

Emotional Influences on Individual Decision-Making: A Comprehensive Literature Review

Jingming Lan^{1,a,*}

¹*Department of Computer and Information Technology, Heilongjiang University of Science and Technology, Heilongjiang, 150020, China*

a. 2047974537@qq.com

**corresponding author*

Abstract: Decision-making occurs in our everyday life, and emotions accompany us the first day we are born. While a majority of individuals hold the belief that their decisions emerge from a succession of rational contemplations, they often overlook the profound influence their emotions have over their choices. This literature review integrates prior research in order to examine the intricate correlation between emotions and individual decision-making. The scope of this paper extends to examining the effects of both positive and negative emotions on decision-making, shedding light on strategies to manage emotions, and scrutinizing the practical ramifications of emotions on decisions in a variety of scenarios, including the burgeoning realm of artificial intelligence. This review ventures to bridge the gap between theoretical understanding and real-world applicability, shedding light on the myriad ways emotions are entwined with the decisions we make, thus offering a holistic insight into human behavior and artificial intelligence. Through a well-rounded analysis, this paper paves the way for further scholarly inquiry and practical advancements in understanding the symbiotic relationship between emotions and decision-making.

Keywords: decision-making, emotions, mood

1. Introduction

In the tapestry of human existence, decision-making is a ubiquitous phenomenon that weaves through our daily lives, guiding us through significant and mundane choices. Imagine a poker player who is faced with a critical hand about whether or not he should fold his cards or reraise, struggles not only with the mathematical probabilities of the cards in others' hands but also with the surge of excitement, anxiety, or determination accumulated from his previous games that confuse their judgment. Similarly, the investor scrutinizing the trajectory of stocks experiences a visceral mix of hope and trepidation that can sway their portfolio strategies. These scenarios unveil a crucial truth: beneath the veneer of rationality, our decisions are inextricably bound to the ebb and flow of our emotions.

These seemingly disparate scenarios converge on an immutable truth that pervades human experience: Emotions are closely entwined with decision-making. Emotions may function as salient cues in decision-making, sometimes facilitating prompt and efficacious choices. Conversely, they may precipitate individuals into biases and distortions, particularly when confronted with multifaceted decisions that necessitate logical and analytical rigour [1].

The interplay between emotions and decision-making goes beyond the individual, permeating organizational and societal matrices, thereby, decision-making. We seek to elucidate various theories, conceptual frameworks, and empirical research to provide a comprehensive understanding of how emotions intervene and influence the human decision-making process, illustrate the ramifications of these effects, and propose strategies to utilize emotions for enhancing decision-making acuity [1].

2. Theoretical Framework: Psychological and Neurobiological Perspectives

Kahneman's dual-process theory is instrumental in understanding the cognitive mechanisms that underpin decision-making, as outlined in his book "Thinking, Fast and Slow," which posits that human cognition operates via two distinct systems [2]. System 1 is fast, intuitive, and automatic, driven by instinct and prior experience. It's our default mode for everyday tasks, like reading facial expressions or completing simple arithmetic. In contrast, System 2 is slower, deliberate, and analytical. It requires conscious effort and is employed in complex problem-solving, like evaluating statistical data or making a strategic choice. While System 1 is efficient and helps us navigate daily life, it's also prone to biases and errors, which System 2 can correct if actively engaged. However, this theory has been criticized for oversimplifying the mutual effect between emotion and logic. Some scholars have challenged the strict division between System 1 and System 2, arguing for more complex interactions between emotion-driven and logic-driven processes [3]. The division may not capture the intricate interactions between these systems significantly since emotions can sometimes enhance rational thinking rather than contradict it. The broad application of dual-process theory across different cultures and individual differences also needs substantiated, warranting further critical research. More research is required to explore how these systems interact and converge in real-world decision-making scenarios. The affect-as-information theory posits a more integrative role for emotions in decision-making [4]. By framing emotions as information, this theory provides a rational basis for the influence of emotional states on decision-making. The theory posits that individuals often use their emotional states as informative cues when making judgments and decisions. Rather than always deliberating on facts or logic alone, people assess how they feel about a situation or stimulus. These emotional reactions, or "affective responses," act as quick heuristic cues, guiding their judgments. However, questions remain about the specificity and consistency of emotional cues and their applicability across different types of decisions and populations [5]. Research exploring the cultural and individual variability in the emotional information process would provide valuable insights into the universality of this theory.

