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Research Article

Emotional Intelligence and Encoding: Exploring the Cognitive-Emotional Link in Indian University Students

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Received: August 26, 2021; **Published:** July 07, 2025

DOI: 10.31080/ECNE.2025.17.01248

Abstract

Emotions play a significant role in how individuals encode and process information, impacting attention, memory, and overall cognitive functioning. This study investigates the relationship between encoding strategies specifically semantic encoding, verbal memory, and visual memory and components of emotional intelligence, with a focus on self-awareness and emotion regulation. A total of 54 undergraduate and postgraduate students participated in the study. Emotional intelligence was assessed using the NHS Emotional Intelligence Questionnaire [32], which is based on Goleman's model of emotional intelligence [20]. Participants also completed a Verbal Encoding Test and a Visual Memory Test to assess auditory and visual memory, including sequential and simultaneous processing styles. The findings revealed that higher levels of self-awareness and emotion regulation were significantly associated with enhanced encoding performance across both visual and auditory domains. These results are consistent with prior research demonstrating that emotional intelligence contributes to improved cognitive processing and memory performance [39,67]. Additionally, studies have shown that effective emotion regulation enhances working memory and attentional control [16,56], supporting the belief that emotional regulation plays a critical role in learning outcomes. Given the high academic pressure in India and the limited integration of emotional development in educational systems, the study emphasizes the need to embed emotional skill-building into academic curricula. This research provides a basis for future interdisciplinary studies linking neuroscience, education, and social psychology, particularly in contexts where emotional self-regulation remains underdeveloped.

Keywords: *Encoding; Emotional Intelligence; Self-Awareness; Managing Emotions; Visual Memory; Auditory Memory; Simultaneous and Sequential Processing Style*

Introduction

In recent years, the interplay between emotional intelligence (EI) and memory processing has received growing attention, particularly in the context of Indian university students, as emotional competencies have been shown to influence cognitive functions such as attention, encoding, and recall [30,68]. Research indicates that emotional intelligence, especially self-awareness and emotion regulation, can affect the processes of encoding, retaining, and retrieving information [20,39]. Emotional intelligence not only involves managing emotions but also developing emotional awareness, a skill that evolves cognitively over time and directly influences how individuals process and store emotional information [31]. Encoding, the process of transforming sensory input into mental representations, is not purely cognitive; it

is deeply impacted by emotional states and individual personality traits [44,75]. This study explores how emotional competencies are related to encoding strategies such as semantic, verbal, and visual encoding among Indian university students.

Daniel Goleman's [20] five-component model of EI includes self-awareness, self-regulation, motivation, empathy, and social skills serves as a foundational framework for understanding the cognitive-emotional interface. Research has shown that individuals with high EI manage stress more effectively, sustain attention longer, and regulate affective states more efficiently, all of which support stronger learning outcomes and memory performance [44,67]. Khairudin., *et al.* [27] demonstrated that emotionally charged material, whether positive or negative, enhances memory performance, indicating that emotional salience plays a vital role in encoding and retrieval. Similarly, Murty., *et al.* [48] found that emotionally salient stimuli activate memory-relevant brain regions such as the amygdala and hippocampus, reinforcing the neural link between emotion and cognition.

Neuroscientific studies further substantiate these findings. Emotionally arousing experiences boost theta oscillations in brain regions like the amygdala and hippocampus, which are crucial for memory consolidation [16,51]. Work by Friese., *et al.* [19] and Kensinger and Schacter [26] highlights how emotional arousal enhances long-term memory through coordinated activity in the prefrontal cortex, amygdala, and hippocampal structures. Pessoa [58] emphasized that emotion and cognition are not processed in isolation but are deeply interconnected within the brain's networks, especially in regions like the amygdala and prefrontal cortex. Wolfe [77] further highlighted that the development of cognitive control is closely linked to emotional regulation, as both rely on shared neural systems, particularly during early developmental stages. These findings support the idea of neurocognitive synchrony where emotional regulation contributes directly to more effective memory formation.

Cognitive processing preferences also play a role in how individuals encode information. The Planning, Attention, Simultaneous, and Successive (PASS) model by Das, Naglieri, and Kirby [13] outlines how people differ in simultaneous and sequential processing styles. Simultaneous processing involves integrating multiple elements into a holistic whole, while sequential processing focuses on step-by-step analysis. Emotional states appear to influence which processing strategy is employed. According to Bartolic., *et al.* [1], individuals in positive emotional states are more likely to rely on heuristic, simultaneous processing, whereas neutral or negative emotional states are associated with more analytical, sequential strategies. Epstein's [18] Cognitive-Experiential Self-Theory also supports this by distinguishing between an intuitive, emotional experiential system and a logical, rational system of thought. Lecerf and de Ribaupierre [33] found that individuals performed significantly better on visuospatial recognition tasks when information was presented simultaneously rather than sequentially, particularly under conditions of complexity. These patterns suggest that emotional regulation and processing style are interdependent in influencing encoding efficiency.

