Sharper Minds Method™

Mental Performance Enhancement Program

Supplement: Understanding the Mind and How It Works

Delbe D. Meelhuysen, M.D., Program Director

www.SharperMindCenters.com

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Introduction

The information contained in this document is supplemental to the other instructional materials of the Sharper Minds Method. To simplify the manuals to contain more "bottom-line" information, this supplement has been posted and is available via our website. This supplement is designed to help you understand more about how individuals learn and the basics of how the human brain operates. It is not designed to be an all-encompassing dissertation on the brain.

How We Learn

As educators, psychologists, and human developmental experts know, humans learn in a variety of ways.

1. Some learn by copying, which is referred to as, "see one, do one, teach one".
2. Some learn by listening. These are auditory learners, or people who learn by hearing and/or talking.
3. Yet another group learns best hands-on. These persons learn best by touching and doing.
4. Others learn by sheer will power. They practice and practice and eventually learn by memorizing through frequent repetition. I refer to this as the Avis® method of learning: "We Try Harder." It works for some people, but is exhausting and only for the strong-willed and self-disciplined. While all learning involves, or is enhanced, by practice and repetition, these are only a part, and not the only way of learning.
5. Some learn by trial and error, or learn by experimentation. Much of the current educational computer software teaches the trial and error method. There is little incentive to think as you try something different and hope you get lucky. While persistence is invaluable, the motto of "if at first you don't succeed, try and try again" doesn't generally teach logical thought and intuitive analysis.
6. Others learn by observing. These are the visual learners. With visual media becoming the dominant method of teaching in the classroom, the current school system strongly favors the visual learner.

7. Small minorities of humans learn by thinking and internalizing. They ponder ideas and turn them over in their minds. These persons are often labeled as lazy and dreamers. They are also usually the Newton's and Einstein's of the world—if they aren't destroyed first by an industrial model school system based on efficiency and achievement.
8. Lastly, many people learn by reading. If one reads and understands what they read, books and the printed media can provide an unlimited learning opportunity.

The eight ways of learning mentioned above are the most common ways in which people learn. The challenge for a teacher or tutor, is that they cannot help a struggling individual overcome learning or attention deficit problems using the above eight methods of learning. Can a person with a learning difficulty, for example a child who has an inability to read, learn through reading? Obviously, no.

The eight ways people learn do not explain the underlying cognitive processes that must be in place for a person to learn in any manner. Nor do they explain how to “fix” a learning or attention problem if someone can’t learn. When teachers and tutors run into individuals with difficulties learning, they usually reach into their personal experience or knowledge base and try one or more of the eight ways of learning. When the student still fails to learn after they have tried two or three ways, the teacher may give up and conclude that the student is not intelligent, unmotivated, or both. That would be equivalent to saying the computer is “bad” when you can’t get it to do what you want because some of the keys on the keyboard got stuck.

Why are the above eight ways not helpful in assisting you or other struggling students? Because they are too general—too non-specific. In order to be helpful to you or other struggling individuals with specific learning challenges, we need to understand the learning process in detail as well as how the mind grows, develops and functions. In addition to understanding the learning process, we need to be able to understand how you or the person we are trying to help thinks or processes

information and what is (or are) the specific cognitive problems that you or they are struggling with. It is also important to discover if you or the person we are concerned about have any physical limitation that is preventing you or them from learning. After we have an accurate understanding of you and how you think, we can then apply the information that we know about therapy to correct your learning or attention problems. When we understand how your mind works in detail, we can help you more effectively.

It is not enough to just understand how the mind works. We must have a way to practically solve the problem.

There are many researchers who understand how the mind works, but are unable to apply it practically to people who are struggling with learning challenges. It is not enough to understand how the mind works and to be able to figure out what cognitive processing challenges the student has.

There are many great diagnosticians who understand the anatomic and physiologic processes and can recognize them in their patients, and think that only psychotropics (speed derivatives) will help their patients. Entrenched in the traditional medical model, they unsuccessfully try medication after medication to correct cognitive processing problems.

Often the person or parents of a child with a cognitive processing problem will go to the psychologist, psychiatrist or their family physician to get help. The professional will take a history and discuss the problem, sometimes perform a physical examination, and maybe run some diagnostics tests. The physician or psychologist will eventually come up with a tentative diagnosis. Since 90% of the diagnosis is made by the person's history (as the famous American physician Osler stated, "If you listen long enough, the patient gives you the diagnosis."). The diagnosis is often just medical or psychological words that repeat what the patient himself described about the problem or by the parent giving the history.

Frequently, people think that if they only try harder, they will get results. The best definition of insanity that I've heard is "continuing to do the same thing and expecting different results". So if tutoring has proved ineffective, more tutoring will not help. If biofeedback hasn't worked, then it is not likely to work the second time

either. If special education hasn't turned a child around and been able to mainstream them back into the regular classroom, more special education of the same kind is not going to work.

Teachers, who are better trained than ever, are taught how to impart information to their students by using various methods of teaching. It is assumed that the students who enter their classrooms are ready, willing and able to learn. In other words, teachers know what to teach and how to teach. However, since they do not understand the process by which students learn, they often fail to effectively teach their students. This can be frustrating and discouraging to the teacher and students.

Whatever method or therapy is tried, it is useless to continue with similar programs that have already proven inadequate. Continued failure usually results in people giving up and concluding that they are indeed stupid.

