

by JoAnn Deak, Ph.D.

Girls Will Be Girls

Raising Confident, Courageous Daughters

Part I: Brain Science and Strudel Theory
“The ‘girl thing’ has been overdone,” a national media commentator told me one day, explaining why she was not interested in doing any more shows on girl topics for the foreseeable future. It was true; there had been a wave of stories, more accurately a tidal wave of media attention on the subject of relational aggression among girls. A couple of highly publicized books on the subject had just come out, and the media had, indeed, been awash in stories about girl meanness.

I agree, “the girl thing” has been overdone, but overdone only if the “thing” we are discussing is the developmental caricature of girls as a subset of the species that is catty, gossipy and socially evil. Do girls struggle with the complexities of development? Of course — what child doesn’t? However, I have worked with girls, parents, and teachers of girls for more than twenty years, and there is more — much more — that distinguishes girl life.

The grain of truth is this: it really matters to girls if they fit in, are liked, and have a place in the social and school community. This is a natural and needed part of the genetic makeup of the female species based in part on the evolutionary fact that females need to be somewhat pre-programmed to care for and be connected to other humans. This is the basis of human survival. Roughly translated, whether a girl is strong and independent or not, she has very strong feelings and is somewhat driven to belong. Current research is also providing evidence that under stressful or challenging conditions, females produce not only adrenaline, but also oxytocin. This chemical predisposes females to want to cluster and interact with other humans. Therefore, under social stress, girls are propelled more than ever to cluster, and clustering inevitably includes some and leaves out those who are somewhat different.

In addition, brain research is showing clearly that the development of language and all of the nuances of use happen much earlier for most girls than for most boys. Combine these two girl ingredients — the need to affiliate and the well-developed language facility — and you have a subset of the species that cares deeply about belonging and connecting, has a propensity for emotional expression and intimacy, and often a heightened sensitivity for reading the social scene. Put those early language skills to work expressing the very strong, visceral adolescent emotions, and find that adolescent girls can and do get hurt very much by the behavior and words of others, and can and do use their language for interactional purposes, both positive and negative.

However, the real “girl thing” that is rarely addressed is girls’ capacity as critical thinkers and relational architects, their willingness to take the world as-is and act on it. Girls today live on the pioneering edge of social transformation that is unprecedented in history. Theirs is a future in which girls and boys, and men and women, will seek partnership and intimacy in new relationship styles, and a future in which the very qualities of female intelligence, energy and wisdom will have currency like never before, which can transform life around the globe in ways never possible before.

Nora, a high school senior described it to me this way: “It’s pretty hard being a girl nowadays. You can’t be too smart, too dumb, too pretty, too ugly, too friendly, too coy, too aggressive, too defenseless, too individual, or too programmed. If you’re too much of anything, then others envy you, or despise you because you intimidate them or make them jealous. It’s like you have to be everything and nothing all at once, without knowing which you need more of.”

How could we not be talking about that, about how girls grow and what they need from us and from their environment to grow into healthy,



Art Titled “Little Mommy” by Larry Walker Courtesy of MARSAD

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resilient, self-expressed women? How we can nourish and prepare girls for the extraordinary demands of our time?

In my work with girls and the adults who live and work with them, I find that parents, teachers and girls themselves are hungry for two kinds of information. They want the “hard science” — specifically new information about the neurological growth of girls. Also, they want a commonsensical way of thinking about “growing up girl” that, for the adults, enables them to support girls’ growth into young women who are smart, strong and emotionally resilient. Girls themselves are eager for the information because it helps them understand themselves. It helps explain the internal and interpersonal dynamics, which they grapple with every day as a part of the relational dimension that is so compelling and vivid for them. I have found that the “hard science” is a lot easier for them to digest if I share my Strudel Theory of child development in language they enjoy and understand.

