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Sentient Rationality in the Digital Age: Integration of Neuroscience and Philosophy for Decision Making

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Abstract

This article delves into the intriguing intersection between human rationality and digital technologies, with a specific focus on the influence of emotion and artificial intelligence on decision making. Drawing from the theory of sentient rationality, it examines how emotional and somatic components shape rationality in a digital context. The implications of these insights for understanding human cognition are thoroughly discussed. Moreover, the article proposes innovative transemiotic approaches that integrate neuroscience and philosophy, inviting the reader to delve deeper into these novel methods. The conclusion presents practical recommendations for future research, underscoring their potential applications in the rapidly evolving digital age.

Keywords: sentient rationality, neuroscience, philosophy, emotion

1. Introduction

In the digital age, human decision-making is at a turning point due to the growing influence of artificial intelligence and the integration of advanced technologies into everyday life. This article focuses on Xavier Zubiri's theory of sentient rationality, which not only provides a new perspective on decision-making but also offers practical insights for navigating the digital landscape, thereby informing and enlightening our understanding of this complex intersection.

According to Zubiri, sentient rationality is not just about understanding reality, it's about feeling it. It's not a mental representation of reality, but the very act by which the real becomes present in our intelligence. In his words, "to intel is formally to apprehend the real as real, and to feel is to apprehend the real in impression" (Zubiri, 1981, p. 46). This means that our understanding of reality is not just a cold, analytical process, but a deeply felt experience.

Zubiri's theory contrasts with the classical conception of rationality that views reason as a purely logical and analytical capacity. Instead, it proposes a dynamic structure in which emotion and somatic components are crucial. This has profound implications for our understanding of decision-making, especially in an increasingly digitized world where emotions can be manipulated by advanced technologies and sophisticated algorithms. The potential for future research in this area is vast and inspiring, offering numerous opportunities for further exploration and discovery.

In this context, the article examines how digital technology and artificial intelligence affect human rationality and how these interactions can be understood and improved through a transemiotic approach. This approach seeks to transcend immediate signs and consider cognition's biological and psychological aspects (Dennett, 1993).

The transemiotic approach offers an innovative way to understand human rationality in the digital age. By integrating biological and psychological signs, this approach allows for a more holistic understanding of cognitive processes, considering both the logical and emotional aspects of decision-making. Transemiotics provides a framework for understanding how signs interact in forming rationality, which is crucial in a context where artificial intelligence (AI) plays an increasingly important role.

Transemiotics, as a field of study, explores how signs and symbols are not only interpreted within a specific semiotic system but also transcend those systems to interact with other domains. In the context of human rationality, this involves examining how biological signs (such as neurochemical and physiological responses)

intertwine with psychological signs (such as thoughts, emotions, and beliefs) to form a complex and dynamic network of meanings. This network influences how individuals perceive, process, and respond to information.

Integrating biology and psychology in transemiotics allows for addressing rationality from a perspective that acknowledges the importance of both systems in decision-making. Traditionally, rationality has been conceptualized mainly in logic and reasoning, aspects that AI systems can model and replicate. However, this limited view does not capture the richness of human experience, which is also profoundly influenced by emotional and contextual factors.

One of the critical principles of transemiotics is that biological signs, such as neurochemical signals, do not operate in a vacuum. Instead, they constantly interact with psychological signs, creating a network of meanings influenced by both the context and the individual's internal state. For example, the release of neurotransmitters like dopamine in response to certain stimuli affects a person's emotional state and can also influence their perception of the risks and benefits associated with a particular decision.

Furthermore, transemiotics emphasize the importance of the interaction between conscious and unconscious signs. Many human decisions are influenced by unconscious processes rooted in the biology of the brain. These unconscious processes interact with conscious signs, such as thoughts and beliefs, creating a dynamic essential for understanding human rationality. By acknowledging this interaction, the transemiotic approach provides a more comprehensive understanding of how decisions are made and how decision-making can be improved at both individual and collective levels.

