



Original Article

Emotion, Cognition, and Consciousness: Expanding the Frontiers of Psychological Science

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Manuscript ID:
RIGJAAR-2025-021203

ISSN: 2998-4459
Volume 2
Issue 12
Pp. 16-22
December 2025

Submitted: 05 Nov. 2025
Revised: 10 Nov. 2025
Accepted: 08 Dec. 2025
Published: 31 Dec. 2025

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Quick Response Code:



Web: <https://rlgjaar.com>



DOI: [10.5281/zenodo.18128780](https://doi.org/10.5281/zenodo.18128780)

DOI Link:
<https://doi.org/10.5281/zenodo.18128780>



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Abstract

Understanding how emotion, cognition, and consciousness work together has always been at the heart of psychology. For many years, emotions were seen as something we could clearly feel and recognize conscious experience that shaped how we think and act. But recent findings paint a far more fascinating picture. Research now shows that emotions can influence us even when we are not aware of them. Subliminal images, quick emotional cues, and rapid brain responses can quietly shape our attitudes, guide our decisions, and impact our social behaviour. These hidden emotional processes push us to rethink what it truly means to “feel” something. At the same time, neuroscience has transformed how we understand the relationship between emotion and thinking. Instead of acting like two opposing forces, emotion and cognition work together constantly, supported by overlapping brain networks. For example, the prefrontal cortex known for planning and reasoning is also deeply involved in managing and regulating our emotions. This shows that thinking and feeling are inseparable parts of everyday life, influencing how we perceive the world, how we focus our attention, and even how we make important decisions. Yet the most personal and mysterious aspect of emotion the conscious, subjective feeling of joy, fear, or sadness remains difficult to capture scientifically. Understanding the “what-it-is-like” quality of emotion continues to challenge researchers, creating space for new theories and new methods of study. These insights have powerful implications for the real world. Distinguishing between conscious and unconscious emotional processes helps us better understand issues like implicit bias, emotional disorders, and decision-making problems. It also supports therapeutic approaches that build emotional awareness and regulation.

Keywords: Emotional Consciousness, Unconscious Emotion, Emotion–Cognition Interaction, Neural Correlates of Emotion, Implicit Processing.

Introduction

Emotion, cognition, and consciousness form the core of human psychological experience. Emotion shapes how we perceive the world, influencing the salience we assign to events and guiding our behavioural tendencies, while cognition helps us interpret, evaluate, and respond to these emotional signals (Prinz, 2004). Consciousness, in turn, allows us to monitor, reflect on, and report these internal states, integrating emotional and cognitive information into a coherent sense of subjective experience (Seth, 2013). For decades, these three constructs were studied separately, as if they belonged to different domains of the mind. Early cognitive science often treated cognition as a rational, computational process distinct from the “irrationality” of emotion, while consciousness research focused primarily on perception and awareness rather than affective experience (Baars, 1997).

Today, however, research increasingly shows that they are deeply interconnected. Emotions influence virtually every stage of cognitive processing from directing attention and modulating memory encoding to shaping decision-making and problem-solving strategies (Kober et al., 2008; Pessoa, 2008). Likewise, cognitive interpretations such as appraisals, beliefs, and expectations play a powerful role in determining emotional reactions, demonstrating that emotion is not merely reactive but actively constructed by cognitive processes (Moors et al., 2013).

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How to cite this article:

G, S. S. (2025). Emotion, Cognition, and Consciousness: Expanding the Frontiers of Psychological Science. *Royal International Global Journal of Advance and Applied Research*, 2(12), 16–22.
<https://doi.org/10.5281/zenodo.18128780>



Conscious awareness further modifies these interactions by allowing individuals to label, reflect on, and regulate their feelings, thereby changing how emotional information guides behaviour (Lambie & Marcel, 2002).

The way we think is therefore inseparable from how we feel, and the emotions we experience whether consciously or unconsciously shape our decisions, memories, social judgments, and goal-directed behaviours (Kober et al., 2008; Winkelman & Berridge, 2004). Unconscious emotional cues, for example, can alter preferences and biases without entering awareness, while consciously experienced emotions contribute to reflective decision-making and long-term planning. Understanding how these processes work together is essential to grasp the full complexity of human psychological functioning, as modern models increasingly conceptualize emotion, cognition, and consciousness not as isolated domains but as interdependent components of a unified, dynamic system (LeDoux & Brown, 2017).

