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#### CORTICAL MAGNETIC FIELDS RELATED TO SPOKEN DIGITS AS MEMORY PROBES

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Brain activity during the act of memorizing and during the retrieval from short term memory of items (spoken digits) during a modified Sternberg paradigm were recorded in three normal subjects. Brain electrical events were sampled at the same time as were the magnetic field derivations. Only one recording site was used for the electrical events (Pz-mastoid) whereas up to 49 positions were sampled for the magnetic fields. Brain activity could be distinguished into sensory and cognitive components. Sensory components appeared at 100 ms localized to the supramarginal temporal gyrus. Cognitive activity associated with memorization beginning at 150 ms also showed a dipolar source localized in both medial basal temporal regions with a left hemisphere preponderance. During the retrieval from short-term memory, high amplitude potential and magnetic fields beginning at 300 ms were recorded for which only magnetic fields coming out of the head were found over the left hemisphere. However, over the right hemisphere ingoing magnetic fields for this 'memory scanning component' appeared. Thus, dipole localization would suggest bilateral deep midline sources possibly stemming from the hippocampus-amygdala regions with a left sided preponderance. The left hemisphere preponderance is compatible with the verbal characteristics of the memory probes. The data suggest that there is neuromagnetic evidence for a hippocampus-amygdala activity in man for short-term memory retrieval.