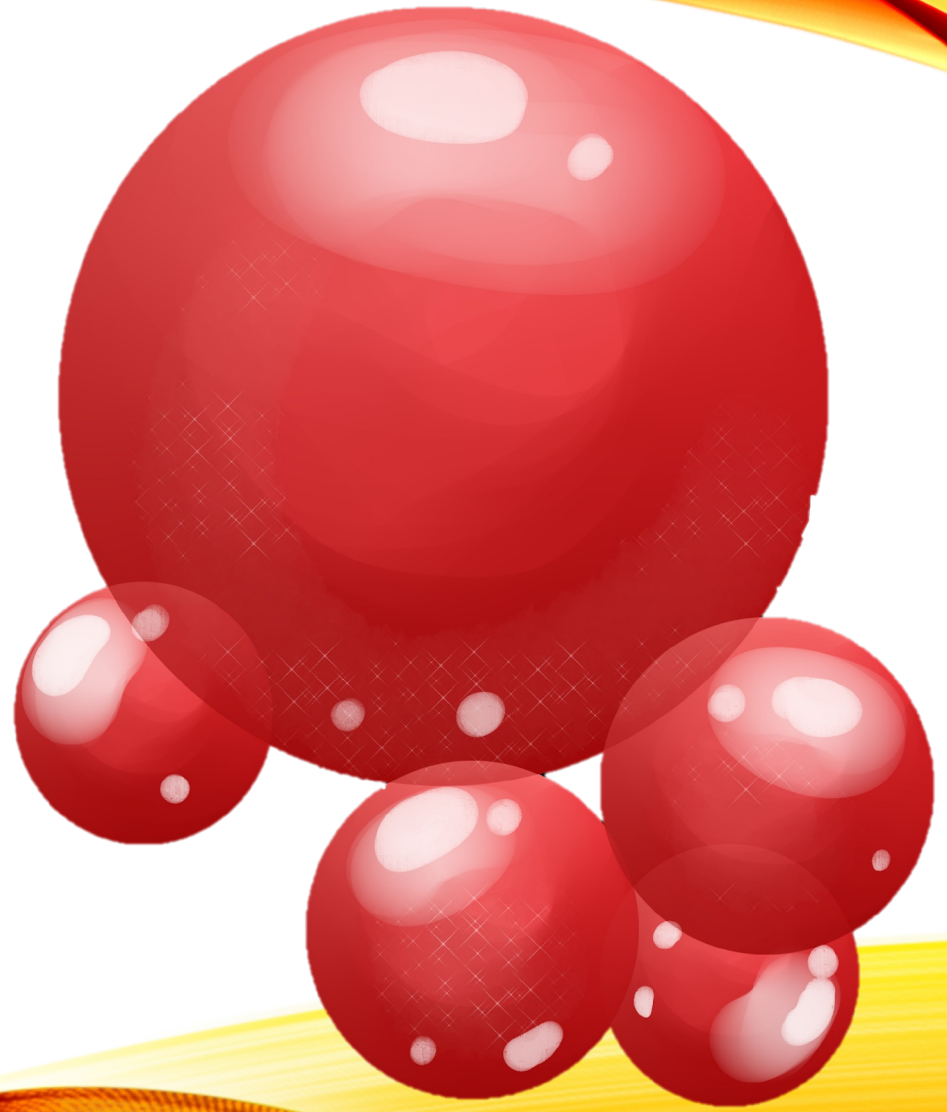
CVI AND BABIES

Kristin Gault, M.Ed, MA, TVI, CVI Endorsed
Claudia Swapp, TVI, MA



OBJECTIVE:

Picture Source-https://wallpaperaccess.com/baby 9-2022

Share information about ways babies with cvi are being served and information from resources you may not be aware of.

NAVEG PROJECT

-EUROPEAN GRID SCREENING WITH PREMATURE INFANTS BORN AT 31 WEEKS OR LESS. SCREENING IS DONE AT 35-40 WEEKS. SCREENS FOR POSSIBLE RISK FOR FUTURE NEUROLOGICAL VISUAL IMPAIRMENT. ACTIVELY BEING USED BY THE ANCHOR CENTER. THE ANCHOR CENTER IS REACHING OUT WITH TRAININGS FOR OTHER INTERESTED PARTIES. UTAH RECEIVE TRAINING AND MADE HUNDREDS OF REFERRALS FOLLOWING THE TRAINING AND SCREENINGS OF INFANTS.

anchor center
FOR BLIND CHILDREN

EARLY VISUAL DEVELOPMENT

- In the past we may have thought it impossible or unusual to screen babies earlier than 6 months.
- Most early development guidelines indicate vision is developing around 4 months.