The relationship between EI and academic success is especially relevant in the Indian context. Kumar., *et al.* [28] identified a positive correlation between emotional intelligence, academic motivation, and student achievement. Poropat [60] extended these findings by showing that emotional stability and conscientiousness are more predictive of academic success than cognitive intelligence. MacCann., *et al.* [36] also reported that emotional intelligence significantly predicts academic outcomes, particularly in learning tasks requiring verbal and visual encoding.

Despite these findings, EI training remains largely underrepresented in Indian education. Singh [69] and Kauts and Saroj [24] argue that the lack of structured emotional development in school curricula contributes to heightened academic stress and reduced learning efficiency. Saarni [62] highlighted that early social and cultural experiences shape emotional competence, stressing the need to include emotional learning in formal education.

Given this background, the present study seeks to investigate the association between emotional intelligence focusing specifically on self-awareness and emotion regulation and encoding strategies, including semantic, verbal, and visual memory. The goal is to examine whether emotional regulation enhances cognitive processing and encoding performance in Indian university students, with implications for educational practice and psychological well-being.

Encoding

Psychologists recognize three fundamental stages in the learning and memory process: encoding, storage, and retrieval [43]. Encoding is the cognitive process through which sensory input is received and converted into a meaningful representation for storage in memory. This cognitive process helps organize and assign meaning to sensory input, allowing it to be integrated with existing knowledge for easier retrieval in the future [47].

Encoding is the essential first step in forming a new memory. It transforms sensory input into a format that the brain can store and later retrieve, either from short-term or long-term memory. This process begins as a biological event, initiated by the perception of stimuli through the senses. Encoding structures external information into neural representations for meaningful storage and recall [72]. All information we perceive through our senses must first be processed into a form that the brain can understand and store. This transformation process is known as encoding, the critical step that prepares sensory input for integration into the memory system. Encoding not only converts incoming data into a meaningful format but also enables its entry into memory for storage and later retrieval. This process involves systematically breaking down and reconstructing sensory experiences so that the mind and body can interpret and remember them effectively [17].

Craik and Lockhart [10] proposed that the depth of mental processing significantly influences memory retention. According to them, deeply processed information leads to longer-lasting memories, whereas shallow processing results in memories that are more prone to decay. They conceptualized the depth of processing along a continuum, ranging from shallow to deep. Craik defined "depth" not by the number of cognitive analyses performed but by the meaningfulness extracted from a stimulus. The more meaning derived and the deeper the analysis, the stronger and more durable the memory formed [10]. This theory highlights the importance of engaging with information in a meaningful way to enhance memory retention.

Semantic encoding involves the process of encoding the meaning of information such as words, phrases, images, or events into memory, rather than relying on its auditory or visual attributes. This type of encoding requires deep cognitive processing, during which new information is actively connected to pre-existing knowledge. Semantic encoding is considered the most effective level of processing because it facilitates the formation of stronger and more enduring memory traces. When individuals engage with information in a meaningful context, they are more likely to retain and retrieve it over time, in contrast to shallow processing, which focuses primarily on surface-level features such as sound or appearance [11,42].

Emotional intelligence (EI)

Emotional intelligence (EI) is a concept originally introduced by Salovey and Mayer [63], who defined it as "the ability to monitor one's own and others' feelings, to discriminate among them, and to use this information to guide one's thinking and actions." They later expanded the definition to include the abilities to perceive, appraise, and express emotions; to use emotions to facilitate thought; to understand emotional knowledge; and to regulate emotions to foster emotional and intellectual growth [63].

Daniel Goleman [20] popularized the concept by framing it around five key components: self-awareness, managing emotions, motivation, empathy, and social skills. He emphasized that EI is often a better predictor of success than IQ in social and professional domains. Coleman [8] similarly defined EI as the capacity to monitor and label emotions in oneself and others, and to use emotional information to guide thinking and behavior.

Research consistently supports the relevance of EI across academic, professional, and interpersonal settings, showing that higher EI is associated with improved stress regulation, academic achievement, and social functioning [36,40]. Petrides., *et al.* [59] also found that adolescents with higher trait emotional intelligence performed better academically and engaged in fewer deviant behaviors, highlighting EI's role in both scholastic and behavioral outcomes.

Self-awareness

Self-awareness, a core component of emotional intelligence, refers to the ability to accurately recognize and monitor one's emotional states and understand their influence on thoughts and behaviors [63]. It is not merely a passive acknowledgment of feelings but an active cognitive process that supports self-regulation and goal-directed behavior [15,23]. This awareness forms the foundation of executive functions such as behavioral inhibition and emotional regulation [14,73].

Emotional self-awareness plays a crucial role in inhibitory control the capacity to pause, reflect, and choose responses that align with long-term goals rather than react impulsively. It enables individuals to detect internal emotional cues, evaluate the appropriateness of their automatic reactions, and consciously modify behavior to suit situational demands [15]. This capacity is particularly valuable in emotionally demanding contexts, where the ability to override instinctive responses leads to more adaptive, socially appropriate outcomes.

Moreover, self-awareness contributes to metacognitive insight, enhancing an individual's ability to anticipate emotional triggers, reflect on past emotional experiences, and regulate behavior accordingly [23]. In academic settings, such insight helps reduce emotional interference and improve encoding efficiency by fostering intentional learning strategies [36].