Emerging neurobiological theories have made understanding emotions in decision-making more intricate and multifaceted while providing insights into the underlying biological mechanisms. Damasio's somatic marker hypothesis has brought attention to the physiological basis of emotions in decision-making [6]. This theory suggests that bodily sensations or "somatic markers" guide decision-making. Influential as it seems, there are still gaps in understanding how somatic markers operate across different decision-making contexts and how they interact with other cognitive processes [6]. Neuroeconomics has opened up new interdisciplinary avenues for understanding the neural basis of economic decisions [7]. The amygdala has been recognized as a significant component in risk-taking and 6 financial judgments within this field [8].

3. Emotion and Decision-Making: The Connection

Emotions have a crucial role in decision-making, especially in situations containing risks and uncertainty [9]. They hypothesized that emotions can function as motivators that steer people toward or away from particular decisions. This concept was developed by [1], who investigated how specific emotions, such as anger or fear, might dramatically affect judgment and decision-making. It has been

discovered that emotions infiltrate cognitive processes, altering what and how we think. Positive emotions may result in overconfidence, whilst negative emotions may promote an analytical and critical mindset [10]. In addition, individual characteristics, such as personality traits and emotional intelligence, might moderate the impact of emotions on decision-making, necessitating more careful approaches [11].

4. Positive Emotions and Decision-Making

Positive emotions are pleasurable states of mind commonly associated with a sense of well-being, success, and constructive ideas and behaviors [12]. Isen contends that positive emotions comprise a larger spectrum that activates cognitive and behavioral patterns than simple happiness [13]. These emotions include numerous sensations, including happiness, gratitude, serenity, curiosity, hope, pride, amusement, inspiration, amazement, and love [14]. Positive emotions have a varied effect on decision-making and play a vital role in influencing cognitive processes, risk assessment, inventiveness, and open-mindedness. Positive emotions have been found to increase cognitive flexibility, enabling more expansive and imaginative problem-solving. According to Isen and Means, a good emotional state enables individuals to make connections between seemingly unrelated concepts [15]. This goes beyond merely raising the number of ideas and contributes to a deeper comprehension of potential outcomes. Positive emotions may be supposed to result in shallow thought, but the reality is more complex. Individuals experiencing positive affect engage in more detailed and thoughtful analysis [15]. Far from glossing over the details, positive emotions prompt us to engage more profoundly with the material, intertwining ideas in a complex web of understanding. Optimism and a willingness to take risks are often attributed to positive emotions. While this propensity toward risk-taking [16] might lead to bold, innovative decisions, it also brings the potential for overlooking potential pitfalls. Positive emotions create a dynamic interplay between opportunity and danger, setting the stage for both triumph and failure.

Gao et al. investigated how induced positive emotions influenced gambling behaviour. They carefully orchestrated an experiment involving 150 undergraduate students. Dividing them into three groups (positive, negative, and neutral emotions), they used emotional stimuli and a simulated gambling task to draw insights. Participants exposed to positive emotional stimuli exhibited increased betting sizes in a simulated gambling task, shedding light on how positive feelings can fuel a risk-prone attitude in gambling. The findings support that positive emotions can promote risk-taking behaviour in gambling scenarios. Charness and Levin [17] examined how emotions affected decisions in poker games like Texas Hold'em. They took 48 individuals with varying poker experience and primed them with emotional states before letting them play a simplified version of Texas Hold'em. Then the participants' betting strategies, risk-taking behaviours, and win-loss records were analyzed. The results were quite revealing, with players in a positive emotional state displaying more aggressive betting strategies and achieving more wins. They were more likely to make optimistic judgments about their hands and the behaviours of other players. The experiment connected positive emotions with optimistic judgments, enriching our understanding of emotional effects in competitive environments like gambling.

