

Speaking In Tones

By Alan Hall

PERFECT PITCH. Vietnamese children, who speak a language in which the meaning of words is conveyed by their tone, acquire perfect musical pitch at an early age.

In the Western world, musicians with so-called perfect, or absolute, pitch are an envied rarity. While most people trained in music learn to identify a note from a reference point, say C, those with perfect pitch can sing an E flat on demand and tell you that the wind blowing through the trees outside is G sharp and that the distant car horn is an F. Only one in 10,000 people seem to have this talent; the rest must get along with what's called "relative pitch." Scientists studying this intriguing phenomenon have drawn various conclusions--some insist it can be learned at an early age, others that it is hereditary. But it now seems that perfect pitch is just a fact of life for many people in Asia. In a paper that will be presented on November 4 at the annual meeting of the Acoustical Society of America, Diana Deutsch, Trevor Henthorn of the Department of Psychology at the University of California San Diego and Mark Dolson of E-mu/Creative Technology Center show that native speakers of tonal languages, even those with no musical training whatsoever, exhibit a remarkable ability to sound perfect pitches. The researchers studied subjects speaking Vietnamese and Mandarin Chinese. In both these languages the meanings of words are conveyed by the pitch at which they are uttered. Seven Vietnamese subjects were given a list of 10 words to read rapidly; the words were chosen so that they spanned a range of tones common in Vietnamese speech. The recorded samples were analyzed for pitch at 5 millisecond intervals and an average pitch was obtained. The next day, subjects were presented with the same list and the results were compared. The results showed an astonishing consistency. The data from all seven subjects displayed averaged pitch differences of less than 1.1 semitone, and four of the seven displayed averaged pitch differences of less than .5 semitone. Then the investigators turned to Mandarin. They asked 15 Mandarin speakers to read a list of 12 words which also spanned the range of tones frequent in Mandarin speech. But this time, they made the test a bit harder. Each subject was asked to read each word twice after a 20 second wait. So the same words were read four times--twice on each of two days. Four different scores were calculated from the recordings--between the first and second readings on the same day, and between the first and second readings on different days. Once again, surprising consistencies emerged. For all comparisons, half of the subjects showed averaged pitch differences of less than .5 semitone, and one-third of the subjects showed averaged pitch differences of less than .25 semitone. In addition, statistical analyses found no significant difference in the degree of pitch consistency in reading out the word list on different days, compared with reading it twice in immediate succession. The investigators conclude that the subjects must have been referring to precise and stable absolute pitch templates in pronouncing the words they were asked to read. If that is the case, then the potential for acquiring absolute pitch may be universal, and it can be realized by the association of pitches with meaningful words very early in life. So, if you wish your children to be imbued with perfect pitch, teach them Mandarin. Or maybe play a tape over the crib that sings E flat in E flat and G sharp in G sharp. Still, none of this explains why a handful of Westerners end up with perfect pitch, seemingly by accident.