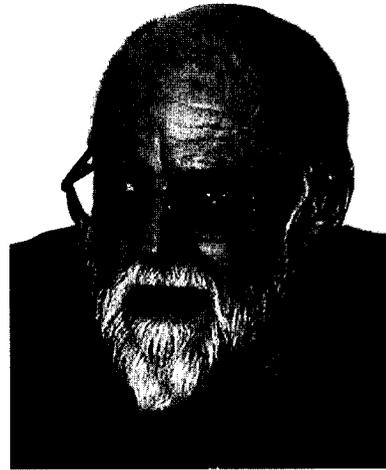


Editorial

The Auditory Steady-State Response



In an editorial in a 1998 issue of *JAAA*, I called attention to a landmark article by Picton, Durieux-Smith, Champagne, Whittingham, Moran, Giguere, and Beauregard (*JAAA* 9:315-331) entitled "Objective Evaluation of Aided Thresholds Using Auditory Steady-State Responses." I wrote:

From the very moment that auditory evoked potentials were first recorded from the human brain, audiologists have sought to exploit these responses to evaluate the hearing status of persons difficult to test by conventional behavioral techniques, especially infants and young children. But early efforts were frustrating and disappointing. Neither the middle-latency response nor the late vertex response proved entirely satisfactory. Reproducibility and dependence on the state of the central nervous system were persistent problems. The advent of the auditory brainstem response (ABR), in the 1970s, raised our hopes substantially. Here was a response that could be reproduced with amazing accuracy, yet seemed utterly impervious to fluctuations in CNS state. And, indeed, during the past two decades the ABR has revolutionized audiologic practice, especially in the arena of pediatric evaluation. But the ABR has two inherent problems that limit its usefulness. First, it is not sufficiently frequency specific for many applications. Second, it works best as a response to an acoustic transient rather than a response to a continuous acoustic signal. Because of these inherent limitations, efforts to use the ABR in, for example, the measurement of the functional gain of a hearing aid have had only limited success.

But for the past two decades an evoked potential particularly suited to frequency-specific measurement, the auditory steady-state response (ASSR), has been under close scrutiny. The steady-state response is a brain potential evoked by periodic amplitude modulation of a carrier frequency. It yields a waveform closely following the time course of the stimulus modulation and a response specific to the frequency of the carrier. By varying the intensity of the eliciting stimulus one can seek the threshold response. Investigators have shown that steady-state responses can be recorded at intensities very near behavioral thresholds at the frequency under test in both normally hearing and hearing-impaired individuals...

This is an important contribution to pediatric audiologic evaluation. It fills a gap between the desirable properties of the transient-induced ABR and the often excessive state dependence of the later, frequency-specific evoked responses.

In the 4 years since I wrote that editorial, the exciting promise of the ASSR in the evaluation of infants and young children has been developed and refined by a number of investigators in Canada, Australia, and the United States. In this special issue of *JAAA*, guest editor Barbara Cone-Wesson, of the University of Arizona, brings together in two successive issues seven articles dealing with the successful effort to exploit ASSR in pediatric audiology. These exciting reports are particularly relevant to the rapidly expanding arena of universal newborn hearing screening.

James Jerger
Editor-in-Chief

Visit the *JAAA* Web site at <http://www.audiology.org/professional/jaaa/>