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A Disruption of Extended Consciousness and its Effect on Autobiography in Neuropsychoanalysis with Emphasis on the Antonio Damasio's View

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Abstract

In recent decades, psychoanalysis has aligned itself with advances in neuroscience to enhance its effectiveness. Neuroscience, with its objective methodological approach, has provided a solid foundation for re-evaluating psychoanalytic hypotheses. Consciousness is considered a complex and abstract concept shared by neuroscience and psychoanalysis and is categorized as a higher-order cognitive and mental function. Today, many neuroscientists, including Antonio Damasio, focus on the study of consciousness. Damasio views consciousness as an emergent product of extensive neural networks. Therefore, this study aims to address the following questions: Which brain regions and neural processes are involved in non-material consciousness, defined as the sense of identity individuals have regarding their own existence? Furthermore, what psychological consequences result from impairments in consciousness? Using qualitative content analysis, this study examines Damasio's perspectives on consciousness. Damasio does not consider consciousness to be merely an awareness of internal bodily states. He categorizes consciousness into two types: core consciousness and extended consciousness. Core consciousness provides a momentary sense of self and occurs when the brain generates a nonverbal, image-based representation of how an individual is affected by an object during processing. Extended consciousness, on the other hand, provides individuals with a detailed sense of self and contributes to the formation of the autobiographical self. This process depends on higher-order prefrontal structures, and damage to these structures can lead to executive dysfunction and behavioral dysregulation. Such impairments disrupt the expression and regulation of certain emotions and feelings that normally emerge within conscious experience.

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Introduction

In our era, most neuroscientists focus on the mind-body (brain) problem. In this regard, the remarkable advancements in brain imaging over the past 30 years have enabled a precise examination of the brain's functional anatomy and mechanisms. These advancements have provided empirical neuroscience approaches with the opportunity to study emotions, attention, cognition, and consciousness. Antonio Damasio is one of the neuroscientists particularly interested in the subject of consciousness. According to him, neurobiology can help resolve the question of how the mind becomes conscious, as he firmly believes that the mind undoubtedly emerges from the activity of neural circuits. In other words, he considers mental life to be the product of an extensive neuronal network. Damasio argues that the scientific method for studying the foundation of the private and internal human mind consists of two stages. "The first stage involves observing and calculating the actions of the subject under study or collecting and computing personal reports of their inner experiences, provided by the individual under examination or both. The second stage involves linking the collected evidence to the computed manifestations of one of the biological phenomena of the nervous system, which we begin to understand at the molecular, neuronal, neural circuit, or systemic levels" *(A. R. Damasio, 1999, p. 179*). This approach is based on the hypothesis that mental processing, including consciousness, arises from brain activity. The brain is an integral part of the whole organism, continuously interacting with it. Therefore, disturbances in this system lead to various neuropsychiatric disorders. Among neurological disorders, behavioral disorders, antisocial behaviors, and learning difficulties can be mentioned. However, understanding brain chemistry and psychology can help combat these conditions. Given the above, this study seeks to answer the following questions: From Damasio's perspective, how does our non-material consciousness the sense of identity and self-awareness emerge from the aggregation of cells and fundamental neural mechanisms? How does damage to a specific brain region prevent the expression of certain emotions and feelings that naturally flow through the mind and, consequently, consciousness? What psychological consequences does this impairment in consciousness entail? Based on the conducted analyses, it appears that one of the key indicators of damage to the prefrontal cortex is executive dysfunction, which is accompanied by deficiencies in emotional responses and self-awareness, leading to behavioral imbalance. Consequently, individuals with damage to this particular region experience severe behavioral impairments in decision-making, especially in uncertain situations.

The Inter-Theoretical Reduction of Psychoanalysis to Neuroscience

Undoubtedly, psychoanalysis triggered a major revolution in the early 20th century by reshaping humanity's understanding of the mental world. However, despite its early success, the progress of psychoanalysis slowed down in the latter half of the century due to its failure to align with scientific

advancements. In other words, psychoanalysis struggled to develop objective methods for testing its compelling ideas. Consequently, if psychoanalysis seeks to regain its past influence, it must establish a closer connection with biology in general and neuroscience in particular. By integrating itself with neuroscience, psychoanalysis aims to unify its concepts with neuroscientific knowledge, thereby creating a single, comprehensive discipline for a deeper understanding of the human mind.

