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EMOTIONAL INTELLIGENCE AND TEACHING COMPETENCY: A NEUROCOGNITIVE PERSPECTIVE IN MEDICAL EDUCATION

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ABSTRACT

Emotional intelligence is increasingly recognized as a critical determinant of teaching effectiveness in medical education; however, its neurocognitive foundations remain insufficiently integrated into pedagogical frameworks. This review critically examines the relationship between emotional intelligence and teaching competency, with particular emphasis on underlying neurocognitive mechanisms. A narrative-integrative approach was employed to analyze interdisciplinary literature from medical education, psychology, and cognitive neuroscience, focusing on key conceptual models and empirical evidence. Three major themes emerge: the role of emotional regulation and empathy in enhancing instructional effectiveness; the contribution of executive functions and associated neural networks to adaptive teaching practices; and the influence of emotional intelligence on learner engagement and clinical outcomes. The review also identifies key limitations, including conceptual ambiguity, insufficient neurocognitive operationalization, and the absence of standardized assessment models. This study contributes by advancing an integrated neurocognitive-educational perspective and underscores the need for empirically grounded frameworks to strengthen teaching competency in medical educators.

Keywords: Emotional intelligence; Teaching competency; Neurocognition; Medical education; Empathy; Executive function; Educational neuroscience

INTRODUCTION

The on-going transition toward competency-based and learner-centered medical education has broadened the definition of effective teaching beyond disciplinary expertise to include affective, relational, and adaptive capacities. In this evolving context, emotional intelligence has gained recognition as a critical determinant of how educators perceive, interpret, and respond to learners' cognitive and emotional needs, particularly within complex clinical environments [1]. It shapes essential pedagogical processes such as feedback delivery, learner engagement, and the management of emotionally nuanced interactions. Empirical evidence indicates that emotional intelligence is associated with clinical skills and empathy in medical training [2, 3]. Accordingly, teaching competency is increasingly conceptualized

as a multidimensional construct integrating instructional expertise with interpersonal sensitivity and professional judgment [4].

Advances in cognitive neuroscience deepen this understanding by elucidating the mechanisms underlying emotional regulation and executive functioning. Neurocognitive processes, particularly those involving cognitive control of emotion, play a central role in attention regulation, decision-making, and adaptive teaching behaviors [5, 6]. This perspective shifts the conceptualization of emotional intelligence from a static trait to a dynamic process grounded in brain-behavior interactions. The conceptual relationship between emotional intelligence, neurocognitive processes, and teaching competency is illustrated in **Figure 1**.

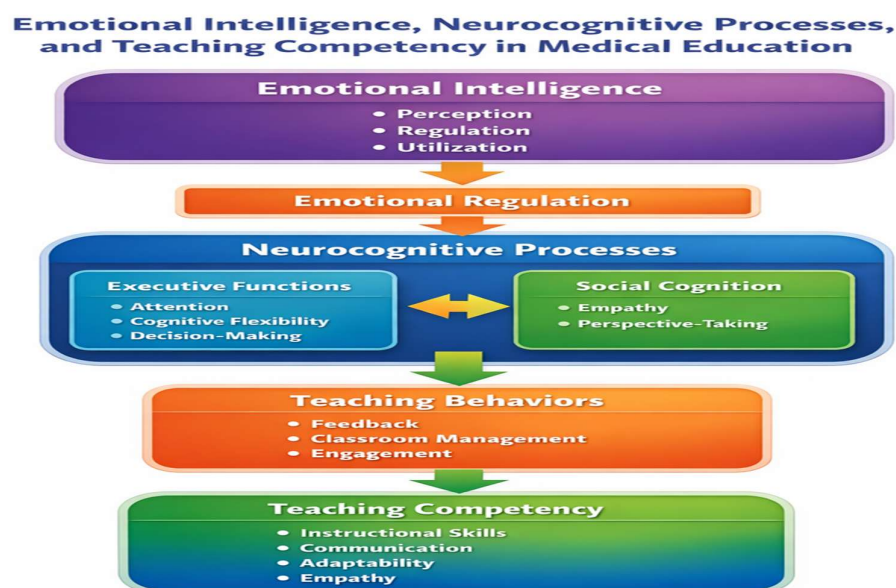


Figure 1: Integrated framework of emotional intelligence, neurocognitive processes, and teaching competency in medical education

