The localization of cortical sites essential for language was assessed by stimulation mapping in the left, dominant hemispheres of 117 patients. Sites were related to language when stimulation at a current below the threshold for afterdischarge evoked repeated statistically significant errors in object naming. The language center was highly localized in many patients to form several mosaics of 1 to 2 sq cm, usually, one in the frontal lobe and one or more in the temporoparietal lobe. The area of individual mosaics and the total area related to language were usually much smaller than the traditional Broca-Wernicke areas. There was substantial individual variability in the exact location of language function, some of which correlated with the patient's sex and verbal intelligence. These features were present for patients as young as 4 years and as old as 80 years, and for those with lesions acquired in early life or adulthood. These findings indicate a need for revision of the classical model of language localization. The combination of discrete localization in individual patients but substantial individual variability between patients also has major clinical implications for cortical resections of the dominant hemisphere, for it means that language cannot be reliably localized on anatomic criteria alone. A maximal resection with minimal risk of postoperative aphasia requires individual localization of language with a technique like stimulation mapping [1].

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Ojemann G, Ojemann J, Lettich E, Berger M. Cortical language localization in left, dominant hemisphere. An electrical stimulation mapping investigation in 117 patients. J Neurosurg. 1989 Sep;71(3):316-26. PubMed PMID: 2769383.