



The Foundations for Learning

Tools for understanding and
preventing learning and behavior
difficulties

by Paula Lynam

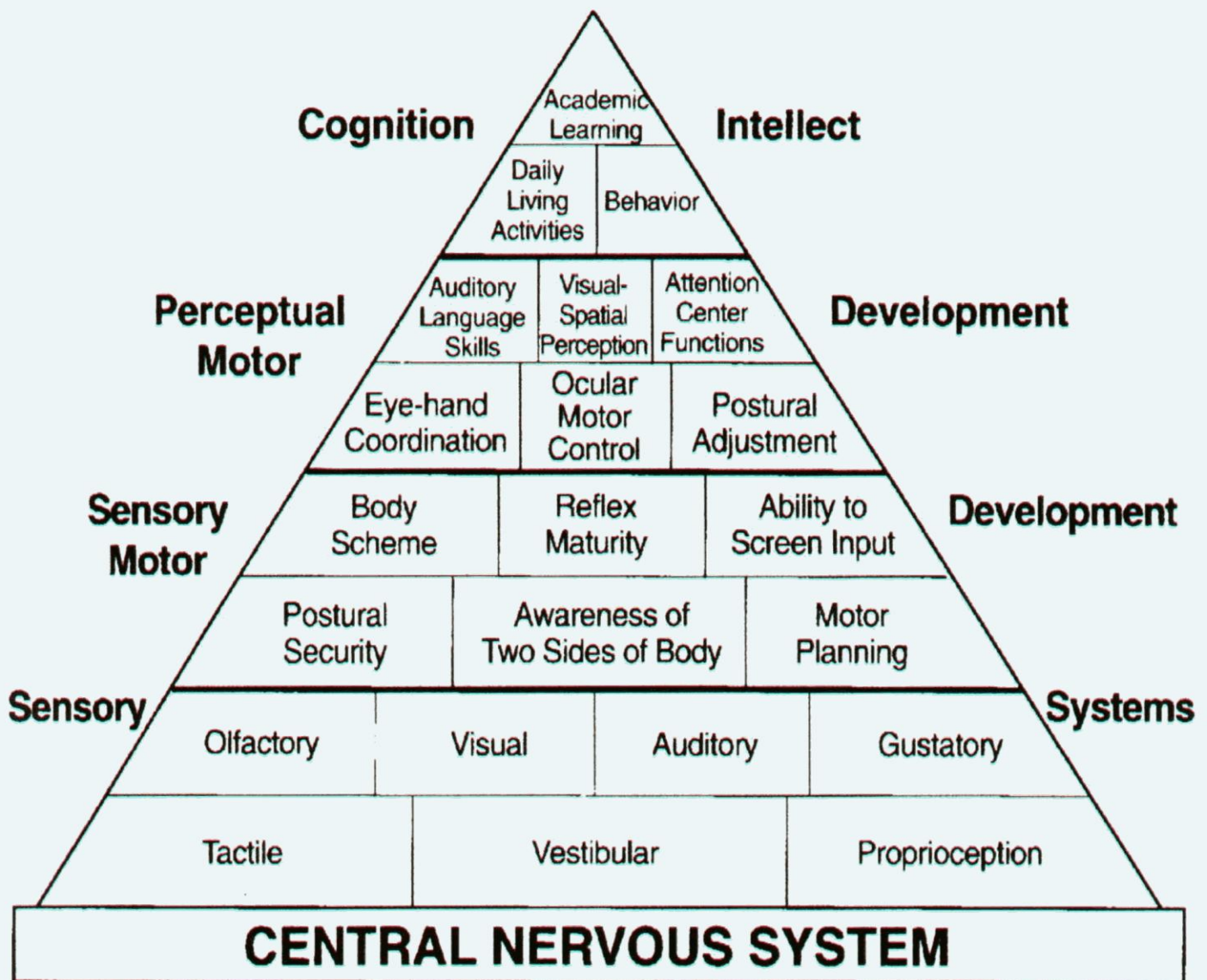


Figure 5. Pyramid of Learning. (Williams & Shellenberger, 1-4)



As children move through and complete their developmental stages, they become increasingly comfortable in their bodies and able to learn more effectively. The ability to participate in learning and social interactions with ease and satisfaction is the byproduct of good communication from the senses, all of which need to function together with efficiency. (A. Jean Ayers, 1949)