Photo source: https://unsplash.com/images/people/baby 9-2022.

WHAT DO WE CURRENTLY KNOW

From Neurons to Neighborhoods-Early Brain Development 2000

***Sensory Development Peaks at one month.**

***Scientific evidence that babies in utero show retinal movement**

***Some visual responses are not based on experience but biologically primed.**

***Newborns are capable of so much more than we thought.**

What we know about CVI and early diagnosis…

Photo Source:
https://www.stockfreeimages.com/p1/baby.html 9-2022

Average identification of visual impairment is 12-18 months.

Current standard of care in the NICU from a visual perspective is really only for Retinopathy of Prematurity.

Prematurity is one of the diagnoses that puts a child at neurological risk visually.

The earlier that referrals can be made to early intervention the earlier families can be made aware of their child's functional vision.

NAVEG HAS SEVERAL BENEFITS

***Already validated as a visual screening tool on premature infants in Italy.**

***It has three areas to cover all areas of visual screening.**

*** It's non-invasive, not a medical procedure**

***Does not stress the babies if you do it correctly**

***Anchor Center is happy to train screeners.**

WHAT THE ANCHOR CENTER HAS LEARNED WORKING WITH THE NICU

- It has been a learning experience on both sides
- Work with your local pediatric ophthalmologist
- Connect with your NICU staff and collaborate
- Learn as much as you can about the NICU's philosophy and scheduling
- Know that physical states of the babies are critical for success
- You may have to do the NAVEG more than once.

Newborn baby with eyes closed, yellow hat on, and wrapped In a white blanket.
Source: https://www.freeimages.com/search/newborn-baby 9-2022

NAVEG
SCREENING AND KIT MADE UP OF THREE COMPONENTS

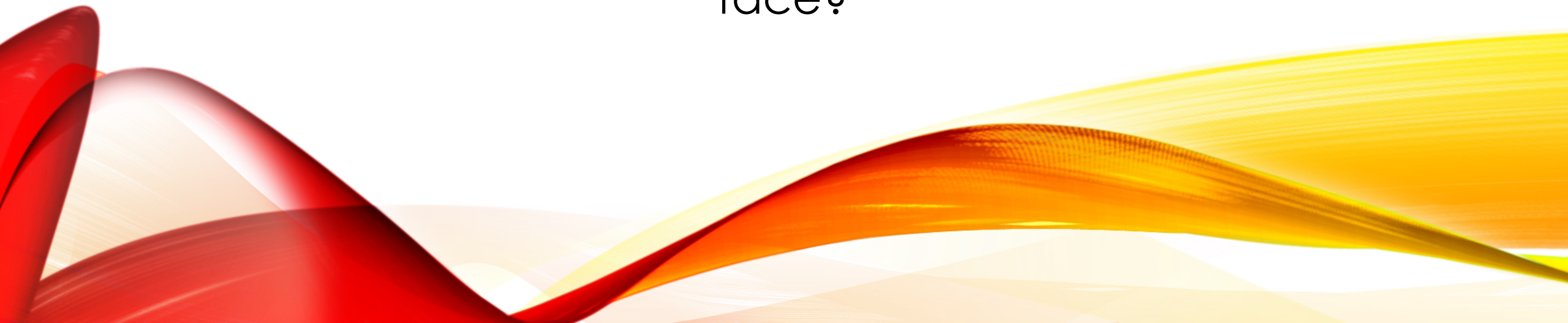
*Ocular Visual Components

*Motor Visual Components

*Perceptual Visual Components

WHAT CAN WE DO IN OREGON?

How do we get started? What road blocks might we face?