Self-aware individuals are more attuned to their cognitive processing styles whether sequential, analytical, or holistic and are capable of flexibly adapting these styles to meet task demands [38]. For example, they may employ holistic strategies (linked with simultaneous processing) for visual-spatial tasks, and sequential strategies (associated with successive processing) for verbal or language-based activities [12,54]. This adaptability supports effective encoding and memory consolidation.

In the Indian academic context, where students face high academic pressure and emotional stress, emotional self-awareness is particularly crucial. It fosters cognitive resilience and enhances the ability to focus despite emotional distractions. Despite its importance, emotional regulation is often overlooked in many educational curricula. Promoting emotional self-awareness among students could therefore lead to significant improvements in both emotional well-being and academic performance.

Managing emotion

Emotional self-regulation involves monitoring and adjusting emotional responses to meet situational demands and long-term goals [74]. It promotes adaptive functioning by supporting socially appropriate and psychologically beneficial reactions [7]. Emotion regulation includes both intrinsic strategies, directed at one's own emotions, and extrinsic strategies, aimed at managing others' emotions [5,50].

At the cognitive level, emotion regulation influences attention and memory, particularly during encoding the transformation of information for storage. Regulated emotional arousal facilitates focused attention and deeper processing, enhancing memory formation [21,75]. While emotionally significant stimuli are often better remembered, uncontrolled high arousal can impair encoding, resulting in fragmented or biased recall [45].

Furthermore, emotion regulation supports semantic encoding, the deepest form of memory processing, by minimizing distractions and promoting meaningful learning [11,23]. It also enhances cognitive flexibility, allowing individuals to adapt processing strategies

based on task demands [12,66]. Pe, Koval, and Kuppens [56] found that people choose how to manage their emotions based not only on their personality but also on their surroundings and mental health. This shows that being flexible with how we control our emotions is important for thinking clearly and staying emotionally healthy.

Effective emotion regulation helps Indian university students under high pressure enhance learning, focus, and emotional resilience.

Processing style

Cognitive processing style refers to how individuals perceive, interpret, and encode information, often influenced by hemispheric specialization. The left hemisphere of the brain is primarily associated with analytical and sequential processing, whereas the right hemisphere is linked to holistic and intuitive processing [2,22,70].

Luria's neuropsychological model [34,35] introduced two core modes: simultaneous integration, which synthesizes multiple elements into a coherent whole (e.g. recognizing faces or interpreting spatial layouts), and successive integration, which involves step-by-step processing, essential for tasks like reading and memorizing sequences. Building on this, Das., *et al.* [12] and later Naglieri and Das [49] formulated the PASS theory, identifying simultaneous and successive processing as key mechanisms for encoding information.

Cognitive styles influence how individuals learn and process information. Pask [53,54] described serialist learners as those who approach tasks in a step-by-step, linear fashion, focusing on details, while holist learners prefer understanding the overall structure or "big picture" first. These learning preferences correspond to left-brain analytical and right-brain holistic processing tendencies [55]. Sternberg [71] further elaborated that people adopt different thinking styles analytical, creative, and practical that affect how they acquire and remember information. Brain hemisphericity research supports these distinctions, indicating that individuals may favor specific processing modes, which can influence their strengths in spatial-visual or ordered-verbal encoding [4,41].

Understanding these processing styles is crucial when exploring how emotional intelligence interacts with encoding. Emotional regulation may facilitate more effective switching or integration between these cognitive modes, especially under academic stress. For instance, emotionally intelligent students might leverage both styles adaptively employing sequential strategies during structured learning and simultaneous strategies during complex problem-solving or visual memory tasks.

Hypotheses

The present study explores the relationship between components of emotional intelligence specifically, self-awareness and emotional management and information processing styles, including semantic encoding and visual memory. The following hypotheses were proposed based on theoretical and empirical literature:

- H1: Students with high self-awareness are better at semantic encoding information.
- H2: Students with high emotional management are better at semantic encoding information.
- H3: Students with high self-awareness process information simultaneously.
- H4: Students with high emotional management process information simultaneously.

These hypotheses draw on emotional intelligence theory and information processing models, which suggest that emotional regulation and self-awareness enhance encoding efficiency and cognitive flexibility across verbal and visual domains [11,36,63].

Method

A random sample comprising 54 students, aged between 19 and 25, was selected from both graduate and postgraduate institutions. Participants signed the consent form and provided demographic details. The NHS Emotional Intelligence Questionnaire, along with a Verbal Encoding Test and a Visual Memory Test, were administered. The EI test evaluated two components: Self-Control (SE) and Managing Emotions (ME). The Visual Memory Test identified participants' preferred processing style as either simultaneous or sequential. The Verbal Encoding Test assessed participants' verbal encoding ability and verbal memory performance.

Material and procedure

Emotional intelligence was evaluated utilizing the NHS Emotional Intelligence Questionnaire [32]. The NHS Emotional Intelligence Questionnaire [32] is a self-report instrument developed by the NHS Leadership Academy to assess emotional intelligence competencies in individuals, particularly in healthcare and leadership contexts. The questionnaire is based on Salovey and Mayer's [63] emotional intelligence model, including perceiving, understanding, regulating, and using emotions effectively.