The ultimate goal of scientific explanation across different eras has been unification explaining the greatest number of phenomena with the least number of concepts and theoretical assumptions. During the 1950s and 1960s, many researchers adopted a model of science that sought to unify different fields of study such as psychoanalysis, biology, chemistry, and physics into a single, overarching scientific framework. This approach was known as the "Unity of Science."

“To achieve unity across different sciences, the main proposal was that each scientific discipline could be linked to the one below it through inter-theoretical reduction. This means that a theory such as biology could be reduced to a more fundamental theory like chemistry, chemistry could then be reduced to atomic theory, and so on” (*Campbell, 2005, p. 78*). Francis Crick played a crucial role in shaping this perspective among scientists, asserting that “the ultimate goal of the modern movement in biology is to explain all of biology in terms of physics and chemistry” (*Crick, 1966, p. 21*).

Reducing one theory to another requires that both theories describe the same phenomenon, albeit with different terminologies and at different levels of detail. The key aspect of such reduction is the formulation of "bridge laws" that connect the two theories. This process is referred to as "reductionism" or, more commonly, the idea that one field is “nothing more than” another meaning that “knowledge A (which you possess) is, in reality, nothing more than knowledge B (which I happen to have)” (*Dadjoo, 2015, p. 158*). In this context, reductionism argues that all identities and properties must be reduced to physical identities and properties. Essentially, reductionist theory explores the possibility of reducing one theory to another, leading in this case to the reduction of the mind to the brain or, more precisely, the reduction of psychoanalysis to neuroscience.

Both psychoanalysis and neuroscience are distinct theories with their own terminology, laws, and principles. Just as reducing cellular biology to chemistry requires the discovery of linking laws, reducing psychoanalysis to neuroscience necessitates identifying the principles that connect the two fields. "Since these principles bridge the gap between the psychological states described in psychoanalysis and the physical states described in neuroscience, they are referred to as psychophysical laws. These laws are established through psychophysical causal generalizations, meaning that individual cases of causal relationships between bodily phenomena and their associated mental states are examined meticulously and

systematically. Through analogy and induction, these findings are then extended to other cases, ultimately leading to the formulation of psychophysical laws" (*Khatami, 2007, p. 25*). Once a sufficient number of psychophysical bridge laws are established allowing us to see how psychoanalytic principles reflect neuroscientific laws psychoanalysis can be successfully reduced to neuroscience (*Campbell, 2005, p. 80*). Such a reduction enables scientists to derive psychoanalytic truths from neuroscientific facts, using the relevant psychophysical laws. As Francis Crick famously stated, "You, your joys, your sorrows, your memories and ambitions, your sense of personal identity and free will, are in fact nothing more than the behavior of a vast assembly of nerve cells and their associated molecules" (*Crick, 1996, p. 21*). According to this scientific perspective, the mind being the behavior of the brain can be explained through the interactions of neurons and their molecular processes. In other words, your mind is nothing more than your body.

The Mind-Body Problem

To examine Antonio Damasio's views on the brain and body, we must first address the ideas of René Descartes, who symbolizes the prevailing Western perspective on the relationship between body, brain, and mind in both natural and human sciences. The mind-body problem can be introduced through a critique of Descartes' famous statement: "I think, therefore I am." This phrase first appeared in the fourth edition of Discourse on the Method and later in the first section of Principles of Philosophy, where it was rendered in Latin as Cogito, ergo sum (*Descartes, 1984*). Descartes' assertion fundamentally contradicts Damasio's ideas about the origins of the mind and its connection to the body. The statement suggests that thinking and awareness of thought serve as the foundation of existence. According to Descartes, thinking must be regarded as an activity entirely separate from the body, and this separation, rooted in the mind, should be praised. "A thinking thing (res cogitans) exists independently of the non-thinking body, which has spatial extension and mechanical components (res extensa)" (*A. R. Damasio & Marg, 1995, p. 347*). In other words, Descartes believed that humans consist of both a physical component including the brain and a non-physical mind or soul. This perspective is widely known as Cartesian Dualism.

