SENSORY INTEGRATION & AVAILABILITY FOR LEARNING

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NEW YORK DEAF-BLIND COLLABORATIVE

MAJOR SENSES

- Hearing
- Vision
- Taste
- Touch
- Smell

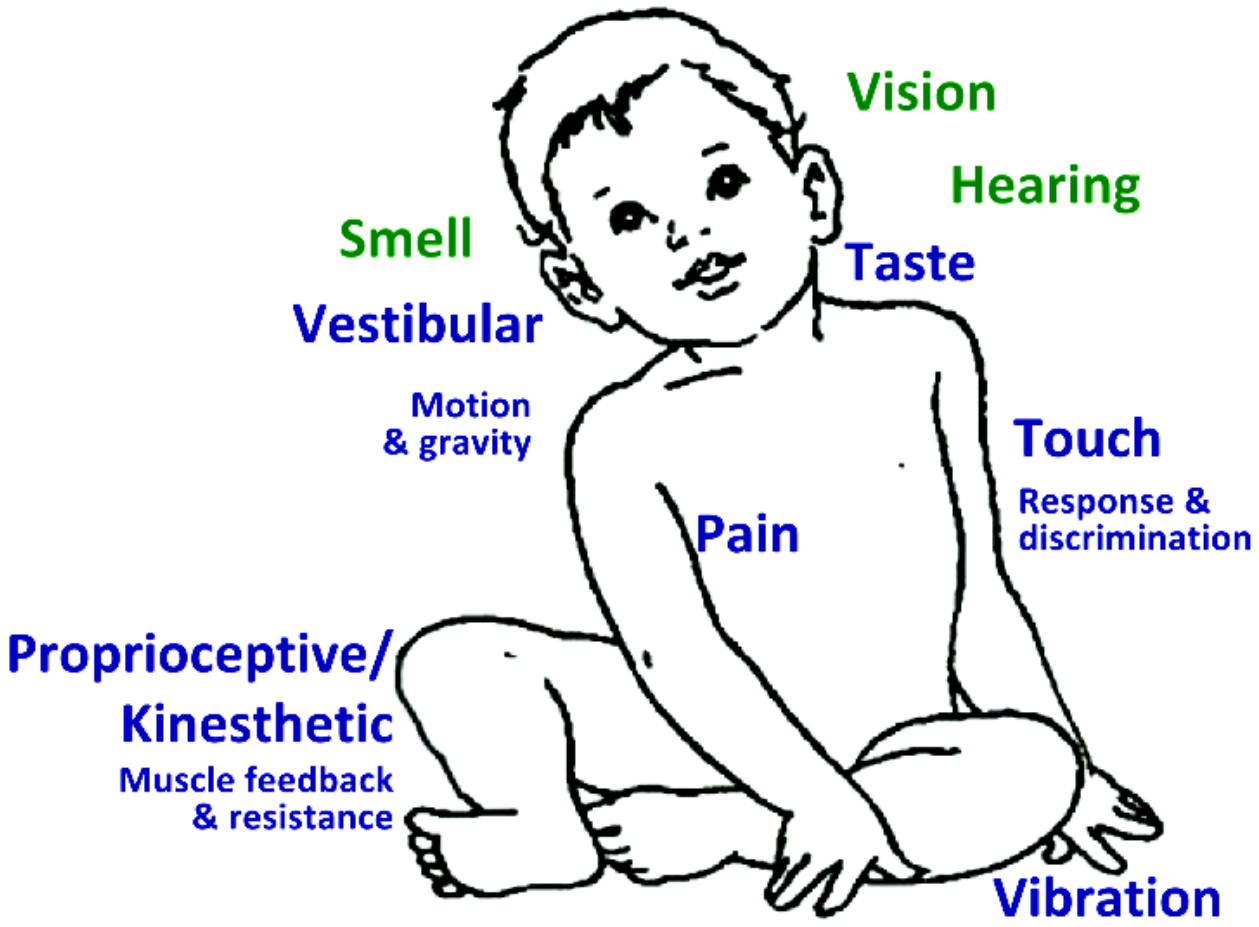
MAJOR SENSES

- What other senses do we have and rely on for functioning?

