

EMPATHY

THEORY OF THE FUNCTION OF "MIRROR"
NEURONS IN THE CONSTRUCTION OF
SOCIAL RELATIONSHIPS

Empathy

- Ability to perceive and understand the mental states of others is such a crucial skill for social development that it is deeply rooted in our brain: to help us get into the shoes of others comes to reproduce emotions, tactile and pain movements, and sensations.

- The first to use the term "empathy," translated from the German *Einfühlung*, was the philosopher Theodore Lipps (1903), who used it at the beginning of the twentieth century in the field of the psychology of aesthetic experience to indicate the relationship between the artist and the user who projects himself in work.

- In contemporary psychosocial sciences and cognitive neuroscience, the term refers to the ability to perceive, imagine and have a direct understanding of the mental states and behaviors of others.

Empathy is deeply rooted in the direct experience of our body, and it is precisely this type of experience that allows us to recognize others as like-minded people and to understand their inner states.

The ability to empathize is a fundamental component of communication between individuals and promotes the implementation of essential social skills, such as learning through observation and understanding the needs and desires of others: a capacity, in short, that in theory allows optimizing the interactions between individuals.

Observing other individuals facing danger can help them understand it without first-hand experience and thus without risking themselves.

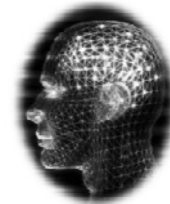
Classically, two excellent components of empathy are distinguished:

cognitive, which concerns the ability to adapt and understand the psychological perspective of other people,

The effective one refers to the ability to experience emotional reactions following the observation of the experiences of others (Baron-Cohen, 2004).

The interactions between the two components strengthen the empathetic interpersonal bond essential to recognize if the other is sad, angry, or happy.

MIRROR NEURONS
AND EMAPTIA



For neuroscience, mirror neurons are what DNA has been for biology.

Vilayanur Ramachandran

Mirror Neurons and Empathy

mirror neurons do not need an effective interaction with objects because they are the basis of understanding the meaning of the actions of others.

Through observation, the mirror neurons can codify the act and the intention we accomplish.

The mirror neurons in humans help develop experiential knowledge.

Mirror Neurons and Empathy

Vittorio Gallese identifies the role assumed by the neuron system "Mirror" not only in the understanding of the actions but also of the feelings of others

EMPATHY

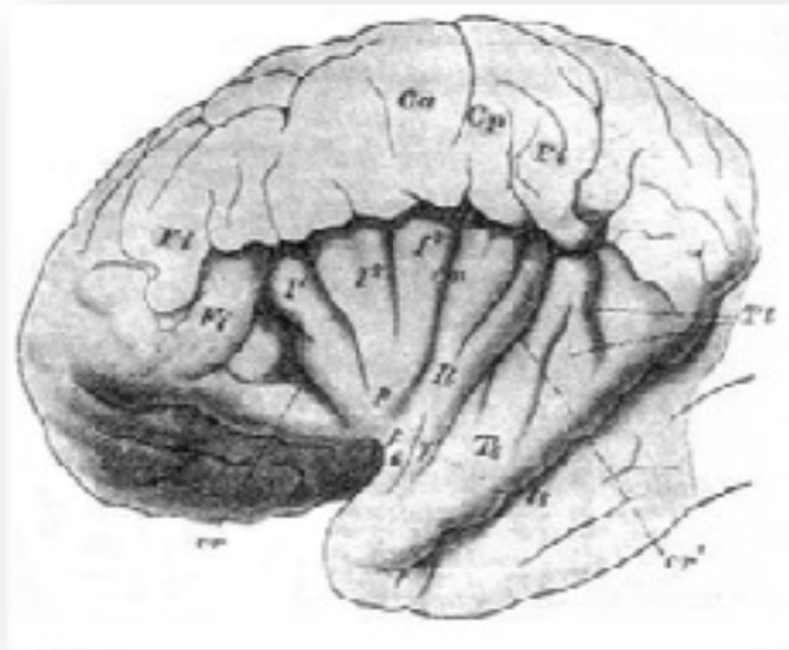
"particular ability to identify

in the other person to the point of understanding his thoughts and moods." (1999, Galimberti)

Mirror Neurons and Empathy

The insula is the center of the mirror mechanism that can immediately encode in the emotions correspondents the information from the visual areas that describe the faces or bodies that express it.

What is more, it is the cortical region in which the body's internal states are represented and constitutes a center of visceromotor integration whose activation causes the transformation of sensory inputs into visceral reactions.



THE INSULA IS IN OF THE SILVIO FRAGMENT

Mirror Neurons and Empathy

the "mirroring" of the emotions of others takes place:

- 1) by activation of the mirror neurons involved in the facial expressions or gestures of others (simulation of the action)
- 2) which in turn activates the emotional brain centers
- 3) which encodes the information received in the corresponding emotional formats.



the "mirroring" of the emotions of others

ALLOWS

to our brain of recognize immediately how much we see, we hear or we imagine doing by Others, because it triggers the same structures neural respectively motor or visceromotor) responsible for our actions or the our emotions.

ARISES

at the basis of behavior empathetic who is involved in the type of relation that you can establish with the other people.

even a merely cognitive perception could make others' emotions discriminate, but, according to William James (1890), these last would be "pale, cold, destitute of any emotional color"

On the other hand, they depend on sharing of visceromotor responses that contribute to defining the emotions

Mirror Neurons and Empathy

"Whatever the cortical areas involved (motor centers or visceromotor) and the type of induced resonance, the mirror neuron mechanism embodies on the neural plane that mode of understanding that, before any conceptual and linguistic mediation, shapes our experience of others."

