## Visual Features of CVI to Consider Looking for in Relation to Damage in Specific Brain Locations Reported on a Brain MRI Scan

<table>
<thead>
<tr>
<th>Area of Damage Seen on MRI Scan</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Occipital Lobes</strong></td>
<td></td>
</tr>
<tr>
<td>Left occipital lobe</td>
<td>• Lack of visual field on the right side for both eyes</td>
</tr>
<tr>
<td>Right occipital lobe</td>
<td>• Lack of visual field on the left side for both eyes</td>
</tr>
</tbody>
</table>
| Both occipital lobes            | • Impaired central visual functions of acuity, contrast, and color  
                                 | • Lack of visual field on both sides (often manifesting as visual field constriction)  
                                 | • Severe damage causes profound visual impairment |

| **Posterior Parietal Lobes**    |                             |
| Left posterior parietal lobe    | • Intermittent lack of attention on the right side  
                                 | • A tendency to miss people and events on the right side  
                                 | • A tendency to bump into people and objects on the right side, especially when upset or tired  
                                 | • Reduced accuracy of visual guidance of movement of the right side of the body  
                                 | • A tendency to be left-handed (because this becomes the dominant hand)  
                                 | • Weakness of the right side of the body (as a result of damage further forward in the brain)  
                                 | • Difficulties with spoken or written language (because the left parietal lobe serves language)  
                                 | • When drawing, the right side of the picture can be distorted |
| Right posterior parietal lobe   | • Significant lack of attention on the left side and intermittent lack of attention on the right side (Ting et al., 2011)  
                                 | • People and events on the left side are frequently missed  
                                 | • People and objects on the left side are frequently bumped in to  
                                 | • A tendency to be right-handed  
                                 | • Weakness of the left side of the body |
| Both posterior parietal lobes   | • Inability to see more than one or two items in a visual scene at once (simultanagnosia), despite the requisite visual field  
                                 | • Inability to use vision to guide movement, accurately despite sometimes having clear three-dimensional vision (stereopsis), in rare cases, resulting in colliding with walls and obstacles, bumping into people and objects, and not being aware of drop-offs  
                                 | • Inability to give attention to more than one or two things at once  
                                 | • Noise or conversation can make the child lose visual attention  
                                 | • Inability to move the eyes from one target to another at will, despite ability to move the eyes  
                                 | • Profound lack of ability to see moving targets is common  
                                 | • Lack of lower visual field below the horizontal midline  
                                 | • Impaired movement of all four limbs as a result of quadriplegic cerebral palsy is common |

(continued on next page)
### Area of Damage Seen on MRI Scan

<table>
<thead>
<tr>
<th>Area of Damage Seen on MRI Scan</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited damage to parietal white matter</td>
<td>• Behavioral patterns of dorsal stream dysfunction&lt;br&gt;• Lack of ability to see moving targets is occasionally observed&lt;br&gt;• Lack of the peripheral lower visual field means that the feet cannot be seen while walking&lt;br&gt;• Impaired ability to move feet over floor boundaries, or walking around patterns despite looking at them, suggests optic ataxia of the lower limbs&lt;br&gt;• Reaching for patterns on plates as if they are three-dimensional is observed in some young children</td>
</tr>
</tbody>
</table>

### Temporal Lobes

(The patterns described for damage to one side apply to acquired damage, but can be variable. Damage from birth tends to affect all forms of recognition.)

<table>
<thead>
<tr>
<th>Temporal Lobe</th>
<th>Visual Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left temporal lobe</td>
<td>• Impaired object recognition (object agnosia); color recognition may be used to compensate&lt;br&gt;• Impaired shape recognition (shape agnosia)&lt;br&gt;• Difficulty learning the shapes of letters (alexia)</td>
</tr>
<tr>
<td>Right temporal lobe</td>
<td>• Impaired face recognition (prosopagnosia)&lt;br&gt;• Impaired ability to see meaning in facial expressions&lt;br&gt;• Difficulty being orientated (may be profound) and navigating known environments (topographic agnosia)</td>
</tr>
<tr>
<td>Both temporal lobes</td>
<td>• Combination of the impaired abilities described for the left and right temporal lobes (integrative agnosia)&lt;br&gt;• Difficulty knowing the length and orientation of lines, or size of objects&lt;br&gt;• Impaired visual memory (often with reliance on auditory memory and language ability)</td>
</tr>
</tbody>
</table>

