

Meeting Minutes

April 18 & 20, 2007

Presenter: Deb Hughes

Topic: Getting It All Together

Attendance: Donita, Jill, Esther, Amy, Trisha, Tonya, Courtney, Ryan, Meg, Ronee, Ashley, Nicole, Mary, Lisa, Melanie W, Joy, Carrie, Erika, Chris, Susan, Emily, Jane, Jean, Griselda, Angelica, Deb S., Jenni, Darla, Jen, Cheryl, Colin, Angie, Denise, Cindy, Dorothy and Melanie R.

Not In Attendance: Jenna and Emi

TOPICS COVERED

- ♻️ **Spring Program:** Its here already!! Make sure flip charts are completed just in case your children freeze on stage the night of the program.
- ♻️ **Appreciation Gift:** Deb handed out an appreciation gift to all staff. She wants us all to know that she is proud to part of our team. She also feels that we have done a great job preparing for the Spring Program.
- ♻️ **Safety Drills:** In the next several weeks we will begin different types of drills, Mr. Greenjeans and Fire Drills, to become more familiar with what we should and shouldn't do. Deb shared a story with us regarding another area facility that did their drill and found that there was a lot they hadn't thought about.
- ♻️ **"Getting It All Together":** Deb reviewed some really interesting things with the staff. She revealed some of the findings she gathered while doing each team member's profile. She said that there is a large number of staff that needs to be moving in order to learn things. How many children do you think we have that require this? Do you think we are benefiting them when we say, "Eyes forward!" or "Sit still!?" How do you behave when under stress? Some may be mean to loved ones (kids to teachers) or act out.

The information that Deb is offering is just a piece of the puzzle. It is not the full answer. It will help us understand the needs of the kids. We will be able to process and help kids learn better and not get stressed out when they aren't fitting into our expectations.

Are we suppose to let kids act up and disrupt others?? No, just get creative. Example: Use movement when doing curriculum. Clap hands when doing numbers or letters, creative a fun beat when trying to learn different colors, etc...

If you are a detailed person, you are a logical thinker (Left Side). If you are an imaginative thinker, you tend to use your right side of the brain over the left side.

Please review all of the information handed out during the meeting. Keep them in your classroom Handbook so you can refer to them on a regular basis. If you are interested in doing these profiles on children or your family, there are papers in the office to help you complete your task.

Anonymous Bag Topics

1. Needs to be lead teacher for naptime gym schedule.
2. Suppose to walk around during naptime, right?
Answer: Yes, but review per class (per Deb H.) How many children are awake when you leave? There will be a meeting with the naptime people to correct the problem.
3. Naptime bags are too much fun for the kids.
Answer: Is the class contained while sitting with the bags?

4. Find a way to fix storage problem in the cot room.

Answer: Computers are in the way, lock on door isn't really working, 15 minutes in gym isn't long enough and things get thrown in the closet, and get list of broken cots. Give list to Cindy when all have put info on it.

Affirmation Box Topics

- ☸ Thank you to Melanie R for fixing the Ocean Room's sink. You were very brave!
- ☸ Carrie – She always works hard and stays the longest during naptime.
- ☸ Thank you, Ryan, for changing my flat tire.
- ☸ Thank you, Melanie W, for cleaning off the Ocean Room's art easel! We appreciate all that you do!
- ☸ Thank you, Cindy, for helping me with a "gross" mess!
- ☸ Thank you, Joy, for offering to run an errand for me on your break to save me out of a jam.
- ☸ Thank you, Griselda, for praying with me when I had something on my mind.
- ☸ Thank you, Darla, for typing all my anecdotal notes when I was sick!

Getting It All Together

Ideally, we all expand our capacities beyond our basal profiles and learn to use both brain hemispheres well, to use our eyes, our ears, and movements of our hands and feet to full capacity. When you learn and perform in whole-brained, integrated ways you achieve more, developing more varied skills and competencies. It is possible to become more logical and analytical (logic hemisphere) or to become more imaginative and intuitive (gestalt hemisphere). You can learn verbal communication skills or increase your kinesthetic abilities. You can increase your visual skills or become better at listening.

As we grow and become schooled, we have opportunities to develop compensatory strategies for learning and most of us do pick up a thing or two over the years to help us work better. This chapter will offer some ideas that you or your child may not have learned in school which may further encourage whole-brain integration. Many of the suggestions are physical movements that come from Paul and Gail Dennison's work on Brain Gym®. Other practices are widely used techniques found in many different books about learning. If a technique is unfamiliar to you, look for it in Appendix B where you will find an alphabetical listing of learning techniques and sources, with more detailed descriptions.

Following are some helpful hints to encourage whole-brain integration in yourself and others.

How To Be More Whole-Brained — Help for the Gestalt Dominant Learner

If you are gestalt dominant in your basal profile, there are many habits and strategies that will help you to become more orderly and analytical in your thinking and your work habits. After all, everyone does have a logic hemisphere, and even if it's not your inclination to do so, you are able to make lists, prioritize, classify, sequence, arrange things in order alphabetically, numerically and hierarchically. Logic hemisphere thinking has many advantages. Logic processing allows you to reason and make judgments based on objective measurements and logical thought patterns. Logic brain checks and measurements can help steer you away from wild goose chases and pie in the sky projects.

If you are gestalt hemisphere dominant, your tendency is to see the big picture and to be less concerned with the details. The trouble with this inclination is that without the details the rest of the world may not know what you are talking about. The challenge for you is to break down your intuitive grasp of things into manageable, identifiable pieces that can be organized and then explained or proven to the rest of us. Using logic hemisphere strategies like math, sequencing of steps, flow-charting, outlining, etc., will help you to communicate your knowledge and great insights to others.

The scientific method with its emphasis on controlled, strictly measured testing of a hypothesis is a good example of integrated functioning. Gestalt hemisphere processes inspire a hypothesis, then logic hemisphere processes test the theory in an objective way, thereby increasing the chance that a true picture emerges from the test.

Strategies and Habits for Gestalt Hemisphere Learners

- Make lists
- Prioritize
- Sequence and use Flow Charts
- Attend to details

Attachment for 4/18 + 4/20 mtg.

- *Learn Time Management*
- *Force yourself to finish what you start*
- *Use objective measurements — quantify, use statistics*
- *Analyze decisions and go through logical reasoning processes*
- *List advantages and disadvantages of a decision and rate each on a scale of 1-10 to give a numerical rating*
- *Break large concepts into smaller pieces. Use outlines, draw pictures, make mind maps to clarify relationships between the pieces of information*
- *Write poems or songs that rhyme and have a numerical sequence*
- *Memorize information using mnemonics, set the information to a tune you know, or make up your own song, repeat or sing the information while jumping on a rebounder or while walking,*
- *Practice observing detail with line drawings or drafting*
- *Practice sequencing when you communicate: "There are three points to this discussion: One,"*

Help for the Logic Dominant Learner

If you are logic dominant in your basal profile you may have to develop habits that encourage your gestalt hemisphere processing. Crucial insights, novel ideas, artistic inspirations originate in the image-making gestalt hemisphere, so does intuitive understanding. If you are a logic dominant learner you may need to acquire habits that help spark this image-making capacity and you may need help learning to trust your intuition.

Allow time and space for idea generation. Inspiration is not methodical. Great ideas often spring from unconscious processes that may surface out of the blue, days after you start working on a problem or task. If you have a tendency to censor and dismiss your ideas too quickly, you can develop loosening up strategies like brainstorming, or creative visualization. These techniques prime your brain's unconscious processes to tie memories or associations together in new ways, sometimes yielding exciting combinations.

When making decisions, learn to trust intuitive knowledge or hunches. Sometimes problems defy logical analysis. Complex problems may have variables that are difficult to relate and quantify. In such cases it often helps to follow intuitive feelings or instincts to find solutions. In many cases people intuitively know the answer and only afterward break it down with logical analysis to explain it to other people or to verify the insights.

If you are logic hemisphere dominant you may also need to encourage your emotional expression. Put aside those tired, worn out prejudices we all learned about not "being too emotional." Emotions are the cornerstones of relationships, leading us to understanding, compassion and interconnectedness. Emotional content is essential in all creative endeavors and in most avenues of communication from sales pitches to book length essays. Physical movement can help you develop expressiveness and bring you out of your tendency toward detail.

Strategies and Habits for Logic Dominant Learners

- *Brainstorm*
- *Visualize unusual images in your mind's eye*
- *Use picture and symbol mind maps (as opposed to outlines) for more fluid idea generation*
- *Pay more attention to gut instincts — trust your intuition*
- *Be aware of your emotions and express them — especially spontaneous joy*
- *Be physically active, especially with highly integrative, non-competitive activities — such as hiking, swimming, etc.*
- *Learn to accept and be comfortable with ambiguity and paradox*
- *Write poems and songs that contain rich images and don't rhyme*
- *Use metaphors and emotional stories whenever possible*
- *Practice saying things in new ways ("In other words ...")*
- *Talk more slowly using fewer words*
- *Play with impressionistic and free-form color painting, sculpture and dance*
- *Role-play business or personal situations to understand the big picture*

Integration in Creative Pursuits

Below is a chart of some common creative pursuits and the logic and gestalt hemisphere functions that are involved in their practice. If you wish to improve your creative output, you need to check both sides of the chart.

	<u>LOGIC</u>	<u>GESTALT</u>
ART	What media to use How to show perspective How to blend colors How to use brush, pallet knife, pens, pencils, etc., for greatest effect	Image Emotion Rhythm Spontaneity Intuition
MUSIC	How to play the instrument How to read the notes Correct timing How to use the vocal folds for a specific sound	Image Emotion Rhythm Spontaneity Intuition
DANCE	Ballet positions for stability Specific dance steps Choreography How to move the eyes to maintain balance	Emotion Image Rhythm Spontaneity Intuition
SPORTS	Rules of the game How to hold the equipment How to move the body for stability	Whole picture Rhythm Spontaneity Passion for the sport

When I learned to play the violin I had to engage both hemispheres and all of my senses. At first, my lessons were more logic-oriented, involving notes, timing, how to hold the violin and bow, watching the progression of notes and listening for specific tones. As I progressed, the violin became an extension of my love for music, engaging more of a balance with my gestalt hemisphere and deeper involvement of all my senses. Current research on the brain shows that people who play musical instruments, especially complicated ones like the violin, have more integrative nerve pathways. The same is true of art, theater, dance and sports. In order to truly excel in all these endeavors, there must be an integration of the technique (logic hemisphere) with the passion, image, story and personal emotion you bring to the art form (gestalt hemisphere).

Physical Movement Increases Brain Integration

One of the best ways to get the two sides of the brain working together is to engage in cross-lateral physical movement. What do I mean by the term cross-lateral? Those movements where limbs on one side of the body cross the body's midline and coordinate with limbs on the other side of the body — so that both sides of the brain are being used at once. When playing the violin, I had to move my left fingers on the strings to produce the notes, while my right arm crossed my midline, moving the bow across the strings to produce the sound. Cross-lateral movements actually improve the nerve communication between the two sides of the brain.

For years we have known about the formative value of crawling in early childhood. This early cross-lateral activity is crucial for setting up neural links between the two brain hemispheres. Children who miss or shortchange the crawling stage are likely to have learning difficulties later on. Cross-lateral movements facilitate learning throughout life as well. They are among the best prescriptions for people with homolateral profiles for eyes, ears, hands and/or feet.

This notion of moving the body to help you learn better is new and startling to many people. If it seems surprising to you, consider what happens when you perform phys-

ical movements. You are not only using your bones and muscles — you are also using nerve pathways in the brain and between the brain and the rest of the body. The neural pathways you use to move your arm in a cross-lateral exercise include many of the same pathways you would use to write with or gesture with in learning activities. The more you stimulate these neural pathways by using them, the more efficiently they work, for all activities.

The same is true of muscles you use for speaking, seeing, hearing, touching, etc. All of our senses work by using muscles. There are specialized muscles in our eyes and ears. Muscles move our hands for touching, our tongues and noses for tasting and smelling. We cannot see, hear, touch, taste, smell or get a sense of our body's position (this last item on the list is a sensory system that we call proprioception) without moving muscles. And whenever we are moving muscles, we are stimulating and building up nerve pathways too — pathways that help us perform all sorts of tasks. As I mentioned before, cross-lateral movements are especially helpful to brain and sensory integration. There are even cross-lateral exercises for the eyes that you may find helpful. (Sources are listed in Appendix B.)

Other kinds of movements are beneficial to the learning process as well, especially movements that stimulate the vestibular system. This is a sensory-motor system connected between the semicircular canals of the inner ear, brain stem, eyes and core muscles. The vestibular system regulates our equilibrium and our sensation of movement. It is an important component of the brain's ability to maintain alertness. Via the reticular activating system, the vestibular system wakes up the brain and prepares it to take in new information. Exercises which include large scale movements of the head or which require balance will stimulate the vestibular system.

Walking, which coordinates arms and legs together, is an all-around good activity for stimulating the brain. Knitting, which involves skilled movements of the hands in concert, is another good example. I once had a student in an anatomy and physiology course who sat in the back of the room and knitted during the whole class. She never took a note and very seldom looked at me. She got one of the highest grades in the course, and

knitted nine sweaters that semester! She was an auditory learner, and did not need to look at me or the board to learn. And, by using both hands while knitting, she was accessing both hemispheres and keeping them equally activated.

Following are some good ideas to get you moving in brain stimulating ways. If you are interested in knowing more about the role of movement in learning I refer you to my previous book, **Smart Moves**, which explores the subject in much more depth.

Brain Beneficial Movements Menu

- *Take a walk. Start out fast and then slow down so that every cross movement of the walk becomes very conscious.*
- *Do Tai Chi, Yoga, gymnastics or cross-lateral aerobics.*
- *Do Brain Gyms®, especially Cross Crawl, Elephants, Lazy 8's and Hook Ups*
- *Dance, play a musical instrument or sing*
- *Knit, play with clay or plasticine*
- *Hug wrestle with your kids, pets, mate*
- *Climb a tree, do a ropes course*
- *Walk across a narrow bridge, balance beam or tightrope*
- *Swim, ski, skate, and surf*
- *Play cross-lateral games like: tennis, soccer, volley ball*

The Eyes — Help for Homolateral (Limited) Vision

A visually limited profile will affect your ability to take in visual information. Reading, especially in stressful circumstances, may be a problem for you. Under stress, the eyes tend to move outward, relying on a broad, peripheral focus. This makes foveal focus difficult — the close-up focus you need for reading and tracking across a page of text. Also under stress, because your dominant eye is on the same side as your dominant hemisphere, the dominant eye muscles will not receive full motor function.

There are a number of physical activities that will increase your ability to take in visual information. Some are stress reducers and others are cross-lateral activities that use both sets of eye muscles and both sides of the brain together, thereby increasing integration.

- Do Brain Gyms®, especially Brain Buttons, Lazy 8's, Energy Yawn and Vision Gym
- Cross your eyes
- Move your eyes in all visual fields, dancing them around the room
- Blink while tracking all around the edge of an object with both eyes
- Look at Magic Eye picture books to see the hidden forms
- Breathe deeply and rest your eyes on pastel colors or on a landscape in the distance
- Take a walk in nature, leading with your eyes
- Practice visualizing colors, unusual patterns and thinking visually
- Develop a keen sense of observation by looking from very small objects to the whole picture — back and forth several times and then recall what you saw
- Take eye time outs and just shut and rest your eyes
- Follow a graceful hand dance with your eyes

The Ears — Help for Homolateral (Limited) Hearing

If you have a limited auditory profile (both the dominant ear and hemisphere are on the same side), the following suggestions will help increase your intake of auditory information by decreasing stress and accommodating both ears and both hemispheres working together.