In the digital age, transemiotics becomes even more relevant due to AI's increasing influence on everyday life. AI, operating through algorithms that process large amounts of data, introduces new signs into the network of meanings that constitute human rationality. These signs can include personalized recommendations, predictions based on behavior patterns, and other outputs generated by AI systems. Transemiotics offers a framework to analyze how these signs interact with existing biological and psychological signs and how this interaction can influence decision-making.

A crucial aspect of this interaction is AI's ability to amplify certain signs over others. For example, social media platforms can amplify emotional signs by prioritizing content that generates strong emotional responses. This amplification can bias users' perceptions and influence their decisions. From a transemiotic perspective, it is vital to understand how these amplified signs interact with biological and psychological signs to form a holistic understanding of rationality in the digital age.

Transemiotics also addresses the issue of sign interpretation in intercultural and technological contexts. In a globalized world, signs are interpreted differently across cultures and constantly reinterpreted as they interact with new technologies. This reinterpretation is a transemiotic process, where signs cross semiotic boundaries and acquire new meanings. For example, an emoji can have different connotations in different cultures, and its meaning can change when used in various technological contexts.

By providing a framework for understanding these complex interactions, transemiotics helps develop strategies to improve communication and decision-making in an increasingly interconnected world. For example, in user interface design, understanding how visual and textual signs are interpreted by different users can help create more inclusive and practical experiences.

Another relevant aspect of transemiotics is its application in education and learning. By considering how biological and psychological signs interact in the learning process, educators can develop pedagogical methods that account for the rational and emotional aspects of learning. This can include designing instructional materials that convey logical information and engage students emotionally, thereby improving retention and comprehension.

Transemiotics offers an innovative and holistic way to understand human rationality, especially in a context where AI and other digital technologies play an increasingly central role. By integrating biological and psychological signs and considering the dynamic interaction between these signs, transemiotics provides a robust framework for understanding the complexity of human decision-making. This approach enriches our understanding of rationality and has practical applications in areas such as AI, education, and intercultural communication.

The importance of this study lies in its ability to offer a deeper understanding of human cognition in the digital age, where decisions are increasingly mediated by intelligent systems. By integrating neuroscience and philosophy, it opens a path to improve not only our theoretical understanding of rationality but also its practical application in digital contexts, with significant implications for areas such as artificial intelligence, technological ethics, and strategic decision-making (Crick & Koch, 1990; Changeux & Dehaene, 2000).

Introducing somatic markers and emotion as critical elements in human rationality challenges traditional conceptions and offers new avenues to explore how we think, feel, and decide in an increasingly digitized world (Damasio, 1994; Zubiri, 1981). This article focuses on theorizing these concepts and provides practical examples and discussions on how these ideas can be implemented in real life to improve decision-making and interaction with digital technologies.

The study of sentient rationality in the digital age is essential for understanding how people make decisions and developing technologies that respect and enhance human autonomy. Current technologies, especially those based on artificial intelligence, have the potential to influence our decisions in subtle and powerful ways. Therefore, these technologies must be designed and used in ways that complement and not undermine our ability to make informed and rational decisions.

2. The Influence of Emotion on Human Rationality

Emotion plays a fundamental role in shaping human rationality, especially in the context of digital civilization. According to Zubiri's theory of sentient rationality, reason is not a purely logical faculty but a dynamic structure that includes emotional and somatic components. Emotion becomes the launching pad for human rationality due to its validating role in apprehending reality. This emotional integration affects both perception and decision-making, providing a foundation upon which cognitive and rational responses are built (Zubiri, 1981).

Zubiri's theory contrasts with the classical conception of rationality that views reason as a purely logical and analytical capacity. Instead, it proposes a dynamic structure in which emotion and somatic components are crucial. This has profound implications for our understanding of decision-making, especially in an increasingly digitized world where emotions can be subtly and powerfully manipulated by advanced technologies and sophisticated algorithms (Zubiri, 1981).

