ISAAC Webinar

June 6, 2017
Christine Roman, Ph.D.
What can be communicated in 50 minutes?

• There is a method that can describe the degree of functional vision in children with CVI

• There is a method that can facilitate improvements in functional vision in children with CVI

• Educators, therapists & parents may have more information about interventions for CVI than physicians

• “Wait and see” is not good advice to families
• Early intervention is critical

• Even older individuals can show great progress in functional vision

• Don’t underestimate a child’s abilities or potential before they have ACCESS to their visual world
what does The CVI Range approach mean?

- it means that there is an approach to visual impairment that is grounded in the visual and behavioral CVI characteristics….not a generic program
- it means that there is an approach that is systematic and closely monitored
- it means that there is a form of visual impairment in which improvements in functional vision are expected and measured
- it means that there is a method that is used in the United States and in many countries that is effective and useful
- it means that cortical visual impairment is different than cerebral visual impairment
Principles & Procedures

• Properly identifying all children who have CVI
• Conducting appropriate assessments
• Providing appropriate supports to facilitate improvements in functional vision
Children with CVI require novel solutions in order to excel.
Diagnosis

• I. Eye exam that does not explain the child’s profound lack of visual attention
  • the eye exam is essential
• II. History of neurological condition associated with CVI
• III. The presence of unique CVI visual and behavioral characteristics
The **key** to understanding how children with CVI see is found in the characteristic CVI behaviors:

- attraction to **color**
- **light** gazing
- movement (**dorsal** stream)
- visual complexity (**ventral** stream)
- visual **latency**
- **visual field** differences

- difficulties with **distance** viewing
- **visual reflex** differences
- difficulties with visual **novelty**
- lack of **visual motor** match
The CVI Range (Roman Lantzy, 2007) is used to investigate the extent of the affect of the 10 characteristic behaviors associated with CVI.
Purposes of The CVI Range

- to describe a continuum of visual function
- to find a common method and language to standardize severity of CVI
- to monitor progress and improvements in functional vision
- to determine appropriate interventions
- to explain the individual’s functional vision
- to complete an educational functional vision assessment
The CVI Range

• Used as a measure of degree of affect of CVI
• Developed by Roman
• Based on the constructs developed by Jan, Hoyt, Groenveld
• Considers CVI in terms of visual impairment, not used as a definition that includes all forms of visual processing disorders (not sensitive to autism, dyslexia, etc)
CVI Range

Procedures

- Interview
- Observation
- Direct assessment
The CVI Range
Christine Roman, Ph. D.
2003(revised 2005)

Student/child’s name: ___________________________ Age: ___________________________

Evaluator(s): ___________________________ Evaluation Date: ___________________________

This assessment protocol is intended for multiple evaluations over a period of time. Suggested scoring (no less than 3x per school year):
(a) Initial assessment (red)
(b) Second assessment (blue)
(c) Third assessment (green)
*Further assessments will require a new form.

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<tr>
<th>Totals:</th>
<th>Evaluation#1 (red)</th>
<th>Evaluation#2 (blue)</th>
<th>Evaluation#3 (green)</th>
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<td>2. Total for Rating 2</td>
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<td>3. Combine both ratings to get overall CVI Range</td>
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CVI Range 1-2: Student functions with minimal visual response

- May localize but no appropriate fixations of objects or faces
- Consistently attentive to lights or perhaps ceiling fans
- Prolonged periods of latency in visual tasks
- Responds only in strictly controlled environments
- Objects viewed are a single color
- Objects viewed have movement and/or reflective properties
- Visually attends in near space only
- No blink in response to touch and/or visual threat
- No regard of the human face
<p>| CVI Range 9-10: Student spontaneously uses vision for most functional activities |
|------------------|-------------------------------------------------|
| <strong>OID</strong> R + +/- - | <strong>Selection of toys/objects not restricted</strong> |
|                  | Only the most complex environments affect visual response |
|                  | Latency resolved |
|                  | No color or pattern preferences |
|                  | Visual attention extends beyond 20 feet |
|                  | Views books or other 2 dimensional materials, simple images |
|                  | Uses vision to imitate actions |
|                  | Demonstrates memory of visual events |
|                  | Typical visual-social responses |
|                  | Visual fields unrestricted |
|                  | Look &amp; reach completed as a single action |
|                  | Attends to 2-dimensional images against complex background |</p>
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<tbody>
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<td>2. Movement</td>
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<tr>
<td>3. Latency</td>
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<td>4. Visual Fields</td>
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<tr>
<td>5. Complexity</td>
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<td>6. Light Gazing</td>
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<td>7. Distance Viewing</td>
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<td>8. Visual Reflexive Responses</td>
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<td>9. Visual Novelty</td>
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<td>10. Visual Motor</td>
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III. CVI Characteristics
Color
color is a visual “anchor”
SLOW
CHILDREN AT PLAY
Movement
movement

• movement of the object
• shiny or reflective objects
• child is moving (independently or being moved)
• child moves head
Visual latency
Complexity
Visual Complexity

• surface of the object
• viewing array
• sensory environment
• complexity of the human face
single color objects
Why??
will these spoons look the same at each presentation?
• single color objects help the individual with CVI see the essence of an object in its entirety

• multi-color objects may result in learning an object based on fragile pieces of information

• and...what about 2-D materials?
complexity of array
your clothing matters

Catic School, Mexico City
Gabriella Berlanga
the human face is a visually complex target
Light gazing/
nonpurposeful gaze
Visual field preferences
Difficulties with visual novelty
How did you assign meaning to the image?

- Previous visual experiences
- Visual schemes that include information regarding faces, animals, trees...
- The child with CVI has to develop and expand visual schemes intentionally, NOT incidentally
learning salient visual features

• helps add critical information to the “search engine”
• expands understanding
• generalizes learning
• supports understanding of the critical or defining features
• supports divergent thinking and reduces rigidity in thinking
novelty

• alerts us to new information
• creates an “aha”
• associated with incidental learning
• helps expand visual schemes
Visual reflexes

- Reflexes often absent, or inconsistent
  - Blink to touch between eye brows
  - Blink to threat
Difficulty with distance viewing, complexity of array
Absence of visually directed reach
Interventions
Interventions

• are based on the principles of visual plasticity and critical visual periods (Hubel, Weisel & others)

• new neural pathways can be developed and visual function can be increased
the motile tip of a young neuron’s burgeoning axon  (Schoonover, 2010)
Notions to question

- vision varies from minute to minute, hour to hour, day to day
- vision cannot exceed cognitive level
- too mentally impaired to see
- vision is the least of the child’s problems
Identify at least 2 opportunities in each quarter of the day...and add frequency is important
Interventions for CVI

• **approach**, not therapy
• vision improvements occur via the eyes
• interventions must be paired with functional, meaningful routines
• create adaptations and activities that incorporate the CVI characteristics at, not above or below the assessed level
Take away messages

- CVI is the leading cause of pediatric visual impairment in The U.S.
- CVI is not consistently diagnosed in a timely way or sometimes not at all
- Traditional diagnostic methods may be inappropriate methods to identify CVI
- The degree of CVI can be measured; interventions are designed to match the CVI Range score
- Improvements in functional vision are associated with targeted interventions