

What Makes a Great Teacher?

August 2017

Leonard Sax MD PhD

www.leonardsax.com

*Please note: this manual is intended as a **supplement to** the presentation, not as a **substitute for** the presentation. It is intended to assist those who attend my workshop, to spare them the distraction of taking excessive notes. These pages are NOT intended to be read separately from the presentation; they cannot “stand by themselves.”*

*If you would like to get a sense of the presentation but did not have the opportunity to attend, please read my second book **Boys Adrift** especially chapters 2, 4, and 8; and also my third book **Girls on the Edge**, especially chapters 5, 6, and 7; and my book **Why Gender Matters** (second edition, 2017), especially chapter 5 as well as the appendices on hearing and vision. You can reach me via email at mcrcad@verizon.net but also please send a copy to my personal email leonardsax@prodigy.net.*

Teacher quality has a bigger effect on student achievement than school or curriculum. See for example Amanda Ripley, “What makes a great teacher?” *The Atlantic*, February 2010, <https://www.theatlantic.com/magazine/archive/2010/01/what-makes-a-great-teacher/307841/>.

Sex differences in the teacher-student relationship

Gender-aware construction of the teacher-student relationship

- Sex differences in communication (Deborah Tannen). Girls are typically face-to-face; boys are more often shoulder-to-shoulder. But: Latina girls who trace their ancestry to the native peoples of the Americas are often exceptions to this rule.
- **Attachment:** make the connection. Example: Greet every student as they enter your room. Equally true for boys and girls. But *how* you greet them may differ, especially early in the school year.
- What kind of teacher are you? A girls’ teacher or a boys’ teacher? What does that mean? How can you become more effective.

- How to reconcile “I’m your friend” with “You earned a B-minus on your term paper”? Suggestion from Kathy Berotti at Girls’ Preparatory School in Chattanooga: use code names.
- A line drawn from her eyes to your eyes should be roughly horizontal. With younger girls, that means you often have to kneel **down on the floor** to interact.

Creating the relationship, and preventing bullying, requires a good understanding of the substantial variations AMONG girls and AMONG boys.

Many girls don’t want to play with dolls; they’d rather kick a football or wrestle a hog. Some boys don’t enjoy football or hockey; they’d rather read *Twilight*. Research by Jerome Kagan at Harvard, Patricia Cayo Sexton at NYU, and others, has demonstrated that these boys share a number of characteristics which distinguish them from ‘mainstream’ boys:

- These boys may be athletically talented, but if so, they tend to prefer tennis, track, or golf, rather than football or soccer
- These boys are more likely to suffer from allergies, asthma, and eczema
- These boys are more likely to be precocious, particularly with regard to language
- These boys are NOT more likely to be homosexual. Sexual orientation is an independent parameter.

We also briefly review the evidence that this is separate from sexual *orientation*, LGBTQ.

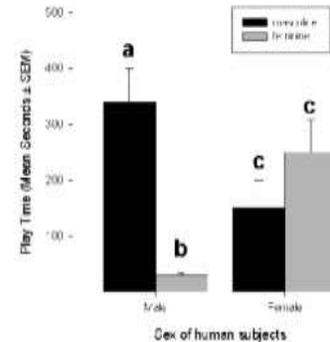
Sex differences in vision /

Sex differences in hearing /

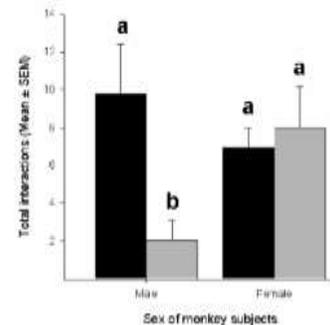
Sex differences in brain development

Sex differences in the visual system

Researchers have long known that young boys tend to prefer playing with a truck rather than a doll. The graph at right shows the typical findings when girls and boys are given a choice of playing with a “boy toy” such as a truck (black bar) or a “girl toy” such as a colorful plush doll (grey bar). Before 2002, most scholars agreed that boys’ preference for trucks over dolls reflected the social construction of gender. Boys were taught that boys were supposed to prefer trucks over dolls; as a result, boys preferred to play with trucks rather than dolls.