GREAT IDEA SHEETS FOR TVIs TO SHARE WITH PARENTS (NOT FOR PARENTS TO ACCESS ON THEIR OWN)

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Early Intervention CVI Characteristic Idea Sheets

CVI STRATEGIES - COLOR

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See life differently

COLOR

- **Does your child visually attend more when one color is presented over another?**
- **Is your child more likely to look at your face if you are wearing a red hat, scarf or lipstick?**
- **Does your child have preferred toys that are a consistent color?**

We all tend to have a favorite color, but for a child with CVI a "preferred color" usually means there is a color that attracts their visual attention more than others. This color may be easier for them to look at. In using this preferred color by *highlighting* or *within* the object itself, we can help the child look at what we want them to engage with visually. Research does indicate that, in some individuals, shape perception can be significantly affected, while color vision remains intact (Zeki, Aglioti, McKeefry, & Berlucchi, 1999). Encouraging the use of vision with an easier skill (attending to color) can improve a child's functional looking behaviors.

*Sarah, 9 months old, does not appear to use her vision to look at object often. However, her mom, Dana, has noticed that she **almost always notices objects that are red**. She particularly loves her Elmo toy and will bring her visual attention to it if it is held in front of her at about a foot away. Dana also noticed that when they had red, white and blue mylar balloons for a party, Sarah almost always focused her attention on the red one. After discussing these observations with their TSVI-EI, the family comes up **with a plan to try use her preferred color** to help Sarah look at things for longer periods of time. During Sarah's playtime, Dana has started wearing bright red lipstick to see if she can get Sarah to attend to her face and her father, Jim, has been successful in getting her to smile at his face when he is wearing a red baseball cap.*

These materials are often already found in the family home, and can be used to **activate the visual system and to attract visual attention** in daily routines. If these items are silent, it will help the child to rely on visual attention, not the sounds.

Elmo, Big Bird, Cookie Monster, Clifford the Big Red Dog toy	Solid Colored Balls	Mylar balloons or wrapping paper	Bright red lipstick
Remote control cars (that have a slower speed)	Fire engines or school buses	Lava lamps	Solid caps or scarves
Solid color blankets or backgrounds	Holiday or emergency lights	Single color Holiday decorations	Solid colored pom-poms

anchor center FOR BLIND CHILDREN
See life differently

COLOR

Play/Floor Time

____ Provide a space on the floor on a solid colored blanket where the child is safe to move freely.
____ Present a toy in the child's preferred color to see if it helps catch the child's attention.
____ Watch for the child to "alert" to these objects. Sometimes it might be a smile, or becoming quiet or still, or directly looking at the object or turning in its direction.
____ Present child with a slow-moving object in their preferred color
____ Consider tying helium-filled balloons in the preferred color to a weight on the table, giving the child an opportunity to reach for or bat at the balloon.

Dressing/Diapering

____ Hold up the diaper/clothing items and shine light in the preferred color onto it. Label it for them "It's time for new diaper!" or "Let's put your pants on" before putting them on.
____ Present two different outfits (only one in the preferred color) and let the child wear what everyone they look at first.

Meal Time

____ Use a solid colored placemat with bowl and spoon in the child's preferred color.
____ Slip cuffs of the preferred color material onto the handles of utensils
____ Wrap a sock or a scrunchie in the child's preferred color around a bottle or drinking cup.
____ For children who use G-tubes make a bag or wrap with a scrunchie or ribbon in the child's favorite color. Lift it to eye level and say, "It's time for lunch."

Lap Time

____ Use a flashlight or directed light source in the child's preferred color from behind the child to shine directly onto the book or toy.
____ Make a book with different objects in the child's preferred color on each page.

Time Outdoors

____ Watching rolling balls in the child's preferred color, or siblings wearing jackets/shirts in the child's preferred color playing on a playground, soccer game, etc.
____ Place pinwheels in the preferred color in the ground along a pathway.
____ Hang holiday lights or mylar strands from trees branches and lie under a tree to watch the branches sway in the wind

Bed/BathTime

____ Use toys that float in the preferred color; like a red boat your child may be able to watch them move along the top of the water.
____ Turn on a lava lamp in the bedroom next to the bed, changing table or favorite chair.

