
Structural and functional basis of aphasia

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Aphasia, in general, is a dysfunction of construction, understanding and performance of speech phenomena, caused by damage to cortical and/or subcortical speech centres in the central nervous system. The term was first used by Sextus Empiricus c. 160-210 AD), an ancient Greek philosopher and physician in his works: *Against the Mathematicians* and *Outlines of Pyrrhonism*, however with a different meaning. The first notion of a medical condition that mirrors the contemporary meaning of aphasia comes from an Egyptian papyrus (3500 BC) that describes speech disturbances after a head injury/concussion. The names "motor" and "sensory" aphasia were first used by J. Schmidt (1667) and P. Rommel (1683), respectively. Among the most frequent forms of aphasia, there are motor and sensory ones. Motor aphasia consists in the disturbances of expressive speech with damage - irrespective of the cause - to the 'motor' speech centre, i.e. within the 44th and 45th cortical fields.

The accompanying symptoms and signs are paraphasias, agramatisms, monophasic automatisms and stereotyped expressions. Speech understanding remains untouched in individuals with this type of aphasia. In sensory aphasia, patients show disturbances of receptive speech, accompanied by expressive compensation, i.e. garrulousness, paraphasias, agramatism, neologisms and elements of jargon speech. Speech, in general, is illogical and inconsistent with disruptive syntax. Damage in this type of language dysfunction concerns the 'sensory' speech centre, i.e. the 41st and 42nd cortical fields, hearing gyri of Heschl and/or temporal-parietal junction. The third, most frequent type of aphasia - the amnesic one consists in naming difficulties, functional descriptiveness and, often, is the outcome of motor aphasia. Cerebral damage involves different regions of the brain, mostly, the lower parietal region and the pre-motor cortical/prefrontal regions. Less frequent types of aphasic language dysfunctions are: conductive/conduction aphasia, subcortical and transcortical (both motor and sensory aphasias). Thalamic and cerebellar aphasic language dysfunctions are casuistic medical conditions.