According to Zubiri (1981), rationality cannot be broken down solely into logical and sequential processes. Instead, reason is deeply rooted in the direct and affective perception of reality. This means that emotions and bodily sensations are not mere epiphenomena or interferences in the rational process but essential components that inform and shape our understanding and decision-making. Emotion acts as a catalyst, providing context and urgency to decisions, enabling a richer and more contextual evaluation of reality.

The dynamic structure of rationality proposed by Zubiri implies that reason and emotion do not operate in isolation but are intrinsically interconnected. This holistic model suggests that human intelligence is a sentient faculty, where feeling and understanding are interdependent processes that continuously feed into each other. According to Zubiri (1981), the apprehension of the real constantly updates reality in sentient intelligence, where feeling and understanding are inseparable modes of the same faculty.

In a digitized world, this theory has profound implications for our understanding of decision-making. The proliferation of advanced technologies and sophisticated algorithms has introduced new dynamics in how we interact with information and make decisions. These technologies can subtly and powerfully manipulate emotions, designed to capture our attention and keep us engaged through the exploitation of emotional responses.

Social media algorithms, for example, are programmed to prioritize content that generates strong emotional responses, such as fear, anger, or surprise. This influences our perception of reality and can bias our decisions by amplifying specific emotional signals over others. From Zubiri's perspective, this emotional manipulation directly impacts rationality, as emotions are integral to the intellection and decision-making process.

Moreover, Zubiri's theory emphasizes the importance of somatic components in rationality. Bodily processes, such as neurotransmitter release and other physiological responses, do not operate in a vacuum. Instead, they interact with our thoughts and emotions, creating a complex network of meanings that influence how we perceive and respond to information. For example, releasing dopamine in response to certain stimuli can affect our emotional state and our evaluation of the risks and benefits of a particular decision.

Integrating emotional and somatic components into decision-making is more critical than ever in a digital environment where information is abundant but often superficial and polarized. Digital technologies can influence our emotions and perceptions in ways that alter our sentient rationality. Zubiri suggests that to understand human rationality fully, it is necessary to consider how these elements interact dynamically and contextually.

According to Zubiri, the dynamic structure of rationality also underscores the need to develop a greater critical awareness of how digital technologies affect our emotions and decisions. This includes the necessity to design technologies that respect and enhance our capacity to make informed and reflective decisions rather than exploit

them. Emotional education and digital literacy are essential to help individuals navigate an increasingly complex and emotionally charged digital environment.

In the digital world, algorithms and data often influence decisions and actions, which can affect our ability to make autonomous decisions. Carr (2011) argues that technology, especially the internet and mobile devices, negatively impacts our ability to think deeply and critically. Turkle (2011) reinforces this idea, noting that digital culture turns people into passive information consumers, promoting quick and superficial responses instead of deep dialogue and debate. This leads to losing identity and values, increasing vulnerability to manipulation and deception in the digital environment.

Zuboff's (2019) concept of "surveillance capitalism" highlights how technology companies collect and analyze massive amounts of personal data to predict and modify human behavior for commercial purposes. This model threatens individual autonomy and privacy and affects democracy and human rights. Emotional manipulation and constant surveillance reduce the space for free choice and action, prioritizing the interests of tech companies over individual rights.

Neuroscience has demonstrated that emotions are crucial for rationality. Damasio (1994) found that rational decisions depend on emotional elements, with damage to the prefrontal cortex negatively affecting judgment. Emotion is not an obstacle to rationality but an integral part that facilitates efficient and appropriate decision-making. Emotion provides the necessary signals to value and prioritize information, acting as an alert mechanism that allows rapid responses to complex situations.

The idea that emotions affect rationality is not new. Philosophers like David Hume pointed out that reason is a slave to the passions. However, contemporary neuroscience research has provided empirical evidence of how emotions influence decision-making. Damasio (1994) introduced the concept of somatic markers, which are emotional signals that guide behavior and decision-making. These somatic markers are essential for rational functioning, allowing for the quick evaluation of options and informed decision-making.