(2006, Rizzolatti, Sinigaglia)

Mirror Neurons and Empathy

examples of areas in which to can advantageously apply the properties of mirror neurons.

Sport area motor skills = learning by imitation, early understanding of actions

Sport empathy (coach/athlete)

Activities to improve performance

The "mirror system" activity seems proportional to familiarity with the observed action. For example, classical dancers show greater activity in this system when observing a ballet rather than watching a South American dance (capoeira) that they have never practiced.

The study of actions suggests that the principle of resonance with the other could therefore reflect the basic social tendency of the human brain to understand the other through an internal simulation/imitation.

Lipps gave the example of the spectator who admires the acrobat walking on the wire and empathizes with the latter to the point of feeling inside him, suggesting that empathy implies a kind of inner imitation of the movements of others.

Theory of mind and stereotypes

How does mind theory apply if the intention is attributed not to a single individual but a group?

Stereotypes are precisely this: the aprioristic attribution of thought to a group of individuals based on common characteristics.

But the theory of the mind is a powerful tool to overcome the stereotype.

For example, we show two children, Jack and Sally, and we ask a third child who loves dolls. Most likely, Sally will answer because the answer is related to the cultural context, or there is a stereotype about the female role and preference in the choice of games.

If we show Jack and Sally, we say that Jack loves to play with dolls. Then we ask the children which of the two owns five dolls; many will answer "Jack!" since the theory of the mind is more potent than the stereotype, even if this path implies a process of mentalization (1975Williams).

The others are contagious.

- Another of the many illusions that my brain produces is my sense of self. I feel like an island of stability in a changing world.

The Italian teacher is desperately fickle: so friendly until a minute ago, and now she is so critical! I'm pretty different from her, but I can't help but reflect on her mood changes: It's contagious: I can't help imitating her!

- But it is not only she who is like that: every one of us is like that. We've already talked about empathy and how each of us automatically shares the actions we see others do.

Observing two individuals during a conversation that excites them, we will see them gradually synchronize their actions, overlap, and stretch their legs simultaneously, bending towards each other simultaneously. When we interact with someone, we imitate them. We become more like them.

Training mentalization through the movie's images
"What a beautiful film, I cried so much".... Empathy
with the feelings of others can come into play even
when we are perfectly aware that we are witnessing
a fiction (Frith and Frith, 1999).

We do not need to fully reproduce the behavior of
others to grasp their emotional value. Moreover, not
even understanding the meaning of the observed
actions requires their replication.

Our perceptions of the acts and emotional reactions of others are united by a mirror mechanism that allows our brain to immediately recognize what we see, feel, or imagine being done by others.

The mirror mechanism triggers the same neural structures (motor or visceromotor) responsible for our actions or emotions.

In the case of actions, it has been pointed out that this resonance mechanism is not the only way our brain can grasp the acts and intentions of others (Grèzes et al., 2004).

The immediate understanding, in the first person, of the emotions of others that the mechanism of mirror neurons makes possible also represents the necessary prerequisite for that empathic behavior that underlies a large part of our inter-individual relationships. Sharing on a visceromotor level the emotional state of another is something, however, different from feeling an empathic involvement towards him.

For example, we are not automatically induced to feel compassion when we see a grimace of pain.

We often feel compassion, but the two processes are distinct in that the second implies the first, not vice versa.

Compassion depends on other factors besides the recognition of pain: for example, on who the other is, what relationship we have with him, the fact that we are more or less able to put ourselves in his shoes, that we more or less intend to take charge of his emotional situation, his desires, his expectations, etc.

If it's someone we know or don't have anything against, the emotional resonance caused by the sight of their pain can lead us to compassion or pity.

However, things can be different if the other is an enemy or doing something that in that particular situation represents a potential danger for us, or if we are incurable sadists; if we do not miss the opportunity to enjoy the suffering of others, etc.

In all these cases, we immediately perceive the pain of the other; but not in all these cases, the perception determines the same type of empathic sharing.

The neuron's "Mirror" mechanism resonates only by the presentation of certain visual stimuli, and the selectivity of its responses depends solely on them.

(Singer, 2004)

Again, the parallel with understanding the actions of others can help us. The ability of the brain to resonate with the perception of the faces and gestures of others and to codify them immediately in visceromotor terms provides the neural substrate for an empathic sharing that, albeit in different ways and at different levels, substantiates and directs our conduct and our interim relations.

(Rizzolatti and Sinigaglia, 2006)

However, the fact remains that these mechanisms refer to a standard functional matrix and that it is similar to the one that intervenes in the perception of actions: whatever the cortical areas involved (motor centers or visceromotor) and the type of resonance induced, The mechanism of neurons "Mirror" embodies on the neural plane that mode of understanding that, before any conceptual and linguistic mediation, gives shape to our experience of others.

The movie's images represent a good gym of continuous exercise of mentalization and consequently of the theory of the mind, as they economically allow us to continuously enter the life and reasons of others.

The study of the motor system has directed us towards a neurophysiological analysis of the action that can identify the neural circuits that regulate our dealing with things.

The clarification of the nature and extent of the mechanism of neurons "Mirror" now seems to offer us a unitary basis from which to begin investigating the brain processes responsible for that diverse range of behaviors.

Behaviors mark our private existence and in which the network of our inter-individual and social relationships takes shape.