

# Parkinson's disease makes it harder to figure out how other people feel

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Scientists are beginning to find out why people with Parkinson's disease often feel socially awkward. Parkinson's patients find it harder to recognize expressions of emotion in other people's faces and voices, report two studies published by the American Psychological Association.

One of the studies raises questions about how deep brain stimulation, the best available treatment for patients who no longer respond to medication, more strongly affects the recognition of fear and sadness.

A [neurodegenerative disorder](#), Parkinson's causes tremors, stiffness and balance problems, as well as fairly frequent depression and [dementia](#).

In the March issue of *Neuropsychology*, Heather Gray, PhD, and Linda Tickle-Degnen, PhD, report that people with [Parkinson's disease](#), compared with matched controls, often have difficulty discerning how others are feeling.

Their meta-analysis of 34 different studies using data from 1,295 participants shows a robust link between Parkinson's and specific deficits in recognizing emotions, especially [negative emotions](#), across different types of stimuli and tasks.

The meta-analysis, conducted at Harvard Medical School and Tufts University, found that patients typically had some degree of problem identifying emotion from faces and voices.

Further clarification is provided in a second study that showed that deep-brain stimulation, compared with medication, caused a consistently large deficit in the recognition of fear and sadness - two key [facial expressions](#) that, when understood, aid survival. That study is published in the January issue of *Neuropsychology*.

Researchers led by Julie Péron, PhD, at the

Centre Hospitalier Universitaire de Rennes in France, compared the ability of people with Parkinson's in three different groups to recognize facial emotions: 24 advanced patients implanted with deep-brain stimulators after they didn't respond or were sensitive to oral levodopa (the usual drug for the disease); 20 advanced patients given apomorphine hydrochloride by injection or infusion pump while they waited an implant; and 30 healthy controls.

Researchers tested all participants using standard photographs of facial expression before and three months after they were treated. Before implantation of the stimulators, all participants read facial expressions equally well.

Patients in the surgical group were implanted with stimulators, electrical devices that prod the brain's subthalamic nucleus, a small, lens-shaped structure, to normalize the nerve signals that control movement. This nucleus is part of the basal ganglia system, which is thought to integrate movement, cognition and emotion.

Three months after treatment, only the patients with stimulators - not the drug-treated patients or the healthy controls - were significantly worse at recognizing fear and sadness. Patients with stimulators confused those expressions with others, such as surprise, or even no emotion. Medicated patients and healthy controls were either accurate about fear and [sadness](#) or occasionally mistook them for other negative emotions, such as disgust.

"Having Parkinson's predisposes an individual to errors in emotion recognition," said Gray. "The research in France, along with previous studies, indicates that deep-brain stimulation produces an even more severe deficit."

Why would treating a movement disorder affect the perception of emotions? Implants affect a part of the brain that reaches across functions, so the

authors suggested that the same electrical stimulation that calms over-excited motor activity may also somehow inhibit [emotional](#) processing.

PhD, Tufts University; Neuropsychology, Vol. 24, No. 2.

Although the impact of Parkinson's and deep-brain stimulation varies by patient, it's important to understand. "The first step is to educate patients and their close associates about the potential for emotion recognition difficulties, so they can learn to manage some of the social consequences, such as misunderstanding and frustration," said Gray and Tickle-Degnen. The next step might be training in emotion recognition, which they said has shown promise.

Provided by American Psychological Association

According to the National Institutes of Health, deep-brain stimulation is used to treat a variety of disabling neurological symptoms, including Parkinson's and essential tremor, a common neurological movement disorder.

At present, the procedure is used only for patients whose symptoms cannot be adequately controlled with medications. According to Péron, about 15 percent of Parkinson's disease patients are thought capable of benefiting from the surgery.

**More information:**

-- "Subthalamic Nucleus Stimulation Affects Fear and Sadness Recognition in Parkinson's Disease," Julie Péron, PhD, Isabelle Biseul, PhD, and Emmanuelle Leray, PhD, Centre Hospitalier Universitaire de Rennes and Centre Eugène Marquis; Siobhan Vicente, PhD, Centre Hospitalier Universitaire de Rennes and Centre Hospitalier Guillaume Régnier; Florence Le Jeune, MD, PhD, Centre Hospitalier Universitaire de Rennes and Centre Eugène Marquis; Sophie Drapier, MD, Centre Hospitalier Universitaire de Rennes; Dominique Drapier, MD, PhD, Centre Hospitalier Universitaire de Rennes and Centre Hospitalier Guillaume Régnier; Paul Sauleau, MD, PhD, Claire Haegelen, MD, and Marc Vérin, MD, PhD, Centre Hospitalier Universitaire de Rennes; Neuropsychology, Vol. 24, No. 1.

-- "A Meta-Analysis of Performance on Emotion Recognition Tasks in Parkinson's Disease," Heather M. Gray, PhD, Cambridge Health Alliance, Harvard Medical School, and Linda Tickle-Degnen,

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