Advanced technologies can manipulate emotions in the context of digital civilization. Social media algorithms, for example, are designed to capture users' attention and keep them engaged, often by exploiting emotions such as fear, anger, and surprise. This emotional manipulation can lead to polarization and radicalization, affecting individuals' ability to make rational and reflective decisions.

The intersection between emotion and rationality is also evident in economic decision-making. Kahneman and Tversky (1979) demonstrated that emotions play a crucial role in decision-making under uncertainty. Their prospect theory shows that people are more likely to avoid losses than to seek gains, an emotional bias that affects economic decisions. This finding has significant implications for economic theory and public policy practice, especially in a world which digital technologies increasingly mediate economic decisions.

Moreover, emotion influences how people process information and form beliefs. Motivated reasoning theory suggests that emotions can lead people to accept information that confirms their pre-existing beliefs and reject information that challenges them. This has important implications for opinion formation and decision-making in a digitized world, where information is abundant but often polarized.

The concept of emotional intelligence reflects the importance of emotion in rationality. Goleman (1995) argues that emotional intelligence, which includes the ability to recognize and manage one's own emotions and those of others, is crucial for personal and professional success. In the digital world, where communication often occurs electronically, the ability to manage emotions effectively is more important than ever.

In the realm of artificial intelligence, the recognition and manipulation of emotions are increasingly present. Facial recognition and voice analysis technologies can detect emotions in real-time, allowing the creation of systems that respond emotionally to users. However, this capability also raises ethical concerns, as emotions can be manipulated to influence people's behavior in ways that are not always transparent or beneficial to them.

Emotional manipulation in the digital age affects individuals and societies. The spread of fake news and misinformation through social media can trigger massive emotional responses, affecting public opinion and social stability. Algorithms' ability to amplify emotionally charged content can lead to polarization and the erosion of trust in institutions.

Emotional education and the design of technologies that promote emotional connection can help mitigate the negative effects of digital manipulation and promote more autonomous and reflective decision-making. Educational programs that teach emotional intelligence skills can equip people with the tools needed to navigate a complex and emotionally charged digital environment.

The design of technologies that respect and enhance users' emotional autonomy is also an area of growing interest. Technology designers are responsible for creating systems that are effective from a functional standpoint and ethical. This includes considering how technologies affect users' emotions and rationality and designing interfaces that foster informed and reflective decision-making.

Integrating emotion into understanding human rationality has profound implications for how we design and use technology in the digital age. By recognizing the interdependence between emotion and rationality, we can develop more holistic and effective approaches to addressing the challenges of the digital era.

3. Digital World and Rationality

In the digital world, our decisions and actions are often influenced by algorithms, data, and interface design, which can affect our ability to make autonomous decisions. Carr (2011) points out that the issues of rationality in the digital world are based on the idea that technology, especially the internet and mobile phones, negatively affects our ability to think deeply and critically. This idea, supported by Turkle (2011), highlights how digital culture has turned humanity into passive consumers of information, driven by mechanisms that prioritize quick and superficial responses, thus avoiding deep dialogue and debate to some extent. According to Turkle (2011), this leads to a loss of meaning, identity, and values, which creates a vulnerability that can result in manipulation and deceit. Consequently, digital civilization is at high risk of undermining human autonomy. Information and communication technologies (ICT) have posed new challenges and threats to individuals' and collectives' ability to make free and responsible decisions about their lives.

Excessive dependence on ICT, for example, has been shown to directly affect individuals' critical, creative, and reflective capacities and their direct interaction with the natural and social environment. Additionally, mass surveillance, which involves the monitoring, collection, analysis, and use of personal data from ICT users by public and private actors for commercial, political, or security purposes without the affected individuals' consent or control, creates a state of widespread distrust and collective fear due to the potential effects of misinformation. Unfortunately, the digital world increasingly reveals significant risks of polarization and misinformation, where people become trapped within biases and beliefs, often without knowing whether these are self-created or the result of manipulation through information consumption. To mitigate these issues, Sunstein (2008) advocates for greater diversity and transparency in information sources and critical education that promotes independent thinking and dialogue.