The instrument typically comprises a series of statements or scenarios to which participants respond using a Likert scale (e.g. from "Strongly Disagree" to "Strongly Agree"). It measures emotional intelligence across self-awareness, self-control, managing emotions, empathy, and social skills.

For the present study, the subscales of self-control and managing emotions were utilized to assess participants' capacity to regulate emotions and maintain emotional balance in cognitively demanding tasks. Higher scores on these subscales indicate greater emotional regulation capacity, which is crucial for effective cognitive processing and memory performance.

The verbal component of the Verbal and Visual Learning and Memory Test, developed by Prof. C. R. Mukundan [46] at NIMHANS, Bangalore, was employed to assess semantic encoding. This component consists of three orally presented passages delivered in sequence. Participants were instructed to recall the content of each passage immediately after listening. Passages 1 and 2 are similar in length, while Passage 3 is comparatively longer. Each participant completed three consecutive trials, with the passage read aloud in each trial, followed by immediate recall. The number of correct responses in each trial was recorded and used to evaluate encoding performance. The improvement in scores from the first to the third trial was used to understand how well each participant learned over time.

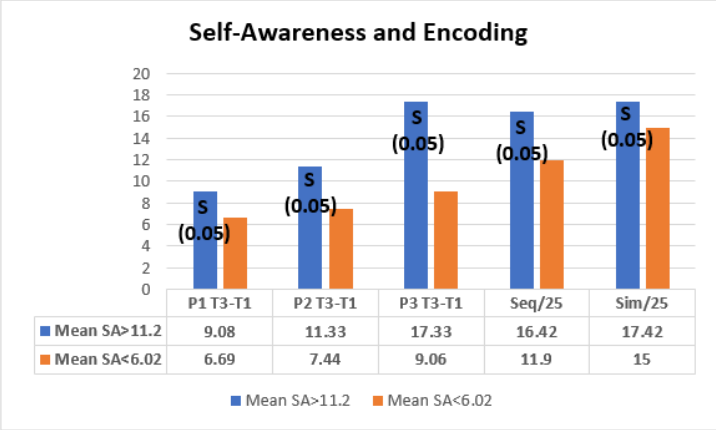
A Visual Memory Test was developed by the researcher to assess individual differences in visual information processing preferences. In the first trial, participants viewed a card displaying 25 images presented simultaneously for 30 seconds. After a 30-second delay, they were asked to recall and write down as many images as they could remember. In the second trial, the same 25 images were presented sequentially, with each image shown for 4 seconds and a 1-second interval between images. Following another 30-second delay, participants again recalled and listed the images. Performance across the two trials was compared to determine whether participants demonstrated a preference for simultaneous (Trial 1) or sequential (Trial 2) visual processing.

Results and Discussion

The present study examined how emotional intelligence specifically the dimensions of self-awareness (SA) and managing emotions (ME) affects memory encoding in both verbal and visual domains. Descriptive statistics were calculated for SA and ME scores from the Emotional Intelligence Questionnaire, as well as participants' performance on verbal semantic encoding tasks and visual memory tasks assessing sequential and simultaneous processing. Verbal encoding was evaluated by examining the variation in recall accuracy between the first and third trials.

The results provide substantial evidence that emotional intelligence, particularly the dimensions of SA and ME, significantly enhances memory encoding in both verbal and visual cognitive domains. This relationship was examined by comparing the performance of

participants classified into high and low emotional intelligence groups, based on scores that were one standard deviation above or below the mean for SA and ME, in accordance with established psychometric guidelines [6]. After performing descriptive analyses, inferential testing was conducted using independent samples t-tests. These tests indicated statistically significant differences in memory performance between the groups, thus supporting the study's hypotheses.



Graph 1

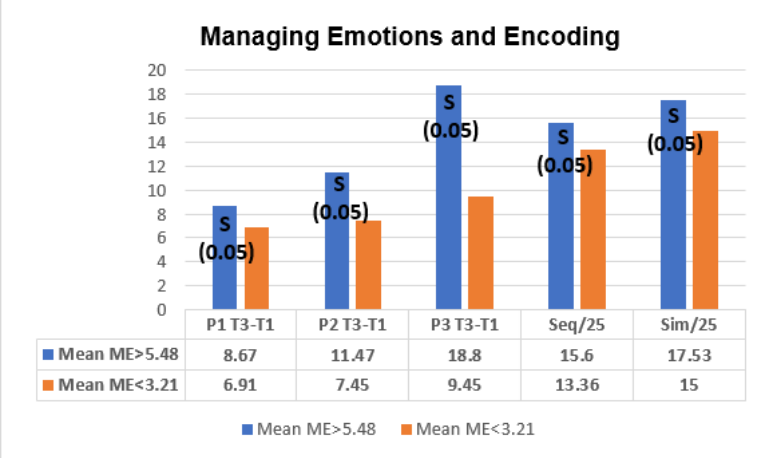
Participants with higher self-awareness scores exhibited significantly greater improvement in semantic recall across all three verbal passages from Trial 1 to Trial 3. This supports Hypothesis 1 and suggests that self-awareness is associated with enhanced cognitive control, selective attention, and the ability to process information meaningfully. These findings align with prior research suggesting that self-awareness fosters metacognitive monitoring, attentional focus, and the reduction of internal distractions during learning [36,63].

