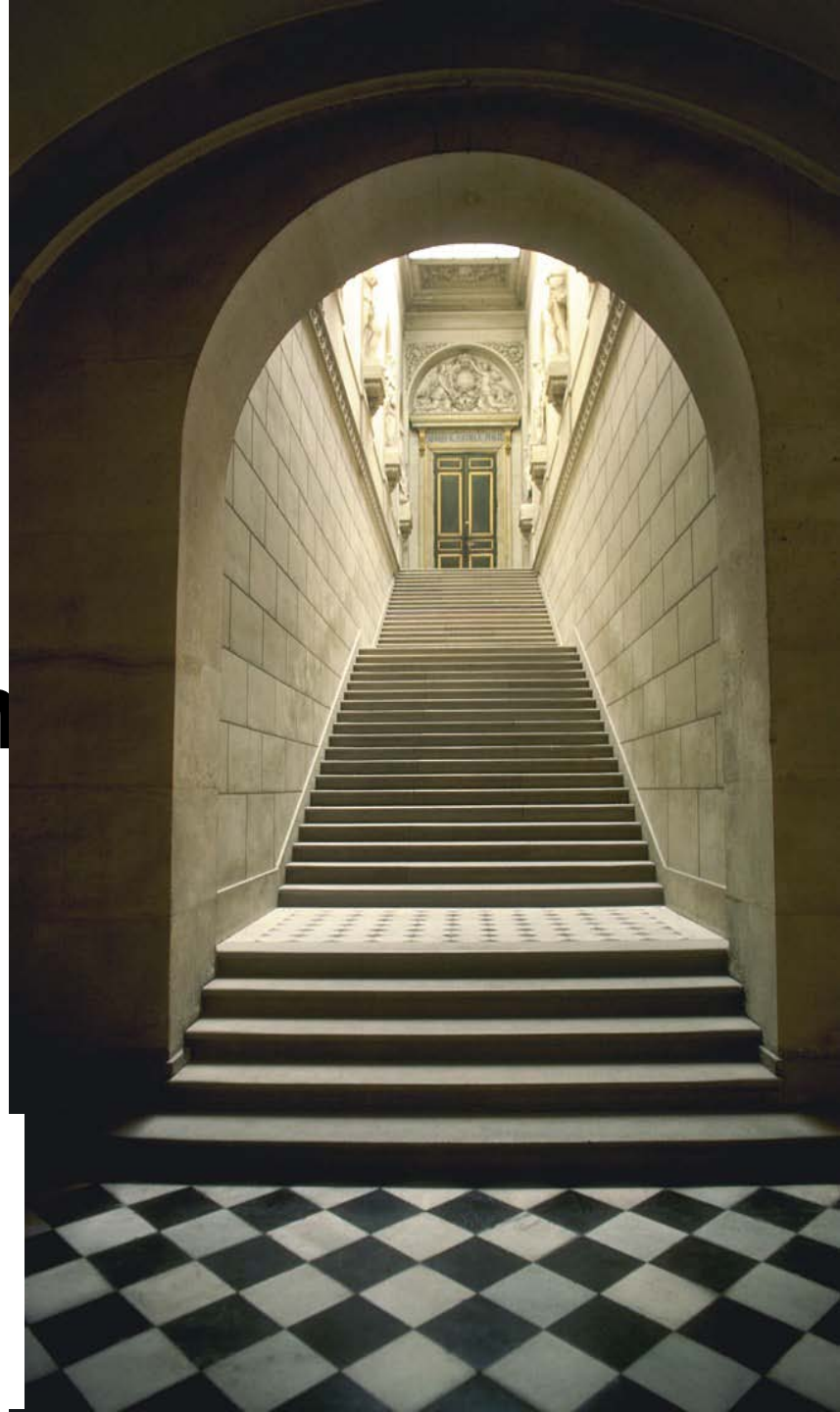
DOORS OF PERCEPTION

Sensory Integration for Parents



JoAnn Granke OTR/L
MetroHealth Medical Center
Cleveland, Ohio
216-778-1380, 9157#

WORKSHOP OBJECTIVES

1. Develop a basic understanding and observation of behaviors described in the work of A. Jean Ayres PhD OTR (Sensory Integration). Reflecting on the child's need to access organized sensory input for whole brain learning and the brain body connection to achieve self regulation.
2. Identify the significant role of oralmotor, vestibular, proprioceptive,and tactile systems as foundational to learning.
3. Discuss environmental considerations as pieces of the puzzle.

WORKSHOP OBJECTIVES cont.

4. Learn practical strategies for organizing and integrating the neuromotor system and limit the need to label children. Participants are encouraged to bring observations of their children.

5. Discuss how sensory integrative strategies were implemented in 2 Montessori classrooms.

6. Identify certified instructors and resources for continued learning

“What must the human child achieve in order to become a complete human being? The development of the brain through sensorial awareness and interaction with the immediate environment is the beginning of the child’s journey.

This development is individual to each child; no two brains are alike.