- Do Brain Gyms®, especially Thinking Caps and The Owl
- Practice active listening with a partner
- Tone the vowels (A, E, I, O, U) by taking in a deep breath and saying the vowel in a long sustained manner as you breathe out. More benefit is gained if you use the whole mouth, full breath, and relax so the sound comes out more as a tone that vibrates

- Listen to 60 beat per minute music — the largo and adagio movements of Baroque music
- Read out loud
- Read stories out loud with a lot of expression, tone changes and foreign dialects
- Sing a lot, by yourself or in groups
- Form your hands into a megaphone by putting the heels together on your chin and directing the fingers up towards your ears. Then listen to yourself talk.
- Practice listening for tonal patterns, pitch, melody and rhythms in music and in voices — your own and others
- Tap out the rhythm of your speech pattern and that of others
- Be very quiet and listen for your heart beat, the sounds of air molecules hitting your ear drums, and the silences between sounds.
- Reach out with your hearing as far as you can to pick up distant sounds

The Hands — Help for Homolateral (Limited) Communication or (Limited) Kinesthetic Manipulation

If your dominant hand and dominant hemisphere are on the same side (limited), there are a number of ways to achieve more integrated functioning and thus be more adept at using your hands. These activities will help you to communicate better verbally, through writing and with your gestures. They will also help you to manipulate objects better for doing skilled work. Explore the following suggestions:

- Do Brain Gyms®, especially Lazy 8's and Double Doodles on a stimulating surface like a rug, rough wall, in rice or on fine sandpaper. This stimulates both the sensory and motor cortexes for the hand and auditory areas of the brain
- Knit, do sculpture, play with clay
- Consciously move each finger of both hands in all directions
- Do finger mirror dances by putting the fingertips of both hands together and

move them to music

- Practice communicating only with your hands
- Play an instrument, type, do beadwork or anything else that requires conscious, fine motor coordination of the hands
- Throw a ball with alternate hands
- Write and draw with your non-dominant hand
- Use large expressive arm movements in all directions

And since speaking is so closely associated with writing, do the following activities as well:

- Massage the Temporal Mandibular Joint (where the lower jaw articulates with the upper jaw, just in front of the ears) and the muscles surrounding your jaws. This activates sensory and motor nerves that assist vocalization
- Intone the vowel sounds while opening and closing the mouth in all different ways. Tone the vowels (A, E, I, O, U) by taking in a deep breath and saying the vowel in a long sustained manner as you breathe out. More benefit is gained if you use the whole mouth, full breath, and relax so the sound comes out more as a tone that vibrates.
- Talk gibberish with someone, making odd sounds and facial expressions
- Sing a lot

The Feet — Help for Homolateral (Limited) Foot Coordination

You can increase coordination in your feet with the following suggestions:

- Do Brain Gyms®, especially Cross Crawls
- Take a walk starting out fast then slowing down until every movement is very conscious
- Do cross-lateral footwork, especially dancing, soccer, martial arts

- Practice leading with your non-dominant foot
- Do mirror movements with both feet where each foot does just the opposite action of the other foot

Waking Up All the Senses

Give yourself a massage using all kinds of touch, especially to the hands and lips where there are more sensory receptors. This suggestion stems from Jean Ayer's work on sensory-motor integration. The varied pressure massage has a profound effect on waking up the whole system to efficiently take in and process information. In learning situations with both adults and children, take a wake-up break. Do it even if you're working alone. An activity that I have used incorporates hand movements to a story about a mouse, a cat and the rain.

First use light touch on yourself as the mouse runs (use your fingertips) all over the arms and especially around through the finger forest of the opposite hand. Then comes the cat with solid pressure all along both arms and hands. And just when the cat is getting close to the mouse it rains (fingertips tapping raindrops over both arms and hands). Then the mouse runs to the legs and all around the toes. Then the cat comes stomping along the legs with solid pressure and finally the rain comes with its tapping raindrops on the legs. Then the mouse runs up to and all around the head, especially around the lips followed by the cat and the rain.

This wakes up all the sense receptors in key areas, especially the fingers and lips that have more sensory receptors, and activates fine motor function. The touch also stimulates the production of NGF (Nerve Growth Factor) increasing dendritic growth of neurons for enhanced learning.

Seating Arrangements in Classrooms

This may not be an item that you or your child can practically arrange, but if you

do have a chance to choose your seat in a classroom or office space, make sure it is one that facilitates your Dominance Profile. If you are a visual learner, make sure you sit up in the front of the classroom. Auditory learners can sit anywhere they can hear well, but if left ear dominant, sit on the right side of the classroom, and if right ear dominant, sit on the left side of the room. If you are a kinesthetic learner, you may sit anywhere, but preferably where you won't disturb other learners with your moving. Optimally, have some clay or other quiet material to handle or doodle with while learning.

But You Need Stress Reduction Too

You can learn to function better and develop competencies beyond your basal profile's. However, your learned compensations and adaptive strategies can tend to disappear in stressful circumstances when you need them most. Under stress we all tend toward lopsided functioning, becoming either too logic hemisphere dominant or too gestalt hemisphere dominant. Suddenly you may not see as well or hear as well. You may have trouble communicating or become clumsy. You may become too rigid in your thinking or want to physically withdraw from the situation. So, to be able to maintain integration you need to reduce and counteract stress. Many of the techniques we mentioned for brain integration will also reduce tension levels in the body and help you to dissipate stress.

Here are some things you can do to alleviate stress:

- *Take a conscious walk — preferably in nature*
- *Do Brain Gyms®, especially Cross Crawls, Elephants, Hook Ups*
- *Dance, sing, hum or whistle*
- *Play a musical instrument*
- *Hug wrestle with your kids, pets, mate*

If you're in a situation where you can't move the whole body:

- *Do Brain Gyms®, especially Hook Ups and Lazy 8's*
- *Drink lots of water*
- *Breathe slowly and deeply to release the tension in your muscles*
- *Hold your forehead lightly until you feel a pulse under your hands*
- *Knit, play with clay or plasticine*
- *Draw or doodle a picture using both hands at the same time*
- *Listen to music*
- *Focus on a positive aspect of the situation, perhaps what lessons you are learning from the experience*
- *Find the humor of the situation*
- *Intentionally focus on the heart and think of a pleasant, peaceful environment in your life*

Dominance Profiles in Human Relationships

It takes all kinds to make a world. It even seems to take all kinds to make just one family — and without a doubt, it takes all kinds of patience and tolerance to make one family work. Most of us have a somewhat egocentric orientation to the world. We tend to assume that our own way of doing things is unquestionably better than other ways. Because of this natural bias, we need to remind ourselves that other ways of behaving are just as valid as our own. Learning about Dominance Profiles is a good introduction to the thinking styles and behavior of other people. At the very least, this knowledge helps us to anticipate how others will respond under stress — thus increasing the potential for deeper understanding within relationships. Knowledge of one another's Dominance Profiles can help everyone in the family, classroom, or workplace to honor and appreciate one another more.

We tend to pick partners that have very different learning styles and respond differently under stress than we do. We also tend to have children with different ways of processing. These differences help to enrich our lives, but they can also become the basis of misunderstandings and disharmony. Understanding our learning styles and those of our partners and children allows us to be more compassionate with one another and with ourselves. Facing our quirks and idiosyncrasies allows us to appreciate variety, and the different things we can learn from each other.

This appreciation for diverse, complementary ways of behaving is essential in the workplace too. In businesses, people who work together should understand how bosses and co-workers are likely to process, plan and create under the stress of business. Dominance Profiles also provide valuable information as to how people will best work together for the benefit of the business, given their particular strengths.

Dominance Profiles and Relationships

In the following pages I have collected some stories to help you see how Dominance Profiles influence our behavior in relationships. These are all true to life situations that illustrate stress-filled or new learning situations. In each case, I've attempted to show how the people involved would react given their basal profiles.

Driving with My Daughter

This first story is of a predicament that occurred when my daughter Breeze was learning to drive. She and I were both in the car, with Breeze at the wheel. Here are our profiles.

We had just finished having breakfast in a restaurant on our way to California. Driving with her learner's permit, Breeze backed out of the parking spot and was driving (*very slowly*) along a line of parked cars on the left. One of the manifestations of her blocked dominant foot (same side as dominant hemisphere) was that she drove very slowly when she was first learning to drive.



My Profile



Breeze's Profile

Being on the right side of the car with my right eye dominant, I naturally looked to the left and was able to see a big white Cadillac with two very old people backing out, and I knew they couldn't see us. Because Breeze is left eye dominant, she was looking to the right and didn't see the Cadillac. Being gestalt dominant, I immediately saw the whole picture and visualized them backing right into Breeze's door and hurting her. Because the image frightened me so badly, I couldn't speak in a logical way and started making all sorts of frantic sounds while pointing at the Cadillac.

Because Breeze is left eye and left ear dominant she had to turn her head toward me to get the information. Also because of her limited foot, she stopped the car *right behind the Cadillac that was still slowly backing out*. She kept asking me what was the matter, and all I could do was make survival sounds and point. Because she was now frightened, she could only look and listen to me — and not turn to see what was happening. Because of her gestalt dominance, she was missing the pieces (like my pointing) that would have let her know why I was acting so strangely.

Fortunately, the Cadillac stopped two inches from Breeze's door. I had nightmares about it for weeks to come. Breeze asked me why I had not just reached over and honked the horn. The simple act of planning, organizing my muscles to reach over and actually honk the horn takes a linear sequence that was totally inaccessible to me at the time.

What could Breeze have done to start out driving that morning with both her hemispheres and all her senses activated? She could have done some Brain Gym® activities for integration like Cross Crawls, Thinking Caps and Lazy 8's for the eyes or Tai Chi, or we could have gone for a nice, conscious walk before driving.

What could I have done to stop the survival reaction, think clearly and give understandable information to Breeze? Again, I could have started out relaxed from a nice, conscious walk and then when the situation arose, taken a moment to sit in Hook Up's before responding. When relaxed, Breeze's left ear would accept the specifics of information, and I could then have clearly advised her on exactly what to do.

The trick is to take the time, if only a few minutes, to prepare the whole

mind/body system for the next adventure. Russian families traditionally do this routinely. Whenever anyone is about to take a trip the whole family sits quietly for 5 minutes before leaving. It is a wonderful practice to quiet and integrate the mind.

A Tale of Two Piano Teachers

Again from my own experience, this story has to do with learning to play the piano from my very logic hemisphere dominant piano teacher. Here are our profiles:

My first piano teacher placed a strong emphasis on timing and note reading and he expected me to master these concepts right away. He even had my mother buy a metronome (which I hated). When I didn't get the notes or timing right he would hit my hands



My Profile



Piano Teacher's Profile

with a baton which caused me to totally shut down all sensory input. Because his dominant hand was opposite his logic hemisphere, he needed to talk a lot during my lesson. To this day I can't remember a thing he said to me, but I do remember picking up the emotional frustration he was feeling. I'm sure he was as stressed as I was.

He presented the linear, logical pieces of musical notation and expected me to easily follow what to him seemed simple. Being a visual learner he would point to the note and say "can't you see that?" I had a hard time seeing or hearing anything after the first intimidating whack of the baton. I'm sure I also appeared stubborn because I never said anything except "yes," since I couldn't access my language hemisphere when stressed. Because of his blocked ear, he wouldn't have heard me, but he needed to talk to figure out why this was so difficult for me.

As a teenager, in a fit of frustration, I secretly buried the metronome in the back yard — one of the most liberating things I have ever done.

In spite of my teacher, I loved the piano when I was alone and could make up my own tunes, and express my young girl emotions through it, and create my own rhythm to the music I had been assigned to practice. I needed to learn through image and emotion in order to finally realize how important learning the notes and timing were.

Later, I had a piano teacher who mothered me and whose home I loved to go to since she had lots of kids and always made bread. She would sit on my right side and speak gently into my right ear about the notes and timing and would pat my back when I did it right. In this safe environment, as she accessed my dominant ear and anchored the learning with a loving touch, I learned to play the piano.

Today, when I play with groups on my violin or piano, I need the integration of both hemispheres and all my senses to sight read the notes with the right timing, know what the other players are doing and perform with image and passion. When I was learning how to play, some integrated movement before my lessons would have assisted both my piano teacher and I. It would have helped him to be more aware of my specific learning style and work with me more effectively. And in a more integrated state, I would not have been so intimidated by him. But even now, integrated movements are beneficial to my playing.

Two Profiles, One Marriage

In marriage, we often pick people with very different profiles from our own. This arrangement has great advantages if each partner is willing to learn from and acknowledge the gifts of the other. However, under times of stress or new learning, the couple's styles of processing may be so different that there is very little common ground for understanding. This situation can also occur between a parent and child or between siblings. This was the case with my marriage to Breeze's father, Jim.

Jim and I taught Biology together at the Community College of Denver where we

met. He is an excellent theoretical biologist and teacher, careful to acknowledge and work with the most current, exact research and findings to present to a class of students. He is a good lecturer, mostly focusing on interesting details and sometimes bringing in the whole picture as he sees it with his dominant eye. He is also a good listener because of his dominant ear, and tends to seek out the details and specifics.

Our teaching styles were quite different. He enjoyed lecturing and digging out the current specifics, while I preferred experiential teaching — taking my students on field trips, or into the laboratory where I emphasized discovery through hands-on lab experiments. My lectures were full of visual aids, "show and tell" graphics or biological specimens, and active discussion.

I was very spontaneous in my approach — if I wanted to learn something (like alternative energy or the useful plants of Colorado), I simply said I would teach the course the next semester. I would then pull together all my resources, prepare as best I could and give my students projects on other aspects of the subject so that I became the student also. Jim would not teach a new course until he had thoroughly researched it and planned the whole curriculum, which usually took two to three years.

We learned much from each other — I, how to research, plan and present material in a sequential way; Jim, how to be more spontaneous and experiential in his presentations. We were a good match except when marital stress would pop up.

When Jim and I would get into an argument, he would start by asking me "What is the matter?" In my mind it wasn't "the matter" it was everything — I could see it only



Jim's Profile



My Profile

as a complete image usually with a lot of emotional injustice involved. As I would begin to explain in my verbally inhibited, emotional way my image of the "everything", he would find a book and go away to read.

At the time, I believed that he retreated to his books because he didn't love me, but it was because he was overwhelmed by the big picture I presented him. He couldn't find any pieces to start working out the problem. And because he was so out of touch with his emotions, mine frightened him.

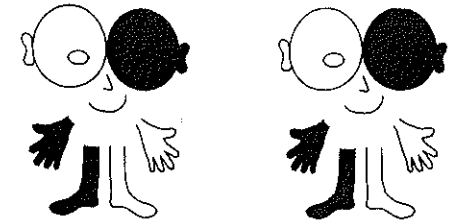
If we did pursue the matter (which didn't often occur — notice our blocked feet), he would talk about all the specifics in a logical way and want me to understand. He would explain what I/we should do and then be upset if I didn't do it. In my frustration at his not understanding me, I couldn't hear or see his logic because my ears and eyes were blocked. I felt lots of emotion and couldn't communicate it with reasoned words, so I would end up crying, which just served to make me feel more inadequate. I'm sure he also felt inadequate at helping, and we would both miss each other totally.

We actually came up with a plan to help us communicate better. When I was upset, but still integrated enough to spell out the specific things bothering me, I would sit down and make a list. I would then hand the list to him which would give him a place to start. However, it was still difficult for him to access his emotions and understand my points. Instead he would just enumerate the things that he thought would "fix it."

If in our frustration we had taken a few moments to do some integrative movements, we might have been able to understand each other better. We both noticed that it helped if we walked together while working on conflicts. My daughter and I have found that if we do Lazy 8's together for my blocked eye, and then walk when we argue, that the emotional charge is dissipated and we are able to see and understand each other more clearly. As a counselor, I have used integrated movement to reduce friction after students have been fighting. I would have them sit in Hook Ups for two minutes and then do Lazy 8's with each other. It helps immensely.

Matching Profiles Don't Necessarily Work Better Together

When you get two people together who have the same profiles, there can also be a problem in times of stress or new learning. Take for example the situation of two logic hemisphere people with limited eyes and ears interacting or coming up with a business plan. They will need to talk and analyze all the details of the project, but each may have difficulty hearing what the other is saying or seeing what the other is doing.



A's Profile

B's Profile

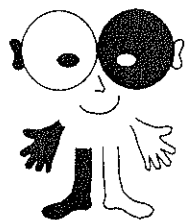
If the situation is relaxed, as in a fun brainstorming session, the ear and eye will be accessing their gestalt hemispheres, allowing them to hear and see the big pic-

ture and process the pieces into it. But if stress creeps in, their similar profiles will make it difficult for each to see or hear the big picture that the other has been able to access, leaving them mired in the details. Because neither of their feet are blocked, they will plow through with the details anyway, doing lots of specific, piecemeal things, but having a hard time pulling it all together into a big picture, idea or plan.

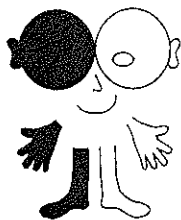
If this is a business or company that must be innovative to survive (as most businesses are), they will need to be as integrated as possible to access the whole picture as well as the details. It is always advantageous to have different learning profiles available to enrich and broaden the scope and possibilities in a company and for all the players to create from a place of integration, rather than stress. Programs such as Brain Gym® or Tai Chi are highly effective in breaking the stress cycle, so that full potential is accessed. In Japan, businessmen and women start their day with Tai Chi and are more productive because of it.

Two Ways to Paint Fish

My good friend Cherokee is a wonderful artist who loves to paint the reef fish she encounters whenever she swims or dives in Hawaii. I also love to paint and draw, but don't consider myself much of an artist though many of my paintings have made their way into friends' and family homes as gifts.



Cherokee's Profile



My Profile

Our profiles help explain why our approaches to art are so strikingly different.

Cherokee's preferred way of doing art from her profile is to scuba dive and really study the fish, noting their size, shape, habitat and especially their colors. She then goes to the library for more information and pictures of the fish. Then, using her

calipers for exact measurements she is able to plan the picture and draw it. Once drawn to her satisfaction, she matches the paint colors to paint the most perfect life-like fish, fresh from the sea. She uses her eyes and ears to pick up the specifics and then is able to transcribe those through her art. Cherokee also teaches art to her students in a highly creative and flexible way, letting them each find their medium and approach to doing art. An excellent, integrated teacher, she honors the artistic style of others.