In visual memory tasks, students with high self-awareness significantly outperformed those with low self-awareness in both sequential and simultaneous processing. These findings strongly support Hypothesis H3, which proposed that students with high self-awareness have a greater ability to integrate and interpret multiple pieces of visual information as a cohesive whole. Although differences in simultaneous processing were less pronounced, the trend still suggests that self-awareness may facilitate a global, integrative cognitive style, allowing individuals to process multiple visual elements in parallel and draw connections across complex information [38].

Students with high self-awareness also showed superior performance in sequential processing, indicating a strength in structured, step-by-step information handling. This ability aligns with dual-processing theories [38], which suggest that emotionally intelligent individuals can flexibly shift between global (simultaneous) and analytic (sequential) cognitive strategies depending on task demands. Additionally, high SA participants performed well on sequential tasks (M = 16.42 vs. 11.90), indicating that self-awareness may enhance cognitive flexibility, enabling individuals to shift effectively between analytic and holistic strategies depending on task demands. The ability to alternate or integrate these styles of processing reflects enhanced cognitive flexibility, which is a hallmark of emotional intelligence [37]. These findings align with previous research conducted by Das, Kirby, and Jarman [12], which highlighted that efficient sequential processing depends on the capacity to exclude non-essential stimuli and sustain focused attention. These skills are augmented by emotional self-regulation and cognitive monitoring. These abilities are associated with higher executive functioning, especially in terms of attention regulation and behavioral inhibition [33,66]. Lower scores among the low self-awareness group may reflect difficulties in emotional regulation and attentional control, leading to less efficient processing and memory storage.

Self-awareness facilitates attentional regulation and emotional monitoring, thereby enabling learners to focus on relevant information and manage internal distractions [66]. As a metacognitive capacity, it supports inhibitory control, which enhances encoding efficiency [15,23]. The superior verbal memory performance of the high SA group suggests their emotional insight enables deeper engagement with content, supporting semantic encoding the most durable form of memory storage [11]. These individuals are more likely to use elaborative and contextual strategies that improve long-term retention [21,36,40].

When individuals are emotionally attuned, they are better able to integrate visual stimuli meaningfully and contextually [23]. These findings collectively affirm that self-awareness, as a core component of emotional intelligence, has a positive impact on both semantic and visual memory performance through its influence on metacognition, attentional control, and emotional regulation. Given the cognitive demands of academic learning, cultivating self-awareness among students may not only support emotional well-being but also enhance memory encoding and academic performance [20,78].



Graph 2

Participants with high scores in Managing Emotions (ME) outperformed their lower ME counterparts on all verbal encoding tasks, supporting Hypothesis 2, highlighting the critical role of emotion regulation in supporting cognitive processing. In the verbal semantic encoding tasks, participants with higher ME abilities demonstrated notable improvement across repeated trials. Their mean scores increased from Trial 1 to Trial 3 in Passage 1 (M = 8.67 vs. 6.91), Passage 2 (M = 11.47 vs. 7.45), and Passage 3 (M = 18.8 vs. 9.45), suggesting stronger capacity for sustained attention, inhibition of emotional distraction, and deeper encoding of semantic content.

These findings reinforce prior evidence that emotion regulation reduces cognitive load and promotes sustained attention, thereby improving encoding depth and retrieval efficiency [21,61,65,78]. High ME individuals are likely better at managing arousal and anxiety during learning, enabling more efficient use of cognitive resources in demanding academic tasks.

Participants with high ME scores achieved higher results in both sequential (*M* = 15.60 vs. 13.36) and simultaneous processing tasks (*M* = 17.53 vs. 15.00). These findings support Hypothesis H4, which proposed that students with high emotional management process information more effectively through simultaneous encoding. The superior performance on the simultaneous task indicates that individuals with strong emotion regulation skills are better able to process complex stimuli holistically, effectively integrating multiple visual elements without becoming overwhelmed by emotional distractions.

Moreover, the higher sequential scores among high-ME participants indicate that emotion regulation also supports linear, goal-directed processing. This reflects the broader executive function benefits of emotion management, such as inhibitory control, cognitive flexibility, and task-focused attention [15,23]. These results are consistent with Lecerf and de Ribaupierre [33], who found that individuals with stronger executive functioning adapt processing strategies more efficiently. Similarly, Bartolic., *et al.* [1] observed that emotionally regulated individuals tend to favor heuristic and integrative thinking, especially under cognitive demand.

The results affirm that emotional management, as a core component of emotional intelligence, not only fosters emotional stability but also significantly enhances core executive functions such as inhibitory control, cognitive flexibility, and goal-oriented behavior [15,65]. By regulating affective responses that could otherwise interfere with attention and memory, individuals with strong emotional regulation are able to engage in deeper cognitive processing, leading to more efficient encoding and improved academic performance. These capacities are especially vital in academic environments where students face complex memory tasks and high-stakes assessments that demand a dynamic interplay of emotional regulation and executive cognitive control [23,36,40,63]. As emotion regulation helps reduce internal noise and emotional reactivity, learners can better direct working memory and attentional control toward the task at hand, optimizing encoding and consolidation processes [15,23].

