DISTINGUISHING DEVELOPMENTAL DIFFERENCES AND DELAYS IN CHILDREN WITH VISUAL IMPAIRMENTS
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OVERVIEW
• Define visual impairment and terms
• Incidence and etiology
• Impact on development and learning-developmental differences
• Assessment and Intervention (brief)
• Distinguishing ASD from developmental differences in children with Visual Impairments
• Understand classroom interventions for social skills in children with Visual Impairments (brief)

VISUAL IMPAIRMENT TERMS
• Visual Impairment: IDEA: “an impairment in vision that, even with correction, adversely affects a child’s educational performance.”
• Additional terms:
  • Partially sighted: outdated, used in the schools
  • Vision Difficulty: refers only to children who have serious difficulty seeing even when wearing glasses and those who are blind
  • Low vision: “Difficulty accomplishing visual tasks, even with corrective lenses...can enhance his or her ability to accomplish these tasks with the use of compensatory visual strategies, low vision or other devices, and environmental modifications (Corn & Koenigh, 1996, p.4 as cited in Gense & Gense, 2005, p.19)
3 CLASSIFICATIONS

- Federal-adult eligibility
  - Legally Blind: visual acuity of 20/200 or less or field of vision restricted to 20 degrees or less at widest

- Educational-function/impact on education
  - Low vision: students use their vision as their primary sensory channel
  - Functionally blind: can use limited vision for functional tasks, but need their tactile and auditory channels for learning
  - Totally blind: only light perception; use tactile and auditory for learning and functional tasks; Braille, raised line drawings, audio recordings; 10% of those with VI (90%)

- Cause
  - Congenital: born with it or develops shortly after birth; occurs before visual memory has been established
  - Adventitious: develops after having normal vision, result of a trauma, disease, or hereditary condition; may have visual memory.

INCIDENCE

- The National Dissemination Center for Children with Disabilities reports (2004 Fact Sheet)
  - Prevalence rate in children under age of 18:
    - Vision impairment 12.2 per 1,000 (1.2%)
    - Legal or total blindness occurs .06 per 1,000 (.006%)

- Data from 2015 Annual Report from the American Printing House for the Blind (APH)
  - 455,462 children with vision difficulty
  - 42,000 children with a severe vision impairment (unable to see words and letters in ordinary newsprint)
  - 61,700 children in educational settings who are legally blind
INCIDENCE

- IDEA data (2015-16):
  - 2,799 children (ages 3-5) with visual impairment
  - 24,944 children (ages 6-21) with visual impairment (eligibility category of Vision Impairment)
    - 389 students in Washington State

MULTIPLE DISABILITIES

- 60% of population of birth to three children have multiple disabilities, a visual impairment may be one of those (Chen, 2000).
- 70% of children with visual impairments have additional disability (Chen, 2000)
- Over 35% of children with hearing loss have an additional disability (Chen, 2000).

FIVE LEADING CAUSES OF VI IN CHILDREN

- Cortical Visual Impairment—neurological disorder
- Retinopathy of Prematurity—impacts immature blood vessels of retina
- Optic Nerve Hypoplasia—underdevelopment of optic nerve during pregnancy
- Albinism—inherited condition; absent or reduce pigment in eyes, skin, or hair. Melanin is essential for development of retina.
- Optic Nerve Atrophy—damage to the optic nerve
IMPACT ON DEVELOPMENT & LEARNING

- Three limitations:
  - Range and variety of experiences
    - Auditory: size, location, shape, and other characteristics of objects (not the same as visual information)
    - Tactile: size and shape, but limited to items explored by hand.
    - Abstract (sunset, rainbow)
  - Impact cognitive and language development
  - Ability to move about environment
  - Ability to control the environment and self in relation to it

SENSORY DEVELOPMENT

- Sound without visual has less meaning—need tactile, motor, and auditory interaction
- Sound does not motive as well as vision.
- Motivation for reach-making an enticing sound does not substitute for visual stimuli
  - Physical skill of reaching (by 5 months), but without vision as a motivator
  - Need sound—attach meaning to sound (9-12 months),
  - Reaching for objects based on sound alone—12 months
  - Environmental exploration is delayed

MOTOR DEVELOPMENT

- Most obvious area of delay
- Until reaching to a sound cue—will not move out into space—so fine and gross motor delays
- Ear-hand coordination—takes more experience; achieved later than hand-eye
- Crawling & walking delayed 6 months or more
- Posture control same as sighted; but poor posture possible due to lack of visual model
- Difficulty or reluctance to move around the environment encourages passive behaviors, i.e., self-stimulating
VIDEO OF EXPLORING AND LEARNING

Lily and Andi Rose

https://youtu.be/wjZthM-Nn4g?t=60

COGNITIVE DEVELOPMENT

- **Object permanence** - need to be reaching for objects based on sound cue alone first. Acquired nearly a year later than sighted children (typically around 8 months).
- **Causal relationships** - results cannot be seen, less motivation to action. Less understanding of ability to cause things to happen. Vision needed to observe “what happens when…”
- **Constancy** - concepts of same and different require child to identify a variable. Need numerous experiences with similar objects.