Classical Views of Emotion and Consciousness

For much of early psychological thought, emotions were conceptualized primarily as conscious, subjective experiences. Researchers believed that for something to qualify as an “emotion,” it had to be felt, labeled, and introspectively accessible. Emotions such as fear, sadness, anger, and joy were understood as internal states that individuals could identify, verbalize, and reflect upon (James, 1884). This perspective placed conscious awareness at the centre of emotional life, suggesting that an emotion becomes meaningful only when the individual is aware of it.

Foundational theories in psychology further reinforced the notion that emotional experience is essentially conscious. William James’s seminal theory posited that emotions arise from the perception of physiological changes meaning that bodily reactions must reach conscious awareness for an emotion to be experienced (James, 1884). Although Cannon (1927) and Bard critiqued James’s physiological sequence and argued that emotional experience and physiological reactions occur simultaneously, their framework still highlighted the conscious experience of emotion as a defining feature. Similarly, early appraisal theorists such as Magda Arnold emphasized the evaluative process underlying emotion, asserting that individuals consciously interpret situations as good or bad, harmful or beneficial, before an emotional experience unfolds (Arnold, 1960). Across these classical models, emotion was understood not only as felt but also as something that required awareness to be fully realized and studied.

The traditional view carried several assumptions about the link between emotional experience and behaviour. Foremost was the idea that individuals respond to situations based on emotions they consciously recognize feeling anger before reacting impulsively, or experiencing fear before withdrawing from danger (Arnold, 1960). Conscious feeling was believed to serve as a mediator between perception and action, guiding decision-making and behavioural responses. Within this framework, awareness was seen as essential for emotional regulation and intentional action. If a person could identify what they were feeling, they could decide how

to act. This assumption shaped early therapeutic practices, which focused heavily on helping individuals become more aware of their emotional states. Thus, emotions were viewed not only as subjective experiences but also as crucial inputs to cognitive processing and behavioural outcomes.

Unconscious Emotions: Evidence and Mechanisms

Contemporary psychological and neuroscientific research has overturned the long-held assumption that emotion requires conscious awareness to exert an influence. Studies increasingly demonstrate that emotional stimuli can be processed outside of conscious perception yet still produce measurable effects on the brain and behaviour. For example, emotional faces or images presented below the threshold of awareness so quickly that individuals cannot report seeing them still activate key emotion-processing regions such as the amygdala (Whalen et al., 1998). Even though the viewer does not consciously detect these cues, the brain rapidly evaluates them for potential significance. These subliminal emotional signals have meaningful consequences. Research in social and cognitive psychology shows that subliminal affective priming can shape preferences, impressions, and even decision-making. Brief, unnoticed exposures to positive stimuli can increase liking for neutral objects, while negative cues can decrease such liking (Winkelman et al., 2005). This growing body of evidence suggests that emotions can guide thought and behaviour from “behind the scenes,” without ever reaching conscious awareness.

Unconscious emotional processes have a powerful and pervasive influence on human behaviour. Individuals often make social judgments or form impressions based on affective cues they never consciously perceived. These implicit emotional reactions can shape evaluations of people, products, or situations, even when individuals believe they are acting purely rationally (Bergh & Williams, 2006). Moreover, unfelt emotions can affect interpersonal interactions. For instance, slight shifts in mood triggered by subliminal stimuli may lead individuals to approach or avoid others, interpret ambiguous expressions more negatively or positively, or behave in ways that feel intuitively driven but lack a conscious emotional source. Importantly, people often create post-hoc explanations for these behaviours, attributing their reactions to external reasons while remaining unaware of the emotional processes that actually influenced them. This dissociation challenges the traditional assumption that emotional awareness precedes emotional behaviour.

Neuroscientific findings further illuminate how emotions operate outside awareness through fast, automatic pathways in the brain. Subcortical circuits, particularly those involving the amygdala, play a central role in detecting biologically relevant stimuli long before conscious processing takes place (LeDoux, 1996). These pathways allow the brain to respond to potential threats or rewards within milliseconds, offering an adaptive advantage in situations requiring rapid action. Research using neuroimaging and electrophysiological techniques shows that these automatic responses emerge prior to the activation of cortical regions associated with conscious awareness and reflective processing (Phelps & LeDoux,



2005). This suggests a two-stage emotional system: one that operates quickly and unconsciously to prepare the body for action, and another that integrates this information into conscious experience. The discovery of these parallel pathways highlights a fundamental insight emotion can be triggered, processed, and acted upon without ever entering conscious awareness.