These findings are particularly significant within the context of Indian higher education, where university students often face considerable academic pressure and emotional strain. Research indicates that the ability to recognize and regulate emotional responses functions as a psychological buffer, mitigating stress and enhancing students' ability to learn, retain information, and adapt to academic demands [64,76]. Emotional intelligence and self-regulation have been positively associated with improved academic functioning and reduced psychological distress among Indian college students [29]. Parker., *et al.* [52] further highlighted that higher emotional intelligence contributes to better academic adjustment and coping strategies in university environments. Emotion regulation fosters executive functions such as inhibitory control, working memory, and goal-directed behavior key skills for successful learning [15,65]. Emotional intelligence, especially self-awareness and emotion management, helps individuals manage stress, stay focused, and maintain effective learning habits. In doing so, they not only enhance their immediate academic outcomes but also build long-term psychological resilience [38,66].

In summary, this study adds to the growing body of research demonstrating that emotional intelligence, particularly the domains of self-awareness and emotional regulation, significantly enhances encoding performance across semantic and visual modalities. These results underscore the need to incorporate emotional intelligence training in educational programs to bolster not only psychological well-being but also academic achievement. Cultivating emotional competencies in students may thus play a transformative role in fostering both cognitive excellence and lifelong resilience.

Conclusion

This study explored the intricate relationship between emotional intelligence specifically self-awareness and emotional management and cognitive encoding styles among university students. The results clearly indicate that students with higher levels of self-awareness and emotional management demonstrate superior semantic encoding and a preference for simultaneous visual processing. These findings underscore the cognitive benefits of emotional intelligence, highlighting its role in enhancing attention, reducing emotional interference, and fostering strategic, flexible information processing [21,36].

By validating all four hypotheses, the study reinforces the notion that emotional competencies are not only crucial for interpersonal and affective functioning but also significantly influences how information is perceived, organized, and retained [40,63]. In Indian universities, students who can understand and manage their emotions tend to do better academically and remember things more effectively, as different emotions can affect how memories are formed [3,25]. In academic contexts particularly within Indian universities

where performance pressures and emotional stressors are prevalent, fostering emotional self-awareness and regulation can support both well-being and cognitive effectiveness [3]. These results advocate for a more integrative educational approach that includes emotional intelligence training as a means of enhancing memory performance, executive function, and adaptability to cognitive demands [78].

Furthermore, the study opens avenues for future interdisciplinary exploration, bridging neuroscience, psychology, and education to better understand how emotional competencies interact with neural mechanisms of attention, memory, and learning [9,57]. This integrated understanding could provide a comprehensive framework for fostering holistic development among students.

Limitations and Future Research Suggestions

This study acknowledges several limitations. The cross-sectional design limits causal conclusions, and reliance on self-report measures of emotional intelligence may introduce bias. Future studies should include ability-based assessments and adopt longitudinal or experimental methods. The sample consisted of Indian university students, which may impact the ability to generalize the findings. Finally, the study focused only on self-awareness and emotion regulation. Future research should explore other emotional intelligence components like empathy, motivation and social skills and consider using neurocognitive tools for deeper insight.

Bibliography

1. Bartolic EI., *et al*. "Effects of experimentally-induced emotional states on frontal lobe cognitive task performance". *Neuropsychologia* 37.6 (1999): 677-683.

2. Beaumont JG., *et al*. "Hemisphericity and cognitive style: A critical appraisal of the evidence". *British Journal of Psychology* 75.2 (1984): 223-237.

3. Brackett MA., *et al*. "Emotional intelligence: Implications for personal, social, academic, and workplace success". *Social and Personality Psychology Compass* 5.1 (2011): 88-103.

4. Bradshaw JL and Nettleton NC. "The nature of hemispheric specialization in man". *Behavioral and Brain Sciences* 4.1 (1981): 51-63.

5. Burman JT., *et al*. "On the meanings of self-regulation: Digital humanities in service of conceptual clarity". *Child Development* 86.5 (2015): 1507-1521.

6. Cohen J. "Statistical Power Analysis for the Behavioral Sciences (2nd edition)". Routledge (1988).

7. Cole PM., *et al*. "The development of emotion regulation and dysregulation: A clinical perspective". *Monographs of the Society for Research in Child Development* 59.2-3 (1994): 73-100.

8. Coleman A. "A dictionary of psychology (3rd edition)". Oxford University Press (2008).

9. Côté S. "Emotional intelligence in organizations". *Annual Review of Organizational Psychology and Organizational Behavior* 1.1 (2014): 459-488.

10. Craik FIM and Lockhart RS. "Levels of processing: A framework for memory research". *Journal of Verbal Learning and Verbal Behavior* 11.6 (1972): 671-684.

11. Craik FIM and Tulving E. "Depth of processing and the retention of words in episodic memory". *Journal of Experimental Psychology: General* 104.3 (1975): 268-294.