Dr. Gerianne Alexander was the first to offer monkeys the same choice: playing with a dull grey truck or a colorful plush doll. Her findings have since been replicated by Kim Wallen and colleagues with a different species of monkey, and by Sonya Kahlenberg and Richard Wrangham in their observations of monkeys. The primate data are shown above.



It’s difficult to invoke the social construction of gender to explain these findings in monkeys or in chimpanzees. One *can* reasonably invoke the social construction of gender to explain the difference across species. Why is the preference of the juvenile male to play with a truck rather than a doll greater in our species than among monkeys or chimpanzees? Answer: the social construction of gender among humans exaggerates the innate preference. The preference of the juvenile male primate to play with trucks rather than dolls must be innate, because this preference is conserved across species. This preference is more pronounced in our species because of the social construction of gender in human cultures; or as Dr. Melvin Konner puts it, “Culture *stretches* biology.” But what explains the main effect? Why do juvenile primate males – whether they are human or monkey – prefer to play with a dull grey truck rather

than with a colorful plush doll?

Dr. Gerianne Alexander was the first to document this finding in nonhuman primates, and also the first to propose a plausible explanation. To understand her explanation, you have to recall some basic facts about the visual system in primates.

Two visual systems:

- One visual system, the Parvocellular (P) system, is devoted to color, texture, detail
- The other visual system, the Magnocellular (M) system, is devoted to detecting speed, direction, and change in direction
- Why do juvenile males – whether human or monkey – prefer to play with a dull grey truck rather than with a colorful plush doll?
- Because the truck MOVES; it has wheels
- Katrin Amunts et al. 2007: compared M system in human occipital cortex (hOc), in women and men; McGivern et al 2012, moving objects on a screen

Application. Suppose you are teaching students in early elementary grades. You give all your students a blank sheet of paper and a box of crayons and tell them to draw whatever they want. What do children draw? Studies using this paradigm have found that young **girls** tend to draw people, pets, flowers, and/or trees, facing the viewer, with lots of detail, eyes, hair, clothes, etc. →





Boys, on the other hand, are more likely to draw a dynamic scene of action, such as a rocket smashing into a planet, or soldiers shooting at each other. Faces, if visible, are often lacking features.

←

The key is to understand: **What is the picture the boy is trying to draw?** Then help him to draw it better.

Don't insist on "one right way." Most schools of education teach undergraduates that at 6 years of age, a child drawing a human figure should include eyes, hair, mouth, and clothes. If the drawn figure does not have eyes, hair, mouth, and clothes, then the child should be corrected. In other words, most schools of education teach that 6-year-olds should draw like a girl. The result of this misguided approach is not that boys try to draw like girls. The result is that many boys decide that "drawing is for girls." **The lack of awareness of gender differences has the unintended consequence of reinforcing gender stereotypes.** When more teachers understand these differences, the result is that they are able to break down gender stereotypes, and boys like to draw. At least, that is the experience of Margrét Pála Ólafsdóttir in Iceland. Boys at all 17 of her schools love to draw. And her teachers know all about M and P (she sent 44 teachers from Iceland to Chicago for the conference I hosted there; she sent 60 teachers from Iceland to Orlando for the conference I hosted there).

The lack of awareness of gender differences has the unintended consequence of *reinforcing* gender stereotypes.

But the importance of these differences extends beyond visual arts. How we see influences how we read and how we write. Some characteristics of "boy writing" – particularly the emphasis on action – may be traced in part to these differences in the

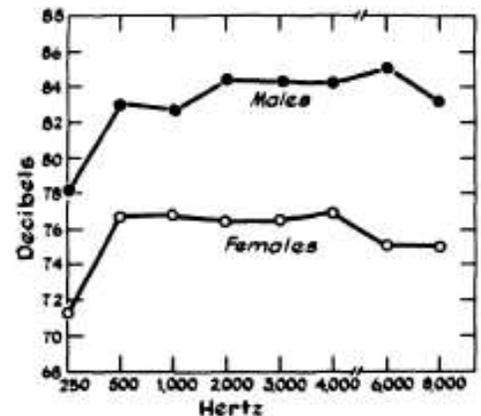
visual system.

But where do you draw the line? What's "out of bounds" with regard to writing, or drawing? What child should be disciplined, or even referred?

