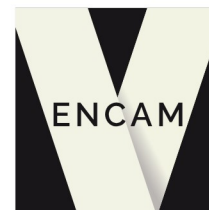




27 A 30 DE MAIO DE 2026

V ENCONTRO DE COGNIÇÃO E ARTES MUSICAIS

UNIVERSIDADE FEDERAL DE SERGIPE



Revisitando teorias do desenvolvimento musical à luz da neurociência cognitiva: um diálogo necessário

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RESUMO

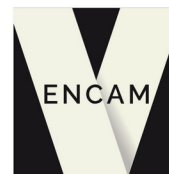
PROBLEMA/QUESTÃO

O desenvolvimento humano constitui um fenômeno altamente complexo e ocupa uma posição central na agenda acadêmica. Fundamentalmente, o período de desenvolvimento associado à expansão do córtex cerebral - e à elevada capacidade de neuroplasticidade dependente da experiência - contribui para a emergência de sistemas generativos de comunicação, como a linguagem e a música (Corrigall & Trainor, 2014; Hannon et al., 2018; Trainor & Hannon, 2013).

Com o objetivo de compreender os processos de enculturação e de categorizar os estágios da aprendizagem musical, bem como de explicar de que maneira a musicalidade se desenvolve ao longo da vida, pesquisadores formularam diferentes teorias do desenvolvimento musical (TDM) ao longo da história (Gardner, 1973; D. Hargreaves, 1996; Seashore, 1938; Serafine, 1988; Swanwick, 1988; Vogiatzoglou et al., 2011; Voyajolu & Ockelford, 2016). Nesse contexto, psicólogos, educadores musicais, musicólogos e cientistas do desenvolvimento realizaram avanços significativos por meio da observação empírica e da análise sistemática do comportamento humano, buscando identificar e descrever as diferentes fases do desenvolvimento musical, suas principais características e suas relações com o aprimoramento das habilidades musicais ao longo da vida.

Entretanto, ainda resta determinar em que medida esses postulados teóricos refletem e incorporam adequadamente os avanços da pesquisa em neurocognição¹ musical. Estudos que empregam técnicas de neuroimagem têm ampliado de forma substancial nossa compreensão acerca do processamento musical no cérebro humano. Tais investigações abrangem um amplo continuum, que se estende desde a percepção sonora em níveis iniciais de atividade cortical até os efeitos de longo prazo do treinamento





musical sistemático, incluindo diferenças estruturais e funcionais decorrentes da neuroplasticidade cerebral (Bianco et al., 2022; Cheng et al., 2022). Nesse cenário, o desenvolvimento e a consolidação dessas técnicas tornaram possível um nível de precisão anatômica e funcional sem precedentes, desempenhando um papel fundamental na elucidação dos mecanismos subjacentes à atividade musical.

Embora parte das estruturas epistemológicas das TDM tenham incorporado contribuições relevantes provenientes da neurociência e da cognição (Gardner, 1973, 1999, 2011; Gordon, 1997, 2013; D. J. Hargreaves, 1989; D. Hargreaves & Lamont, 2017; Serafine, 1984, 1988), o diálogo carece de aprofundamento. Limitações metodológicas presentes em estudos anteriores permanecem insuficientemente abordadas, resultando em modelos teóricos parcialmente desatualizados frente à literatura neurocognitiva contemporânea.

OBJETIVOS

Refletir e analisar as TDM à luz do conhecimento neurocognitivo contemporâneo, a fim de aprofundar o debate entre o desenvolvimento musical e o avanço na área da neurocognição musical.

RESULTADOS E/OU PRINCIPAIS CONTRIBUIÇÕES

A análise sistemática e revisão dos modelos de TDM propostos mostraram inconsistências metodológicas que resultam em afirmações generalistas. A exemplo, Gordon (1997) postula que após os 9 anos de idade, o ambiente não tem mais efeito notável sobre a aptidão musical. Resultados da pesquisa de Phillips-Silver et al. (2024) refutam a afirmação e sugerem que a capacidade de identificar correspondência rítmica melhorou ao longo da infância média [8-9] e apenas atingiu níveis semelhantes aos dos adultos na adolescência [12-14]. Para Gardner, “uma criança de 7 anos razoavelmente competente deve compreender as propriedades métricas básicas do seu sistema musical e as escalas, harmonias, cadências e agrupamentos apropriados” (1973, p. 197). Estudos comportamentais e de eletroencefalografia apontam que a aquisição implícita das regras harmônicas se desenvolve relativamente tarde, não atingindo os níveis adultos até ao início da adolescência [12-14] (Costa-Giomi, 2003; Trainor & Unrau, 2012).