12. Das JP., *et al*. "Simultaneous and successive cognitive processes". Academic Press (1979).

13. Das JP., *et al*. "Assessment of cognitive processes: The PASS theory of intelligence". Allyn & Bacon (1994).

14. DeLisi M. "Psychopathy as unified theory of crime". Palgrave Macmillan (2014).

15. Diamond A. "Executive functions". *Annual Review of Psychology* 64 (2013): 135-168.

16. Dolcos F., *et al*. "Neural correlates of emotion-cognition interactions: A review of evidence from brain imaging investigations". *Journal of Cognitive Psychology* 23.6 (2011): 669-694.

17. Encoding. In Alleydog.com's online glossary (2017).

18. Epstein S. "Integration of the cognitive and the psychodynamic unconscious". *American Psychologist* 49.8 (1994): 709-724.

19. Friese M., *et al*. "Suppressing emotions impairs subsequent Stroop performance and reduces prefrontal brain activation". *PLoS ONE* 8.4 (2013): e60385.

20. Goleman D. "Emotional intelligence: Why it can matter more than IQ". Bantam Books (1995).

21. Gross JJ. "Emotion regulation: Current status and future prospects". *Psychological Inquiry* 26.1 (2015): 1-26.

22. Iaccino JF. "Left brain-right brain differences: Inquiries, evidence, and new directions". Lawrence Erlbaum Associates (1993).

23. Ilieva IP., *et al*. "Prescription stimulants' effects on healthy inhibitory control, working memory, and episodic memory: A meta-analysis". *Journal of Cognitive Neuroscience* 27.6 (2015): 1069-1089.

24. Kauts A and Saroj R. "Study of stress, self-concept, and intelligence as predictors of academic achievement". *Journal of the Indian Academy of Applied Psychology* 38.1 (2012): 93-100.

25. Kensinger EA and Corkin S. "Two routes to emotional memory: Distinct neural processes for valence and arousal". *Proceedings of the National Academy of Sciences* 101.9 (2004): 3310-3315.

26. Kensinger EA and Schacter DL. "Processing emotional pictures and words: Effects of valence and arousal". *Cognitive, Affective, and Behavioral Neuroscience* 6.2 (2006): 110-126.

27. Khairudin R., *et al*. "The effect of emotion on memory performance". *Procedia - Social and Behavioral Sciences* 30 (2011): 2441-2446.

28. Kumar A., *et al*. "Emotional intelligence and academic achievement of students". *International Journal of Education and Psychological Research* 2.2 (2013): 42-45.

29. Kumari N and Sachdeva P. "A study of relationship between emotional regulation and psychological distress among undergraduate college students of Jammu District". *International Journal of Indian Psychology* 11.3 (2023): 1409-1419.

30. Kumari V and Gartia R. "Emotional intelligence and academic achievement of high school students in India". *International Journal of Scientific Research Publications* 2.12 (2012): 1-4.

31. Lane RD and Schwartz GE. "Levels of emotional awareness: A cognitive-developmental theory and its application to psychopathology". *American Journal of Psychiatry* 144.2 (1987): 133-143.

32. Leadership Toolkit (EI): Emotional Intelligence Questionnaire. "Emotional intelligence questionnaire [Assessment instrument]". NHS Leadership Academy (2014).

33. Lecerf T and de Ribaupierre A. "Relationships between working memory and intelligence from a developmental perspective: Convergent evidence from a neo-Piagetian and a psychometric approach". *European Journal of Cognitive Psychology* 17.3 (2005): 417-445.

34. Luria AR. "Higher cortical functions in man". Tavistock Publications (1966).

35. Luria AR. "The functional organization of the brain". *Scientific American* 224.3 (1971): 66-78.

36. MacCann C., *et al*. "Emotional intelligence predicts academic performance: A meta-analysis". *Psychological Bulletin* 146.2 (2020): 150-186.

37. Matthews G., *et al*. "Emotional Intelligence: Science and Myth". MIT Press (2002).

38. Mayer JD and Salovey P. "What is emotional intelligence?". In P. Salovey & D. Sluyter (Eds.: Emotional development and emotional intelligence: Educational implications. Basic Books (1997): 3-31.

39. Mayer JD., *et al*. "Human abilities: Emotional intelligence". *Annual Review of Psychology* 59 (2008): 507-536.

40. Mayer JD., *et al*. "Emotional intelligence: Theory, findings, and implications". *Psychological Inquiry* 15.3 (2004): 197-215.

41. McCarthy M. "Hemisphericity styles and cognitive processing". *Educational Psychology* 16.3 (1996): 289-298.

42. McLeod SA. "Levels of processing". Simply Psychology (2017).

43. Melton AW. "Implications of short-term memory for a general theory of memory". *Journal of Verbal Learning and Verbal Behavior* 2.1 (1963): 1-21.

44. Mikolajczak M and Quoidbach J. "Beyond cognitive ability: Emotional intelligence and memory". In M. D. Robinson, E. R. Watkins, & E. Harmon-Jones (Eds.: Handbook of cognition and emotion. Guilford Press (2013): 206-221.