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Introduction

Movement is the door to learning... (Dennison)

As children move through and complete their developmental stages, they become increasingly comfortable in their bodies and able to learn more effectively. Their ability to participate in learning and social interactions with ease and satisfaction is the byproduct of good communication from the senses, all of which need to function together with efficiency. (Ayres, 1979)

The SENSORY SYSTEMS, of the **LOWER** or WILL SENSES: TOUCH (tactile), BALANCE (vestibular), SELF/MOVEMENT (proprioception), and LIFE (well-being);

FEELING SENSES: SMELL, TASTE, SIGHT, WARMTH and

COGNITIVE SENSES: HEARING, SPEECH, ANOTHER'S THOUGHT, ANOTHER'S "I" (Soesman, 1990)

all contribute to this foundation which is built upon the healthy functioning of the CENTRAL NERVOUS SYSTEM. **From the interaction of these systems come all higher functions, which allow us to learn and interact socially with ease and confidence.**

This particular material will focus primarily on the LOWER SENSES; the part they play in the development of learning and behavior difficulties and therapeutic activities which support healthy development as a preventative measure.

Learning and Behavior Difficulties

Our LOWER senses give us constant information about the physical conditions of our body and the environment around us. Our **head** is only partially responsible for receiving the information we take in. The **brain** locates, sorts and orders sensations as they come to the body. When these sensations flow in a well-organized or integrated manner, the brain can use them to form perceptions, behaviors and learning. When the flow of the sensations is disorganized, the opposite can be the case.

As food nourishes the body, so you could think of sensations as “food for the brain”. They provide the energy and knowledge needed to feed the body and mind. Without well-organized sensory processes, sensations cannot be digested and nourish the brain.

Until about the age of seven, the brain is primarily a sensory processing machine. It senses things and gets meaning directly from sensations. A young child does not have many thoughts or ideas about things; he is concerned mostly with sensing them and moving his body in relation to those sensations.

The integration of the senses that occurs in moving, talking and playing is the groundwork for the more complex integration that is necessary for reading, writing and healthy behavior.

If sensory-motor processes are well organized in the first seven years, the child will have an easier time learning mental and social skills later on. When the child experiences challenges to which he can respond effectively, he “has fun”. (Ayres, 1979) A human being is designed to enjoy things that promote the development of his brain, and we naturally seek sensations that help organize the brain. This is one reason children love to be picked up, rocked, and hugged and why they love to run, jump and play. **They want to move because the sensations of movement nourish their brains and create a sense of order and belonging.**

Some infants with difficulties do not roll over, creep, sit or stand at the same age as other children. Later they may have trouble learning to tie shoes or ride a bicycle without training wheels. They may not move easily or gracefully; running may be awkward; they may seem clumsy and fall or stumble frequently. S/he may not choose playthings that are popular with other children of the same age and toys that require manipulation may be too challenging. He may break things and have “accidents” more often than is typical. (Gerber & Johnson, 1998)

Delay in language development is a common problem in early childhood. Some children do not listen well, although they do not have hearing problems, it is as though the words enter their ears, but get lost on the way to the brain. Other children know what they want to say, but cannot direct their mouths to form the words. Without clear messages from the hands and eyes, a child cannot color between the lines, put a puzzle together, cut accurately with scissors, thread beads etc.



In his first seven years, a child learns to sense his body and the world around him and to rise up and move effectively in that world. He learns what different sounds mean and how to speak. He learns how to interact with the physical forces of this planet, along with innumerable pieces of furniture, clothes, shoes, eating utensils, toys, pencils, books and of course, other people. Each of these gives him some sensory information and he must develop sensory integration to use that information and interact effectively. *“Sensory integrative functions develop in a natural order, and every child follows the same basic sequence. Some children develop faster and some*

more slowly, but all travel the same general path. Children who deviate a great deal from the normal sequence on sensory integrative development are apt to have trouble later on with other aspects of life” (Ayers).

Some children cannot organize the sensations from their skin. They may get angry or anxious when people touch them, or even stand nearby. Much of the hyperactivity today is due to poor integration. Sometimes lights and noises will irritate and distract the child; this can often be noticed in their faces. *Sometimes the child does everything alright at home, or at least well enough that the problem is not noticed, but has great difficulty in school. Reading, writing and arithmetic are often referred to as the “basics”, but they are actually extremely complex processes that can develop only upon a strong foundation.*

More is often expected of a school-age child than is of a younger child. Not only must the child learn a wide variety of new things, but he must also get along with many classmates and teachers. The brain that does not organize sensations well is also apt to have trouble making friends and keeping them. School puts the child under a great deal of stress, for he has to work harder to do the same tasks as his classmates. Many children with these difficulties feel helpless and anxious in school.