Critical Mental Processes

According to some sources, there are over 40 unique mental processes that need to be present for optimal mental functioning. Of these, there are seven which are the most critical to educational and work success. The seven mental processes are:

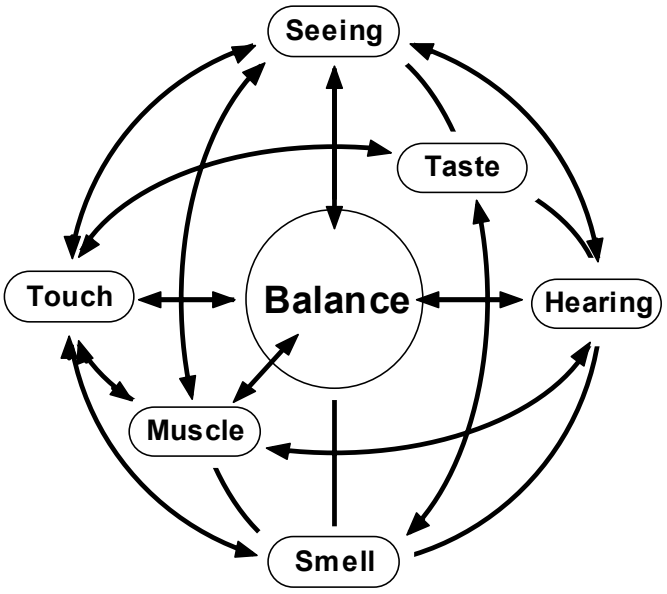
- **SIZE** which relates to volume, distance and time. How big? How far?
- **SHAPE** which identifies all objects and all language. Is it round? square?
- **SEQUENCING** which is the ability to break down a task into its individual components and to complete each one in order.
- **POSITION IN SPACE** which is understanding where the person or an object is relative to its environment?
- **FIGURE-GROUND**. Objects change meanings depending on their background. Different situations demand different behaviors or emotional responses. Can you see the forest for the trees, or the trees for the forest? Can you pick out the letters and words from lines on a page?

- **DIRECTION** relates to all sequencing, order and following instructions as well as finding things and places. All movement is from one place to another. Left, right, above, below, in front of, behind, etc.
- **DETAIL VS SKIMMING** relates to the ability to understand something in depth or to only gloss over the surface depending on the circumstances. Understanding when to read the fine print or speed read for the essence. When is it vital to pay close attention or coast. It is an ability to discern and correctly place value and focus of attention.

Sufficient skills in the critical mental processes of size, shape, position-in-shape, figure-ground, ability to sequence, attention to detail versus skimming and direction, are essential to a person's ability to succeed in the academic and work environment.

The Senses

All of the senses are important to learning or understanding, and each sends valuable information to your mind. There are seven senses: taste (Gustatory), smell (Olfactory), hearing (Auditory), seeing (Eyesight), touch (Tactile), muscle feedback (Kinesthetic), and balance (Vestibular). While all of the senses send sensory information to your mind, it must be clearly understood that some senses are more critical than others. The interaction between the senses may be seen as illustrated in the diagram. Where arrows connect the senses, there is greater interaction than where a simple line connects two components.



In much of their literature, Behavioral Optometrists hold that there are six sensory systems: seeing, touch, muscle, smell, hearing and taste. In their view, the visual or seeing sense is the most important. Many Behavioral Optometrists teach that people who are auditory or touch/muscle learners are less “evolved” or advanced than those who are sight learners. They promote vision as the major or highest sensory system, with all other sensory systems as distant seconds. They maintain if you correct a person’s visual processing problems, you correct the majority of that person’s cognitive processing issues. There is no doubt that seeing is very important in our visually biased culture, and visual processing problems can handicap a person and impair learning. Their view however, lacks the single most important sensory system, which is the balance or vestibular system.

Other specialists would suggest that other senses are more important. For example, Kinesthesiologists and SOMA therapists may feel that the touch (tactile) and muscle (kinesthetic) sensory systems are the most important, and that massage of the deep soft tissues will correct emotional and learning problems. In a sense they are partially right, as a person’s skin is their largest sensory organ and each and every cell in the body has a "memory". Developmentally, skin develops out of the same part of the body (the neuro-ectoderm) as the ear and can be more accurately thought of as an extension of the hearing sense.

Regardless of which sensory system you feel is the most important, it is important to remember that all contribute to the whole person and all are important to a normal functioning person. If one fixates on their favorite system to the exclusion of the others, they are no better than the six blind men who were taken to an elephant and asked to describe it. The blind man who was holding onto the tail stated, “The elephant is like a rope.” “No,” argued the second, who was hugging a massive leg, “an elephant is like a tree trunk.” “You are so wrong,” argued the third, who was holding onto the tusk. “An elephant is like a polished stick.” And on it went, with each of the six arguing about what an elephant looked like—which of course they had never seen. They were all correct in part and yet all partially wrong at the same time.

Humans were created to develop in an orderly precise manner. All normal human babies develop from head-to-toe and centrally-to-peripherally (top to bottom and in to out). Obtain any book on developmental pediatrics and it will contain physical and neurological development charts that give normal ranges for heights, weights, head circumferences and developmental milestones. This orderly development begins at conception and continues throughout a person's lifetime.

The first sensory system to develop is the balance system. The Saccules (which are the balance organs located in the inner ear) are fully mature by the third week of gestation. The middle and inner ear are fully mature by 4½ months of pregnancy. The inner and middle ear reach their full adult size shortly after birth. Once a sensory system develops, it takes an active part in the further development of the brain. The sensory organs and the brain form a bio-feedback loop where the brain develops the sensory organs and the sensory organs drive the growth, anatomic structure and function of the brain. The brain matures from the brain stem upward, completing its maturation process in the region of the frontal cortex. The frontal cortex is fully mature at the age of approximately 24 years. Even after maturity, the brain continues to change on a local level all of a person's life and is continually in the process of remodeling itself.

From three weeks after conception on, humans are taking information in through their sensory system and responding to their environment through their motor or muscle control system. All of the sensory systems develop simultaneously, and all send sensory information back to the brain. In other words, they parallel process. All of the sensory systems are closely related and communicate extensively. We often discuss the different sensory systems are though they were isolated entities. They are not. Underdevelopment or arrested development in one sensory system can impair neurological development of another. On the flip side, strengthening one sensory system can strengthen the others. A sensory poor environment during infancy and childhood can lead to a lifetime of emotional and learning difficulties.

As stated earlier, sensory systems are considered to be afferent or input systems. They feed information into the brain. The brain sends information or

commands back through the output or efferent motor systems. The motor systems are: visual projection, speaking, and intentional gross and fine motor movement. The fully mature individual or adult has developed competencies or Automaticity of all the sensory and motor systems. Some researchers have boiled it down into 42 skills or developmental milestones. Fully functional persons also have completely integrated the sensory and motor systems. This results in the ability to see and discern, read and comprehend, hear and understand, move in a coordinated and balanced manner, speak clearly and with meaning, write or demonstrate other fine motor skills and have good hand-eye coordination.

