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Researchers find a brain link between affective understanding and interpersonal attraction

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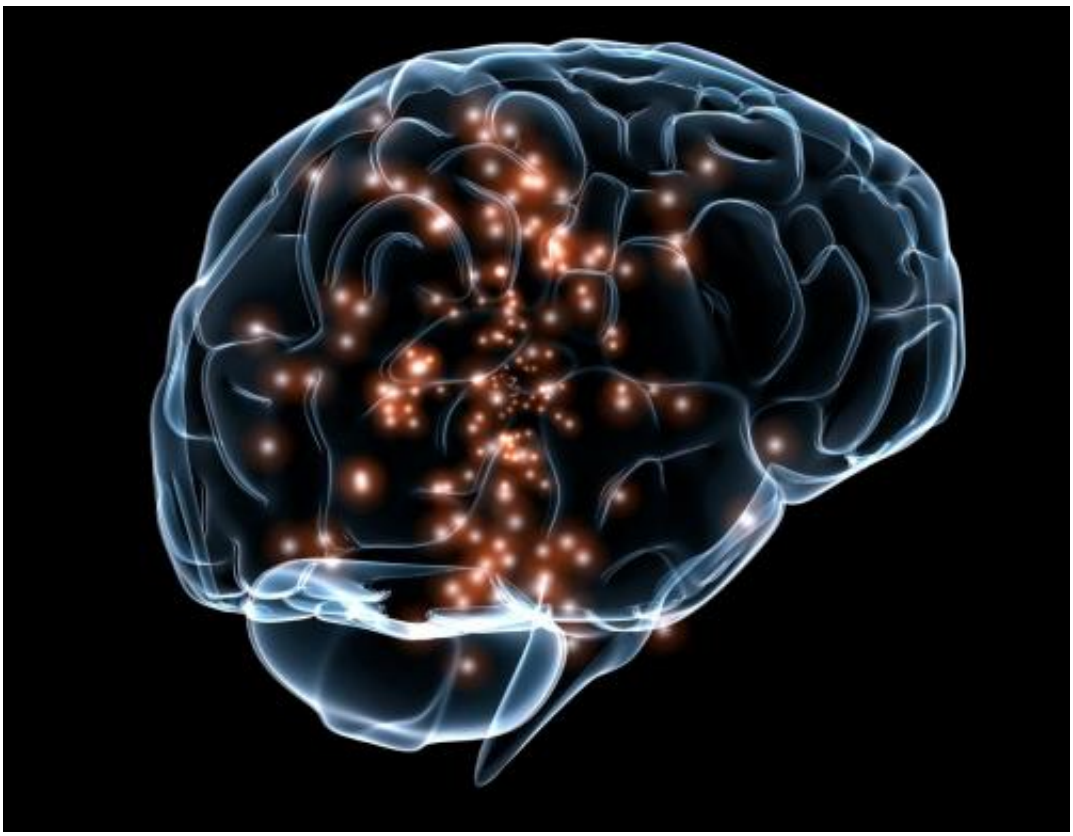

Credit: Wikimedia Commons

(Medical Xpress)—A team of researchers with members from a large number of institutions in Germany has conducted a study that has revealed more about the way interpersonal attraction works in the brain.

In their paper published in *Proceedings of the National Academy of Sciences*, the group describes two experiments they conducted with volunteers, their results and what they believe was revealed about the nature of the mechanism of attraction between people.

Most everyone has experienced near instant attraction to someone else, whether of a social or sexual nature, but few are able to pin down exactly why they felt that attraction. Based on two experiments they conducted with human volunteers, the researchers suggest it may have to do with matching neural circuitry.

To learn more about attraction, the researchers ran two experiments, the first consisted of showing 19 male and 21 female volunteers, videos of six different women as they experienced fear or sadness. The volunteers were asked to choose which emotion was being shown, and then to mark down how confident they were in their choice. To gauge how much of an attraction they volunteers felt for the women in the videos, they were asked to enlarge a picture of the woman both before and after seeing her in the video—each was also asked to answer questions about each woman, such as how much they would like to meet her in real life, if she would understand them, etc.

The second experiment was run with a different set of volunteers who were also asked to watch the woman in the videos, but the second group did so while undergoing an fMRI imaging—the researchers were specifically looking for activity in the part of the brain known to be associated with rewards.

The final phase of the experiment involved combining data from both experiments to see if any patterns might emerge. The researchers report that most of the volunteers were able to identify the emotions being portrayed, and the more confident they felt they were able to identify the correct emotion, the more attracted to her they felt. This was confirmed

in the fMRI scans—reward centers in the volunteers' brains lit up more when watching women they felt they could read their emotions better.

The researchers propose that their results suggest that in addition to physical attractiveness, people are attracted to other people due to their own feelings of similarity to another person, which gives them a feeling of understanding, or connectedness.

More information: A neural link between affective understanding and interpersonal attraction, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1516191113

Abstract
Being able to comprehend another person's intentions and emotions is essential for successful social interaction. However, it is currently unknown whether the human brain possesses a neural mechanism that attracts people to others whose mental states they can easily understand. Here we show that the degree to which a person feels attracted to another person can change while they observe the other's affective behavior, and that these changes depend on the observer's confidence in having correctly understood the other's affective state. At the neural level, changes in interpersonal attraction were predicted by activity in the reward system of the observer's brain. Importantly, these effects were specific to individual observer–target pairs and could not be explained by a target's general attractiveness or expressivity. Furthermore, using multivoxel pattern analysis (MVPA), we found that neural activity in the reward system of the observer's brain varied as a function of how well the target's affective behavior matched the observer's neural representation of the underlying affective state: The greater the match, the larger the brain's intrinsic reward signal. Taken together, these findings provide evidence that reward-related neural activity during social encounters signals how well an individual's "neural vocabulary" is suited to infer another person's affective state, and that this intrinsic

reward might be a source of changes in interpersonal attraction.

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