Neural Architecture of Emotional Experience

Subcortical structures form the foundation of the brain's rapid and automatic emotional responses. Key regions, including the amygdala, hypothalamus, and brainstem, play central roles in detecting emotionally salient stimuli even before conscious awareness emerges (LeDoux, 2000). The amygdala, in particular, is highly sensitive to cues signalling threat or reward, allowing it to initiate physiological and behavioural responses within milliseconds. These fast, bottom-up processes provide an adaptive survival advantage by preparing the organism for immediate action without requiring deliberate cognitive evaluation. The hypothalamus contributes by activating autonomic and endocrine responses, while brainstem nuclei mediate reflexive emotional behaviours such as startle responses. Together, these subcortical systems function as an early-warning mechanism, rapidly processing emotional information outside of conscious control.

While subcortical structures generate rapid emotional responses, cortical regions are responsible for elaborating, regulating, and interpreting these initial signals. The prefrontal cortex (PFC), for example, supports executive functions such as appraisal, reappraisal, and emotion regulation by exerting top-down control over subcortical activity (Ochsner et al., 2012). The insula plays a crucial role in integrating bodily sensations with emotional meaning, contributing to interoceptive awareness and the subjective feel of emotions (Craig, 2009). Similarly, the anterior cingulate cortex (ACC) monitors conflict, evaluates emotional significance, and coordinates appropriate behavioural responses. These cortical processes transform raw emotional signals into nuanced experiences, enabling individuals to reflect on what they feel, understand its context, and modify their reactions accordingly. This interaction between cortical and subcortical systems ensures that emotions are not merely reflexive but can be shaped by learning, social context, and conscious goals.

The emergence of conscious emotional experience remains a central question in affective neuroscience. The Higher-Order Theory (HOT) offers one influential explanation, proposing that emotions become conscious when higher-order cortical processes represent or "think about" first-order emotional states (Lau & Rosenthal, 2011). According to this framework, subcortical regions generate the initial emotional response, but consciousness arises only when cortical areas particularly within the prefrontal cortex form a secondary representation of this state. This perspective highlights the importance of cortical-subcortical integration: first-order emotional signals must be registered by higher-order cognitive systems for an emotion to be consciously felt. Thus, conscious emotion emerges not solely from the activation of emotional circuits, but from reflective awareness of that activation. Higher-Order

Theory aligns with neural evidence showing that conscious emotional awareness correlates more strongly with prefrontal cortical activity than with subcortical responses alone. This model helps explain why individuals can have physiological emotional reactions without subjective awareness, and why emotional insight depends on the capacity for metacognition.

Emotion and Cognition: An Integrated System

Emotion profoundly modulates basic cognitive processes how we perceive, attend to, and remember events. Emotional arousal improves long-term memory consolidation: activation of the Amygdala during emotionally charged experiences facilitates the strengthening of memory traces in the Hippocampus and related medial-temporal lobe structures (McGaugh, 2004). Specifically, the amygdala influences neuromodulator systems (including noradrenergic and cholinergic pathways) that affect hippocampal plasticity, thereby enhancing retention of emotionally salient events. Neuroimaging studies confirm that when people encode emotionally arousing material (whether positive or negative), greater amygdala activation predicts better recall after delays, compared to neutral stimuli. Emotional memory enhancement seems particularly strong for central aspects (e.g., the emotional content), though memory for peripheral details or contextual associations can be less reliably enhanced and sometimes even impaired perhaps due to attentional narrowing or other resource trade-offs under high arousal.

Beyond memory, emotion also shapes perception and attention. Emotional stimuli tend to capture attention more readily than neutral ones, making it easier to detect, process, and prioritize emotionally relevant information over competing neutral information. On the flip side, emotional states themselves influence cognitive scope: according to the Broaden-and-Build Theory (proposed by Barbara Fredrickson), positive emotions broaden an individual's thought-action repertoire, leading to more flexible thinking, greater creativity, openness to new information, and broader attentional focus. Experimental evidence supports these claims. In controlled studies, participants induced into positive emotional states (e.g., amusement or contentment) show expanded scope of attention (global rather than local focus), generate a wider range of thoughts and action ideas, and display greater cognitive flexibility than participants in neutral or negative emotional states.

