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GENDER BASED DIFFERENCES IN THE BROCA'S AND WERNICKE'S AREA

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This Report discusses about the areas of brain which are different in sizes and shape between male and females and their influence speech functions. There are huge contradictions being widespread across world as when the topic comes for gender-based differences in brain between male and female. When we investigated it, the question arises as then what exactly fills up the extra 300 Cubic-centimetres space in the male brain. Which is not an additional structure which going to film for extra volume it is that the constitution of existing internal structures and cortex and white matters of the brain that differs in proportion and as a result it has a change in volume in males as from the evolutionary pathway. So, what are the structures that are different in sizes across Genders? In the context of speech functions, we are interested in structures such as Planum temporale, sylvian fissure and the asymmetries of them, Broca's and Wernicke's area, corpus callosum are discussed with inter-relating to their skills such as, language fluency, comprehension and other verbal abilities.

Here we will be discussing about the Wernicke's area and Broca's area on their size comparison between the genders relating to the total volume proportion and their correlation to skills. According to some studies that the volumes of Superior temporal cortex, Broca's area were found to be significantly larger in females. In another study the inferior frontal gyrus (Wernicke's area), superior temporal gyrus (close to Broca's area) was observed that the relative amount of grey matter was greater in female brains. Initially it was the observed results of Good et al. (2001) but his findings were limited to the grey matter observations of the posterior temporal, parietal cortices in Para hippocampal gyri. This whole-brain voxel-based study was conducted between similar sized male and female brains to confirm whether the greater grey matter constitution is generally for female brains or typical for smaller brains. Another study which observed the greater sizes of the Broca's and Wernicke's area from research conducted in the university of Sydney. In this research the results were that the Broca's area in females was 20.4% larger than in males as a proportion to total cerebral volume. While the planum temporale seems to be 29.8% larger in females than males according to their tests. Planum temporale is located within Wernicke's area. Using magnetic resonance imaging another study have also resulted in same outcome as the Broca's and Wernicke's area seems to be larger in compared to total brain grey matter volume. According to his study women had 23% more volume in Broca's area than men and 13% more volume in Wernicke's area than men.

The disproportionateness of planum temporale which overlaps the Wernicke's area found to be more noticeable in males than females. According to a histological study found greater dendritic values for the Wernicke's area in females. While another study (Witelson et al 1995) also have found that the females had more neuronal density in this area than men. The studies and subject analysis further support the pronounced female Broca's and Wernicke's area. The planum temporale was longer and larger in women according to some other tests (Claudio Cantalupo, Dawn L. Pilcher).

Thus, the data presented indicate that at the anatomical level, women have a statistically significantly larger area of cortical fields responsible for the performance of speech functions, including in Broca's and Wernicke's areas, as well as in the planum temporale area. In addition, in these areas, at the histological level, women have a higher density of neurons compared to the male brain. The results of instrumental research methods, including magnetic resonance imaging, also confirm higher activity of speech centres in the female brain. These features of the female brain are reflected in everyday life, because as it known, women usually talk more than men, in addition, their speech skills are usually more developed. Therefore, the well-known expression "women love with their ears" can easily be based on a serious neurobiological basis.