

BRAIN CORTEX

Language is defined as audible, articulate human speech that is produced by the action of the tongue and vocal cords, and speech as utterance of vocal sounds that convey ideas, or the faculty of expressing thoughts by words (articulate sounds that symbolize and communicate ideas). Speech is more than a motor activity; it is the mechanism by which one gives external expression to internal symbolization, or thinking.

An important part of cerebral, or cortical, function is concerned with the ability of the individual to express himself by speech, writing, and gestures; to comprehend spoken and written words and gestures; to recognize the significance of various sensory stimuli; and to carry out purposive or complex movements.

The word *aphasia* has been used as a general term to include all disturbances of language that are caused by lesions of the brain but are not the result of faulty innervation of the speech muscles, involvement of the organs of articulation themselves, or general mental or intellectual deficiency. It may include those varieties of *agnosia*, or failure to recognize the importance of sensory stimuli, and of *apraxia*, or loss of ability to carry out purposive acts, which have to do with language.

The definition of aphasia considers it as defect in (dysphasia) or loss of (aphasia) the power of expression by speech, writing, or gestures or a defect or loss in the ability to comprehend spoken or written language or to interpret gestures, secondary to brain damage. If the term aphasia is used, it is implied that there is no paralysis or disability of the organs of speech or of muscles governing other forms of expression, and no loss of hearing or vision. Most aphasias are complex phenomena, and varying combinations of expressive and receptive difficulty may be present.

Before considering the examination of the aphasic patient, it is well to recall that there are three cortical levels as far as reception of impulses is concerned. The first is the level of "arrival," a function of the primary cortical reception areas; at this level one perceives, or sees and hears, without further differentiation of the impulses. The second level is that of "knowing," or gnostic function, concerned with the recognition of impulses, formulation of engrams for recall of stimuli, and revisualization. The third level, the one of greatest importance in aphasia, is that which has to do with recognition of symbols in the form of words, or the higher elaboration and association of learned symbols as a function of language.

The detailed testing of language and related functions in the patient who shows evidence of aphasia, agnosia, or apraxia include investigation of spontaneous speech, automatic speech, emotional speech, volitional speech, recall of words and naming of objects, spontaneous, automatic, volitional writing, comprehension of spoken and written language, expression by gestures and the comprehension of symbols and gestures, drawing, calculation, gnostic functions, performance of purposive acts

Expressive aphasia

The predominantly expressive, or motor, aphasias are characterized by a defect or loss in the power of expression by speech, writing, or gestures. Oral expressive aphasia corresponds to the motor aphasia of Broca and the verbal aphasia of Head. Although there is no loss of function of the organs of articulation, the patient is unable to form words or to combine or integrate the movements of the organs of articulation that are necessary for speech. He knows what he wishes to say, but is unable to say it, or to say it correctly. He may be unable to talk spontaneously, repeat, or read aloud. He is able to hear and understand spoken language and to read and comprehend written language but is unable to repeat what he hears and reads. He can identify objects but not name them. He may be able to write and draw, although under most circumstances the lesion causing the aphasia also causes paralysis of the right hand. There may be loss of expression of recently acquired languages or those not thoroughly learned, with preservation of those learned early in life or most thoroughly learned.