

Brain Sex

Over the past couple of years there has been a lot of controversy over the study of brain differences between the male and female. Many people are disturbed by the suggestion that the human mind could be at least partially shaped by sex, thus the storm of controversy surrounding research in this area. In 1982, the controversy began with de Lacoste-Utamsing and Holloway's report on the corpus callosum (a bundle of fibres that connect the right hemisphere of the brain to the left). In measuring the corpus callosum, de Lacoste-Utamsing and Holloway found that the splenium, one end of the corpus callosum, was 16 percent larger in the female sample than the male. Studies had previously shown a difference in brain organization; men tended to be highly specialized, with the left hemisphere serving language functions and the right serving visual and spatial skills. Lansdell in the 1960's revealed that women's brains were more evenly organized, with centres for some abilities in both brain hemispheres.

Unfortunately for de Lacoste-Utamsing and Holloway, Witelson's own research disproved their ideas when brain weight was taken

into account. But as Witelson studied other parts of the corpus callosum she found some definite distinctions. She found that in men, the corpus callosum was larger in left-handed men, but there was no difference in women. She believed that this meant that "the neural networks that are underlying behaviour, are different in one sex than another". This discovery fits well with the theory that women's brains engage in more communication between the hemispheres of the brain.

Newer research points toward the effect of sex hormones on the brain. These hormones, produced by the male and female reproductive systems, influence the rates of protein synthesis and masculinizing or feminizing certain key structures. Scientists are now asking if hormones play a role in laying down networks of male or female circuitry in the fetal brain, and switching them on in puberty.

Two Canadian psychologists, Hampson and Kimura devised a set of experiments to test hormonal effects on women's performance. These tests focused on the menstrual cycle since hormonal levels climb right after ovulation and plummet during menstruation. The results of these tests showed that when hormone levels were high, women did extremely well on female-biased tests but not well on male-biased tests. The experimenters now believe that high levels of estragon may hinder inter-hemisphere communication in women.

The controversy over this theory was led by a host of critics who worried that the findings would be used to characterize some women as

"impaired" during certain parts of her cycle. But Hampson defends her findings since she believes that the actual effect of the estrogen is small.

Undeterred by their critics, Hampson and Kimura continue their research. Most recently they have found that men also undergo cyclic hormonal changes. In autumn a male's level of testosterone rises while in the spring it drops. On sex-biased tests during these two seasons Kimura found that men's performance on spatial tests rose when their hormone level was lowest and declined when the level got too high. These differences in spatial ability appear to be universal evident and not just in humans but also rodents and primates.

The difference in spatial ability appears to be that women have spatial ability in restricted areas, for example remembering where things are at home, while men are better at unlimited spatial skills such as reading maps and orienting themselves in a space. In some research it has been discovered that this ability is affected by hormones, and therefore coincides with puberty.

Despite all the proof that this research has brought to our attention, many scientists claiming this research is an example of biased experimentation. Previous research may prove this by being overly contradictory so that it fits the scientist's personal belief; however, there is enough evidence now to show that men and women process information differently as has been thought for years. This difference may be a key to our survival as a species. ●



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