

# Sex differences in the human brain psychology essay



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For a period of hundreds of years, the dissimilarity between male and female were described and misrepresented that males are supposed to be more superior or be in a higher status than females in which we normally named this discrimination sexism (Michael, 1999). However, in the recent years, men and women had already achieved equality as we now become closer together and thus we became unaware of the important differences between us (Michael). Also, because the goal of achieving balance equality between men and women became close and the unawareness of the society, the mission of discovering what exactly present within a male and female would need a great deal of effort and endurance (Michael). It is known that men and women differ physically in which the dissimilarity are either clear or they are easy to measure and observe (Michael). Some of the examples which can be easily measured are weight, height, size, shape and anatomy (Michael).

One of the differences between men and women are for instance, women have neurons which relate the right and left hemisphere of the brain four times more than men (Michael, 1999). Also, females have greater access to both hemisphere of their brain, regardless of that, women still use the right sides of their brain more frequently (Michael). Males on the other hand, are more physically fit and stronger (Michael). They have more strength and muscles can build up easily (Michael). However, the psychological differences between male and female can be harder to understand and describe (Michael). Problems emerge when we think that the opposite sex have to act, think and feel the same as we do due to the deficient in information, education and experiences (Michael).

In a published newspaper in Scientific American titled “ Sex Differences in the Brain” by Seymour Levine, who is a neuroendocrinologist in the year of 1966, the understanding of the topic were presented in a pleasant manner in which he only mentioned about the one region in the brain that is important in the whole article, which is the hypothalamus known as the site for regulating hormones and involved in spatial learning (Cahill, 2011).

Previously, researchers thought that sex differences in the brain merely means the hypothalamus, steroid hormones and sex behavior, which has got nothing to do with anything else in the brain (Cahill). This misleading observation diminished as more and more evidence arise nowadays proves that the idea before was wrong (Cahill).

The process of discovering about the influence of sex on function of neurons have been undergoing in a fast pace in which studies found that every part and level of the brain is affected (Cahill, 2011). According to Dr Pfaff, author of “ Man and Women: An Inside Story”, described that sex differences in the brain is mainly due to the hypothalamus and he later gives several other reasons of sex influence in the brain such as social behavior and aggression, but he failed to take into consideration about the nature of brain functioning influenced by sex (Pfaff, 2002, as cited in Cahill, 2011). In the end, he returns to his statement saying that sex differences in the brain are hypothalamus centered which is incorrect (Pfaff, as cited in Cahill).

The level of intelligence, also known as IQ, does not seem to be main factor of sex differences rather than ability (Kimura, 1999). Nevertheless, some researchers for instance, Lynn and Rich from the University of Ulster in

Northern Ireland proposed that there are slight intellectual differences  
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between male and female preferring men (Kimura). The meaning of different patterns of intellectual means that each person have different own intellectual strength (Kimura). For instance, some people may be good at utilizing words and some are especially skillful at addressing external stimuli (Kimura). Their individual abilities are different although the intellectual strength is the same (Kimura).

Sex differences in the brain had been studied regarding the issue of problem solving. Overall, men tends to be superior in spatial task than women, particularly, when they are asked to imagine an object to be rotating or some other way, men shows an advantage in handling the problem (Kimura, 1999). They are also better at solving problems related to mathematics and in finding a path (Kimura). Although some research support the idea, such as teenage boys in the United States normally perform better than girls on science and mathematics test, however, this is not true for boys in Thailand and Iceland where usually teenage girls outperform boys in an mathematics exam held internationally, making the statement of boys perform better in mathematics than girls inappropriate (Eliot, 2009). Thus, according to Cordelia Fine, superiority in mathematics and science are not genetically determined in our brain or fixed, but are due to upbringing, education, or they are inhibited by the society (Fine, 2010).

Women, on the opposite, outperform men in memorizing or remembering word, have an advantage in identifying items that match quickly and doing manual test such as putting marbles or pegs in proper holes (Kimura, 1999).

In spite of that, Maccoby and Jacklin from Stanford University argued that it is still an incomplete picture to say that spatial task favour males and verbal  
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task favour females (Jacklin & Maccoby, 1974). There was evidence showing that the advantage of spatial task for male does not apply to certain spatial tasks, and that women's advantage in verbal task was including many memory required work which are definitely not verbal (Cahill, 2011). Also, there are possibilities that females are able to outperform males when they are exposed to extra androgens prior to birth or newborn, a genetic deficiency known as congenital adrenal hyperplasia (Kimura, 1999). In this case, ability of CAH-affected girls to do well in spatial task increases compared to normal unaffected girls (Kimura). Another exception shown by Elizabeth Hampson from the University of Western Ontario is that females perform some task differently throughout their menstrual period because the estrogen level becomes inconsistent and thus will affect their ability in doing the task (Kimura).