On the other hand, when I do art from my preferential profile I may find a place in the woods with my pencil and paper away from any distractions. When the spirit moves me, I sketch freehand whatever interests me, which is usually twisted trees with faces in their gnarled structure. If I choose to paint, I prefer to pick whichever color feels right to me at the time and just paint freeform until another color is called for. I enjoy watching what shapes emerge and how the colors work or don't work together. By using my dom-

inant observer eye, accessing my logic hemisphere, I am able to draw or paint realistically, but I must first be emotionally inspired.

Both Cherokee and I find that integrative movement assists our art, and every other part of our lives. When I get stuck and know I must do a drawing (as for this book), I will take a long walk, consciously accessing all my senses. True art (creativity) comes from being able to access the pieces as well as the whole.

The Eighth Grade Algebra Dilemma

This is a real situation that occurred at an Intermediate school where I was a counselor for children who were having problems in school. It had to do with an eighth grade algebra student and her teacher. Here are their profiles:

This student was sent to me because she was failing algebra. After assessing her

Dominance Profile, I was surprised that she was having any difficulty. With her logic hemisphere dominant, she should have been able to pick up the linear sequencing necessary to understand algebra. And with her dominant right ear going into her logic hemisphere, she should have had no problems with remembering the formulas or details of algebra.



Student's Profile



Teacher's Profile

When I asked how she was doing in her other courses, she said she was doing A or B work. I was not surprised because she had a good profile for the normal school curriculum, except for her eye, but most eighth grade courses were lecture based and didn't require initial visual input.

I decided to sit in on her algebra class to see if I could get a clue as to why she

was having problems. The teacher had put her in the front of the class, right in front of him. When he talked about an algebra problem or wrote it on the board, the girl would close her eyes and turn her right ear toward him. He would look at her in disgust and say "Look at me. Look at the board!" As soon as she had to look at him with her limited eye, she would lose the whole concept.

We all learned something that day. Because the teacher was such a visual learner, he expected his students to also be visual learners and always look at him. This is typical in many classrooms where teachers insist on "Eyes forward," or believe that the students are learning only if they are looking at the teacher or the board. People like this student, who are auditory learners with limited eyes under stress, may need to close their eyes or look elsewhere when attempting to understand a difficult concept.

The teacher took immediate action (stepping forward with his dominant foot), apologizing to the student and asking her where she would prefer to sit. She chose a seat two rows back on the left side of the room where she could fully access with her dominant right ear and not bother him if she didn't look at him. She began doing integrated movements to more fully access her eye and within weeks, her algebra grades had improved greatly.

Dominance Profiles give us useful tools to assist others, learn to understand our mistakes and be more fully present with other people. Through this process, the teacher also began working on his limited hearing under stress so that he could better listen to his students when they had difficulties. He admitted that when students came to him with problems, like the student who was failing, he would tell them to simply watch what he was doing. In this case, she needed him to verbalize the process in a logical manner instead. In cases with very kinesthetic students, he could have been more helpful by having them work with math manipulatives or do the math problem while he watched. Knowing about Dominance Profiles helped him to greatly broaden his teaching skills and become a highly effective teacher.

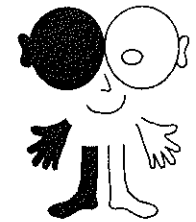
The Information-Gathering Quandry

This next situation has to do with my partner Charles and me, as we research and work together on a current book project. Here are our profiles

Under stress, Charles has very little access to his logic hemisphere, because everything except his hand communicates with his gestalt hemisphere. Even though his dominant hand is opposite his logic hemisphere, he can only verbally communicate when he is



Charles' Profile



My Profile

relaxed and can focus on the whole picture. This actually works well for him as a Medical Doctor, where he can easily see and hear his patient's emotional state and doesn't overwhelm them with a lot of details at their time of stress. I, on the other hand look and listen for the details when I am relaxed and love to take those details, put them into a gestalt context and play with the ideas verbally with other people and in my classrooms. These modes of functioning have worked well for each of us personally, but it makes brainstorming together an interesting challenge.

Currently, we are doing research for a book in progress, with Charles doing most of the reading. From the reading he is able to immediately get the overall idea, but must go back over the pieces many times, underlining each time to remember the details. If I asked him what he got from the reading, he feels like a child being asked "What did you learn today at school?" It takes him a while to process the pieces into his gestalt understanding and then verbalize it comfortably. If I ask him a specific question on new information that he hasn't totally integrated, it throws him off. I like to form my own ideas from the information I'm given, but I need the details to plug in, so his processing throws me off, and frustration on both sides ensues.

By the time he is ready to present at one of our workshops, the necessary integration has occurred and the ideas flow out with the details and specifics forming an understandable picture. As he presents, he paces, and if standing still, rocks up on his toes which tends to help him verbalize easily. Being aware of our individual profiles has been helpful in reducing the frustration and spurring an adventure to understand how we can best work together.

We have discovered that if we both walk while we're brainstorming, it helps immensely. Being gestalt dominant, we are both kinesthetic learners, with movement increasing the efficiency of our processing. It also helps him if he pictures himself in the information. He cannot orchestrate what he will say ahead of time, it must be "off the cuff" and highly pictorial. He was able to make it through the details of medical school by using mnemonics, memorizing with a tune or picturing the page of notes (with all his underlines) in his mind. Another thing that works well is to have him lie on a couch, picturing himself in the information and then just talking, while I type what he says. It's important not to interrupt when he's on a roll because it will fragment the image he is describing and cause him to lose the big picture.

Knowing these kinds of things about other people, you don't have to waste time trying to get through to them, feeling frustrated or irritated. And by knowing your own profile, you can honor those tendencies in yourself, maximizing your life.

Now — using your own profile, think of people in your life and your interactions with them. Notice how your Dominance Profile can affect your first reactions under stress and how you prefer to learn. Also be aware of how you have learned to compensate in social situations with other people. Our uniqueness is very important because it gives the world another way to look at and do things. I have only presented a small piece of what affects our lives — how we see, hear, process and communicate things. There are many other factors, so I invite you to explore. You will probably find, as I have, that people are most interesting subjects with lots of gifts to offer, to learn and grow from. ENJOY!

Dominance Profiles and Education

In 1990 I undertook a formal study to compare students' Dominance Profiles with the systems the schools were using to classify learners. For instance, I wanted to see if there were correlations between labels like "Gifted and Talented" and particular Dominance Profiles. In fact, I did find that overall, people with logic hemisphere dominant profiles were heavily represented in the Gifted and Talented category, whereas students with gestalt or sensory limited profiles were heavily represented in Special Education groups.

Having used the Dominance Profiles for these past ten years with thousands of individuals, I've found that, unfortunately, my initial study from 1990 still holds true for school children. So, I have decided to include my study in this book in order to illustrate the need for Dominance Profile assessment in the schools and also to point to shortcomings of the education labels currently being used.

In 1990 using the basal Dominance Profiles, I collected data from a random sample of 218 students attending schools in Denver, Colorado and Kona, Hawaii. These students were identified by the following labels according to assessment criteria used in these schools:

- Gifted & Talented** = Children chosen for this program excelled academically and had high SAT scores, thus succeeded at language and math skills.
- Normal** = Children doing OK in the regular classroom.

Remedial = Includes children in Chapter 1 (Title I) and children with specific reading difficulties.

Special Education/Emotionally Handicapped = Children labeled with learning disabilities and Attention Deficit Hyperactive Disorder — ADHD.

High School Redirection = An alternative high school for students who had previously dropped out of or been suspended from other schools)

The following graph shows my findings with percentages of each group checked.

(The columns representing logic and gestalt for each group total 100%.)

According to this study, students labeled Gifted and Talented and Normal were

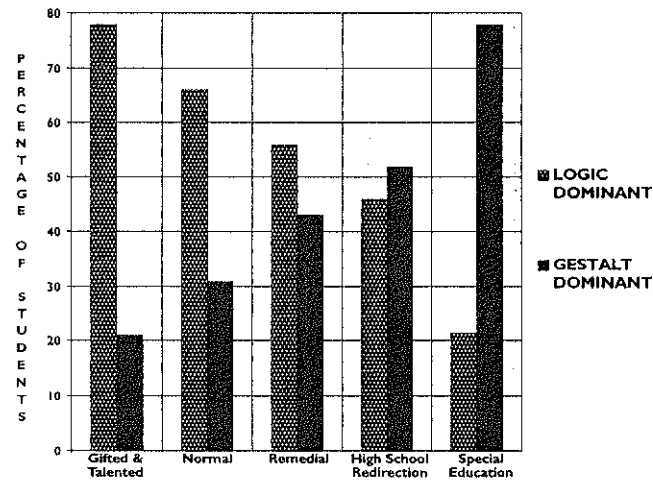


Figure 25: Hemisphere Dominance in a Random Sample of 218 Students Attending Denver and Kona, Hawaii High Schools

predominantly logic hemisphere dominant, whereas the Special Education students were mostly gestalt dominant learners.

Logic hemisphere dominant students tend to demonstrate high linear and verbal abilities. In school, they are more often positively reinforced with the Gifted and Talented label. They are more likely to have high self-esteem and experience less stress because schoolwork is geared toward their competencies. This allows them the confidence to explore gestalt avenues of learning. (But only if they are not overly stressed by competition and the pursuit of ever higher grades.) With less stress in the long run, they have a better chance of obtaining more integrative learning strategies.

Gestalt learners tend to have lower linear and verbal skills. They are affected by the early push, between ages 5-7, to learn linear functions both in language and math. These children may begin to judge themselves as "dumb" and develop "learned helplessness."

A study of brain wave activity between "learning disabled" and "normal" children revealed a major difference. "Learning disabled" children, exhibited 1) less overall left-hemisphere activation, even with verbal tasks, and 2) significantly fewer shifts from one hemisphere to the other when tasks required different processing strategies.² I believe this directly relates to stress in these children. Due to stress in the learning environment, they end up depending only on their dominant hemisphere (gestalt). They become unable to explore and adequately access their logic hemisphere. Thus they are trapped in a vicious cycle. The stress of schooling heightens their inability to learn in a logical way and discourages communication between both hemispheres. Discrimination against Gestalt learners in our society has been very strong.

Gestalt learners have to struggle to make it through our educational system. I believe Albert Einstein was a gestalt learner. His early academic career suggests this. He eventually graduated from Federal Polytechnic University in Switzerland, but without any particular acclaim. Fortunately, he sought out holistic learning situations that fed his curiosity and lust for understanding. And the world has been the beneficiary of his incredible insights; all of which were more intimately bound to his internal images and feelings than to strictly linear processing.³

Our educational system does little to encourage holistic, intuitive, image-based (as opposed to verbal-based) thinking. But where would we be without these capacities? Gestalt learners have talents that are too frequently undervalued in school. If, as a result, gestalt learners undervalue themselves we run the risk that they stop contributing in significant ways. We must strive to understand and facilitate the learning process of gestalt learners so we do not lose this valuable resource.

Sensory Access

Our educational system favors students who process linearly, take in information auditorially, look at the teacher when they are talking (visual) and can repeat the pieces of information back in a logical, linear fashion. These are students with the full sensory access Profile A. Yet, they made up, on average, only 15% of the test population. The Gifted and Talented group had the largest number of full sensory access learners. (See Figure 26.)

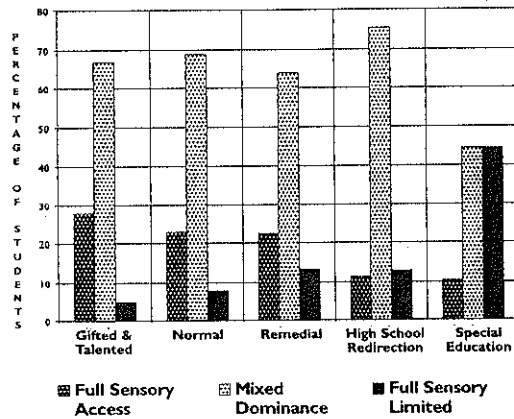


Figure 26: Sensory Access Patterns in the Same 218 Students

These students usually do well on the verbal and mathematical skills tests commonly given in our schools, including the Scholastic Achievement Tests (SAT's) which despite their limited scope, are considered in the United States to be reliable assessments of intelligence. You will notice that this profile is highly dependent on logic hemisphere functioning. But if these learners are not encouraged to use gestalt hemisphere processing they may not adequately develop some very important abilities like: seeing the big picture, feeling the emotional implications of ideas or spontaneously generating new ideas.

Dominant Ear

In my study, the auditory limited profile represents an average of approximately 52% of the population (see Figure 27). Yet lecturing is our primary way of teaching. A typical lecture, then, is likely to be missed by over half of the audience.

Also notice that a high percentage of both the Gifted and Talented and the Spe-

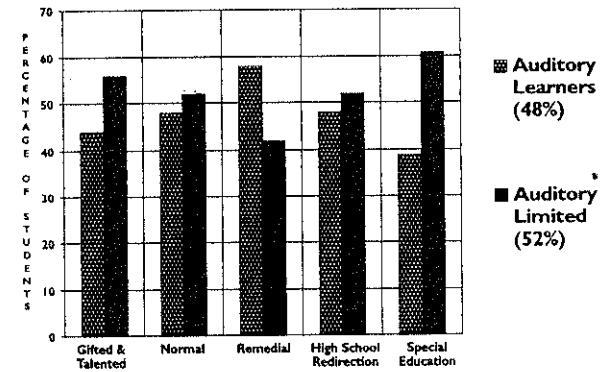


Figure 27: Ear/Hemisphere Dominance Patterns in the Same 218 Students

cia. Education students were auditory limited. This discrepancy in labeling can be explained when you consider that the vast majority of Gifted and Talented students are logic dominant and therefore verbal. So, even though they are auditory limited and may not hear what is being said, they talk — and so are believed to be more intelligent. The opposite is true for Special Education students, mainly gestalt dominant, who are not verbal when stressed.

Verbal vs. Kinesthetic

As you can see from Figure 25, 89% of the Special Education group were Gestalt dominant and therefore kinesthetic learners, compared to only 22% of the Gifted and Talented group. In our traditional educational system we highly value linguistic ability and students sitting still. Our SAT tests reflect this by testing the Linguistic and Logical/Mathematical Intelligences. As educational researcher Howard Gardner has observed, this bias ignores at least five other intelligences, including the kinesthetic, visual/spatial, musical, interpersonal and intrapersonal. According to learning style researchers Rita and Kenneth Dunn as many as 85% of students are kinesthetic learners, yet the typical school curriculum offers very few if any kinesthetic learning techniques.

Dominant Eye

We also tend to believe that people are listening only if they are looking at us when we are speaking. Being a teacher for so long, I know it does feel good to have people looking at me when I talk, but notice in Figure 28 the columns marked visual limited. This represents any profile where the dominant eye is on the same side as the dominant hemisphere. With only 27.8% of the GT group compared to 72.2% of the Special Education group being visually limited, there might be an overemphasis on visual learning in the classroom. If concepts are new and difficult to understand, visually limited persons may need to look away (out the window, for example), or shut their eyes in order to take in the information more easily through their dominant senses. Unfortunately, this is often construed as inattentiveness.

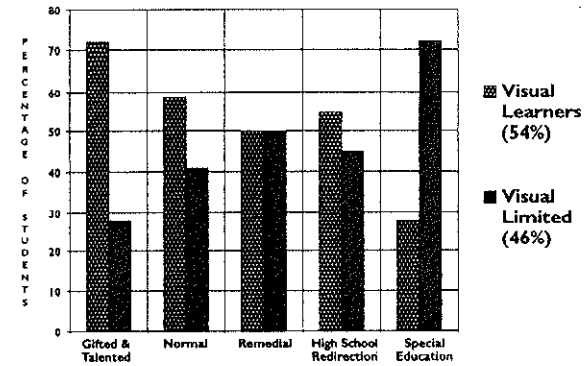


Figure 28: Eye/Hemisphere Dominance Patterns in the Same 218 Students

The visually limited profile also affects ease of reading, especially in stressful circumstances. Under stress, the eyes will react by moving peripherally to access 3D focus which is better for sensing external danger. However, the 3D focus makes it difficult to even see the black letters on a white page of 2D writing, let alone track the eyes across it.

Left eye dominance has another consequence for learners. We are not truly binocular. That large protuberance between your eyes — your nose, interferes with complete binocular vision. So, we have one main tracking eye. The other eye follows. The right eye naturally tracks from left to right while the left eye naturally tracks from right to left.

The learner with a left eye dominant pattern will want to look at the right side of the page first and then move to the left. In languages that are read from right to left (Hebrew or Chinese) left eyed students would have the edge. Perhaps they would be the Gifted and Talented students, reading easily and therefore gaining acclaim.