Zeki, S., Aglioti, S., McKeefry, D., & Berlucchi, G. (1999). The neurological basis of color perception in a blind patient. *Proceedings of the National Academy of Sciences of the United States of America, 96,*14124- 14129. doi: 10.1073/pnas.96.24.14124

Anchor Center for Blind Children, 2550 Roslyn St. Denver, CO 80238

Babies with CVI
a useful reference guide for TVI's working with babies

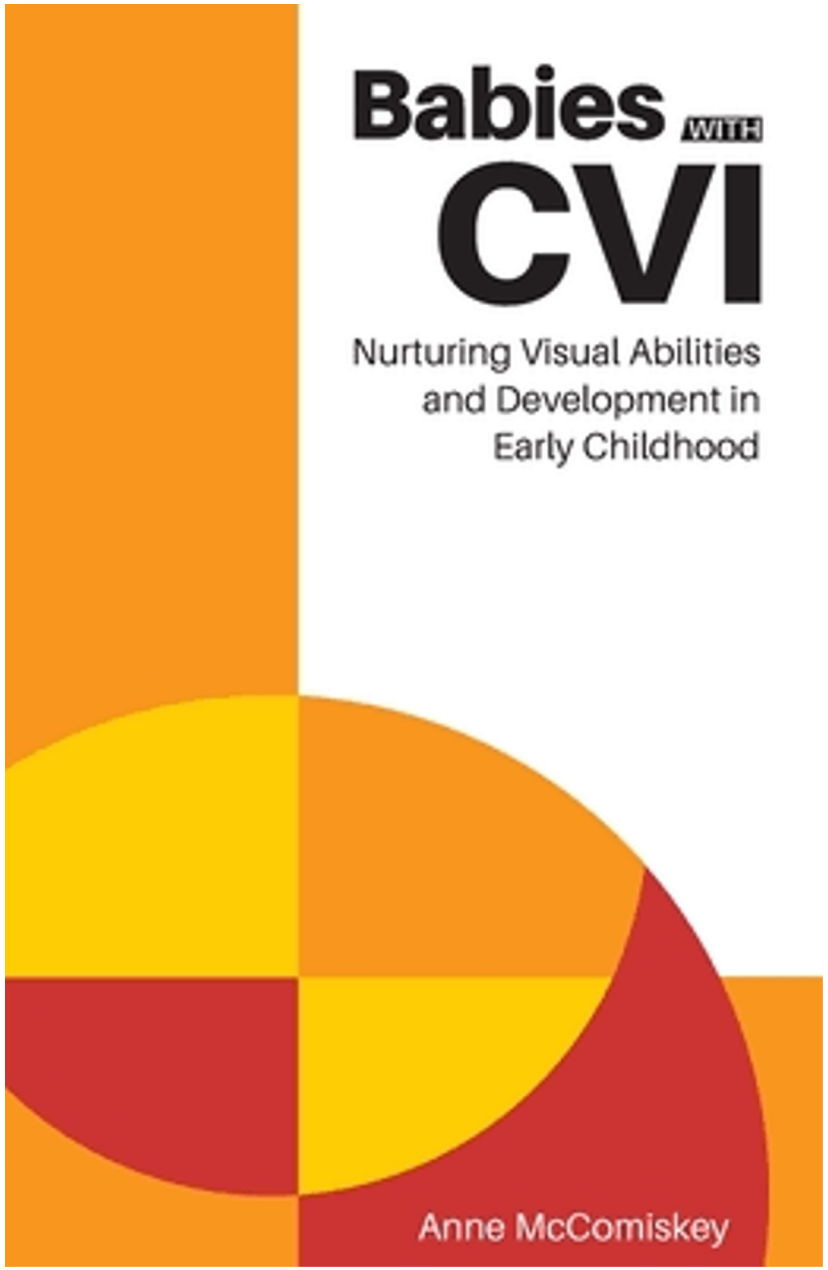


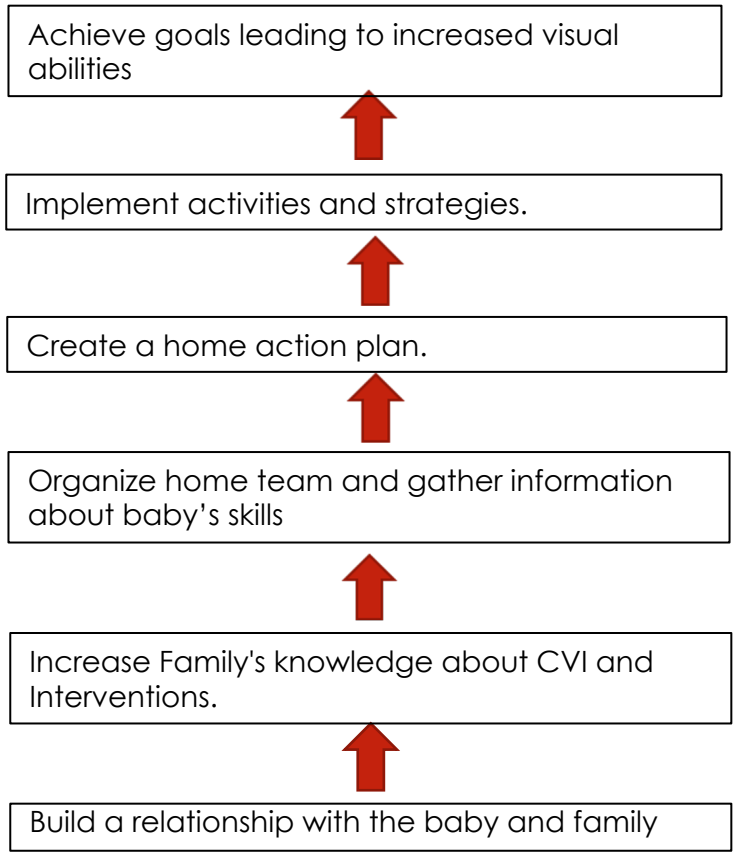
Image of the cover of the book Babies with CVI

From the Foreword by Kay Ferrell, PhD

"*Babies with Cerebral Visual Impairment* would have shortened my learning period. The book provides strategies for approaching families, making home visits, and having appropriate (and sometimes difficult) conversations. Better yet, Anne gives the reader activities and interventions for working with infants and toddlers with CVI. These activities are designed to help the children develop their visual skills and to increase their learning opportunities. She also takes the reader through a history of CVI and provides valuable resources for families and educators."

Just a few of the things we learn from *Babies with CVI…*

FROM BUILDING PARTNERSHIPS TO ACHIEVING GOALS



Four ways a teacher of children with visual impairments can provide support by helping parents:

*To understand that early intervention plays an important role to help improve their baby's vision and development.