Strudel Theory: Building a Life with Layers of Experience

When we see a little boy turn to the box of blocks and a little girl head for the dress-up corner, we see the backdrop for the “nature versus nurture” debate: are gender preferences the result of genetic “hard-wiring,” or of socializing influences in the environment? The answer stimulates heated debates in some circles, but only in terms of how much. We accept that individuals are shaped by nature and nurture. It is the cumulative effect of nature, nurture and life experience that shapes a child, and it does so in some special ways from the very beginning when that child is a girl.

Basic Strudel Theory says that each of us is born with the main ingredient (our nature), but it is the layering of that with other ingredients (nurturing) and the interaction of them all together over time (life experience) that creates the finished product.

Think about a girl you know well — maybe a student, maybe your own daughter — and her personality, and label it either sweet cherries or tart apples. Starting with that main ingredient, imagine adding a cup of sugar (your loving attention), some salt and spices (friends and family interactions), a pastry crust (home and school environments), and some heat (the excitement and pressures of everyday life) and bake it all together. No matter how carefully you measure or mix those ingredients, each strudel is going to turn out a little differently, depending on the characteristics of the fruit and spices, and the chemistry that occurs in the mixing and baking.

In human terms, Strudel Theory says that whatever qualities a girl’s basic nature brings to the mix, the layering of experiences and actions over time, on an hourly, daily, weekly, monthly and yearly basis, leave a lasting impression on a girl and profoundly shape her image of herself and herself in relation to others.

Research offers insights into the nature of girls and the distinctly female development of the core neurological system, which includes thinking, perceiving, feeling and movement — in other words, the nature of a girl’s

experiences. A few simple points about brain development help set the stage for understanding the female experience of life and learning from the earliest days of life, when the layering begins.

Girl Brains: The Accent on Caring and Complex Thought

We each are born with an existing pattern and number of neurons, or nerve cells, that conduct impulses throughout the body and to and from the brain. However, with each experience and with layered experiences using the same sets of neurons, two things happen. First, the axon, or nerve cell body, becomes thicker with added coats of the myelin, a fatty covering on a nerve that conducts an impulse faster and more effectively as it grows thicker. The entire neuron grows thicker through this process of *myelination*. Basically, as a neuron or set of neurons is used, it gets bigger and better. Second, the dendrites, branch-like connections between neurons, also grow “bushier” with use. With no or little use, dendrites do not grow, and with time, are naturally “pruned out” of the system. Neurons with more dendrites conduct impulses, or thoughts, more effectively and efficiently, so we want to grow dendrites and have “bushy” areas in many parts of our brains.

From birth to about age three, the human nervous system is primed for growth. Just like a tree, it grows quickly during this early stage, and that growth establishes the basic pattern for our brain “tree” development. Those areas that develop the most branches (dendrites) and the sturdiest branches will be the strongest part of the tree, or in this case, the brain.

We now know that this process of dendritic growth can, and does, happen all through life. However, just like the tree, it is harder to prune large branches, or habits, than smaller branches. Once something is learned or felt for a long enough period of time, it is harder to change. It is also easier to grow bigger branches early in the tree’s life than later when the patterns of growth have already been established.

The lower or mid-brain, called the limbic system, and more specifically, an almond-size portion of the mid-brain, called the amygdala is the neurological home of our emotions. The amygdala has a powerful influence on all thoughts and behaviors, especially in the female. Females seem to have a very sensitive and active amygdala. The thought process in both the female and male brain, intertwine the activity of the cortex (the pecan-shaped gray matter, which is the center of rational thought) and this amygdala, the emotional center of the brain. This tells us that there is no such thing as totally rational thought; our thoughts always have amygdala involvement. However, research indicates that the female brain usually has more amygdala involvement than the male brain under the same circumstances. Research has not yet discerned an explanation for this, but evolutionary scientists suggest there must be a survival advantage for the female of a species to be hard-wired to feel some emotions, especially negative ones, more frequently and more intensely than the male of the species.

What does all this mean? To use the Strudel Theory metaphor, the female “strudel” is very different from the

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male “strudel” at the most basic level. The combination of different “ingredients” by gender and by individual combine with the experiences layered over time to exert a strong influence on the end product [i.e. each individual]. This readiness of the system, not just psychologically, but in terms of the hardwiring of the brain, is very important in thinking about the earliest parenting responses to girls and responses throughout a girl’s life. Females and males seem to have differing timelines of physical and brain development, especially during the formative years.