There are many little things that a child has to do in school. Without a solid foundation it is hard to learn how to tie shoelaces, hold a pencil, not break the lead of the pencil, change from one task to another, recognize stop signs on the way to school and so on. The child has to pay attention in a roomful of people, although he can barely pay attention when alone with his teacher. He is expected to do things fast when he can only do them slowly, or do them slowly when it is easier to move quickly. He has to remember instructions to do two things at once – such as “put away your books and get out your pencil” – when it is hard to remember even a single instruction.



In the classroom he is easily distracted by all the extraneous sounds, lights, and the confusion of many people doing different things. His brain is overly stimulated and it responds with a lot of excessive activity. He jumps all over the classroom, not because that is what he wants to do, but because his brain is trying to get things organized or keep things manageable. His excessive activity is a reaction to sensations he can neither turn off nor

organize. The confusion within his brain makes it impossible to focus or concentrate, and so he cannot understand what his teacher is teaching. If he is standing in line and someone accidentally bumps into him, he may become angry or strike out. The anger and hitting have nothing to do with interpersonal relationships; they are automatic reactions to sensations the child cannot tolerate. (Judith Bluestone, HANDLE 2002).

The child is not able to talk about these problems, nor can he understand what is going on, since the problem occurs in brain processes that are below consciousness and control. It is useless to tell him to control himself or concentrate harder. Rewards of candy or stars or punishment do not make it easier for the brain to organize sensations. Without careful parental support he may grow up thinking that he is stupid or bad, especially since other children tell him that he is. (Kranowitz, 1998)



TACTILE (Touch)

It has been said that in cultures where there is a lot of healthy physical contact between people—crime is less abundant. (Montagu, 1978)

The awareness of temperature, friction, moisture and dryness all tell one something about their environment. When one touches something, messages are sent to the brain filled with information.

A CHILD FREQUENTLY OR CONSISTENTLY SHOWING SEVERAL OF THE FOLLOWING REACTIONS IS SHOWING TACTILE DEFENSIVE BEHAVIOR:

- Avoids being touched on the face. He may move his head away from things that are near his face. Washing his face may be especially difficult.
- Is very distressed about having his hair cut or washed.
- Dislikes it when people touch him, even in a friendly or affectionate way. Pulls away from a hug or even a pat on the shoulder. At other times, or from other people, he may accept the same kind of touch.
- Touching the child while dressing him may bring about a negative reaction. Simply pulling up his sock may make him react.
- Does not like it when someone bathes him or cuts his fingernails.
- Tends to avoid physical contact with friends, even though he likes to talk to them and relate without touch.
- Being approached from behind is more threatening than it is for other children.
- Having people near him, even without touching, may cause him distress.
- Is sensitive to certain fabrics and avoids wearing clothes made of them.
- Does not like to get his hands in sand, finger paint, paste, etc.
- Avoids going bare foot, especially in sand or grass.
- Tags in clothes are irritating.
- Often prefers long-sleeved shirt and wears a sweater or jacket even when he is warm.

ACTIVITIES TO PROMOTE TACTILE INTEGRATION

- BACK DRAWING
- BACK RUBS
- BEAN BUCKETS /TREASURE
- BREAD MAKING
- BURRITO
- CLAPPING GAMES
- COCCOON
- DEVELOPMENTAL MOVEMENTS: SEAL
- CATERPILLAR
- LIZARD
- CREEPING CAT
- CRAB
- DRESS UP
- FINGER PAINTING
- HUMAN TOUCH
- ORAL ACTIVITIES
- PLAY DOUGH
- ROUND AND ROUND THE GARDEN/THIS LITTLE PIGGY/
WISH WASH
- SANDWICH
- SOCK GAME
- STEAM ROLLER

Eating healthy fats—coconut oil, flax oil, cod liver oil, butter increase the protective coating or myelin sheath. It is often noted that children with low-fat diets, or diets containing saturated fats, such as cooking oil, margarine, fast foods, display more tactile defensive behaviors. One image is that the nerve endings are without adequate coating, (like the insulation on a pipe), which gives the feeling of exposed nerves.