Despite these developments, existing scholarship remains fragmented. Emotional intelligence is predominantly assessed through self-report measures, raising concerns regarding construct validity and contextual sensitivity in medical education [7]. Moreover, much of the literature establishes correlational relationships without examining the neurocognitive mechanisms that mediate the link between emotional intelligence and teaching competency. The absence of integrative frameworks aligning specific neurocognitive processes with pedagogical competencies limits both theoretical clarity and practical application in faculty development.

In response, the present study aims to critically examine the relationship between emotional intelligence and teaching competency through a neurocognitive lens. By synthesizing interdisciplinary evidence, it seeks to develop a coherent and empirically informed framework to enhance teaching competency in medical education. To address these gaps, a narrative-integrative review approach was adopted, as described in the following section.

METHODOLOGY

This study employs a narrative-integrative review design to examine the relationship between emotional intelligence and teaching competency from a neurocognitive perspective in medical education. This

approach is appropriate for interdisciplinary and conceptually complex topics, as it enables the integration of theoretical and empirical insights across domains where methodological heterogeneity limits meta-analytic synthesis [8].

A structured literature search was conducted across major academic databases, including Scopus, Web of Science, and PubMed, covering publications from 2000 to 2025. Search terms included combinations of “emotional intelligence,” “teaching competency,” “medical education,” “neurocognition,” “emotion regulation,” and “executive function.” The selection process involved three stages: identification of records, screening based on titles and abstracts, and full-text evaluation using predefined inclusion criteria. Studies were included if they addressed core constructs and demonstrated relevance to teaching processes in medical education, particularly those examining emotional intelligence in clinical or educational contexts [9].

Data were analyzed using a thematic synthesis approach. Selected studies were systematically coded to identify recurring constructs, theoretical frameworks, and empirical patterns. Themes were developed through iterative comparison, with particular focus on the operationalization of emotional intelligence and the role of neurocognitive mechanisms such as emotion regulation and cognitive control

[5]. Conceptual inconsistencies and methodological limitations—especially reliance on self-report measures—were critically examined to refine thematic categories and interpret findings

This critical-integrative analysis supports the development of a coherent framework linking neurocognitive processes with teaching competency, thereby enhancing the study's theoretical clarity and practical relevance for medical education. The findings derived from this approach are synthesized thematically in the following literature review.

LITERATURE REVIEW

The relationship between emotional intelligence and teaching competency in medical education has gained increasing attention as educational paradigms shift toward competency-based and learner-centered models. This shift necessitates a reconceptualization of teaching as an integration of cognitive, affective, and adaptive processes rather than a purely knowledge-driven activity. Emotional intelligence, as a framework for understanding emotional and social functioning, provides a relevant foundation for examining these changes [1]. Accordingly, the literature can be examined through interconnected themes linking emotional intelligence, teaching competency, and neurocognitive mechanisms.

Conceptual Foundations of Emotional Intelligence in Medical Education

Emotional intelligence is generally defined as the ability to perceive, regulate, and utilize emotions in oneself and others. While foundational models provide a strong theoretical basis, their application in medical education remains inconsistent and often fragmented [8]. Many studies adopt trait-based or self-report approaches, overlooking the dynamic and context-sensitive nature of emotional functioning in clinical environments [10]. In medical education, emotional intelligence has been linked to communication, empathy, and professional behavior, reinforcing its relevance as a core competency [7, 9]. However, conceptual ambiguity and variability in measurement continue to limit theoretical coherence and comparability across studies.