Recently, a group of researchers from National Institutes of Health (NIH), have come up with a surprising new report saying that sex differences in the brain decreases as age increases in which the subjects of the research consist of a group of children whose age ranging from 9 through 22 (Sax, 2007). To say it in another way, they discover that when females and males encounter puberty, where the level of steroid hormones such as estradiol in female and testosterone in male begin to increase, the sex differences in the brain diminish (Sax). Even so, some researchers like Leonard Sax, author of "Boys Adrift and Girls on the Edge" think that the finding is a common-sense expectation (Sax). Other researchers or authors such as Cordelia Fine and Lise Eliot also think that although sex differences prior to birth are

insignificant because they have different education and lifestyles depending on the culture of the society (Sax).

Sex differences in the brain do not diminish over age, but increases as we grow older when the onset of puberty starts (Sax, 2007). The latter finding seems to be more reliable to many of the researchers (Sax). To give a more clearer view, an example is to compare boys and girls both at the age of six years old, they tend to behave differently in which usually boys attention span is much weaker compared to girls of the same age (Sax). On the other hand, compare a mature old man and women both at the age of 40 years old, there wouldn't be any differences, they are able to keep quiet and sit still as women do (Sax). Another researcher named Fausto-Stirling, who focuses studies regarding this, also think that if there are any sex differences in the brain, it is only present after birth during puberty (Sterling, 1992). Thus, the finding of sex differences diminishes as age increases are said to be counter-intuitive (Sax).

Brain development does not stop after birth, but instead goes on for a long time, that is where the field of social cognition comes into action to look for sex differences in our brain (Eliot, 2009). At the early stage of sex differences it is said to be congenital and development of our individual behavior depends on either gene expression or being exposed to certain hormone prenatally (Eliot). Regardless of that, behavioral development can be shaped from a young age by training, social learning, culture and various lifestyle that each one of us would encounter in every society (Eliot). To illustrate the idea of congenitally programmed, Jessica Woods, Peg Nopoulos and Vesna Murko carried out an experiment with young adults from 7 to 17 years old <https://assignbuster.com/sex-differences-in-the-human-brain-psychology-essay/>

which the same section in frontal lobe of the children are measured (Eliot). The outcome was surprisingly different from previous research they have done where the size of straight gyrus, an area in the cortex, is unexpectedly bigger in boys, in which the reversal of adulthood and childhood cogitate the maturation of boy's brain in later part of their life (Eliot). They are the few neuroscientists to examine male and female brain differences not only in biological sex but in terms of gender type (Eliot). Woods and colleagues argue about the suggestion that sex differences in the brain are because of Y chromosome despite having no prove that the causes of brain differences depends on social learning (Eliot).

In the past few years, there were a lot of new technology created to better examine the human brain's activity, for instance positron emission tomography, PET and functional magnetic resonance imaging, fMRI (Kimura, 1999). These new techniques enable us to solve problems regarding brain's activity, provides more detail and information about how our brain function (Kimura). The outcome until now was interesting but there were times when disagreement happens because of the results (Kimura). A number of studies done shown that the activity between both side of the brain of male are greater than female when performing task involving language, for example, identifying rhyme of words (Kimura). However, some other research could not find out the asymmetry function for sex differences in human brain (Kimura). It may be due to different language tasks given in various researches possibly because the brain system acts for certain language tasks only but not others (Kimura). Perhaps limitation exist because the new techniques are too complicated which leads to different results, because it is

difficult for it to correctly measure what exactly is happening in the brain as the activity in our brain are very complex (Kimura).

In a nutshell, there have been many critics and arguments about the study of sex differences in the brain (Bland, 2003). One of it is that the research subject for most of the studies are mainly focusing on male only, this in returns affect and limit our understanding of brain differences for the opposite sex because the research are based with one sex only (Beery & Zucker, 2010). Therefore, the research of sex differences in the brain should now put more attention in female perspective (Beery & Zucker). Moreover, there are certain brain disorders that affect one sex more frequently than another or there may be more protected from the disease compared to the opposite sex (Arnold, Ball, Blaustein, De Vries and McCarthy, 2012). Thus, in this situation, it would bring benefit to us if researcher could identify the problem and come up with a solution for instance, create drugs or treatment for specific sex to be protected against these diseases (Arnold et al., 2012). There is no doubt that the whole debate about sex differences in the brain will continue to be studied for a long time (Bland). Different researcher would have different opinion and thinking, it is just the matter of how they explain the outcome in their own way (Bland).