Dry off with air-dried towels to stimulate the skin in a fresh way; giving a massage with firm pressure and lavender oil before bed or rosemary before school to wake up.

By the time a child is ready for preschool they should be able to modulate touch sensations through the skin, especially unexpected, light touch, and to discriminate among the physical properties of objects by touch.

PROPRIOCEPTION—SELF SENSE

Math comes through the body.....we have five fingers, five toes, four limbs and so on. The more comfortable we are in our skin the more comfortable we are with numbers (Bluestone, 2005)

Children these days do not get as many opportunities to use their bodies the way they crave. We do an effective job of keeping our children “safe”, and in some ways we may be going overboard. It is alright for a child to fall and scrape his knees, bump into things, attempt something and fail. It is more than alright, it is essential. That is how a child learns about his own body, abilities and capabilities, by falling, bumping, crashing, struggling to accomplish his goals. It is through the proprioceptors sending messages to the brain, constantly; that we learn all there is to learn about our bodies and the environment. If we are getting limited feedback, because we are sitting a great deal, or prevented from lifting heavy things, pushing, jumping, pulling etc., we are limiting how much our children are able to learn about their world and them-selves. They have to know their own body before they can know letters and numbers. If we notice children wanting to push each other, let us give them healthy things to push, like a wheelbarrow or digging in the dirt or sand (Kranowitz, 1998).



A person experiencing **PROPRIOCEPTIVE** irregularities/weaknesses may:

- Need to be held, swaddled
- Be clingy
- Be hysterical over hair washing or pulling shirts over head
- Avoid eyes– closed activities
- Have difficulty falling/staying asleep
- Fall out of bed/restless sleeper
- Need heavy covers or clothing
- Need light on to sleep
- Fear the dark
- Avoid team sports
- Avoid crowds
- Prefer swimming
- Appear clumsy, tripping over own feet, bumping into things
- Swing between pieces of furniture
- Show unusual degree of stretching and yawning
- Have difficulty grasping mathematical concepts
- Have inability or difficulty accepting physical and social boundaries



*As we **know** where our own body begins and ends so will we be able to respect the space of another....*

ACTIVITIES TO PROMOTE PROPRIOCEPTIVE INTEGRATION

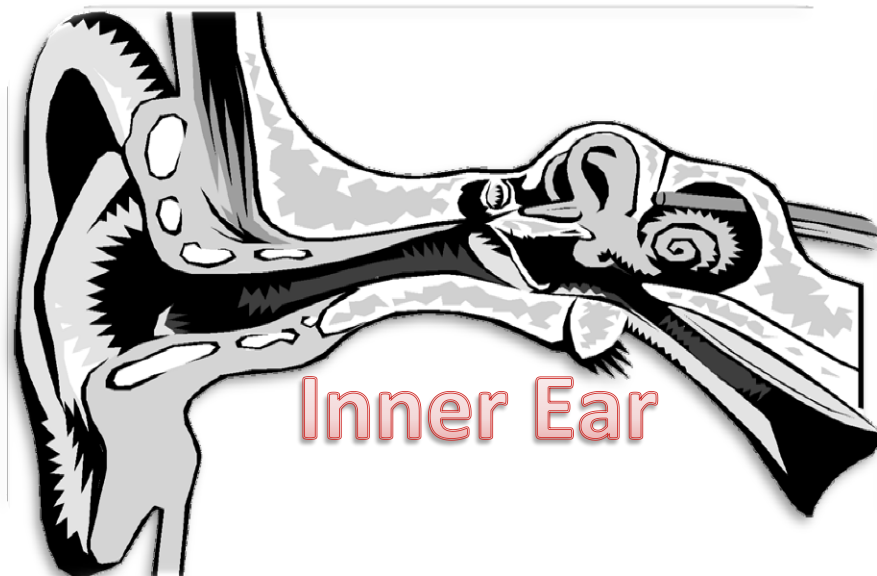
- **CARRYING HEAVY LOADS**
- **PUSHING AND PULLING**
- **HANGING FROM ARMS OR LEGS**
- **PILLOW CRASHING**
- **JOINT SQUEEZING/TAPPING**
- **BODY GEOGRAPHY**
- **STUBBORN COW**
- **CRAB WALK**
- **BODY SQUEEZE**
- **TUG OF WAR**
- **LEAP FROG**
- **BULLDOZER**
- **BACK TO BACK STAND UP**
- **HOOP MAZES**
- **ROPE TURNING**
- **BLINDFOLD /EYES CLOSED ACTIVITIES**
- **DEVELOPMENTAL MOVEMENTS**