*To realize that the grief that follows a significant medical diagnosis may effect their emotions, behaviors, and energy, and can also make bonding with a baby that has a visual impairment especially challenging.

*To learn about CVI and important strategies that can help a baby's development,

*To build productive relationships with professionals such as teachers and medical doctors.

Taken from Babies with CVI 2021 pages 2-3

THE STAGES OF GRIEF

Anne McComiskey lists the stages of grief she has directly observed in parents of babies with visual impairments. She also includes in a chart several behaviors and reactions parents commonly exhibit during each stage. She also includes suggestions for actions professionals can take support including listening and providing attachment interventions.

GRIEF EXPERIENCE TABLE

TAKEN FROM TABLE 1.1 PAGES -11 *BABIES WITH CVI,* ANNE MCCOMISKEY 20221

Stage/Emotion	Behavior(s)	Support
Shock	*Numb *Distracted *Forgetful *Unfocused *Feeling "out of body"	*LISTEN *Offer brief, clear answers to questions *Suggest baby massage activity to increase parent-baby attachment. *Suggest visual skill building intervention. *Refer to other resources and groups
Sadness/Depression	*Exhausted *Low affect *Crying of feeling depressed *Low or negative affect *Exhausted *May become sick *Has trouble sleeping. *Difficulty focusing *Sleeping excessively to escape sadness	*LISTEN *Refer to other professionals , information websites, support groups, or another mentor parent supporter. *Suggest parent-baby attachment interventions. *Suggest music or movement class to increase relaxation and attachment.