- Interoceptive senses, including:
  - Balance – the sense of the body's alignment
  - The organic sense – the sense of internal condition, such as hunger or thirst
  - Proprioception – the brain's knowledge of relative positions of body parts
  - Vestibular – balance & spatial orientation

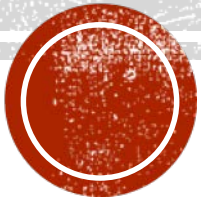
- Hearing
- Vision
- Taste
- Touch
- Smell

Distance Senses



Near Senses

WHAT IS PROPRIOCEPTION?



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Proprioception (or kinesthesia) is the sense though which we perceive the position and movement of our body, including our sense of equilibrium and balance, senses that depend on the notion of force (Jones, 2000)

https://www.sciencedirect.com/topics/neuroscience/proprioception

PROPRIOCEPTION

- Where does proprioception rest?

- Why is this sense important?
  - Activity
  - Finger/nose touch
  - One leg stand

SENSORY INTEGRATION

- Our brain and central nervous system organize information gathered from all of our senses for easy use.

- For most people sensory integration is...
  - automatic
  - effortless
  - unnoticed

- For others, this process is unreliable and inefficient.

- The world can seem scary and confusing and navigating the events and environments of daily life can be exhausting.

-Pat Amos, TASH Conference, December 2012

SENSORY PROFILE

- **Hypersensitivity or Hyposensivity:** heightened or diminished response to sounds, sights, touch, smell, taste, texture.
- Difficulty attending to simultaneously presented information and will select one narrow aspect of information--"stimulus over-selectivity"
- Seeking or avoiding certain sensory input
- Repeated behaviors-- "What is the purpose or function?"
- Routines and rigidity
- Sometimes "system shutdowns" occur when sensory stimulus is too overwhelming (D. Williams, 1996)

WHAT IS THE LEADING CAUSE OF DEAFBLINDNESS?

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Preterm Infants

Surviving as early as 21-25 weeks gestation

A baby fewer than 37 weeks gestation is considered preterm

Before 25 weeks is extremely preterm

Enter the world making a statement

What sensory systems are being impacted here?

MEDICAL INTERVENTION & TRAUMA

- What impact does medical intervention have on infants & toddlers?

- Does medical trauma in infants & toddlers have a lingering effect?

  - These may include bonding with parents, as well as foundational development in the areas of language, mobility, physical and social skills and managing emotions.

-Better Health Journal

"..psychiatric outcomes in very low birthweight infants…at age 12 …found a significantly greater risk of attention-deficit/ hyperactivity disorder (ADHD), generalized anxiety, and symptoms of depression. In all, 28% displayed some type of psychiatric disorder compared to nine percent of their peers."

https://www.nature.com/articles/7211010

CHARGE SYNDROME

C -

H -

A -

R -

G -

E -

-Pat Amos, TASH Conference, December 2012

CHARGE SYNDROME

C – Coloboma, Cranial Nerves

H – Heart anomalies

A – Atresia of the Chonae

R – Retardation (body), Retina

G – Genitalia, Gastrointestinal

E – Ears, Endocrine System

-Pat Amos, TASH Conference, December 2012

"Most children with CHARGE have normal brain-imaging studies and, therefore, must be presumed to have normal brain function until proven otherwise. Before a child with CHARGE can be said to have anything other than normal intelligence, that child must have been in settings with appropriate adaptations that address the multiple sensory issues for a number of years."

-Sandra Davenport & Margaret Hefner, 2011

Children with CHARGE syndrome are truly "multi-sensory impaired", having difficulties not only with vision and hearing but also with the senses that perceive:

- balance
- touch
- temperature
- pain
- pressure
- smell, as well as problems with
- breathing and swallowing
- eating and drinking
- digestion
- temperature control

- David Brown *American Journal of Medical Genetics*, 2005

The Box of DeafBlindness

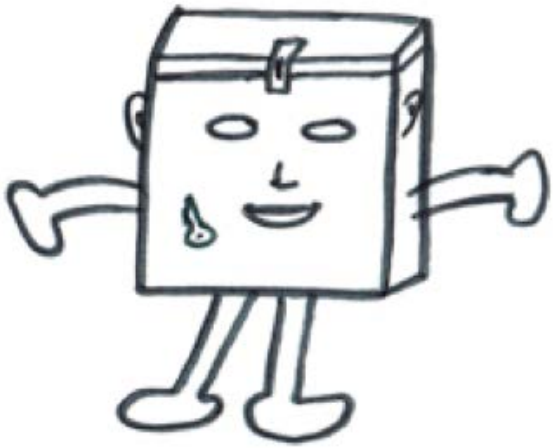
- What goes into the child's box of DB/multiple disabilities?
- Understanding etiology and history
- What are the child's residual senses (windows)?
- What pulls the child out (the key)?
- What makes the child retreat?

