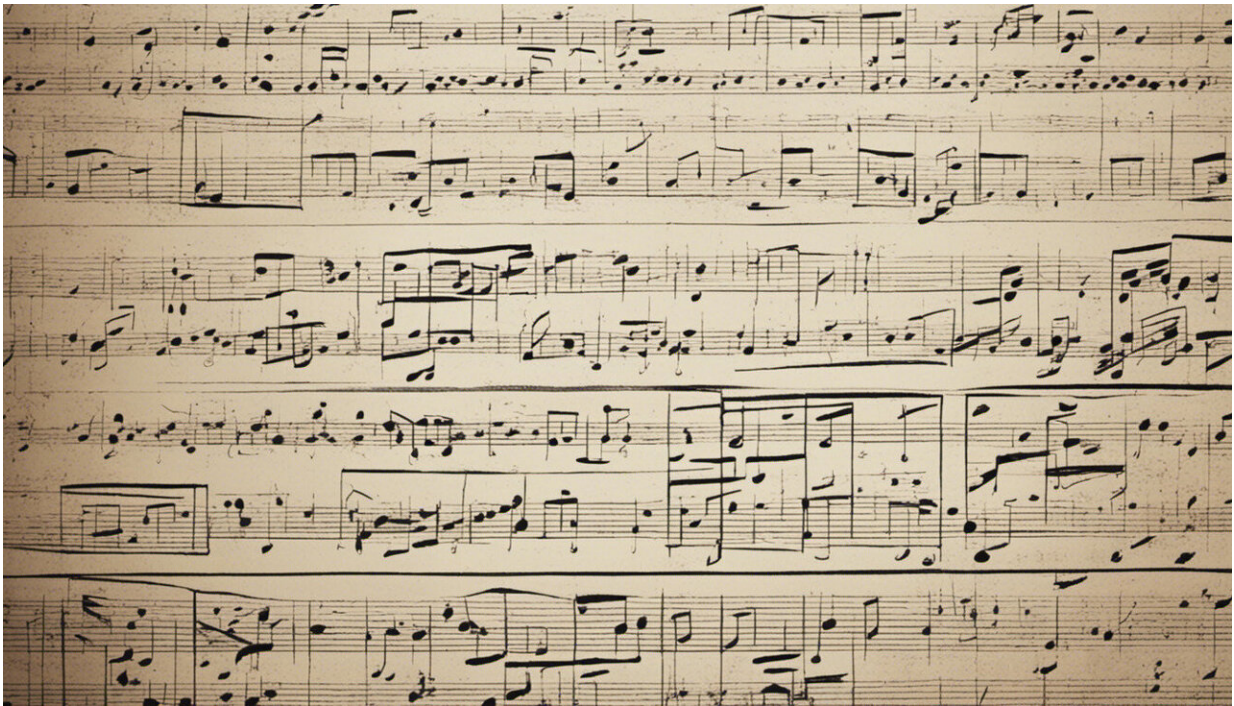


# You're not tone deaf and you know more about music than you think

March 8 2022, by Alexander Albury, Virginia Penhune

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Credit: AI-generated image ([disclaimer](#))

Think of the last time you were at a birthday party and the obligatory rendition of "Happy Birthday" began. If you're like most people, you probably joined in without a second thought. Would you be surprised to know that the version of "Happy Birthday" you're used to singing might be different every time?

The musical key that "Happy Birthday" is sung in often depends on the note that the person who starts the song chooses to sing first. This starting point determines the key for the rest of the song. We're still able to recognize the song because the intervals—the differences in pitch between notes—remain the same and the notes just shift up or down depending on where that starting point is.

This act of shifting pitches up or down but preserving the intervals between notes is called transposition and although it may not seem like a simple task, people tend to handle it quite well. In one study, [both children and adults easily recognized common songs like "Happy Birthday" and "Twinkle Twinkle Little Star" after they were presented at various keys.](#)

How is it that most people can perform this complex musical task even in the absence of any formal musical training? Even though you may not realize it, you actually have a lot more musical knowledge than you might think.

## Pattern recognition

Where does this knowledge of music come from? You get it from your [everyday life](#) without realizing it thanks to a process called [statistical learning](#). This concept suggests that we learn about our environment through passive exposure and that we constantly use this knowledge to interpret the world around us. Statistical learning is how we learn to recognize patterns and can be used to explain complex learning processes like [language acquisition](#). Significantly, this process is almost entirely subconscious—we learn just by being exposed to new information.

In the case of music, we have no shortage of experience to draw from. We hear music constantly, whether intentionally or as a bystander. Riding in a car, standing in an elevator, sitting in a waiting room—we

can't help but be exposed to music. And we gain something from this passive exposure: We become familiar with the patterns and regularities of the music of our culture and we develop an implicit knowledge of music.

This process happens very early on. [Eight-month-old babies can recognize patterns in sequences of tones](#) and some studies show that even at [three months of age](#), babies can recognize changes in short melodies. This implicit musical knowledge only grows as we get older and is why most people might not be as musically challenged as they think.

In one study, people were recruited to sing in a public park and their performance was compared to that of professional singers. The results showed that the [amateur singers' pitch and timing accuracy was close to that of experts](#). This aligns with other research showing that people without musical training also [perform well on pitch discrimination tasks](#) in which they have to recognize the difference between two tones that vary slightly in pitch.

These results might seem surprising at first, but they are backed by large-scale studies as well. While many people might claim to be tone deaf, some research estimates that the rate of congenital amusia—a condition in which a person is unable to recognize or process musical information—[is less than two percent in the general population](#).

## Cultural expectations

Our implicit knowledge of music also leads us to develop expectations of how music should sound. That's why music from other cultures might sound strange at first—[it deviates from the expectations you've developed based on the music of your own culture](#).

This is also true across musical genres. Jazz musicians were found to be

[more accurate at predicting changes in jazz music than classical musicians and non-musicians.](#)

Our expectations are also responsible for generating [musical pleasure](#) and the desire to move when listening to music, and have been used as a tool by artists and composers for centuries to elicit stronger emotions.

So although you might not be aware of it, you're a walking music processing machine. And next time you find yourself singing "Happy Birthday," you can sing a bit more confidently with your hidden [music](#) expertise in mind.

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