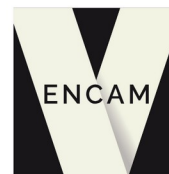
CONCLUSÕES E/OU IMPLICAÇÕES

A revisão da literatura especializada permitiu trazer uma nova perspectiva acerca das TDM, dialogar com avanços na área e, conseqüentemente, promover um debate mais atento à contemporaneidade. Teorias que assumem proposições por vezes generalistas depararam-se aqui com evidências científicas que refutam - e por hora corroboram - ideias postuladas. O presente trabalho promove a ampliação do embasamento da neurociência cognitiva aplicado às TDM, no intuito de serem revisitadas sob a égide de um olhar mais atento aos avanços na área da cognição musical.

PALAVRAS-CHAVE

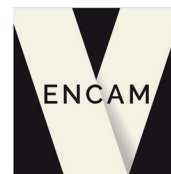
Desenvolvimento musical, teorias do desenvolvimento musical, cognição musical, neurociência cognitiva.





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Musical developmental theories revisited: towards a dialogue under the perspectives of cognitive neuroscience

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ABSTRACT

RESEARCH QUESTION/PROBLEM

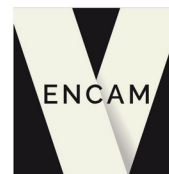
Human development represents a highly complex phenomenon that occupies a central role in academic agenda. Critically, the extended period of development - characterized by cortices increased by human's capacity of experience-driven neural plasticity - contributes for the generative communication systems, such as language and music (Corrigall & Trainor, 2014; Hannon et al., 2018; Trainor & Hannon, 2013). Conducive to understand the process of enculturation and categorize stages of musical learning and how musicianship matures in a lifespan, scholars have conceived different music developmental theories (MDT) throughout history (Gardner, 1973; D. Hargreaves, 1996; Seashore, 1938; Serafine, 1988; Swanwick, 1988; Vogiatzoglou et al., 2011; Voyajolu & Ockelford, 2016). Psychologists, music educators, musicologists and developmental scientists made a huge progress in empirically perceive, notice and analyze the human behavior in order to divide the phases (or stages) of evolution, the main characteristics and how it can be related to one's musicianship improvement capacity.

Nevertheless, it remains to be determined whether these theoretical frameworks adequately reflect recent advances in musical cognition research. Research employing neuroimaging techniques has profoundly expanded our understanding of how musical processing is organized within the human brain. These perspectives encompass a wide continuum, from the perception of sound - at the level of primary cortical processing - to the long-term effects of sustained musical training and the functional and structural differences due to the brain's neuroplasticity (Bianco et al., 2022; Cheng et al., 2022). The advent of functional neuroimaging has made it possible to investigate these processes with unprecedented anatomical and functional precision, playing a pivotal role in elucidating nature of music cognition.

Although some of the MDT frameworks have incorporated important insights from neuroscience and cognition (Gardner, 1973, 1999, 2011; Gordon, 1997, 2013; D. J. Hargreaves, 1989; D. Hargreaves & Lamont, 2017; Serafine, 1984, 1988), such integrations are often insufficient, taking into account the empirical depth and methodological limitations not adequately addressed of earlier studies, which might be considered outdated nowadays.

OBJECTIVES





Reflect on and analyze MDT in light of contemporary neurocognitive knowledge in order to deepen the debate between musical development and advances in the field of musical neurocognition.

RESULTS AND/OR MAIN CONTRIBUTIONS

A systematic analysis and review of the MDT models revealed several methodological inconsistencies that lead to overly general claims. For example, Gordon (1997) posits that after the age of 9, the environment no longer has a significant effect on musical aptitude. Findings from the study by Phillips-Silver et al. (2024) refute this appointment and suggest that the ability to identify rhythmic entrainment improved throughout middle childhood [8–9] and only reached adult levels during adolescence [12–14]. According to Gardner, “a reasonably competent 7-year-old should understand the basic metrical properties of their musical system and the appropriate scales, harmonies, cadences, and groupings” (1973, p. 197). Behavioral and electroencephalography studies indicate that the implicit acquisition of harmonic rules develops relatively late, not reaching adult levels until early adolescence [12–14] (Costa-Giomi, 2003; Trainor & Unrau, 2012).

CONCLUSIONS AND/OR IMPLICATIONS

The comparison between specialized literature on neurocognitive neuroscience and the MDT has provided a new perspective in the field, and, consequently, fostered a debate that is more attuned to contemporary developments. Theories that make sometimes overly general claims have been confronted here with scientific evidence that both refutes—and, for now, corroborates—the ideas they propose. This study aims to broaden the foundation of cognitive neuroscience as applied to MDT, with the goal of revisiting them under the umbrella of a closer examination of advances in the field of musical cognition.

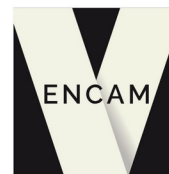
KEYWORDS

Music development, Music developmental theories, music cognition, neurocognition

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