Use of any of the sensory systems stimulates and changes the mind. The more sensory systems utilized to accomplish a task, the more neurons the mind engages in the process and the more connections and pathways are strengthened or developed. Any stimulation of the mind changes it for better or worse. As mentioned earlier, our brains are dynamic structures, meaning they are constantly growing and changing throughout our life times. The mind's development is not dependent upon any one of the senses exclusively. All contribute to the growth and maturity of the mind. An absence of one (excepting balance) does not doom the mind to stunted or permanent immaturity. Let us take Helen Keller for example. She could not see or hear, yet was obviously intelligent. While she lacked the auditory and visual sensory systems, she was able through her touch, taste, smell, balance and muscle sensory systems, to obtain a mature mind and develop into an inspiring person.

What Goes Wrong—Why Some People Can't Learn or Pay Attention.

Many things can go wrong and result in a person turning out with less than optimal brain functioning. Common triggers of learning and attention problems could be inherited factors, damage done during the pregnancy due to illness, medications,

toxins, delivery complications, and the environment after birth. The following items are some of the factors that influence how a person turns out.

Favoring a Non-Preferred Sense

Our current American culture currently places a high value on the visual sense. However, prior to the 20th and 21st centuries, the United States was a farming and trade based culture and was biased toward the balance, kinesthetic and auditory senses. In other words, people learned by doing and by talking. Now our culture prioritizes the senses in the following order: seeing, hearing, and thirdly touch/muscle systems. All of the other sensory systems are either ignored or discounted, including the very critical foundational sense: balance. Our educational system and most jobs require that the individual use their sensory preferences in the same order: visual, auditory, touch/muscle.

Researchers indicate that in the United States, an individual in a work or academic environment takes in 80-90% of the information they absorb through the visual sense. This may or may not be the individual's preference; it is the demand of their environment. If the individual's personal preference and the environment match, they do well. If the individual's sensory preference and the environment's sensory demands do not match, then the person struggles. This is the case with many of the students who come to the Sharper Minds program for help. They are usually touch/muscle learners trying to feel their way around in a visual environment. Since they "look" with their hands, they are frequently reprimanded or criticized for being inappropriate.

Many children with a touch/muscle learning preference are incorrectly labeled as learning disabled, ADHD, hyperactive, behaviorally challenged, and or dyslexic. Touch/muscle learners need to be in motion to be learning. Most schools cannot accommodate students who need to move in order to learn. If they move more than is tolerated by the adults in their environment, the students are labeled hyperactive.

The traditional school environment is designed to educate students to be good employees. Thus the school environment is patterned after the visually biased

work environment to make the transition from student to employee as smooth as possible. Schools are required to teach students to handle the complex demands of the work environment in just 12 condensed years (condensed when you consider the average life span of 70-80 years).

When there is a mismatch between the child and the school environment, one of two approaches is usually taken to resolve the mismatch. They are:

1. **Change the child.** Make them fit into the environment. If they still don't fit after trying to force them to fit, then transfer them to the Special Education classroom. (Of course, the “square peg” child that didn't fit into the “round” school program is thrown into the same room as the triangle, rectangle, diamond, octagon, and hexagon-shaped pegs.) This is the traditional educational system's approach to children who don't fit in. Unfortunately many of the children sent to "special" education are never mainstreamed back into regular classrooms. The children get hopelessly behind; suffer severe low self-esteem and usually give-up on learning and succeeding in life.
2. **Change the environment**. Create a unique environment that is tailor-made for the child. Children who learn in non-traditional manners can do very well in these environments. Unfortunately, when they leave that protected environment, they usually “fall flat on their faces”. They discover that the rest of the world is not going to cater to them and their individual needs. All altering the environment did was postpone the problems and pain while the problems got bigger.

The solution to the mismatch is really quite simple. Look for the root cause of the mental processing inability and correct it so that the child can succeed in any environment. In other words, whatever sensory preference they have, strengthen all of their senses, so that all of them (in their original preferred order) are well above the failure threshold line. You do not need to force the child to change to be something they are not, or change the environment to cater to the child. You do not need to teach them how to use crutches, “embrace their diversity” or have a positive

attitude. They will not need "crutches" if you strengthen the "weak mental leg" They will have a better attitude naturally, when they feel healthy mentally and feel good about themselves and what they are accomplishing.

The Sharper Minds Evaluation and Program are designed to do just that: accurately evaluate the mental processing challenge, and to step-by-step correct or improve the mis-wiring. Unfortunately, we cannot include the Sharper Minds comprehensive evaluation which is administered by Sharper Mind Centers or other authorized providers in this kit.

Brain Lead Preference or Intelligence Mismatch

Another factor contributing to learning difficulties is the brain preference or intelligence Mismatch. Harvard psychologist Howard Gardner proposed in his 1983 book, Frames of Mind: The Theory of Multiple Intelligences seven different intelligences. His book brought him widespread recognition. According to Dr. Gardner, persons can posses: linguistic, logical/mathematical, musical, spatial, interpersonal, intrapersonal, and/or bodily/kinesthetic intelligences. While his work was insightful and helpful, it confuses several factors that make you a unique individual and omits other vital areas of intelligence such as the sequential and detail intelligences.

There are many factors that influence you and have influenced who you have become. Factors can be intrinsic, which are influences internal to you, or extrinsic (external) to you; in other words your environment. Some of those factors are:

1. Learning sensory preference (In other words, do you prefer learning through your eye-sight, hearing/balance, or touch/muscle systems? This was discussed in the previous section.)
2. Birth Order, family structure and environment. Are you the oldest? Middle? Youngest? Oldest male? Oldest female? What was your family like? How were you treated growing up?
3. Love Language. How do you experience love? Do you like gifts? Acts of service? Quality time? Being touched? Being spoken to?

Speaking with friends? Do you enjoy something that looks pleasing to your eyes? How you prefer to be loved, is also how someone can wound you the deepest.