In contrast, negative emotions or high arousal (e.g., fear, anxiety, stress) tend to narrow attentional focus often directing attention to threat-related cues and may limit cognitive breadth, making thinking more rigid and selective (for survival-relevant stimuli), at the cost of peripheral detail or holistic processing. (This narrowing of attention aligns with adaptive evolutionary functions: in threatening contexts, focused attention on danger maximizes survival.)

Thus, emotion serves as a powerful modulator: it can:

- Prioritize salient stimuli for attention and encoding;



- Enhance memory consolidation for emotionally relevant events;
- Expand or narrow cognitive scope depending on the emotional valence and arousal;
- Influence what we perceive, how we attend, and what we remember of our experiences.

While emotion can shape cognition, cognitive processes themselves also regulate emotion. Higher-order cognitive functions such as reappraisal, attentional deployment, suppression, or rethinking enable individuals to modulate their emotional responses. This ability to regulate emotion is largely supported by cortical control systems, particularly in the Prefrontal Cortex (PFC) (especially dorsolateral and ventromedial sectors) which exert top-down influence over subcortical emotional circuits such as the amygdala. Neuroimaging studies of emotion regulation tasks (e.g., cognitive reappraisal, suppression, distraction) provide evidence that when participants consciously reinterpret or reframe an emotional stimulus, there is increased activation in PFC control regions and decreased activation in emotion-generative regions like the amygdala. Moreover, connectivity-based interventions, such as neurofeedback training, demonstrate that people can learn to enhance PFC-to-amygdala top-down connectivity, improving their capacity to regulate emotional responses. Thus, cognitive control is not merely a parallel process it interacts dynamically with emotional systems to shape emotional experience, intensity, and behavioural outcomes. Through cognitive regulation, humans gain the capacity to reflect on, re-evaluate, and modulate emotional reactions, supporting adaptive behaviour in complex social and environmental contexts.

Modern neuroscience challenges the classical view of a strict dichotomy between “emotional brain” and “cognitive brain.” Instead, evidence increasingly supports the idea that emotion and cognition rely on overlapping, dynamic brain networks rather than segregated modular systems. According to this view, brain networks are inherently overlapping and flexible: regions typically associated with cognitive control such as the PFC and the Anterior Cingulate Cortex (ACC) often contribute to emotional processing, regulation, and evaluation; conversely, regions historically associated with affect like the amygdala, insula, and medial temporal lobe structures influence perception, attention, working memory, decision-making, and other cognitive functions.

Computational and network-based models further support this integrative perspective. Rather than viewing emotional and cognitive processes as strictly separate, these models posit a continuum or matrix of flexible, context-sensitive interactions, where the same neural circuits can contribute differentially depending on task demands, emotional state, and individual differences (e.g., past experience, emotional regulation capacity).

This overlap and integration have important implications:

- It explains why emotions can influence reasoning, judgment, memory, and decision-making even in tasks that appear “purely cognitive.”
- It highlights how cognitive control mechanisms modulate emotional reactions, and vice versa how emotional states shape cognitive performance.
- It underscores the brain’s dynamic, network-based architecture: cognitive and emotional processes are not fixed modules but fluid, context-dependent interactions across shared neural substrates.

In sum, neuroscience reveals that “thinking” and “feeling” are not handled by separate, independent brain systems instead, they are deeply intertwined, dynamically interacting facets of a unified neural architecture.

Conscious Emotional Experience

One of the most complex and debated dimensions of emotion is its subjective, phenomenological character the distinctive “what-it-is-like” feeling that accompanies emotional states. This subjective quality is central to human experience, yet it remains one of the least accessible to scientific measurement (Lambie & Marcel, 2002). Unlike physiological arousal or observable behaviour, the felt aspect of emotion is inherently private and introspective. It shapes not only how individuals interpret their internal states but also how they make decisions, navigate relationships, and construct their personal identities.

Emotional feelings from the warmth of affection to the tension of fear provide meaning to events and help individuals assess whether something is beneficial, threatening, or personally significant. These subjective experiences inform moral judgment, motivate behaviour, and contribute to psychological well-being. Because they influence how we think about ourselves and respond to others, understanding the subjective dimension of emotion is crucial for a full account of human psychological functioning.

