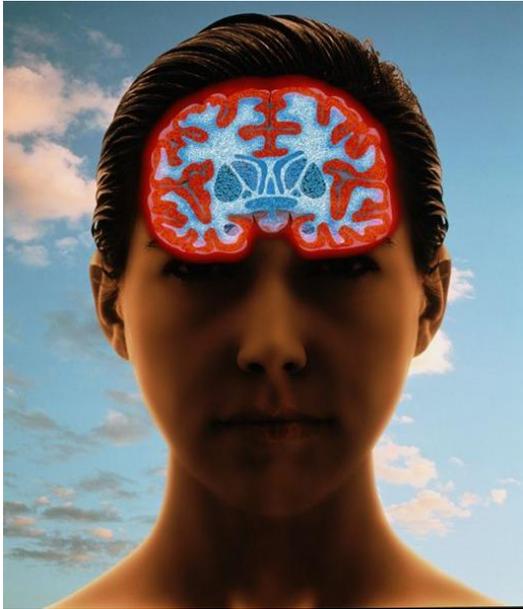


The Male and Female Brain

By Horacio Sanchez

This is a timely topic since so many education experts are promoting the idea of separating boys and girls to better design instruction to be more compatible with their distinct brain functions. It is important to first know what the distinctions between the male and female brain are and then what conclusions can be drawn from them.



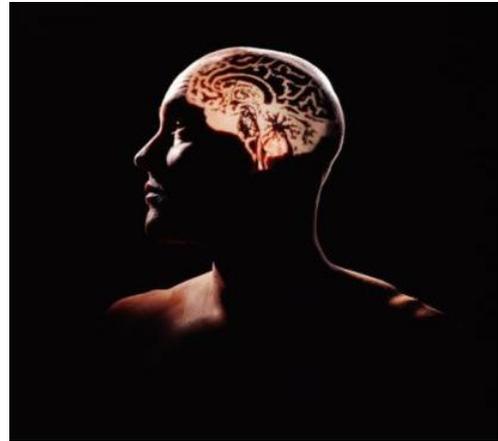
Until eight weeks of life every brain is female. A hormonal surge of either estrogen or testosterone makes the female and male brain respectively. The surge of estrogen allows the brain to develop symmetrically. This is significant because language development requires the entire brain to act in concert. In addition, girls have a larger corpus callosum which allows more efficient communication between the left and right brain. Not only is the female brain more efficient going from left to right brain but it is also blessed with specific glutamate receptors which allows for faster communication between neurons. These glutamate receptors are found within the region

of the brain responsible for learning, enhancing focus, memory, and the ability to notice details (Mermelstein 2005). This gives girls some distinct advantages in traditional classrooms that dispense information verbally and demand recall.

In addition, estrogen impacts social behaviors. Females are better able to read nonverbal cues because they are wired to make better eye contact, gaze at faces, and interpret what the other person is feeling. Girls also have significant larger orbitofrontal-to-amygdala ration. The amygdala governs emotions. By having the thinking part of the brain more connected to the emotional center of the brain, girls are better able to process through their emotions without becoming impulsive. This is why females can seem more indecisive, but in reality they are processing problems from all sides. Girls advanced communication skills are even reinforced chemically through a hormone called oxytocin. Oxytocin is the social bonding hormone that enables the building of trust and helps regulate stress. Girls get oxytocin released during conversations with close friends. That is why they can talk on the phone for hours; they are getting a chemical payoff. All of this makes girls more socially advanced earlier, able to demonstrate empathy, and more prone to talking out problems.

On the other hand testosterone causes shrinkage of cells involved in communication, observation, and the control of emotions. Testosterone causes asymmetrical brain development, resulting in more activity in the left hemisphere. The male brain structure is better able to do spatial reasoning which aligns with math and science skills. Boys have the ability to focus long-term on a single problem or challenge. Learning is best processed through integrating information during action.

Testosterone like estrogen also impacts social behavior. It can lower the ability to read nonverbal cues, feel empathy, and communicate. Several studies have shown that the higher the testosterone levels in utero between 12 to 18 weeks, the lower the ability to focus on nonverbal cues, bond, and socially interact appropriately. A common test conducted found that children with the highest testosterone levels at 12 to 18 weeks tended to focus on objects rather than the face of their caretaker. In addition, these same children showed



poor social skills at age four. Boys also have larger amygdalae accounting for increased aggression and sex drive. While girls have a higher level of involvement of the cerebral cortex during times of emotions, boys do not. This means that their responses will be more active rather than verbal.

What conclusions should education draw from what we now know about the male and female brain? The first is that education should seek to be more interactive. It has been proven that both sexes learn faster through multi-sensory instruction. Girls are better able to develop spatial reasoning and boys language skills with faster recall.

School discipline should also focus on the demonstration of what you want students to do rather than verbal directives. Girls are very capable of learning through observation and boys require it. In addition, during times of arousal, the female voice causes a higher level of chemical activity in the human brain than the male voice. This means that talking through some incidents might trigger more impulsive behaviors by students who are more at-risk. By adopting a discipline model that demonstrates desired behaviors, some incidents will be avoided and desired practices will be internalized quicker.

The current movement to separate males and female education is being promoted primarily by educational institutions offering separate education programs. These institutions have a vested interest in manipulating the new research to support separate male and female education. Also, it is important to note that some males have female structured brains, and some females have male structured brains. This means that making distinctions based on the gender of the student does not guarantee compatibility with an instructional model. The human brain learns new information by relating it to what it already knows and has been exposed to. The hope of better male and female social relationships requires early and constant exposure to one another. Many of the academic and behavioral distinctions between the male and female brain can be addressed through good instruction and sound discipline. Separation and exclusion models have and will always prove problematic at the point of reintegration.