4. Extroversion versus introversion. How outgoing or shy are you? This is dealt with in more detail in a subsequent section.
5. Brain Quadrant preference. This is discussed in more detail in the next section.
6. Temperament refers to the natural variation in personality.

Brain Quadrant Preference Mismatch

Psychologist Carl Jung, in the 1930's used the quadrant pattern to describe human behavior. His four categories were thinking, sensing, feeling, and intuition. Jung's observations formed the basis for the Keirsey-Bates and Myers-Briggs personality inventories. Fifty years after Dr. Jung, a Dr. Katherine Benziger, developed her working model of brain function called the thinking styles assessment. She also used a quadrant pattern dividing the brain into

- Left Frontal (LF or logical, mathematical, thinking),
- Right Frontal (RF or intuitive, creative, visual),
- Left Basal (LB or detailed, sequential, organized) and
- Right Basal (RB or musical, spiritual, emotional) quadrants. Much of her work correlates with the work of Dr. Roger W. Sperry.

Left and Right Brain Anatomy and Function

Research done by Dr. Sperry showed that each hemisphere of the brain is highly specialized and that many functions are centered in the right hemisphere. The right hemisphere is the more reflexive or passive hemisphere. The right half of the brain is involved with the spatial, figural [figurative], musical, and creative (inventive, imaginative, or artistic) functions as well as the holistic or "big picture" thought processes. The left half of the brain is the logical or management side of the

brain. The left brain is the more aggressive half and is involved with integrating logical thought processes, executive functions, mechanics, mathematics and words in any form, whether in thought, speech or written format. Comparing left versus right brain preferences, the school and work environments tend to "favor" those who are innately left brain dominant and "penalize" those who are right brain dominant.

Only approximately 20-25% of students, are "naturally" good at school. In general, elementary school favors the female mind over the male and rewards the person who memorizes or copies rather than thinks for themselves. Many students who don't "fit in" are merely nonconforming right frontal thinkers (the ultra-creative), or males who are right basal – (nurturing males), or females who are left frontal- (aggressive leaders) and who do not fit society's expectations of them. See the chart on the next page comparing right and left brain functions on the next page.

Regardless of brain quadrant preferences, the more skills a person develops, the more they will relate to other people and the more successful in life they will be. Everyone should be engaged in active mental exercises to develop different skills which will strengthen and develop the mind.

A Comparison between the Left and Right Hemispheres of the Brain

Left Brain Functions and Skills	Right Brain Functions and Skills
Verbal: Uses words to name, describe, define. (LF)	**Non-Verbal:** Has an awareness of things, but make minimal connection with words. (Gestalt) (RF)
Analytical: Figures things out step-by-step and piece-by-piece. (LF)	**Synthetic:** Puts pieces together to form a whole. (RB)
Symbolic: Uses a symbol to stand for something; For example, the drawn form represents an eye, the sign + represent a positive or addition. (LF)	**Concrete:** Relates to things as they are, at the present moment. (RB and some LB)
Abstract: Takes out a small fragment of information and uses it to represent the whole entity. (LF)	**Analogic:** Sees likeness between things: understands metaphoric relationships. (RF)
Temporal: Keeps track of time, sequences tasks in order, does one task after another. Does first things first, second things second, etc. (LB, Size, Sequencing)	**Non-Temporal:** Without a sense of time. (RF)
Rational: Draws conclusions based on reason and facts. (LF)	**Non-Rational**: Does not require a basis of reason or facts.; Is willing to suspend judgment. (RF or RB)
Digital: Uses number as in counting. (LB)	**Spatia**l: Sees where things are in relation to other things, and how parts go together to form a whole. (RF)

Logical: Draws conclusion based on logic: one thought, idea, or concept logically follows another thought, idea, or concept. There is a logical order or sequence to ideas. Examples include: A mathematical theorem is a well stated argument in a debate. (LF)	**Intuitive:** Makes leaps of insight, often based on incomplete patterns, information, hunches, feelings, or visual images. (RF)
Linear: Thinks in term of linked ideas, one thought directly follows another, often leading to a convergent conclusion. (A meeting of the minds or arriving at a common endpoint.) (LB)	**Holistic:** Sees whole things all at once; perceives the overall patterns and structure, often leading to divergent conclusions. (Two completely different conclusions, or no meeting of the minds.) (RF)

Extroversion versus Introversion

There is a spectrum of how outgoing or shy you are. Where you place on the spectrum is dependent on intrinsic and extrinsic factors. Some people are born extremely shy and others are born extremely outgoing. Most are born somewhere in between. Your environment can modify who you are as well. For example, if you have been emotionally abused, it might cause you to be more shy than if you had not been emotionally abused.

Extroverts need a lot of stimulation to maintain alertness and wakefulness. They also tend to have more energy and are like a light switch, either on or off. Extroverts seek environments that are noisier, have more people, and more things to peak their interest. Introverts need very little stimulation to stay awake and tend to avoid being around lots of people and noise as they find it fatiguing. Introverts seek quieter, more sedentary activities.

Those who are extroverted are far more likely to get into trouble than the shy-stay-in-your-seat kind of child. In a sense, the stereotypical loud boisterous boy who is having difficulties may be more fortunate than the quiet recessive girl who is also

struggling academically. “He” will at least be noticed and sent for evaluation and attempted remediation. “She” will often be overlooked or ignored, since “she” is not causing any problems.

The Trauma of Abuse

Abuse can occur before or after birth. It is damaging at any age or any stage. Abuse in any form (physical, emotional, sexual, verbal, etc.) impairs a person’s ability to learn.

Alcohol and Fetal Alcohol Syndrome or Effect. Alcohol has been proven to cause birth defects. The symptoms and signs of fetal alcohol syndrome include malformed bones, heart, or other organs; vision and hearing impairment; poor coordination, and mild to severe mental retardation. Babies born to mothers who drank moderately or heavy, often have low birth weight and grow or develop more slowly than normal. The physical impact of alcohol is greatest during the first 3 months of pregnancy. However, emotional and behavioral problems more often result from drinking during the final three months of pregnancy when brain development is at an important stage. Abnormal behaviors include hyperactivity, difficulty in school, and the inability to learn from their own or others' experiences.