Despite their importance, conscious emotional experiences are exceptionally difficult to measure with scientific precision. Traditional methods often rely on self-report, which assumes that individuals have accurate access to their emotional states and can articulate them reliably. However, emotional awareness varies widely across individuals. Some people easily differentiate nuanced emotional states trait known as emotional granularity while others struggle to distinguish between broad categories such as feeling “good” or “bad” (Barrett et al., 2001). Furthermore, self-report measures are influenced by cultural norms, language constraints, memory biases, and social desirability. People may misinterpret, downplay, or exaggerate their emotional experiences, creating discrepancies between felt emotion and reported emotion. Physiological and behavioural measures add valuable data but still cannot directly capture subjective conscious experience. For example, two individuals may show similar physiological arousal while reporting very different emotional feelings. These methodological challenges highlight the difficulty of studying conscious emotion with objective tools and underscore the need for integrative approaches combining self-report, neural measures, and behavioural indicators.

Neuroscientific research suggests that conscious emotional experience emerges from the integration of rapid



subcortical affective signals with higher-order cortical processing. According to the Higher-Order Representation (HOR) framework proposed by LeDoux and Brown (2017), emotional consciousness does not arise simply from amygdala activation or other subcortical triggers. Instead, feelings become conscious when cortical systems particularly in the prefrontal cortex generate higher-order representations of bodily and emotional states.

The insula plays a central role in this process, as it integrates interoceptive information signals from the body such as heart rate, breathing, and visceral sensations and transforms them into subjective emotional awareness (Craig, 2009). The anterior cingulate cortex (ACC) further contributes by monitoring emotional conflict, evaluating the significance of internal states, and linking emotional signals with conscious decision-making. Together, the insula and ACC form a core network for the awareness of affective states, providing the foundation for what individuals identify as “feeling” an emotion. Their interaction with prefrontal regions supports reflective processes, enabling people to label, interpret, and consciously regulate their emotional experiences. This cortical–subcortical integration helps explain why unconscious emotional responses can occur without feelings, and why conscious emotion involves both bodily sensations and reflective awareness.

Clinical and Social Implications

Implicit biases arise from automatic, unconscious emotional associations that individuals often do not recognize but that nonetheless influence their judgments and behaviours. These biases are formed through repeated exposure to cultural, social, and environmental cues that pair certain groups or stimuli with emotional valence positive or negative without conscious intention (Greenwald & Banaji, 1995). Because these associations operate beneath awareness, people may sincerely endorse egalitarian beliefs yet still display biased behavioural tendencies in contexts such as hiring, medical decisions, or interpersonal interactions. Unconscious emotional reactions play a central role in this process. Research shows that rapid subcortical responses particularly amygdala activation to social cues can occur before a person becomes aware of forming a judgment (Phelps et al., 2000). These implicit emotional evaluations subtly shape first impressions, threat appraisal, and social behaviour. The disconnection between conscious attitudes and unconscious emotional biases highlights the complexity of social cognition and underscores the importance of interventions that target automatic emotional processes rather than relying solely on conscious intentions.

Unconscious emotional processes are deeply implicated in the development and maintenance of various psychological disorders. In conditions such as anxiety, depression, PTSD, and somatic disorders, individuals often experience emotional reactions that they cannot fully identify or understand. These underlying emotional conflicts sometimes rooted in past trauma, unresolved developmental issues, or maladaptive learning can influence behaviour, cognition, and physiology outside conscious awareness (Shervin et al., 2013). For example, unconscious fear responses may manifest as chronic worry, avoidance, or physiological tension, even when the person cannot pinpoint

a specific threat. Similarly, depression may involve automatic negative biases in attention and interpretation that operate beneath awareness (Disner et al., 2011).

Effective therapy requires addressing emotional processes at both conscious and unconscious levels. Contemporary therapeutic models incorporate strategies designed to enhance emotional awareness, process hidden emotional associations, and integrate cognitive and affective systems. Mindfulness-based approaches cultivate nonjudgmental awareness of present-moment emotional states, helping individuals notice subtle emotional cues that were previously ignored or suppressed (Hayes et al., 2011). This expanded awareness supports better emotional regulation and reduces automatic reactivity. Cognitive-behavioural therapy (CBT) works by identifying maladaptive thoughts and beliefs that shape emotional responses. Through cognitive restructuring and behavioural experiments, CBT helps individuals reinterpret emotional experiences and weaken automatic negative patterns. Emotion-focused therapy (EFT) emphasizes processing deep emotional experiences and fostering emotional transformation, enabling clients to access, express, and reorganize core emotional states (Greenberg, 2011). In addition, psychodynamic therapy targets unconscious emotional conflicts, relational patterns, and early attachment experiences that continue to shape behaviour outside awareness. Trauma-informed approaches, including EMDR and somatic therapies, address emotional memories stored implicitly in the body and nervous system, allowing clients to process unresolved emotional responses that have not yet reached conscious awareness. Together, these therapeutic models illustrate that healing occurs through a dynamic integration of conscious emotional insight, cognitive understanding, and deeper unconscious processing. Addressing emotional phenomena across levels of awareness leads to improved regulation, enhanced self-understanding, and more adaptive patterns of behaviour.

