Abstract 1.

Preferred presentation session: Free Paper

Thematic area and presentation category: Auditory neurophysiology, electrophysiology.

Authors and affiliations:

1.	Joaquin T. Valderrama, PhD [#,a,b,c]	joaquin.valderrama@nal.gov.au	+61 2 9412 6878
2.	Ingrid Yeend, MA [a,b,c]	ingrid.yeend@nal.gov.au	+61 2 9412 6981
3.	Jermy Pang, MAudSA (CCP) [a]	jermy.pang@nal.gov.au	+61 2 9412 6709
4.	Elizabeth Beach, PhD [a,b]	elizabeth.beach@nal.gov.au	+61 2 9412 6983
5.	Mridula Sharma, PhD [b,c]	mridula.sharma@mq.edu.au.	+61 2 9850 4863
6.	Bram Van Dun, PhD [a,b]	bram.vandun@nal.gov.au.	+61 2 9412 6967
7.	Harvey Dillon, PhD [a,b]	harvey.dillon@nal.gov.au	+61 2 9412 6828

[a] *Institution*: National Acoustic Laboratories, Australian Hearing. [b] *Institution*: The HEARing CRC. [c] *Institution*: Department of Linguistic, Macquarie University. *Address for* [a, b and c]: Australian Hearing Hub, 16 University Avenue, Macquarie University, NSW 2109, Sydney, Australia. [#] Presenting author.

Abstract

Title: Auditory brainstem response wave I amplitude correlates with speech perception in noise

Background: Understanding speech in noise is a challenging task that requires the correct encoding of sound along the auditory pathway, as well as several cognitive skills such as selective attention, working memory and semantic comprehension. Understanding the role that the brainstem plays may have important implications for prevention of hearing loss.

Methods: This is a correlational study. 13 subjects (6 males, 44±7 yr), at the time of writing, with normal audiograms participated. Speech perception in noise performance was measured behaviorally through the Listening in Spatialized Noise – Sentences (LiSN-S) test, which provides an evaluation of a subject's ability to make use of spatial and voice cues. Auditory brainstem response (ABR) signals were recorded from the scalp (Fz-M2) by presenting 10,000 clicks in condensation polarity at 75 dB HL, at a rate of 39.1 Hz. The amplitudes of ABR waves I and V were measured as the voltage difference from peak to trough.

Results: Results show a statistically significant correlation between the amplitude of ABR wave I and speech perception in noise performance. This correlation does not occur in ABR wave V.

Conclusions: In this study we show that the number of auditory nerve fibers may have a relevant role in speech perception in noise. Absence of correlation in wave V may reveal the activation of central gain mechanisms, which compensate in amplitude but not resolution, the reduced neural output from the cochlea.