- Some boys like to draw violent pictures, or tell violent stories
 - The lesson from St. Andrew's, in Aurora, Ontario
 - Throwing of snowballs is permitted on the football field, but not elsewhere
 - **In-bounds vs. out-of bounds**
 - Generic and classic is OK; personal and threatening is **NOT** OK
 - Violence in a story of Roman gladiators is *generic*: it is intrinsic to that genre. Likewise for a story about the Battle of Stalingrad, 1942.
 - But if a boy tells a story about bringing in a knife to hurt another boy at school, whom he names – that's not generic, that is personal and threatening. That's out of bounds.
 - Snowball tournament; dart-throwing tournament; light-saber tournament
- It's not about ability; it's about motivation. The big differences between girls and boys are not in what they *can* do but in what they *want* to do.

Sex differences in hearing

- L = Loudness (subjective)
- Φ = physical amplitude of the sound
- n = "loudness exponent"
- Stevens' Law: $L = k \Phi^n$
- n declines as a function of amplitude
- At any particular amplitude and frequency, **n is higher for females than for males**
- Stevens' n is higher for the average girl compared with the average boy (e.g. D'Alessandro & Norwich, 2009); this difference is clearly established at 5 years of age

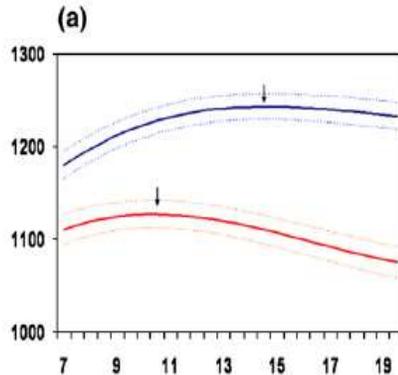


- As a result: You need to speak about 8 decibels more loudly for the **average** boy. But not for all boys! Please note the caveats and exceptions!!

Sex differences in brain development. We now know that the various regions of the brain develop in a different sequence in boys compared with girls. Thirty years ago, most neuroscientists believed that sex differences in the brain were due to adult production of sex hormones. If that were true, then sex differences in the brains of children would be very small or non-existent. But in 1980, nobody tested that hypothesis.

Chromosomes, not hormones.

At what age are sex differences in gene expression in the human brain most dramatic?
 Answer: Just before birth. See Kang et al. 2011, "Spatio-temporal transcriptome of the human brain"



NIH study, 1995 to the present (see e.g. Lenroot et al., 2007, figure at left; Raznahan et al. 2010; comment in Sax 2010). Girls reach the inflection point (arrow) just before 11 years of age. Boys do not reach the inflection point (arrow) until about 15 years of age.

Sex differences in the brain are largest between young girls and young boys; sex differences between adult females and adult males are small. The same is true for many parameters relevant to education. For example:

How long can you sit still, be quiet, and pay attention? We find no difference on that parameter comparing a 40-year-old woman with a 40-year-old man. But when we compare a 6-year-old girl with a 6-year-old boy, we find that the average 6-year-old boy can sit still, be quiet, and *pay attention* for only about half as long as the average 6-year-old girl. He may be sitting still and being quiet, but he is not paying attention. It's

not unusual to find 6-year-old boys who absolutely have to stand and make buzzing noises in order to learn. It *is* unusual to find a 40-year-old man who absolutely has to stand and make buzzing noises in order to learn.

Development of brain regions involved in emotion: e.g. Killgore & Yurgelun-Todd, 2004. Left amygdala activation corresponds with cognitive awareness of emotion, conscious reflection on emotions; right amygdala activation corresponds with unconscious “instinctive” emotion (Dyck et al., 2011). Boys activate primarily right amygdala; girls activate primarily left amygdala (Schneider et al., 2011)

Gender-Aware Instructional Strategies for English Language arts / Creative writing / Expository writing History / Social Studies

Be skeptical of anyone who promotes the idea of “girl books” and “boy books.” You can teach ANY of the “Great Books” to girls, and to boys. But you may teach them somewhat differently.

In medias res: starting in the middle of the story. Teach *Jane Eyre* to boys by starting in chapter 19, then go back to the beginning. This is not a new idea. Homer knew it. Hollywood screenwriters knew it. Ben Williams at Georgetown Prep knew it. We can learn from them.

Technical Details, and Maps are good strategies for engaging boys in literature, even in elementary school; less often effective with girls in this age group. When teaching *The Secret Garden*: make a map of the Manor; determine the location of the secret garden by interpolating its position from the herb garden and the fountain.