Teaching Competency as a Multidimensional and Situated Construct

Teaching competency in medical education is increasingly understood as a multidimensional construct that integrates instructional expertise, interpersonal effectiveness, and adaptive decision-making. Frameworks emphasizing teaching as a professional competency highlight the importance of aligning knowledge, skills, and attitudes in educational practice [4]. Faculty development research further supports the need for structured approaches

to enhance teaching effectiveness [11]. However, these frameworks often prioritize observable behaviors while underrepresenting the internal emotional and cognitive processes that shape teaching performance. This limitation suggests the need for more integrative models that account for both external behaviors and internal regulatory mechanisms. Emotional intelligence and teaching competency are better understood as context-sensitive and process-driven constructs.

Empirical Linkages Between Emotional Intelligence and Teaching Outcomes

Empirical evidence consistently demonstrates positive associations between emotional intelligence and teaching-related outcomes. Studies in medical education

show that emotional intelligence contributes to clinical performance, empathy, and effective interpersonal interactions [2, 12]. Additionally, emotional intelligence has been linked to academic performance and learner engagement, indicating its broader educational significance [13]. Emotion-related skills training have also shown potential in enhancing professional competencies among medical learners [14]. Despite these findings, most studies rely on correlational designs and self-report measures, limiting causal interpretation and raising concerns about ecological validity. Consequently, the mechanisms through which emotional intelligence influences teaching competency remain insufficiently explained.

Table 1: Thematic synthesis of emotional intelligence, neurocognitive mechanisms, and teaching competency in medical education

Theme	Key Constructs	Role in Teaching	Limitation in Literature
Emotional Intelligence	Emotion perception, regulation	Improves communication, empathy	Over-reliance on self-report
Teaching Competency	Instruction, adaptability	Enhances learning effectiveness	Focus on behavior, not process
Neurocognition	Executive function, social cognition	Supports decision-making, feedback	Limited integration in education
EI-Teaching Link	Emotional regulation → behavior	Better classroom & clinical interaction	Mostly correlational
EI Training	Skill development	Improves professional performance	Lack of mechanism-based models

Neurocognitive Mechanisms Underpinning Emotional Intelligence and Teaching

Neurocognitive research provides critical insights into the mechanisms underlying emotional intelligence, particularly in relation to emotional regulation, executive functioning, and social cognition. The

cognitive control of emotion, supported by interactions between prefrontal and limbic systems, plays a central role in adaptive behaviour [5, 15]. Emotional regulation processes are essential for managing stress and guiding context-appropriate responses in teaching environments [6]. These mechanisms are directly relevant to teaching

practices, as they underpin attention control, decision-making, and responsiveness to learners.

Importantly, neurocognitive functions can be mapped onto specific teaching behaviors. For example, effective feedback delivery requires emotional regulation to manage interpersonal tone, executive control to structure communication, and social cognition to interpret learner responses. Similarly, classroom and clinical teaching involve continuous adjustment of cognitive and emotional states. However, despite these clear connections, neurocognitive perspectives remain underutilized in medical education research, limiting their integration into teaching competency frameworks.

Critical Synthesis and Research Direction

A critical synthesis of the literature highlights a central limitation: the absence of an integrative framework connecting emotional intelligence, neurocognitive mechanisms, and teaching competency. While emotional intelligence research emphasizes individual capabilities and teaching competency frameworks focus on observable behaviors, neurocognitive studies provide mechanistic insights that are rarely translated into educational contexts. This fragmentation restricts theoretical development and practical application.

Emerging research on emotional intelligence training suggests that these

competencies can be developed through targeted interventions, offering potential pathways for enhancing teaching effectiveness [16, 17]. However, without a coherent theoretical integration, such interventions remain limited in scope and impact.

In summary, the literature establishes emotional intelligence as a significant factor in medical education but reveals substantial gaps in its integration with neurocognitive processes and teaching competency. A neurocognitive perspective offers a unifying framework to bridge these domains, enabling a more comprehensive and mechanism-based understanding of effective teaching in medical education. These findings are critically interpreted in the subsequent discussion to develop an integrated neurocognitive perspective.