Sunstein (2018) identifies two phenomena that threaten rationality: polarization and fragmentation. Polarization refers to the tendency of people to adopt extreme opinions and reject evidence that contradicts them. This can be explained by the functional mechanism of beliefs in humans, which seeks to create mental fixations that sustain their own beliefs. Fixations result from cognitive efficiency, which aims to regulate the flow and dynamism inherent in human thought. In other words, we cling to beliefs to maintain a self-consistent worldview. Fragmentation, on the other hand, refers to the lack of exposure to different viewpoints and the formation of homogeneous groups that isolate themselves from others. Fragmentation in the digital world manifests as a phenomenon where people selectively expose themselves to information that confirms their beliefs and avoid information that challenges them.

Sunstein (2008) also argues that this process can weaken democracy by creating echo chambers and cyber cascades that impede dialogue and understanding among groups with different opinions. An echo chamber is a space where people are only exposed to views and information that confirm their pre-existing beliefs without considering contrary evidence or arguments. A cyber cascade, on the other hand, is a process by which a false or unfounded idea spreads rapidly among groups of people who share the same worldview without being subjected to critical reflection. These phenomena have negative consequences for democracy, science, and social coexistence, as they hinder dialogue, learning, and cooperation among people with different perspectives.

4. Neuroscience, Intelligence, and Decision Making

Given the previous discussion, it is evident that the understanding of the neuroscience of rationality not only leads to the creation of tools for influence and manipulation but also could be used to develop mechanisms of awareness to tackle the challenges of digital civilization and the use of information. The human brain is an adaptive organ that can modify its structure and functioning in response to environmental stimuli. The brain is not a static and deterministic system but a dynamic and complex one operating under uncertain and constant change. Therefore, the brain is not a logical and infallible machine but a creative and flexible organ that seeks solutions to problems through preconscious heuristics.

Human rationality, thus, cannot be understood as an innate and universal capacity but as a skill that develops and perfects over a lifetime, thanks to the configuration of the objective self. In this sense, rationality depends on factors such as emotions, self-perception, and social development context.

Therefore, we must reclaim the importance of emotion and context as foundational to critical thinking. Evidently, manipulation takes advantage of these two dimensions, given that emotional management within individuals' belief mechanisms allows for altering reality and manipulating decision-making.

However, we could use the same knowledge to understand emotion and educate it as a great ally for a reflective view of the world. The importance of emotions in rationality lies in the idea that emotions are embodied valuations, that is, representations of physiological changes occurring in the body when faced with a specific situation. Emotions are not merely subjective states; they have intentionality and content and can be evaluated from a metacognitive perspective, allowing us to monitor our mental processes. For this, it is necessary to educate oneself in self-regulation mechanisms. Metacognition is an essential component of emotional management. An example of this can be seen in experiments conducted by Elizabeth Phelps.

Elizabeth Phelps is a psychologist who has studied the amygdala's role in emotional reactions and racial biases. The amygdala is a part of the brain that activates in threatening or fearful situations. Phelps conducted several experiments measuring brain activity in white and black individuals. She discovered that the amygdala activated more when people saw faces of a different race, indicating greater anxiety or distrust. However, this effect diminished if the individuals knew the person of the other race beforehand or had friends of that race. This suggests that the amygdala is not an innate source of racism but is modulated by social and cultural experiences. Phelps also found that the amygdala is related to implicit bias, the unconscious tendency to favor members of one's group. Implicit bias can influence decisions and behaviors preconsciously and can generate discrimination or injustice (Phelps & Thomas, 2003). Interestingly, despite the negative emotional activation caused by the amygdala, many people could monitor the negative effect of the emotion and modulate it thanks to the frontal and prefrontal cortex. In other words, emotion can be modulated by our ability to integrate it with various brain areas (Sapolsky, 2020).