Damasio considered Descartes' error to be the sharp separation between mind and body. "On one hand, a visible element, possessing dimensions, with mechanical function, infinitely divisible, made of physical matter that constitutes the body; and on the other hand, an invisible, dimensionless, immovable, and indivisible element made of a mental substance, suggesting that reasoning, moral judgment, and suffering from physical pain or emotional distress could exist independently of the body. Especially, the separation of the most refined mental functions from the structures and functions of biological existence" (*A. R. Damasio & Marg, 1995, p. 349*). For this reason, he attempts to prove that all the functions Descartes attributed to the soul actually stem

from the activity of the bodily system, namely the brain. A physical event occurs to you, yet you feel pain in your mind. From Damasio's perspective, this phenomenon can be easily explained through neuroscience.

The ultimate goal of cognitive neuroscientists is to understand how brain function is connected to the mind. This is because it is within the physical framework of the brain that the human mind emerges as a complex phenomenon. The nature of the brain-mind relationship has not yet been fully uncovered. Unlike Descartes' dualism, in the theory of monism, a person is considered purely a physiological being, with the brain being responsible for consciousness and all cognitive functions, without any supernatural phenomena or receptors within it. According to Damasio, with advancements in science especially in particle physics and nanotechnology it will eventually be possible to uncover the physics behind the conscious mind.

The Study of Consciousness from Antonio Damasio's Perspective

From an evolutionary perspective, consciousness initially emerged as an internal phenomenon, which then rapidly generalized. "From the viewpoint of neuroscience, consciousness is considered a complex cognitive process that enables awareness of sensory information about existence." (*Bennett & Hacker, 2001, p. 511*). In this way, external perceptions, processed through a set of unconscious information-processing channels, transform into the production of rich perceptual experiences (such as sight, sound, and smell), which we experience as awareness. Damasio does not see consciousness as merely an awareness of internal states but also as the synchronization of our current state with the external world. "Each unit of consciousness creates a connection between the self and objects" (*Solms & Turnbull, 2018, p. 126*). Thus, all mental phenomena, such as time, space, and actions, become unified in consciousness. This connection between the brain and the experience of consciousness manifesting as a unified, coherent, and personal experience is one of the most mysterious phenomena in biology, shaped through the synchronization and coordination of oscillatory neurons in the brain.

Based on the results of neurological observations and neuropsychological research, Damasio reveals many truths about consciousness. The first truth is that "some aspects of consciousness processing can be linked to the functions of specific areas of the brain and their systems, opening a window for discovering the neural architectures responsible for consciousness. The areas and systems in question are gathered in limited regions of the brain" (*A. R. Damasio, 1999, pp. 97-98*). Using neurological evidence, Damasio also uncovers the second truth about consciousness. According to him, consciousness is not a unified phenomenon, at least in humans. As a result, Damasio divides consciousness into two main types: substantial consciousness and extended consciousness.

- Core Consciousness

Damasio refers to the simplest form of consciousness as core consciousness, which gives an individual an immediate and present sense of self an awareness of the "here and now." In essence, the scope of core consciousness is limited to the present moment and location. Core consciousness has the ability to construct a multi-qualitative (multi-sensory) scene, integrating various sources of information, living in the present, and lacking any reference to the individual's past or future. According to Damasio, "Core consciousness occurs when, initially, the brain's representational mechanisms generate an imagined and non-verbal account of how the individual's body is affected during the processing of an object. Then, as this processing continues, it strengthens the perception of the object, making it prominent in a temporal and spatial context" (*A. R. Damasio, 1999, p. 273*). In other words, core consciousness happens when the brain creates a second-order, non-verbal representation of how an object affects the individual's state during its processing. This imagined report is linked to second-order neural patterns. "The set of second-order neural patterns that describe the subject-object relationship alters the neural representations of the object in the brain, reinforcing its perception. The comprehensive perception of 'self' in the act of 'knowing' an object emerges, possibly in the form of a large-scale neural model that integrates both components" (*A. R. Damasio, 1999, p. 297*). Thus, core consciousness is related to the continuous mental representations generated by the act of knowing, first manifesting as the feeling of knowing about a mental image of an object that must be understood. If this feeling of knowing leads to and is accompanied by the reinforcement of object representations, then core consciousness signifies something that represents "you." It is the most fundamental embodiment of our self and reflects our current state. "This is me. I am this body. And right now, this is how I feel." In fact, this type of consciousness is rich in meaning and emotion. "It forms the very foundation of an individual's feelings and sense of meaning" (*Solms & Turnbull, 2018, p. 124*). Under normal brain function, core consciousness is the result of a neural and mental process that, at any given moment, integrates three components: the representation of the self, the representation of the object, and the representation of the relationship between the two.