DESCRIPTING AND EXPLORING THE WORLD

- Kendra and the plunger
  - Roof
  - Sports
  - Grocery Store
  - Telephone poles

Written by a father in a newsletter for the Texas School for the Blind and Visually Impaired - Fall 2011
VIDE O OF EXPL ORING

Colton
- http://www.wsdsonline.org/concepts-orientation-mobility/

Taylor
- https://www.youtube.com/watch?v=KaJ5FZGrNFQ

SELF-CONCEPT

- Less vision has, more likely to wait for stimuli-contributes to passivity and overdependence on others
- Need to have opportunities to act on environment to receive self-initiated feedback
- Need to learn that can achieve some degree of control over environment-vital in building confidence and positive self-image (critical for school and work success)

VIDEO OF LEARNING CONCEPTS

Angelica
- http://www.wsdsonline.org/concepts-orientation-mobility/

Rinney
- http://www.wsdsonline.org/concepts-orientation-mobility/
SELF-HELP SKILLS
- Many of self-help skills are learned by watching; thus are delayed
  - Eating-chewing, scooping, feeding: ≥ 2 years delay
  - Dressing
  - Grooming
  - Brushing teeth
- Toilet training delays
  - Fears of unknown
  - Need for more time for Orientation & Mobility

LANGUAGE DEVELOPMENT
- May jabber and imitate sooner, but show delay when combining words
- Early language is based on others' language and not on experience of world
- May store phrases and sentences in memory and repeat them out of context (echolalic and less meaningful)
- Experience is often limited due to less exploration due to fears of unknown, overprotective adults
- Personal pronouns
  - Requires development of self-concept (delayed)
  - Often use second or third pronoun or own name to refer to self
- Concepts may be incompletely developed or missed entirely.
  - Concrete experiences to develop meaningful concepts and language to describe and think about them.
  - Important to directly experience as much of their world as possible and direct instruction to make connections
- Conversations difficulty initiating, maintaining, and ending.
  - Inability to observe facial expressions and body language
  - Lack of experiences contribute
  - Area to target for skill development in early childhood

SOCIAL SKILLS
- Infant-caregiver bonding
  - Eye contact may not be made between caregiver and infant
  - Alternatives need to be developed-nuzzling, tickling, talking
- Many social gestures may not be learned because do not observe them
  - Waving
  - Head nodding “yes”, Head shaking “no,”
  - Facing speaker when in conversation
- Negative behaviors-nose picking, eye poking, thumb sucking, “finger flicking,” or rocking
  - Social feedback (visual) lacking
  - Behavioral intervention may be needed
PLAY
- Exploratory/sensory behaviors may persist
  - Mouthing, waving, shaking
- Functional & Imaginative-imitating what we observe
  - Not able to observe others’ actions
  - Cannot see what models (e.g., toy cars, dolls, miniature tools) mean.
- Experiences with real objects/tools first
  - Provides information on how work and function
  - Then develop ability to play with models of objects and tools

PROJECT PRISM
  - 5 year study, 202 children, nearly 60% with additional disabilities
  - Presence of other disabilities had more impact than degree of visual function
  - Development in children with visual acuities of 20/800 or worse was significantly different than those with 20/500 or better
  - Development of the children with 20/500 or better similar to sighted children if no other disabilities
    - Supports idea that children use available vision to enhance understanding of environment; helps learning

PROJECT PRISM
- Compared to typically developing children, 12 developmental milestones (i.e., reaching, transferring hand to hand, sitting, crawling) delayed in children with visual impairments
- 5 milestones related to expressive and receptive language-median age for acquisition was similar to sighted children
- Some developmental milestones achieved in different sequence
- Limitations
  - All children received services
  - Services varied in intensity, duration, and frequency
ASSESSMENT

- Functional Vision Evaluation and Learning Media Assessment—done in school by O&M instructor or Vision Impairment Teacher
- Oregon Project or “Growing Up”—Developmental scales oriented to visually impaired infants and young children
  - Oregon Project for Visually Impaired and Blind Preschool Children—640 behavioral statements organized into 8 developmental areas
- Standard developmental assessments are not normed on children with vision impairments (Bayley-III, Denver)
- Cognitive testing also not normed,
  - Format (verbal, nonverbal divided) is better.
  - Verbal Composite—estimate cognitive ability.
- Texas School for Blind and Visually Impaired (TSBVI) offers information on assessment