Beyond the gaming table, the influence of emotions extends to financial decisions. Kamstra et al. analyzed the stock market returns and weather patterns over 26 countries for 15 years [18]. Their findings unveiled a positive relationship between sunny weather, commonly associated with uplifting emotions and stock returns. This innovative approach showcased how environmental factors evoking positive emotions can resonate in complex financial systems, impacting market behaviours correspondingly.

Hermalin and Isen delved into economic behaviour in a more controlled setting using a trust game [19]. 112 participants were required to play a trust game; half were subjected to positive mood

induction, while the other half were not. There was a tangible increase in trust, risk-taking behaviours, and cooperative decisions amid the first half of the participants, which not only highlighted the interplay of emotions and economics but emphasized the human aspect of financial interactions. Moreover, in an experimental setting, Kramer and Weber found that positive mood states influenced investment decisions [20]. Participants with induced positive emotions exhibited different investment strategies than those in neutral or negative mood states. This work further emphasizes how emotions can shape financial decisions.

Finally, the tangible connection between emotions and financial trading performance was brought to life in the study by Lo et al. [21]. Monitoring ten professional stock market traders over 20 trading days, they synchronized physiological data with trading decisions. Then, a clear pattern emerged, linking positive emotional states with better trading performance, while stress correlated with a decline.

5. Negative Emotions and Decision-Making

Negative emotions represent a complex construct encompassing a variety of emotional states, such as fear, anxiety, stress, sadness, and anger [22,23]. These emotions have been studied for their intricate relationship with decision-making, characterized by physical and psychological responses that signal aversion, discomfort, and displeasure. Some scholars argue that negative emotions can impair decision-making by causing cognitive disruptions [24], while others posit that these very emotions can enhance decision-making through increased attention to detail and critical thinking. This multifaceted interplay between negative emotions and decision-making illustrates the complexity of their relationship, underlining the necessity of examining individuals' emotions and contexts to understand their effects fully.

A heightened sensitivity to threat and danger characterizes fear. Research by Lerner and Keltner has shown that fear specifically triggers a greater perceived risk, leading to more cautious and risk-averse decisions. For example, in financial investment, fear can prompt individuals to avoid stocks perceived as volatile, opting instead for more conservative options like bonds [25]. This can translate into decision strategies that prioritize security over potential gains.

However, the impact of fear on decision-making is only sometimes risk-averse. Loewenstein et al. contend that fear can also lead to "risk-seeking behaviour" in certain loss domains, such as promoting desperate actions to avoid an immediate threat [9].

While related to fear, anxiety often involves a broader sense of worry and uncertainty. Whereas fear is commonly linked to specific threats, anxiety may relate to undefined concerns about future outcomes. Anxiety can hinder decision-making by disrupting cognitive processes, reducing the ability to focus on relevant information [26]. It may also cause an overestimation of risk and a preference for familiar or status-quo choices [27]. In poker, for instance, anxious players may avoid aggressive betting strategies, limiting their potential for gain [28].

Nevertheless, anxiety can lead to an enhanced focus on specific details and increased vigilance. This heightened awareness may prompt people to pay more attention to potential hazards, assess alternatives extensively, and avoid errors [24]. Anxiety may also act as a signal that the decision at hand is crucial or that specific features of the circumstance deserve extra consideration. This influence can result in more cautious and reflective decision-making [29]. An emphasis on anxiety in medical decision-making, for instance, could assist physicians in weighing complex aspects with greater caution, hence enhancing diagnostic accuracy.