Notice that in my study, the "remedial" students have a higher percentage of left eye dominance (see Figure 29). Eighty-one percent of these students are left eyed/right handed. Since the left eye naturally wants to track from the right to the left, it will also guide the hand from the right to the left which may cause writing difficulties or letter reversals. These are the children in Chapter 1 (Title 1) programs that reverse letters and numbers and have difficulty with beginning reading. They simply need a bit of remediation to facilitate ease of tracking in the opposite direction.

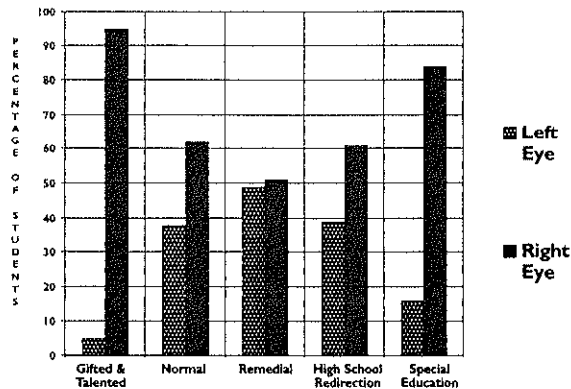


Figure 29: Eye Dominance in the Same Sample of 218 Students

If you have a basal profile that indicates left eye dominance using the muscle checking, yet you came up with a right eye dominance on the self-assessment, this is an example of a compensation (adaptation) strategy. In order to read English more easily, a crucial skill for success in school, you switched to your non-dominant right eye, since it

tracks from left to right. This demonstrates the immense adaptability of the human system. Just for fun: if you are basically left eye dominant, you may notice that it is easy to read this page upside down from right to left. You may also have a tendency to read from the back to the front of the book or magazine.

The Teachers

My study also profiled the teachers in the subject schools. Seventy-five percent (75%) of them were logic hemisphere dominant, right handed, right eyed, and auditory limited (Profile B). Under stress people with this profile tend to talk about the details, not listen, and expect students to look at them. Of course teachers are as stressed as anyone else, maybe even more so. With crowded classrooms and children acting out in class, teachers may revert to their own basal Dominance Profiles. Stress creates a circle of frustration for everyone concerned.

Gestalt, Full Sensory Limited Learners

The most disadvantaged group of learners in our traditional school system are those who are full sensory limited, especially when they are gestalt brain dominant (Profiles L and LL). Figure 26 presents a comparative graphing of this group in the columns marked full sensory limited. Only 5% of the Gifted and Talented students are fully limited compared to 44% of the Special Education group. People that are fully gestalt limited (gestalt hemisphere dominant, right eyed, right eared, right handed) have difficulty taking in sensory input during times of stress. They withdraw and process through internal images and emotions, unable to explain themselves with words. They are all kinesthetic learners and need to move in order to learn.

It is important for persons with Profiles L and LL to have quiet time alone to process stressful situations. Again, in our very verbal society, we want people to articulate their thoughts and feelings. Gestalt fully limited learners may see the big picture, but have difficulty expressing it in language. In their frustration at not being able to verbalize, they

may strike out emotionally. They may end up in fights or become emotionally volatile in the classroom, thus earning the label of emotionally handicapped. Or the stress may be so great that they must move, so they fidget and wiggle, ending up with labels like: ADD or ADHD.

Gestalt fully limited people can be assisted when several factors are included in the learning environment. These include: 1) moving to learn, 2) getting the whole picture first, then tying in the details later, 3) starting linear processing like printing, reading, spelling, linear math functions at age seven to eight, not before, 4) feeling secure in their emotions and relationships, and 5) taking quiet time out to process new learning in an intrapersonal way. With highly traditional crowded classrooms, mostly logic hemisphere dominant teachers, and curricula based on detail first, these limited learners spend a lot of time in survival mode. This can lead to "learned helplessness" and the astoundingly large numbers of gestalt learners in our expensive Special Education and Emotionally Handicapped programs.

As I worked with the wonderful children in the Special Education and Emotionally Handicapped programs at various schools, I could see through their frustration to the unheralded intelligence inside each of them. I've found them to be spontaneous and to excel in kinesthetic, musical, visual/spatial and interpersonal ways. By honoring the arts, movement and interpersonal relationships more in our schools and society, these students may one day become our leaders.

Gestalt Hemisphere Problem Solving

Though our educational system espouses and rewards logic hemisphere problem solving, the role of the gestalt hemisphere in problem solving is gaining recognition. One researcher, Grayson Wheatley, has addressed an aspect of right hemisphere problem solving which I recognize as my own specific way of processing math, particularly algebra.

According to Wheatley⁴, the right hemisphere excels in tasks that are non-verbal, spatial and less familiar. It grasps the whole and solves the problems at once. The left hemisphere processes the stimulus information so the stimulus can be described in lan-

guage. In problem solving, it is important not to force children to use language as the vehicle for thought when imaging is more appropriate. Children can know without being able to state their thoughts in words. Bob Samples elaborates this thinking by noting that problem solving requires restructuring of elements, not just following rules.⁵

We are still leaning too heavily on algorithmic (linear, mathematical, rule-oriented) learning, still expecting students to learn primarily through rote memorization, all the way up through college. Why? Memory and linear skills are easy to test and quantify. That's why! These kinds of tests give objective comparisons. But what do they measure? Facts and linear skills are useful acquisitions, but are they the most important part of a person's education? Shouldn't we be more concerned about thinking, creativity, application of knowledge to real life situations. The emphasis on low-level skills and memory testing fosters an emphasis on low-level thought processing — teaching to tests. Consequently, practice in high level thinking can be and often is shortchanged. As Herman Epstein has observed, "More than half the population in the United States never reach the Piaget stage of formal reasoning. We have knowers but few thinkers!"⁶

The stress of constant testing diminishes the ability to see problem solving in a larger context. It turns education into a numbers game where competition, rather than cooperation, is encouraged and information is not moved to applicability or creative thought. If we can advance to an education that balances memory and thinking, and honors each person's learning style, agile learners with valuable thinking tools can emerge. Or to put it more cerebrally, as Bob Samples does: "We discovered that if the right hemisphere functions are celebrated, the development of left hemisphere qualities becomes inevitable."

Teaching to the Whole Brain

Sandra Zachary, a third grade teacher in Hawaii, had her students figure out their own Dominance Profiles at the beginning of the school year, using the muscle checking assessment. She then had them organize themselves according to their easiest sensory

access: visual learners in front; auditory learners in the next row with right ear dominants on the left side of the room and left ear dominants on the right side of the room; and the gestalt fully limited in the back of the room with clay or wax to manipulate kinesthetically during class.

For her class, it became a strong lesson in self-understanding and compassion for others. Labels like "Stupid" or "Nerd" were dropped as students became aware of the learning preferences of their peers, and how and why they would respond when stressed. Each student taped their Dominance Profile to their desk so other students could see it and relate to them with understanding. Sandra would hear students say: "Michael is upset right now and needs to be left alone because he has the Einstein profile," or, "Tell Claudia how you feel into her left ear, the other doesn't work well when she is sad."

Each day — at the beginning of the day, after recess and after lunch — the whole class did Brain Gym® activities for five minutes. At the end of six weeks, students were allowed to change seats, which they did with a deeper understanding of their preferential patterns and learning strengths. The stress levels in the classroom had become minimal and classroom management had become a cooperative process for everyone. In the end, each student gained the highest academic success they had yet achieved in their schooling. This was a simple, common sense way to honor each learner.

The health of our educational system depends on our nurturing and promoting the learning of all our citizens. We must relinquish judgments that lead to stress-provoking labels and competition. An appropriate thinking curriculum must be established that synthesizes whole mind/body processing through regular art, music and movement in conjunction with cognitive skills. We must give learners mind/body integrative tools such as Brain Gym® and others suggested in Appendix B which allow them to stop the stress cycle and activate full sensory/hemisphere access. Perhaps then we can fully realize the unique human potential that Paul MacLean invokes, in an evolving society where all people succeed at learning.

Appendix A

How Muscle Checking Works

Muscle testing (checking) as an indicator for bodily function and information was developed by Dr. George Goodheart in 1964 from the work of H. Kendall and F. Kendall.⁷ With the proper intention and procedure, it is a very accurate way to assess the body's wisdom about itself, such as with the Dominance Profiles.

Muscle checking is usually done using the anterior deltoid muscle which is held out at a 45 or 90 degree angle from the body and is challenged by applying approximately 2 pounds of pressure to the forearm. The mechanism by which we hold the arm up is well understood. Physiologically it works through the intricate structure of the muscle fibers that utilize a feedforward/feedback system of communication with the nervous system. All muscles constantly report their position and degree of stretch to the Central Nervous System via sensory nerves from the spindle fibers (the stretch sensing devices) within the muscles themselves. That's the feedback system. In addition, the intention to hold the arm up comes from the Central Nervous System and activates specific motor nerves which in turn activate muscle fibers to hold up the arm. Additionally, there are nerves from the Central Nervous System to the spindle fibers to set their sensitivity to stretch so the arm can maintain its position. That's the feedforward system. Each muscle (like the deltoid) is made up of hundreds of muscle fibers, each communicating through the spindle fibers to facilitate this feedforward/feedback system.

Spindle fibers are unique sensory structures among the muscle fibers that not only provide information to the Central Nervous System by means of I- and II- afferents,

The muscle checking procedure is easy to learn, but takes practice to perfect. It has been an important tool for me, not only in my work, but also in becoming more sensitive and aware of my body's subconscious and innate messages. A very validating experience in muscle checking occurred for me with a group of Occupational Therapists in South Africa. These professionals were highly trained, had private practices, and had also taught in the Medical Department at the University for many years. Muscle checking confirmed all of the assessments they had already made with the children they were working with. It also gave solid information, especially about hand dominance, that they were having a difficult time assessing with their professional training. They were so impressed with its accuracy, they began using the muscle checking exclusively, saving themselves and their clients hours of testing and assessment work.

Appendix B

Learning Aids and Strategies

Active Listening

The practice of bringing full attention to the act of listening in order to take in as much of the information, motive, and context from spoken words. Following are some good sources for further information on improving your listening skills.

Mortimer J. Adler suggests that good listening is similar to good reading. He offers a guide to listening in his book, *How To Speak, How to Listen*, Macmillan, New York, 1983.

A simple and effective two person listening exercise called *The Think & Listen* is described by Peter Kline in his book, *The Everyday Genius*, Great Ocean Publishers, Arlington, VA, 1988.

For more extensive training in listening skills see: Madelyn Burley-Allen's, *Listening, The Forgotten Skill*, John Wiley & Sons, New York, 1995. For improving listening skills in the workplace see: Warren H. Reed's *Positive Listening: Learning To Hear What People Are Really Saying*, Franklin Watts, New York, 1985 or Kevin J. Murphy's *Effective Listening: Hearing What People Say and Making It Work For You*, Bantam Books, New York, 1987.

Brain Gym®

Brain Gym is a set of simple and enjoyable movements and activities developed

by Dr. Paul Dennison and Gail Dennison from their work with Edu-Kinesthetics. The Brain Gym activities encourage whole brain integration by enabling learners to access parts of the brain previously unavailable to them. The changes in learning and behavior are often immediate and profound. Brain Gym is a registered trademark of the Educational Kinesiology Foundation. For information about Brain Gym and the Brain Gym activities contact the Educational Kinesiology Foundation at P.O. Box 3396, Ventura, CA 93006-3396 (U.S. phone: 800-356-2109).

Brain Gym Activities

- Brain Buttons* — activate points on the chest below the collar bone that increase oxygen to the brain and stimulate the vestibular system to wake up the brain
- Cross Crawls* — a cross-lateral standing crawl that activates integrated right and left hemisphere function
- Double Doodles* — an activity using both hands simultaneously that activates integrated right and left hemisphere function
- Elephants* — activates all areas of the mind/body system in a balanced way, especially the vestibular system
- Energy Yawn* — facilitates full nerve function across the temporal-mandibular joint (TMJ)
- Hook Ups* — a calming activity that facilitates whole brain function to quiet and refocus yourself
- Lazy 8's* — a cross-lateral, midline movement using hand and eye coordination to improve integrated eye function and written communication
- The Owl* — relieves tension in the neck and shoulders, allowing more integrated hearing
- Thinking Caps* — stimulates the ears for active listening
- Vision Gym* — an extensive group of activities that facilitate optimal, integrated functioning of the eyes

These activities are explained in detail in *Brain Gym, Teachers Edition*, by Paul and Gail Dennison, Educ-Kinesthetics, Inc., Ventura, CA, 1994, or in my Video, *Education in Motion*, Zephyr Press, Tucson, AZ, or in my book *Smart Moves, Why Learning Is Not All In Your Head*, Great Ocean Publishers, Arlington, VA, 1995, which also explores the neurophysiological basis of Brain Gym and the impact of movement and physical activity on learning.

Brainstorming

Brainstorming is a commonly used technique to loosen up thinking in groups of people working together, but which can also be used by individuals. The term was coined in the 1950's by Alex Osborne, an industrialist who encouraged brainstorming sessions among his managers to produce more innovation in the company. When brainstorming, the practice is to freely generate and spout out ideas in a playful way, without censoring any thoughts — wild, outrageous or otherwise. Further information about brainstorming and other creativity boosting practices can be found in Tom Wujec's *Five Star Mind, Games and Exercises to Stimulate Your Creativity and Imagination*, Doubleday, New York, 1995. Other brainstorming techniques can be found in Tony Buzan's *The Mind Map Book, How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential*, Dutton, New York, 1994.

Creative Visualization

Creative visualization is another good way to generate ideas and boost your creativity. In a relaxed but alert mental state, freely associate and watch your internal, imagined thoughts in your mind's eye. Some helpful books are: Marilee Zdenek's *The Right-Brain Experience, An Intimate Program to Free The Powers of Your Imagination*, McGraw Hill, New York, 1983 and Willis Harman and Howard Rheingold's *Higher Creativity, Liberating the Unconscious for Breakthrough Insights*, Jeremy Tarcher, Los Angeles, 1984.

Flow Charts

A mapping method to break down the parts of a process so that the linear sequence of events and feedback loops in the process can be graphically represented. Flow charting is often used in computer programming but a good description of flow charting for generalized purposes can be found in Peter Kline and Laurence Martel's *School Success, The Inside Story*, Great Ocean Publishers, Arlington, VA, 1992.

Magic Eye Books

A series of books that challenge your eyes to see hidden three dimensional pictures on a page printed with a two dimensional pattern. N. E. Thing *Magic Eye: A New Way of Looking at the World*, Andrews and McMeel, Kansas City, 1993

Mind Maps

A way of graphically representing information in words and pictures with associated links between ideas. It was first developed by Tony Buzan in the 1970s as a memory aid, but has since been espoused as a useful tool to generate and organize ideas. Further information about mind mapping can be found in Tony Buzan's *The Mind Map Book, How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential*, Dutton, New York, 1994. Also see Nancy Margulies *Mapping Inner Space, Learning and Teaching Mind Mapping*, Zephyr Press, Tucson, AZ, 1991.

Mnemonics

There are many different techniques to boost your memory for anything from faces to formulas. Mnemonics help because they are based on the brain's own tendencies in memory processing. For many good memory techniques see: Joan Minninger's *Total Recall, How To Boost Your Memory Powers*, Rodale Press, Emmaus, PA, 1984, also, Peter Kline and Laurence Martel, *School Success, The Inside Story*, Great Ocean Publishers,

Arlington, VA, 1992, also, Eric Jensen, *Student Success Secrets*, Barron's Educational Series, New York, 1989.

Outlining

A condensed list of the concepts in spoken or written text that identifies the main ideas and supporting details in a hierarchical, sequential order. Outlining is useful as a sequential, compact representation of ideas. However, if you are hoping to spur creative thinking and idea generation, mind mapping is a more powerful technique. Most books on study skills will contain instructions on how to outline topics. *School Success* by Peter Kline and Laurence Martel, Great Ocean Publishers, Arlington, VA 1992, is a good all around study skills workbook that teaches both left brain and right brain strategies for maximizing learning.

Prioritizing

Prioritizing organizes your activities by their overall importance to your goals and life. For good examples of prioritizing activities see Peter Kline and Laurence Martel, *School Success, The Inside Story*, Great Ocean Publishers, Arlington, VA 1992.

Time Management

Aids that help you get more things done in a day and achieve goals faster. Many books about study skills include tips and techniques to help you manage your time better. See Rita Phipps, *The Successful Student's Handbook*, University of Washington Press, Seattle, 1983, also, Julie Hahn's *Have You Done Your Homework? A Parent's Guide to Helping Teenagers Succeed in School*, John Wiley & Sons, New York, 1985. Also see various books on time management such as Ken Blanchard, *The One Minute Manager*, Morrow, New York, 1982.