https://www.youtube.com/watch?v=LTUgmCjb4s4

-Kimberly Lauger, 2012, from NCDB OHOA Intervener Module 2

WHAT DO YOU HAVE TO OPEN THE BOX?

- Sensory access
- Relationships
  - Attachment
  - Establishing rapport
  - Developing security/safety
- Communication
  - Respectful communication techniques
  - Process/wait time
- Environmental supports
  - How can the environment be modified or altered to support sensory input?



TACTILE DEFENSIVENESS

- What is tactile defensiveness?
- What does tactile defensiveness stem from?
- What are we doing to reduce a defensive response?
- What are we doing to INCREASE a response?
  - Jimmy Fallon

MANAGING ANXIETY

- What does Jimmy Fallon do to relieve his anxiety?
  - Flails his arms
  - Yells
  - Expresses outward dislike for the activity
  - Retreats
  - Throws himself on the floor
  - Makes "weird" facial expressions
  - Tongue thrusts

MANAGING ANXIETY

- How could we have helped reduce Jimmy's level of anxiety?
  - Give him information about the activity, before starting the activity
  - Give him key words that assists in foreshadowing
    - Animal, living animal, type of animal, temperature of animal, texture of animal, movement of animal
  - Tell him what is expected from him in the activity
  - Tell him the purpose of the activity
  - Participate in the activity WITH him

Multi-Modal,
Constant Contact,
Availability,
Respectful Touch,
Wait Time,
Assistive
Technology,
Sensory
Integration

Parker with Intervener, Cindi


Behaviors
Coping Mechanisms
Tendencies

Simply put, deafblindness and ASD may look similar because they both significantly impact the way an individual accesses and processes the sensory information in their environment.

Belote & Maier (2014)

Types of DeafBlindness

CONGENITALLY DEAF – ADVENTITIOUSLY BLIND

Individuals who are born with a significant hearing loss and acquire a vision loss later in life (progressive loss).

-*These individuals are often involved in the Deaf community and use sign language as their primary mode of communication.*

CONGENITALLY BLIND – ADVENTITIOUSLY DEAF

Individuals who are born with significant visual impairment or are blind and acquire deafness later in life.

-*These individuals grow up and socialize in the hearing community and can be Braille readers, experienced cane users and have guide dogs.*

ADVENTITIOUSLY DEAF-BLIND

An individual who is born hearing and sighted but loses both senses (either in part or totally) for various reasons.

-*Typically associated to trauma, ototoxic causes, neurologic disorders, etc. These individuals are usually oral/aural and have associated with the hearing community.*

CONGENITALLY DEAF-BLIND

Individuals who were born with concomitant vision and hearing loss.

-*Congenital deaf-blindness is typically associated with perinatal trauma, various syndromes (CHARGE Syndrome) or unknown causes.*

-*The level and type of the communication for these individuals will vary significantly.*

CRITICAL FACTORS

- Age of onset of vision and hearing loss
- Congenital or acquired
- Degree and type of vision and hearing loss
- Stability of each sensory loss
- Progressive or stable
- Presence of additional disabilities
- Interventions: Access, environments and routines, communication partners

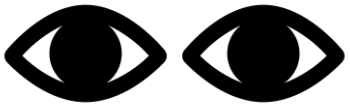
Deaf-blindness is “a unique, low-incidence disability, and students require a team of highly trained professionals and paraprofessionals to ensure that they receive the same access to an education as every other student.”

Joe McNulty page xii Deaf-Blind Guidelines

INCIDENCE OF VISION AND HEARING LOSS

- Over 35% of children with hearing loss have additional disabilities
- Between 40 and 70% of children with visual impairments have additional disabilities
- Children with severe and multiple disabilities have the highest incidence rate of vision and hearing impairment

Chen, D. (2000). Identifying vision and hearing problems in infants with disabilities. *IDA News,27*(3), 1-3.