VESTIBULAR (BALANCE)

Most of our systems are governed by the vestibular system: our vision, hearing, relationship to above and below, left and right, forward and backward. Smooth functioning of our vestibular system is essential to our overall well-being and ability to be effective academically and socially (Blythe, 2004).

The person with a healthy vestibular system can:

- Easily regain balance when off-center
- Stand on his own two feet, in an upright position, against the pull of gravity
- Differentiate body movements so he can function with an economy of motion
- Discriminate among sounds vibrating in the inner ear—learns to listen
- Provide the body with visual sensation and easily processes visual information
- Enjoy spinning and twirling, swinging and rocking



IF A CHILD HAS VESTIBULAR DYSFUNCTION, THERE IS INEFFICIENT PROCESSING IN THE BRAIN OF SENSATION PERCEIVED THROUGH THE INNER EAR.

A CHILD WHO HAS VESTIBULAR DYSFUNCTION MAY:

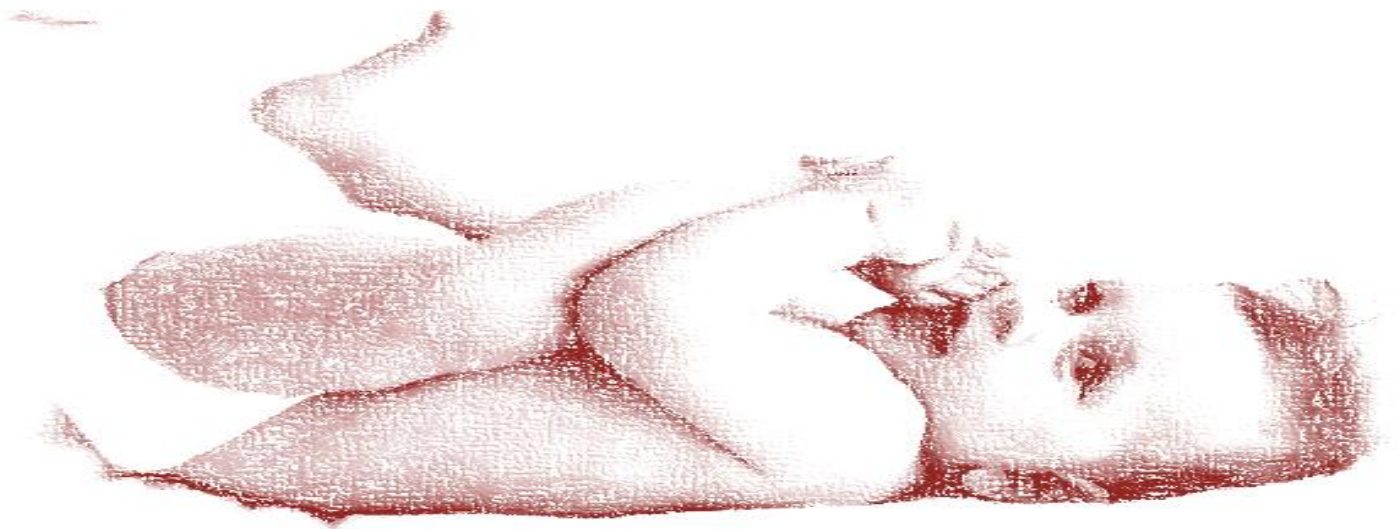
- Have difficulty walking on uneven ground—gravitational insecurity
- Be unable to sustain listening without rocking, tipping chair, or moving
- Get over excited, can't calm down after movement
- Have defiant behavior when encouraged to move
- Have excessive need to hang upside down, spin etc.
- Have loose and floppy body, low muscle tone
- Lay head on table, slouch while sitting
- Rock excessively
- Get motion or car sick easily
- Need to stay in constant movement
- Be unable to maintain static balance
- Avoid movement, swings, rides
- Be unable to read or write cursive (older)
- Have poor auditory processing
- Seem to have trouble listening
- Have tracking problems in reading
- Feel dizzy or nauseated after watching people or things move
- Suffer from repeated or severe ear infections
- Have had excessive use of walker, playpen, infant seat restricting or limiting movement

NOTE: do not push a child to do vestibular activities if they are uncomfortable. If ears turn red, face flushes, child feels sick or dizzy; the system is over activated. **STOP.** Do not do soon after eating.

