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AUDITORY ERP RESPONSE TO PERCEPTION OF SEMANTIC ANOMALY

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Authors

OHALLORAN, J
LARKEY, L
MATHEI, E
[et al.](#)

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O'Halloran, J., Larkey, L., Mathei, E., Isenhardt, R., & Sandman, C.A. (University of California, Irvine, and Fairview Hospital) **Auditory ERP response to perception of semantic anomaly.** Recently, Kutas and Hillyard reported the existence of a visual ERP component (N400) which reflects the perception of semantic anomaly in short sentences. The present study sought to determine whether the N400 component could be elicited in the auditory modality using real human speech as stimuli

Speech stimuli consisted of 96 tape-recorded 7-word sentences spoken by an adult male with clear articulation. Each sentence was spoken with a natural cadence and was preceded by a 4-sec silence with a 700 Hz signal tone occurring 1 sec before the first word of each sentence. Half of the sentences ended in a semantically anomalous (SA) fashion and half ended in a semantically normal (SN) way. In order to control word duration and acoustic composition, all seventh (stimulus) words were consonant-vowel-consonant (CVC) monosyllables where each consonant was a voiceless stop. Further, each stimulus word was used twice, once in an anomalous way and once in a normal way. Right-handed subjects (N = 17) were instructed to pay close attention to the binaurally-presented (eyes closed conditions) stimuli since they would be given a recognition memory test for the stimulus set at the end of the session.

EEG from C₃, C₄, F_z, and P_z with a linked mastoid reference was sampled at 250 Hz for a 1250-msec period, where 250 msec was recorded prior to the onset of the first consonant of each seventh word and 1000 msec was recorded beginning at that point.

Stepwise discriminant function analysis indicated that four placements showed a negative component, peaking at 300 msec on the SA condition which was not apparent in the SN condition. This component may be the auditory analog of the visually evoked N400. There was also a late bifurcation in waveforms at each placement between the two conditions which began at 600 msec and was sustained to the end of the sampling period. These two components may reflect the perception of semantic anomaly.