# Common Clues to the Possibility of CVI and Its Potential Features

## Possible Indications of the Presence of CVI

<table>
<thead>
<tr>
<th>Medical Features</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
</table>
| Premature birth (if damage is subtle. MRI may be normal) | - Low visual acuities with no optical or eye disorder  
- Inability to find someone in a group, or objects in a pile  
- Lower visual field impairment (very peripheral in mild cases)  
- Inaccurate visual guidance of limb movement  
- Difficulty reading crowded text |
| Hydrocephalus (can have periventricular white matter injury) | - Many have visual acuity or visual field impairment  
- Over 50 percent have perceptual impairments that can affect both dorsal and ventral streams |
| History of seizure | - West syndrome (infantile spasms or early-onset epilepsy): low vision (low vision may lead to the diagnosis)  
- Grand mal seizures: CVI symptoms and reduced vision lasting for hours or days after a seizure  
- Continuous epilepsy with variable vision that can be controlled with anti-epileptic drugs  
- Occipital seizures: unformed images that are not actually there (hallucinations), resulting from electrical activity in the visual brain |
| Low blood sugar or respiratory arrest in early weeks after birth (leads to damage to visual brain if sugar or oxygen does not reach the brain cells) | - Occipital or posterior parietal lobe damage, or both; severity of damage and outcome varies  
- Low visual acuities with visual field reduction unexplained by eye or refractive disorders  
- Features of dorsal stream dysfunction common  
- Possible Balint’s syndrome  
- Ventral stream dysfunction can predominate in some cases |
| Meningitis (infection around lining of brain) or encephalitis (infection of brain) (can lead to multiple foci of damage with outcome ranging from mild to severe visual dysfunction) | - Photophobia  
- Visual acuity impaired (worse when tired)  
- Vision can fluctuate during recovery  
- Visual field constriction  
- Visual perceptual disorders (impaired color naming, inability to recognize shapes, letters, or words)  
- Faces can look distorted or are not recognized  
- Getting lost  
(Note: Progressive recovery needs to be sought and the approach to the child modified accordingly) |
| Hyoscine patches to control salivation | - Large pupils, causing photophobia  
- Poor or absent accommodation (ability to focus) causing reduced vision in the long farsighted (long sited), and minimal near vision |
| History of major head injury | - Any type of CVI can result |

(continued on next page)
### Possible Indications of the Presence of CVI

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
</table>
| Microcephaly (small head), with flattening at the back, more so on one side | Low visual acuities  
Lack of vision/visual field on side opposite to the greatest degree of flattening |
| Spastic diplegia | Lower visual field impairment  
Impaired visual search  
Difficulty reading crowded text |
| Hemiplegic cerebral palsy or Consistent repeated bruising on one leg | Lack of vision (often relatively asymptomatic) or impaired visual attention on the weak or bruised side |
| Spastic quadriplegia | Any aspect of visual functioning can be impaired |
| Dyskinetic cerebral palsy | Impaired focusing (accommodation) |
| Horizontal nystagmus (some children have undiagnosed periventricular white matter disease [PVWMD]) | The same features as for premature birth need to be looked for (only a small proportion of cases affected) |

<table>
<thead>
<tr>
<th>Visual Behaviors</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
</table>
| Visual search difficulties (any of these features should trigger a search for the others) | Inability to find a distant target being pointed out  
Inability to find a person in a group  
Inability to find a clothing item in a pile of clothes  
Inability to find a toy in a toy box  
Inability to read crowded text |
| Running out in front of traffic | Low visual acuities  
Visual field impairment  
Impaired visual attention  
Impaired perception of movement  
Visual inattention |
| Not looking at someone who is talking to him or her | Low visual acuity precluding interpretation of facial appearance and expressions  
Evidence of dorsal stream dysfunction with impaired splitting of attention between sight and sound  
Impaired perception of movement precluding fast-moving facial expressions from being seen  
Inability to recognize faces  
Inability to interpret the language of facial expression |
| Refusing to run down a hill | Lower visual field impairment, often very peripheral, precluding the extended foot from being seen |
| Drawings poor on one side of the page | Evidence of visual inattention on the side of the poor drawing |
| Reading difficulties, starting around age 8 (resulting from smaller print size and increased crowding) | Lack of focusing (accommodation)  
Difficulties with visual crowding |