“The child who is deafblind does not have enough vision to compensate for his lack of hearing or enough hearing to compensate for his lack of vision.”

- *John McInnes*

LEADING CAUSES OF DEAF-BLINDNESS

A. Hereditary Syndromes and Disorders

- CHARGE Syndrome
- Usher Syndrome (I,II,III)
- Down syndrome (Trisomy 21 syndrome)

B. Prenatal/Congenital Complications

- Cytomegalo-virus (CMV)
- Microcephaly
- Hydrocephaly
- Congenital Rubella

C. Post Natal/Non-Congenital

- Asphyxia
- Meningitis
- Severe Head Injury
- Encephalitis
- Complication of Prematurity
- No Determination of Etiology
- Cortical Visual Impairment

IMPACT OF DEAF-BLINDNESS/MULTIPLE DISABILITIES

- Sensory deficits, physical challenges
- Processing delays
- Behaviors resulting from stress
- Unconventional forms of communication
- Lack of social experiences
- Lack of exposure to the world beyond reach

Requires responsive adults to support access and exposure to meaningful experiences, communication, concept development and social development

IMPACTED AREAS OF DEVELOPMENT

- Motor
- Communication/Language
- Attachment
- Cognitive / Concept
- Social
- Emotional
- Self-determination
- Independent Living Skills

APPENDIX 2A

Comparison of Development Among Children Who Are Sighted and Typically Developing, Blind or Visually Impaired, and Blind or Visually Impaired with an Autism Spectrum Disorder

Typical Development	Blind or Visually Impaired	ASDVI
Communication Behaviors		
Makes cooing and gurgling sounds (3–6 months). Copies speech sounds (6–12 months).	The process of acquiring speech and language appears to be the same for visually impaired children as it is for typical children, but slower physical development, a more restricted range of experiences, and the lack of visual stimulation may cause a child's language development to be slower (Scholl, 1986).	Language develops slowly or not at all. Development is frequently "splintered"; language development may or may not be consistent with typical developmental norms or sequences. May show no interest in communicating.
Uses much jargon (unintelligible speech) with emotional content. Is able to follow simple commands (18 months). Has a vocabulary of 150–300 words (24 months).	Speech is echolalic but for a short duration. Language may be delayed if experiences are limited, but is not distorted. Responds appropriately to language requests; enjoy communication "give and take."	Exhibits concrete understanding and use of language; has difficulty with generalizations. Echolalic; often has difficulty breaking this pattern. The echolalia often leads to patterns of verbal perseveration with idiosyncratic meanings. Has difficulty initiating and engaging in meaningful conversations. The range of "topics of interest" is narrow. Has difficulty maintaining a topic chosen by others; exhibits limited or no conversational reciprocity.

Source: Adapted with permission from M. Gense and D. J. Gense, "Identifying Autism in Children with Blindness and Visual Impairments," *RE:view, 26* (Summer 1994) pp. 55–62. Copyright © 1994, Heldref Publications, Washington, DC.

Most common *misdiagnoses* for visual impairment and additional disabilities:

