

Boys in School: What Every Teacher and Parent Should Know

“Why can't a woman be more like a man?”
- Professor Higgins in *My Fair Lady*

As exemplified in Professor Higgins' question, society has always recognized that there are differences between the sexes. Ask parents and teachers whether girls and boys are different from the get-go, and they will answer, “Absolutely!” Until recently, however, scientific data did not exist to support that response authoritatively.

Girls: A Success Story

A basic belief of the women's movement of the 1970s was that observable differences in behavior and aptitude between boys and girls were primarily due to expectations of parents and society. Differences were not seen as the result of biology (e.g., Baron-Cohen, 2003). This belief understandably led to optimism about the potential to achieve true gender equity, since child-rearing and societal practices could evolve. When girls played with dolls, or boys spent hours on video games, experts chalked the differences up to social expectations and parenting differences. Behavioral distinctions between boys and girls were seen as the result of life experiences, not biology.

Because public education is so central to children in America, schools received much attention in this discussion. A number of reports in the 1990s found that, while girls started school ahead of boys socially and academically, they lost ground during early adolescence. Girls remained verbally stronger than boys, but fell behind in math and science.

Much of the research concluded this was due to sex-role stereotyping still prevalent in American schools. One widely circulated report concluded that girls were being educationally “shortchanged” (American Association of University Women, 1994). For example, boys were more likely to respond in class than were girls, and thus received more teacher attention. Textbooks showed women in stereotyped roles. Women might be pictured as homemakers or secretaries, but not as construction workers or business executives.

Although questions were later raised about the accuracy of the data used by the AAUW (Kleinfeld, 1999), the impact of the report remained strong. Public perception that girls were under-served by schools became a rallying cause.

In response to these concerns, school programs for girls received an outpouring of national political and financial support. To help girls, schools and teachers changed the ways in which they might have consciously or unconsciously conveyed different expectations. These changes were highly successful in enhancing the academic successes of girls.

In the last two decades, girls have minimized the historic academic gender gaps in math and science, while girls' verbal scores have remained higher than those of boys. The number of girls in advanced math and science courses is growing. Further, women are now equally represented with men in law schools and medical schools.

The results from these school and societal efforts have been interpreted as support for the position that the differences are based in environment, not biology. However, the fact that environmental influences do impact girls' learning does not mean that biology is irrelevant.

Boys: The New Second Sex

As schools tried to "get it right" for girls, perhaps important clues about boys were missed. It may be significant that the educational gains of boys began to stall about the same time that girls entered the educational limelight (Sommers, 2000).

Some people see today's boys as a "payback generation," wherein boys have made sacrifices for "centuries of subjugation" of girls (Conlin, 2003). Considerable evidence exists that boys are much more likely than girls to struggle in today's schools.

- Boys trail girls in reading throughout school, and leave high school reading about one grade level below girls. Girls, however, score only slightly behind boys in math and science upon graduation (Freeman, 2004).
- About 16% of boys and 8% of girls between the ages of 5 to 17 have been diagnosed with ADHD or a learning disability. Boys are 3 times more likely than girls to be diagnosed as having ADHD without a learning disability (Quickstats, 2005).
- Boys are more likely to repeat a grade and to drop out of school (Freeman, 2004).
- Boys engage in more risky behaviors, such as drug use, and are more likely to be involved in violent behavior or be bullied at school (Freeman, 2004).
- Whereas the number of girls entering and completing college continues to rise, the number of boys who pursue and complete a college degree has stagnated. In 2001, 57% of college graduates were women (Freeman, 2004).

If these trends continue, they have the potential to do great harm to both boys and society at large. Society must ask how effectively the schools are meeting the needs of boys. If girls are thriving while boys are lagging in the same educational environments, it follows that boys and girls may require different learning conditions.

The basic question is the degree to which the cognitive and learning styles of each gender are hardwired in the brain from birth. In trying to answer this, scientists have identified specific biological differences between boys and girls in an attempt to begin to explain learning and behavior differences.

Biological Research: Hormones and Brains

Emerging research studying differences in hormonal make-up as well as basic physiological brain differences between boys and girls is providing tantalizing insights into gender differences in behavior and learning. New sophisticated medical technology, including MRI (magnetic resonance imaging), PET (positron emission tomography), and fMRI (functional magnetic resonance imaging), has opened new possibilities for much of this research (e.g., Brizendine, 2006).

Hormonal Influences on Behavior

Hormones are chemical messengers from one cell (or group of cells) to another. Both males and females possess all the human hormones, but there are quantitative differences between the sexes. For example, males typically have more testosterone, while females have more estrogen.

Hormones significantly affect thinking and behavior. For example, in one study researchers observed preschool children as they selected toys for play. Most of the girls chose toys such as dolls and kitchen items. Boys more often chose trucks and construction toys. However, during embryonic development some of the girls had been exposed to an excess of testosterone. These girls demonstrated more boyish behavior than did unaffected girls. They played with the same toys as did boys, and in much the same ways (Berenbaum & Hines, 1992).