In this sense, we are all “originals.” ”

From :“Montessori from the Start”;
-Lillard and Jessen,2003

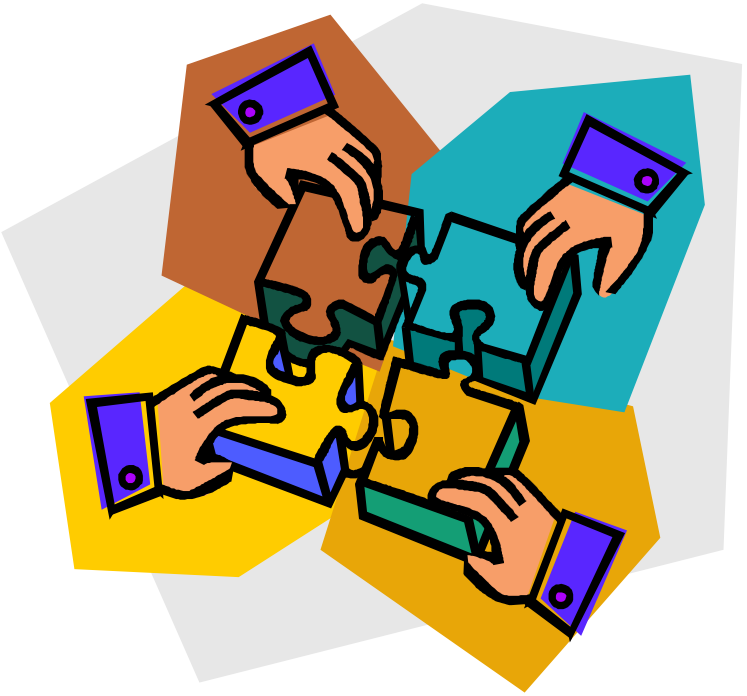
“Sensory Integration occurs when a child spontaneously plans and executes a successful adaptive response to sensory input….The child must participate actively with the environment to improve the organization of his nervous system. The drive “to do” must come from within the child, even though he has been unable “to do” successfully before. He must take each developmental step himself, even though development has been difficult for him in the past. The equipment used in sensory integrative therapy is designed to entice the child into activities that provide sensations that tend to organize our human brains.” A. Jean Ayres

HOW DOES THE BRAIN LEARN?

- Sensory and motor input stimulates the lower centers of the brain to transmit information toward the higher level brain to develop the cerebral cortex and progressively acquire more complex skills.
- Reflexes at birth which integrate generally by 6 months are the initial doorways to this process.
- These sensory motor areas include the partnership of the limbic system which integrates our emotions, motivation and emotional association with memory.
- It includes many structures in the cerebral cortex and sub cortex of the brain
- The limbic system is older than other parts of the brain.
- It manages the “Flight or Fight” chemicals

ADDITIONAL PIECES OF THE PUZZLE

- Nutrition
- Sleep
- Medical condition
- Environmental
- Social / emotional
- Language concepts



HMM…
Hand, Mouth and the Mind

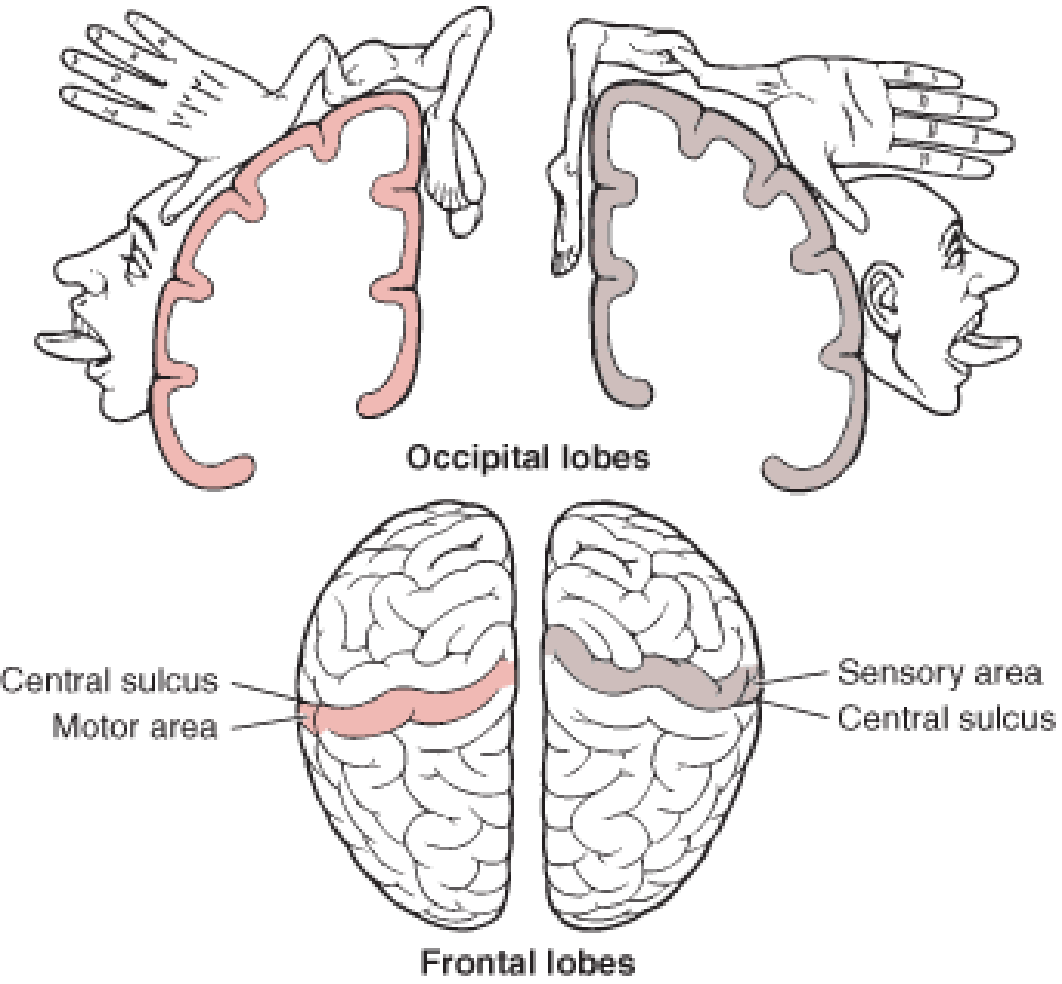
- **“NEVER GIVE TO THE MIND MORE THAN YOU GIVE TO THE HAND”**
  – Maria Montessori
- Hand & mouth are structurally close in the brain, influencing sensory motor experience
- Interdependence of sensory, muscular strength, coordination, skill acquisition and mental development

HMM…
Hand, Mouth and the Mind

- Reflexive to volitional
- Experiences: sensory, weight bearing, weight shifting, visual, and movement lead to whole brain learning
- Oral exploration, coordination of suck, swallow and breathing lead to self regulation and sensory motor development.