DISCUSSION

This review interprets the relationship between emotional intelligence and teaching competency in medical education by integrating insights from educational theory and neurocognitive research [18]. The findings indicate that emotional intelligence contributes to teaching effectiveness not as a discrete trait, but as a set of regulatory processes that shape how educators respond to cognitively and emotionally demanding situations [1]. This perspective extends prior evidence linking emotional intelligence to communication, empathy, and learner

engagement by identifying the mechanisms through which these outcomes are achieved [12].

A key implication is that teaching competency is best understood as an emergent process arising from the interaction of emotional regulation, executive functioning, and social cognition. Effective teaching depends on the educator's capacity to interpret contextual cues and adapt responses accordingly. For instance, providing constructive feedback or managing learner anxiety requires coordinated cognitive control and emotional modulation, processes grounded in the cognitive regulation of emotion [5, 6]. This interpretation helps explain why existing competency frameworks, which emphasize behavioral indicators, often fail to account for variability in teaching performance across contexts [4].

The analysis also highlights important limitations in current research. Although emotional intelligence is consistently associated with positive educational outcomes, its operationalization remains inconsistent and is frequently limited to self-report measures, raising concerns about construct validity and contextual applicability [7]. Furthermore, neurocognitive findings, while theoretically informative, are rarely translated into empirically testable models within medical education, limiting their practical relevance.

Importantly, the relationship between emotional intelligence and teaching competency appears to be mediated by underlying cognitive and affective processes rather than being directly causal. Recognizing this mediated relationship shifts the focus toward identifying and strengthening these processes in educational practice.

From an applied perspective, these findings suggest that faculty development should move beyond behavior-focused training toward process-oriented approaches that target emotional and cognitive regulation. Interventions such as simulation-based learning, structured reflection, and feedback-informed practice may enhance both emotional intelligence and teaching effectiveness, as supported by evidence on emotion skills training in medical education [14].

In conclusion, a neurocognitive perspective provides a coherent and analytically grounded framework for understanding teaching competency in medical education. By linking emotional intelligence to underlying regulatory mechanisms, it offers a more precise basis for both research and the development of targeted educational interventions.

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Conflict of Interest: Nil

CONCLUSION

This review establishes that emotional intelligence is a foundational determinant of teaching competency in medical education when examined through a neurocognitive framework. It reconceptualises teaching effectiveness as an outcome of interacting regulatory processes—specifically emotional regulation, executive functioning, and social cognition—rather than a collection of discrete skills. This perspective provides a clearer explanation of how educators navigate complex instructional environments and respond adaptively to learner needs.

The key contribution of this study lies in advancing a process-based model that integrates emotional intelligence with neurocognitive mechanisms, thereby addressing the limitations of trait-focused and behavior-driven approaches. By identifying the internal processes underlying effective teaching, the study offers a more precise and theoretically grounded

understanding of teaching competency. However, current research remains constrained by the lack of models that explicitly operationalize these mechanisms within educational contexts. There is limited alignment between neurocognitive processes and measurable teaching outcomes, and existing assessment approaches fail to capture the dynamic nature of teaching practice.

Future research should focus on developing mechanism-oriented frameworks that connect neurocognitive functions with specific pedagogical behaviors. Incorporating context-sensitive and multimodal assessment strategies will be essential to capture real-time teaching dynamics. Such advancements can inform more targeted faculty development and strengthen evidence-based practices in medical education.

REFERENCES

- [1] Mayer, J. D., Salovey, P., & Caruso, D. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 396–420). Cambridge University Press. <https://doi.org/10.1017/CBO9780511807947.019>
- [2] Stratton, T. D., Elam, C. L., Murphy-Spencer, A. E., & Quinlivan, S. L. (2005). Emotional intelligence and clinical skills: Preliminary results from a comprehensive clinical