GRIEF EXPERIENCE TABLE

TAKEN FROM TABLE 1.1 PAGES -11 *BABIES WITH CVI,* ANNE MCCOMISKEY 20221

Stage/Emotion	Behavior(s)	Support
Denial	*Defensive *Downplays seriousness of diagnosis *Belief that a higher power with "fix" the issue *Insists that doctors are incorrect about diagnosis	*LISTEN *Relate positive observations *Offer support referrals. *Suggest parent-baby attachment interventions.
Anxiety	*Belief that situation is consequence of past actions. *Anxious about possibility of other revelations about baby's health. *Worried about the baby. *Is quiet, timid, overly attentive. *Controlling.	*LISTEN *Suggest chest-to-chest relaxation *Introduce to parent mentor *Suggest parent-baby attachment interventions.

GRIEF EXPERIENCE TABLE

TAKEN FROM TABLE 1.1 PAGES -11 *BABIES WITH CVI,* ANNE MCCOMISKEY 20221

Stage/Emotion	Behavior(s)	Support
Guilt	*Preoccupied with future *Obsessive *Ignores other children	*LISTEN *Provide support activities, including activities that include siblings. *Suggest parent-baby attachment interventions *Provide referrals as appropriate.
Resentment/Anger	*Is curt, rude or angry *Places blame on others *Litigious *Questions spiritual beliefs *Experiences partner discord.	*LISTEN *Avoid difficult discussions

GRIEF EXPERIENCE TABLE

TAKEN FROM TABLE 1.1 PAGES -11 *BABIES WITH CVI,* ANNE MCCOMISKEY 20221

Stage/Emotion	Behavior(s)	Support
Bargaining	*Excessive focus on behaving ethically. *Obsessively researches child's condition. *Volunteers	*LISTEN *Refer to support sources, appropriate websites, and programs.
Acceptance	*Behaves more calmly *Is ready to listen *Interest in participating in interventions. *Demonstrates closer attachment with baby.	*LISTEN *Explain that emotions from previous stages of grief may reappear, but now with diminished intensity.

