ABSTRACT

EEG MEASURES IN LEFT BRAIN DAMAGED APHASIC PATIENTS
NON-BRAIN DAMAGED CONTROLS

K. York Haaland and Robert T. Wertz
Neuropsychology Laboratory, University of Wisconsin and
Speech Pathology Service, Veterans Hospital,
Madison, Wisconsin

Galin and Ornstein (1972) have reported that right
handed normal subjects demonstrate more fast EEG activity
in the right than in the left hemisphere when performing a
visuospatial task. During a language task the opposite
occurred.

This measure of EEG asymmetry may be used as an indicant
of hemispheric dominance specifically to determine which
hemisphere is assuming control during recovery from aphasia.
With this in mind we recorded EEG activity from left and right
parietal areas referenced to vertex in ten left brain-injured
aphasic patients and ten normal controls during four conditions.
One condition was relaxation, and the other three were
delayed match to sample tasks (word to picture, word to word,
and picture to picture matching) designed to increase
differentially left or right hemisphere activity. Left and
right parietal activity was integrated to yield a quantitative
measure of asymmetry. Two recordings were obtained on each
subject to obtain some estimate of reliability. The ten
aphasic patients also received the Porch Index of Communi-
cative Ability (PICA), so EEG activity could be compared with
severity of aphasia.

Our results revealed that EEG asymmetry did not differ
between the aphasic patients and the control subjects nor did
it change as a function of the linguistic or nonlinguistic nature
of the tasks. Comparison of initial and retest recordings
indicated that EEG asymmetry in our subjects was not a reliable
measure; however, average 5-15 Hz activity showed adequate
reliability. Finally, severity of aphasia as measured by the
PICA was significantly related with EEG asymmetry. Patients
with mild to moderate aphasia show less 5-15 Hz activity in the
right hemisphere relative to the left than normals as well as
severe aphasics. This very tentatively suggests the possibility
that right hemisphere activity may be related to the language
recovery seen in these patients.