

Does Botox impair human understanding?

June 16, 2010

Hollywood film directors were among the first to recognize the downside of Botox. Several years ago, Martin Scorsese, whose works include *Raging Bull*, *Taxi Driver* and *The Departed*, became an early and outspoken critic of the anti-aging treatment. The Academy Award-winning director complained that it was becoming increasingly difficult to find an actress who could use her face to express the range of human emotion, especially anger.

It may be worse than the famed director suspected. New evidence is now suggesting that Botox may harm not only the expression of emotion, but also its comprehension. The facial paralysis that does away with unwanted frown lines may cripple a crucial ability to mimic and process emotional language.

That's the conclusion of David Havas, a psychological scientist at the University of Wisconsin—Madison. Havas and his colleagues did not set out to study the unintended consequences of the controversial cosmetic treatment. Their goal was to study the role of the nervous system in normal language processing, specifically the idea that people comprehend emotional language in part by involuntarily simulating emotions with their facial nerves and muscles. They used injections of the neurotoxin to disable certain facial nerves as a way of testing this theory.

The scientists studied first-time patients who were scheduled for Botox treatment to get rid of their frown lines—a treatment that works by paralyzing a particular set of facial muscles. Since frowns are an important element in anger and sadness, they wanted to see if disabling the frown muscles impaired comprehension of sad and happy sentences—but not happy ones. They had the patients read dozens of sentences of each kind, both before Botox treatment and two weeks later, timing them to see if there was any slowdown in reading speed as a result of the treatment.

The results were unambiguous. As [reported on line this week](#) in the journal *Psychological Science*, the scientists not only verified their theory of language processing, they also showed that getting rid of frowns selectively impairs the ability to understand angry and sad sentences. In other words, it's normal to frown—undetected—when we try to process anger and sadness. If we can't frown, our emotional understanding breaks down.

The popularity of Botox has of course spread far beyond Hollywood since Scorsese first sounded the alarm about the acting biz. Indeed, the director might now be worried about the emotional depth of his viewing audience as well.

Wray Herbert's [new book](#), *On Second Thought: Outsmarting Your Mind's Hard-Wired Habits*, will be published by Crown in September. Excerpts from "We're Only Human" appear regularly in *The Huffington Post* and *Scientific American Mind*.