(continued on next page)
### Possible Indications of the Presence of CVI

<table>
<thead>
<tr>
<th>Reactive Behaviors</th>
<th>Visual Features to Look For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not looking at what is being reached for</td>
<td>• Lack of central vision&lt;br&gt;• Features of ventral or dorsal stream dysfunction</td>
</tr>
<tr>
<td>Striking an adjacent restless child, while continuing to work</td>
<td>• Limited visual attention, leading to a need not to be distracted when completing a task</td>
</tr>
<tr>
<td>Displaying anger when furniture is moved</td>
<td>• Lower visual field impairment&lt;br&gt;• Features of dorsal stream dysfunction</td>
</tr>
<tr>
<td>Exhibiting fear in straight symmetrical corridors</td>
<td>• Lack of visual attention on one side can render symmetrical environments frightening, perhaps because one side becomes less evident</td>
</tr>
<tr>
<td>Exhibiting distress in crowded places</td>
<td>• Features of dorsal stream dysfunction</td>
</tr>
</tbody>
</table>

### Compensatory Behaviors

| Sitting very close to the TV                                                       | • Low visual acuity<br>• Features of dorsal stream dysfunction                           |
| Watching the TV upside down, lying on back with head back                           | • Lower visual field impairment (using the intact upper field to watch the TV)           |
| Feeling the ground ahead at floor boundaries                                       | • Low vision<br>• Lower visual field impairment<br>• Other features of dorsal stream dysfunction |
| Organizing possessions in fixed locations                                          | • Other features of dorsal stream dysfunction                                              |

Framework for a Team Assessment Report for Children Who Have CVI

The following is a general framework that can be used to prepare an assessment report for a child who has been assessed for CVI. Precise categories in a report will depend on a child’s specific situation.

Identification Information
- Name of child
- Date of birth
- Assessment date(s)
- Location(s)
- Name and title of evaluator(s)

Purpose or Reason for Evaluation

Background
- Diagnosis (visual diagnosis, other conditions)
- Relevant medical and educational history (including current medications)
- Summary and date of relevant eye reports
- Current educational placement information

Current Assessment Results (list test or observation methods; address only those categories that are applicable)
- Functional vision (vision function results from eye doctors are listed in the Background section and mentioned here as needed)
- Auditory processing
- Visual processing
  - Visual attention
  - Visually guided movements
  - Perception of objects or faces/facial expressions
- Other attention issues
- Use of vision in typical tasks, situations, or curricular areas
- Adaptive behaviors
- Student’s and family’s understanding of vision capabilities and concerns
- Assistive technology
- Environmental analysis

Summary

Recommendation Areas (use only those categories that are applicable)
- Functional vision (including recommended object size or print size at recommended viewing distances for different tasks)
- Auditory processing
- Visual processing
  - Visually guided movements
  - Perception of objects or faces and facial expressions
  - Simultaneous perception
  - Other
- Other attention issues
- Use of vision in typical tasks, situations, or curricular areas
- Adaptive behaviors
- Student’s and family’s understanding of vision capabilities and concerns
- Assistive technology
- Environmental modifications
- List of adaptive equipment or assistive technology to be considered

