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Brain Differences Between Genders

Do you ever wonder why men and women think so differently?

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It's no secret that boys and girls are different—*very* different. The differences between genders, however, extend beyond what the eye can see. Research reveals major distinguishers between male and female brains.

Scientists generally study four primary areas of difference in male and female brains: processing, chemistry, structure, and activity. The differences between male and female brains in these areas show up all over the world, but scientists also have discovered exceptions to every so-called gender rule. You may know some boys who are very sensitive, immensely talkative about feelings, and just generally don't seem to fit the "boy" way of doing things. As with all gender differences, no one way of doing things is better or worse. The differences listed below are simply generalized differences in typical brain functioning, and it is important to remember that all differences have advantages and disadvantages.

Processing

Male brains utilize nearly seven times more *gray matter* for activity while female brains utilize nearly ten times more *white matter*. What does this mean?

Gray matter areas of the brain are localized. They are information- and action-processing centers in specific splotches in a specific area of the brain. This can translate to a kind of tunnel vision when they are doing something. Once they are deeply engaged in a task or game, they may not demonstrate much sensitivity to other people or their surroundings.

White matter is the networking grid that connects the brain's gray matter and other processing centers with one another. This profound brain-processing difference is probably one reason you may have noticed that girls tend to more quickly transition between tasks than boys do. The gray-white matter difference may explain why, in adulthood, females are great multi-taskers, while men excel in highly task-focused projects.

Chemistry

Male and female brains process the same neurochemicals but to different degrees and through gender-specific body-brain connections. Some dominant neurochemicals are *serotonin*, which, among other things, helps us sit still; *testosterone*, our sex and aggression chemical; *estrogen*, a female growth and reproductive chemical; and *oxytocin*, a bonding-relationship chemical.

In part, because of differences in processing these chemicals, males on average tend to be less inclined to sit still for as long as females and tend to be more physically impulsive and aggressive. Additionally, males process less of the bonding chemical oxytocin than females. Overall, a major takeaway of chemistry differences is to realize that our boys at times need different strategies for stress release than our girls.

Structural Differences

A number of structural elements in the human brain differ between males and females. "Structural" refers to actual parts of the brain and the way they are built, including their size and/or mass.

Females often have a larger hippocampus, our human memory center. Females also often have a higher density of neural connections into the hippocampus. As a result, girls and women tend to input or absorb more sensorial and emotive information than males do. By "sensorial" we mean information to and from all five senses. If you note your observations over the next months of boys and girls and women and men, you will

find that females tend to sense a lot more of what is going on around them throughout the day, and they retain that sensorial information more than men.

Additionally, before boys or girls are born, their brains developed with different hemispheric divisions of labor. The right and left hemispheres of the male and female brains are not set up exactly the same way. For instance, females tend to have verbal centers on both sides of the brain, while males tend to have verbal centers on only the left hemisphere. This is a significant difference. Girls tend to use more words when discussing or describing incidence, story, person, object, feeling, or place. Males not only have fewer verbal centers in general but also, often, have less connectivity between their word centers and their memories or feelings. When it comes to discussing feelings and emotions and senses together, girls tend to have an advantage, and they tend to have more interest in talking about these things.

Blood Flow and Brain Activity

While we are on the subject of emotional processing, another difference worth looking closely at is the activity difference between male and female brains. The female brain, in part thanks to far more natural blood flow throughout the brain at any given moment (more white matter processing), and because of a higher degree of blood flow in a concentration part of the brain called the *cingulate gyrus*, will often ruminate on and revisit emotional memories more than the male brain.

Males, in general, are designed a bit differently. Males tend, after reflecting more briefly on an emotive memory, to analyze it somewhat, then move onto the next task. During this process, they may also choose to change course and do something active and unrelated to feelings rather than analyze their feelings at all. Thus, observers may mistakenly believe that boys avoid feelings in comparison to girls or move to problem-solving too quickly.

These four, natural design differences listed above are just a sample of how males and females think differently. Scientists have discovered approximately 100 gender differences in the brain, and the importance of these differences cannot be overstated. Understanding gender differences from a neurological perspective not only opens the door to greater appreciation of the different genders, it also calls into question how we parent, educate, and support our children from a young age.

Gregory L. Jantz, PhD is the founder of The Center • A Place of HOPE and an internationally recognized best selling author of over 26 books related to mental wellness and holistic recovery treatment. He is also co-hosting the first-ever Helping Boys Thrive Summit on May 24th to discuss how brain science influences raising and educating boys. This article features excerpts from Dr. Jantz's book *Raising Boys by Design*.