This reveals a practical union between emotion and reason. This work has shown no separation between the two; instead, they mutually influence each other dynamically and bi-directionally. Rationality can even be seen as a manifestation of somatic operation more linked to emotion than anything else. Emotion and reason are interdependent. Emotion can provide the impetus for decision-making, while reason can provide the necessary information to make informed decisions.

It is now evident that emotion can affect reason, but reason can also modulate emotion. Brain modulation contains an entire platform where emotion provides support for various cognitive operations. In the case of preconscious racism, different brain regions synergistically participate, such as the amygdala, which controls behaviors related to fear and anger, and the prefrontal cortex, which controls emotional impulses and makes decisions based on configured belief mechanisms. Ultimately, emotions are necessary for rational decision-making, allowing us to value and prioritize information efficiently. Emotions can act as an alert signal, warning us of dangerous or essential situations and enabling us to respond quickly and make decisions suited to the complexity of the reality in which we live.

With this in mind, we can use the interrelationship between emotion and reason to consolidate an educational process that fosters critical perspective and self-regulation in decision-making. This process should highlight the following points:

Promote Emotional Education: Although this point might be confused with emotional intelligence, the goal is to understand that emotions are an integral part of the decision-making process and that emotional education is essential for learning to recognize and manage emotions effectively. This education is closer to understanding the experience of feeling and thinking in a complex and integrated way. For example, we are constantly exposed to information and emotional stimuli in the digital world. Therefore, it is essential to promote emotional education to help people make informed decisions through cognitive operations that map the response level to each presented stimulus. This mapping can be achieved with metacognition and cognitive self-regulation.

Encourage Diversity of Perspectives: Emotions can help us value and prioritize information effectively. To address information problems in the digital world, it is essential to promote the diversity of perspectives and encourage exposure to different ideas and opinions through evaluative exercises where empathy is predominant. This can help people evaluate information more comprehensively and make more informed decisions, seeing the world as a shared space.

Design Technologies That Foster Emotional Connection: Instead of designing technologies that foster disconnection and emotional alienation, technologies could be designed to foster emotional connection and empathy. This could include creating platforms that enable communication and idea exchange in an emotionally safe and enriching environment. To do this, it is vital to promote, through technological use, greater awareness of our emotions and how they influence our perception of reality. This involves examining bodily signals indicating how information affects us and the values and motivations underlying human choices. It also consists in questioning the truth and relevance of the information and the purpose and intention of those who generate or disseminate it. This way, biases, and manipulations could be avoided, recognizing that we are all emotional and rational beings simultaneously, with emotions varying according to context and experience.

Avoiding Homogeneity of Online Information: The homogeneity of information can limit people's decision-making ability. Therefore, there is a risk that online information can be biased, manipulated, or incomplete. In this sense, it is also essential to develop new technologies to evaluate the quality, truthfulness, and relevance of information found on the internet. This could foster critical reflection, helping people analyze information more carefully for decision-making.

In summary, rationality manifests at different levels of complexity, from perception to abstract reasoning, and is based on neural mechanisms that can be modified by experience and learning. In this sense, rationality is not limited to the ability to think logically or analytically but implies the ability to act according to established belief systems validated through emotional mechanisms.

Rationality also relies on integrating different types of knowledge, including empirical, ethical, and emotional understanding. Therefore, experience, ethics, and emotion could be the anchor points for forming sentient rationality, allowing a balance between reason, emotions, and ethical values. This could manifest in an improved ability to make informed decisions in complex situations. Thus, rationality would cease to be seen as an empty set of cognitive skills, instead understood as a more complex attribute involving the ability to reflect on our values, evaluate our actions, and make informed decisions based on the emotional validations of our body.

Emotions, as demonstrated, are not merely subjective responses to stimuli but reflect a preconscious evaluation of the situation and its relation to forming an objective self. Both reason and emotion mutually influence and feed each other, forming a dynamic and complex system that constitutes the basis of human identity and action. Thus, rationality and emotion are two aspects of knowledge articulated at different levels of abstraction and concreteness, expressed in various practical applications. Therefore, emotion is not something to be controlled or repressed to achieve more rational decision-making but an essential source of information that can be used in the process.