Emotional Abuse. Emotional abuse has been defined as the systematic diminishment of another human being. Emotional abuse is more devastating and long lasting than physical abuse. Physical abuse however, rarely takes place without emotional abuse. Emotional abuse is designed to lessen a person's self-concept to the point where they consider themselves unworthy of respect, friendship, success, and love. Emotional abuse in childhood can lead to addiction, rage, a severely damaged sense of self, an inability to truly bond with others, and economic and emotional dependence.

Physical Abuse. Physical abuse, extreme or otherwise can cause brain damage. In addition, it can leave impairing emotional scars as mentioned earlier.

Sexual Abuse. Sexual abuse is unfortunately a painful reality in our culture. Millions of children and adults have suffered and continue to suffer with the shame,

humiliation, anger and sadness that sexual abuse causes. Many who have been sexually abused have difficulty learning as do those who have been abused in any form. Their emotional state is a powerful barrier to learning.

If you are the adult survivor of sexual, physical or emotional abuse including rejection and abandonment, we at Sharper Minds strongly encourage you to seek professional counseling, join a support group and deal with these issues that prevent you from becoming all you were intended to become. You will gain much more from our or any program as the learning "pipes" are unclogged. If you don't know where to turn, we recommend that you check out the website www.itsfixable.com for excellent resources to overcome past trauma.

Inherited physical and cognitive Issues

Many children who are not doing well in school have poor language abilities. They have problems reading and/or comprehending. These problems usually do not go away as they get older. The sad reality is, if a boy fails first grade, there is 50% chance of him committing a felony sometime in his life. This has led researchers including Dr. Michael Merzenich, a Professor at the University of California, San Francisco to ask, "What could the neurological sources of impairment in performance abilities be?" What he and others have found is that children who are struggling in school have many common characteristics including:

- a distorted early learning experience, including a sensory poor environment
- less successful early learning progressions. In other words they don't start or go through the normal language developmental stages.
- a "noisier" or more disorganized brain. Many of these children are raised under difficult conditions.
- an inherited weaknesses including dyslexia
- physical deformities such a cleft palate or other conditions causing excess fluid in the ears. For example, children who are born with cleft palate hear muffled sounds due to the constant abnormal presence of fluid in the inner ears often due to blockage of the Eustachian tubes. If surgeons correct the

cleft palate early in life—resulting in improved hearing— those children will develop normal speech patterns and intelligence. If their hearing is uncorrected, they have slow and poor language development.

According to Dr. Merzenich, most language and reading impaired children have all the predicted deficits listed below.

a. Degraded sound processing
b. Poor separation of the sound parts of speech
c. A poor or noisy environment
d. Delay in language development
e. Weak left hemisphere dominance
f. Poor phonemic perception
g. Limited phonological awareness
h. Deficits in syntax, grammar, etc.
i. Delay in reading.

Discrimination against individuals with high energy.

When our economy was based on farming or trades, people with high energy had a distinct advantage. Now, with our more passive inactive culture, where people sit for long periods in front of TV or computer screens, those with high energy often do not have enough constructive or positive ways to release their energy. School often requires energetic young children to sit still for long periods of time. When a child—usually a boy wiggles or gets out of his seat, we punish, label and medicate.

Even in the home environment, there are few positive outlets for energetic individuals, as we tend to entertain ourselves with passive devices such as television, computer or video games. In general, passive entertainment reduces the higher functions of the brain. These “entertainment's” have been correctly labeled "brain suspenders" by some educators and psychologists. Because television, computer and video games dwarf the mind, eliminating or severely limiting your exposure to them is a great step towards higher mental functioning and success.

It is Not Permanent or Hopeless – the Brain Can Heal.

According to Dr. Merzenich, the brain is built for change. He is not alone in his conclusions. Throughout your life, your brain is remodeling itself continuously. This is called neuroplasticity. Your mind is fundamentally adaptive, meaning it CAN change. It revises and adapts itself on a local level as it is stimulated to do so. As short as 10-15 years ago, scientists thought that the brain was static, meaning that once it developed, it was completed. About 10 years ago, scientists "discovered" that the brain itself changes its own local wiring throughout a person's life. In other words, humans have a life-long ability to change and learn.

The brain has a powerful capacity to learn, both the good and the bad. The good news is, if it learned its way to dysfunction, it can learn its way back to health and soundness. The brain is very remarkable in that it can, to a great extent, control its own self-development after one year of age. Each person has a unique inborn ability, but how we develop is a result of our environment. You cannot separate the individual from the environment that shaped them to be the person they are.

The mind is like any other muscle in your body. If not stimulated properly, it does not develop. Or stated another way, if you don't use it, you lose it. The more your mind is actively exercised, the stronger it becomes. The more sensory and motor systems employed for any given activity, the greater the effect on your mind. If you add good physical health (including good nutrition) and a positive emotional outlook to the formula, your brain function is enhanced even more. To re-normalize the mind or correct underlying mis-wiring or missing connections requires correct stimulation, the coordination of the sensory and motor systems, as well as a training of the mind's eye to work as it was designed to function.

Dr. Frank A. Belgau states,

> *"Each act of a human being, no matter how simple or complex, has an effect on the operation of their brain at a future time. An activity done in a sloppy, disorganized manner develops sloppy, disorganized brain circuits. An activity done in a routine manner maintains the function, but an activity performed with an eye to perfection, or one that challenges ability, builds and refines the circuits of the brain and makes for continued mental growth." In other words, practice makes perfect; so be careful what you practice, you will probably become good at it.*

You can learn or unlearn at any age. Learning as an older person (senior citizen) is possible. While practicing something physically and doing it mentally (task visualization) both have value (as both stimulate the brain into developing the ability to do a task), using both the mind and body simultaneously has a greater effect on the mind. Furthermore, movement of the major muscle groups such as those in the arms and legs have a greater stimulating feed-back effect on the mind than movement of the smaller muscles such as those controlling the fingers.

