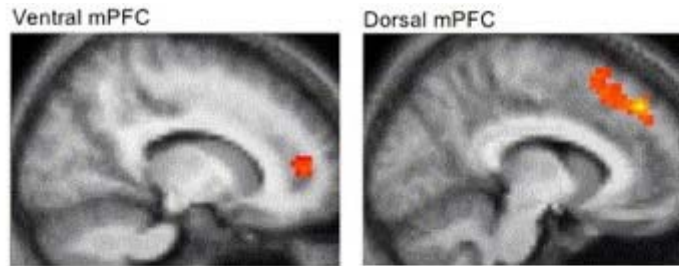


[How Harvard students perceive rednecks: The neural basis for prejudice](#)

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It appears that different brain areas respond strongly to people depending on whether they belong (left) or don't belong (right) to groups we identify ourselves with. Is this the neural basis of prejudice -- or the key to overcoming it?

from J. Mitchell, C. Macrae, and M VBanaji, "Dissociable Medial Prefrontal Contributions to Judgments of Similar and Dissimilar Others," *Neuron* v 50, issue 4: 655-663.

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The source of many of the world's woes might be tracked to a specific brain area responsible for identifying people that are not of our ilk. If so, a study on the neural bases of prejudice and its modulation ([read abstract](#) or [download the pdf](#)), by Jason Mitchell and Mahzarin R. Banaji, of Harvard University, and C Neil Macrae, at the University of Aberdeen in Scotland, published in *Neuron* in May 2006, could be as important to the burgeoning field of social cognitive neuroscience as Martin Luther King Jr.'s "I have a dream" speech was to the American civil rights movement.

Like-minded

How does the brain differentiate those who are similar to us from those who are different? Does it analyze differences in skin color, language, religion, height, eye color, foot size? Does it discriminate cat versus dog lovers, Pepsi versus Coke drinkers, Shiite versus Sunni, Crips versus Bloods?

In a way, the brain does all this and more by simply distinguishing those who don't meet various definitions of who we are. Specifically, a forebrain area called the dorsal medial prefrontal cortex (mPFC) appears to predict the behavior of members of outgroups by employing prejudices about their presumed background -- assumptions we make, in other words, based on what groups their various traits and contexts seem to put them in or out of. In this sense, outsiders, or those in outgroups, include humans of dissimilar cultural or ethnic identities or any other perceived stereotyped dissimilarity from your own self-identified groups, as well as non-human agents such as cartoons and animals and even inanimate moving objects. We distinguish otherness by all sorts of indicators, from the seemingly obviously, like sex or race, to the more obviously cultural, such as whether a person is wearing, say, a Yankees cap, a Dodgers cap, or a tee-shirt that says Baseball Sucks.

The focus of the paper under review here focuses less on the cues than on the brain areas that respond to them. The authors detailed the function of a particularly important brain area while studying the neural correlates of "mentalizing." [Mentalizing](#) is the ability to predict how other people will behave in a given situation. It combines the powers of [theory of mind](#) (our ideas about what other people know and do not know) with the presumptions that we hold about people with dissimilar backgrounds. Some researchers believe that mentalizing is a [function of the brain's mirror neuron system](#),

allowing us to predict the behavior of others by simulating how other people may feel in a given situation.

You might be a redneck if... you activate a Harvard student's dorsal mPFC

The experimenters used functional magnetic resonance imaging (fMRI) to scan the brains of Harvard and other Boston-area students while showing them pictures of other college-age people whom the researchers randomly described as either liberal northeastern students or conservative Midwest fundamentalist Christian students. The categories were a ruse. The pictures were actually downloaded from an online dating website and randomly assigned to the two groups (which were an invention of the researchers), with each group holding similar racial and gender mixes. The experimental participants, however, thought each person pictured really was from one group or the other because the experimenters contrived demographic information about each photo; this information was randomly reassigned to different pictures with each new experimental subject. The participants, then, were confronted with pictures of people who had randomly generated but coherent cultural and political identities already attached to them.

The participants themselves, meanwhile, had answered a questionnaire about their social and political attitudes, which the scientists used to classify them as liberal or conservative. How would these self-described liberals or conservatives react to the pictures of the (supposedly) liberal and conservative strangers?

Prior research had suggested that the medial prefrontal cortex, or mPFC, an area stretching up and forward from roughly beneath the temple, was known to be involved in mentalizing. The researchers hoped to distinguish whether two important parts of the medial PFC, the ventral mPFC (toward the front of the mPFC) and the dorsal mPFC (further toward the top of the head), might be reacting differently. The brain imaging results indeed indeed showed a dissociation between these two regions. Heightened activity in the ventral mPFC was associated with mentalization of self-similar people, whereas dorsal mPFC activity was associated with mentalization of self-dissimilar people. But when the participant pondered the subject in situations where an outsider was believed to behave in the same way as the participant would, activity in dorsal and ventral mPFC was equivalent. For instance, virtually all college students enjoy going home for Thanksgiving, irrespective of background, so a conservative student would recognize that even a liberal probably loves Thanksgiving, and his brain would set aside their differences when it came to that situation.

Mentalizing as Moralizing

The study adds valuable perspective to our understanding brain dynamics associated with stereotyping and prejudice. It shows, for instance, that the recognition of a common interest or trait in an "outsider" has the potential, at a brain-based level, to make that outsider seem less foreign and threatening. Prejudice may in part arise (and be easily aggravated) when people assume that members of an outgroup do not have corresponding mental states, due to their different backgrounds. Without a self-referential basis to mentalize individuals from an outgroup in a specific circumstance -- without the opportunity, in other words, to recognize the things they have in common -- perceivers may rely heavily on stereotypes to predict the mental states of outgroup members.

The experimenters certainly saw it that way. They concluded that "that a critical strategy for reducing prejudice may be to breach arbitrary boundaries based on social group membership by focusing instead on the shared similarity between oneself and outgroup members." This is not new advice. Yet it is heartening to see that it is firmly grounded in distinct patterns of neural activity. There may be a brain basis for reacting with prejudices for those that seem different. But there's also a brain basis for overriding those differences and seeing outsiders as more like us.

Stephen L. Macknik is director of the [Laboratory of Behavioral Neurophysiology](#) at the Barrow Neurological Institute in Phoenix, where he studies how vision and other basic mechanisms of awareness affect consciousness and behavior. Along with fellow *Mind Matters* and *Scientific American Mind* contributor Susana Martinez-Conde (with whom he co-authored a recent *Scientific American* cover story on eye movements -- [pdf download](#)), he also has a strong interest in the neuroscience of magic and illusions.