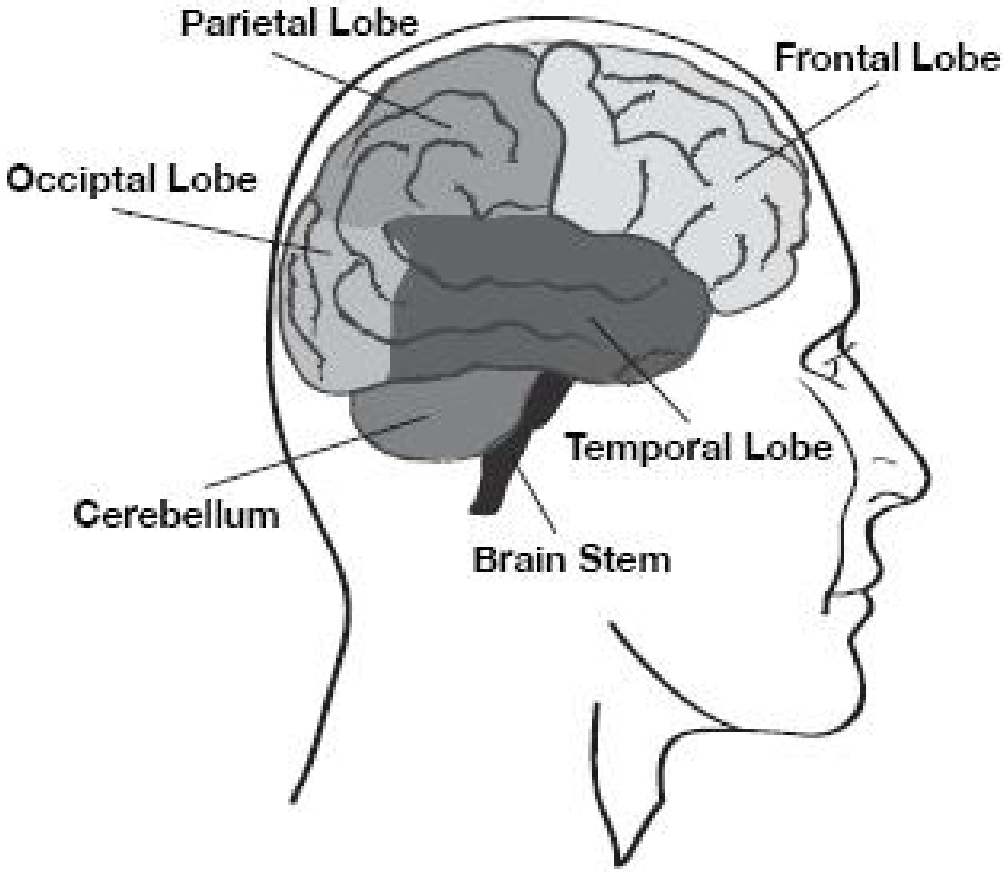
ORAL MOTOR/SELF REGULATION STRATEGIES

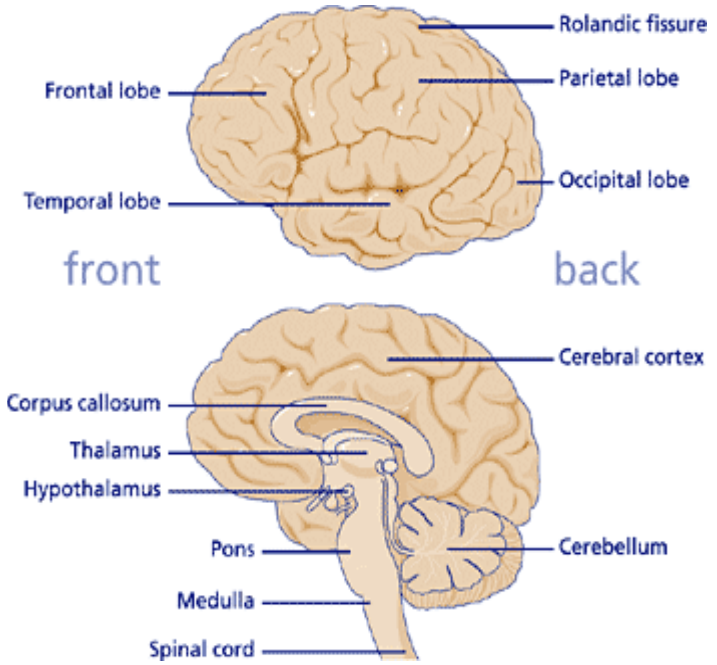
- Suck, swallow breathe coordination-increases self regulation, calm and focused
- Chewing-proprioceptive increases focus, attention and body awareness in space
- FOODS:
- Sour-alertness
- Crunching-focus


Occipital lobes
Central sulcus
Motor area
Sensory area
Central sulcus
Frontal lobes