The dominant feeling in core consciousness is the first step toward being illuminated by the light of awareness and knowing. However, this light is not enough to illuminate the entirety of an individual's existence. In reality, it is extended consciousness that can fully shed light on a person's entire sense of being, integrating both the past and the anticipated future alongside the immediate perception of time and space forming a vast, epic-like perspective on existence.

- Extended Consciousness

Damasio refers to the more complex type of consciousness as "extended consciousness", which encompasses multiple levels and degrees. In core consciousness, the perception of "self" emerges from an elusive

and fleeting sense of "knowing," which is reconstructed moment by moment. However, in extended consciousness, the perception of self-arises from a continuous and repetitive representation, incorporating personal memories in other words, past experiences that effortlessly and constantly shape our identity and individuality. "From all the places a person has been in their past life, extended consciousness generates a sense of self, providing a rich awareness of both their past experiences and their anticipated future, along with a keen understanding of their surrounding world" (*A. R. Damasio, 1999, p. 98*). Thus, when we think about the grandeur of consciousness and consider it one of the defining characteristics of humans, we are referring to extended consciousness in its most advanced form. This aspect of consciousness is not limited to simple perception; rather, it includes thinking about perception or in other words, awareness of awareness itself. It also involves reflecting on perceptual images, making it possible not only to process present perceptions but also to think about past experiences and memories. This type of consciousness "is dependent on the cerebral cortex, particularly the associative cortex, and primarily relies on the collaboration of speech-related areas in the left hemisphere. Most importantly, it is connected to higher structures in the frontal lobe, which has undergone significantly greater evolution in humans compared to other mammals. The frontal lobe serves as a key unit for planning, regulation, and decision-making in behavior, allowing it to reprocess the core consciousness units that are initially stored and understood in the posterior cortical regions and around the limbic system (Paleomammalian Cortex). This enables us to recall and reflect on our conscious experiences rather than merely living through them in the moment" (*Solms & Turnbull, 2018, pp. 129-130*). Therefore, extended consciousness continues to expand and grow throughout a person's development, evolution, and rich life experiences.

Extended consciousness emerges in two ways. First, it requires the gradual construction of a memory bank containing a vast number of objects specifically, the objects involved in an individual's autobiography, encompassing personal life experiences as they unfolded in the past and emerged alongside our awareness. Once autobiographical memory is established, these objects can be recalled and contemplated whenever they are processed. "Each of these autobiographical memories is processed by the brain just like an object, and each, along with the non-self-entity being processed, contributes to the generation of core consciousness. While relying on the same fundamental mechanism of core consciousness namely, the creation of a mapped report of the interactions between the individual and the object extended consciousness applies this mechanism not only to a single non-self-object X but also to a stable category of remembered objects related to the individual's history. The continuous recall of these objects persistently manifests through core consciousness, ultimately shaping the autobiography itself" (*A. R. Damasio, 1999, pp. 305-306*). Second, it involves "actively maintaining,

simultaneously and for a considerable duration, a large number of mental images." These images collectively define one's autobiography and include representations that describe objects. "The recurring components of the self's autobiography and objects become immersed in a sense of knowing that originates from core consciousness" (*A. R. Damasio, 1999, p. 306*). Thus, extended consciousness has the capacity to be aware of a vast range of entities and events, meaning it enables the perception of personal perspective, ownership, and agency over a significantly broader scope of information than what is analyzed and explained within core consciousness. The understanding of autobiographical self, which this larger sphere of information refers to, encompasses the unique life narrative of the individual.

