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ACTION, EMOTION AND EMBODIMENT IN EMPATHIC RESPONSES

abstract

In the perspective of a study of emotions and mind in adaptive and naturalized terms, the analysis of empathic phenomena assumes a peculiar significance. Putting together neuroscience and philosophy, nowadays it is possible to analyze the neurobiological substrate of empathy and to conceptually redefine empathy. We will talk about some philosophical reflections on empathy and then we will stress that, as in some philosophical theories, recent brain imaging studies reveal the existence of multiple areas (and so, multiple levels) involved in empathic responses: limbic areas for the emotional resonance; motor areas and sensory areas for sensorimotor resonance; prefrontal areas to assess the social status of others, and parietal areas to adopt the others intentional point of view and for the self/other distinction. A detailed analysis of empirical data has led us to show how the same 'mirroring' metaphor is used for two different phenomena. However, it is possible to throw a bridge between the different types of empathic responses (motor or emotional ones). Then, we will focus on some theoretical points to provide a contribution about empathy, a topic that often is still considered an enigma for sciences of mind and behavior.

keywords

Empathy; intersubjectivity; motor theory; embodiment

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Introduction

The analysis of empathic phenomena assumes a great significance for the study of emotions and mind in adaptive and thus naturalized terms. This subject has been the center of a long philosophical debate. Recently empathy studies crossed the borders of philosophical research to become a subject of experimental investigation. In particular empirical evidence from psychology and neuroscience was achieved in the theory of motor resonance and in the perception-action model. We are convinced that it is of great heuristic value to approach this subject both by neuroscience research and philosophical theories, because in this way it becomes possible to analyze and interpret the neurobiological substrate of the empathic phenomenon and to conceptually redefine empathy.

Therefore, we will focus on the possible interaction between a phenomenological perspective and the progresses of neuroscience as also Gallagher and Zahavi proposed in their *The Phenomenological Mind* (2008). Within this framework we will both try to interpret some neuroscientific evidence in the light of the phenomenological theories and to modify the theories about empathic mechanisms using the results achieved by cognitive neuroscience.

1. Philosophical considerations about empathic mechanisms

Theodor Lipps (1903) claims that empathy is a fundamental concept in the theory of aesthetics, and he defines it as a process through which we relive ourselves within the observed object. Moreover, Lipps affirms that when we put ourselves in the other's shoes, for example when we observe a tightrope walker moving on the wire, we are able to understand his/her intentions and emotions. This understanding is relieved through our bodies and our feelings.

Max Scheler (1923) describes the differences between the various ways of "feel with others" (*Mitgefühl*). He distinguishes both "sympathy", namely the sharing of feelings, the emotional contagion, and "unipathy" (*Einsfühlung*) namely the identification with the other, from "empathy" (*Einfühlung*), which is defined as feeling the other's feelings. According to Scheler the self/other distinction seems to be one of the basic characteristics that distinguishes empathy from other forms of "feel with the other".

Edmund Husserl (1931, 1952) suggests that, by nature, we are intersubjectively open to others. According to him, the intersubjective experience should be conceived as an empathic experience in which we consciously ascribe to the other intentional acts and feelings, putting in its clothes. The opening of subjectivity is made possible because of

physical, sensorial and perceptual similarities with the other seen as *Leib* (Husserl distinguishes between *Körper* , the physical structure, and *Leib*, the component that is experientially based in our living body). The first step to take the point of view of others is a passive one and it is followed by the voluntary (intentional) act of imaginative thinking. For an accurate analysis, see Petit (2004 and also 1999).
The disciple of Husserl, Edith Stein (1917), focuses on the act of "fusion" of different points of view needed in empathy, but pointed out that, to really understand the other, it is crucial to maintain a self/other distinction: empathy presupposes *alterity*. Stein describes empathy as a way to access the other in its wholeness; it represents the condition of possibility of all the feelings and the many forms of understanding others. It is also interesting to note that the alterity becomes, according to Stein and Scheler, a constitutive element of the empathic feeling. [On this topic, see Gallagher and Zahavi (2009, p. 284) when they say that it is not an imperfection: the difference between the access in the first person to the own experience and the access to the experience of the other is constitutive].