Allow transgressive responses: *Write about your first date.*
Frank McCourt assigned his students to write an excuse about why they didn’t turn in a story. Then he asked them to write an excuse to God. Both good ideas. Then he asked them to write an obituary for anybody at the school now living – NOT a good idea.
Challenging the notion of “girl books” and “boy books”.

Avoid *requiring* boys in grades K-8, “*How would you feel if you were that character?*” Instead suggest, “*What would you DO if you were in that situation?*”

Encourage boys to make their writing more vivid by **restating adjectives as subordinate clauses or as participles**. Instead of “goldenrod eyes,” try “eyes the color of rotting squash” (that’s from *The Hunger Games*, chapter 1).

Encourage hyperbole: *His feet smelled so awful, the flowers wilted and DIED when he walked past* (that’s an example from Denise Scott, who teaches 3rd grade at Clemmie Ross James Elementary School in Tampa, Florida).

Creative writing storyboarding: start with a picture, perhaps *in medias res*. Ask the boy what’s going on in the picture. What happened right before? Right after? Make a series of captions. Now remove the pictures and string the captions together.

Imagining the counter-factual: e.g. in teaching *The Secret Garden*, asking what would have happened if Mary’s parents did not die of cholera? Why this strategy is less effective with boys than with girls. One boy said: “*Suppose Mary’s parents were aliens from outer space!*”

Expository writing: girls are equally comfortable with critical approach and personal approach. Most boys in elementary school and middle school are more comfortable with the critical approach.

- Personal: *How did Dr. King’s speech make you feel? How might you have felt in that situation?*
- Critical: *What was Dr. King’s objective in writing this speech? How well did he achieve his objective?*

Your **instructional objective** is to teach the elements of a persuasive essay: topic sentence, evidence, chain of argument etc. There are multiple ways to achieve that objective.

Here’s a common question from teachers and administrators:

The state test, or the district assessment, *requires* that all students answer questions such as “*How would you feel if . . . ?*”

Many schools therefore drill students in writing about “*How would you feel if . . . ?*” But this strategy is often ineffective. For many students, especially boys, a more effective strategy is to offer many opportunities for free writing (creative writing) and critical essays. **Develop the student’s fluency and skills as a writer.** Help him to find his voice. Once he finds his voice, and he is a fluent writer, he can write even on topics which make him uncomfortable – such as “*How would you feel if . . . ?*” But if he has never developed that fluency, he is less likely to be successful.

- ◆ Best practices for teaching **social studies and history** to boys . . .and girls
 - Use narrative history as a vehicle to engage boys, and then make the pivot into social studies.
 - Why is historical fiction less reliably effective with elementary- and middle-school *boys* – even though adult *men* love it?
 - *In medias res*: why it sometimes makes sense to start “in the middle of things”
 - Emphasize technical elements, and maps: What was the difference between a Confederate rifle and a Union Army rifle? Why did it matter?
- ❖ **For girls:**
 - Begin with “what would it be like to be a girl *your age* living in . . .”
 - Make the connection with the student
 - Examples from the southern United States before the Civil War: what would it be like to be a White girl on a Virginia plantation? What would it be like to be a Black slave girl on the same plantation? Introduce the narrative history only after the connection is made, and interest is engaged.
 - Merging the content areas: history/English/art/music/math. Why **thematic instruction** works better for girls than it does for boys. . .and why HISTORY is often the most efficient nucleus around which to organize thematic instruction for girls

- Integrate across different content areas. Why don't we do that more? Why don't we do it ALL the time? Who came up with the idea of dividing up the content into history, English, art, music, etc.? The answer: Winchester, Eton, Harrow.

Gender-Aware Instructional Strategies for mathematics / the sciences / computer programming

Mathematics, beginning with navigation:

In navigating, males are more likely to use north/south/east/west and “two blocks” or “six blocks.” Females are more likely to use landmarks, left/right, and “five minutes’ walk.” Which approach is better? Meaningless question – because the answer depends entirely on the context. If you are stranded in midtown Manhattan on a cloudy day, then the male approach is useless – you can't see the sun. But if you know your landmarks, you can't get lost.

