见
你看到了什么？

CVI儿童2D图像解释：对评估和指导的影响

Matt Tietjen 教育硕士，视力障碍学生认证老师
What do you see?

2D Image Interpretation in Children with CVI: Implications for Assessment and Instruction

Matt Tietjen, M.Ed., CTVI
Agenda:

Part one: “What do you See?” Assessment

Part two: “Accommodations”

Part three: Instruction (some brief thoughts)
Part One: Assessment
What do you see?

It’s a picture.

“A picture is a pattern of lines on a flat surface that depicts some aspect of the real world”

- Deregowski
“CAN he see it?”
“WHAT do you see?”

“bicycle”
“scissors”
Objects vs. Images

• Many children with CVI have difficulty with complexity of objects (Roman-Lantzy)

• Common Misconception: this characteristic involves only the ability to look at different types of objects.

• Difficulty with Complexity of objects also encompasses ability to interpret objects, images, symbols, letters, words, numbers, etc. (Ventral Stream functions)

• By mid-phase II (Roman-Lantzy) and beyond I am much more concerned with “can the child interpret?” versus “Can the child look?”
Objects vs. Images

• Images tend to be more difficult to interpret than objects for our students with CVI.

• Color photographs tend to be easier to interpret than other kinds of images while black and white line drawings tend to be the most difficult.

• This loose “hierarchy” of difficulty is supported in the literature on brain-based visual impairments (Farrah, 97).
Why are images more difficult than objects?

Higher Order
Salient features
(wheels, hood, windshield)

Lower Order
• Color
• Luminance cues
• Visual texture
• Actual size
The progression from object, to photograph, to illustrations, to black and white line drawings results in the increasing “impoverishment” of the lower order features. (Farrah, 93)
Why is this Important?
Most children’s books contain abstract color illustrations.
Black and White drawings are prevalent in school materials.
Activity: Assessing your rhyming skills.

Write 6 words that rhyme with this object
• Some children with CVI may be able to interpret these types of images.

• Others may be able to learn to interpret a particular set of abstract images for communication purposes, but many students with CVI may have difficulty learning the meaning of more abstract images.

• If we are uncertain of a child’s ability to interpret different types of images, we need to do our best to find out.

• One way to do this for some children is asking, “what do you see?”
“corn”

“glasses”

“marker”
We need to ask the right questions

“Do you see it?”

“Yes”
"What do you see?"

late phase II  “house”
phase III  “square”
phase III  “quadrilateral”
phase III  “sign with a face on it”
phase III  “birds”

Phases from Roman-Lantzy
What do you see?

When we begin with this simple question, we can:

1. **Assess** in order to gain deeper insight into a student’s visual perception

2. Make more informed choices for **visual learning/literacy media**

3. Offer targeted **instruction** in salient features

Salient Features from Roman-Lantzy
Assessment
Choosing Images

We want to find out if the child is able to interpret:

- Realistic photographs
- Realistic color images
- Abstract color images
- Realistic black and white images
- Abstract black and white image

(Zuidhoek, S., et al., 360)
<table>
<thead>
<tr>
<th>Color Photo</th>
<th>Realistic color illustration</th>
<th>Abstract color illustration</th>
<th>Realistic black and white illustration</th>
<th>Abstract black and white illustration</th>
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</table>
Assessment Procedure
Assessment Procedure

- **Environment** (minimally complex, moderately complex depending on student)
- Don’t give any hints or context
- **Most abstract** to least abstract (usually)
- Don’t tell the child if they are correct
# What's the Complexity? 2D Identification Assessment

**Student:** ____________  **CVI Range Phase:** ____________  **Identification / Recognition (circle one)**  **Date:** ____________

**Category:** Mixed  **For correct answers:** mark a check.  **For incorrect answers:** write the student’s approximation

<table>
<thead>
<tr>
<th>Item</th>
<th>Color Photograph</th>
<th>Realistic Color</th>
<th>Abstract Color</th>
<th>Realistic Black and White</th>
<th>Abstract Black and White</th>
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</table>

100% = Comfortable  60% - 99% = Challenging  0% - 59% = Frustrational
Identification (Results by Phase)
Very small informal case study

Phases from Roman-Lantzy
In general...