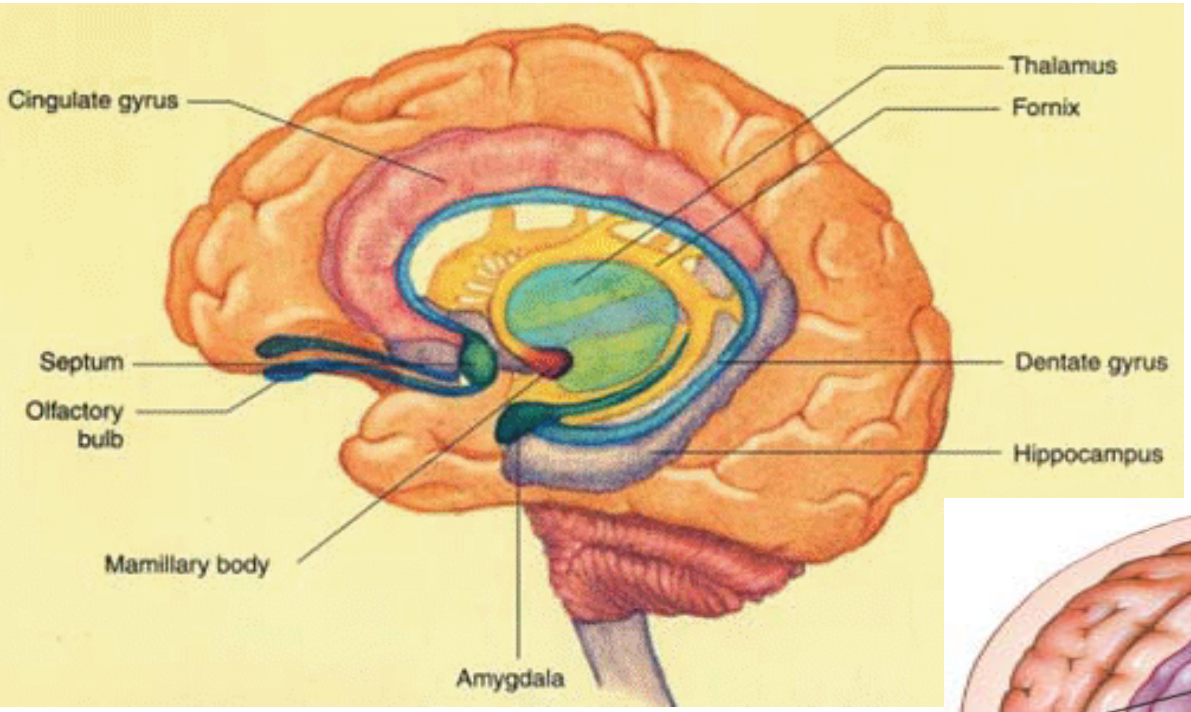
ORALMOTOR/SELF REGULATION RESOURCES

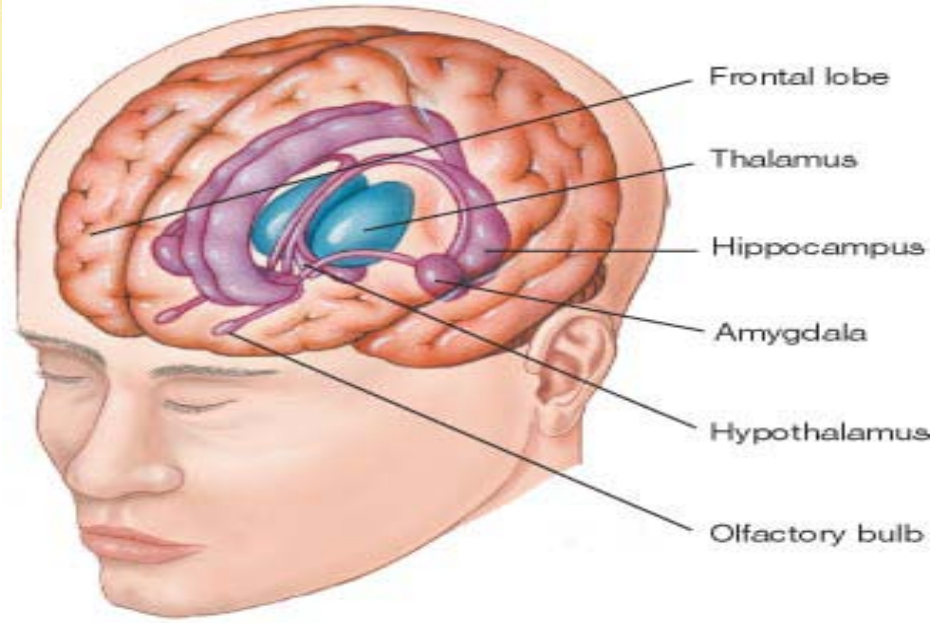
- *Out of the Mouths of Babes, parent booklet.*
  - Patricia Oetter, OTR; Feileen W. Richter, OTR; Sheila M. Frick OT; Ron Frick
- Website www.PdPro.com


Parietal Lobe
Frontal Lobe
Occiptal Lobe
Temporal Lobe
Cerebellum
Brain Stem


Rolandic fissure
Frontal lobe
Parietal lobe
Occipital lobe
Temporal lobe
front
back
Cerebral cortex
Corpus callosum
Thalamus
Hypothalamus
Pons
Cerebellum
Medulla
Spinal cord