If core consciousness allows you to momentarily recognize yourself as the observer of a moving body or as the one experiencing pain, extended consciousness expands these experiences onto a broader stage and across a longer timeline. Extended consciousness remains connected to the same "core self," but now this "you" is linked to a living past and an anticipated future, both of which are part of your autobiographical record.

Self-Autobiography and the Concept of Identity

Core consciousness and extended consciousness can be aligned with two types of self. The first is the core self, the immediate sense of self that arises from core consciousness a continuously reconstructed entity that emerges with every object it interacts with. However, the formal concept of "self" is linked to the idea of identity, which can be understood as a collection of unique realities and a way of being that defines each individual. Damasio refers to this type of identity as the self-autobiographical or personal autobiographical self. "The autobiographical self depends on an organized memory of situations in which core consciousness has engaged with the most unchanging characteristics of an individual's life for example, who, where, and when you were born; your name; your likes and dislikes; your typical responses to issues or crises, and so on. Damasio uses the term autobiographical memory to denote the structured record of an individual's major life experiences" (*A. R. Damasio, 1999, p. 100*). The extended self, also called the narrative self or autobiographical self, consists of fundamental elements that persist throughout a person's life. "This type of self-awareness provides individuals with a sense of continuity and purpose, enabling them to participate in activities that benefit them and help preserve their 'I.' This consciousness emphasizes the dimension of time and its continuity as its core structure, while simultaneously incorporating the personal life story, self-statements and plans, episodic memories, and personal future projections" (*Kimyai Asadi, 2023, p. 736*).

From a psychoanalytic perspective, the core self can be understood as an awareness of the present state of the "Id," whereas the

extended autobiographical self is synonymous with the "Ego." "The autobiographical self (the 'I' or 'me') is dependent on past experiences, but the emergence of extended consciousness enables the ability to envision and plan for the future. This forward-looking aspect of extended consciousness is closely linked to the functioning of the frontal lobes" (*Solms & Turnbull, 2018, pp. 131-132*). A normal human perceives their existence as a unified and continuous entity. However, the self or "I" is not a singular biological entity but rather the result of a neural process, just like other mental constructs, emerging from a series of dynamic, interconnected processes. "The entity that forms this structured understanding is the brain itself, and the experience of 'being' is the brain's ultimate effort to represent itself. The prefrontal cortex plays a crucial role in this self-representation but engages a diverse and widely distributed network of neural interactions. The capacity for self-awareness enables an immediate, fluid, and personal experience of one's mental life, providing access to one's autobiographical memory" (*Kimyai Asadi, 2023, p. 728*). Therefore, it is possible to identify the neuronal correlate of consciousness, meaning that consciousness, like other brain functions, is fundamentally a neurobiological phenomenon.

In the absence of consciousness in its broadest sense encompassing both the mental stream (imagery) or core consciousness and the awareness of being or extended consciousness it becomes clear that we cannot properly manage life. "A temporary suspension of consciousness leads to incompetence in managing life. In fact, even the mere suspension of the 'self' component in consciousness results in a disruption of life management, rendering a person entirely dependent on others, comparable to an infant. Therefore, it is safe to say that a conscious mental level is essential for survival" (*A. Damasio, 2019, p. 256*).

The Role of the Prefrontal Cortex in Reasoning and Decision-Making

The prefrontal cortex is the most developed part of the brain in humans compared to other animals. This region serves as the center for complex cognitive abilities, including planning and problem-solving, capabilities that are uniquely human. Key processes such as attention, working memory, and response generation are essential components of executive functioning within the prefrontal cortex, shaping appropriate human behavior. Neuroscientist and psychiatrist Todd Feinberg, while working with patients who had sustained frontal lobe damage, observed changes in their extended autobiographical self or Ego, which altered how they related to themselves and the world around them. In his research, he referred to these phenomena as the neuronal pathology of the self. The neuronal pathology of the self (NPS) refers to conditions where damage to the prefrontal cortex causes profound changes in a person's identity or their relationship with the external world, ultimately blurring the boundaries of the Ego and disrupting its functions (*Todd E. Feinberg, 2011*). Findings in neuropathology, particularly those associated with the neuronal pathology of the self, provide a mechanism for understanding

how these changes occur. Numerous reports indicate that many forms of neuronal pathology of the self are linked to prefrontal cortex damage, particularly in the right hemisphere (*Todd E Feinberg & Shapiro, 1989*; *Fleminger & Burns, 1993*).