## Observed Behaviors Recording Form

### Recording Form for Observed Behaviors for Young Children and Children with Visual and Cognitive Challenges

<table>
<thead>
<tr>
<th>Behavior Observed</th>
<th>Conditions Under Which Observed</th>
<th>Description and Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Involuntary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nystagmus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal or motor response delay</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Habitual and Reactive</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light gazing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive behaviors (e.g., angry, distressed, disruptive in crowded, busy environments)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand waving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye pressing or poking (a maladaptive behavior)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Habitual and Adaptive</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head turn away when reaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photophobia (aversion to light)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body movement such as rocking, head shaking (NOTE: This is adaptive for some children who need movement to engage vision but for others it may be a form of self-stimulation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eccentric viewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head movement to follow or scan, rather than eye movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close viewing distance adopted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequent breaks required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of voice, sound, scent, or compelling visual feature such as hair, glasses, bracelet, clothing to identify people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objects stacked or lined up in order to look at them one by one rather than looking at them within a close-knit array of items</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The assessment team should determine which behaviors to encourage or discourage.

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### Summary Form for Evaluation of Dorsal Stream Disorders

#### Evaluation Areas

<table>
<thead>
<tr>
<th>Evaluation Areas</th>
<th>Sample Behavioral Indicators</th>
<th>Evidence from Interview and History Taking</th>
<th>Evidence from Formal and Informal Testing</th>
<th>Evidence from Observations in Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual search</td>
<td>Has difficulty finding items in background pattern or foreground clutter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining and shifting visual attention</td>
<td>Looks away when talking; has difficulty copying</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersensory attention (attending to and integrating simultaneous input from the different senses)</td>
<td>Bumps into obstacles when walking and talking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditory search and processing, including knowledge of where sounds and speech are coming from</td>
<td>Does not know where voice is coming from; worse with background noise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysfunction of lower field of vision</td>
<td>Has difficulty going down steps and slopes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower visual field impairment</td>
<td>Does not see nearest food, toys, and images</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neglect of lower visual field</td>
<td>Walks over obstacles without being aware of them</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual guidance of movement of lower limbs</td>
<td>Looks at floor boundaries and probes with foot to identify if a step is present</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Visual guidance of movement of upper limbs and hands | Cannot accurately place items on table unless body is touching table  
Reaches with wider than expected gap between fingers and thumb  
Reaches with extended hand to touch item in order to identify its correct location |                                          |                                          |                                          |
| Estimation of speed of moving targets        | Perceives risk but walks out in front of traffic with incorrect timing                      |                                          |                                          |                                          |
### Summary Form for Evaluation of Ventral Stream Disorders

<table>
<thead>
<tr>
<th>Evaluation Areas</th>
<th>Sample Behavioral Indicators</th>
<th>Evidence from Interview and History Taking</th>
<th>Evidence from Formal and Informal Testing</th>
<th>Evidence from Observations in Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of people, facial expressions, objects, shapes, pictures, words</td>
<td>Does not recognize known people, incorrectly recognizes unknown people&lt;br&gt;Does not see language in facial expressions&lt;br&gt;Does not recognize objects, shapes, pictures, and words</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation in surrounding environment (as related to topographic agnosia)</td>
<td>Gets lost easily in uncrowded places that should be known&lt;br&gt;Easily loses possessions and cannot locate them</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation of lines: Creating, copying, and mentally rotating visual imagery</td>
<td>Has difficulty copying orientation of lines, copying or creating diagrams and pictures, and imagining visual imagery from different perspectives</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions to Ask Parents and Caregivers of Children with CVI

This question inventory is designed for children with visual acuities of 20/200 (6/60) or better (Macintyre-Béon, Young, Calvert, et al., 2012; Macintyre-Béon, Young, Dutton, et al., 2013). For children with poorer visual acuities, the question inventory can serve as a useful reminder of difficulties to ask about, but responses to the questions may also relate to ocular causes.

For each of the questions, check the box that best accords with the child's behavior. Children with typical vision tend to have responses of “never” with two or three responses of “rarely,” except for questions 37 and 38, for which clarification needs to be sought for positive answers.

