FIGURE 5.4 CVI Range Assessment Review

CVI Range Assessment Review

This worksheet can be used as a quick review for evaluators who wish to double-check the completeness of the CVI Range.

Interview, Observation, and Direct Assessment Check-Off

The following chart can be used to check off whether the presence of a medical cause for CVI has been determined as well as whether all the information has been obtained from the interview, observation, and direct assessment portions of the assessment. (Not all characteristics are represented, only those determined by interview or observation.) For the CVI behavioral characteristics, the chart can be used as follows:

Yes Information from interview, observation, and direct assessment suggests the possibility of the presence of this characteristic

No Information from interview, observation, and direct assessment does not suggest the presence of this characteristic

Pending Information from interview, observation, and direct assessment is incomplete

Recheck Information gathered from interview, observation, and direct assessment is conflicting; more information needed

	Yes	No	Pending	Recheck
Medical cause				
Interview				
Observation				
Direct assessment				
CVI characteristics Color preference				
Need for movement				
Visual latency				
Visual field preferences				
Difficulties with visual complexity				
▪ Surface of an object				
▪ Visual array				
▪ Sensory environment				
▪ Faces				

(continued on next page)

FIGURE 5.4 *(continued)*

	Yes	No	Pending	Recheck
Need for light				
Difficulty with distance viewing				
Atypical visual reflexes				
Difficulty with visual novelty				
Absence of visually guided reach				

Direct Assessment Guide

The following Direct Assessment guideline questions can be reviewed by the evaluator as a quick self-check of key information that must be gathered prior to the completion of the CVI Range. These questions represent behaviors frequently demonstrated by students in Phases I to III. Answers to the guiding questions may also provide useful information for report preparation.

Phase I: Building Visual Behavior

Did I check . . . ?

- ☐ Are viewed objects primarily one color?
- ☐ Are the objects similar to one another in degree of complexity?
- ☐ Is the student/child able to look toward a parent's or evaluator's face?
- ☐ Can the student/child simultaneously look and process other sensory information?
- ☐ Is a black or nonpatterned background required for visual attention to take place?
- ☐ Is there persistent latency?
- ☐ Is movement or shiny or reflective material required for visual attention to take place?
- ☐ Is light a significant motivator, and does it also interfere with visual attention?
- ☐ Do materials always have to be presented within 18 inches?

Phase II: Integrating Vision with Function

Did I check . . . ?

- ☐ Is the preferred color still important?
- ☐ Can the student look at two- or three-color items?
- ☐ Is movement or shiny or reflective material less critical?
- ☐ Is latency decreasing?
- ☐ Is the need for light decreasing or resolved?
- ☐ Is look and reach occasionally completed as a single action?

FIGURE 5.4

- ☐ Is the student/child able to look toward or into faces?
- ☐ Is the student/child able to look while voices or music are present?
- ☐ Is the student/child able to locate an object in the presence of several additional objects?
- ☐ Does the student/child have a repertoire of objects that resemble one another?
- ☐ Does distance viewing now extend as far as 10 feet?

Phase III: Refinement of CVI Characteristics

Did I check . . . ?

- ☐ Can objects be presented against increasingly complex backgrounds?
- ☐ Are novel objects preferred over familiar objects?
- ☐ Is attention to light almost never or never present?
- ☐ Is visually guided reach seen more frequently, or is it related to motor rather than visual issues?
- ☐ Can the student/child now use vision even in the presence of voices or music?
- ☐ Do highly complex environments (such as malls, assemblies, or parties) continue to affect visual performance?
- ☐ Is distance viewing and interpretation of environmental features now extended up to or beyond 20 feet?
- ☐ Are simple two-dimensional images discriminated, recognized, or identified?
- ☐ Are small objects placed on patterned backgrounds located?
- ☐ Are small, single-color images found in two-dimensional backgrounds?
- ☐ Is the student/child able to locate salient features in two-dimensional materials or in the environment?
- ☐ Is the student/child able to differentiate faces?

Although all improvements in visual ability support literacy, particularly literacy pertaining to accessing print materials, as students with CVI progress into Phase III, their ability to discern, focus on, and discriminate between letters and shapes improves. They begin to have the skills to use symbols and words and to learn from imitation. In other words, they are now in a preliteracy or early literacy and pre-reading phase of their growth and development. The use of the Phase III Extension is a way for educators to gather information to help their students make the transition into early reading or literacy tasks. The format of the Phase III Extension and the methods used to gather information (interviews, observations, and direct assessment) are similar to those of the Across–CVI Characteristics Assessment Method, Rating I. However, no separate score is derived from the extension; rather, it is used to provide a more detailed summary of the student's visual behavior and

FIGURE 5.1 CVI Range: Cover Sheet and Across–CVI Characteristics Assessment Method (Rating I) Form

The CVI Range

Student/child's name: _____ Age/Birthdate: _____

Evaluator(s): _____ Evaluation date: _____

This assessment protocol is intended for multiple evaluations over a period of time:

a. Initial assessment (red)

b. Second assessment (blue)

c. Third assessment (green)

Further assessments will require a new form.

