

# Scientists identify the neural circuitry of first impressions

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Neuroscientists at New York University and Harvard University have identified the neural systems involved in forming first impressions of others. The findings, which show how we encode social information and then evaluate it in making these initial judgments, are reported in the most recent issue of the journal *Nature Neuroscience*.

Making sense of others in a social interaction is not easy—each new person we meet may be a source of ambiguous and complex information. However, when encountering someone for the first time, we are often quick to judge whether we like that person or not. In fact, previous research has shown that people make relatively accurate and persistent evaluations based on rapid observations of even less than half a minute.

The *Nature Neuroscience* study sought to investigate the brain mechanisms that give rise to impressions formed immediately after meeting a new person. It was conducted in the laboratory of Elizabeth Phelps, an NYU professor of psychology and neuroscience and one of the co-authors. The study's lead author was Daniela Schiller, a post-doctoral fellow in NYU's Department of Psychology and its Center for Neural Science. The other co-authors were: Jonathan Freeman, a former NYU undergraduate who is currently a doctoral candidate at Tufts University; James Mitchell, an assistant professor at Harvard University's Department of Psychology; and James Uleman, a professor in NYU's Department of Psychology.

To explore the process of first impression formation, the researchers designed an experiment in which they examined the brain activity when these participants made initial evaluations of fictional individuals. The participants were given written profiles of 20 individuals implying different personality traits. The profiles, presented along with pictures of these fictional individuals, included scenarios indicating both positive (e.g., intelligent) and negative (e.g., lazy) traits in their depictions.

After reading the profiles, the participants were asked to evaluate how much they liked or disliked each profiled individual. These impressions varied depending on how much each participant valued the different positive and negative traits conveyed. For instance, if a participant liked intelligence more than they disliked laziness, he or she might form a positive impression. During this impression formation period, participants' brain activity was observed using functional magnetic resonance imaging (fMRI). Based on the participants' ratings, the researchers were able to determine the difference in brain activity when they encountered information that was more, as opposed to less, important in forming the first impression.

The neuroimaging results showed significant activity in two regions of the brain during the encoding of impression-relevant information. The first, the amygdala, is a small structure in the medial temporal lobe that previously has been linked to emotional learning about inanimate objects, as well as social evaluations based on trust or race group. The second, the posterior cingulate cortex (PCC), has been linked to economic decision-making and assigning subjective value to rewards. In the *Nature Neuroscience* study, these parts of the brain, which are implicated in value processing in a number of domains, showed increased activity when encoding information that was consistent with the impression.

"Even when we only briefly encounter others, brain regions that are

important in forming evaluations are engaged, resulting in a quick first impression," commented NYU's Phelps.

NYU's Schiller, the study's lead author, concluded, "When encoding everyday social information during a social encounter, these regions sort information based on its personal and subjective significance, and summarize it into an ultimate score--a first impression."

Source: New York University

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