Moving on to arithmetic, number theory, and algebra: For girls, begin with concrete, then move to abstract. For boys: Start with numbers for the sake of numbers. Although one of Piaget's basic principles – concrete before abstract – is accurate in most content areas, researchers have discovered in the past decade that specifically with regard to mathematical concepts, most boys do better if you teach the abstract mathematical principle first, *then* move to the concrete application and the word problems. For example, in teaching how to solve equations in multiple variables, the “boy-friendly” approach might be to ask: *If $x + 2y = 90$, and $2x + y = 60$, solve for x and y .* The “girl-friendly” approach might be to ask: *If a blouse and two sweaters cost \$90, and a sweater and two blouses cost \$60, how much does one blouse cost and how much does one sweater cost?* The “boy-friendly” approach is to begin with the equations, then move to the word problem. The “girl-friendly” approach is to begin with the word problem, then move to the equations. Even girls who hate to shop will be more likely to engage if you begin with the shopping example rather than with “ $x + 2y = 90$.”

- Number theory: example of Fibonacci numbers, and phi: the girl-friendly strategy (beginning with quantitative measurements of pinecones, artichokes, and nautilus shells); the boy-friendly strategy (beginning with $x - 1 = 1/x$; solve for x). In both examples we cover the same material: by the end of the unit, girls and boys have both mastered the same material. But the sequence of topics is different. Remember the principle: no difference in *curriculum* between the girls' classroom and the boys' classroom; the difference is evidence-based differences in *pedagogy*.
- Arithmetic and algebra; geometry; gender-aware use of manipulatives. Recognize that some boys may insist on using manipulatives as toys rather than as aids to learning. "Jason, step away from the pinecones!"

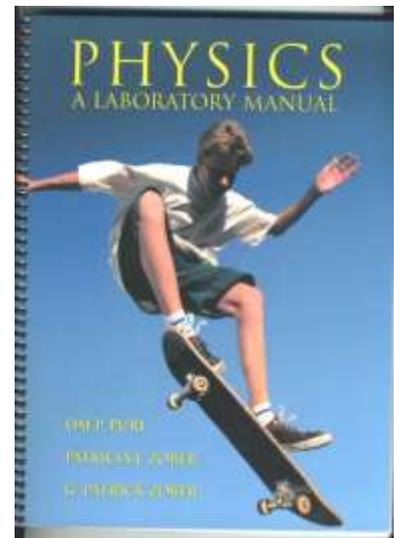
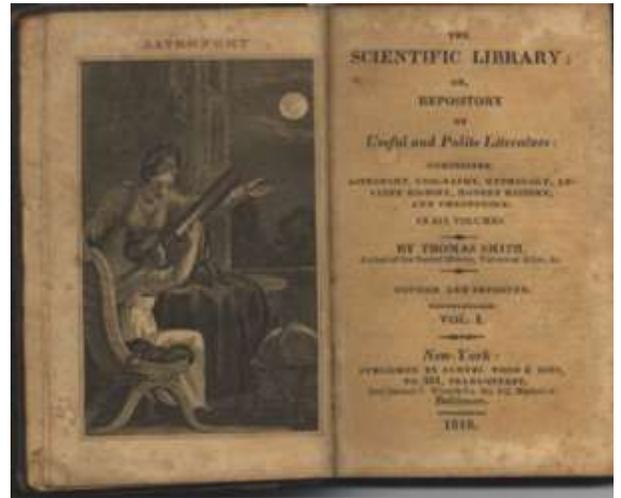
Computer science for girls. Based primarily on the work of Professor Caitlin Kelleher at Washington University – St. Louis, in this segment we explore a new perspective on engaging girls in computer science, a different approach which was remarkably effective in one study: more than tripling the proportion of girls who use their spare time to work on their computer programming, from 16% to 51%.

- The role of mentors. What are the characteristics of effective mentors for girls? Is it essential that the mentor be female? Why has the National Science Foundation been so unsuccessful?
- How to make computer programming "cool" in the eyes of girls

Mentors work only if the mentor is someone the girl would like to BE or be WITH. A *man* who is friendly and easy to talk with might be a better mentor, under some circumstances, than a woman who keeps shouting about *Star Trek* and Leonard Nimoy. Lessons from Cheryl Sandberg: if a man is going to mentor a girl, there must be rules in place: everything in a public setting; no closed doors; no evening meetings.