Various regions of the prefrontal cortex are involved in distinct and specialized functions. Generally, the posterior parts of the prefrontal cortex are engaged in spatial tasks, while the inferior part is involved in processes related to behaviors associated with specific stimuli. The ventrolateral areas play a role in encoding and reconstructing specific information stored in the visual, auditory, and sensorimotor association areas and are connected to these regions. These connections contribute to the selection, comparison, and processing of information retained in both long-term and short-term memory and are used in decision-making (*Kimyai Asadi, 2023, p. 443*). Therefore, if one of the systems influencing the prefrontal cortex undergoes alterations for any reason, behavioral balance is disrupted. This is because the prefrontal cortex plays a crucial role in overseeing and supervising human cognitive tasks. "The results of numerous studies on impairments in processing ability, problem-solving, and planning in individuals with brain injuries clearly indicate significant deficiencies following the injury" (*McDonald et al., 2002, p. 339*). Traumatic Brain Injury (TBI) refers to any brain damage caused by an external force, which can lead to temporary or permanent cognitive and behavioral disabilities. "In brain injuries, the frontal and temporal lobes are common sites of trauma, and damage to the prefrontal cortex results in executive function impairment and disruption of daily activities" (*Skurvydas et al., 2018*). "One of the symptoms of brain injury is executive dysfunction, which includes impulsivity, emotional dysregulation, and violent behavior" (*Bufkin & Luttrell, 2005, p. 187*). "It is also associated with deficits in planning and problem-solving, mood self-regulation, emotional responses, and self-awareness" (*Sohlberg & Mateer, 2017*). Executive function is directly linked to the health of the prefrontal cortex (*Kuelz et al., 2004*). In fact, executive functions act as intermediaries among complex neural circuits, facilitating connections between distinct regions of the prefrontal cortex and other cortical areas and subcortical structures (*Baxter Jr et al., 1996*). Executive functions are crucial because they are associated with the psychological processes responsible for controlling thought, awareness, and performance. Executive functions include a set of cognitive processes that allow individuals to set goals, plan, and regulate their thoughts, behaviors, and emotions, particularly enabling them to inhibit one action in favor of selecting an appropriate behavior (*Schoemaker et al., 2013*). Overall, the role of executive functions is to determine how a behavior is executed at a specific time (*Loftis, 2004*). Thus, executive function is essential for goal-directed behavior, and its impairment can have detrimental and harmful effects on all aspects of life, including independent living, professional activities, and social functioning.

A review of psychological texts and studies has shown that one of the key factors in determining success in social relationships is the regulation of emotions and affect (*Veilleux et al., 2015, p. 96*). Researchers consider executive function an essential ability for self-regulation, including emotions and affect, which in turn leads to appropriate social behavior. Any impairment in this function results in inappropriate social behavior (*Fuster, 1997*). Emotions and affect are mental events that form the foundation of the mind and, consequently, consciousness. We become aware when our existence internally constructs and displays specific nonverbal information, indicating that our being is accompanied by a known object. Since life is managed through various inherent regulatory activities such as the secretion of chemicals like hormones and actual movements in the viscera and limbs the progression of these activities depends on information derived from neighboring neural maps, which continuously transmit signals about the organism's state. "Since emotions are cognitive and mental interpretations of bodily changes, they constantly provide a mental representation of different bodily states. In this way, they help us maintain vital equilibrium and seek optimal conditions for survival and well-being" (*A. Damasio, 2012, p. 213*). Automatic reactions in humans create conditions that, once mapped in the nervous system, manifest as pleasure or pain and ultimately become recognized as feelings. "This is the primary source of human joy and happiness or suffering and misery. Moreover, by understanding the connection between certain objects and particular emotions, humans can purposefully and, to some extent, regulate their emotions. We can decide which objects or conditions in our environment to allow or where to invest our time and attention" *(A. Damasio, 2019, p. 96*). According to Damasio's neuroscientific explanation, the absence of emotions or any dysfunction in emotional regulation has far more severe consequences when it interferes with decision-making and reasoning. If emotions fail to perform their functional role properly, the prefrontal cortex cannot access emotional information. Consequently, it cannot evaluate the emotional and affective consequences of decisions, leading to choices that disregard aspects of social and physical survival. Damasio argues that such scenarios occur in individuals with neurological disorders, particularly in the stimulus evaluation system of the brain. Damasio believes that individuals with prefrontal cortex impairments cannot activate the appropriate emotional memory when facing specific situations requiring practical solutions and consequence evaluation. As a result, they fail to select the most beneficial course of action among various options. The reason is that their brains are unable to organize and utilize emotion-related experiences accumulated over their lifetime. Thus, decisions made in emotionless conditions produce irrational or entirely negative outcomes. "Antoine Bechara, Hanna Damasio, Daniel Tranel, and Antonio Damasio have shown that prefrontal cortex lesions alter the ability to generate emotions in social situations or in circumstances where an appropriate emotional response, such as embarrassment, shame, guilt, or