Other studies have found that both boys and girls exposed to high levels of testosterone during their embryonic development were less likely to establish eye contact with their mothers, which is fundamental to subsequent social and communication skill development. Also, these children were generally less verbally fluent (Baron-Cohen, 2003).

Hormonal variations may also affect spatial and verbal abilities. Usually females out-perform males in tests of verbal skills. Males are better than females in tests involving rotation of three-dimensional objects. But performance levels in all these arenas may vary with hormonal fluctuations.

For example, when women are experiencing high levels of estrogen, they tend to perform better (about 10% higher) on verbal tasks and lower on spatial reasoning problems (about 10% lower) than when their estrogen levels are lower. Conversely, when estrogen levels were low, women's scores on spatial tests improved (Kimura, 2000).

Studies such as these strongly suggest that hormonal factors may significantly influence behavioral differences between boys and girls. These hormonally-based gender differences may be established prenatally, or at some point afterwards.

Brain Imaging Research

Several new techniques for understanding brain function have emerged. These include:

- MRI (magnetic resonance imaging)
- PET (positron emission tomography)
- fMRI (functional magnetic resonance imaging).

Different parts of the brain are known to control different functions. These new imaging techniques allow researchers to scan the brains of live subjects, tracking the levels of activity of each of these areas of the brain. These new approaches to brain research offer incredible opportunities for exploring neurologically-based gender differences.

Early research with these techniques is suggesting several differences between boys and girls in brain structure and functioning. During the six weeks following conception, all embryos are structurally alike. At six weeks, sexual identity is determined. At that point several distinct and significant differences between the male and female brains begin to emerge, though the significance of these differences is still a subject of much debate. Biologically-based brain differences between the sexes, and the potential implications of these differences on behavior and learning, include the following.

- The **corpus callosum**, the bundle of nerves connecting the right and left brain hemisphere, is typically somewhat thicker in women. This may facilitate the reported result that in many cognitive tasks, women are more likely to use more of the brain, with both hemispheres, than do men (e.g., Shaywitz et al., 1995). The thicker corpus callosum may allow women to more effectively access both hemispheres of the brain during thinking and sensory processing. This might account for women being better at verbal tasks, and may even hint at the source of women's intuitive strengths and their ability to read emotions (Baron-Cohen, 2003).
- The **prefrontal cortex** is the area of the brain that regulates impulse control. This is the last part of the brain to reach physiological maturity, and may not be fully formed until early adulthood. The prefrontal cortex develops earlier in girls than boys (Giedd et al., 1999). This maturational delay in the development of the prefrontal cortex in boys could account for girls making fewer impulsive decisions and being less likely to be diagnosed with ADHD
- Girls have stronger **neural** connectors and increased blood flow in the brain (Witelson, Glezer, & Kigar, 1995). This may result in girls having more detailed memory storage, and better listening skills.
- The **amygdala**, the origin of anger and other strong emotions, is larger in males (Goldstein et al., 2001). This may explain why boys tend to be more aggressive and volatile.

In his book *The Essential Difference: The Truth about the Male and Female Brain* (2003), Baron-Cohen suggested that the female brain is predominantly structured for empathy, while the male brain is predominantly designed for understanding and building physical systems. This biological predisposition for enhanced social skills may also be correlated with the general superiority of women's language skills.

In males, strong spatial skills are related to organizing and understanding physical systems. This may be the result of evolutionary neurological adaptation. If early men and women systematically took on different types of tasks, over the eons the brain structure of both genders may have physically evolved differently to better support these differentiated functions. Baron-Cohen (2003) further hypothesized the intriguing theory that Autism Spectrum Disorder (ASD), much more prevalent in males than females, is simply an extreme example of the male brain pattern. At the risk of oversimplifying the issue, such characteristics of the ASD as social and language deficits, and unusual preoccupations with objects, are simply exaggerations of typical “guy” behaviors.

Given the inherent complexity of the brain’s physiological structures, along with the relatively infancy of brain research, the temptation to reach premature conclusions should be resisted. At this point, research is less than clear on how specific brain differences affect thinking and behavior. Further, the physical differences between the brains of men and women that have been identified to date are statistically small, with sizeable variations occurring within genders (Hyde, 2005). While this is an exciting field to watch, it is important that claims of gender differences not be over-stated. To do so might lead to the emergence of newer but equally damaging stereotypical expectations of boys and girls.

Why Do Boys Struggle in Schools Today?

Over the past few years many reasons have been offered for why boys are not more successful in school. These include the following.