2. A brief review of the most recent neuroscientific data about resonance phenomena

Leaving aside for a moment the theoretical argument concerning the theory of mind and theory of simulation as different explanations of empathy (see, also in this case, Gallagher and Zahavi 2009), we want to summarize some of the principal recent studies of brain imaging on empathy. It is important to underline that those studies reveal the existence of multiple areas involved in the empathic response:

- limbic areas (the anterior cingulate cortex and the anterior insula, Singer *et al.* 2004; de Vignemont and Singer 2006, Carr *et al.* 2003) for the emotional resonance;
- motor areas (premotor cortex and, in general, the mirror neurons' circuit, Di Pellegrino *et al.* 1992; Rizzolatti and colleagues in the last twenty years, Wicker *et al.* 2003) and sensory areas (somatosensory cortex; Bufalari *et al.* 2007; Avenanti *et al.* 2005) for sensorimotor resonance (e.g. especially the supporters of the perception-action model, Preston and de Waal 2002, and the motor theory of empathy, Leslie *et al.* 2004, Carr *et al.* 2003, Meltzoff and Decety 2003).
- prefrontal areas (ventromedial prefrontal cortex, Damasio 2003) involved in assessing the social status of others, and parietal areas, active in adopting the intentional point of view of others (Decety 2004) and for the self/other distinction (Bachoud-Levi and Degos 2004).

A detailed analysis of empirical data provided to date by neuroimaging has led to show how the same metaphor that of mirroring is used for two different phenomena that involve the activation of different neural networks: the one a

motor network, the other an emotional network (Galloni 2009). However, the results of Avenanti and colleagues (2005, Bufalari *et al.* 2007) indicate that in the mechanism for empathic pain there is the activation of motor components but also fine-grained somatic responses. Avenanti and colleagues, both using transcranial magnetic stimulation (Avenanti *et al.* 2005) and somatosensory-evoked potentials (Bufalari *et al.* 2007), found that motor components and also fine-grained somatic responses (also in the primary somatosensory cortex) are involved in the empathic mechanism for pain. They suggest the existence "of a pain resonance system that extracts basic sensory aspects of the model's painful experience [...] and maps them onto the observer's motor system according to topographic rules" (Avenanti *et al.* 2005, p. 958). Therefore, it seems that both the affective and the sensorimotor areas of the so-called "pain matrix" (a neural network crucially involved in pain experience, Melzack 1999) are activated in an automatic and unconscious way in empathic response. This mechanism, which they named "sensorimotor" or "somatomotor contagion", seems to throw a bridge between the two types of empathy – motor and emotional – mentioned above.

3. A multi-levels account

Therefore we tried to attempt a contribution towards the explanation of the empathic feeling, with a neurophilosophical formulation of the different levels of empathic-like and empathic-based mechanisms, starting from low-levels (see Galloni 2009). We can now briefly analyse this stratified approach. At the lower level, following the formulations of Preston and de Waal, we talk about the emotional contagion, which consists of a total and immediate identification with the feelings of the other and that is an unconscious and automatic phenomenon, and it provides an identity of emotional state between perceiving and perceived subject, without any inhibition in the repetition of emotional matching (think about the crying of babies in a nursery). The sensorimotor-emotional resonance, similar to Scheler's unipathy, differs from the emotional contagion because the state is not duplicated but only simulated; it is a phenomenon that is based on mirror mechanisms and a network that implies limbic areas, premotor but also sensory areas that communicate using both anatomical pathways, such as the field of dysgranular insula (e.g. Carr *et al.* 2003, p. 5497), and functional ones, such as the hypothesis of gamma-band frequencies (Lutz *et al.* 2004). Then there is the genuine empathy, which requires, in addition to what listed in previous levels, the intentional self/other distinction, made possible by the involvement of proprioceptive information (Decety 2004, see also Gallagher and Zahavi, when they speak in relation to the sense of agency, p. 252) and parietal areas (Bachoud-Levi and Degos 2004).
At a further step, we place what is called social empathy, or the pragmatic