LIMBIC SYSTEM





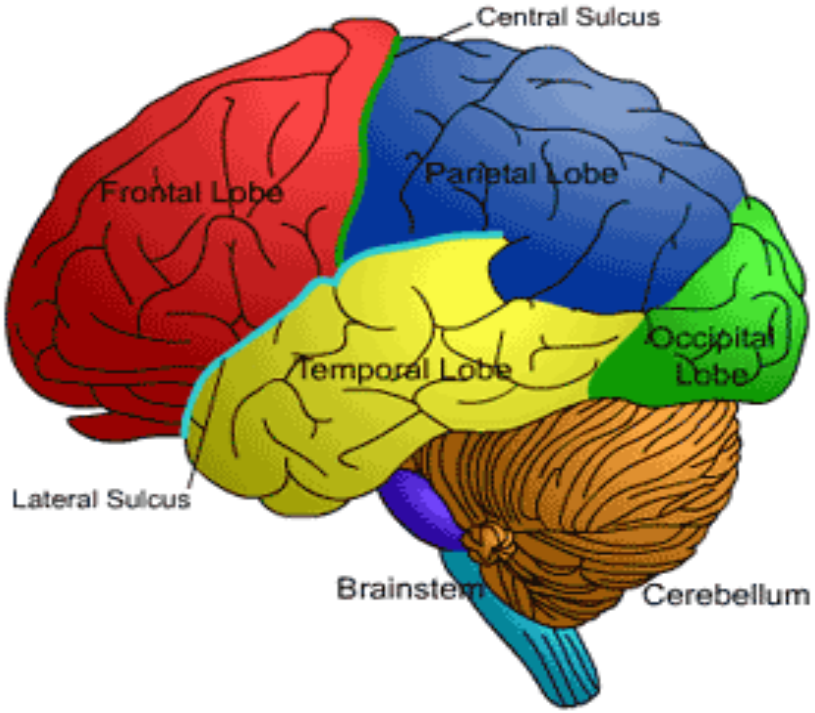
BRAIN STRUCTURES AND FUNCTIONS

- Cerebellum-”little brain” regulates and coordinates movement posture and balance.
- Brain stem-responsible for basic vital life functions: breathing, heartbeat, blood pressure. It is reflexive and for survival ”Fight or Flight” (negative stress hormones)
- Mid brain is part of the brain stem with visual, eye movement, hearing, and body movement areas from the cerebral cortex through the Brain Stem. Important for voluntary motor function.
- Corpus Callosum-bundle of axons which connects the two hemispheres.

BRAIN STRUCTURES AND FUNCTIONS (cont.)

- Limbic System-emotional area of brain influences motivation and emotional association with memory. Contains additional structures like the olfactory bulb, thalamus, hypothalamus, amygdala, and hippocampus buried within the cerebrum.
- Organization-involves the whole brain from the lower brain centers toward the cortex.
- It is a higher brain function involving communication initiated by neuronal growth and synapsing
- It is dependant on repetitive experiences and positive stress to advance, strengthen and transform
- The need to organize creates meaning of self in relationship to others and the world

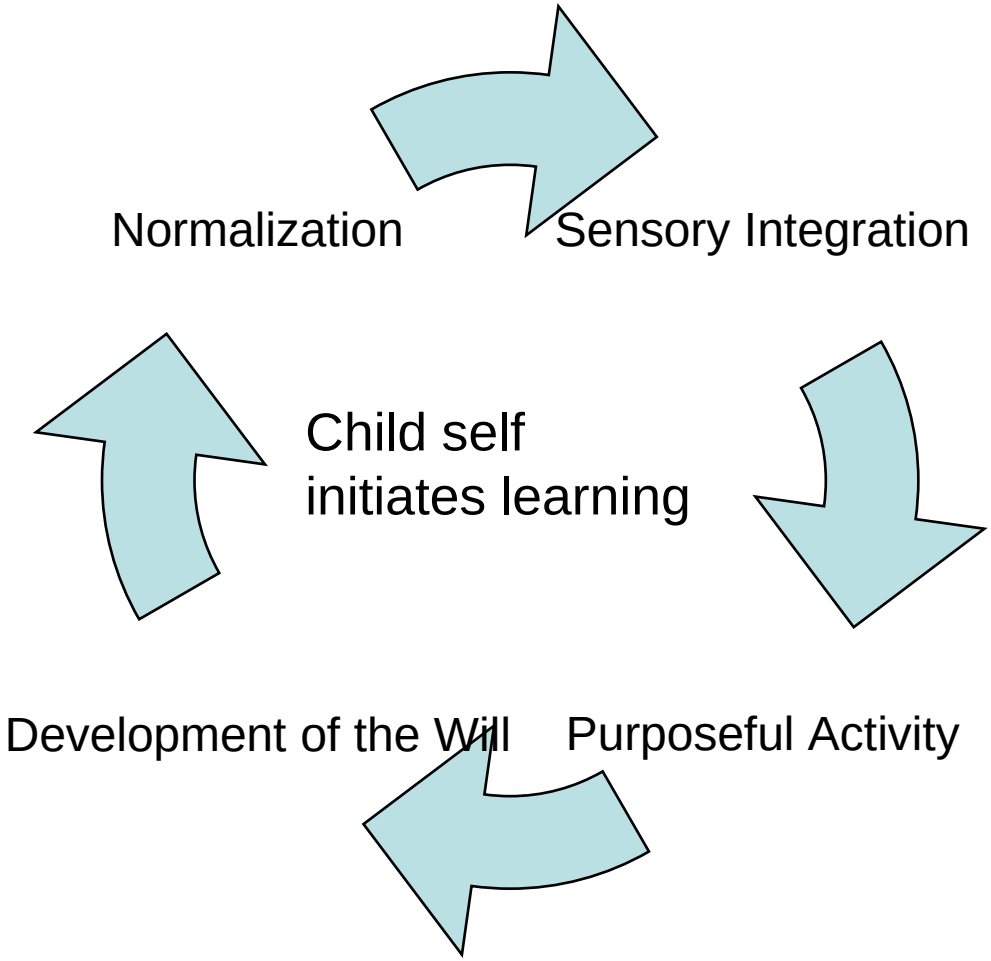
Figure AB-11: Lobes of the Brain



BRAIN STRUCTURES AND FUNCTIONS (cont.)

