

Music and native language interact in the brain

November 30 2017



Credit: CC0 Public Domain

Finnish speakers showed an advantage in auditory duration processing compared to German speakers in a recent doctoral study on auditory processing of sound in people with different linguistic and musical

backgrounds. In Finnish speakers, musical expertise was associated with enhanced behavioral frequency discrimination.

The brain's auditory system can be shaped by exposure to different auditory environments, such as [native language](#) and musical training. A recent doctoral study by Caitlin Dawson from University of Helsinki focuses on interacting effects of native language patterns and musical experience on early auditory processing of basic sound features. Methods included electrophysiological brainstem recording as well as a set of behavioral auditory [discrimination](#) tasks.

The auditory tasks were designed to find discrimination thresholds for intensity, frequency, and duration. A self-report questionnaire on musical sophistication was also used in the analyses.

"We found that Finnish speakers showed an advantage in duration processing in the brainstem, compared to German speakers. The reason for this may be that Finnish language includes long and short sounds that determine the meaning of words, which trains Finnish speakers' brains to be very sensitive to the timing of sounds," Dawson says.

For Finnish speakers, musical expertise was associated with enhanced behavioral frequency discrimination. Mandarin speaking musicians showed enhanced behavioral discrimination in both frequency and duration. Mandarin Chinese language has tones which determine the meaning of words.

"The perceptual effects of musical expertise were not reflected in brainstem responses in either Finnish or Mandarin speakers. This might be because language is an earlier and more essential skill than music, and native speakers are experts at their own language," Dawson says.

The results suggest that musical expertise does not enhance all auditory

features equally for all language speakers; native [language](#) phonological patterns may modulate the enhancing effects of musical expertise on processing of specific features.

Caitlin Dawson will defend the doctoral dissertation entitled "Effects of linguistic and musical expertise on early auditory processing – Electrophysiological and behavioral evidence" in the Faculty of Medicine, University of Helsinki, on 4 December 2017.

More information: <urn.fi/URN:ISBN:978-951-51-3844-6>

Provided by University of Helsinki

Citation: Music and native language interact in the brain (2017, November 30) retrieved 6 May 2024 from <https://medicalxpress.com/news/2017-11-music-native-language-interact-brain.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.