Physics (and the sciences): girl-friendly v. boy-friendly pedagogy

- Larry Summers, January 14 2005: the politicization of gender difference
- Conservatives: sex differences are hardwired; “girls are better with people”
- Left-of-center: sex differences are socially constructed
- *Both were wrong*
- Kim Tolley, *The Science Education of American Girls*. Two centuries ago, most girls’ schools in the United States taught physics and chemistry and astronomy, but most boys’ schools did NOT; instead they taught Latin and Greek, which most girls’ schools did not teach. Common belief in North America 200 years ago: “Science for the ladies; classics for gentlemen” (that’s the title of chapter 2 of Kim Tolley’s book)
- The best way to teach physics to girls may be different from the best way to teach it to boys: Anat Zohar and David Sela, “Her physics, his physics: gender issues in Israeli advanced placement physics classes,” *International Journal of Science Education*, 25:245-268, 2003.
- The *Feynman Lectures on Physics* are a good example of girl-friendly physics instruction, because they focus on the WHY. But those textbooks are out of date. *Warped Passages* by Dr. Lisa Randall is a more up-to-date although less quantitative example of girl-friendly physics.
- Physics textbooks in the United States today are still biased in favor of boys, even when women are co-authors (Patricia Zober is a co-author of the book at right)



- Jenn Alabaster is the physics instructor at Korowa who said: “Where is it written that physics instruction has to begin with kinematics?” She begins with the wave-particle duality of light. (*Girls on the Edge*, pp. 132 – 138)
- Tim Smith, at a school (Mount Alvernia) in Queensland Australia. He was previously at Nonsuch, a public school in a low-income neighborhood in London England. Enrollments in advanced physics at his school increased from 4 girls to >50 girls in four years’ time as a result of using girl-friendly instructional strategies.

But girls are not the winners here. When educators ignore gender differences – as Dr. Halpern and her colleagues insist that we should – girls lose out as well. Girls develop negative attitudes toward math and technology early on, as a result of a lack of awareness of gender differences. And those negative attitudes, once formed, are hard to change. One result is that **girls remain under-represented in physics, computer science, and Calculus BC**. Who’s taking the AP exam in Physics C, E&M and/or Mechanics?

In another study, researchers interviewed high school students from 27 different states. These girls and these boys were all taking AP Calculus. The researchers asked every girl and every boy, “*Is there any chance that you might major in engineering, that you might become an engineer?*” More than half the boys said things like “*Yes, there’s a chance, I haven’t made up my mind yet what I’m going to do.*” But more than 90% of the girls said “*NO, there is NO possibility that I will become an engineer.*” And all these girls were taking AP Calculus! www.eweek.org/site/news/Eweek/EWE_Needs_Asses.pdf.

**The lack of awareness of gender differences
has the unintended consequence of *reinforcing* gender stereotypes.**

Contact information:

Leonard Sax MD PhD

Montgomery Center for Research in Child & Adolescent Development (MCRCAD)

64 East Uwchlan Avenue

Exton, Pennsylvania 19341

Telephone: 610 296 2821

Fax: 610 993 3139

e-mail: mrcrad@verizon.net and leonardsax@prodigy.net (use both)

www.leonardsax.com

Sources, and additional reading:

- Israel Abramov, James Gordon, Olga Feldman, and Alla Chavanga. "Sex & vision I: spatio-temporal resolution," *Biology of Sex Differences*, 2012, full text online at no charge at <http://www.bsd-journal.com/content/3/1/20>.
- Gerianne Alexander and Melissa Hines, "Sex differences in response to children's toys in nonhuman primates," *Evolution and Human Behavior*, volume 23, pp. 467-479, 2002.
- Gerianne Alexander, "An evolutionary perspective of sex-typed toy preferences: pink, blue, and the brain," *Archives of Sexual Behavior*, volume 32, pp. 7-14, 2003.
- Katrin Amunts et al., "Gender-specific left-right asymmetries in human visual cortex," *Journal of Neuroscience*, volume 27, pp. 1356-1364, 2007, full text available at no charge at this link: <http://www.jneurosci.org/cgi/content/full/27/6/1356>
- Roy Baumeister, *Is There Anything Good About Men?* New York: Oxford University Press, 2010.
- Kevin Carey, "Finlandia," *Education Week*, December 15 2008, online at www.quickanded.com/2008/12/lessons-from-finland.html