45. Mikolajczak M., *et al*. "An experimental investigation of emotional intelligence and affect regulation". *Emotion* 9.5 (2009): 684-691.

46. Mukundan CR. "Verbal and visual learning and memory test". National Institute of Mental Health and Neurosciences (NIMHANS) (1979).

47. Mukundan CR. "Brain at work: Neuroexperiential perspective". Atlantic Publishers (2015).

48. Murty VP., *et al*. "fMRI studies of successful emotional memory encoding: A quantitative meta-analysis". *Neuropsychologia* 48.12 (2010): 3459-3469.

49. Naglieri JA and Das JP. "Cognitive Assessment System: Interpretive handbook". Riverside Publishing (1997).

50. Niven K., *et al*. "A classification of controlled interpersonal affect regulation strategies". *Emotion* 9.4 (2009): 498-509.

51. Paré D., *et al*. "Amygdala oscillations and the consolidation of emotional memories". *Trends in Cognitive Sciences* 6.7 (2002): 306-314.

52. Parker JDA., *et al*. "Emotional intelligence and academic success: Examining the transition from high school to university". *Personality and Individual Differences* 36.1 (2004): 163-172.

53. Pask G. "A fresh look at cognition and the individual". *International Journal of Man-Machine Studies* 4.3 (1972): 211-216.

54. Pask G. "Styles and strategies of learning". *British Journal of Educational Psychology* 46.2 (1972): 128-148.

55. Pask G and Scott BCE. "Learning strategies and individual competence". *International Journal of Man-Machine Studies* 4.3 (1972): 217-253.

56. Pe ML., *et al*. "Emotion regulation choice: The role of environmental affordances and mental health". *Emotion* 13.6 (2013): 1056-1068.

57. Pekrun R and Linnenbrink-Garcia L. "Academic emotions and student engagement". In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.: Handbook of research on student engagement. Springer (2012): 259-282.

58. Pessoa L. "On the relationship between emotion and cognition". *Nature Reviews Neuroscience* 9.2 (2008): 148-158.

59. Petrides KV., *et al*. "The role of trait emotional intelligence in academic performance and deviant behavior in adolescents". *Personality and Individual Differences* 36.2 (2004): 277-293.

60. Poropat AE. "A meta-analysis of the five-factor model of personality and academic performance". *Psychological Bulletin* 135.2 (2009): 322-338.

61. Richards JM and Gross JJ. "Emotion regulation and memory: The cognitive costs of keeping one's cool". *Journal of Personality and Social Psychology* 79.3 (2000): 410-424.

62. Saarni C. "The development of emotional competence". Guilford Press (1999).

63. Salovey P and Mayer JD. "Emotional intelligence". *Imagination, Cognition and Personality* 9.3 (1990): 185-211.

64. Sayeed A and Srivastava N. "Emotional intelligence, academic procrastination, and stress among undergraduate students: A correlational study". *International Journal of Indian Psychology* 13.2 (2025): 728-737.

65. Schmeichel BJ and Tang D. "The relationship between individual differences in executive functioning and emotion regulation: A cognitive neuroscience perspective". In J. Gross (Ed.) Handbook of emotion regulation (2nd edition). Guilford Press (2015): 186-202.

66. Schmeichel BJ., *et al*. "Working memory capacity and the self-regulation of emotional expression and experience". *Journal of Personality and Social Psychology* 95.6 (2008): 1526-1540.

67. Schutte NS., *et al*. "The assessing emotions scale". *Personality and Individual Differences* 43.6 (2007): 1251-1262.

68. Sharma R and Sharma M. "Emotional intelligence as a predictor of memory and academic achievement among university students". *Indian Journal of Health and Wellbeing* 9.2 (2018): 288-291.

69. Singh Y. "Emotional intelligence and academic stress among Indian adolescents". *Indian Journal of Health and Wellbeing* 9.1 (2018): 70-73.

70. Springer SP and Deutsch G. "Left brain, right brain (5th edition)". W. H. Freeman (1993).

71. Sternberg RJ. "Thinking styles". Cambridge University Press (1997).

72. The Human Memory. "Memory encoding" (2010).

73. Timpano KR and Schmidt NB. "The role of emotion regulation in obsessive-compulsive symptoms". *Cognitive Therapy and Research* 37 (2013): 1221-1231.

74. Thompson RA. "Emotion regulation: A theme in search of definition". *Monographs of the Society for Research in Child Development* 59.2-3 (1994): 25-52.

75. Tyng CM., *et al*. "The influences of emotion on learning and memory". *Frontiers in Psychology* 8 (2017): 1454.

76. Urmila J and Swathi P. "Relation between psychological capital and emotional regulation in college students". *International Journal of Indian Psychology* 13.1 (2025): 1588-1595.

77. Wolfe CD. "Emotion and dual process models of cognition in middle childhood and adolescence". In K. C. Barrett & M. D. Robinson (Eds.) Handbook of cognition and emotion. Guilford Press (2013): 87-103.

78. Zeidner M., *et al*. "What we know about emotional intelligence: how it affects learning, work, relationships, and our mental health". MIT Press (2009).

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