

A Is For Audibility

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Words are funny things. Used to clarify, they make things simple. Used to obfuscate (as in "eschew obfuscatory neologisms"), they cloud the issue. Sometimes words that were meant to clarify cloud. The four of us believe that "articulation," as in "articulation index," is such a word.

The term "articulation index" or AI has caused a great deal of confusion because it does not say what it means. Indeed, it sounds as though it had to do with speech production, as in "When Demosthenes first placed pebbles in his mouth, his articulation index was undoubtedly quite low."

This is not the only example of audiology jargon that we could cite. Bob Bilger used to be fond of pointing out, to any offending speaker, that we don't measure speech discrimination with word lists, but, rather, we obtain a word-recognition score. In such testing, we don't use speech; we use words.

And we don't discriminate between words; we recognize them (or fail to).

In separate articles, we have independently introduced count-the-dot audiograms.¹⁻³ Our intent was to provide clinically friendly versions of the articulation index. These have met with gratifying success, probably for the same reason we introduced them in the first place: the absence of such a tool. In a sense, these audiograms are a return to the old days when the speech area was always outlined on the audiogram, a practice that somehow fell out of favor for a generation or so. The difference is that, with the help of a few dots, we can now quantify the importance of the speech sounds that are being missed.

The next step appears to be to provide a more intuitive name for the result of these simplified clinical versions of the AI. Just as we have gradually learned that what we measure with word lists is a word-recognition score, we believe it is time to recognize that the AI measures the amount of audible speech information.

More precisely, the AI is a measure of the proportion of speech cues that are audible, a factor that is strongly correlated to the intelligibility of speech. (The proposed new ANSI standard on the articulation index changes the identifier AI to SII, which stands for speech intelligibility index.⁴) In the simplified clinical versions of the AI, unlike their more elaborate predecessors, the only factor reducing audibility is threshold elevation. The clinical AI is not so

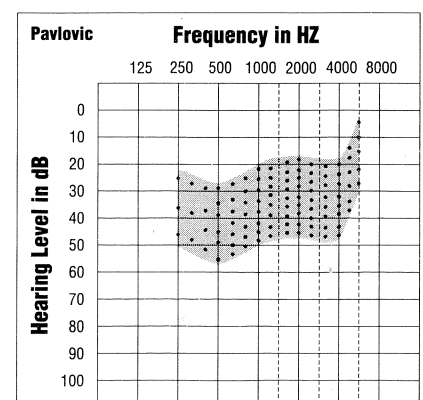
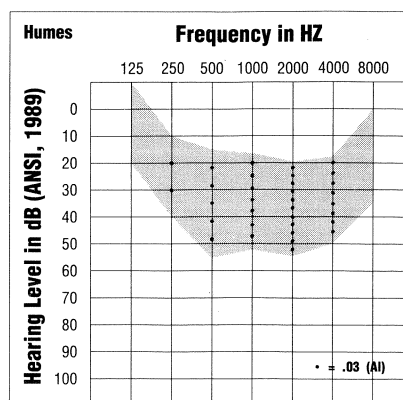
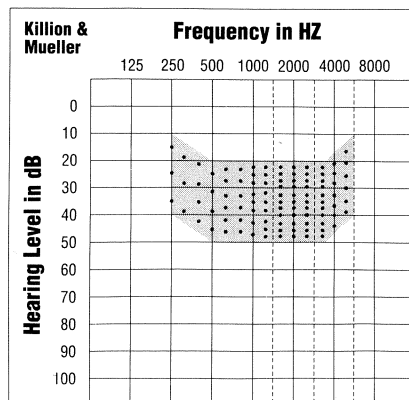
much an articulation index as a (speech cue) audibility index.

That is the main point of this article, but we will go on. Just as we suggest that the AI can be thought of interchangeably as the audibility index or the articulation index, we suggest that the result of the dot counting can be equally well expressed as a percentage (0 to 100%) rather than a proportion (0.0 to 1.0). Again, the more traditional proportion would be allowed to exist (we couldn't kill it if we wanted to), but perhaps relegated to the closet.

Why bother with these changes? Because the AI is a powerful tool for hearing aid fitting and guidance counseling. Pascoe said it well in his carefully understated summary: "Although it is true that mere detection of a sound does not insure its recognition, it is even more true that without detection the probabilities of correct identification are greatly diminished."⁵ Our changes make audibility considerations easier.

REFERENCES

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4. ANSI S3, 79-199X Draft 3.0, 12/17/92, Methods for the calculation of the Speech Intelligibility Index.
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The above count-the-dot audiograms represent simplified methods of calculation of the audibility index. From left are Killion and Mueller's method, reprinted from *The Hearing Journal*, September 1990, Vol. 43, No. 9, page 15; Humes's method, reprinted, with permission, from *Journal of the American Academy of Audiology*, 1991, Volume 2, page 65; and Pavlovic's method, reprinted, with permission, from *Hearing Instruments*, September 1991, Vol. 42, No. 9, page 23.