

Monkey see, monkey do? The role of mirror neurons in human behavior

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We are all familiar with the phrase "monkey see, monkey do" – but have we actually thought about what it means? Over the last two decades, neuroscience research has been investigating whether this popular saying has a real basis in human behavior.

Over twenty years ago, a team of scientists, led by Giacomo Rizzolatti at the University of Parma, discovered special brain cells, called mirror neurons, in monkeys. These cells appeared to be activated both when the monkey did something itself and when the monkey simply watched another monkey do the same thing.

The function of such mirror neurons in humans has since become a hot topic. In the latest issue of *Perspectives on Psychological Science*, a team of distinguished researchers debate whether the mirror neuron system is involved in such diverse processes as understanding speech, understanding the meaning of other people's actions, and understanding other people's minds.

Understanding Speech

The mirror neuron system probably plays some role in how we understand other people's speech, but it's likely that this role is much smaller than has been previously claimed. In fact, the role is small enough that it's unlikely that mirror neurons would be causal factors in our ability to understand speech. Mirror neuron-related processes may

only contribute to understanding what another person is trying to say if the room is very noisy or there are other complications to normal speech perception conditions.

Understanding Actions

Mirror neurons are believed to play a critical role in how and why we understand other people's actions. There are many physical actions, like Tiger Woods' golf swing, that we ourselves can't do, but we understand those actions anyway. However, contrary to what some mirror neuron proponents have suggested, doing isn't required for understanding. In fact, neuroimaging data reviewed in this article demonstrate that the actions we ourselves have the most experience doing — the actions we are best at doing and understand best — actually show less mirror neuron activity. Such findings suggest a need to reappraise the role of mirror neurons in guiding how we understand actions.

Understanding Minds

One of the most powerful roles suggested for the mirror neuron system in humans is that of understanding not just other people's physical actions or speech, but their minds and their intentions. It has been suggested that some persons, such as persons with autism, have difficulty understanding other people's minds and, therefore, might lack mirror neurons. However, numerous research studies reviewed in this article consistently show that persons with autism are highly capable of understanding the intentions of other people's actions, suggesting that our intuitions about persons with autism and mirror neurons needs to be revised.

This article presents some of the toughest questions asked about mirror neurons to date. The answers to those questions, guided by hundreds of

research studies, clarify the limits of the function of [mirror neurons](#) in humans.

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