Future Directions and Research Frontiers

Emotion research continues to evolve through extensive interdisciplinary collaboration, bringing together perspectives from psychology, neuroscience, artificial intelligence, linguistics, philosophy, and even anthropology. Each discipline contributes unique methods and conceptual frameworks for understanding the nature of emotional experience. For example, psychologists focus on behavioural and cognitive mechanisms involved in emotional processing, while neuroscientists investigate the brain networks and neural dynamics underlying affective states (Pessoa, 2013). In recent years, AI and computational sciences have played a growing role by developing machine-learning models that simulate emotional recognition, prediction, and decision-making. These interdisciplinary dialogues not only broaden theoretical understanding but also enhance practical applications from mental health interventions to human–computer interaction and policy design.

Rapid technological advancements have revolutionized how emotional processes are studied. Neuroimaging techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) enable researchers to map real-time changes in



neural activity associated with emotional states. fMRI provides high spatial resolution to identify which brain regions become active during specific emotional experiences, while EEG captures millisecond-by-millisecond electrical activity, allowing fine-grained analysis of emotional timing and unconscious precursors to conscious affect. Additionally, emerging methods like neural decoding and multivariate pattern analysis help decode patterns of brain activation to infer emotional states even before individuals explicitly report them (Kragel & LaBar, 2016). Computational modelling integrates large datasets from physiology, behaviour, and neural activity to create predictive models of how emotions unfold over time. Together, these technologies support a more dynamic and mechanistic understanding of emotional experience, opening possibilities for personalized mental health assessments and digital therapeutics.

A major frontier of emotion science involves understanding how unconscious emotional signals gradually rise into conscious awareness. While many emotional responses begin automatically and outside awareness, conscious feelings emerge when the brain integrates these signals with attentional, contextual, and interpretive processes. Future research seeks to clarify the thresholds and mechanisms involved in this transition from initial subcortical affective responses to fully articulated emotional experiences. Scholars emphasize that individuals differ widely in emotional awareness, sensitivity, and interpretive ability, often influenced by developmental history, culture, and mental health status (Barrett, 2017). People with higher emotional granularity can differentiate subtle feelings, leading to better emotional regulation, whereas low granularity may contribute to misinterpretation or overwhelm. Understanding these individual differences will be crucial for designing targeted interventions, improving diagnostic frameworks, and enriching theories of emotional consciousness.

Conclusion

Emotion, cognition, and consciousness are deeply interconnected components of human psychological life. While early theories emphasized emotion as a conscious experience, modern research reveals that much emotional processing occurs beneath awareness (LeDoux, 1996). Unconscious emotions influence perception, judgment, and behaviour, while conscious emotions support insight and deliberate action. Neuroscientific advances show that emotional and cognitive systems operate through overlapping networks (Pessoa, 2008). Subcortical structures generate rapid emotional responses, and cortical regions regulate and interpret them. These distinctions matter in social and clinical contexts, helping explain implicit biases and mental-health challenges. Therapeutic approaches that address both conscious and unconscious emotional layers support improved emotional regulation and well-being. As interdisciplinary research expands, a unified science of emotion that integrates consciousness, cognition, and neural processes is becoming increasingly possible.

Acknowledgment

The author wishes to express sincere gratitude to all those who contributed, directly or indirectly, to the completion of

this work. I am deeply thankful to the academic community of psychology and neuroscience whose foundational theories, empirical research, and interdisciplinary insights have provided the intellectual grounding for this study.

I extend my heartfelt appreciation to the Management and Principal of Manikam Ramaswami College of Arts & Science, affiliated to Madurai Kamaraj University, Madurai, for providing a supportive academic environment that encourages research, critical inquiry, and scholarly growth. I am also grateful to my colleagues in the Department of Psychology for their constructive discussions, encouragement, and academic support throughout the development of this manuscript.

I would also like to acknowledge the invaluable support of my family and well-wishers for their constant motivation, patience, and encouragement. Finally, I express my sincere appreciation to the editors and reviewers for their insightful comments and suggestions, which have helped improve the clarity and quality of this work.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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