INTERVENTION SERVICES

- Intervention effective in minimizing delays
- Low vision specialist—certified in instructing children with low vision
- Orientation & Mobility Instructor—teaches skills for using residual vision and tactile and auditory to learn to move safely and efficiently in environment; sighted children learn without instruction.
  - Orientation—ability to perceive and understand one’s position and location in environment
  - Mobility—ability to move about within an environment
    - Use of push toys when learning to walk; training on use of cane not until 4-5 years old

EXPLORING AND LEARNING

Judah
- https://www.youtube.com/watch?v=oSzrc6XwwZ

Boon
- http://www.wsdsonline.org/concepts-orientation-mobility/
ASD ASSESSMENT MODIFICATIONS

Autism Diagnostic Observation Schedule (ADOS)
- Unusual Eye Contact and integration of gaze with other behavior-N/A
- Credit given, without integrating eye contact:
  - Pointing
  - Requesting
  - Showing
  - Initiation of Joint Attention
- Responsive Smile-if child smiled when examiner spoke in friendly manner
- Response to Name-if child paused and oriented toward the examiner
- Response to Joint Attention-responds to verbal by orienting or verbalizing as a way to identify object
- Unusual Sensory Interest-holding objects close, tactile exploration of objects-not considered

ASD ASSESSMENT MODIFICATIONS

- Autism Diagnostic Interview-Revised (ADI-R)-retrospective report of behaviors at 4 years old
  - Direct Gaze-N/A
  - Social Smiling-in response to others' friendly comments
  - Pointing-if pointed to show interest, eye contact not required

ASD ASSESSMENT TOOL

- The Visual Impairment and Social Communication Schedule (VISS)
  - Preschool children with VI
  - None of items are vision-dependent
  - All observation-based items
  - Compared to independently to Childhood Autism Rating Scale (CARS)-significant correlation
  - Sample items: (definitions not provided)
    - Makes social approach
    - Directs adults attention to own activity
    - Positive acceptance of social approach
    - Communicates need for help by vocalization or gesture
    - Willing to be redirected to new activity or focus of attention
**Visual Impairments and ASD**

- Need a good understanding of developmental differences in children with visual impairments
- Marilyn Gense and Jay Gense are experts in the field—articles and books on topic; 25-30 years
  - M.G.: Special Education Coordinator in Salem, OR, coordinates uses for children who are blind or visually impaired and children with ASD
  - J.G.: Director of low incidence programs with Oregon Department of Education in Salem, OR—administers state services for students with VI, HI, ASD, and D-B
  - Uses DSM-IV, not DSM-5 criteria

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**DSM-5 Deficits in Social-Emotional Reciprocity**

<table>
<thead>
<tr>
<th>Blind/Vision Impaired</th>
<th>ASD/Visual Impaired</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Less experience &amp; lack of visual input may cause slower language development</strong></td>
<td>o Language develops slowly or not at all</td>
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<td>o Responds to language requests</td>
<td>o Splintered development</td>
</tr>
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<td>o Enjoy communication “give and take”</td>
<td>o May lack interest in communication</td>
</tr>
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<td>o Adjusts the topic of conversation</td>
<td>o Difficulty maintaining topic chosen by others</td>
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<td>o Limited conversational reciprocity</td>
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<td>o Conversation topics may be focus on restricted interest</td>
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<td>o Responds to name better when paired with tactile contact</td>
<td>o Appears not to hear, does not orient to sound</td>
</tr>
<tr>
<td>o May exhibit social interest orienting toward (leaning in, turning)</td>
<td>o Limited social interest</td>
</tr>
<tr>
<td>o Seeks to share information/experience</td>
<td>o Limited understanding of social give and take</td>
</tr>
</tbody>
</table>
**DSM-5 DEFICITS IN NONVERBAL COMMUNICATION**
(VERY LITTLE INFORMATION)

**Blind/VI**
- Social smile may be in response to familiar voice or friendly comments
- Orient toward speaker
- Pointing may not develop if no visual input
- Conventional gestures are often delayed
- Showing objects may be rare
- May give objects to share interest
- May orient facial expressions toward familiar caregiver

**ASD/VI**
- May not smile in response to familiar voice or friendly comment
- May not turn toward speaker, familiar voice, friendly comments
- May not orient facial expressions toward familiar caregiver

**DSM-5 DEFICITS IN DEVELOPING, MAINTAINING, & UNDERSTANDING RELATIONSHIPS**

**Blind/VI**
- Play observed to be less “imaginative” and more concrete. Redirection is possible
- Imitative and make-believe play may be delayed, but can be “taught”
- Enjoys playing with other children; curious about others and environment

