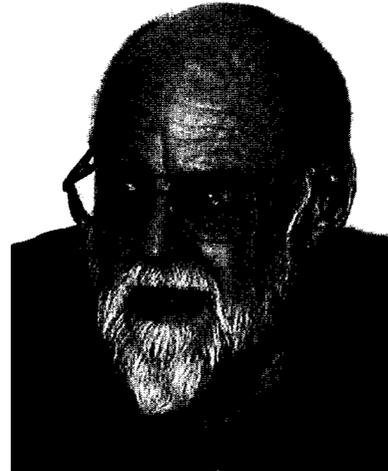


Editorial

Jitter Produces Rollover



One of the more curious symptoms of auditory disorder is “rollover,” the paradoxical decline in the performance versus intensity function for speech materials at high speech intensities. As the speech level is increased above audibility threshold, performance grows to a maximum value in the expected manner. But as the tester continues to increase the test level, performance declines, sometimes gradually, sometimes precipitously. In extreme cases, it may fall all the way back down to 0 percent. The phenomenon was first observed in cases of acoustic neuroma. Over the past two decades it has been documented as well in multiple sclerosis, tumors of the low brain stem, and in many elderly persons with speech understanding problems.

The fact that the rollover phenomenon is almost invariably associated with abnormalities of the auditory brainstem response (ABR) has led many individuals to suspect that a failure of synchrony in neural firing at the low brainstem level underlies the problem of poor speech understanding at high speech intensities. It is supposed that the importance of synchronous firing increases with speech intensity and causes maximal disruption at the highest speed levels.

In this issue of *JAAA*, Canadian authors Terence Miranda and M. Kathleen Pichora-Fuller, of the University of British Columbia, add another important piece to the puzzle. They show that the rollover effect can be simulated in young adults with normal hearing by creating temporal “jitter” in the speech waveform. They attempted to simulate the effect of actual neural dyssynchrony by delaying successive 50- μ sec segments of the speech waveform by an amount determined by the momentary amplitude of a randomly varying noise. The end effect was to introduce random error, or “jitter,” in the amplitudes of successive samples of the low-frequency components of the speech waveform. Interestingly enough, this manipulation produced significant rollover in 16 young listeners with normal hearing. In the case of unaltered NU-6 words, the average rollover effect was only 4 percent. But in the jitter condition, the average rollover was 16 percent. A similar effect was noted for W-22 words.

This is yet another example of how a well-conceived basic research effort can contribute to a better understanding of a clinical issue.

James Jerger
Editor-in-Chief

Special Announcement

With this issue of *JAAA* we initiate a new feature as a service to our colleagues in Mexico, in Central and South America, and throughout the world. Beginning with this first issue of 2002, the abstract of each article in *JAAA* will be translated into Spanish. All translations will be carried out

by Dr. Juan Madriz, our international editorial associate in Costa Rica. Although the new feature is aimed primarily at our Spanish-speaking colleagues, English-speaking readers may take advantage of the opportunity to broaden their linguistic horizons.