<table>
<thead>
<tr>
<th>Questions seeking evidence of visual field impairment or impaired visual attention on one or both sides</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child . . .</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. trip over toys and obstacles on the floor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. have difficulty walking down stairs?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. trip at the edges of pavements going up?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. trip at the edges of pavements going down?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. appear to “get stuck” at the top of a slide or hill?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. look down when crossing floor boundaries (e.g., where linoleum meets carpet)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. leave food on the near or far side of his or her plate?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If so, on which side?</td>
<td>near □</td>
<td>far □</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. leave food on the right or left side of his or her plate?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If so, on which side?</td>
<td>right □</td>
<td>left □</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. have difficulty finding the beginning of a line when reading?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued on next page)
10. have difficulty finding the next word when reading?  
11. walk out in front of traffic?  
If so, which side?  
right □  left □  both □  
12. bump into doorframes or partly open doors?  
If so, which side?  
right □  left □  both □  
13. miss pictures or words on one side of a page?  
If so, which side?  
right □  left □  both □  

**Questions seeking evidence of impaired perception of movement**

<table>
<thead>
<tr>
<th>Does your child . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. have difficulty seeing passing vehicles when he or she is in a moving car?</td>
</tr>
<tr>
<td>15. have difficulty seeing things which are moving quickly, such as small animals?</td>
</tr>
<tr>
<td>16. avoid watching fast-moving TV?</td>
</tr>
<tr>
<td>17. choose to watch slow-moving TV?</td>
</tr>
<tr>
<td>18. have difficulty catching a ball?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions seeking evidence of difficulty handling the complexity of a visual scene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child . . .</td>
</tr>
<tr>
<td>19. have difficulty seeing something that is pointed out in the distance?</td>
</tr>
<tr>
<td>20. have difficulty finding a close friend or relative who is standing in a group?</td>
</tr>
<tr>
<td>21. have difficulty finding an item in a supermarket (e.g., finding the breakfast cereal he or she wants)?</td>
</tr>
</tbody>
</table>

(continued on next page)
22. get lost in places where there is a lot to see (e.g., a crowded shop)?

23. get lost in places that are well known to him or her?

24. have difficulty locating an item of clothing in a pile of clothes?

25. have difficulty selecting a toy from a toy box?

26. sit closer than about 1 foot (30 cm) from the television?

27. find copying words or drawings time-consuming and difficult?

| Questions seeking evidence of impairment of visually guided movement of the body and further evidence of visual field impairment |
|---|---|---|---|---|---|
| 28. When walking, does your child hold onto your clothes, tugging down? | Never | Rarely | Sometimes | Often | Always | N/A |
| 29. Does your child find uneven ground difficult to walk over? | | | | | | |
| 30. Does your child bump into low furniture such as a coffee table? | | | | | | |
| 31. Is low furniture bumped into if it is moved? | | | | | | |
| 32. Does your child get angry if furniture is moved? | | | | | | |
| 33. Does your child explore floor boundaries (e.g., between linoleum and carpet) with his or her foot before crossing the boundary? | | | | | | |
| 34. Does your child find inside floor boundaries difficult to cross? | | | | | | |
| a. If so, boundaries that are new to him or her? | | | | | | |
| b. Or boundaries that are well known to him or her? | | | | | | |

(continued on next page)
35. Does your child reach incorrectly for objects, reaching beyond or around the object?

36. When picking up an object, does your child grasp incorrectly, missing or knocking over the object?

Questions seeking evidence of impaired visual attention

37. Does your child find it difficult to keep on task for more than 5 minutes?

38. After being distracted, does your child find it difficult to get back to what he or she was doing?

39. Does your child bump into things when walking and having a conversation?

40. Does your child miss objects that are obvious to you because they are different from their background and seem to “pop out” (e.g., a brightly colored ball against the grass)?