Stress, which is a physiological response to stressful events, it can be divided into chronic stress and acute stress. Long-lasting, persistent chronic stress frequently has negative consequences on decision-making. It has been linked to long-term cognitive impairments [30] and greater vulnerability to mental disorders like depression and anxiety [31]. These cognitive deficits may have a domino

effect on judgment, planning, and decision-making [32]. Moreover, prolonged stress can promote a risk-taking behavior pattern, resulting in reckless and impulsive judgments made without regard for the consequences [33]. In contrast, acute stress, usually triggered by specific events, can often sharpen focus and lead to heightened performance. This phenomenon has been noted in various high-pressure scenarios, from athletes performing under competitive stress [34] to soldiers in combat situation. Research suggests acute stress might boost decision-making by heightening alertness and enhancing certain cognitive functions [35]. For instance, medical professionals making urgent decisions might benefit from the heightened arousal state that acute stress induces, as it could enable quicker assimilation of vital information [36].

6. Practical Implications

Through the above analysis, we now understand how different effects will intervene in an individual's decisions. However, we need to notice that these interventions are not confined only to the academic realm. Also, it has profound practical implications that can reshape various fields and industries.

In the business world, understanding how emotions affect negotiations, team dynamics, leadership, and consumer behaviour can significantly enhance organizational effectiveness. Leaders who can grasp and utilize emotional intelligence may foster more cohesive teams, build trust, and drive better outcomes. The practice of cultivating positive emotions within a sales team, as shown by Baron, can lead to higher sales and customer satisfaction [37]. Therefore, incorporating emotional intelligence training in leadership development programs can be a strategic investment.

In the financial and investment sectors, awareness of how positive or negative emotions influence risk-taking can lead to better investment strategies and decision-making [20]. Financial professionals and individual investors can benefit from mindfulness practices or cognitive reappraisal techniques to manage the emotional roller-coaster of market fluctuations, leading to more rational and aligned investment choices [1].

Even in areas like gambling and sports, the influence of emotions on decision-making is significant. Gamblers and athletes who recognize and manage their emotions are more likely to take calculated risks rather than impulsive ones, optimizing their overall performance. Interventions that target emotional regulation may reduce problem gambling or improve mental resilience in high-pressure competitive scenarios.

Turning to the stage of AI, a coveted child of the new century, the idea of integrating emotions into AI systems to make them more "human-like" is a fascinating area in AI research, termed Affective Computing. The central premise is that if AI can understand and respond to human emotions, it could enhance the interaction between humans and machines, making these interactions more natural, effective, and satisfying.

In conclusion, the implications of understanding the relationship between emotions and decision-making extend far beyond theoretical interest. It touches almost every aspect of human interaction and professional endeavour. From enhancing educational outcomes to improving business negotiations, investment choices, healthcare decisions, or athletic and AI performance, the potential applications and interventions are broad and transformative.

7. Conclusion

In our comprehensive literature review, we delved into the intricate relationship between emotions and decision-making. Our journey began with some foundational concepts, such as dual-process theories and the emerging field of neuroeconomics, both of which offer insight into the cognitive and neurological pathways through which emotions steer our choices. We further dissected the roles of positive and negative emotions, elucidating their contrasting effects: while positive emotions tend to

encourage risk-taking and foster creativity, negative ones instigate caution and meticulous detail orientation.

This nuanced understanding of emotional influence holds paramount importance across varied sectors. From the realms of education and business to healthcare, there's a tangible impact. Particularly intriguing is its application in the development of artificial intelligence. By leveraging our knowledge, we can aspire to create AI systems that are not only more advanced but also deeply empathetic and human-like.

As we look to the horizon, one promising direction emerges: the exploration of mixed emotional states. Real-world emotions rarely exist in isolation; their interplay and coexistence offer a rich tapestry that influences decisions. Recognizing and analyzing this complexity can provide further clarity. In summary, as we deepen our understanding of emotions in decision-making, we open doors to enhanced personal choices and groundbreaking advancements in technology, reinforcing the increasing relevance of this domain in the future.

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