Open Your Mind to a Drug-Free Method of Enhancing and Optimizing Your Mind

If you consult most experts in the field of learning disabilities, they will tell you that the "standard of care" is to diagnose ADD, ADHD or dyslexia based upon the American Psychiatric Association's latest DSM criteria. If a person "fits" the criteria, the only "proven" treatment is medication with a "psychostimulant" with or without the use of self-regulation techniques (self-hypnosis, biofeedback, diaphragmatic breathing, progressive muscle relaxation, autogenics and cognitive-behavioral therapy). Many professionals will also advise you that you are doing yourself or your child serious harm by not putting yourself or them on medications.

The purpose of this Basic Instruction Manual is not to discuss the pros or cons of medications or to persuade you that medications are bad. We support the pharmaceutical manufacturers' written stance that if medications are to be used, that they are to be part of a total treatment program. For example, on the insert included with the Ritalin medication it states:

> *"Ritalin is indicated as an integral part of a total treatment program which typically includes other remedial measures (psychological, educational, social) for a stabilizing affect in children with behavioral syndrome . . . Adequate diagnosis requires the use not only of medical, but of special psychological, educational, and social resources."*

Unfortunately, medications are often prescribed without regard for therapies to eventually reduce the child's dependence on the medication.

The potential problems in placing yourself or your child on psychotropic medication are well documented by: Dr. Peter Breggin in "Talking Back to Ritalin," Dr. Sydney Walker in "The Hyperactivity Hoax," and Dr. Lawrence H. Dillard in, "Running on Ritalin."

One of the purposes of this manual is to explain how you can help yourself or your child improve brain performance to the extent that the need for medications such as Ritalin, Dexedrine, Adderall and Concerta may be reduced or eliminated. There may be a need, however, for continued psychiatric medications in some individuals and if a person needs such, they should take it as prescribed.

Based upon the results of many of our in-office students, doing the Sharper Minds program has resulted in a significantly reduced need for psychotropic medication. Historically, of the one third of clients that join the in-office program that are on meds at the time they start, about three quarters (75 to 80%) are off of meds within 8 to 12 weeks. Results may vary for un-mentored programs done strictly at home. However, it is not our place to tell a family, parent or adult when it is time to reduce or eliminate the usage of medications. If you or your child is on medication(s), we strongly recommend that you make changes only in consultation with your physician.

Much research on safe and effective drug-free alternatives for learning disabilities and ADD has been done. And like most of modern medicine, much is also based upon case studies and personal experience. Early research on understanding humans and how they learn is based upon the work of Arnold Gesell, Temple Fay, Doman/Delacato and others. Effectiveness and safety has been substantiated multiple times over in literally thousands of client families at various centers. Components of the methodologies have been proven historically, make logical sense, and are being continually improved by innovative research. Many individuals and families have found the help, happiness and success they desire, without the potential adverse side effects of medications by using these proven methods.

Sharper Minds has created a synergistic blend of the best of the research and practical results to create an effective program, simple enough to be used in the home. The program has been built on a solid foundation of research and experience.

Understanding the Medical Model

Modern medicine prides itself on its scientifically thought-out, evidenced-based model of patient care. Indeed, good science and medical research is based on sound logical thinking. The medical model applied in the right way to the right disease processes provides valuable insights into disease pathology and treatments. Clinical practice, while theoretically based on the medical model and scientific evidence, is in reality, frequently based on personal observations and experience first and foremost, and secondly on sound scientific reasoning.

All physicians learn the scientific process and medical model throughout their pre-med and medical education studies. Psychiatry, one of medicine's specialties, deals with the illogical and often times difficult to understand field of human behavior and emotions. While psychiatrists have tried to adapt the medical model to their area of medicine, there are serious limitations. Serious limitations, because one often can't logically explain the intangible and elusive.

Applying the medical model to the study of infectious diseases on the other hand, revolutionized our understanding of infectious diseases and enabled the development of appropriate treatments including antibiotics. The use of the right tool at the right time adds to the efficiency and accuracy of accomplishing a task. Use of the right tool but at the wrong time, or the wrong tool at the right time will produce sub-optimal results, or a failure to complete the desired task. The medical model applied in the right place at the right time and in the right manner is logical and accurate. The medical model applied in the wrong place at the wrong time and in the wrong manner can lead to inadequate solutions, erroneous conclusions and perhaps even to disaster.

So what is the medical model? To quote the *Penguin Dictionary of Sociology*, the medical model is "the basic paradigm [way of thinking] of medicine since the development of the germ theory of disease in the nineteenth century. It is the principal form of explanation in scientific medicine." The medical model is a general label often used to refer to disease, which is based on the assumption that an

abnormality and/or disorder is produced by single specific cause and that a cure is possible only by removing (through surgical excision, medication, or some form of technology) the root cause.

"In summary, its fundamental assumptions are:

1) all disease is caused by a specific etiological agent (the disease entity) for example, a virus, fungus, parasite or bacteria;
2) the patient is to be regarded as the passive target of medical intervention, since scientific medicine is concerned with the body as sort of a machine rather than the person in a complex social environment;
3) restoring health (a state of equilibrium in the body conceptualized as a machine with functional parts returned to full function) requires the use of medical technology [drugs] and advanced scientific procedures."

The medical model is a valid and powerful approach when the disease or condition it explains can be precisely defined, labeled and quantified or a clear path can be outlined from cause to effect. The medical model assumes that the disease in question is "within the individual." The medical model applies well to physical diseases. The challenge is that psychiatrists, physicians and psychologists who are involved with patients in the mental health arena, naturally assume—based on the medical model—that the behavior or affect of the patient is a symptom of some condition within the physical space of the individual. The medical model assumes that any behavior or action is the result of internal psychological processes and that the environment does not need to be addressed or corrected. But is this correct or optimal?

