Affective prosody in frontotemporal dementia
The importance of “pitching it right”

“It’s not what you said; it’s how you said it” How many times have you said or heard that while interacting with a family member or colleague? It is clear that tone of voice (modulations in pitch, loudness, and rhythm of speech, together called prosody) conveys a great deal of intent and emotion in nearly every exchange. Imagine that your spouse’s response to a very special birthday gift is “I’ve never seen anything like it,” spoken in a completely monotone voice. You would not be able to tell if he or she loves it or hates it. On the flip side, suppose you say to your spouse, lovingly, “I can hardly believe we have been married for 20 years.” But she thinks you sound angry when you say that, so she retorts that she is happy to divorce you to put you out of your misery. As reported by Nevler et al.1 in this issue of Neurology®, people with the behavioral variant of frontotemporal dementia (bvFTD) often have severe impairments in expression of emotion through affective prosody. They also often have trouble understanding affective prosody in others.2 These deficits can lead to frequent misinterpretation and failures of communication. Deficits in prosody expression and comprehension are not specific to bvFTD. Survivors of right middle cerebral artery stroke3,4 and people with autism,5 schizophrenia,6 and Parkinson disease7 also can have marked impairment in affective prosody recognition or production.

Despite the importance of these problems in everyday interactions and interpersonal relationships, they have received relatively little attention in the clinic. One reason clinicians have not routinely evaluated affective prosody is that available tests of prosody are time-consuming (e.g., the Florida Affect Battery,8 the Aprosodia Battery9). Nevler et al. show that automated analysis of fundamental frequency range provides a rapid assessment of affective prosody expression in bvFTD. Shortened phrase length also distinguished speech in patients with bvFTD from speech in normal controls. Other investigators have reported that impaired prosody expression can be measured by the coefficient of variation in fundamental frequencyA–D or other acoustic measures. Further studies are necessary to identify measures that best capture listeners’ judgments of the emotion of speech. Although prosody is a multifaceted acoustic phenomenon, which results from variations of intensity, rhythm, and length, the pitch contour or the “melody” of the voice during speech independently conveys emotion.9 Accordingly, variation of the fundamental frequency represents a suitable proxy of affective prosody, which has been widely validated. Thus, this study from the University of Pennsylvania provides a first step towards efficiently measuring this disabling social communication problem in people with bvFTD and other neurologic diseases.

One of the current problems in behavioral neurology is the difficulty in establishing the diagnosis of bvFTD, which largely rests on caregivers or family report. The implementation of objective measures, such as the one proposed by Nevler et al., represents an effort in the right direction. In contrast to the expert perceptual judgment of speech samples, automatic analysis of acoustic measures provides an efficient and reliable gauge of core acoustic phenomena that underpin emotional expression in speech. Enthusiasm should be measured, however, in light of potential caveats. First, these results need to be replicated and validated in other centers and measured in other patient populations to evaluate the specificity of the identified abnormalities. This type of analysis might be useful in distinguishing other neurologic diseases. Indeed, the analysis of speech samples and extraction of acoustic components is a strategy that has proven useful in distinguishing between nonfluent/agrammatic and logopenic variants of primary progressive aphasia as well.10 Second, evaluation of affective prosody in other languages is necessary to confirm the universality of this acoustic marker. Although a large-scale implementation of automatic acoustic measures can be daunting, this study has delivered promising outcomes that potentially can be translated in clinical practice as an efficient and reliable ancillary diagnostic tool.

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