- School environments are dominated by women in the classroom. These female teachers may favor girls’ style of learning, including highly verbalized instruction and sustained activities with low levels of physical activity.
- Boys may be over diagnosed as having hyperactivity disorders because of their inherent and biologically-based need for more activity and variety.
- Boys’ slower rate of maturity can delay their readiness for some academic tasks, such as reading. These reading delays result in significant academic deficits.
- Boys may not process language as efficiently or as rapidly as girls.
- Boys often have shorter attention spans than girls, and may need more rest periods to process information. If teachers don’t plan for brief rests or chances for movement, boys can “zone out” on their own.
- Boys may be less inherently attuned to subtle communication cues, and are less able to verbalize their own emotional feelings.

Tips for Teachers

Given the inherent biologically-based differences between boys and girls, what can teachers do to maximize the success of *all* students in the classroom? Many girls and boys can, of course, adapt to a variety of classroom situations. As an ideal, teachers should seek to create classrooms that will be responsive to students’ general and

particular needs, including gender-specific student needs. The best classrooms are learner-friendly for *both* boys and girls.

For Boys . . .

- Boys are more likely to turn in homework late and to be penalized, yet in the workplace they meet deadlines. Consider alternatives to punishment for boys submitting late homework.
- Acknowledge the inherently higher levels of energy in boys. Teachers can help boys direct the energy more efficiently towards purpose and mission.
- More so than girls, boys may need to see meaning and relevance in their work. For example, to foster the development of reading skills, give boys reading materials that match their interests (e.g., the *Lord of the Rings* trilogy, not *Jane Eyre*).
- Involve more multimedia in instruction, and seek to include multiple sensory inputs. (For example, in addition to visual and auditory input, include kinesthetic and/or tactile components. Give boys things to touch and manipulate.)
- Provide strong male role models for boys to help them identify the line between appropriate male self-assertion and violence.
- Understand that male bonding often requires activities that have some inherent aggression, including physical roughhousing. These activities help male social bonding and the establishment of social hierarchies. Do not prohibit all such activities, but help boys understand appropriate and inappropriate activities.
- Talk less.
- Highlight how assignments relate to real life situations.
- Use humor in your classroom. (But be wary of using sarcasm when addressing students.)
- Allow more physical movement in the classroom. Advocate for active and frequent recesses. (In the current era of high stakes testing, recesses and physical education programs are often cut to create more classroom instructional and testing time.)
- Help boys learn how to harness their energy in productive ways, rather than trying to force them against their inclinations to sit still for hours.
- Provide opportunities for project and problem solving activities instead of just talk and tests.

For Girls . . .

- Have them participate in sports activities to develop large motor skills.
- Create hands-on activities using manipulatives, graphs, etc, to develop greater spatial awareness and physical problem-solving skills.
- Encourage girls to take leadership roles and to hold their own against more dominant boys.
- Provide extra encouragement and mentoring for development of technology skills.
- Have high expectations for girls and provide positive feedback for them.

- Teach girls to recognize and avoid inappropriate subtle socially aggressive actions.
- Provide opportunities for working in both competitive and collaborative activities, often with separate-sex groups.
- Call on boys and girls equally in class.
- Encourage girls to participate in computer and technology-based activities, emphasizing the word processing and social components of these activities that girls are more likely to be skilled in.
- Bring in mentors from the community to discuss a range of professional roles for girls.
- Teach girls about the potential impact of media images on their self-concept.

Tips for Parents

Parents provide what is arguably the most powerful socialization in a child's life. The following are suggestions offered by school professionals to help maximize the success of your son or daughter in school.

- All children need multiple adult mentors. As they go through adolescence help your child find these.
- Diet has a significant effect on learning and behavior. A good diet includes adequate protein, many fresh fruits and vegetables, and whole wheat grains. A good diet helps children to maintain energy and think well. Reduce carbohydrates and sweets in the diet.
- Make sure your child gets enough sleep. Teens are especially susceptible to sleep deprivation.
- Get to know your child's teacher(s). Meet with the teacher(s), and especially ask how you can support your child's learning at home.
- Volunteer in the school (not necessarily in your child's classroom). It will give you invaluable insights into your child's daily life at school, as well as a sense of other children's behaviors and learning.
- Provide age-appropriate supervision and guidelines. Children succeed when reasonable boundaries and limits are clear and consistently enforced.
- Attend all parent-teacher conferences. Teachers have seen many children the age of your child, and can help you understand what is typical, and what may be cause for concern.
- Help your child balance sedentary activities such as computer usage and reading with physical activities such as sports, bicycling, and walking.
- Stay informed on emerging child developmental research. New information is constantly emerging.
- Spend time with your child. Car trips with just you and your child are a good way to learn what is going on in your child's life, and to understand his/her perspectives.
- Encourage strong extended family ties.

Conclusions

Society is best served when all educators are committed to the reality that both boys and girls have extraordinarily wide ranges of abilities that should be encouraged in order for them to achieve their potentials. Unfortunately, simple good intentions alone may not be enough to ensure that both boys and girls receive educational programs that enable them to reach their potentials. For our schools to be as effective as possible, both teachers and parents must be aware of the very real and inherent differences between boys and girls, and then act on that knowledge to provide the most effective programs for all.

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