When the medical model is applied to unique human beings with all their complexities of emotions, attitudes, environment, relationships, attachments, motivations, aptitudes, interests and patterns of thinking, it falls far short of what is needed. The medical model when applied to the field of mental health can be criticized on the following grounds:

1) it is an ideology which “requires” and thereby justifies the use of medical technology (drugs), thereby precluding serious consideration of potentially viable alternative therapies and procedures;
2) the model was developed as a response to infectious disease in the nineteenth century, but in part due to the aging of the population, modern societies require health care systems which can respond to chronic illness in a more standard or “canned” fashion;
3) the model is inadequate and thus inappropriate in the treatment of mental illness and deviance;
4) it is not appropriate to regard the patient simply as an organism [mechanical device], and therapy is more likely to be effective where the patient is regarded as a person with mental, social, spiritual, physical and psychological (emotional) needs.”

The medical model therefore rejects anything that it cannot define, measure or quantify. It rejects "alternative" therapies by claiming that the only benefit one may receive is from "potent placebo effects" and that these unproven alternative therapies may delay "appropriate and definitive" treatment. Accepted therapies must be proposed to and accepted by "traditional medical, educational, and psychological professionals", and the initial medium of presentation of accepted therapies is a peer-reviewed scientific journal. The reality, however, is that most journal editors would never accept an article that didn't meet party-line or conventional thinking for fear of job loss, or loss of advertising revenues from their main advertisers, which in the case of most health related magazines are pharmaceutical companies. The medical community often states that alternative therapies are based upon anecdotal "evidence" and "pseudoscientific" reasoning, and categorically disregards any and all dietary and nutritional therapies, and neuro-physiologic therapies (including sensory integration, auditory processing training, visual therapies and cerebellar-vestibular dysfunction therapies). The medical establishment, however, supports the use of drugs, self-hypnosis, biofeedback, diaphragmatic breathing, progressive muscle relaxation, and cognitive-behavioral

therapy. Like many of the "unproven alternative" therapies, there is benefit to each of these therapies as well, if applied in the appropriate clinical situation.

As a medical doctor, trained in the medical model, with siblings diagnosed with ADHD and dyslexia, and as a parent of children with ADD and dyslexia, I did not find the help I needed or wanted among the "accepted therapies" list. After reviewing the literature on various studies at a local teaching medical hospital (Oregon Health Sciences University), I found the support for drugs and other "proven" modalities to be quite subjective and often suspect in the studies' methodologies and conclusions. For example, one study was of children at a week-long ADD/ADHD camp who were given various psychotropic meds to compare the differences in effectiveness. From this rather short-term and small study, the authors drew strident conclusions which were published in the peer review journals. The study failed to note that after 12-16 weeks, most psychotropic meds have declined in effectiveness necessitating an increase in dosage or a change of medication. Furthermore, amongst all the literature, there was a glaring absence of data from long term studies.

As a board certified internist, I have sat on the formulary panels for various hospitals and clinics and have extensive experience with many medications. I often have to deal with patients who are experiencing side affects of medications, including those that might have been given to deal with a mental health issue. In doing so, I have formed deep concerns about the long term effects of putting much of our populace on psychotropics, which pharmacologically have similar properties to cocaine. My concerns are that our nation will be seeing a higher incidence of early onset Parkinson's and strokes among adults in their 40's who have been on these types of medications long term. In my medical practice, I'm already started to see these types of incidents.

On the non-medicative side, I found great improvement and help with certain therapies that have been proven in the lives of many children and adults, which is where it really counts.

Alternative therapies that have met with success with segments of the population that appear to have A.D.D. symptoms or learning challenges include:

- Vision or Visual therapy
- Auditory Therapy
- Balance or Vestibular Therapy
- Counseling
- Success Skills training
- Memory Skills training

Each of these has been used effectively for people who have challenges in those respective areas. For example, a child with auditory discrimination issues will experience major improvements by going through auditory therapy. However, if a child with auditory discrimination issues is put through vision therapy, should we expect marked improvement? Of course not! One has to use the right tool to address the underlying need.

But what if there is extensive overlap in needs? What if a child that has auditory issues is also likely to suffer from balance-related or vision-related issues? What if the bilateral processing required to interpret sounds correctly, also affects the ability to interpret letters or track words correctly? Or what if the child or adult lacks the ability to store and retrieve images from memory at a high rate of speed? Using one unique therapy is not going to do an adequate job in improving the brain.

That is where the Sharper Minds program, an advanced neural-cognitive program, comes in. The program contains elements of each of the above therapies, blended together to remove redundancies and to focus on simplicity and the effective use of time. We and our advisory team have worked with thousand of children, offering various therapies to deal with various issues. Over time, we've come to understand the essence of what it takes to strengthen the mental performance of individuals whether they are struggling academically, behaviorally, or just seeking to sharper their faculties.

The Sharper Minds entire program works on the seeing, hearing, and balance centers of the mind. It will teach children and adults how to retrieve memories that are already there. In some ways, it will seem like it unlocks the memory banks of the mind, releasing subjects and concepts that were experienced some time ago.

The Sharper Minds program will enhance the mental performance of nearly every person who is able and willing to do the exercises. And as you go through the exercises, you will see that many are fun to do with another family member or friend. And we recommend that you “keep the program fun.”

It may be helpful to recognize that there will be times of difficulty when you reach an exercise that your brain is going to struggle with. It is by pushing through these difficult times, that the brain will be encouraged to make the most new neuronal connections and subsequently make the most improvement. Therefore it is important NOT to quit when the going gets tough. The difficult spots are simply indicators that these are parts that you need to work on.

The Sharper Minds program is not for everyone, nor does it "cure" every learning, behavioral, or psychological problem. It is not a quick fix, but it is a reasonable and effective alternative to help you improve your learning and attention difficulties. At Sharper Minds, we believe that therapy is most effective when the whole person and their individual needs are addressed in the whole context of their environment.

The Structure of the Brain

The Central Nervous System or CNS consists of the cerebrum, cerebellum, rain stem, ventricles meninges, cerebrospinal fluid, and the spinal cord. The cerebrum consists of gyri-eminences, and sulci or fissures that are crevices or furrows. A deep fissure called the medial longitudinal fissure incompletely separates the right and left-brain or hemispheres. The cerebral cortex consists of gray matter and white matter. The gray matter is from 1.3-4.5 mm thick and covers the brain halves. The brain is estimated to have 14 billion neurons. In addition to the central groove (the medial longitudinal fissure), there are two major grooves on the lateral sides of the brain, the lateral fissure of Sylvius and the central sulcus of Rolando. Anatomically the outside of the brain is divided into four main lobes. The frontal lobe is approximately the anterior 1/3 of the hemisphere. The occipital lobe is located in the posterior brain. The remaining two lobes are the parietal lobe and the temporal lobe. The temporal lobe is a basal lobe and the parietal extends from the frontal lobe to the occipital and lies above the temporal. The two remaining lobes are the limbic lobe or system, and the insular lobe.