Toning the Vowels

For developing sensitivity to sounds, especially for children who can't distinguish fast sound components in speech. Tone the vowels (A, E, I, O, U) by taking in a deep breath and saying the vowel in a long sustained manner as you breathe out. More benefit is gained if you use the whole mouth, full breath, and relax so the sound comes out more as a tone that vibrates. See Chris Brewer and Don Campbell, *Rhythms of Learning, Creative Tools for Developing Lifelong Skills*, Zephyr Press, Tucson, 1991.

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Foot - step-up Left
eye - clock - Right eye

When I arrived to teach in 1991, she had assembled fifty psychologists and medical doctors from the Moscow/St. Petersburg area and also from an institute in Tomsk, Siberia, that had been using Brain Gym. They shared with me their remarkable successes with people of all ages, with every problem imaginable. Currently, major cities throughout Russia are using the Brain Gym® work, with great success.

AND IN SOUTH AFRICA

In 1991 in Botswana, I was invited to work with trainees of the Botswana Insurance Company that were preparing for their Insurance exams. Though people had taken the exam each year, the pass rate had hovered at less than thirty percent. After my six-hour session with these people in February, they committed themselves to continue using Brain Gym® when they studied. Every single one of them passed the exam in May. One man named, Waiks Tall, had worried the examiner by spending the first 30 minutes of the timed test doing Brain Gym. He was the first person in Southern Africa to receive one hundred percent on the Insurance Exam.

Brain Gym® even played a part in the emergence of a new South Africa. In late 1993, the Town Council of Verwoerdburg, Pretoria was developing a process to empower their semi- and illiterate trainees and decided to use Brain Gym® in a pilot study. An experimental group and control group of eight semi- and illiterate trainees were chosen by the Town Council. The experimental group was exposed to Brain Gym® activities over a three-day period by Andre Vermeulen, a Brain Gym® instructor with Destinatium Ltd. Two weeks after the experimental group had been exposed to Brain Gym®, trainers from the Affirmative Vision organization presented the same Life Skills course (Basic Orientation to Modern Society) to the experimental and control group in an identical manner in the same language, Northern Sotho (the mother tongue of the trainees). All variants including time spans, breaks, presenters, translator, content, tests, and workshops were kept the same.

Upon testing the content of the five day course, the evaluators found that the experimental group tested 27.7% better than the control group. They also found that the experimental group was much more confident, creative, attentive, relaxed during training, at ease during testing and involved in the workshops. They had more insights and also more positive attitudes, expressing their desire to learn. Because of this pilot study, banks and mining companies in South Africa began incorporating Brain Gym® into their training programs.

BRAIN GYM® ENHANCES PERFORMANCE TOO

Brain Gym® is also highly effective with sports, music, art and dance of every kind. In order to perform well in any of these, a person must be able to master technique and integrate that mastery with rhythm, flow, emotion and image in a spontaneous way. I have taught Brain Gym® to technically good musicians who found they could finally feel and express the passion in the music they played. Visual artists I have taught were stunned by the depth of expression they could achieve in their work. Brain Gym® is used in a course called Switched-On Golf that many golfers now consider their secret weapon.⁵ Ron Langford uses Brain Gym® in his work with racecar drivers, a sport that demands calm, focus and integration.⁶

In Hawaii, I was invited to work with a soccer team of boys ages fourteen to sixteen who wanted to win the state championship. They were good players but all too often, they lost their "cool" during games, got penalties and lost. I did one Brain Gym® session with these boys as they focused on this goal: "we are calm, cool and collected and win the state championship." Until the tournament the boys voluntarily drank lots of water and did Cross Crawls, Brain Buttons and Hook-ups (the PACE program discussed below) before and in the middle of each practice and game. Their whole game improved and they qualified for the state championship play-off in Honolulu. There, they easily won the first two playoff games and advanced to the final championship game. The tension during this "make or break" game was very high and the boys began to lose their cool. During a time out, the boys spontaneously lay on the field and did Hook-Ups as the coach, parents and everyone else looked on in amazement. Then they returned to the game and won the state championship.

The tremendous contribution and appeal of Brain Gym® is its ease and utility. People can do the exercises at any time to enhance anything they do. It is simply movement, free and easy.

A BRAIN GYM® SAMPLER

I will go over a few of the Brain Gym® movements and their physiological mechanisms as I understand them from my research of brain function.⁷ I will begin with PACE which stands for *Positive, Active, Clear and Energetic* learning. It is a learning readiness sequence that is usually done at the beginning of the school day, after recess and after lunch to effectively prepare the student for learning. I do it prior to any activity I want to be totally integrated for. It includes drinking water for energetic learning and then doing Brain Buttons, Cross Crawls and Hook-ups.

BRAIN BUTTONS

Brain Buttons are done by placing one hand over the navel while the other hand stimulates points between the ribs. The hand over the navel brings attention to the gravitational center of the body. Here lie the core muscles, important contributors to bodily balance. This action alerts the vestibular system, which stimulates RAS activation to wake up the brain for incoming sensory input. If a person is staring, this vestibular activation will get the eyes moving again so the brain has access to external visual information.⁸

The other hand gently rubs the indentations between the first and second ribs directly under the collarbone (clavicle), to the right and left of the sternum. This is thought to stimulate blood flow through the carotid arteries,



Figure 7.3: Brain Buttons

the first arteries out the heart that supply nutrients and freshly oxygenated blood to the brain. The Brain Buttons lie just above where the two carotid arteries branch. Baroreceptors (pressoreceptors) in the walls of the carotid arteries may account for the effects noticed when rubbing these points. Baroreceptor nerve cells are capable of responding to changes in blood pressure and (through the carotid sinus reflex) maintain normal blood pressure to the brain.⁹

I first realized the value of Brain Buttons when I was teaching an evening course at the University of Hawaii after working at the elementary school all day. The twenty-five minute drive home after class was deadly. I would find myself falling asleep at the wheel. My students had been doing Brain Buttons as part of PACE at the beginning of the class and I remembered their comments that it really woke them up and got them ready to learn even after their long work day. So I pulled the car over and did my Brain Buttons. It was as if a fog had lifted and I was able to stay alert for the rest of the drive. Many of my students have commented that it brings them back to focus when they are taking a test.

CROSS CRAWL

The Cross Crawl is simply a cross-lateral walking in place. By touching the right elbow to the left knee and then the left elbow to the right knee, large areas of both brain hemispheres are being activated simultaneously. Cross Crawling is like consciously walking, which facilitates balanced nerve activation across the corpus callosum. When done on a regular basis more nerve cells and networks form and myelinate in the corpus callosum, thus making communication between the two hemispheres faster and more integrated for high-level reasoning.

Infant crawling has long been known to be crucial for activating full sensory functioning and learning. Crawling involves movements that cross the body's midline and use both sides of the brain in concert. Our cross-lateral movements help us to build the capacities that allow full sensory access (auditory, visual, proprioceptive) from both sides of the body. (Later on, walking incorporates all of our early stages of development from infancy to toddling.) The Cross Crawl assists people who have missed or shortened this important step in development.¹⁰ Drs. Dolman and Delcato coined the term patterning to describe the process of repeating a natural movement, like crawling, again and again to imprint it in the body's physiology even years after the developmentally appropriate time has passed. They have been instrumental in successfully assisting stroke patients to regain function through crawling.¹¹

It's most effective to do the Cross Crawl movements very slowly. When the exercise is done slowly, it requires more fine motor involvement and balance, consciously activating the vestibular system and the frontal lobes. Children labeled hyperactive will have a hard time going slow, so engage them by first allowing them to go fast (which requires less balance), and then saying "Who can go the slowest?" There are many fun variations possible for all the

activities I will present, with suggestions in two wonderful books: *Hands On, How to use Brain Gym® in the Classroom*,¹² and *S'cool Moves for Learning*.¹³ As with the findings that running wheels stimulate the production of new nerve cells in the hippocampus of rats, cross-crawls are stimulating the same areas, thus it would make sense that they improve learning and memory.

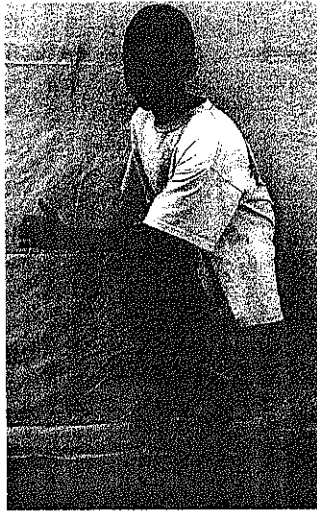


Figure 7.4: Cross Crawl

This simple movement is elegant in activating full brain function and major diffusion into the frontal lobes. Whenever I get stuck, for instance, with writer's block, I Cross Crawl or take a walk, and the ideas begin to flow again. The simple act of walking uphill or on uneven ground helps strengthen the back and neck muscles, thus allowing the head to balance properly so the eyes can more easily team together. Having children walk or climb up and roll down hills is a great way to develop their learning system.¹⁴ Robert Dustman, director of neuropsychology research at the Veterans Affairs Medical Center in Salt Lake City, Utah, found walking to improve mental performance in fifty to sixty year old men and women. He first administered mental and physical tests to a group of relatively inactive men and women in their fifties and six-

ties. He put the subjects on a four-month program of regular brisk walking. At the end of the four months, their performance on the same series of mental tests jumped by ten percent.¹⁵

HOOK-UPS

Hook-ups are done by first crossing one ankle over the other — whichever feels most comfortable. The hands are then crossed, clasped and inverted. To do this, stretch your arms out in front of you, with the back of the hands together and the thumbs pointing down. Now lift one hand over the other,



Figure 7.5: Hook-ups

palms facing and interlock the fingers. Then roll the locked hands straight down and in toward the body so they eventually rest on the chest with the elbows down. This complex crossover action has a similar integrative effect in the brain as the Cross Crawl. In a balanced way, it consciously activates the sensory and motor cortices of each hemisphere of the cerebrum, especially the large area devoted to the hands.

While in this position, rest your tongue on the roof of your mouth behind the teeth (hard palette). This action stimulates the tongue ligaments,

which connect to the vestibular system, thus activating the RAS for focus and balance, and also helps to release a tongue thrust caused by postural imbalance. This complex balanced configuration equally stimulates both hemispheres of the brain, the entire motor coordination system and the vestibular system, thus stopping the survival reaction by bringing the system into coherence, and assisting focus, learning and memory.

As a counselor, I had a two-minute rule. When students (ages five to fifteen) were sent to me for being disruptive in the classroom, or following a playground fight, they had to sit in Hook-ups for two minutes before we talked. This consciously brought attention to the motor cortex of both frontal hemispheres and away from the survival centers in the reptilian brain, thus decreasing adrenalin production. Following the two minutes they were able to see both their own and each others' points of view more clearly. None of these students wanted to "get in trouble," and they were grateful to have a tool they could personally use, at any time, to control their own behavior.

This is one of my most frequently used Brain Gym® activities. Teachers often use it for themselves when their stress levels rise, and also to quiet and refocus students after changes like recess or lunch.

I invite you to do an experiment. Concentrate on a stressful or extremely challenging situation in your life. Notice where you tense up, where you feel muscles tighten, if the backs of your knees lock in the tendon guard reaction, and how you are breathing. Then sit, stand or lie down in Hook-ups for two to five minutes. Notice the differences in muscle tightness, breathing and outlook after this time. The situation is the same, but the whole body/mind system is being used to handle it more efficiently.

Following is a sampling of other Brain Gyms that work for specific skills development.

THE ENERGY YAWN

The Energy Yawn is done by massaging the muscles around the temporal-mandibular joint (TMJ) while yawning. The TMJ lies right in front of the ear opening and is the joint where the lower jaw meets the upper jaw. Across this joint run nerves from major cranial nerve trunks that gain sensory information from all over the face, eye muscles, tongue and mouth and activate all the muscles of the face, eyes and mouth for expression, mastication and vocalization.¹⁶ This is also one of my most frequently used Brain Gyms, as many as 12 times per day because it activates so much for learning. Figure 3.4 graphically depicts the large area of the sensory and motor cortices these nerves supply.

The simple act of yawning also stimulates the tongue ligament, which helps to activate the RAS, waking up the brain and assisting focused attention.



Figure 7.6: The Energy Yawn

When we are stressed, the jaw tightens up and nerve function across this area decreases. (It's a protective reaction, so that if we are hit, the lower jaw won't be dislocated.) The Energy Yawn relaxes the whole facial area so the eyes, ears and facial muscles work more efficiently. It also facilitates more effective verbalization and communication.

When children are having difficulties with reading, tension in the TMJ may cause the eyes to not work well together due to stress. Tension in the TMJ may also make it difficult for children to hear clearly and verbalize, consequently affecting thought processing and memory. The Energy Yawn is remarkable in its effects. By relaxing the muscles and facilitating full nerve function across the temporal-mandibular joint, all the nerve functions to and from the eyes, facial muscles, and mouth are improved.

I used to enjoy watching Michael Jordan, a most amazing basketball player. He is grace in motion, *and*, his jaw is usually totally relaxed. This shows he is *playing* basketball, not stressed by it, which makes him a great basketball player. I have also seen this in Tiger Woods's beautiful, relaxed smile when he is *playing* golf.

THE THINKING CAPS

The Thinking Caps exercise wakes up the whole hearing mechanism and assists memory. It is done by unrolling the outer cartilage of the ears from top to bottom several times.



Figure 7.7: The Thinking Cap

The link between hearing in the temporal lobe and memory in the limbic system appears to be very strong. My students at the University of Hawaii found the Thinking Caps to be very useful when needing to recall some technical information for an essay or exam. They'd also begin using this activity when I'd say "I want you to remember this information." Often, if I can't remember a person's name or the reference for an article, I do the Thinking Caps and the answer pops into my mind. The simple act of physically stimulating the tactile receptors in the outer ear, wakes up the whole hearing mechanism. (Acupuncturists identify over 148 points in the outer ear as corresponding to areas of the body, from the feet at the top of the ear to the head at the ear lobe.)¹⁷

It might be interesting for you to do this simple experiment: Close your eyes and listen for a few minutes. Are you hearing things equally with both ears? Does one ear seem bigger, or is it hearing more clearly than the other? Are any sounds muffled? If you are in a noisy environment, are you able to pick out individual sounds? Now, unroll your ears about three times on each side and close your eyes again. Notice the difference.¹⁸

X MARKS THE SPOT

The X is a very powerful symbol for the brain. Both hemispheres of the neocortex and the developed neural pathways of the corpus callosum are required in order to see the center of the X. The X lies in the center of the infinity symbol which, when used with hands, eyes, or body, in a smooth easy way going up the center and out assists integrated, graceful, coordinated movements of the hands, eyes and entire body. The X and infinity symbol are used a lot in the Brain Gym[®] activities, however, the infinity symbol is called a "Lazy 8", or an 8 lying on it's side. I will move between using the term "Lazy 8" and "Infinity Symbol" in the following text.

LAZY 8'S FOR WRITING

The Lazy 8 for writing is a pencil and paper activity specifically geared to improve written communication. Lazy 8's for writing are excellent for establishing the necessary rhythm and flow for good hand-eye coordination. To do a Lazy 8 you draw an infinity symbol (a sideways eight), with the X of the symbol right at the position of your belly-button (midline), in a flowing continuous movement. Start at the middle, draw counterclockwise first: up, over and around; then clockwise: up, over, around and back to the midpoint. *make sure to start up the middle*, which follows the midline of the body. Five or more continuous repetitions are done with each hand and five or more with both hands together.

The Lazy 8 is best done large at first (but within the visual field), to stimulate large muscles, and on a surface to stimulate tactile awareness. Especially with young students, I suggest this activity be done first in sand, birdseed, on carpet squares or textured walls with the full hand, rather than pen or pencil, to activate both hand areas in the motor and sensory cortexes of the brain. This action relaxes the muscles of the hands, arms and shoulders as well as facilitating visual tracking.

You can experience the integration this activity brings by thinking of something you need to communicate in writing. Notice the position and how tightly you are holding the pen as you begin to write. Now write a few sentences and notice if the ideas flow easily or if there is effort in communicating what you want to say. Do the Lazy 8 (infinity symbol) as big as an 8½ x 11 inch sheet of paper. Then write a few sentences again, noticing the position and how tightly you hold the pen, how clear your thoughts are and if you are now able to communicate with ease. Also notice your writing before and after, was the writing more fluid and easy?

Lazy 8's are very helpful to me when I get writer's block. Students also find them very helpful when taking a test. If they start to feel stressed, become confused and/or can't think of the answer, they simply do some Lazy 8's on their desk tops with their fingers and experience cross-lateral integration again. Then they can find the answers more easily.

