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# BRAIN & BODY



## Foreign Accent Syndrome for Beginners

How a brain injury in rare instances can impact pronunciation, intonation and inflection. By Michele Solis for MSN Health & Fitness

A brain injury can be devastating: It can leave you blind, deaf, and even paralyzed. In the grand scheme of things, ending up with a different voice with an unfamiliar accent as a result of brain injury may seem minor. But Foreign Accent Syndrome (FAS) can be distressing too, because our voice, like our face, is integral to our identity.

People with this rare condition suddenly develop an accent due to a stroke, a tumor or trauma. The accent is beyond their control, and lends them an exotic and worldly air, even though they may not have traveled much or even studied a foreign language.

But FAS is more than a "gee whiz" entry into the annals of science. This bewildering phenomenon gives us a look at the speech-producing machinery inside the brain.

## A generic accent

Sheila Blumstein, a professor at Brown University, was a little skeptical when she first encountered a woman with FAS during a patient presentation in 1983, thinking that as a trained linguist, she wouldn't hear the so-called accent. But as soon as the woman spoke, Blumstein was convinced. "There was no question in my mind that she sounded as though she was speaking with a foreign accent," she recalls.

The next surprise came when the specialists in the room were asked what kind of accent it was. Some said Russian, others said French. "We were all over the place," she says.

They were all wrong, Blumstein later found out. Rather than relying on her own ear, she set about measuring the acoustics of the woman's speech to understand what exactly gave it its foreign sound. By breaking speech down into its component vowels, consonants and melodies, she found that some parts of speech were not normal for English speakers—or for any other language speakers.

These oddities contribute to what Blumstein calls a "generic" foreign accent—one that sounds different, but doesn't really belong to a particular language. We label it as French or Russian, or something else depending on our own experiences. "We're listening through the veil of our own language," says Blumstein. "And that shapes a lot of what we hear."

For example, when making a statement, English speakers typically lower the pitch of their voice. But a

person with FAS might end a statement with an upward lilt, maybe reminding us of a French exchange

student we once knew. In FAS, the parts of words that are emphasized, or stressed, change, which can alter consonants.

Instead of pronouncing "butter" as "budder" as we typically do in America, some FAS patients will crisply pronounce the Ts, bringing to mind a British governess.

And vowel sounds start to merge. An "eh" sound tinged with an "ah" could transform an all-American "yeah" into a Swedish-sounding "yah."

These changes occur consistently, which adds to the impression of a foreign accent. Fooled, we try to place the accent, which as Blumstein puts it, "is in the ears of the beholder."

#### The brain's speech stereo

Studying what comes out of the mouth can tell us a lot about what is going on in the brain.

Blumstein says that people with FAS have taught us that what you say is controlled separately from how you say it. What they want to say comes readily, but how it is pronounced is changed.

Think of popping a CD into a stereo. The CD provides the message, but the stereo's control panel shapes what the music ultimately sounds like. The volume knob controls loudness, other buttons increase bass or treble, and on a fancier system, equalizer sliders boost different frequencies. These controls bring out different features of the music, giving it different tones, different accents.

Like the multiple controls on a stereo, there are many parts of the brain that contribute to pronunciation. The different types of brain injury in people with FAS attest to this distributed organization. No one place is the accent center, says Blumstein. Instead a whole ensemble of brain areas embellishes speech with an accent.

This accent orchestra resides largely in the frontal part of our brains, which direct the mouth and tongue movements and exhalations responsible for shaping the final output of speech. This makes speech therapy somewhat of a long shot for helping someone with FAS. It's kind of like holding a pen between your teeth while talking; no amount of trying will improve your pen-induced garble.

But sometimes, FAS drifts away on its own, leaving the patient with their former drawl or twang, or lack of any noticeable accent, as the case may be. This release from the foreign accent points to the mysterious ways in which a brain reacts to—and recovers from—injury.

# **Audio:**

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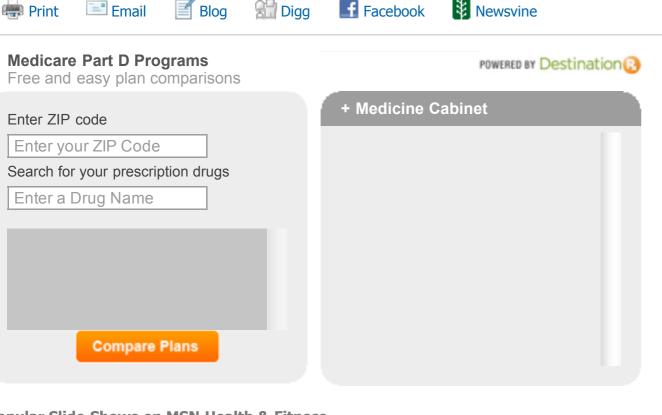
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## **About Michele Solis**



After spending 15 years in the lab doing her own neuroscience research, Michele Solis is now putting her Ph.D. to work as a science writer. Her work covers a variety of topics including autism, linguistics, and animal communication. She contributes regularly to the Autism Speaks, Simons Foundation, and Crosscut Web sites.



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