disappointment, is expected" (*A. R. Damasio et al., 1991, p. 107*). Emotions, along with motivations and the affective states they often trigger, play a crucial role in decision-making regarding social behaviors. Over the past two decades, Damasio's research group has conducted numerous studies highlighting the significance of this decision-making role. "If healthy individuals sustain damage to brain areas responsible for mobilizing certain categories of emotions and feelings, their ability to manage social life becomes severely impaired. These patients struggle with decision-making in uncertain situations, such as financial investments or forming significant relationships like marriage" (*A. Damasio, 2019, p. 189*). Regarding such individuals, Damasio states: "Because they could not emotionally comprehend the consequences of a risky relationship or a business deal, nor could they feel anger or frustration toward deception and misconduct, they were unable to distinguish between trustworthy and untrustworthy people" (*A. R. Damasio, 2003*; *A. R. Damasio & Marg, 1995*). As a result, they would lose their jobs, go bankrupt in their investments, or experience failures in emotional relationships, as they inadvertently created opportunities for others to exploit them. A crucial aspect of these patients is that "their intelligence (IQ), learning abilities, knowledge retention, standard reasoning tests, speech abilities, attention span, working memory, and estimation skills remain intact. However, they experience significant difficulties in emotionally charged situations, in understanding their own emotions, and in interpreting the emotions of others" (*Kimyai Asadi, 2023, p. 451*). In other words, in cases where damage is confined to this cortex, the content of personal knowledge, logical thinking, reasoning, and discernment collectively forming an individual's intellect remain largely unaffected. Instead, such damage causes profound disruptions in human behavior, even when intellectual abilities remain intact. Thus, prefrontal cortex damage inadvertently results in short-sightedness regarding the future. "The prefrontal cortex plays a key role in generating and maintaining cognitive activity related to strategies for emotion regulation" (*Ochsner & Gross, 2008, p. 153*). The inability to regulate emotions and affect leads to difficulties in problem-solving, subsequently impairing executive functions and daily performance. "In patients with prefrontal cortex damage, cooperative strategies in their behavior are disrupted. These patients are unable to express social emotions and fail to adhere to social conventions in their behavior. In tasks requiring social intelligence, their responses are abnormal" (*Adolphs et al., 1994, pp. 669-679*).

Based on the above statements, it becomes clear why reconstructing emotional messages is of great importance. This reconstruction, whether overt or covert, directs the brain's attention system toward a specific aspect of an issue. "One of the fundamental components of cognitive processes is attention. Therefore, the integration of the attention system is essential for the functioning of all other higher-level cognitive systems, such as executive functions"

(*Penner & Kappos, 2006, p. 149*). As a result of engaging the attentional system and bringing the subject into awareness, the brain spends more time resolving the issue, thereby enhancing the quality of reasoning and rational problem-solving. However, it should be noted that the term "rational" here does not refer to explicit logical reasoning; rather, it signifies the coherence between actions, consequences, and emotions in favor of the being experiencing the emotion. "Reconstructed emotional messages are not inherently or necessarily rational, but the brain's use of emotions enhances outcomes that can be well inferred through rational means. Perhaps a more suitable term to describe the nature of emotions is 'reasonable,' as suggested by Stephen Heck, meaning that emotions make an action more reasonable" (*A. Damasio, 2019, p. 198*).