- Cerebral cortex is divided into 4 lobes:
- Frontal Lobe - associated with reasoning, planning, parts of speech, movement, emotions, and problem solving
- Parietal Lobe - associated with movement, orientation, recognition, perception of stimuli
- Temporal Lobes (right and left) - Associated with perception and recognition of auditory stimuli, memory, and speech
- Occipital Lobe-the visual processing center, containing most of the anatomical region of the visual cortex. The occipital lobes are the smallest of the four lobes.

THE SENSORY INTEGRATED CHILD IN THE MONTESSORI CLASSROOM



- Sustained concentration of the child is the goal of the Montessori teacher.
- Normalization is the state of a content satisfied child that has attained a higher level of peaceful being
- It is the holistic development of a child to become a citizen of the world
- Development of the Will leads to normalization
- Sensory Integration occurs in the child leading to purposeful activity which leads to development of the will leading to normalization and a deepening of sensory integration
- When a child is not engaging in purposeful activity HOW DO WE RESPOND ?

SENSORY PROCESSING DISORDER(SPD)

- Sensory Integration refers to a neurological process at the cellular level.
- 1 in 20 children have a sensory processing disorder.
- Sensory processing disorder/dysfunction refers to the observed behaviors distinguishing it from theory and treatment.

SPD OBSERVATIONS

- SENSORY MODULATION DISORDER(SMD)
- Sensory input leads to behaviors that match the nature and intensity received by the nervous system.
- SUBTYPES:
- Sensory over responsivity/hyper-responsiveness
- Sensory under responsivity or hypo-responsiveness
- Sensory seeking

SENSORY DISCRIMINATION DISORDER(SDD)

INVOLVES:

- Tactile
- Auditory
- 5 senses (visual, auditory, touch taste, smell)
- Child needs extra time for handling different foods, textures,
- Difficulty processing what is heard

BEHAVIORS:

- Difficulty following directions
- Aversion to puzzles and visual games. Easily frustrated when unable to differentiate visual or auditory signals
- Needs directions repeated; needs more time.

SENSORY BASED MOTOR DISORDER (SBMD)

A SECOND CLASSIC PATTERN OF SPD

- Based on impaired proprioceptive and vestibular systems
- Trouble with stabilizing, moving, or performing movement sequences.

2 SUBTYPES:

1.DYPRAXIA (ICD.9 code 781.3)

- Difficulty w/movements for Gross Motor, Fine Motor and or Oral motor skills

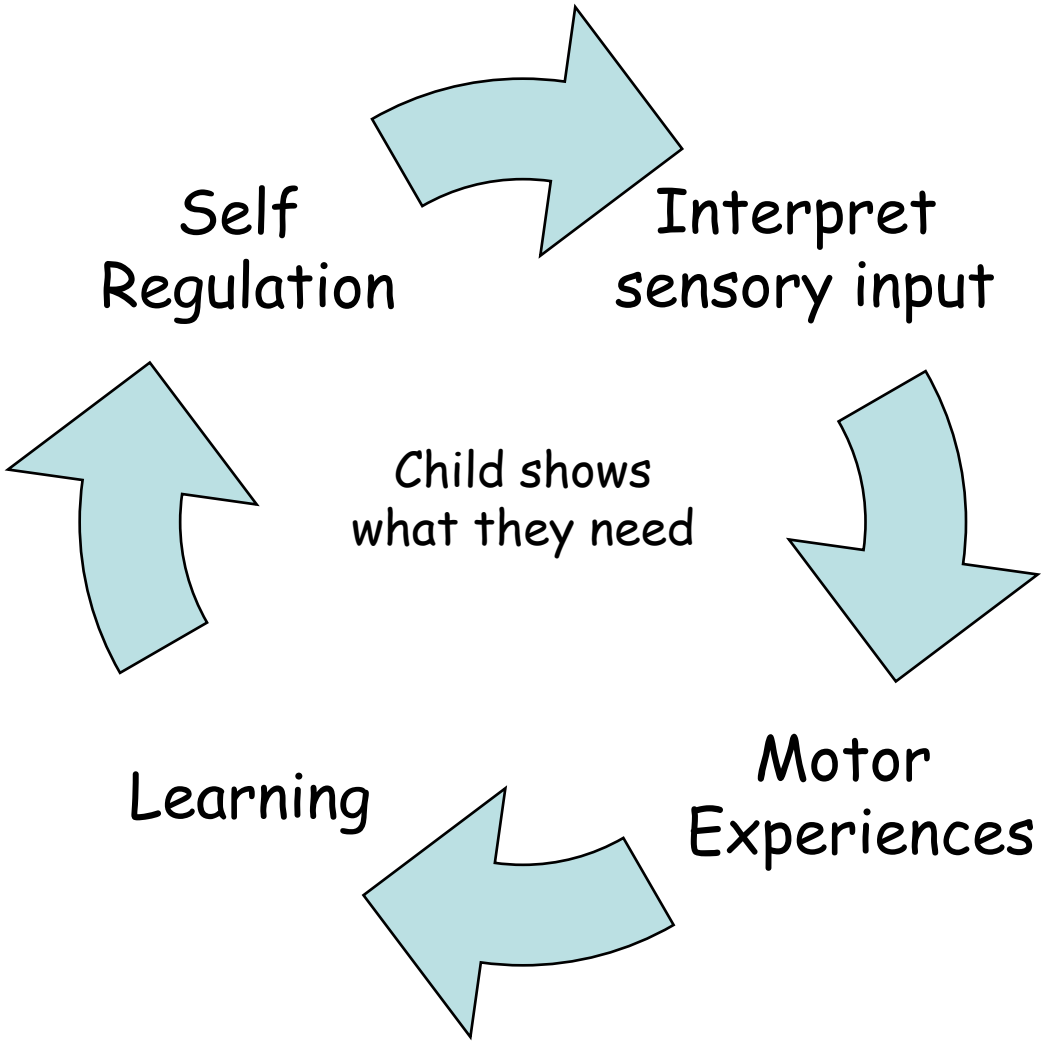
SENSORY BASED MOTOR DISORDER (SBMD) cont.

