

Autism Spectrum as an Empathy Disorder

Pio Alfredo Di Tore*, Tonia De Giuseppe and Felice Corona

Universita degli Studi di Salerno, Via Giovanni Paolo II, 132, 84084 Fisciano SA, Italy

*Corresponding author: Di Tore PA, Universita degli Studi di Salerno, Via Giovanni Paolo II, 132, 84084 Fisciano SA, Italy, Tel: 00390894825421, E-mail: alfredo.ditore@gmail.com

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Abstract

According to the DSM-V, the diagnosis of "autism spectrum disorder" requires the presence of at least three symptoms in the category of "deficit of social communication" and at least two in that of "repetitive behaviors." Children with autism, therefore, show a large deficit area of social communication, and most scholars agree that the lack of empathy figures prominently among these disorders. This work discusses the link between autism, empathy and perception – action process, according to neuroscientific evidences. The neuroscientific framework makes direct reference to a paradigm of perception/action that now appears permanently reversed with respect to the idea of perception-action that was dominant in the second half of the twentieth century, solidly hinged on cognitivist foundations and, in particular, on the computational metaphor. In this new paradigm, simply, perception is function of action.

Keywords: Autism; Empathy; DSM-V; Repetitive behaviors; Cognitive empathy; Anxiety

Introduction

The idea of autism spectrum as an empathy disorder extends the most dated ToM (Theory of Mind)/mind-blindness hypothesis. Theory of mind is the ability to attribute mental states to others, to infer what someone else is thinking or feeling, roughly attributable to the component that was generally defined 'cognitive empathy', distinct from the 'affective empathy', i.e., the ability to respond with an appropriate emotion to the mental states of someone else.

It is through the bodily experience and physical activity that the individual first senses the presence of the other and then comprises the actions of others. In other words, the kinesthesia is the basis of empathic processes, as understanding, for analogue transfer in the body of another agent, of a part of intentional actions performed by the subject and the intentions that precede and accompany those actions.

In this hypothesis, the fundamental characteristic of empathy consists in being both ourselves and the other. Following Berthoz, empathy is a dynamic process, which requires a doubling, requires the adoption of an egocentric point of view, but after an allocentric manipulation, while inhibiting the emotional contagion (typical of sympathy). Adopting this perspective, the ability to assess the perceptual egocentrism condition is of fundamental importance in the teaching-learning process.

Autism and Empathy

Empathy implies acknowledgment and understanding of one another's emotional state. According to Decety and Jackson, is the organization itself of our nervous system to provide the basic mechanism for resonance with others, the ability to simulate our actions and their consequences, as well as other people's actions and their consequences [1].

This mechanism proposed by Decety and Jackson [1], of the shared representation (neural patterns temporarily activated from the real perception or evoked from memory), driven by the common code between perception and action, provides the default mode for relating to others implicitly. This mechanism is based on the idea that the perception of a certain behavior in another individual automatically activates our representations of such behavior. The mechanism involves the fundamental physiological properties of the nervous system with regard to the continuity between the action and cognition.

In particular, Decety and Jackson [1] move away from meaning of empathy gained in some areas of psychology, who stressed the inductive, sometimes almost mechanical, aspect of empathy, to mark the intentional aspect of empathic process: "comparative psychologists view empathy as a kind of induction process by which emotions, both positive and negative, are shared and by which the probabilities of similar behavior are increased in the participants. In our view, this is not a sufficient mechanism to account for human empathy. Feelings may be shared, but humans are able to intentionally "feel for" and act on behalf of other people whose experiences differ greatly from their own".

The theoretical framework whereby neurosciences, and in particular Decety and Jackson [1] move makes direct reference to a paradigm of perception/action that now appears permanently reversed with respect to the idea of perception-action that was dominant in the second half of the twentieth century, solidly hinged on cognitivist foundations and, in particular, on the computational metaphor.

In this new paradigm, simply, perception is function of action. Leman [2] summarizes: "what happens in perception can be understood in terms of action" [1,3-5].

Berthoz is more explicit: "there is no perception of the world which does not refer in some way to the body which acts" [6].

Decety and Jackson [1] explicitly link the concept of empathy to the process of perception-action and the concept of shared representation. In neuroscience, evidence for this perception/action coupling ranges

from electrophysiological recordings in monkeys, in which mirror neurons that fire both during goal-directed actions and observation of actions performed by Rizzolatti et al. [7], to functional neuroimaging experiments in humans, which demonstrate that the neural circuit involved in action execution overlaps with that activated when actions are observed”.

This hypothesis is supported by abundant scientific literature in the field of perception and action, entitled under the name of common coding theory [5]. The basic assumption is that actions are coded in terms of the perceptible effects that are expected to generate. These representations, then, can be shared among different individuals. In other words, the isomorphism between representation and action allows the individual to implicitly learn the goal of others through the use of action representation system. Through bodily experience and physical activity, therefore, the individual perceives the presence of the other and then comprises the actions of others [8].

At the basis of empathy, in this case, we find the kinesthesia since it contributes to intersubjectivity, as understanding, for analog transfer in the body of another agent, of a part of the intentional actions of the subject and of the intentions that precede and accompany those actions. The empathic processes require the contribution (albeit not exclusively) of different brain mechanisms involved in spatial perception, the mental manipulation of the reference systems and the change of perspective [9].

In essence, as in space navigation we find useful to change spatial referents and even the same reference systems, so in social life often change referent taking others as a reference.