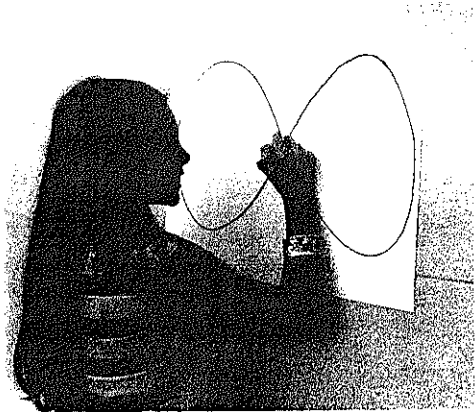


Figure 7.8: Lazy 8's For Writing

The Lazy 8's also assist with art, graphics and playing any musical instrument. In South Africa, I had one of the nation's top artists draw a picture of a person we were with, and I gave him only ten minutes to do this. Then I had him do the Lazy 8's and gave him ten minutes to draw a picture of another person. He was astounded, as were we, at the difference in his ability to more closely and complexly capture the second person after just one or two minutes of Lazy 8's.

LAZY 8'S FOR EYES

Lazy 8's for eyes are similar to the Lazy 8's for writing except that the focus here is on eye movements and improving hand-eye and eye-hand coordination. These Lazy 8's are done by training the eyes on a moving thumb as it describes an infinity sign in the visual field. To do this, hold either thumb at eye level in the mid-field of the body at approximately an elbow length from the eyes. For maximum muscular activation the movements should be slow and conscious. Holding the head still, but relaxed, and just moving the eyes to follow the thumb, move the thumb directly up the center of the mid-field to the top of the visual field and then counterclockwise out around and down to

the left side. As the thumb reaches the lower mid-field of the visual field bring it back up the center and clockwise out, around and down the right side. This should be continued in an even flowing movement at least three times with each hand. Then both hands should be clasped with the thumbs forming an X. While focusing on the center of the X, again follow the clasped thumbs through the Lazy 8 pattern.

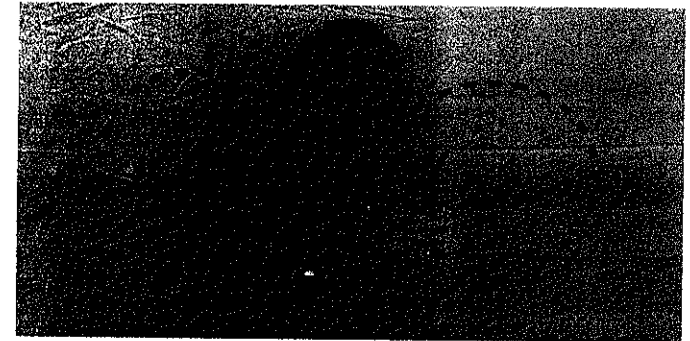


Figure 7.9: Lazy 8's For Eyes

This activity effectively strengthens the extrinsic eye muscles, assisting network development and myelination from the frontal eye field area for fine motor tracking. It also sets up learning patterns that coordinate hand-eye and eye-hand muscle alignment.

The Lazy 8 pattern can also be drawn in a three-dimensional field close to and away from the eyes. In this version of the activity the plane of the figure 8 is shifted ninety degrees so that it is now perpendicular to the body. This exercise works the intrinsic muscles that hold the lens of the eye, thus activating near and far focus. Starting at the midpoint, move the thumb up and away from your body as you circle the outer loop, then move up through the midpoint and toward your eyes as you circle the nearer loop. Again, this should be done in a free-flowing pattern with only the eyes and hand moving.

People with glasses might want to take them off so the visual field is not pre-empted by the rims of the glasses. If done right, you should feel maximal muscle movement, equally in both eyes. This means you may feel like you've been doing push-ups with your eyes if the muscles are a bit weak.

This is often difficult for people who have been under a great deal of stress. One student I worked with, who had been in a sexually abusive situa-

tion for years, could only do a few of these at a time without pain in her eye muscles. It had been impossible for her to read, because in her chronic state of stress her outer eye muscles had strengthened for peripheral vision and her inner eye muscles were very weak. In this condition she was unable to bring her eyes into focus for two-dimensional foveal focus or to track across a page of reading. With persistence, over a month's time, the muscular movements of her eyes became stronger and more balanced so she was able to achieve foveal focus and finally read.

Lazy 8's are an important activity for me after working on the computer. I can start to feel the eye-strain setting in, which also causes my neck muscles to tighten and my shoulders to become sore. By doing the Lazy 8's for eyes, my eyes and shoulders relax and I'm able to continue with my work.

A wonderful variation is the infinity back massage that not only assists writing and eye teaming, but also the release of nerve growth factor (NGF) and oxytocin for increased calm, focus and learning. In a classroom situation, one student sits at the desk and rests his head on his arms, while another student draws the Lazy 8 on his back. The student drawing the Lazy 8 should be aware of his eyes moving with his hands and the feel of the fabric on his hands, which stimulates both the motor and sensory cortexes of the brain. Then they can switch roles. Done as a regular treat, at least once a day for several minutes, it greatly assists a sense of safety, calm, focus and learning for all.¹⁹

THE ELEPHANT

This is one of the most integrative of the Brain Gym® activities. It is done by placing the left ear on the left shoulder, tight enough to hold a piece of paper between the two, then extending the left arm like a trunk. With knees relaxed and bending with the flow, the arm draws a Lazy 8 pattern in the mid-field, again starting up the middle and out and around with eyes following the movement of the finger tips. For increased effectiveness, it should be done slowly three to five times on the left and an equal number of times with the right ear against the right shoulder.

The Elephant activates all areas of the body/mind system in a balanced way. The movement is mainly from the core muscles, activating the vestibular system, especially the semicircular canals. Hand-eye coordination is also involved, all orchestrated by the basal ganglion of the limbic system in conjunction with the cerebellum and sensory motor cortices of the cerebrum with emphasis on the frontal lobes. Visual input activates the occipital lobe and, if elephant sounds are added, the hearing mechanisms within the temporal lobes.

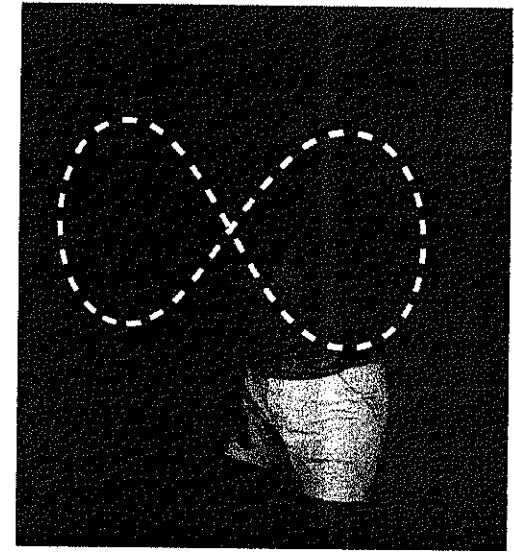


Figure 7.10: *The Elephant*

People who have experienced chronic ear infections find the Elephant extremely challenging, but see major results with improved balance and equilibrium within a few weeks. If done on a regular basis, the Elephant stimulates the whole vestibular system, re-establishing nerve networks that might have been damaged during ear infections. Elephants are highly recommended for people labeled ADD, as this exercise assists full activation of the Reticular Activating System, thus improving attention.

OTHER PROGRAMS OF INTEGRATED MOVEMENTS

The physiology of brain function that applies to Brain Gym, also applies to most yoga, Tai Chi, Alexander Technique, and other movement programs in which each posture and movement is done slowly, with maximal activation of both gross and fine motor areas of the brain in a controlled, coherent, cross-lateral way that stimulates whole brain/body balance and frontal lobe processing. This routine activation of the motor cortex elaborates nerve networks in the rest of the frontal lobe including the pre-motor and superior pre-frontal cortex.

Since these specific movements are growing and activating nerve networks throughout the brain, in both hemispheres simultaneously, they help build the hardware needed to assure success for life-long learning. I enjoy watching the people in China, in the morning as they gather by the hundreds to do Tai Chi in the parks. They are the vision of grace and beauty. Unfortunately, most of the participants are older people, sometimes very old. It seems

the young people of China have turned to becoming Westernized with high stress jobs, sedentary lifestyles in offices, at computers or TV, and the resulting obesity never before present.



Figure 7.11: The Integrated Movements of Tai Chi aid learning

All these activities effectively optimize learning and performance at every level in all areas of life: cognitive endeavors, healthy relationships, communication, creativity, art, music, sports and dance and increased productivity in the workplace. Because they relieve and manage stress to help maintain brain coherence, they also contribute to overall health.

With the high pressure to perform academically in Singapore, two parents I met, Sumi Said and Hadi Chua Muhd, decided to use Brain Gym® and other integrative movements in order to assist their own children through school. In their home they hung a rope ladder for climbing. They constructed a balance beam from 2 x 4 boards laid on blocks, provided balls to roll around on, throw, and do Brain Gym® activities with, and collected a lot of manipulative objects for hand development. Their children spent much time in nature playing in streams and rivers, playing with sticks and rocks, climbing cashew and palm trees, rope structures, big rocks and even the sides of buildings. As you can see from the accompanying photographs, the children are barefoot. We are learning the importance of foot flexibility. The more children can go barefoot, the more they develop their sense of balance and their entire vestibular system, which in turn affects their hearing, attention, language, and all learning.

As their children succeeded in school, other parents became interested

in what Sumi and Hadi were doing. The interest was so great that they opened sessions to other children. Currently they work with hundreds of children a week. The children coming to their center are labeled with learning and physical disabilities, many severe. Sumi and Hadi get them climbing, doing a variety of activities that demand strong balance, doing Brain Gym. They even take children on camping trips in nature for the fun of it. The play and joy these two people bring to those children has left each child functioning at high physical and academic levels, acknowledged by the media as outstanding, and they just started out as concerned parents.²⁰



Figure 7.12: Brain Waves Educational Kinesiology Consultancy School, Singapore

Schools and all other learning settings from preschool to corporate training classrooms are obvious places to incorporate these simple activities. I have never worked with an age group or type of individual that failed to learn more effectively as a result of using integrated movements. They help the young to get ready to learn, and the elderly to maintain active thinking and memory. But perhaps the most profound improvements I have witnessed were with adults and children labeled "learning disabled," "Attention Deficit Hyperactive Disorder," "Emotionally Handicapped," Autistic, Dyslexic, Down's Syndrome. These activities are drug-free, simple and highly effective. They maintain a fine-tuned body/mind system; assist comprehension, and understanding; and promote more joy and enthusiasm in every area of life.

What Goes Wrong?

Every child has inside him an aching void for excitement and if we don't fill it with something which is exciting and interesting and good for him, he will fill it with something which is exciting and interesting and which isn't good for him.

— Theodore Roosevelt

If movement is essential for learning and thought, then why aren't "hyperactive" people, who move all the time, thinking and learning? If people have all the necessary elements to take in the world sensorially, to process and integrate information, and to demonstrate the skill of thought, why are some people labeled "learning disabled"? If the drive to learn is intrinsic to the human body/mind from before birth to death, why do some people have "attention deficit disorder"?

In the United States alone there are between three and four million school-aged children, mainly boys, who are labeled with specific learning disabilities. As many as five hundred thousand preschool children are also being labeled with learning disabilities, between one and one and a half million preschool children with speech and language disabilities, five hundred thousand preschoolers with emotional disturbances, seventy-five thousand with hearing impairments, and one hundred thousand with autism.¹ Every week, fifteen thousand American school children are being referred for assessment, and up to eighty percent of all American school children could be diagnosed with learning difficulties.^{2,3}

In my observation, based on years of work with schools and school children, the labels used for specific learning difficulties are generally arbitrary, based on behaviors and non-pathological. These labels include: Hyperactive, Attention Deficit Disorder (ADD), Attention Deficit Hyperactive Disorder

(ADHD), Learning Disabled, and Emotionally Handicapped. Efforts to help people with learning difficulties have often relied on the pigeonhole strategy: labeling a problem and thinking that greater understanding will follow from greater generalization. But more often than not, labeling leads to oversimplification and insensitivity to the very real, very unique people behind the label. Sadly, in some ways we have trapped these children — and adults — in a diminished view of themselves and their potential for learning.

In light of the amazing resiliency of the human body/mind system, I propose that we hold off such a judgment until a person has completed their learning, which will take a lifetime. How can we label someone who is still in the process of becoming, a process we all are engaged in until we die? Having said that, I hasten to agree that there are people with specific learning difficulties. However, if we must label them, why not label them according to the underlying core problems rather than just the symptoms? I suggest the label SOSOH: Stressed Out, Survival-Oriented Humans.

WHO ARE SOSOH?

What do I mean by stressed out, survival-oriented? I am referring to non-integrated, lopsided brain functioning, a tendency to operate reflexively and/or reactively from survival centers in the brain stem and the sympathetic nervous system. How does stress fit into the picture? Stress from various environmental, developmental, family and social influences is a trigger setting off events in the nervous system that produce and regulate survival-oriented behavior. We certainly know that chronic exposure to stress inhibits full brain development and learning.⁴

Stress necessitates an overemphasis on survival-oriented brain processing at the expense of rational, limbic and cortical functioning, especially within the frontal lobes. Consequently, stressed out, survival oriented humans have less opportunity to develop nerve nets into the frontal lobe and may exhibit learning difficulties as a result. In the next five chapters we will look at these detrimental effects of stress in greater depth. Here I wish to emphasize that stressors of various kinds, some obvious, some less visible, are causative agents for many learning difficulties.

As far as I can tell, my SOSOH label easily covers all the other labels we currently apply to learning problems. These familiar labels, including Fetal Alcohol Syndrome, have been attached to the following patterns of behavior:

Excessive activity — hyperactivity,

Difficulties in maintaining attention and focus on a task,

- Disruptive behavior,
- Learning difficulties,
- Inability to control behavior in alignment with social norms,
- Marked discrepancy between seemingly high verbal skills (constant talking) and the ability to communicate effectively,
- Erratic, non-graceful, unbalanced or poorly controlled movements.
- Insensitivity to the needs and feelings of others.

All these behaviors fall within the realm of frontal lobe functioning. The frontal lobes control fine motor movement, inner speech, self-control, and reasoning. I believe that people who exhibit these behaviors, my SOSOH group, have been exposed to stressors that require them to be concerned more with survival than reason. Because of this, they lack integrated nerve-net development and myelination into the frontal lobe area of the cerebrum.

HYPERACTIVITY AND THE FRONTAL LOBE

A study by Alan Zametkin and colleagues at the National Institute of Mental Health graphically demonstrated the frontal lobe/hyperactivity connection. Zametkin studied 25 hyperactive adults of childhood onset (who also had hyperactive children of their own). Using PET scans to measure these adults' cerebral glucose metabolism while engaged in an auditory-attention task, researchers found 8.1% less brain activity in the hyperactive group as compared to a normal control. The area of the brain with reduced function was the frontal lobe.⁵

Hyperactivity (and ADD or ADHD) is characterized by a lack of fine motor coordination, and constant, erratic, non-graceful adrenalin-initiated movements. Constant external chatter is also characteristic, pointing to a lack of inner speech development that controls social behavior. Exhibited also is a lack of deep feelings such as empathy, compassion and love for others and their needs and feelings.

The largest reduction of brain activity in the Zametkin study was found specifically in the premotor cortex and superior prefrontal cortex of the frontal lobes.⁶ (See Figure 5.2, the four lobes of the neocortex.) These areas of the brain are crucial for the self-talk which controls behavior and planning, for fine controlled movement, for integrative thought, and for creativity and higher level emotions such as empathy and altruism. The prefrontal cortex, with its connection to Broca's area on the left side for motor control of speech, affects focused attention, motor activity and the ability to think before acting.⁷

When fully developed, in late adolescence or even adulthood, the fron-

tal lobe takes all the information from the rest of the brain and synthesizes it into thought, creativity and action. These areas of the frontal lobe light up on PET scans when a person is thinking, and they link to the motor cortex which facilitates appropriate action in relationship to reasoning.⁸ (See Figure 5.3 which schematically represents the brain areas involved in thinking) Jay Giedd implicates malfunction in the frontal lobes and smaller frontal areas of the corpus callosum in ADHD. A smaller frontal corpus callosum reflects communication problems between the two brain hemispheres.⁹

What Inhibits Learning

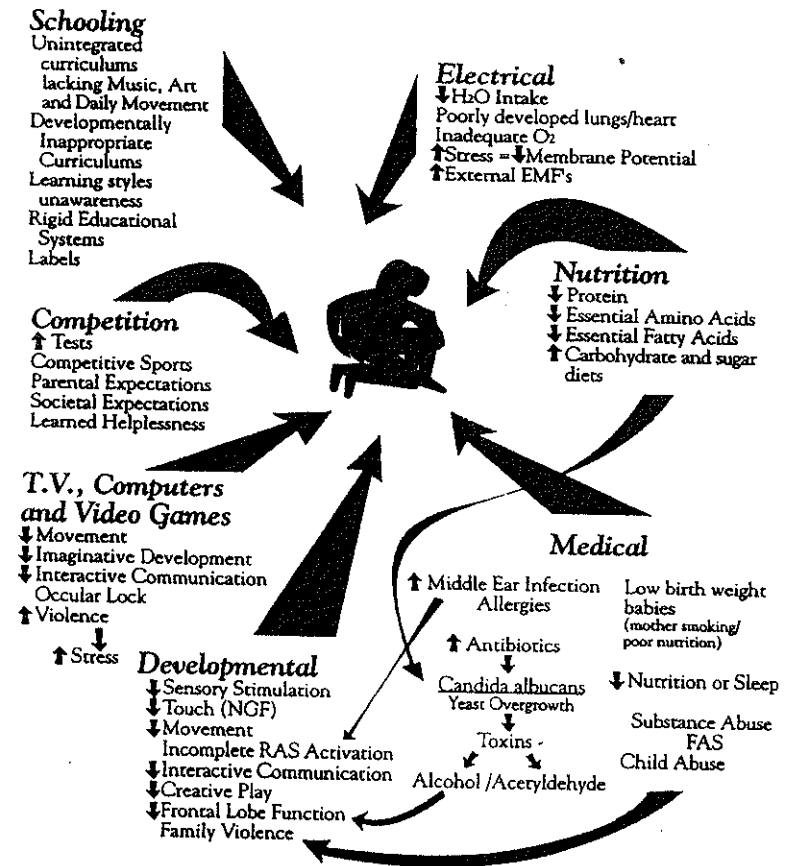


Figure 8.1: What Inhibits Learning

SOME OF THE SOURCES OF STRESS IN OUR LIVES

So what are some of the stressors people face in their lives that limit frontal lobe development? I will attempt to categorize what I believe are the main stressors. Many are interlinked:

Developmental — lack of sensory stimulation, lack of movement, lack of touch (diminished Nerve Growth Factor), lack of interactive creative play and communication, unbalanced or incomplete RAS (Reticular Activating System) activation.

