Understanding emotion in different languages: Emotional prosody recognition in bilinguals and the impact of background noise.

Gabrielle O. Stokes, Adriana R. Miller, Michele T. Diaz, Susanne M. Brouwer, Janet G. van Hell

The Pennsylvania State University

There are two main components to how we speak: what we say and how we say it. Currently, improvements in cross culture communication focus on translational efforts and how to get messages across semantically—the *what* we say. However, one of the most crucial components of connecting and communicating is the emotions we convey when we speak—the *how*. There have been limited studies investigating emotional prosody recognition, especially between different languages. Therefore, the results gathered from this studied have filled this gap in research (and applied it further to bilingual individuals) and increased our knowledge on the cultural effects on emotion interpretation rather than just comprehension. Multiple previous studies have examined how humans recognize emotion in a foreign language that they don't speak, with an overarching goal to examine whether aspects of emotional prosody may have universal qualities (e.g., Paulman & Uskul, 2014; Pell et al., 2009). Their findings concluded that there is an "in-group advantage" in emotional prosody recognition where participants more accurately recognize emotions in their native language compared to a foreign language (Pell et al., 2009). However, it remains to be seen how these effects apply to bilingual individuals. This follow-up study investigated how this "in-group advantage" applies to individuals in their second language as well as their first language. At Radboud University in the Netherlands, Dutch-English bilinguals listened to pseudo-sentences in Dutch (L1), English (L2), Arabic (foreign), and Hindi (foreign). These pseudo-sentences were created to match the phonetics and syntax of each language but containing meaningless words, allowing participants to only focus on the prosodic elements of the speech (for an English example, the fector egzullin the boshent). For each language, participants listened to pseudo-utterances spoken with happy, sad, fearful, angry and neutral intonation. After listening to each pseudo-utterance participants determined which emotion they thought the speaker expressed using a button press. Based on this task, we discovered that emotion identification accuracy for second language was better than that for both foreign language and native language. Therefore, the "in-group advantage" applies to second language even more than first language. Furthermore, to investigate the effect of background noise on emotion recognition (to mimic a real-world scenario), pseudo-utterances were presented in quiet or in two-talker Dutch babble. We found that participants had decreased emotion identification accuracy in the babble condition when compared to the quiet condition. In addition, results also indicated that earlier age of English acquisition and higher English proficiency (as measured by LexTALE) were positively correlated with emotion decision accuracy. The results of this study will help to improve cross-cultural communication and recognize the influences of an individual's culture and environment on language interpretation.

References:

Lemhöfer, K., & Broersma, M. (2012). Introducing LexTALE: A quick and valid Lexical Test for Advanced Learners of English. *Behavior Research Methods*, *44*(2), 325–343.

Paulmann, S., & Uskul, A. K. (2014). Cross-cultural emotional prosody recognition: Evidence from Chinese and British listeners. Cognition and Emotion, 28(2), 230-244.

Pell, M. D., Monetta, L., Paulmann, S., & Kotz, S. A. (2009). Recognizing emotions in a foreign language. Journal of Nonverbal Behavior, 33(2), 107–120.

Pell, M. D., Paulmann, S., Dara, C., Alasseri, A., & Kotz, S. A. (2009). Factors in the recognition of vocally expressed emotions: A comparison of four languages. Journal of Phonetics, 37, 417-435.