

Ability to perceive perfect pitch is more common than previously thought

June 21 2017



Credit: CC0 Public Domain

New research finds that perception of absolute pitch in music is far more common than previously thought, challenging conventional wisdom that the ability to detect perfect pitch is rare.

U of A music professor Elizabeth Margulis and two colleagues at Tel Aviv University in Israel published their findings this month in the journal *Music Perception*.

A classic study in music psychology established that most [people](#) make sense of music in terms of relative [pitch](#), or where notes are placed in relation to a central note. The corollary notion has been that only a few people – one in 10,000 – can access [absolute pitch](#).

Margulis and her team, however, found that absolute pitch perception is far more common than previously believed, particularly in people without formal musical training. A secondary finding points to the possibility that this cognitive capacity to track absolute pitch and key impacts the emotional experience of listening to music.

The paper, "Implicit Absolute Pitch Representation Affects Basic Tonal Perception," draws on research conducted by Margulis and Zohar Eitan in 2014, when Eitan spent a semester at the U of A as a visiting scholar. Moshe Shay Ben-Haim in Tel Aviv also worked on the paper.

Researchers extended the Krumhansl probe tone method, which asks people to rate how well individual notes fit within the context of a set of scales or chord series they have just heard. The results are predictable, with people rating in-key notes higher than notes not found in that series.

But when people were given two very different musical contexts – G major, which uses mainly white keys on a piano, and D-flat major, which uses mainly black keys and is less common in Western music – that predictability changed. People rated the in-key notes in G-major higher than the in-key notes in D-flat major, meaning their perceptions were influenced by their familiarity with the specific notes.

That demonstrates that they were responding not just to relative pitch, as

commonly assumed, but also to absolute pitch, Margulis said.

"The way we implemented the probe tone test, we were able to show that the rules are not the same for all the keys," she said. "That means that people have some kind of representation of absolute pitch, even when they don't think they know anything about music. They're not special 'one-in-10,000' absolute pitch holders, and they're not Mozart," she said. "Our challenge now is finding the right tools to draw that out implicitly and show what they've got in their brains that they're not able to report explicitly."

In a separate study reported in the same paper, researchers added another innovation, asking people to rate the tension they heard in the music. Tension is often related to the emotional aspect of the listening experience. Tension ratings tended to relate inversely to the goodness-of-fit ratings, which makes sense: the less well a note fits the context, the tenser it sounds. But people also thought the music sounded tenser when it was in the less common key.

Again, this shows that people are tracking notes in terms of absolute pitch and applying a cognitive dimension to their affective listening experience, whether they know it or not.

"There's an imprint of this absolute pitch representation we don't even know we have, but it's actually shaping these expressive dimensions of music, and how tense the music seems," Margulis said. "We're trying to understand, why does some [music](#) move us, and others not? Here, we're arguing that one tiny player in that big question is actually absolute pitch, and whether we're hearing pitches that are more common in the environment to which we're typically exposed, or whether we're hearing rare pitches or keys."

More information: Zohar Eitan et al. Implicit Absolute Pitch

Representation Affects Basic Tonal Perception, *Music Perception: An Interdisciplinary Journal* (2017). [DOI: 10.1525/mp.2017.34.5.569](https://doi.org/10.1525/mp.2017.34.5.569)

Provided by University of Arkansas

Citation: Ability to perceive perfect pitch is more common than previously thought (2017, June 21) retrieved 27 April 2024 from <https://phys.org/news/2017-06-ability-pitch-common-previously-thought.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.