Electrical — inadequate water consumption, inadequate oxygen, excessive exposure to external EMF's (electromagnetic fields).

Nutritional — inadequate amounts of proteins, lack of essential amino acids and fatty acids, high carbohydrate and sugar diets.

Medical — low birth weight babies, chronic middle ear infections, allergies, medications, yeast overgrowth, inadequate diet or sleep, substance abuse, child abuse, poor vision or hearing.

TV, computers and video games — which can lead to violence, decreased imaginative development, less interactive communication, ocular lock, decreased motor development, decreased motivation, and linear thinking that lacks comprehension of complex systems.

Competition — inappropriate expectations (at home, school, work and self-imposed), pressures towards social conformity, competition in sports and in the arts, learning in a winner/loser rather than cooperative framework.

Rigid educational systems — developmentally inappropriate curricula, constant low-level skills testing, lecture/writing formats for quiet classrooms, unawareness of or inattention to unique learning styles.

Most of these stressors overstimulate the survival centers of the mind/body system. They cause nerve activity to be centered in the sympathetic nervous system and brain stem, with little activation of the rest of the brain, especially of the frontal lobes.

A review of the research shows strong evidence for a variety of effects of stress on SOSOH people. I will go into greater detail in coming chapters, but one more example may suggest the significant, complex links that neuroscientific research is establishing between stress and brain function. The hippocampus of the limbic system, key to memory and learning, is profoundly affected by stress. In research on rats, Solomon Snyder found that enkephalins, chemi-

cals produced in the brain during stress to numb pain, also increase hyperactivity and decrease memory.¹⁰ In addition, the stressed rats did not grow new nerve cells in the hippocampus (involved in memory) and lost more hippocampal cells than the non-stressed ones.¹¹ Furthermore, only the stressed rats lost cells in the part of the hippocampus that suffers selective damage in Alzheimer's disease in humans.¹² These results are thought to apply directly to humans, stress and aging. Adrenalin output rises during aging, rendering the hippocampus more vulnerable to neurological insults like seizures and strokes, especially in the presence of stress.

Many sources of stress can interfere with the learning process. In earlier chapters I have discussed the impact of various developmental factors on brain functioning and learning capacities. In the chapters ahead, I will do my best to address the rest of the list. Some, like malnutrition are well known inhibitors of learning and health. Others, like TV, competition and educational expectations exert less visible but no less serious influences on learning. We will take a look at them all. Armed with greater knowledge we can help ourselves and our children avoid situations and influences that pose a danger to brain development and to learning. That is why I have called the second part of this book, *Nurturing and Protecting Our Learning Systems*.

Nurturance and protection of the young are the primary roles of every family and every society. But as we look at our children, our schools, and our future, concerns mount that somewhere along the line we have gotten dangerously off track. We may be accepting far higher levels of stress than we can possibly manage and dissipate. In the following pages I hope to point us in a better direction.

Basics for the Brain: Nutrition

We all know that good, balanced nutrition is important to learning, but what does that mean? It means making sure the raw materials for healthy bodies, and especially the nervous system, are available. These include protein, carbohydrates and fats. It also means being careful not to weaken the body's ability to protect and restore itself by over-eating the unhealthy things, notably sugar.

Proteins and fats provide the major building blocks for the membranes of all the cells in our body. Specifically, they form the structure of the developing nerves and their networks. Proteins also form the structure of the sodium-potassium pump to maintain polarity and assure proper nerve transmission throughout our system. In addition, they are involved in the hemoglobin structure (which enables blood to transport oxygen), in the contractile elements in muscle fibers, and serve as antibodies, hormones and enzymes.

Proteins are made up of long chains of amino acids that are assembled according to our DNA code. As proteins form, they fold on to themselves to create characteristic crystalline structures that facilitate their specific functions. Water plays an essential role in the building of the protein molecule. Proteins trap water as they crystallize, with water accounting for 27% to 77% of the crystal's volume. This allows water to influence and maximize the fine-scale structure and function of the protein^{1,2}

Our diets must be balanced to include all ten essential amino acids necessary for the synthesis of proteins and the essential fatty acids that produce our hormones and myelin sheaths. These essential amino and fatty acids cannot be synthesized by the human body from molecules present in the body. Chicken eggs and fish provide all the essential amino and fatty acids. Dairy products that have been pre-digested such as yogurt, cottage cheese, kefir, feta cheese and goat cheese are good sources of the essential amino acids. Nuts, fish oil and olive oil are good sources of healthy fatty acids. Vegetarians must

be very careful to combine foods in such a way that all essential amino and fatty acids are included in their diets.³

Pregnant women should be eating approximately 70 grams of protein and about the same of fatty acids a day to provide the building blocks for the developing fetus. Children especially need extra protein and fats, as they form 90% of the nerve cells and dendritic extensions in their bodies before age five. They also need more proteins and fats to provide the membranes of new growing cells all through their growth years. The diets of children with learning difficulties are often deficient in proteins and fats. Just having a child eat an egg in the morning, instead of cereal, and providing snacks of cheese, yogurt, or nuts, will go far towards giving them the needed building blocks for learning.⁴

Carbohydrates, which consist of long molecular chains of sugars, provide the main energy source for our bodies. They are the primary ingredients of grains, fruits, vegetables and dairy sugar. Each of these sources contains two simple sugars, one of which is a molecule of glucose — the main source of energy for the brain. This is the molecule that is broken down (oxidized) by oxygen to yield energy that is then trapped in ATP. The byproducts of this process are carbon dioxide (CO₂) and water, which are then exhaled and later recycled by plants back into more food. Carbohydrates are essential, but they must be balanced with proteins and fats.

SUGAR AND THE SSOH PERSON

When I speak at schools, I am often asked what I would do immediately to assist learning. My answer always begins with three items: First, ban TV, computers and video games before the age of eight to give imagination a chance to develop. For older children, keep viewing time to a minimum (less than 1 hour a day) and monitor the programs for violence to cut out a major source of adrenalin producing stress in the learner's life. (I've already discussed TV in Chapter 4, and will again in Chapter 12.) Second, institute a daily integrative movement program for the whole family that is fun. An hour of outdoor unstructured play or inside rough-and-tumble play, walking, swimming, dancing and integrative sports that are cooperative rather than competitive would be best. Brain Gym, Tai Chi, yoga are examples of movement programs for every learner both in classrooms, workspaces and at home. These insure optimal learning readiness and frontal lobe activation. And third, decrease or, better yet, eliminate simple sugars in peoples' diets. If glucose is essential for brain function, why do I make this statement?

This recommendation actually encompasses more than sugar. Sugar is

one player in a whole cycle of stress, disease, and immune system factors that contribute to learning problems. The whole cycle probably starts with stress and increased adrenalin, leading to lowered membrane potential and polarity. This in turn leads to food sensitivities (usually milk, wheat and corn) with 6 – 8% of children under age three having allergies⁵ and a depressed immune systems, which of course leads to infections, particularly respiratory disorders and ear infections.⁶ Persistent, recurring ear infections (discussed in Chapter 11) are seen in 94% to 97% of children with learning disabilities. These chronic infections damage the vestibular system and inhibit maximal stimulation to the reticular activating system. This decreases the brain's ability to stay alert, focus and learn.⁷

Persistent, recurring ear infections also lead to long term, repeated treatments with broad spectrum antibiotics. Antibiotics do nothing for viral infection. Waickman notes that "Sixty percent of illnesses which take children to doctors are viral. Yet, many of these viral illnesses are treated with antibiotics."⁸ Broad spectrum antibiotics alter all the natural flora of the body, decreasing the beneficial lactobacillus organisms which produce acid that holds down the growth of yeast and other organisms. Antibiotics can also interfere with the ability of the immune system to limit fungal (yeast) infections by decreasing the ability of white blood cells to destroy (phagocytize) yeast organisms.⁹

Since the yeast (*Candida albicans*) grows back faster than the lactobacillus, yeast flourishes in the system. It then thrives and reproduces on excess

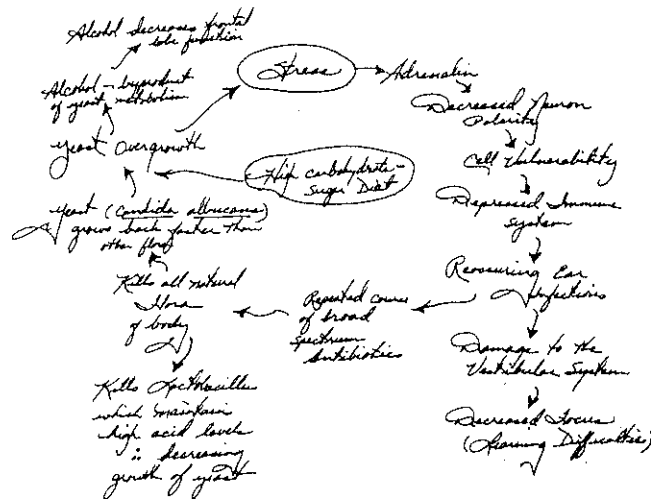


Figure 10.1: The Stress-Infection-Antibiotic-Yeast-Sugar-Toxins Cycle

sugars in the body supplied by diets rich in carbohydrates and sugars. The reproduction causes a yeast overgrowth situation. Yeast utilizes sugars as its main food source, releasing toxins (acetaldehyde and alcohol).¹⁰ These toxins further adversely affect the immune system by decreasing the availability of essential omega-3 and -6 fatty acids. These fatty acids are necessary for the formation of prostaglandins, which stimulate T-lymphocyte function to resist allergies and infections.¹¹ T-lymphocytes, produced in the thymus gland, are key elements in the immune system.¹² With fewer T-lymphocytes, the body becomes overly sensitive and reacts to other foods (chocolate, cola, citrus eggs), and to environmental allergens, chemicals and other stimuli.

This oversensitivity to environmental stimuli from the stress-infection-antibiotic-yeast-sugar-toxins cycle often manifests itself in fears and phobias prevalent among dyslexics. Harold Levinson identifies heightened sensitivity to fluorescent lights and photo-phobia as consequences of ear disorders from childhood infections and high sugar diets which result in yeast overgrowth.¹³ Children with reduced sensory acuity, poor hearing and balance due to infections, don't fully experience their environments. It seems likely that these children could develop fears and phobias leading to even greater stress.

Greater stress would, again, lead to infections as the cycle continues. With high sugar consumption thrown in, yeast overgrowth and the ensuing toxins could lead to over-sensitivity. External, low frequency electromagnetic fields might also exacerbate this whole cycle as they disrupt and weaken cellular membranes.

The toxins released by yeast overgrowth include alcohol. Dr. Waickman found that 60% of the population has some yeast in the alimentary tract capable of producing some alcohol in the stomach.¹⁴ With diets high in carbohydrates and sugars, the conditions are right for further yeast overgrowth and alcohol production. Alcohol is easily carried directly into the blood from the digestive system, and primarily affects the frontal lobes of the brain. Within the frontal lobes, it inhibits nerve net growth and proper development and function. The symptoms show up as decreased attention span, behavior problems, disruptive conduct, irritability, increased sugar cravings, hyperactivity, depression and autistic behavior.^{15, 16} This is dramatically seen in Fetal Alcohol Syndrome.

The effects of alcohol in the system can be far-reaching, particularly in the frontal lobes, because they are responsible for fine motor coordination, high level formal reasoning and inner speech to control one's behavior. If you have had a "bit to drink," what do you notice about your fine motor coordination? How about your high level formal reasoning? And what does alcohol

do to your ability to control your behavior in alignment with social norms? These are the same symptoms I have noticed consistently in SOSOH people. Close to one hundred percent of the SOSOH people I've known and worked with have had high dietary sugar and carbohydrate intake.

In the past fifty years, sugar has become more readily accessible to the general public and its use has skyrocketed. Between 1957 and 1977, dairy product consumption declined by 21%, while sugar consumption increased dramatically: soft drink consumption up 80%, cookies pies and desserts up 70%, and snacks up 85%. TV has contributed to this trend, familiarizing children with sugar more than any other kind of food.¹⁷

One way to stop the yeast overgrowth/alcohol cycle is to cut sugars in the diet. It is important to note that all carbohydrates are simply chains of sugars and that fruits are very high in sugars. Sugar also means brown sugar, honey, molasses, maple syrup, fructose sugar, and corn syrup. So even such an ordinary meal as breakfast cereal with sugar and fruit is a real sugar whammy.

Reading food labels is essential in any sugar reducing effort. Very important is a balanced diet, rich in protein (meat, eggs, nuts, yogurt, cottage cheese, beans), vegetables that supply calcium, magnesium, Vitamin C and the B complex, chromium, zinc and essential fatty acids. I would love to see vending machines in schools that provide nuts, apples, yogurt, cottage cheese or vegetables in place of the usual fare. SOSOH children and adults I have worked with have commented that their sugar cravings have decreased when they drink more water.

The same symptoms of SOSOH occur in Fetal Alcohol Syndrome, which is believed to cause frontal lobe damage in utero that then can affect learning the rest of the child's life.¹⁸ Also a genetic predisposition to alcoholism has been found to be connected with hyperactivity.¹⁹ If you have been around alcoholics, you've probably noticed that they gravitate to sugars when they are "on the wagon." The bottom line is that with stress and high dietary intake of sugars, anyone can produce their own alcohol, which will affect frontal lobe functioning. Even as "teetotalers," these children and adults are producing their own alcohol from the stress/sugar/yeast cycle.

We should be aware of one additional and remarkably adverse characteristic of yeast in our system: they have receptor sites for cortisol, which means that yeast produces cortisol. As we will see in our consideration of stress in Chapter 12, while cortisol serves a valuable purpose for the mind and body on alert for danger, it decreases learning and memory function.²⁰



The Vestibular System and Learning Disorders

All learning in the first fifteen months of life is centered on vestibular system development. The word vestibule means entryway, and this system is the entry way into the conscious brain. Balance, locomotion, discrimination of speech and language, coordination of vision with movement, all of these fundamental abilities, which we learn early and rely on the rest of our lives depend upon the proper functioning of the vestibular system. Additionally, the vestibular system maintains the all important arousal state (through the reticular activating system RAS) necessary to be conscious, alert and responsive.

HOW THE VESTIBULAR SYSTEM GETS DAMAGED

Disturbance to the vestibular system causes major learning difficulties. Researchers Frank and Harold Levinson found that 94% to 97% of children with dyslexia and learning disabilities showed two or more abnormal neurological or ENG (electronystagmographic) parameters indicating a cerebellar/vestibular system dysfunction.^{1,2} All of these children had experienced trauma to the cerebellar/vestibular system in the form of ear infections, allergies, or having been "shaken" as infants. The two major causes of ear infections in the U.S. are: sidestream cigarette smoke from a smoker in the home, and bottle feeding, where the position the baby is held in causes milk to reflux up the Eustachian tubes. In both cases, infection occurs in the Eustachian tubes and moves to the inner ear, affecting normal vestibular development and function.

As we saw in Chapter 10, yeast overgrowth has also been implicated in cerebellar/vestibular system dysfunction.

