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Name That Tone

■ People With Perfect Pitch Identify Musical Notes As Easily As They Tell **Black From White**

April 11, 2006

By WILLIAM WEIR, Courant Staff Writer

The one-second squeak of an opening door produces several notes before settling somewhere around an F. Outside, a passing bus might sing in the key of C sharp.

On a recent day at Au Bon Pain in New Haven, the whine of a coffee machine contributes to the symphony of background noises.

"The pitch is oscillating back and forth, just flat of a standard B," Hannah Collins says. A pre-med student at Yale, Collins belongs to a small sliver of the population able to distinguish tones as easily as most people distinguish colors.

Perfect pitch - being able to name or sing a particular note without a reference tone - is fairly scarce. Researchers estimate that fewer than 1 in 10,000 has it.

Lacking perfect pitch hardly dooms one to musical mediocrity - as Stravinsky, Ravel and Wagner would tell you - but there's no denying that it gives musicians a leg up. Mozart had it, as did Beethoven, Bach, Handel and Chopin. So do Yo Yo Ma, Bobby McFerrin and Phil Spector.

Despite all the wonder it evokes, we still haven't figured out how people get it. Is it genetics, early musical training or your native language? For more than a century, researchers (who prefer to call it "absolute pitch") have hacked away at the question without reaching agreement.

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David Ross, a resident in the Yale Department of Psychiatry, thinks it's something you're born with. Some people may think they have it after developing a heightened sense of relative pitch (identifying notes with a pitch pipe or other reference tone) and even memorize the sound of certain pitches. But true perfect pitch gives tones a quality most of us can't even imagine. For those with it, one tone is as distinct from another as brown is from orange.

More commonly, researchers believe early musical reinforcement is necessary. Ross thinks this theory endures because many scientists are reluctant to attribute certain traits - especially those as soughtafter as perfect pitch - to genetics. It's easier to think of it as something you earn.

"People take great umbrage at the idea that nonmusicians could have perfect pitch," Ross says. Though a longtime musician himself, Ross speaks in awe of his subjects' abilities.

It's Not `Relative'

Perfect pitch can make for some great party tricks, but to have people constantly calling out "A-flat!" "C-sharp!" at you would probably get annoying. Collins is a good sport about it when a reporter does just that. "How about a D?" comes the request. A little self-conscious about the surrounding customers at the coffee shop, Collins quietly hums. And, indeed, the electronic tuner she brought along confirms it as a "D."

Collins, who served as one of the subjects in Ross' study, can look at a sheet of music and hear in her head just how it will sound. She downplays her ability with a shrug. But to someone who struggles with even crude relative pitch, her demonstration is an amazing - almost otherworldly - display.

That may explain why so many researchers in the field also happen to be musicians with imperfect pitch.

"People who have it, frankly, are tired of people like you and me pestering them about it," says Robert Zatorre, a researcher at McGill University in Montreal. "It's not something they've worked at."

An organist of imperfect pitch, Zatorre has been conducting his own research into the phenomenon at McGill. He thinks Ross is right about a lot of things but isn't convinced that he has proved genetics is the determining factor.



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Zatorre's research partner, Daniel Levitin, said that although people may be born with a preternatural sense of pitch, they can't fully exploit their ability without early musical training. Music is a lot like language, he says. Unless you learn the names of notes and their relation to each other early on, you'll never absorb all its intricacies.

Training Doesn't Help

Ross thinks most pitch tests are set up to favor subjects who know the names of notes, which would require musical training. While still a Ph.D. candidate at Yale's medical school, Ross tested 150 subjects, asking them to match certain tones without naming them. The most difficult test involved more than 70 tones and proved all but impossible for those lacking perfect pitch - including veteran musicians from the Yale School of Music.

Based on his studies, Ross estimates that Yale has up to 100 times more people with perfect pitch than the population at large. He's not convinced that the music programs at Yale entirely explain this and hopes to look closer at the phenomenon in future studies.

But those with perfect pitch picked out the tones with relative ease. Among these was a 6-year-old girl whose ability was first suspected when she told her mother that the microwave oven cooked food in F.

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But some researchers say the theory is flawed. Most Japanese also possess perfect pitch, they say, and they don't speak tonally. That tends to support the genetic theory, with Asians apparently enjoying a genetic advantage.

Deutsch shakes off the criticism, saying it comes from researchers who don't understand the nuances of Japanese. The language does incorporate tonality, she says, but in a different way.

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In all, she has a lot of concerns about the field of pitch research. Deutsch, who has perfect pitch, says researchers too often are struck by a sense of mystery about the ability.

"People who don't have absolute pitch regard it as this amazing and wonderful faculty that can be associated with some extreme musicality," she said. "We should look at it as why people in our society don't have it."

One Drawback

Anyone who has spent hours doing listening exercises can sympathize with the frustration of being an imperfectly pitched musician. But perfect pitch doesn't come without its drawbacks. One odd, and not entirely understood, side effect is that it warps with age and can eventually make playing in tune almost impossible.

For Collins, key changes can be particularly tricky. When a conductor decides to change a composition's key, musicians with relative pitch can switch the notes wholesale. But when Collins is part of an ensemble, it means mentally reworking the music note for note.

"Sometimes you just have to turn it off; you have to re-adjust," she says.

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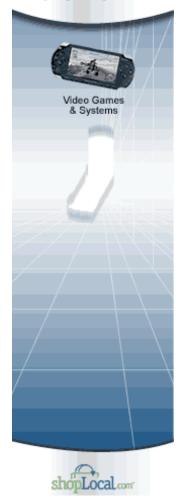
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