Totals	Evaluation #1 (red)	Evaluation #2 (blue)	Evaluation #3 (green)
1. Score for Rating I			
2. Score for Rating II			

No functional vision

Typical or near-typical visual functioning

0 1 2 3 4 5 6 7 8 9 10

Phase I	Phase II	Phase III
Primarily dorsal stream visual function	Dorsal and beginning ventral stream visual function	Refinement of ventral stream visual function

The CVI Range: Across–CVI Characteristics Assessment Method

Rating I

Rate the following statements as related to the student/child's visual behaviors by marking the appropriate column to indicate the methods used to support the scores:

O = Information obtained through observation of the student/child

I = Information obtained through interview regarding the student/child

D = Information obtained through direct contact with the student/child

In the remaining columns, rate each statement with one of the following descriptors:

R Represents a visual behavior that is resolving or approaching typical behavior

+ Describes current functioning of student/child

+/– Partially describes the student/child; emerging

– Does not apply to student/child

FIGURE 5.1

CVI Range 1–2: Student functions with minimal visual response

O	*I*	*D*	R	+	+/–	–	
							May localize, but no appropriate fixations on 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 shiny or reflective properties
							Visually attends in near space only
							No blink in response to touch or visual threat
							No regard of the human face

CVI Range 3–4: Student functions with more consistent visual response

O	*I*	*D*	R	+	+/–	–	
							Visually fixates when the environment is controlled
							Less attracted to lights; can be redirected
							Latency slightly decreases after periods of consistent viewing
							May look at novel objects if they share characteristics of familiar objects
							Blinks in response to touch and/or visual threat, but the responses may be latent and/or inconsistent
							Has a "favorite" color
							Shows strong visual field preferences
							May notice moving objects at 2 to 3 feet
							Look and touch completed as separate events

(continued on next page)

FIGURE 5.1 *(continued)*

CVI Range 5–6: Student uses vision for functional tasks

O	I	D	R	+	+/–	–	
							Objects viewed may have two to three colors
							Light is no longer a distractor
							Latency present only when the student is tired, stressed, or overstimulated
							Movement continues to be an important factor for visual attention
							Student tolerates low levels of background noise
							Blink response to touch is consistently present
							Blink response to visual threat is intermittently present
							Visual attention now extends beyond near space, up to 4 to 6 feet
							May regard familiar faces when voices do not compete

CVI Range 7–8: Student demonstrates visual curiosity

O	I	D	R	+	+/–	–	
							Selection of toys or objects is less restricted; requires one to two sessions of "warm-up"
							Competing auditory stimuli tolerated during periods of viewing; the student may now maintain visual attention on objects that produce music
							Blink response to visual threat consistently present
							Latency rarely present
							Visual attention extends to 10 feet with targets that produce movement
							Movement not required for attention at near distance
							Smiles at/regards familiar and new faces
							May enjoy regarding self in mirror
							Most high-contrast colors and/or familiar patterns regarded and interpreted
							Simple books, picture cards, or symbols regarded and interpreted

FIGURE 5.1

CVI Range 9–10: Student spontaneously uses vision for most functional activities at a level approaching near typical

O	*I*	*D*	R	+	+/–	–	
							Selection of toys or objects not restricted to the familiar; visually curious in new settings
							Only the most complex environments affect visual response
							Latency never present
							No color or pattern preferences
							Visual attention and interpretation of the environment extends beyond 20 feet
							Views and interprets information from non-backlit two-dimensional materials and simple images
							Uses vision to imitate actions
							Demonstrates memory of visual events
							Displays typical visual-social responses
							Visual fields unrestricted
							Look and reach completed as a single action
							Views and interprets information from non-backlit two-dimensional images presented on complex, visually dense backgrounds

In the lower-numbered clusters, the statements describe behavioral responses indicating that the CVI characteristic in question has an intense effect on the student's visual functioning. As the numbers increase through the levels, the behaviors described in the statements indicate that the CVI characteristic is having a less intense effect as the characteristics change and functional vision improves. As the student's visual functioning approaches 10 on the scale, his or her overall visual functioning improves, and the effects of the characteristics of CVI interfere less with his or her use of vision.