application of empathy, our inclination to relieve the suffering of others. It is probably made possible by the contribution of the ventromedial prefrontal areas mentioned by Damasio (2003); it requires the self/other distinction but state matching is not necessary. We are not saying that it is an explanation for the ethical domain, but it may be a precondition of it (e.g. de Waal and Thompson 2005, p. 49). Finally, there is cognitive empathy, or perspective-taking, which is a representation of the mental and emotional states of others in which the perceiver is not identified, he doesn't "resonate" with the other. Classically it can be considered as the main level on which the supporters of the theory of mind operate.
Therefore, empathy is only a level among all the resonance phenomena, and it is a conscious bodily experience of other's feelings.

4. Commenting The Phenomenological Mind

Now, going on to observe the way in which Gallagher and Zahavi addressed this issue in their text *The Phenomenological Mind*, we cannot but agree with the fact that phenomenology has much to say about the explanation of social cognition, intersubjectivity. We have seen that adopting some phenomenological theories we have been able to interpret more deeply the latest neuroscientific results, especially to articulate the mirroring phenomenon in different levels.
The reading makes clear, however, some thoughts and clarifications to do, that we would like to briefly set out. First, we have to notice that often, when we talk about the neurobiological basis of the resonance, mirror neurons are mentioned (Gallagher and Zahavi 2009, p. 269). This is not entirely correct because, as we saw in the previous discussion, in the case of empathy there is not properly an activation of mirror neurons. It is not therefore the neural premotor area but the functional mechanism (a direct "resonance" mechanism) discovered through mirror neurons that is really interesting for an explanation of empathy.
Furthermore, trying to understand what constitutes the phenomenon of the simulation, Gallagher and Zahavi discuss quite correctly that it is part of an intersubjective perception (p. 272), but a little later they state that we are not active during the social experience of other's feeling or intentions, the other is doing something to us (p. 274). So while it is correct that this is a perceptual event, we are not in agreement with the fact that the interpretation of the authors seems to assume the idea that the perceiving subject is a passive one in relation to that event. Both from a theoretical and experimental point of view, the idea of a passive perception now seems meaningless, and in other points of the discussion the authors show to be totally convinced of that, stating, for example, that we perceive in a pragmatic way (p. 152). Another point we would like to raise is in relation to the existence of various levels of

intersubjective understanding. As we have seen, it is our belief that empathy is indeed one of the possible ways in which we understand what the other feels, an intermediate level among the different constructs we have listed. Gallagher and Zahavi say that this account is problematic if you intend to take a phenomenological point of view, since it is likely to distinguish a perceptual stage and a cognitive one. So we would clarify that when we speak about a "level" what we mean is a slightly different phenomenon in which there is something (as a specific neural activity) that is not added later than usual on the lower level, but there is something that is added or subtracted *during* that specific phenomenon (for example, think about empathy, that – in addition to the mechanisms involved in the previous levels – requires the self/other intentional distinction). The act of understanding is a joint act, because our cognitive system is integrated, and because – as previously stated – the very act of seeing the expressive movement of others leads us to understand its meaning, without any inference.

5. Conclusion

In conclusion, we hope that such an approach, that aims to connect more and more the philosophy of mind in general and phenomenology in particular to the cognitive sciences, will be increasingly followed and that the communication between these disciplines will be highly fertile. Still today in experimental sciences it is difficult for researchers to understand what might be the true and proper role of the phenomenological point of view, and the text of Gallagher and Zahavi is certainly useful in this direction. On the other hand, philosophers often are unfamiliar with the experimental literature, and often they use the same data just in a descriptive way, not arriving to a true interpretation of a class of experimental data and neurological disorders. We are trying to cross this bridge. We firmly believe it is indeed the only way to get a deeper understanding of cognitive functions.

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