

Perfect pitch: Knowing the note may be in your genes

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People with perfect pitch seem to possess their own inner pitch pipe, allowing them to sing a specific note without first hearing a reference tone. This skill has long been associated with early and extensive musical training, but new research suggests that perfect pitch may have as much to do with genetics as it does with learning an instrument or studying voice.

Previous research does draw a connection between early [musical training](#) and the likelihood of a person developing [perfect pitch](#), which is also referred to as absolute pitch. This is especially true among speakers of tonal languages, such as Mandarin. Speakers of English and other non-tonal languages are far less likely to develop perfect pitch, even if they were exposed to early and extensive musical training.

"We have wondered if perfect pitch is as much about [nature or nurture](#)," said Diana Deutsch, a professor of psychology at the University of California, San Diego. "What is clear is that musically trained individuals who speak a non-tone language can acquire absolute pitch, but it is still a remarkably rare talent. What has been less clear is why most others with equivalent musical training do not." Deutsch and her colleague Kevin Dooley present their findings at the 164th meeting of the Acoustical Society of America (ASA), held Oct. 22 – 26 in Kansas City, Missouri.

To shine light on this question, the researchers studied 27 English speaking adults, 7 of whom possessed perfect pitch. All began extensive

musical training at or before the age of 6. The researchers tested the subjects' memory ability using a test known as the digit span, which measures how many digits a person can hold in memory and immediately recall in correct order. They presented the digits either visually or auditorily; for the auditory test, the subject listened to the numbers through headphones, and for the visual test the digits were presented successively at the center of a [computer screen](#).

The people with perfect pitch substantially outperformed the others in the audio portion of the test. In contrast, for the visual test, the two groups exhibited very similar performance, and their scores were not significantly different from each other. This is significant because other researchers have shown previously that auditory digit span has a genetic component.

"Our finding therefore shows that perfect pitch is associated with an unusually large memory span for speech sounds," said Deutsch, "which in turn could facilitate the development of associations between pitches and their spoken languages early in life."

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