Recent advancements in neuroscience have increasingly emphasized the pivotal role of emotions in decision-making, especially in digital contexts where interactions with advanced technologies, such as artificial intelligence and personalized algorithms, profoundly shape cognitive and emotional responses. The concept of neuroplasticity is central to these discussions, as it refers to the brain's ability to reorganize and adapt to new experiences, stimuli, and environments (Kolb & Gibb, 2017). Neuroplasticity becomes essential to understanding how individuals process and react to stimuli in a world where exposure to vast amounts of information and emotionally charged content is constant. This ongoing adaptation supports a more nuanced view of rationality that acknowledges the dynamic interplay between emotion and cognition rather than seeing decision-making as purely logical.

In addition to neuroplasticity, recent research has highlighted the importance of emotional intelligence in decision-making processes, particularly within digital environments. Studies show that individuals with higher emotional intelligence are better equipped to navigate the complexities of digital interactions, as they can more effectively regulate emotional responses to digital stimuli (Zeidner et al., 2019). Emotional intelligence enables deeper processing of information and helps counter the influence of emotionally manipulative algorithms, which often aim to exploit users' affective states to shape their behavior. This line of research further underscores the intricate connection between emotion and cognition, as emotional awareness and regulation contribute to more reflective and informed decision-making.

Furthermore, contemporary studies in the field of neuroeconomics provide additional insights into how decision-making is influenced by both emotion and rationality. Scholars such as Camerer, Loewenstein, and Prelec (2015) have demonstrated that emotional responses, especially those tied to reward processing and risk evaluation, play a central role in economic decisions. These findings are particularly relevant in the digital realm as AI systems increasingly influence users' risk perceptions and reward evaluations through predictive analytics and personalized recommendations. This interaction between algorithmic outputs and human emotional responses forms a feedback loop where affective processes continuously modulate rational decision-making.

These insights suggest that understanding the neurobiological basis of emotional responses is key to developing more robust decision-making models in a digital age dominated by intelligent systems.

Moreover, recent work by Sapolsky (2020) has expanded on the idea that emotions, while often perceived as disruptive to rational thought, are in fact integral to the decision-making process. His research suggests that emotions facilitate rapid and adaptive decision-making, particularly in situations of uncertainty, where logical reasoning may be too slow or insufficient. This perspective aligns with Damasio's (1994) theory of somatic markers, which argues that emotional signals guide rational choices by providing essential shortcuts that enable individuals to evaluate complex scenarios more efficiently. In digital environments, where decision-making must often occur rapidly in response to overwhelming amounts of information, the role of emotion becomes even more pronounced. These findings encourage a more integrated approach to understanding how both emotions and rationality contribute to decision-making processes shaped by the digital context.

In light of these recent developments, it becomes clear that the intersection of neuroscience, emotion, and decision-making is an increasingly relevant field of study in the digital age. Artificial intelligence's capacity to amplify and manipulate emotional responses introduces challenges and opportunities for understanding human rationality. By recognizing the essential role of emotion in decision-making, contemporary neuroscience offers new pathways to refine our models of rationality, particularly in an era where digital technologies exert unprecedented influence over our cognitive and emotional lives.

5. Conclusions

The transemiotic approach offers an innovative way to understand human rationality in the digital age. By integrating biological and psychological signs, this approach allows for a holistic understanding of cognitive processes, considering both logical and emotional aspects of decision-making. Transemiotics provides a framework to understand how signs interact in forming rationality, which is crucial in a context where artificial intelligence (AI) plays an increasingly important role.

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Transemiotics offers an innovative and holistic way to understand human rationality, especially in a context where AI and other digital technologies play an increasingly central role. By integrating biological and psychological signs and considering the dynamic interaction between these signs, transemiotics provides a robust framework for understanding the complexity of human decision-making. This approach enriches our understanding of rationality and has practical applications in areas such as AI, education, and intercultural communication.

