



Comment

# 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 behaviour.

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 behavioural 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*.

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Multiple lines of evidence—particularly from developmental psychology—seem to support this picture. From birth, infants readily entrain responsive behaviour—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 behaviour, 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-coloured 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.

## References

- [1] Gallagher S, Hutto DD. Understanding others through primary interaction and narrative practice. In: Zlatev J, Racine TPR, Sinha C, Itkonen E, editors. *The shared mind: perspectives on intersubjectivity*. Amsterdam: John Benjamins Publishing Company; 2008. p. 17–38.
- [2] Lopes DM. Pictures and the representational mind. *Monist* 2003;86:632–52.
- [3] Guajardo NR, Watson AC. Narrative discourse and theory of mind development. *J Genet Psychol* 2002;163:305–25.
- [4] Bal PM, Veltkamp M. How does fiction reading influence empathy? An experimental investigation on the role of emotional transportation. *PLoS ONE* 2013;8:e55341.
- [5] Black JE, Barnes JL. The effects of reading material on social and non-social cognition. *Poetics* 2015;52:32–43.
- [6] Kidd DC, Castano E. Reading literary fiction improves theory of mind. *Science* 2013;342:377–80.
- [7] Mar RA, Oatley K. The function of fiction is the abstraction and simulation of social experience. *Perspect Psychol Sci* 2008;3:173–92.
- [8] Clarke E, DeNora T, Vuoskoski J. Music, empathy, and cultural understanding. *Phys Life Rev* 2015;15:61–88. <http://dx.doi.org/10.1016/j.plev.2015.09.001> [in this issue].
- [9] Chemero A. *Radical embodied cognitive science*. Cambridge: MIT Press; 2009.
- [10] Clark A. *Supersizing the mind: embodiment, action, and cognitive extension*. Oxford: Oxford University Press; 2008.
- [11] Menary R, editor. *The extended mind*. Cambridge, MA: MIT Press; 2010.
- [12] Kersten L. Music and cognitive extension. *Empir Musicol Rev* 2014;9:193–202.
- [13] Krueger J. Affordances and the musically extended mind. *Front Psychol* 2014;4:1–13.
- [14] Matyja JR. Toward extended music cognition: commentary on music and cognitive extension. *Empir Musicol Rev* 2014;9:203–7.
- [15] Smith M. Empathy, expansionism, and the extended mind. In: Coplan A, Goldie P, editors. *Empathy: philosophical and psychological perspectives*. New York: Oxford University Press; 2011.
- [16] Adachi M, Trehub SE. Musical lives of infants. In: McPherson GE, Welch GF, editors. *The Oxford handbook of music education*. New York: Oxford University Press; 2012. p. 229–47.
- [17] Haslbeck FB. The interactive potential of creative music therapy with premature infants and their parents: a qualitative analysis. *Nord J Music Ther* 2014;23:36–70.
- [18] Nawrot ES. The perception of emotional expression in music: evidence from infants, children and adults. *Psychol Music* 2003;31:75–92.
- [19] Dissanayake E. The earliest narratives were musical. *Res Stud Music Educ* 2012;34:3–14.
- [20] Krueger J. Empathy, enaction, and shared musical experience: evidence from infant cognition. In: Cochrane T, Fantini B, Scherer K, editors. *The emotional power of music: multidisciplinary perspectives on musical expression, arousal, and social control*. Oxford: Oxford University Press; 2013. p. 177–96.
- [21] Malloch S. Mothers and infants and communicative musicality. *Music Sci* 1999;29–57 [special issue on rhythms, musical narrative, and the origins of human communication].