Questions seeking evidence of behavioral difficulties associated with crowded environments

41. Do rooms with a lot of clutter cause difficult behavior?

42. Do quiet places or the open countryside cause difficult behavior?

43. Is behavior more difficult in a busy supermarket or shopping center?

44. Does your child react angrily when other restless children cause a distraction?
### Questions evaluating the ability to recognize what is being looked at and to navigate

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. have difficulty recognizing close relatives in real life?</td>
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<tr>
<td>46. have difficulty recognizing close relatives from photographs?</td>
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<tr>
<td>47. mistakenly identify strangers as people known to him or her?</td>
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<tr>
<td>48. have difficulty understanding the meaning of facial expressions?</td>
<td></td>
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<tr>
<td>49. have difficulty naming common colors?</td>
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<tr>
<td>50. have difficulty naming basic shapes such as squares, triangles, and circles?</td>
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<tr>
<td>51. have difficulty recognizing familiar objects such as the family car?</td>
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</tbody>
</table>


Profile of Visual Functioning Completed for Bertil, 9 Years Old

**Key:**
N = normal  
I = impaired but useful  
P = profoundly impaired

<table>
<thead>
<tr>
<th>CLINICAL FINDINGS, OCULAR MOTOR</th>
<th>N</th>
<th>I</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Fixation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B Following movements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Saccades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Nystagmus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Strabismus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Convergence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Accommodation, compensated</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CLINICAL FINDINGS, SENSORY</th>
<th>N</th>
<th>I</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Binocularity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I Visual acuity, matching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J Visual acuity, naming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K Grating acuity, detection, not tested</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>L Grating acuity, discrimination, 8 cpd</td>
<td></td>
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<tr>
<td>M Gratings, line quality in the center</td>
<td></td>
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<tr>
<td>N Contrast sensitivity, optotype</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O Contrast sensitivity, grating</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>P Color vision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q Adaptation speed, CONE adaptation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R Photophobia</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>S Visual field, central</td>
<td></td>
<td></td>
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<tr>
<td>T Visual field, peripheral, lower</td>
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<td></td>
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<tr>
<td>U Motion perception, Pepi Test</td>
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<tr>
<td>V Biological motion, Walking Man</td>
<td></td>
<td></td>
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<tr>
<td>X Depth perception</td>
<td></td>
<td></td>
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<tr>
<td>Y Refraction</td>
<td></td>
<td></td>
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<tr>
<td>Z Glasses</td>
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</tbody>
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<table>
<thead>
<tr>
<th>VENTRAL NETWORK</th>
<th>N</th>
<th>I</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Recognition of objects</td>
<td></td>
<td></td>
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<tr>
<td>B Recognition of details</td>
<td></td>
<td></td>
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<tr>
<td>C Recognition of pictures of objects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Noticing errors and missing details</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>E Recognition of faces</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>F Recognition of facial expressions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Reading body language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H Recognition of landmarks</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I Abstract pictures of objects</td>
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</tr>
<tr>
<td>J Abstract forms, letters, numbers</td>
<td></td>
<td></td>
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<tr>
<td>K Increased crowding effect, NO MORE</td>
<td></td>
<td></td>
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<tr>
<td>L Comparison with pictures in memory</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>M Recognition in mathematical tasks</td>
<td></td>
<td></td>
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<tr>
<td>N Scanning strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O Cartoons, interpreting the content</td>
<td></td>
<td></td>
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<tr>
<td>P Overview of large pictures</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Q Visual Imagination</td>
<td></td>
<td></td>
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<tr>
<td>R Reading, need of magnification</td>
<td></td>
<td></td>
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<td>S</td>
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</tbody>
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<table>
<thead>
<tr>
<th>MIRROR NEURON SYSTEM</th>
<th>N</th>
<th>I</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>A Early eye contact, delayed</td>
<td></td>
<td></td>
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<tr>
<td>B Early social smile, delayed</td>
<td></td>
<td></td>
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<tr>
<td>C Early Interaction, delayed, supported</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Early interest in movements of mouth</td>
<td></td>
<td></td>
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<tr>
<td>E Early interest in hand movements</td>
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</tbody>
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(continued on next page)
<table>
<thead>
<tr>
<th>EARLY PROCESSING</th>
<th>OTHER COMMON PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Length of lines, visual comparison</td>
<td>L Integration of sensory functions</td>
</tr>
<tr>
<td>B Orientation of lines, visual comparison</td>
<td>M Visual overload</td>
</tr>
<tr>
<td>C Stereovision</td>
<td>N Auditory overload</td>
</tr>
<tr>
<td>D Visual closure</td>
<td>O Specific memory problems</td>
</tr>
<tr>
<td>E Textures and surface qualities</td>
<td>P Head control</td>
</tr>
<tr>
<td>F Objects/figures on patterned background</td>
<td>Q Body control</td>
</tr>
<tr>
<td>G Short time memory</td>
<td>R Hand functions</td>
</tr>
<tr>
<td>H Recognition of parents at 6–8 months</td>
<td>S Moving</td>
</tr>
<tr>
<td>I Effect of image quality on above</td>
<td>T Hearing</td>
</tr>
<tr>
<td></td>
<td>U Executive functions</td>
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<tr>
<td></td>
<td>V Use of devices</td>
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<td></td>
<td>X</td>
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<td></td>
<td>PARTICIPATION</td>
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<tr>
<td></td>
<td>ENVIRONMENT</td>
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</tbody>
</table>