SYMBOLS FOR SCORING. The Across–CVI Characteristics Assessment Method, Rating I, is scored using a series of symbols: **R**, **+** (plus), **+/–** (plus/minus), and **–** (minus). For each statement, the evaluator assigns the symbol that most accurately indicates the way in which the student functions visually in regard to the CVI characteristic in question:

- A score of **+** is assigned if the statement accurately describes the current functioning of the student. In other words, if the statement describes a behavior that is actually occurring in the present time, a score of **+** is assigned.
- A score of **+/–** is assigned if the statement partially describes a behavior demonstrated by the student. It may also be assigned if the behavior occurs

FIGURE 5.3 CVI Range: Within-CVI Characteristics Assessment Method (Rating II) Form

The CVI Range: Within-CVI Characteristics Assessment Method

Determine the level of CVI present in the 10 categories below and add to obtain total score. Rate the following CVI categories as related to the student/child's visual behaviors by circling the appropriate number (the CVI Progress Chart may be useful as a scoring guide):

0 Full effect of the characteristic is present
.25 Behavior on this characteristic has begun to change or improve
.5 The characteristic is affecting visual functioning approximately half the time
.75 Occasional effect of the characteristic; response is nearly like that of individuals the same age
1 Resolving, approaching typical, or response is the same as others of the same age

1. Color preference Comments:	**0**	**.25**	**.5**	**.75**	**1**
2. Need for movement Comments:	**0**	**.25**	**.5**	**.75**	**1**
3. Visual latency Comments:	**0**	**.25**	**.5**	**.75**	**1**
4. Visual field preferences Comments:	**0**	**.25**	**.5**	**.75**	**1**
5. Difficulties with visual complexity Comments:	**0**	**.25**	**.5**	**.75**	**1**
6. Need for light Comments:	**0**	**.25**	**.5**	**.75**	**1**
7. Difficulty with distance viewing Comments:	**0**	**.25**	**.5**	**.75**	**1**
8. Atypical visual reflexes Comments:	**0**	**.25**	**.5**	**.75**	**1**
9. Difficulty with visual novelty Comments:	**0**	**.25**	**.5**	**.75**	**1**
10. Absence of visually guided reach Comments:	**0**	**.25**	**.5**	**.75**	**1**

FIGURE 5.5 CVI Range: Phase III Extension

CVI Range: Phase III Extension Chart

Approaching Literacy

This chart can be used as a guide to obtain more detailed information when a student scores 7–10 on the CVI Range, a phase in which he or she may be developing the visual skills for literacy activities. The CVI characteristics considered in this extension are visual field preferences, difficulties with visual complexity, difficulty with distance viewing, and absence of visually guided reach. No separate score is derived from the extension; it is used to help organize appropriate interventions. This extension may not be appropriate for Phase III students who have both CVI and coexisting ocular visual impairment.

Recognition of Salient Features with Increasing Levels of Complexity at Near

O	*I*	*D*	R	+	+/–	–	Statement
							Visually discriminates between same and different objects ("Show me one like . . .")
							Visually recognizes same and different objects ("Show me the _____"). Recognition can be based on object name, color name, or shape
							Visually identifies object, color, or shape in three dimensions ("What is this?")
							Visually discriminates between same and different symbols in two dimensions, such as photographs
							Visually recognizes symbols in two dimensions, such as photographs
							Visually identifies symbols of two dimensions, such as photographs
							Visually discriminates "same" three-dimensional object (1 inch or smaller) from a field of 10 or fewer objects
							Visually discriminates "same" three-dimensional object (1 inch or smaller) from a field of 11 or more objects
							Visually recognizes a named object (1 inch or smaller) from a field of 10 or fewer objects
							Visually recognizes a named object (1 inch or smaller) from a field of 11 or more objects
							Visually identifies objects (1 inch or smaller) from a field of 10 or fewer objects
							Visually identifies objects (1 inch or smaller) from a field of 11 or more objects

FIGURE 5.5

O	I	D	R	+	+/–	–	Statement
							Visually discriminates "same" two-dimensional picture or symbol from a field of 10 or fewer images
							Visually recognizes a named two-dimensional picture or symbol from a field of 11 or more images
							Visually identifies pictures or symbols from a field of 10 or fewer images
							Visually identifies pictures or symbols from a field of 11 or more images
							Visually discriminates hidden or embedded pictures or symbols when provided an identical prompt
							Visually recognizes hidden or embedded pictures or symbols when provided a verbal prompt ("Find the_____")
							Visually identifies hidden or embedded pictures or symbols without visual or verbal prompt ("Can you find the hidden pictures/symbols?")
							Visually discriminates, recognizes, and identifies faces in three dimensions
							Visually discriminates, recognizes, and identifies two-dimensional images of faces
							Visually discriminates, recognizes, and identifies their name, sight words, or communication symbols
							Visually recognizes, identifies, and functionally uses words or symbols presented in a group of two to five symbols
							Visually recognizes, identifies, and functionally uses words or symbols presented in a phrase or group of six or more symbols