- John Colapinto, *As Nature Made Him: the boy who was raised as a girl*, New York: Harper, 2006.
- Lisa D'Alessandro and Kenneth Norwich, "Loudness adaptation measured by the simultaneous dichotic loudness balance technique differs between genders," *Hearing Research*, 247:122-127, 2009.
- Miriam Dyck et al., "Cognitive versus automatic mechanisms of mood induction differentially activate left and right amygdala," *NeuroImage*, 54:2503-2513, 2011.
- Janice Hassett, Erin Siebert, and Kim Wallen, "Sex differences in rhesus monkey toy preferences parallel those of children," *Hormones and Behavior*, volume 54, pp. 359–364, 2008.
- Sonya Kahlenberg and Richard Wrangham, "Sex differences in chimpanzees' use of sticks as play objects resemble those of children," *Current Biology*, volume 20, pp. 1067-1068, 2010, full text online at no charge at <http://www.tsi.org/files/doi101016j.cub.2010.11.024.pdf>
- Hyu Jung Kang et al., "Spatio-temporal transcriptome of the human brain," *Nature*, 478:483-489, 2011.
- Caitlin Kelleher, "Barriers to programming engagement," *Advances in Gender & Education*, 1:5-10, 2009, online at www.mcrcad.org.
- Katherine Keller and Vinod Menon, "Gender differences in the functional and structural neuroanatomy of mathematical cognition," *NeuroImage*, 47:342-352, 2009.
- William Killgore and Deborah Yurgelun-Todd, "Sex-related developmental differences in the lateralized activation of the prefrontal cortex and amygdala during perception of facial affect," *Perceptual and Motor Skills*, 99:371 – 391, 2004.
- Rhoshel Lenroot et al., "Sexual dimorphism of brain developmental trajectories in childhood and adolescence," *NeuroImage*, 36:1065 – 1073, 2007.
- Robert McGivern et al., "Men and women exhibit a differential bias for processing movement versus objects," *PLOS One*, March 14 2012, DOI: 10.1371/journal.pone.0032238,

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0032238>.

- Armin Raznahan et al., “Longitudinally mapping the influence of sex and androgen signaling on the dynamics of human cortical maturation,” *Proceedings of the National Academy of Science*, 107:16988-16993, 2010.
- Leonard Sax and Kathleen Kautz, “Who first suggests the diagnosis of attention-deficit / hyperactivity disorder?” *Annals of Family Medicine*, 1:171-174, 2003.
- Leonard Sax, “Reclaiming kindergarten: making kindergarten less harmful to boys,” *Psychology of Men and Masculinity*, 2:3-12, 2001.
- Leonard Sax, *Why Gender Matters: what parents and teachers need to know about the emerging science of sex differences*, New York: Doubleday, 2005. Revised second edition will be published in August 2017.
- Leonard Sax, *Boys Adrift: the five factors driving the growing epidemic of unmotivated boys and underachieving young men*, New York: Basic Books, 2007; revised second edition was published in 2016..
- Leonard Sax, “Noisy Time Story Time,” *School Library Journal* (cover story), September 2007, 40-43.
- Leonard Sax, *Girls on the Edge: the four factors driving the new crisis for girls*, New York: Basic Books, 2010 (updated softcover edition, 2011).
- Leonard Sax, “Sex differences in hearing: implications for the classroom,” *Advances in Gender and Education*, 2:13-21, 2010.
- Leonard Sax, “Unexpected sex differences in brain development,” *Psychology Today*, December 2010, online at <http://www.psychologytoday.com/node/51774>.
- Leonard Sax, “Why not just put ALL the kids on medication?” *Psychology Today*, April 2013, online at www.psychologytoday.com/node/122122
- S. Schneider et al., “Sex-dependent amygdala lateralization in adolescents,” *NeuroImage*, 56:1847-1853, 2011.

- Deborah Tannen, *You Just Don't Understand: women and men in conversation*, HarperCollins (revised edition, 2001)
- Kimberly Tolley, *The Science Education of American Girls*, Routledge, 2002.
- Anat Zohar and David Sela, "Her physics, his physics: gender issues in Israeli advanced placement physics classes," *International Journal of Science Education*, volume 25, pp. 245-268, 2003.