In terms of phonics or spelling readiness, girls can and do move into reading earlier than boys, often up to two years earlier. Boys are able to do spatial tasks much earlier than girls like building those Lego models, for instance. Society thought that this was due to experience, toys, or other influences that were gender stereotypes. Brain research now clearly shows that the structure of the female and male brain is different at birth. Female brains have more neurons in certain areas than male brains as a result of having more estrogen “bathing” them during fetal development. It is thought that about 80 percent of girls come into the world with this “female differentiated” brain, and about 20 percent arrive with a more “male differentiated” brain. (This only references neurological predispositions — not sexuality.)

The infant girl in the 80 percent group comes into the world with three key predispositions as a result of female-differentiated brain:

- She is more likely to be more highly developed in the cognitive areas of language facility, auditory skills, fine motor skills, and sequential/detailed thinking.
- In comparison to the male brain, the female has a more decentralized brain that uses many parts for a singular task: a more integrated brain, which uses both hemispheres for most tasks, a more developed corpus callosum, the bridge between the left and right hemispheres that allows communication back and forth, and enhances the integration of those brain activities.
- The limbic system appears to be more sensitive and more active in females. Consequently, females’ thoughts are more integrated with the emotional system more frequently and more intensely than most males. In everyday activity, a girl views the moment with both the rational and emotional parts of her brain, so seemingly “unemotional” situations contain an emotional component for her.

In the layering of experience, the world can and does intervene. Early experiences can exacerbate these slight gender predispositions or modify them in the other direction. During the formative years, what is experienced has significant impact on the wiring of the brain and the development of the personality.

Keep in mind that use increases the dendritic branching, and neuron growth; this growth improves the facility of thinking in the used area, and the formative years are the high neurologic “tree” growth time. This means that boys who are quickly building those Lego models use their spatial neurons because they are good at it, and there is a brain comfort factor with this activity. As boys continue to

engage in this kind of play, they are growing even more dendrites and making these particular neurological connections even stronger. Girls, on the other hand, are spending hardly any time in the block area and are, therefore, not increasing dendritic growth and neurologic strength in that area, but are probably “pruning back” the number of dendrites there because of little usage. This is the area of the brain that deals with math and logic-based problem-solving later in life. It is a critical area of development in terms of later success in school and in life in general.

‘Logging in’ for Optimal Brain Growth

I refer to usage and time spent in a particular skill area as “log in” time. It is important for girls (and boys) to spend “log in” time in areas that are counter to their neurologic “grain.” Translation, for optimal lifelong neurological balancing and growth, girls generally need to spend more time in the block corner and boys need to spend more time in the writing/drawing corner. Provided in an enjoyable way, these early against-the-grain gender experiences help create a well-balanced brain that is better equipped to handle the range of tasks and challenges that brain will have to contend with throughout life. This concept can be expanded to many areas. Young girls need to be spending time in all of the areas that they are not as hard-wired to choose early on of their own accord. *For the 80 percent, that would be:*

- Gross motor tasks: skipping, riding a bike, climbing
- Spatial tasks: puzzles, tangrams, carpentry, orienteering
- Strategy and problem solving: team games and sports, checkers
- Risk taking: doing anything that takes a bit of courage on a particular girl’s part. This can range tremendously by individual.

If you have a “20 percent” girl, then she needs to spend more time on:

- Fine motor tasks: painting, drawing, tying, zipping
- Auditory tasks: books on tape, rhyming, reading poems and stories aloud
- Sequential and detailed thinking: hidden word puzzles, jigsaw puzzles, putting things in order, alphabetizing
- Connecting with others: cooperative play, volunteer work

We cannot make a girl develop a certain way, but we can intentionally layer opportunities and experiences to support and enhance optimal development. Part II of this article will discuss more about some patterns of neurological development, and the role of ambiguity in divergent thinking in girls. ▼

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