**ASD/VI**
- Play repetitive, toys not used for intended purpose
- Perseverative behavior is a problem; difficult to re-direct
- Does not initiate pretend play
- Prefers to play alone; little social curiosity
- Social situations may be uncomfortable or may feel anxious

**DSM-5 DEFICITS IN DEVELOPING, MAINTAINING, & UNDERSTANDING RELATIONSHIPS**

**Blind/VI**
- Demonstrates empathy
- Able to understand another’s feelings

**ASD/VI**
- May treat others as objects; limited ability to understand another’s feelings
- Difficulty with perspective-taking
### Restricted and Repetitive Behaviors

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<td>Stereotyped behaviors (i.e., rocking, eye-poking, finger flicking, spinning objects) in novel or unfamiliar settings; can redirect with sensory feedback; decreases as child learns to interact with environment</td>
<td>Repetitive play</td>
</tr>
<tr>
<td>Interests may be limited due to limited exposure; shows interest in variety of toys/objects once provided experience</td>
<td>May focus on specific feature of toy (spinning wheels) or engage in repetitive action with toy/object</td>
</tr>
<tr>
<td>Echolalic - short duration</td>
<td>Difficult to interrupt favorite activity or repetitive motor movements - often extreme resistance</td>
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<td>Echolalic - difficult to change pattern</td>
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### Restricted and Repetitive Behaviors

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<td>Interests may be limited to those toys/activities previously experienced; able to engage in a variety of activities with adults and peers</td>
<td>Highly restricted interests; difficulties being re-directed from high interest toys</td>
</tr>
<tr>
<td>Response to change improves as exposure to more experiences</td>
<td>Demonstrate difficulty with transitions; challenging behaviors escalate when experience change in routine or structure</td>
</tr>
<tr>
<td>Sensory interests - response - explore objects close to face, tactile, smell; sensitive to loud noises</td>
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<tr>
<td>Sensory focus - decreases over time and demonstrate other use of objects</td>
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### Communication/Language Impairments in ASD

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COMMUNICATION IMPAIRMENTS

- Restricted range of experience and lack of visual input may cause slower language development
- Vocabulary based on concrete experiences
- Difficulty with abstract language
- Pronoun reversals, limited duration
- Longer to learn concepts- once understood can generalize

Blind/VI

- Use of words without usual meaning
- Non-conventional communication behaviors (pulling)
- Longer term difficulties with pronoun use

ASD/VI

SOCIAL SKILLS IN CHILDREN WITH VI

- Developing social skills is a life-long process
- Social skills are necessary for success in life
- Most social skills are learned through visual observation (75-80% learning is via visual)
  - Body language
  - Facial expressions
- Connect what we see/observe with language to develop concepts of social behavior
- Students with VI start out with a deficit, so social learning must occur differently-more explicit

CLASSROOM EXPERIENCE WITH VI

SOCIAL SKILLS INTERVENTIONS
- Preschool classroom: Adults provide verbal description so child with VI understands what is mostly nonverbal
- Pre-teaching and role playing concepts and what to do and say in situations
- Create access to social learning opportunities
- Social skills need to be an ongoing part of the IEP for a student with VI-changing across time to meet the needs and demands

SOCIAL SKILLS OPPORTUNITIES
- [https://youtu.be/y2VUsSWDj68?t=452](https://youtu.be/y2VUsSWDj68?t=452)

MYTHS
- Those “legally blind” must use a white cane and cannot live independently
- People with low vision are unable to drive
- People with low vision must use Braille instead of regular print
- People with low vision do not need Orientation and Mobility instruction
MYTHS

- Emily's Oz
  - [https://www.youtube.com/watch?v=ZU7NU_fanSU&feature=youtu.be](https://www.youtube.com/watch?v=ZU7NU_fanSU&feature=youtu.be)
  - [https://www.youtube.com/watch?v=9jqRoFR5WHY&feature=youtu.be](https://www.youtube.com/watch?v=9jqRoFR5WHY&feature=youtu.be)

REFERENCES


RESOURCES

- Family Connect-excellent source of information. Information on adapting home environment ([www.familyconnect.org/parentsitehome.asp](http://www.familyconnect.org/parentsitehome.asp)) also available in Spanish
- American Foundation for the Blind ([www.afb.org](http://www.afb.org))
- American Council of the Blind ([www.acb.org](http://www.acb.org))
- Education for Students with Blindness or Visual Impairment ([www.perkins.org/resources/education/education culturally](http://www.perkins.org/resources/education/education culturally))
Questions?