Assuming Berthoz and Thirioux, four main processes are the basis of empathic relationships:

1. The construction of a coherent perception of our body and its relationship with the environment. La capacità di risuonare con le emozioni e le percezioni altrui.
2. The ability to change point of view or perspective and move our body and our brain into others' body and brains (“Einfühlung”).
3. The ability to abandon the egocentric (or heterocentric) perspective (our point of view or the other's point of view) to adopt an allocentric perspective, inhibiting the emotional contagion [9].

In this vision, the "point of view" goes beyond metaphor for the ability to physically take the perspective of others, the ability to perform a simulated rotation of the body in space, a mental manipulation on ourselves and on the objects of the environment through a process that Berthoz and Jorland defines as a “mise à jour spatiale” [10].

One of the main components of empathy is based on the mental simulation of another's subjectivity that occurs, at least in humans, under conscious control. In fact, the activation of the shared representation mechanism, without self-awareness and emotional regulation, produces no empathy, but anxiety or distress.

In humans, the empathy construct is a more complex psychological state than that associated with the automatic sharing of emotions. As in other species, emotions and feelings can be shared between individuals, but humans are also able to "feel" and act intentionally on behalf of other persons whose experiences can differ greatly from them [1]. Empathy, in this sense, is to be considered an intentional skill.

According to the DSM-V, the diagnosis of "autism spectrum disorder" requires the presence of at least three symptoms in the category of "deficit of social communication" and at least two in that of "repetitive behaviors." Children with autism, therefore, show a large deficit area of social communication, and most scholars agree that the lack of empathy figures prominently among these disorders [11].

The cause of this deficit is, however, controversial. Decety and Jackson offer a complete and concise overview of the different positions [1].

Baron-Cohen has argued that the social difficulties in autism arise from a problem in a mentalizing mechanism; their work, in fact, is mainly based on the construct of the theory of mind [12]. "Theory of Mind" in the scientific literature relate autism, refers to “the ability of [the neurotypical] to attribute mental states (such as beliefs, desires, intentions, etc.) to themselves and other people, as a way of making sense of and predicting behaviour” [13]. They argue that the severe forms of autism can be characterized by mind blindness-inability to accurately infer or perhaps even to recognize the existence of thoughts and feelings in other people.

Other authors believe that children with autism have difficulty feel and express emotions and that this basic deficit prevents them from engaging in social interactions. Yet others argue that deficits in executive functions are the main cause for the observed social disorders in autism. Initially it was suggested that a waterfall model in which the lack of some aspects of interpersonal development in a prior stage upsets some developments in the later stages. Finally, researchers proposed that autism involves impaired attention to social cues such as facial expressions, language, gestures.

Decety and Moriguchi conclude that seems likely that children with autism exhibit difficulties in taking the perspective of others-activities that requires executive resources-but they have the required physiological substrate to show of emotion sharing capabilities [14]. In addition, several studies prove some deficit in the perception-action process. This deficit in the motor resonance can be the central node of a profound impairment of managing emotions. Yet, several studies suggest that a poor mirror system (MNS mirron Neuron System) may contribute to the motor and social problems experienced by people with autism spectrum disorders. The activation to a lesser extent of the mirror system in the motor cortex can be in part responsible for the social cognition deficit, in particular as it regards self-other representation, social skills, and the development of empathy.

Conclusion

These latest results seem to suggest that malfunctions of the mirror system hinder the normal development of self-other relationship, triggering waterfall processes that result in empathy deficit. What is, however, the dysfunctional element of empathy in autism is still unclear, and seems to be no sufficient empirical studies that have addressed the subject. According to available research, seem to be affected both fundamental mechanisms of empathy: the aspect linked to the perception process-action process and the metacognitive aspect of self-regulation of emotions. In any case, the literature is not sufficient to establish the extent to which these elements are altered in people with autism.

References

1. Decety J, Jackson PL (2004) The functional architecture of human empathy. *Behav Cogn Neurosci Rev* 3: 71-100.
2. Leman M (2008) *Embodied music: Cognition and mediation technology*. MIT Press.
3. Berthoz A (1997) *Le sens du mouvement*. Odile Jacob, Paris
4. Jeannerod M (1994) The representing brain: Neural correlates of motor intention and imagery. *Behav Brain sci* 17: 187-202.
5. Prinz W (1997) Perception and action planning. *Eur J Cogn Psychol* 9: 129-154.
6. Berthoz A (2008) The human brain “projects” upon the world, simplifying principles and rules for perception. *Neurobiology of Umwelt* Springer, Berlin.
7. Rizzolatti G, Fogassi L, Gallese V (2001) Neurophysiological mechanisms underlying the understanding and imitation of action. *Nat Rev Neurosci* 2: 661-670.
8. Gallagher S (2001) The practice of mind. Theory, simulation or primary interaction? *J Consci* 8: 83-108.
9. Berthoz A, Thirioux B (2010) A spatial and perspective change theory of the difference between sympathy and empathy. *Paragrana* 19: 32-61.
10. Berthoz A, Jorland G (2014) *Empathie (L')*. Odile Jacob, Paris.
11. Frith U (2001) Mind blindness and the brain in autism. *Neuron* 32: 969-979.
12. Baron-Cohen S (2002) The extreme male brain theory of autism. *Trends Cogn Sci* 6: 248-254.
13. Baron-Cohen S, Wheelwright S (2004) The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *J Autism Dev Disord* 34: 163-175.
14. Decety J, Moriguchi Y (2007) The empathic brain and its dysfunction in psychiatric populations: Implications for intervention across different clinical conditions. *Biopsychosoc Med* 1: 1.