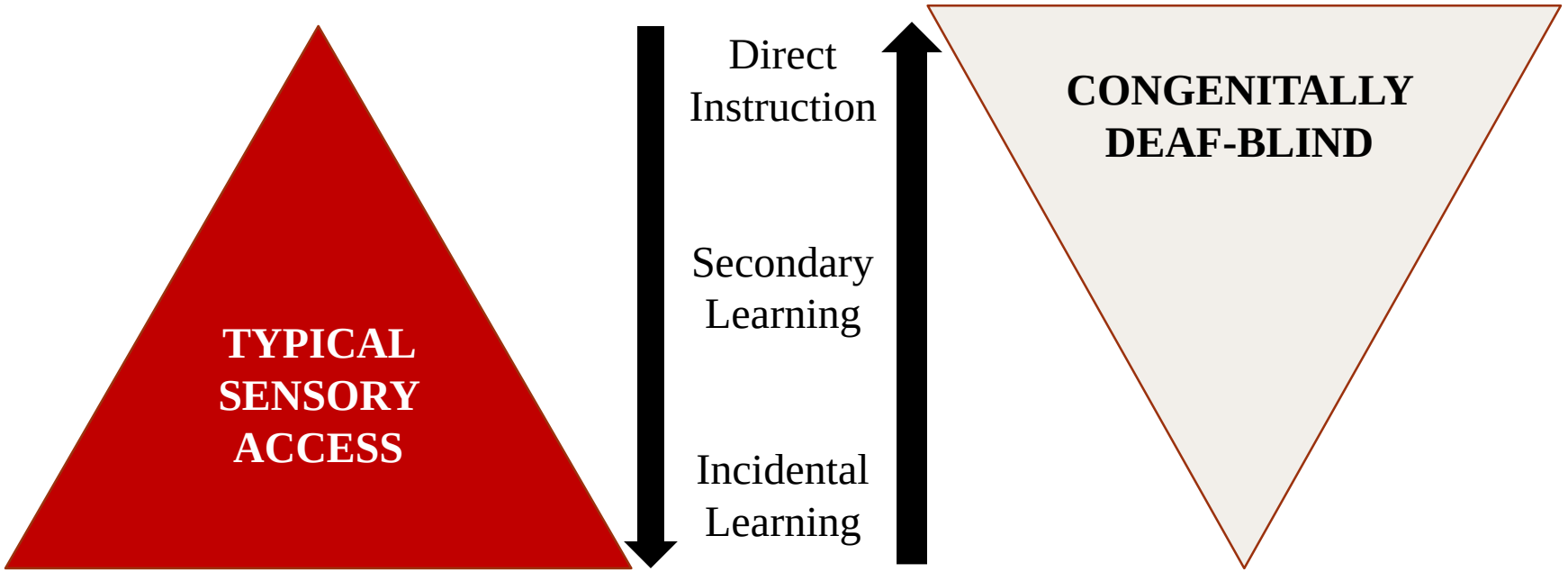
- ASD
- ADD/ADHD
- Learning Disabilities

Complicated
infants
grow into
active learners
with the right
supports &
interventions

Instruction – Direct vs. Indirect

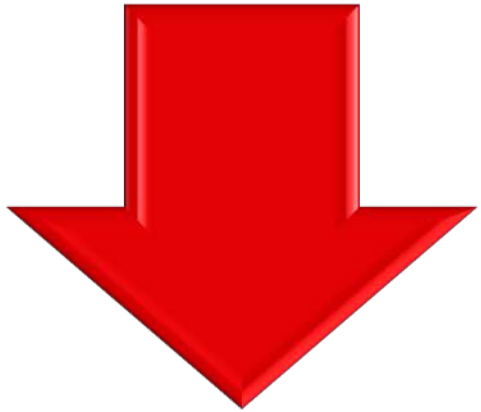
Children with VI/DB:

- Lack access to incidental learning
- Require facilitated experiences to support development



Bruce, 2005; van Dijk, 1999; Miles & Riggio, 1999; Alsop, 2010

Kids with multiple disabilities are significantly under-diagnosed with sensory loss but are at extreme risk.



Mild to moderate levels of hearing & vision loss are exacerbated when combined together.

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Eligibility Chart: Combinations of Vision and Hearing Loss

Degree of Vision Loss

Degree of Hearing Loss	Normal 20/20	Acuity 20/70 – 20/200	Peripheral Fields <20 degrees	Acuity 20/200 – 20/400	Acuity 20/400 – 20/1000	Light Perception Only/No Vision
0 – 25 dB Normal						
26 – 40 dB Mild						
41 – 55 dB Moderate						
56 – 70 dB Moderate to Severe						
71 – 90 dB Severe						
> 91 dB Profound						

At Risk - Consult with NYDBC

Children/young adults with dual sensory loss as a result of congenital infections, hereditary syndromes and post-natal complications (see NYDBC Child Count Form) are at risk for compromised access to learning.

Eligible for Services – Refer to NYDBC

Children/young adults with more severe hearing & vision loss will experience difficulty accessing spoken language and the visual world around them. Accommodations must be made in order to provide adequate access to learning.

Cortical Visual Impairment:	• Phase III	• Phase II	• Phase I

At Risk: **Consult with NYDBC**

Eligible for Services: **Refer to NYDBC**

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