SITUATIONS CAN INTENSIFY FEELINGS OF GRIEF

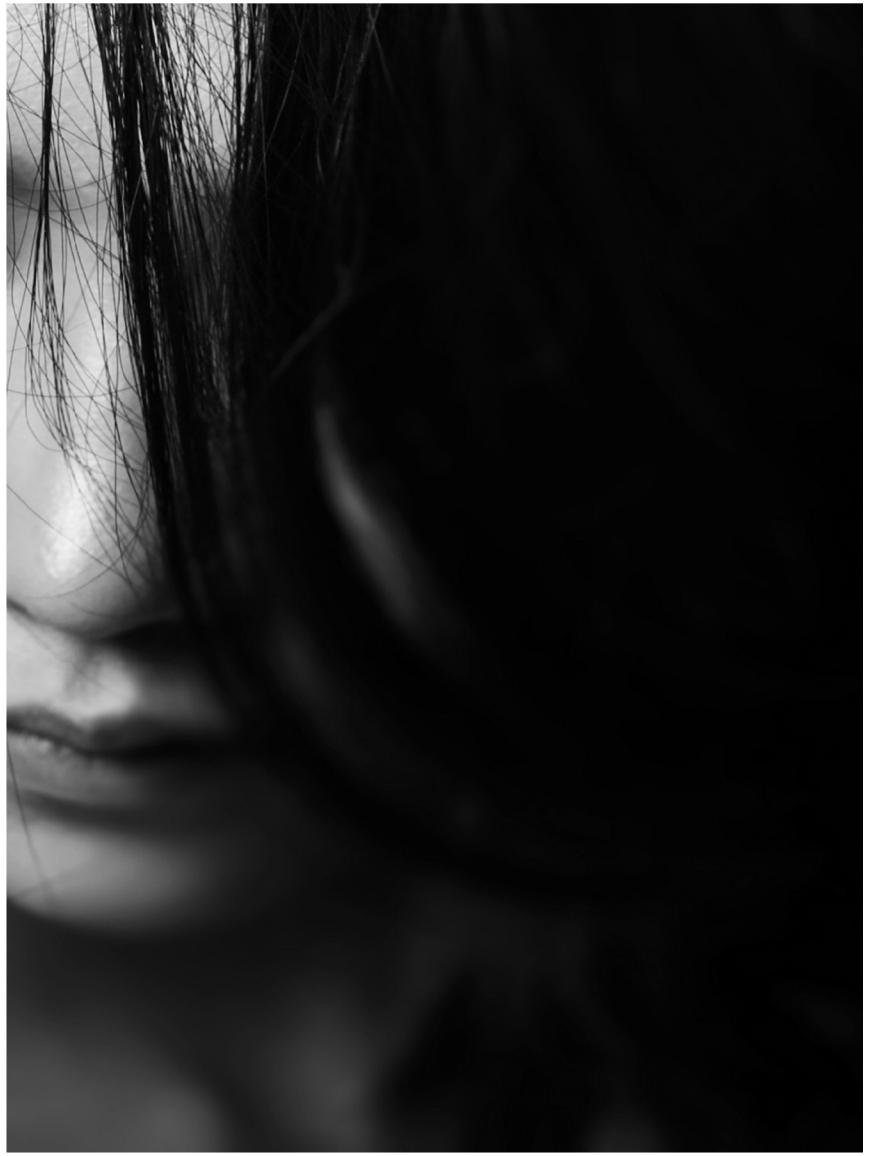
*Judgmental or unwelcome comments

*Incorrect information about CVI

*Discovery of additional difficulties

*Discord with a partner

*Unsupportive friends or family



MANAGING UNWELCOME COMMENTS

SUGGESTIONS GATHERED FROM PARENTS AND PROFESSIONALS BY ANNE MCCOMISKEY (see page 20-21 Babies with CVI)

- A baby needs the experience of being in the supermarket as much as the family needs to but food. However, on occasion, it may be necessary to leave the baby at home, especially if you are in a rush, or when you need time alone.
- Remember that people ask questions simply because they do not understand. Approach the situation as a teacher and try to increase their understanding about children with disabilities, State facts simply and positively.
- Limit an uncomfortable conversation by politely ending it. For example, you may respond by saying, "I appreciate that you are interested in my child, but I am trying to concentrate on reading my book".

MANAGING UNWELCOME COMMENTS CONTINUED

- Create an honest, quick, and simple story about your baby's condition. Write it down and practice it so that you can repeat it comfortably whenever a question or comment arises. You can then conclude the story with a fact about something your baby enjoys doing: for example, "Timmy has a visual condition that makes his eyes move from side to side and he doesn't see certain things well. He loves to sing, "If You're Happy and Know It" and has just started finger painting. Thank you for asking."
- Whenever possible, refer to your baby using their first name to help people remember that you are talking about a child and not a disability.
- It is important to remember the following:

  Your approach to the interaction helps you control the situation

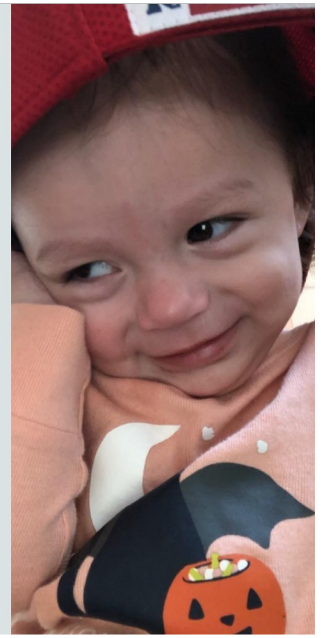
  It is never okay for someone to treat you rudely

  It is never okay for someone to handle you or your child without permission.

EXAMPLE OF JADE'S SOCIAL STORY

Jade

All About Me...



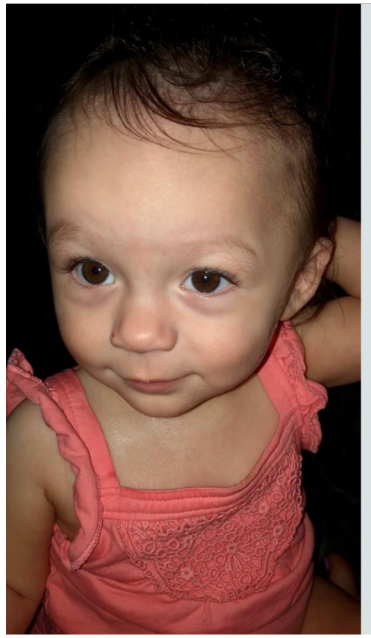
Things I love to do...