REMEMBER: **STRESSED SYSTEMS DO NOT GET STRONGER!** (Bluestone, 2005)

ACTIVITIES TO SUPPORT VESTIBULAR SYSTEM

- ANIMAL TAG
- BURRITO
- CRAZY STRAW
- DEVELOPMENTAL MOVEMENTS
- EAR MUFFS (HANDLE)
- HOOP MAZES (HANDLE)
- MARBLE PICK UP
- OUTSIDE BALANCE PLAY
- ROLLING AROUND ON THE FLOOR
- ROUGH HOUSING
- THERBALL PLAY rolling on ball while aiming beanbags, tag, sits on ball while watching screens
- TIMBER—child falls back into your arms like a log falling, you lower him to the ground where he rolls away as stiff as a log, slowly.
- UPSIDE DOWN WORLD— hanging, bending upside down
- WALKING ON UNEVEN GROUND
- WHEELBARROW WALKING
- WITCH TAG
- WIZARD-WIZARD



SENSORY	SYMPTOMS
Auditory	<ul style="list-style-type: none">• Responds negatively to unexpected or loud noises• Holds hands over ears• Cannot walk with background noise• Seems oblivious within an active environment
Visual	<ul style="list-style-type: none">• Prefers to be in the dark• Hesitates going up and down steps• Avoids bright lights• Stares intensely at people or objects• Avoids eye contact
Taste/Smell	<ul style="list-style-type: none">• Avoids certain tastes/smells that are typically part of children's diets• Routinely smells nonfood objects• Seeks out certain tastes or smells• Does not seem to smell strong odors

Body Position

- Continually seeks out all kinds of movement activities
- Hangs on other people, furniture, objects, even in familiar situations
- Seems to have weak muscles, tires easily, has poor endurance
- Walks on toes

Movement

- Becomes anxious or distressed when feet leave the ground
- Avoids climbing or jumping
- Avoids playground equipment
- Seeks all kinds of movement and this interferes with daily life
- Takes excessive risks while playing, has no safety awareness

Touch

- Avoids getting messy in glue, sand, finger paint, tape
- Is sensitive to certain fabrics (clothing, bedding)
- Touches people and objects at an irritating level
- Avoids going barefoot, especially in grass or sand
- Has decreased awareness of pain or temperature

Attention, Behavior And Social

- Jumps from one activity to another frequently and it interferes with play
- Has difficulty paying attention—is accident prone
- Is overly affectionate with others
- Seems anxious—has difficulty making friends —does not express emotions
- Is accident prone
- Has difficulty making friends, does not express emotions

IN ADDITION.....

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- Have a great big pile of dirt with loads of shovels
- A nature table in your classroom, home, or day care which you change and update seasonally will foster the sense of rhythm and connection to nature in the children. They can collect little things on walks or from their surroundings to add to the table.
- Tell seasonal stories, finger plays, songs and so on during circle or throughout the day.
- Keep the TV and computer etc. off. These only stunt the imagination and development.
- Have logs to walk on in the yard (or to turn over and find ants and earthworms).
- Bowls of stones, sticks, acorns, walnuts and sea shells are a natural delight for children to play with. They do not need large numbers of toys. A few choice toys which have more than one use, such as building blocks, nourish the imagination.
- Read books and poems about nature, and tell the children about your experiences in nature.
- Go on long walks. Notice how much nature is in your home or room and how you could have more. Pay attention to the smells and sounds we surround our children with and eliminate as many as possible that are not natural.
- Imagination and intelligence go together. Supporting the innocence of childhood imagination is foundational in nurturing intelligence.
- Play outside during all-weather so the children learn about their world and develop a relationship with their surroundings. They just need to be dressed appropriately; warm woolen underwear for the winter is very helpful.
- Keep hands busy with crafts made using nature found items, which are simple and delightful; no need to purchase so many ready-made bits and pieces.
- Leave space.....we do not need to fill our children's lives. Being bored is a good thing – “out of boredom comes creativity!”



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