

Prefrontal damage = no empathy

New research from Israel, discovered that people with brain damage to the prefrontal cortex region, have trouble comprehending sarcasm. The prefrontal cortex, handles the task of detecting hidden meaning, a crucial component of sarcasm. If that part of the brain is out of commission, the irony doesn't come through. This research was published in the journal *Neuropsychology*.

People with prefrontal brain damage suffer from difficulties in understanding other people's mental states, and they lack empathy, said researchers from the University of Haifa. Therefore, they can't understand what the speaker really is talking about, and get only the literal meaning.

In the study, Shamay-Tsoory and her colleagues first enrolled 58 subjects—25 participants with prefrontal-lobe damage, 17 who were healthy and 16 who had damage to the posterior lobe of the brain. Then they tested each person by exposing them to several “neutral” and sarcastic comments recorded by actors as part of a story. This “sarcasm meter” was designed to gauge how well the subjects could comprehend the unique kind of irony that is sarcasm.

For example, actors read phrases such as “don't work too hard” in both a neutral sense (meaning “you're a hard worker”) and a sarcastic sense (meaning “you're a real slacker”). Each comment came in proper context as part of a story about, say, a worker who's sleeping or a worker who's grinding away at his job.

All the subjects understood the sarcasm except for those with damage to the prefrontal area, which is above the eye sockets and behind the forehead. And among those, people with damage to a specific area known as the ventromedial area had the most trouble deciphering sarcasm.

The researchers think lesions in several parts of the brain can contribute to an inability to understand sarcasm. But, they wrote, this particular area is important because it draws on your innate recognition of the emotions of other people—empathy—and past experiences to comprehend a speaker's intentions.