## Level of Visual Attention in Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Level of Visual Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reacting to basic visual stimuli</td>
<td>The child primarily uses other senses in a given activity, and visual attention is minimal or nonexistent</td>
</tr>
<tr>
<td>Eating/drinking</td>
<td>The child fixates briefly and may follow objects momentarily in a given activity</td>
</tr>
<tr>
<td>Other skills of daily living</td>
<td>The child looks attentively for brief periods independently or with instructor prompts in a given activity, but not for all situations or activities</td>
</tr>
<tr>
<td>Communication</td>
<td>The child looks attentively and independently in many activities but occasionally uses other senses for exploration and accessing information</td>
</tr>
<tr>
<td>Moving around; mobility</td>
<td>The child looks attentively and independently in most activities, although visual tasks may still present challenges</td>
</tr>
<tr>
<td>Playing alone</td>
<td></td>
</tr>
<tr>
<td>Playing in one-to-one situations</td>
<td></td>
</tr>
<tr>
<td>Doing tasks alone</td>
<td></td>
</tr>
<tr>
<td>Doing tasks in one-to-one situations</td>
<td></td>
</tr>
</tbody>
</table>

### Description of signs of fatigue, including average duration of occurrence

## Observation of Independent Living Skills

<table>
<thead>
<tr>
<th>Personal Management Skill: Organization</th>
<th>Task</th>
<th>Effects of Visual Impairment/ CVI</th>
<th>Functional Observation</th>
<th>Suggested Intervention Approaches</th>
<th>Outcomes of Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locating personal belongings</td>
<td>Taking homework papers out of backpack</td>
<td>Difficulty looking at a specific object and reaching for it; object had low to no contrast against background</td>
<td>Dominic was unable to locate loose homework papers in his backpack and asked for assistance</td>
<td>Place homework papers in a bright yellow folder, and place folder in a separate zippered section of backpack</td>
<td>Initial visual location of yellow folder in single section and ability to remove folder without vision, using touch</td>
</tr>
<tr>
<td>Desk organization</td>
<td>Locating black felt-tip pen</td>
<td>Difficulty with visual perception in a crowded environment; looking away when reaching for a specific object</td>
<td>It took two tries for Dominic to visually locate the pen, look away, and grasp the intended object</td>
<td>Organize the inside of Dominic’s desk with small, separate colored containers for specific objects; place two or more black felt-tip markers in one narrow orange pencil basket in the lower right corner of his desk</td>
<td>Pencil basket often tipped over, spilling the contents; small clear zippered bag replaced the basket, keeping the contents together</td>
</tr>
<tr>
<td>Desk cubby organization</td>
<td>Locating class materials</td>
<td>Inefficient organization; use of color and lighting to locate classroom materials</td>
<td>It took extra time, and Dominic exhibited frustration in locating one journal</td>
<td>Provide notebooks of different bright colors for each subject, colored or patterned folders for each subject matter to hold papers to keep or take home, and a small LED flashlight to use when looking in the storage area under his chair</td>
<td>Dominic needed daily reminders to place papers in the appropriate folders, but the notebooks were more easily accessible, helping him complete class projects in a more timely manner</td>
</tr>
</tbody>
</table>