Whether we like someone affects how our brain processes movement

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Hate the Lakers? Do the Celtics make you want to hurl? Whether you like someone can affect how your brain processes their actions, according to new research from the Brain and Creativity Institute at USC.

Most of the time, watching someone else move causes a 'mirroring' effect – that is, the parts of our brains responsible for motor skills are activated by watching someone else in action.

But a study by USC researchers appearing Oct. 5 in PLOS ONE shows that whether or not you like the person you're watching can actually have an effect on brain activity related to motor actions and lead to "differential processing" – for example, thinking the person you dislike is moving more slowly than they actually are.

"We address the basic question of whether social factors influence our perception of simple actions," says Lisa Aziz-Zadeh, an assistant professor with the Brain and Creativity Institute at USC and the Division of Occupational Science. "These results indicate that an abstract sense of group membership, and not only differences in physical appearance, can affect basic sensory-motor processing."

Past research has shown that race or physical similarity can influence brain processes, and we tend to have more empathy for people who look more like us.

In this study, the researchers controlled for race, age and gender, but introduced a back story that primed participants to dislike some of the people they were observing: half were presented as neo-Nazis, and half were presented as likeable and open-minded. All study participants recruited for the study were Jewish males.

The researchers found that when people viewed someone they disliked, a part of their brain that was otherwise activated in "mirroring" – the right ventral premotor cortex – had a different pattern of activity for the disliked individuals as compared to the liked individuals.

Importantly, the effect was specific to watching the other person move. There was no difference in brain activity in the motor region when participants simply watched still videos of the people they liked or disliked.

"Even something as basic as how we process visual stimuli of a movement is modulated by social factors, such as our interpersonal relationships and social group membership," says Mona Sobhani, lead author of the paper and a graduate student in neuroscience at USC. "These findings lend important support for the notion that social factors influence our perceptual processing."

Glenn R. Fox and Jonas Kaplan of the Brain and Creativity Insitute at USC were co-authors of the paper.

Provided by University of Southern California