Damage can occur even before birth. A study of seasonal birth patterns showed that viral infections (influenza, measles) during the second trimester

of pregnancy (when the vestibular system and VIIIth cranial nerve, the vestibulo-cochlear are developing) are contributing causes of hyperactivity, language difficulties and mental retardation, as well as of autism and schizophrenia.³

LACK OF VESTIBULAR DEVELOPMENT AND LABELED BEHAVIOR

In children identified as ADD (Attention Deficit Disorder), Hyperactive or ADHD (Attention Deficit Hyperactive Disorder), stress and lack of vestibular system development cause low or erratic RAS function. These children may flicker in and out of wakefulness, especially if there is no movement stimulation, which leads to hypo- or hyper-vigilance with difficulty in maintaining attention, concentration or focus.⁴ They tend to lose their balance easily and have more playground accidents. They often invade other people's space without knowing it, exhibiting an incomplete understanding of spatial relationships in their environment. They can't stand still, but they can run, since running is more like a propelled fall and doesn't demand as much balance as standing still, standing or hopping on one foot, skipping, jumping or doing the slow, cross-lateral movements that stimulate new cell growth in the hippocampus.⁵ They "noodle" in their desks because the back and neck muscles haven't been adequately trained to hold their bodies upright against gravity.⁶ If these children are not given full freedom and encouragement to move and practice balance when they are little, there may be too little vestibular activation to assist proper growth and development.

Children truly want to be "good." In order to "stay alert" where there has been inadequate vestibular development, they must move, wiggle and constantly turn their heads. Often this is precisely how they first get tagged with the ADD, Hyperactive or ADHD labels. Teachers become frustrated with their constant movement and tell them to "sit still." Wanting to stay alert, the children's next strategy is to activate their balance centers by tilting their chairs so that only the back two legs of the chair are supporting them. The teacher's response is to demand that they "sit up right and pay attention." But this is a contradiction for these children. If their heads and bodies are still, there will be reduced activation of their brains. These children are also the ones asked to stay in during recess to complete work — when the best thing for them would be to go outside and move.

At least one in five U.S. grade-schoolers with average or above-average intelligence encounters severe difficulties in learning to read.⁷ Dyslexia has been considered a visual problem because it shows up and by definition is associated with reading difficulties. Interestingly, the central deficit with dys-

lexia, which is universal in all languages, is related to the metalinguistic ability to decompose words into sounds, link the sounds (phonemes) to symbols and to make these skills automatic.⁸ The development of that phonemic understanding is thought to begin in utero, possibly as early as 9 weeks, as the semicircular canals develop and the embryo responds to sound with movement. At that time the Moro reflex develops which allows the embryo/fetus/child to respond to danger with a protective action. If there is much maternal stress the fetus will often be in the Moro reflex and the other reflexes important for vestibular development, will be delayed. Without this development, the fetus and child will have difficulty hearing the patterns of language, the phonemes and later linking them to symbols to read.^{9, 10, 11, 12}

The primary area of the brain implicated in phoneme deficit is the temporal gyrus that has to do with hearing.^{13, 14} Dyslexic individuals, also show significantly smaller corpus callosum.¹⁵ Incidentally, research shows that the temporal lobes and corpus callosum are larger and more developed in musicians and singers. The primary sensory and motor cortex, premotor cortex and supplementary motor area (SMA) also show up as undeveloped.¹⁶ All of these areas are developed through movement as the reflexes mature into balanced integrated movement and a well developed vestibular system.

Regarding the eyes, lack of cerebellar/vestibular development shows up in the muscles that control the movement of the eyes (extraocular muscle dysmetria) causing them to overshoot or undershoot their position of optimal effectiveness when reading — again a symptom of an underdeveloped vestibular system. The dyslexic must concentrate so much on moving his eye that cerebral input for comprehension or retention is limited. Lack of movement and keeping the head still for long periods of time (as with watching TV, or having to sit still and be quiet in school) has also been implicated in acquired dyslexic symptomology.^{17, 18} Movement, music and much interactive communication in the child's early environment promotes the development of hearing discrimination whereby the child is able to say the phonemes and actively voice the language, and then associate the sounds with symbols later on, in order to read.^{19, 20, 21}

In Denmark, fifty percent of the children spend between ages two and a half and six in Forest Kindergartens where they climb rocks, trees, hills, roll jump, balance and play at least four hours a day no matter what the weather.²² These children's vestibular systems are so well developed that learning difficulties and dyslexia are rare. If teachers do notice a child is having learning difficulties, they immediately involve the child in music and/or choir, and set

up a movement program with an Occupational or Physical Therapist, which develop the vestibular system and stop the difficulty.²³

The vestibular system and sound are so important to the whole learning process, specifically language development, and pattern understanding in areas such as mathematics, that I have dedicated two chapters to this subject in *Awakening The Child Heart, Handbook for Global Parenting*.²⁴ There you will find the research behind possible steps to dyslexia and how to make a difference.

WHY INTEGRATED MOVEMENTS, MUSIC AND PLAY HELP

When children move, damaged tissue to and from the vestibular system can be overridden as new nerve nets develop and myelinate. As we saw in Chapter 3, the benefits of cerebellar vestibular stimulation — movement — on cognitive growth during infancy are well established.²⁵ Gross motor and cognitive retardation in deaf children can be eliminated by stimulating the semicircular canal system through movement.²⁶ First graders who engaged in physical exercise periods that emphasized movement requiring maximum cerebellar/vestibular system control, sharply reduced their rates of academic failure.²⁷ Another study reports that movement and stimulation of balance greatly assist attentional disorders and improve reading.²⁸

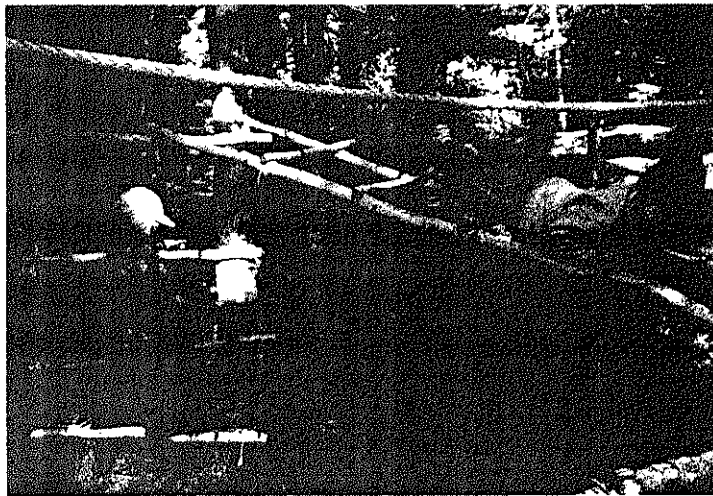


Figure 11.1: Forest Kindergarten Children Developing Their Sense Of Balance

Integrated cross-lateral activities such as crawling, climbing, rolling, spinning, walking on uneven ground, skipping, jumping, Brain Gyms®, Tai Chi, Yoga, and spontaneous joy-filled play specifically stimulate and develop the cerebellar/vestibular system.²⁹ Walking on low boards, or climbing a rope ladder, monkey bars, large rocks or trees requires an amazing amount of balance, thus activating the vestibular system and strengthening hand-eye coordination. Spinning, rolling down hills, and balancing on an exercise ball involves the core muscles of the torso, and activates the semi-circular canal system, which activates all muscles and assists vision. Simply placing the hand on the navel, as in Brain Buttons, assists balance and brings attention to the gravitational center of the body.

Sounding one's own voice is a strong stimulator of the vestibular system. Imaging studies show that the frontal lobe areas of the brain connected with the vestibular system, enable proper construction of the syntax of both music and language. Many areas of the brain handle related aspects of language and music. When singing, the tongue ligaments directly stimulate the semicircular canals. The intricate cross-lateral movements required to play a musical instrument or even to dance, directly stimulate the vestibular system, growing and strengthening it.

Brain responses depend on the experience and training of the listener. Even a little training can alter the brain reaction. Youngsters, age 4 and 5 years old, who have received greater exposure to music in their homes showed enhanced brain auditory activity, compared to 8 year old children who did not get the music exposure. These youngsters showed greater ease in learning, speaking and reading the language.³⁰ Students who studied music in the curriculum did far better on Standardized tests than students without music — and over time, students who took music lessons for four or more years scored the highest on Standardized tests. In a study of slow readers, just five months of playing a musical instrument (violin, recorder or other instrument where rhythms could be felt against the body or teeth), improved their reading scores by an average of four and a half years.^{31, 32, 33, 34, 35} The auditory cortex of musicians is more extensive with a 130% larger volume than non-musicians, making it easier for them to discriminate and respond to sounds and understand the important patterns of language, math, and all cognitive learning.³⁶

Simply put, integrated movements, done in a playful, coherent way with music, activate the entire vestibular system, large areas of the motor cortex, and frontal eye field area of the frontal lobes; and produce chemicals, such as dopamine which assist enthusiastic learning and memory. Consistent,

frequent activation of the motor cortex and frontal eye field area, promotes nerve-net elaboration, growth and myelination into the rest of the frontal lobe including the pre-motor and superior pre-frontal cortex for high-level thinking and creativity as well as more grace, balance, and control of all our muscles. The profound healing that occurred in Amy and Brandy, whose stories I shared in Chapter 1, are directly related to developing the vestibular system.



Fight or Flight — The Stress Effect on Learning

The highest priority of all living organisms is, simply, to live. From the moment we are born, food, oxygen and water are essential to daily life maintenance. No less critical for survival is the capacity to sense and avoid danger. Nourishment and protection from danger are so essential that a whole range of instinctive drives and automatic processes have evolved in the human body/mind system to insure that these fundamental requirements are satisfied. Of course, hunger and thirst are familiar experiences to everyone. Less evident perhaps are the self-protective instincts that our body/minds trigger whenever we sense threatening circumstances in the environment.

What we have coined “the stress reaction” is actually our survival reaction to perceived threat of death that prepares the individual to mentally and physically take protective action. In times of real danger, these survival instincts are invaluable. They heighten our sensitivity to the environment, making us hypervigilant. They intensify muscle strength, blood flow and oxygen distribution. But the stress/survival response does not make us smarter, more creative or rational. In fact these instinctive processes are largely carried out in the brain stem and sympathetic nervous system with little activation of the rational areas of the brain.

Unfortunately, we often allow this excellent survival mechanism to take over during the many non-threatening situations in our lives. Living with chronic stress has detrimental, far-reaching consequences. The American Medical Association contends that well over 90% of illness is stress related. In this chapter we will explore the dynamics of stress, its impact on our nervous and immune systems, and its effects on our health and capacity to learn.

WHAT HAPPENS WHEN WE GO ON ALERT

When we are confronted with a threat, one of our body's response

The Self-Assessment Method

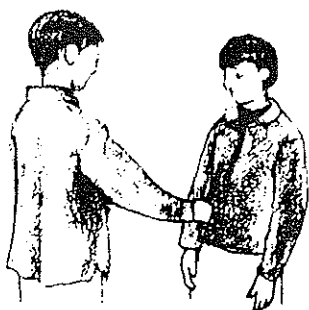


Figure 11: Reaching Out At The Body's Midpoint

Hand — Whichever hand you currently write with. You can assist other people in determining their dominant hand by offering them a pen or pencil at their body's midpoint (at waist level in the middle part of their torso). Whichever hand they reach out with to take the pen or pencil will be their current dominant hand.

Eye — Hold your thumb out at arm's length, lining it up with a vertical structure (door or window frame, picture edge, etc.), focusing on it with both eyes. You are likely to see a double image — that is normal. Without moving either your thumb or head, close one eye, then open it and close the other eye. Whichever eye holds the image of the vertical object lined up with your thumb is the dominant eye.

Or, make a window by overlapping the two hands so there is a small opening between the thumb and forefinger of both hands. Hold the window at arm's length. With both eyes focusing through the window, line up an object (another person's face, a door knob, etc.). Without moving either your window or head, close one eye, then open it and close the other eye. Whichever eye holds the image is the dominant eye.

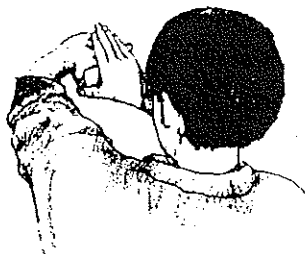


Figure 12: Making A Window with Hands for Determining Eye Dominance

Ear — Pretend there are people on the other side of a wall across the room who are talking about you. Walk to the wall and put your ear close so you can listen to what they are saying. Which ear did you put against the wall?

Or, lay on the floor on your stomach and note which ear you put up to hear the sounds above you.

Or, hand the person being assessed a sea shell or empty cup at their body's mid-point (at waist level in the middle part of their torso). Ask them to listen to the sound of the shell or cup and note which ear they put the cup or shell to in order to hear the sound.

Foot — Step up onto a step or chair and notice which foot you used first. Or kick a ball and note which foot you kicked with. (It's useful to have someone observe you when you're not thinking about it).

Or, you might also lean far forward with feet together until you fall forward and notice which foot you step out on to catch yourself.

Or, to get a more accurate reading, have someone push you off balance from behind when you don't expect it. (Obviously, be careful with this last suggestion).

Brain Hemisphere — Use the Logic and Gestalt chart on page 20 to decide which hemisphere you currently access the most. This should give you some indication of your brain dominance. However, the best test is to recognize how you would initially respond during a highly stressful situation. During stress, you rely more on your dominant brain hemisphere.

If you are **logic dominant**: when under stress your first response is to analyze the situation, write or talk about it and look for the specific reasons behind it. Your focus will be on the details, with a strong need to understand each aspect of the situation.

If you are **gestalt dominant**: when under stress your first response is to see the whole situation and feel the emotion. But you may be unable to decipher the details. You will have difficulty in breaking the whole situation down into the pieces of language to express it. Language is not an initial response. Often you feel a strong need to physically move or express emotions.

Find your matching DomiKnow among the possible 32 Dominance Profiles. The **Key to the 32 Dominance Profiles** on page 51 will assist you to quickly find your profile.

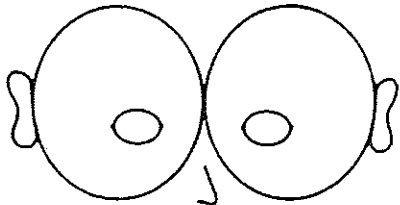
LOGIC HEMISPHERE DOMINANT

HAND	EYE	EAR	FOOT	PROFILE
			Right Foot	A
		RIGHT EAR		
			Left Foot	AA
	Right Eye			
		LEFT EAR	Right Foot	B
			Left Foot	BB
Right Hand				
		RIGHT EAR	Right Foot	C
			Left Foot	CC
	Left Eye			
		LEFT EAR	Right Foot	E
			Left Foot	EE
<hr/>				
			Right Foot	D
		RIGHT EAR		
			Left Foot	DD
	Right Eye			
		LEFT EAR	Right Foot	F
			Left Foot	FF
Left Hand				
		RIGHT EAR	Right Foot	G
			Left Foot	GG
	Left Eye			
		LEFT EAR	Right Foot	H
			Left Foot	HH

GESTALT HEMISPHERE DOMINANT

HAND	EYE	EAR	FOOT	PROFILE
			Right Foot	L
		RIGHT EAR		
			Left Foot	LL
	Right Eye			
		LEFT EAR	Right Foot	J
			Left Foot	JJ
Right Hand				
		RIGHT EAR	Right Foot	K
			Left Foot	KK
	Left Eye			
		LEFT EAR	Right Foot	I
			Left Foot	II
<hr/>				
			Right Foot	PP
		RIGHT EAR		
			Left Foot	P
	Right Eye			
		LEFT EAR	Right Foot	NN
			Left Foot	N
Left Hand				
		RIGHT EAR	Right Foot	OO
			Left Foot	O
	Left Eye			
		LEFT EAR	Right Foot	MM
			Left Foot	M

Figure 24: Key to the 32 Dominance Profiles

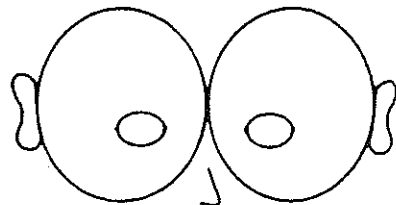


Right

Left

DomKnow for: _____

Dominance Profile: _____

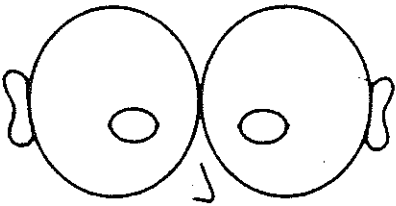


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DomKnow for: _____

Dominance Profile: _____

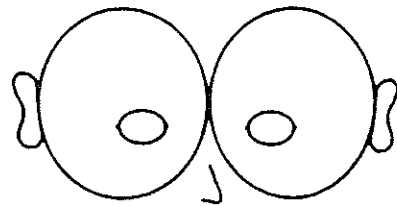


Right

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DomKnow for: _____

Dominance Profile: _____



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