The Aware Mind refers to consciousness and awareness accompanied by purposeful attention to everything occurring in the present moment being here and now, adopting an accepting, curious, nonjudgmental perspective, and responding to internal and external experiences without reactivity. "When an emotional message is clear and transferred to the aware mind, automatic alarm signals are triggered. These signals, formed either innately in the brain or through past experiences, serve as warnings about potential consequences and possible solutions that might lead to negative outcomes. Such awareness creates a sense of suspicion, as if advising you to avoid a particular solution the same one that previously led to undesirable consequences. This mechanism can function before the reasoning system is engaged, warning you: 'Do not do this.' Conversely, emotional messages can act as a green light, swiftly endorsing a specific solution because, in the system's history, that approach has yielded positive results" (*A. Damasio, 2019, p. 196*). Thus, it can be said that these messages classify solutions and their consequences into signals either as a positive message or a green light, or as a negative message or a red light guiding the individual accordingly. As a result, the decision-making space narrows, options become more limited, and the likelihood of selecting a solution that aligns with the brain's past experiences and innate structure increases.

Damasio considers proper reasoning and rationality to be dependent on the correct functioning of emotions and feelings. Consequently, deficiencies in awareness and rationality stem from dysfunctions in emotional and affective processes, which, in turn, are linked to impairments in a specific brain region the prefrontal system. This system is crucial for the establishment and processing of particular groups of emotions and feelings. Thus, any dysfunction in this area leads to issues in decision-making and rationality. Damasio argues that the prefrontal cortex enhances and refines mental functions, elevating humans to a higher level of social emotions such as empathy, sacrifice, compassion, shame, and prejudice. As a result, these emotions contribute to the evolution of culture and cultural laws, ultimately facilitating the development of strategic societal structures like democracy, liberal democracy, free-market regulations,

and other complex forms of life management (*A. Damasio, 2019*). He likens emotions to sensory detectors within the individual's mind, allowing the Conscious Self to become aware of the organism's current state. However, in discussing emotions and feelings, the concept of self extends beyond momentary awareness to encompass the autobiographical self, which includes an individual's entire knowledge and cognitive system.

Conclusion

Awareness is one of the most enigmatic biological phenomena, emerging through the coordination of brain neurons. Disruptions in this complex neural-electronic system can lead to numerous neuropsychological disorders. One key indicator of brain damage is impaired executive function, often accompanied by deficiencies in emotional responses and self-awareness. Recognizing the significance of this issue, many neuroscientists, including Antonio Damasio, have dedicated their research to understanding consciousness and its implications. Damasio categorizes consciousness into two types: core consciousness and extended consciousness. Core consciousness provides an individual with an immediate sense of self, manifesting as the awareness of knowing something about a mental image. This fundamental state of consciousness reflects an individual's sense of self in the present moment. In contrast, extended consciousness often described as awareness of awareness shapes a more detailed understanding of oneself, encompassing identity and individuality, or in other words, the autobiographical self. Extended consciousness is closely tied to the prefrontal cortex, which is responsible for behavioral organization. Executive function, which involves problem awareness and planning the necessary steps to solve an issue, is directly linked to prefrontal cortex health. This function is essential for regulating emotions and feelings, ultimately contributing to appropriate social and daily behavior. Therefore, any dysfunction in the prefrontal cortex can disrupt behavioral balance. In such cases, the autobiographical self is impaired, leading to abnormalities in extended consciousness. Consequently, individuals may experience a decline in rational decision-making, even if their intellectual abilities remain intact. This impairment severely affects decision-making in situations involving uncertainty, such as financial investments, daily activity planning, and short-, medium-, and long-term strategizing in both personal and social contexts. Since awareness enables individuals to comprehend their emotions, it serves both an introspective and evaluative function, signaling values by distinguishing between what is good and bad through corresponding feelings. Ultimately, the consciousness system integrates sensory input, selects and organizes relevant information, interprets it, and expresses a specific behavioral response. Thus, emotional and affective regulation, as a specialized form of self-control, is crucial for cognitive and behavioral performance, leading to enhanced well-being in social life.

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