Comfortable Level (100%): Appropriate for instructional materials with little support.

Challenging Level (60-89%): Appropriate for instructional materials with more support.

Frustrational Level (0 – 59%): Inappropriate for instructional materials in most cases. May use occasionally with maximum support. May consider targeted instruction to progress toward frustrational level images.
13 children with CVI (Phases II and III) Very small informal study

Percentage Correct

Phases from Roman-Lantzy
Percentage Correct
Very small informal study

![Bar graph showing percentage correct for different conditions and types of images for CVI, Ocular, and NVI.](image-url)
Number of students CVI for whom that category of images was their best or tied for best (very small informal case study)
Early Phase II

“Swimming Pool”

Phases from Roman-Lantzy
Early Phase II

“Princess”

Phases from Roman-Lantzy
Early Phase II

“Fire Truck”

Phases from Roman-Lantzy
Early Phase II

“Purple”

Phases from Roman-Lantzy
Mid Phase II

“fork”

“toothbrush”

“marker”

Phases from Roman-Lantzy
Mid Phase II

"boat"

Phases from Roman-Lantzy
Phase II

“Bowl with sticks”  Phases from Roman-Lantzy
(Aiden) Late Phase II

"ladder"

Phases from Roman-Lantzy
(Aiden) Late Phase II

"pen"

Phases from Roman-Lantzy
(Aiden) Late Phase II

“basketball hoop”

Phases from Roman-Lantzy
(Aiden) Late Phase II

“bus driving down the road”

Phases from Roman-Lantzy
(Aiden) Late Phase II

“bannana”

Phases from Roman-Lantzy
(Aiden) Late Phase II

“piano”
“American Flag”

Phases from Roman-Lantzy
(Aiden) Late Phase II

“swan”

Phases from Roman-Lantzy
(Aiden) Late Phase II

"remote"

Phases from Roman-Lantzy
Early Phase III

“jug on a balloon”

Phases from Roman-Lantzy
Early Phase III

"zebra"
Early Phase III

“person standing up”

Phases from Roman-Lantzy
Why did you call it a cow the first time? “The spots.”
Why did you call it a dog this time? “The nose.”

Phases from Roman-Lantzy
Assessment Results: Aiden
(Aiden) Late Phase II

“walker”

“chair”

Black and White vs. Color

Phases from Roman-Lantzy
(Aiden) Late Phase II

“dog”

“cat”

Black and White vs. Color

Phases from Roman-Lantzy
(Aiden) Late Phase II

“computer”

“cup”

Abstract vs. Realistic

Phases from Roman-Lantzy
(Aiden) Late Phase II

“house”

“lamp”

Black and White vs. Color

Phases from Roman-Lantzy
(Aiden) Late Phase II

"frog"  "dog"

Abstract vs. Realistic

Phases from Roman-Lantzy
(Aiden) Late Phase II

“airplane”

“bird”

Realistic black and white vs. photo

Phases from Roman-Lantzy
## What's the Complexity? 2D Identification Assessment

**Student:** Aiden  
**CVI Range Phase:** III  
**Identification / Recognition (circle one):**  
**Date:** Nov, 2017

### Category: Mixed

For correct answers: mark a check. For incorrect answers: write the student’s approximation

<table>
<thead>
<tr>
<th>Item</th>
<th>Color Photograph</th>
<th>Realistic Color</th>
<th>Abstract Color</th>
<th>Realistic Black and White</th>
<th>Abstract Black and White</th>
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</tbody>
</table>

### Average:
- Color Photograph: 92%
- Realistic Color: 85%
- Abstract Color: 54%
- Realistic Black and White: 69%
- Abstract Black and White: 54%

### Complexity Level:
- Color Photograph: Challenging
- Realistic Color: Challenging
- Abstract Color: Frustrational
- Realistic Black and White: Frustrational
- Abstract Black and White: Frustrational

100% = Comfortable  
60% - 99% = Challenging  
0% - 59% = Frustrational
What does it mean?

