

## Empathy Beyond the Head: Comment on “Music, Empathy, and Cultural Understanding” by E. Clarke et al.

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Can art build up our capacity for empathy? Some argue that film and narrative arts—by providing nuanced case studies of characters who act for reasons—serve as cognitive tools that scaffold our imaginative, perceptual, and affective capacities and expand our empathic skillset [1,2]. There is evidence that narrative may be an effective tool for at least modest improvements in children’s theory of mind development [3]; other studies suggest reading literary fiction later in life can enhance empathy and perspective-taking [4–7].

What about music? Clarke et al. explore numerous links between musical practices and increased empathy [8]. But there is a theoretical perspective worthy of more focused consideration. As the authors note, ongoing debates mainly focus on the relation between empathy and *embodiment*. Whether thought of as a low-level process rooted in mirror neuron activity or behavioural entrainment, or a high-level representational process involving imagination or folk psychological concepts, empathy is presumed to emerge from subject-centred endogenous mechanisms. But this individualistic focus potentially overlooks the ongoing role that environmental resources play in scaffolding the development and functioning of our empathic abilities.

This is where an emerging perspective can help. A growing number of researchers in philosophy of mind and cognitive science defend some version of the *hypothesis of extended cognition* (HEC) [9–11]. According to HEC, environmental resources such as tools and technologies—when dynamically coupled with an agent’s neuronal and bodily processes in the right sort of way—become part of the associated process and scaffold access to otherwise-inaccessible forms of cognition and behavior.

While HEC is now applied to topics like memory, emotions, social epistemology, scientific reasoning, moral psychology, and personal identity, few attempts have been made to consider empathy or music cognition (although see [12–15]). However, due to its temporally-extended nature, portability (via compact listening technologies), and cross-modal impact on listeners, music appears to be an especially potent cognitive tool. When we engage with and become dynamically coupled with music at neural, physiological, and behavioral levels, music potentially elicits, shapes, and regulates capacities and experiences that would remain otherwise inaccessible. To use a term of art from cognitive science: we realize musically-scaffolded *functional gain*.

Multiple lines of evidence—particularly from developmental psychology—seem to support this picture. From birth, infants readily entrain responsive behavior—respiratory patterns, sucking (both rhythm and intensity), tongue and mouth protrusions, eye opening and closing, limb movements, vocalizations, etc.—with melodic and rhythmic properties of lullabies and consonant music [16–18]. In so doing, they realize musically-scaffolded functional gain. Since they lack endogenous resources to self-regulate affect, attention, and behavior, music takes over and governs these processes for them; it functions as a stabilizing environment that modulates their stress responses and promotes enhanced bio-regulatory competence and developmental homeostasis (i.e., regularized patterns of respiration, blood pressure, heartbeat, sleep, etc.). Additionally, long-term exposure to music appears to scaffold the

acquisition of rudimentary embodied skills at the heart of our empathic engagements: e.g., the ability to attend to and interpret the sonic shape of emotionally-colored sounds; auditory-tactile-kinesthetic sensitivity to the flexible rhythmic parameters of interactive turn-taking; and the coordination of bodily movement with affective expression and shared feeling [19–21]

As Clarke et al. demonstrate, music continues to scaffold our empathic skillset throughout our life. From the perspective of HEC, taking seriously the idea that music is a tool for empathy suggests that, as with other cognitive capacities, the mechanisms of empathy may not be entirely in the head.

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