2nd SUBTYPE cont.

2.POSTURAL DISORDER

- Difficulty maintaining control to meet the demands of a given task-related to poor/low muscle tone and decreased postural and proximal (shoulders and hips strength.

SENSORY INTEGRATION IN THE CLASSROOM



SI IN THE CLASSROOM (cont.)

- All behavior is communication indicating the child's needs providing direction for adults to interpret and influence.
- All children are at risk, demanding careful observation and inquiry by parents, teachers and others.
- OT's, other professionals and parents working with children can contribute to observation, dialogue and implementation of strategies.

SENSORY INTEGRATION IS ORGANIZED ACTIVITIES TO INFLUENCE BRAIN BASED SENSORY-MOTOR AREAS

- SI is based on the work of A. Jean Ayres PhD OTR
- Assessment: OBSERVATION AND CHILD DIRECTED
- Vestibular - inner ear; initiated by head movement
- Proprioceptive - joints, initiated by heavy work load activities
- Tactile - skin; initiated by touch and texture
- Motor Planning - ability to access organized purposeful activity (like blueprints) to execute tasks of a progressively complex nature
- Integration is the ability of the child to initiate and engage meaningfully with their environment; developing self esteem autonomy and social relationships that lead them to adulthood.

DOORS OF PERCEPTION
SI IN THE CLASSROOM

- SI deepens a child's experience and success with learning and participation in life. SI facilitates whole brain learning.
- Improves energy, focus and self regulation of adults who participate with the students.

VESTIBULAR

- Movement - variety of positions
- Swinging
- Scooter boards
- Rolling
- Household chores
- Balance board
- Pogo Sticks
- Trampoline
- Jump Rope
- Rocking Chair

PROPRIOCEPTIVE

- Heavy work load activities
- Pushing
- Pulling
- Tug O War
- Wall pushes
- Household chores
- Monkey Bars (arms extended & knees toward chest)
- Farm tasks
- Carpentry / tools
- Cooking

TACTILE

- A variety of textures in objects
- Hugs
- Folding fabrics of different texture
- Food textures to taste or mix with clean hands
- Playdoh
- Tracing letters/numbers on their backs as a guessing game
- Household chores

MOTOR PLANNING

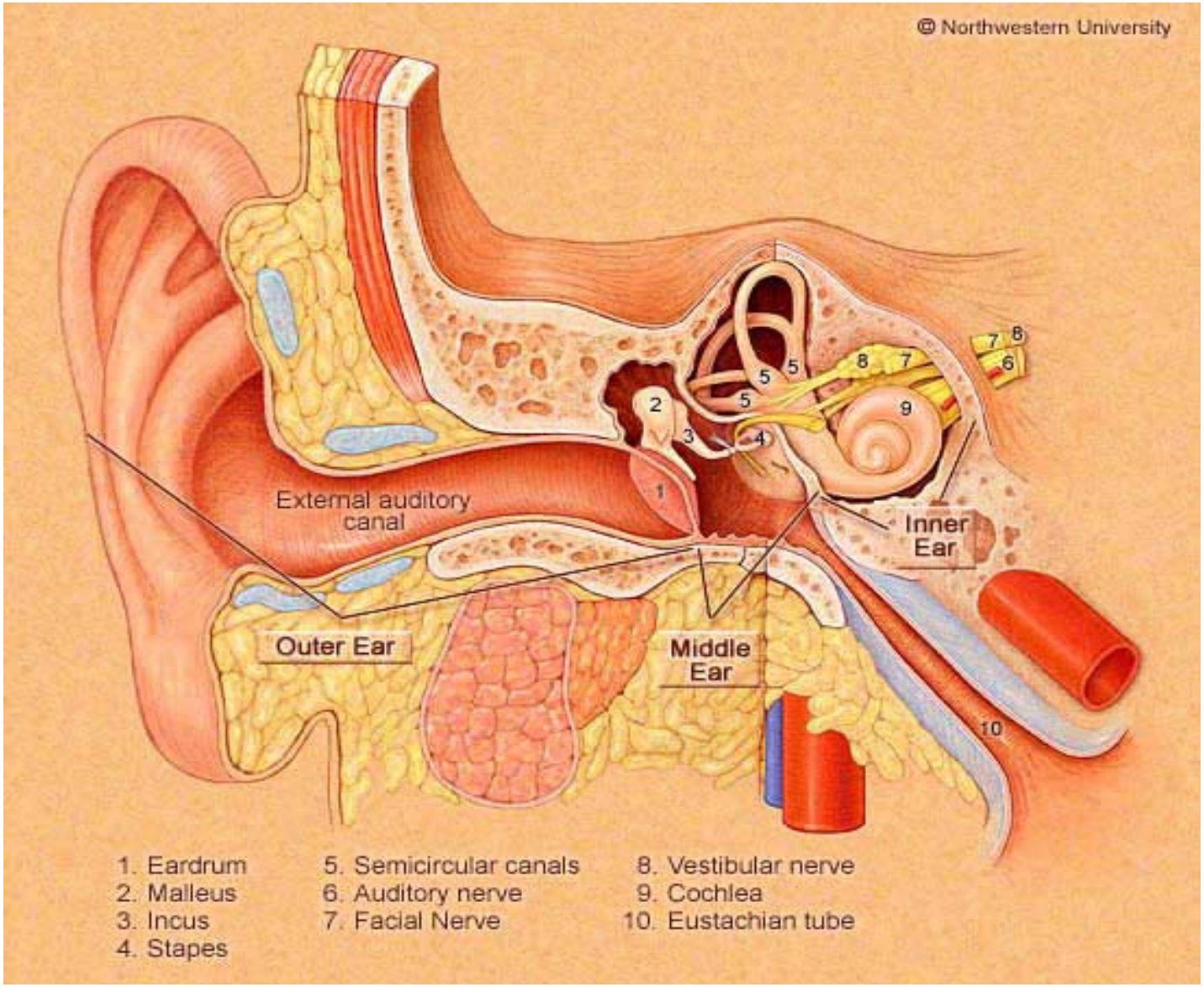
- Obstacle courses
- Tasks with minimal to no directions from fine motor to gross motor
- Constructing models from designs or from imagination
- Taking turns creating and engaging with peer developed obstacle courses or construction.
- Household chores