The cerebellum is attached to the brain stem at the level of the pons. It looks like cauliflower at the base of the skull. The cerebellum is also while matter covered with a layer of gray matter.

The brain stem is divided into the (from top down), medulla, pons, midbrain, and diencephalons. Cavities within the brain are called ventricles and are filled with a sterile fluid called cerebral spinal fluid. The meninges are the three layers of connective tissue membranes that cover the surface of the brain (Meningitis is the inflammation of these layers). From inside to out, there is pia mater, the arachnoid and the outer most layer, the dura mater.

The spinal cord is a cable-like structure that is less than one-inch in diameter. The spinal cord is divided up arbitrarily into five regions: the cervical, thoracic, lumbar, sacral, and coccygeal.

Abnormalities of the CNS can be caused by genetic factors (i.e. chromosomal anomalies—trisomy 21) and/or environmental influences (infectious agents, drugs nutritional deficiencies and metabolic disorders). Most CNS abnormalities are caused by a combination of genetic and environmental factors. Some gross CNS deformities, such as Anencephaly, are incompatible with life. Other severe CNS deformities, such as spina bifida, cause functional disabilities (muscle paralysis of the lower extremities). Given all that could go wrong during the pre-natal developmental process, it is a wonder anyone turns out normal. The fact that most are anatomically normal is amazing.

There are three types of CNS congenital abnormalities:

- structural abnormalities as mentioned above,
- disturbances in the organization of the cells of the CNS, and
- metabolic disorders (e.g. phenylketonuria – PKU and congenital hypothyroidism).

Mental retardation has numerous causes or contributors including:

- chromosomal abnormalities,
- maternal alcohol abuse,
- metabolic disorders (e.g. PKU, hypothyroidism),
- maternal or paternal drug use prior to conception,
- maternal drug use during pregnancy,
- environmental toxins (high dose radiation, lead poisoning),
- genetic inheritance,
- prenatal infection (e.g. Toxoplasmosis, measles, etc.),
- severe pre, peri or postnatal malnutrition,
- postnatal infections (meningitis), and/or
- postnatal head trauma.

Looking at the nervous system from the opposite view of the big picture, the nervous system consists of the neuron or nerve cell, the basic functional and anatomic unit. Each neuron consists of a:

- Cell body (perikaryon)
- Dendrites, which are branching processes that receive electrical impulses, and send those impulses to the nerve cell body
- Axon, is a single fiber that conducts the electrical impulses away from the nerve cell body.

The two critical aspects of the CNS, structure and function cannot be understood apart from each other. To get a complete picture of the brain's function, it is important to understand the three closely related sciences, neuroanatomy, neurophysiology and clinical neurology.

The Function of the Brain

There are afferent and efferent neuro pathways in the brain. The afferent pathway means that the message is being "carrying inward to a central organ or section as nerves that conduct impulses from the periphery of the body to the brain or spinal cord. The efferent pathway means that the impulse is being "directed away from a central organ or section", such as a nerve "carrying impulses from the central nervous system to an effector (muscle)."

Learning is like using any muscle; it requires input (afferent impulses) to the CNS and output (efferent impulses) from the CNS to the sensory organ. In other words, learning has to have a "biofeedback" loop in order to take place.

When a person is learning a new skill, the same process is followed. The skin, muscle, eye, ear or balance system sends a signal to the brain; i.e. the input or training signal. The brain then sends a signal back to the skin, muscle, eye, ear or balance system and a motor response happens. This motor response is referred to as the output or confirming phase. In the input phase, the mind receives information

from the sense and forms a mental image which is filed away in the mind for future reference.

It is not enough to have a mind full of information. It is necessary to confirm that the knowledge or information is stored and can be made useful. When a person is asked a question while taking an examination, they send a signal to the mind requesting the memory to find what an answer to what the question is asking. The mind then begins a general scan. This might be like heading for the "N" or "P" section in the dictionary when trying to look up the word “pneumonia”. You have a general idea in which direction to head your search in. For example, when visiting a friend across the country, a broad scan or generalized search of a nationwide map gets you to the right town, but not directly at the house you want to go to. You need to narrow down the search with more facts and detail in order to find the specific house you need to be at.

The steps of the confirming portion of the thinking process are:

1. a **Generalized Scan**, the mind is searching broad categories, followed by
2. a **Detailed Scan**, which is the mind is searching more specifically This process is double checked by the
3. **Intrinsic Quality Control** (referred to as the Intrinsic QC), which is the mind confirming the accuracy of the generalized and detail scans. The brain then sends a signal to the appropriate motor organ, resulting in a
4. **Motor Response**, which could include speaking, moving, or writing, etc. The accurateness of the motor response is compared with the message sent by the brain and is called the
5. **Extrinsic Quality Control**, which is the senses confirming or challenging the result of the search.

Brain Processes

By their nature, the brain's self-organization processes are time-based. Cortical processes integrate the neuronal representations of action input that are:

1. Integrative. The mind integrates auditory stimuli that arrive in proximity to each other (for example: screeching tires and the crashing sound of impact, or the different instruments of a symphony playing in harmony).
2. Segregate. The mind also segregates (separately represents) inputs and actions that consistently occur separately in the environment. It sorts these by shape, size, feel, color, and other characteristics.
3. Linking. The brain links the representation of things that belong together. It makes linkages or logical connections in how things occur and belong together.

Our minds determine who we are through how we move, think, see, balance, understand, touch, remember, experience pain, dream, orient ourselves, adapt, hear, create, taste, position ourselves, feel, smell, learn, and by how aware we are of our environment, both internal and external.