The importance of this study lies in its ability to offer a deeper understanding of human cognition in the digital age, which intelligent systems increasingly mediate decisions. Integrating neuroscience and philosophy opens a path to improve our theoretical understanding of rationality and its practical application in digital contexts, with significant implications for artificial intelligence, technological ethics, and strategic decision-making.

In conclusion, integrating neuroscience and emotional intelligence into our understanding of decision-making in the digital age offers profound insights into how cognitive and emotional processes intertwine. The findings discussed throughout this article contribute to a theoretical understanding of sentient rationality and have significant practical implications for the field of psychology. As digital technologies increasingly permeate all aspects of daily life, psychologists are uniquely positioned to address the challenges posed by these advancements. By understanding the neural and emotional mechanisms underlying decision-making, psychologists can develop evidence-based interventions to foster emotional resilience and improve decision-making capabilities in digitally saturated environments.

One practical implication for psychology is the design of therapeutic interventions that focus on emotional regulation in response to digital stimuli. Given the prevalence of emotionally manipulative algorithms in social media and other online platforms, psychologists can help individuals develop strategies to recognize and mitigate the impact of these algorithms on their emotional and cognitive states. Techniques such as mindfulness-based therapy and cognitive-behavioral approaches can be adapted to digital contexts to help individuals become more aware of their emotional triggers and make more reflective decisions online. Emotional education, particularly in understanding how emotions shape rationality, becomes a critical tool in helping individuals navigate the complexities of the digital world without succumbing to manipulative influences.

Additionally, integrating emotional intelligence training in educational and workplace settings can enhance decision-making in professional and personal contexts. Psychologists can develop programs that teach individuals how to better recognize and regulate their emotional responses, particularly in high-stakes decision-making scenarios often encountered in digital environments. This approach can be extended to AI ethics and human-computer interaction, where emotional intelligence principles are incorporated into the design of digital systems that encourage users to make more informed and reflective decisions. By ensuring that digital platforms prioritize emotional well-being and psychological health, the field of psychology can contribute to a more ethical and human-centered approach to technology.

Furthermore, the role of neuroplasticity in decision-making has significant implications for psychological practice, particularly in cognitive and behavioral therapies. The understanding that the brain constantly adapts to new information and experiences underscores the importance of therapeutic approaches emphasizing learning and flexibility. Psychologists can leverage neuroplasticity by helping clients reframe their emotional responses to

digital stimuli, encouraging the development of new cognitive pathways that support healthier decision-making processes. This is especially important in addressing issues such as digital addiction, where individuals may need to rewire their mental and emotional responses to technology.

From a broader perspective, the field of psychology also plays a critical role in addressing the societal impact of digital technologies on mental health. The rise of "surveillance capitalism" (Zuboff, 2019) and the widespread use of personalized algorithms have raised ethical concerns about privacy, autonomy, and the potential for emotional manipulation. Psychologists can contribute to this dialogue by advocating for digital literacy programs that equip individuals with the skills to evaluate digital platforms' emotional and psychological impacts critically. Such programs would enhance decision-making and promote a healthier relationship with technology by fostering a critical awareness of how digital systems shape emotional and cognitive responses.

Finally, the findings presented in this article encourage psychologists to participate in interdisciplinary research on decision-making and technology actively. By collaborating with neuroscientists, technologists, and ethicists, psychologists can help shape the development of digital systems that prioritize human well-being. Research into how emotions interact with digital environments offers exciting opportunities for psychologists to contribute to creating tools that support emotional health and cognitive resilience in an increasingly digital world.

In conclusion, the intersection of neuroscience, emotion, and decision-making provides psychology with a rich foundation for developing practical interventions that address the challenges of the digital age. Psychologists can play a vital role in promoting healthier decision-making processes and fostering emotional resilience in a rapidly evolving technological landscape by focusing on emotional regulation, neuroplasticity, and ethical considerations.

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