SI RESOURCES

- *Sensory Integration and the Child*
  - A. Jean Ayres, 1979;Western Psychological Services; 800-648-8857.
- *Sensational Kids*
  - Lucy Jane Miller,PhD,OTR,2006,GP Putnam's Sons
- *The Out of Sinc Child*
  - Carol Stock Kranowitz MA, 1998; Berkley Publishing Group
- *The Out of Sinc Child Has Fun*
  - Carol Stock Kranowitz MA
- Sensory Secrets – Catherine Chemin Schneider
- The Sensory Sensitive Child – K. Smith & K. Gouze (Ph.D.)
- Raising A Sensory Smart Child – L. Biel and N. Peske
- www.sensory integration.com
- www.sensory integration.org

AUDITORY

- Auditory processing difficulties versus disorder
- Toxic noise environment
- Allergies/Food sensitivities
- Ear infections


© Northwestern University
External auditory canal
Outer Ear
Middle Ear
Inner Ear
1. Eardrum
2. Malleus
3. Incus
4. Stapes
5. Semicircular canals
6. Auditory nerve
7. Facial Nerve
8. Vestibular nerve
9. Cochlea
10. Eustachian tube

TLP The Listening Program

- Based on the work of Dr. Alfred Tomatis, France
- TLP developed by Alex Doman and staff from Advanced Brain Technologies (ABT)
- Intensive 8 CD’s (Classic) or 10 CD’s (Level One) week program on closed or open air head sets
- Schedule is 5 days on (15-30 min.) and 2 days off
- Cost approximately $600.00; can be home or school based
- Must be followed by a TLP trained practitioner

TLP RESOURCES

- *The Conscious Ear*
  - Alfred Tomatis MD
- *The Power Of Sound*
  - Joshua Leeds
- *When Listening Comes Alive*
  - Paul Maudaule
- www.advancedbrain.com

WHOLE BRAIN LEARNING

- Sensory-Motor
- 5 senses:
  - Touch, Visual, Auditory, Taste, Smell
- Tactile
- Vestibular
- Proprioceptive
- Right/Left hemisphere communication
- Hemisphere dominance

WHOLE BRAIN LEARNING

- Visual, head orientation and midline
- Crossing midline
- Upper body strength + fine motor development
- Balance reactions
- Reciprocal creeping
- Walking

BRAIN GYM

- Developed by Paul E. Dennison PhD and Gail E. Dennison in1970’s
- Paul is a pioneer in Applied Brain Research with background in curriculum development and experimental psychology
- Series of 26 simple movement based activities to enhance whole brain learning

BRAIN GYM (cont.)

- PACE
  - gets the individual ready for learning
  - is a prerequisite to the 26 activities
- **E**nergy= drinking water
- **C**lear=Brain Buttons
- **A**ctive=cross crawls
- **P**ositive=Hook Ups

Cross Crawl and Lazy 8

BRAIN GYM RESOURCES

- *Hands On How to use Brain Gym in the Classroom*
  - Isabel Cohen and Marcelle Goldsmith
- Smart Moves: Why Learning Is not all in your Head
- Carla Hannaford PhD
- Brain Gym Teachers Manual
- www.eduk.org
- www.braingym.org
- www.braingym.com

BAL-A-VIS-X

- BAL = balance
- A = auditory
- VIS = visual
- X = exercise (also think crossing the midline)

BAL-A-VIS-X (cont.)

- Developed by Bill Hubert 30 year teacher from Wichita Kansas school system
- Series of progressive exercises using bean bags, racquet balls, and balance board
- Exercises produce multiple midline crossings using the eyes, and upper extremities to facilitate whole brain learning
- Fun and challenging exercises with components of rhythm, timing, focus, & balance for whole brain activation.

BAL-A-VIS-X RESOURCES

- WWW.BAL-A-VIS-X.COM
- Link to PRODUCTS which will list books, videos, sky bounce balls and Brain Buddy board (Balance board)


Thank You