- **Color photographs and realistic color illustrations** are best. They are at Aiden’s challenging level, which means they are appropriate visual learning media with added supports (i.e. picture walks through books, checking for understanding, pre-teaching, reviewing salient features ahead of time, etc.)

- **Color is important** and made a difference in Aiden’s ability to interpret images.

- Level of **realism seems to be even more important** for Aiden, as he did better with realistic black and white than with abstract color.

- **Abstract color, realistic black and white** and **abstract black and white** are at Aiden’s frustrational level. This means that they are not appropriate visual learning media. However, that does not mean that they cannot be taught directly in a supported way, paired with color photographs and realistic color illustrations. (show examples of circling salient features on both)

Salient Features from Roman-Lantzy
Part Two: Accommodations
What does it mean?

- Images that are abstract and/or black and white are an inappropriate visual medium for instructional materials (such as worksheets, books (read-aloud or independent), picture calendar images, etc.).

- This is because in these materials the images are typically novel or the arrangement of them is novel.

- **Color photographs** and **realistic color illustrations** are best. They are at Aiden’s challenging level, which means they are appropriate visual learning media with added supports (i.e. picture walks through books, checking for understanding, pre-teaching, reviewing salient features ahead of time, etc.)

Salient Features from Roman-Lantzy
What does it mean?

Gray Area

- This type of 2D image assessment evaluates the student’s ability to interpret novel images or ones in which the order is not expected.
- This does not necessarily mean that a child cannot learn a specific set of images within a meaningful context such as a communication device in which the images are always in the same place and the child has an opportunity to memorize their location within a static, familiar context.
- Child may learn to associate the images and their locations with particular meanings within the context of communication.
- **Proceed with caution**: 2D image interpretation is one piece of relevant information that the TVI can bring to the table when collaborating with the speech and language pathologist to determine what the best type and combination of images will be for that child.
Sample IEP Accommodations (Aiden)

- **Use color photographs** in instructional materials whenever possible.
Tim bit into an apple.
It was big and hard and crunchy.
His tooth wiggled, but it didn’t come out.
Ginger went to the next door.
A boy let her in.
Bow-wow-wow! A dog chased her out.
Ginger didn’t like dogs.
Dogs didn’t like Ginger, either.
This was not the place for Ginger.
Sample IEP Accommodations (Aiden)

• Substitute or pair real photographs with picture book illustrations (Google Images)

iPad, Google Images
Sample IEP Accommodations (Aiden)

- **Color in** black and white line drawings when color photos cannot be substituted.
Part 3: Instruction
Teaching 2D Interpretation

• “some form of learning is required to recognize pictures. Inability to perceive that a pattern of lines and shaded areas on a flat surface represents a real object would render all pictorial material inapprehensible. All drawings would be perceived as being meaningless, abstract patterns until the viewer had learned to interpret and organize the symbolic elements.

  – Deregowski.
What are salient features?

Salient Features are (Roman-Lantzy, 2013):

• **Purely visual** (when we are teaching visual perception) Can I point to them in a black and white line drawing?

• **Not colors** (except when color is a distinctive feature of most examples of a thing...oranges, broccoli, etc.) (Roman-Lantzy)

• **Unvarying (generally)**: Though the size, color, and texture of most things can vary from exemplar to exemplar, salient features are the constant, defining visual features that are common to the majority of individuals in that group. (Roman-Lantzy)
What are salient features?

Unvarying: This dog is a dog because it has a snout, paws and a tail, not because it is large, yellow and fluffy.
For more information on teaching salient features see:
Where to go from Here?

- **IEP Accommodations:** continue to use color photographs and realistic illustrations whenever possible.
- Incorporate pre-teaching of images and picture walks into daily instruction
- **IEP Goals:** Continue to work with Aiden on Salient Features (new categories)
- Use strength with colored photographs to teach the more abstract categories.

Salient Features from Roman-Lantzy
Difficulty with Complexity of Objects

Cognitive vs. Visual-Perceptual