Recognition of Salient Features with Increasing Levels of Complexity at a Distance (O&M)

O	I	D	R	+	+/–	–	Statement
							Visually recognizes or identifies three-dimensional landmarks in familiar indoor settings at distances up to 20 feet
							Visually recognizes or identifies three-dimensional landmarks in familiar indoor settings at distances beyond 20 feet
							Visually recognizes or identifies two-dimensional signs, symbols, or pictures in familiar indoor settings at distances up to 20 feet

(continued on next page)

FIGURE 5.5 *(continued)*

O	I	D	R	+	+/–	–	Statement
							Visually recognizes or identifies two-dimensional signs, symbols, or pictures in familiar indoor settings at distances beyond 20 feet
							Visually recognizes or identifies three-dimensional landmarks in familiar outdoor settings at distances up to 20 feet
							Visually recognizes or identifies three-dimensional landmarks in familiar outdoor settings beyond 20 feet
							Visually recognizes or identifies three-dimensional landmarks in unfamiliar indoor settings up to 20 feet
							Visually recognizes or identifies three-dimensional landmarks in unfamiliar indoor settings beyond 20 feet
							Visually recognizes or identifies three-dimensional landmarks in unfamiliar indoor settings beyond 20 feet with low levels of sensory complexity
							Visually recognizes or identifies three-dimensional landmarks in unfamiliar indoor settings beyond 20 feet with high levels of sensory complexity
							Visually recognizes or identifies three-dimensional landmarks in outdoor settings beyond 20 feet with low levels of sensory complexity
							Visually recognizes or identifies three-dimensional landmarks in outdoor settings beyond 20 feet with high levels of sensory complexity
							Visually locates three-dimensional moving or reflective objects presented in upper, lower, right, and left peripheral visual fields
							Visually locates three-dimensional stable objects presented in upper, lower, right, and left peripheral visual fields
							Visually locates two-dimensional moving or reflective materials presented in upper, lower, right, and left peripheral visual fields
							Visually locates two-dimensional stable materials presented in upper, lower, right, or left peripheral visual fields
							Moves through familiar indoor or outdoor settings without unintended contact with walls, doorways, or objects on the floor
							Moves through unfamiliar indoor or outdoor settings without unintended contact with walls, doorways, or objects on the floor
							If appropriate, ascends and descends stairways safely and without assistance

FIGURE 5.5

Visually Guided Reach with Increasing Levels of Complexity

O	*I*	*D*	R	+	+/–	–	Statement
							Visually guided reach occurs when a 1-inch target is presented on a visually noncomplex background
							Visually guided reach occurs when a 1-inch target is presented on a moderately patterned or cluttered background
							Visually guided reach occurs when a 1-inch target is presented on an unadapted, highly patterned, or cluttered background

ability to recognize the salient or distinguishing features of objects in Phase III, when the effects of CVI may be subtler, to help the teacher plan practical interventions. The CVI visual characteristics considered in the extension are difficulties with visual complexity, difficulty with distance viewing, and absence of visually guided reach. The Phase III Extension focuses on the integration of vision with higher-level visual, cognitive, O&M, and social tasks. However, the use of the extension may not be appropriate for Phase III students who have both CVI and ocular visual impairments.

Environmental Considerations

When assessing students for the presence of CVI, it is extremely important to take into account the influence of the environment on their visual functioning. There is a common, and perhaps inaccurate, belief that students with CVI have vision that varies from minute to minute, hour to hour, and day to day. However, it is essential to consider the factors that create such apparent variability in a child's vision.

It is likely that the student's ability to utilize his or her vision may be greatly dependent on the influences of the environment. It is not uncommon for parents to report that their children seem more visually alert at night (Roman, 1996). The alertness that parents observe in their children at night may be associated with lower levels of environmental stimulation that occur during the routines of the evening or late at night, versus those that occur during the daylight hours. Students who have difficulty with visual complexity and who are not able to easily sort out the complex patterns presented by an object, the array in which the object exists, or the sensory environment, may be faced with great challenges in navigating their learning environments. The need to attend to competing stimuli may overwhelm or greatly fatigue a student. Thus, when assessing a student's behavior, it is important to consider whether it is the student who has changed or, more likely, the environment that has changed in some critical way, as in the following case study.

Jeremy is a 12-year-old student who has CVI. His classroom teacher feels that Jeremy uses his vision so irregularly that it is difficult to know when to expect him to use it at