- performance examination.
Academic Medicine, 80(10), S34–S37.
<https://doi.org/10.1097/00001888-200510001-00012>
- [3] Hojat, M., Gonnella, J. S., Mangione, S., Nasca, T. J., Veloski, J. J., Erdmann, J. B., & Magee, M. (2002). Empathy in medical students as related to academic performance, clinical competence and gender. *Medical Education*, 36(6), 522–527.
<https://doi.org/10.1046/j.1365-2923.2002.01234.x>
- [4] Srinivasan, M., Li, S. T. T., Meyers, F. J., Pratt, D. D., Collins, J. B., Braddock, C., & Hilty, D. M. (2011). Teaching as a competency: Competencies for medical educators. *Academic Medicine*, 86(10), 1211–1220.
<https://doi.org/10.1097/ACM.0b013e31822c5b9a>
- [5] Ochsner, K. N., & Gross, J. J. (2005). The cognitive control of emotion. *Trends in Cognitive Sciences*, 9(5), 242–249.
<https://doi.org/10.1016/j.tics.2005.03.010>
- [6] Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1–26.
<https://doi.org/10.1080/1047840X.2014.940781>
- [7] Cherry, M. G., Fletcher, I., O'Sullivan, H., & Dornan, T. (2014). Emotional intelligence in medical education: A critical review. *Medical Education*, 48(5), 468–478.
<https://doi.org/10.1111/medu.12406>
- [8] Mayer, J. D., Roberts, R. D., & Barsade, S. G. (2008). Human abilities: Emotional intelligence. *Annual Review of Psychology*, 59(1), 507–536.
<https://doi.org/10.1146/annurev.psy.ch.59.103006.093646>
- [9] Arora, S., Ashrafian, H., Davis, R., Athanasiou, T., Darzi, A., & Sevdalis, N. (2010). Emotional intelligence in medicine: A systematic review through the context of the ACGME competencies. *Medical Education*, 44(8), 749–764.
<https://doi.org/10.1111/j.1365-2923.2010.03709.x>
- [10] Mikolajczak, M., & Luminet, O. (2008). Trait emotional intelligence and the cognitive appraisal of stressful events: An exploratory study. *Personality and Individual Differences*, 44(7), 1445–1453.
<https://doi.org/10.1016/j.paid.2007.12.012>

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- [11] Steinert, Y., Mann, K., Centeno, A., Dolmans, D., Spencer, J., Gelula, M., & Prideaux, D. (2006). A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education. *Medical Teacher*, 28(6), 497–526. <https://doi.org/10.1080/01421590600902976>
- [12] Weng, H. C., Chen, H. C., Chen, H. J., Lu, K., & Hung, S. Y. (2008). Doctors' emotional intelligence and the patient–doctor relationship. *Medical Education*, 42(7), 703–711. <https://doi.org/10.1111/j.1365-2923.2008.03039.x>
- [13] MacCann, C., Jiang, Y., Brown, L. E., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: A meta-analysis. *Psychological Bulletin*, 146(2), 150–186. <https://doi.org/10.1037/bul0000219>
- [14] Satterfield, J. M., & Hughes, E. (2007). Emotion skills training for medical students: A systematic review. *Medical Education*, 41(10), 935–941. <https://doi.org/10.1111/j.1365-2923.2007.02835.x>
- [15] Ochsner, K. N., Silvers, J. A., & Buhle, J. T. (2012). Functional imaging studies of emotion regulation: A synthetic review and evolving model of the cognitive control of emotion. *Annals of the New York Academy of Sciences*, 1251(1), E1–E24. <https://doi.org/10.1111/j.1749-6632.2012.06751.x>
- [16] Hodzic, S., Scharfen, J., Ripoll, P., Holling, H., & Zenasni, F. (2018). How efficient are emotional intelligence trainings: A meta-analysis. *Emotion Review*, 10(2), 138–148. <https://doi.org/10.1177/1754073917708613>
- [17] Nelis, D., Quoidbach, J., Mikolajczak, M., & Hansenne, M. (2009). Increasing emotional intelligence: (How) is it possible? *Personality and Individual Differences*, 47(1), 36–41. <https://doi.org/10.1016/j.paid.2009.01.046>
- [18] Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology*, 95(1), 54–78. <https://doi.org/10.1037/a0017286>
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