Deconstructing Empathy

Raymond A. Mar

Emotion Review 2011 3: 113
DOI: 10.1177/1754073910384158

emotion review

Emotion Review
Vol. 3, No. 1 (January 2011) 113–114

ISSN 1754-0739
DOI: 10.1177/1754073910384158
er.sagepub.com

Deconstructing Empathy

Raymond A. Mar
Department of Psychology, York University, Canada

Abstract

The heterogeneous nature of the empathy construct demands that neuroscience investigations into this topic employ methods directed at uncovering multiple processes. This article touches upon some of the methods most appropriate for empathy research, and closes by arguing for a better distinction between perception and imagination during the initial stage of an empathic response.

Keywords
empathy, imagination, neuroimaging, perception, theory of mind

In his target article, Decety (2011) has provided a welcome call-to-arms challenging researchers to adopt a more nuanced approach to the neuroscience of empathy. Empathy is a notoriously heterogeneous construct, a fact often acknowledged but rarely tackled head on by researchers. In order for us to address this issue we need a concrete strategy and Decety has begun to sketch the shape of such a plan. Here I flesh out the most promising aspects of a collective strategy to progress us toward a comprehensive and fine-grained understanding of empathy. I close with an additional issue important to the deconstruction of the empathy construct: the differentiation between perception and imagination.

As I see it, there are two principal ways in which the neuroscience of empathy can take up Decety's challenge: (a) through a more appropriate set of neuroscience methods, and (b) with better understanding of tasks and their design. Provided that these two avenues are pursued with the multifaceted nature of empathy in mind, they are both likely to substantially improve our understanding.

Since empathy is an umbrella term that actually refers to a host of subprocesses and related constructs, neuroscience methods should be undertaken with the goal of deconstructing empathy. If we are to accept the major distinction put forth in Decety's model, for bottom–up and top–down contributors to empathic understanding, then the temporal dynamics of these broad categories need to be taken into account. Emotional recognition, for example, should precede any self-regulation process that informs empathic feeling. It is likely that conventional functional magnetic resonance imaging (fMRI) approaches do not provide us with the temporal resolution needed to examine these two sets of processes separately. As the work cited by Decety reveals, empathic processes occur rapidly, at the millisecond timescale. Neuroscientists interested in this topic should therefore adopt imaging methods that allow for greater observation of how empathy unfolds over time. No doubt this recommendation brings to mind some concern about a corresponding loss of spatial resolution. This is not a trivial concern. Many of the key brain structures involved in empathy, such as subcortical limbic structures like the amygdala, cannot be accurately imaged with some of the methods that afford the requisite temporal resolution, such as electroencephalography. Magnetoencephalography combined with the beamformer technique, however, shows promise in providing excellent spatial and temporal resolution, capable of capturing the amygdala (Cornwell et al., 2008).

Just as the choice of imaging method should be driven by a need to resolve separate empathic processes, the same motivation should impel our choice of analysis method for neuroimaging data. Multivariate techniques such as partial least squares and independent components analysis aim to identify different functionally connected networks from a single dataset. In the context of an empathy study, these networks could theoretically reflect different subprocesses engaged during the task.

Moving from the analysis of single studies to the meta-analysis of multiple studies (e.g., activation likelihood estimation and multilevel kernel density analysis), statistical approaches should similarly be oriented toward identifying different functional networks. Methods for performing connectivity analyses on meta-analytic data are currently being developed (Neumann, Fox, Turner, & Lohmann, 2010), and these may help to identify the subprocesses engaged during empathy tasks employed across different studies.

The second path to a more nuanced investigation of empathy involves a better understanding of tasks and what they represent. With regard to previously published studies, it would be useful to begin hypothesizing about the possible subprocesses that

Corresponding author: Raymond A. Mar, York University, Department of Psychology, 239 Behavioural Sciences Building, 4700 Keele Street, Toronto, ON Canada M3J 1P3.
Email: mar@yorku.ca

might underlie these complex tasks. This is traditionally known as task analysis. Hypotheses derived from a task analysis should then be subjected to empirical tests in subsequent studies. Future studies should also employ simpler tasks that examine more discrete subprocesses associated with empathy, with a focus on tasks that involve measurable performance.

I would like to close by raising one additional issue that could help to clarify the study of empathy. Perception of another person's emotional response is an important first step in the evocation of an empathic response, but a number of studies have equated imagination with perception during this stage. That is, participants are asked to imagine the pain, or distress, of another person rather than engage in direct perception. Although there are a number of fascinating parallels between imagination and perception (Mar, in press), the two are far from identical, and the ways in which they depart, in the context of empathy, are likely to be of interest. Imagination can likely explain the empathic response in those who have never felt pain, for example; we are able to imagine all sorts of things that we have never experienced. It is also possible that imagination may be more closely tied to the cognitive aspects of empathy, in contrast to the emotional. The fact that lesions of the left inferior frontal gyrus—a region often associated with language and therefore our capacity for abstraction—are associated with emotional empathy, however, complicates this interpretation. The contribution of imagination to empathy, in a manner separate from perception, warrants more of our attention.

This article by Decety will hopefully inspire more neuroscientists to acknowledge and investigate the complex nature of the empathy construct. With the many new tools rapidly emerging in our field, we should consider ourselves well armed to take on this difficult task.

References

Cornwell, B. R., Carver, F. W., Coppola, R., Johnson, L., Alvarez, R., & Grillon, C. (2008). Evoked amygdala response to negative faces revealed by adaptive MEG beamformers. *Brain Research*, *1244*, 103–112.

Decety, J. (2011). Dissecting the neural mechanisms mediating empathy. *Emotion Review*, *3*, 92–108.

Mar, R. A. (in press). The neural bases of social cognition and story comprehension. *Annual Review of Psychology*.

Neumann, J., Fox, P. T., Turner, R., & Lohmann, G. (2010). Learning partially directed functional networks from meta-analysis imaging data. *NeuroImage*, *49*, 1372–1384.