- Being with my Mommy and Daddy
- Playing in the water
- Being outdoors
- Playing with my dogs (I love animals!)
- Playing with colorful toys that light up
- Listening to music and dancing, especially to "The Oldies"
- Exploring different toys and objects
- Looking at my Baby Face book

JADE'S SOCIAL STORY

Things I am good at...

- Laughing and making people laugh
- Playing "Peek-a-boo"
- Trying lots of foods
- Being willing to feel all sorts of different textures and explore new toys
- Being to open to new experiences
- Being able to track objects, especially if lights are included



I have special eyes...

- Optic Nerve Hypoplasia: My optic nerves did not fully develop when I was born, however my vision has gotten stronger with time.
- Nystagmus: This is a fancy name which means that my eyes tend to move back and forth on their own. It is not something I can always control.
- I may not be able to see as clearly as someone with typical vision. This means that things might be a little blurry for me.
- My right eye is a little stronger than my left eye. This means I may notice and be able to see things a little better if they are presented on my right side, especially if I am tired or in an unfamiliar environment.

JADE'S SOCIAL STORY

Things I may need a little help in...

- It helps to look at things when they are lit up, have bright colors, or when there is high contrast.
- It helps to be able to look only 1-2 objects at the same time. Visual clutter is hard for me and makes it hard to me to find something.
- I am better able to see something when it is presented against a single-colored background.
- It helps me to have time to explore a new toy when I can touch it as well as look at it.

Things I may need a little help in...

- When being shown something that is beyond 4 feet it helps to shine a light on it, use a bright color, or use movement so I can better be able to see what is being shown to me. By seeing it, I will be more motivated to crawl and check out what is being shown to me.
- Helping me balance. I am getting stronger, but I am not always stable.

JADE'S SOCIAL STORY

What does not work well for me...

- Picking me up without letting me know first
- Not giving me enough time to look at things
- Showing me too many things at one time
- Showing me things from too far away
- Making eye contact and looking directly at faces, especially with people I do not know very well

The most important things I want you to know about me are...

- I am deeply loved!
- I love to learn!
- I love to try new things!
- I have so much potential!

PARENT-BABY CONNECTIONS

Parent/Baby interaction observations can help to gauge the level of encouragement, support, or interventions that may be needed to encourage these connections,

PARENT/BABY OBSERVATIONS

ACTION	RARELY	SOMETIMES	OFTEN
Looks toward baby			
Touches baby			
Names baby in discussion			
Sits near baby			
Shows gentle touch			
Parent readily responds to baby with cues (hunger/upset/wet)			
Uses playful, loving voice			
Smiles toward baby when talking			
Displays delight about baby			
Enjoys interactions with baby			
Adjusts baby's clothes, hair, and touches baby's face lovingly.			
Positions or handles baby carefully			

CLARIFY BEHAVIORAL CUES

- "One area of visual difficulty noted in children with CVI is the inability to recognize and attend to faces."
- (Dutton, 2015c)

PROVIDING EXPOSURE TO FACE MOTIFS…….EXAMPLES AND SUGGESTIONS

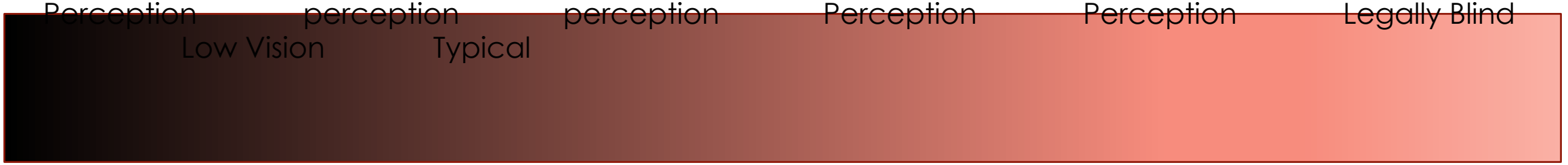
Face Off Challenge

PARENT'S SUGGESTIONS WHO HAVE RAISED CHILDREN WITH CVI FOR PROVIDERS

- Listen to the parents' descriptions of their baby's history and their own feelings.
- Acknowledge the importance of parents' experience and knowledge regarding their baby with CVI.
- Include parents in a discussion whenever additional professionals are present.
- Respect the customs of the house and the beliefs of the family.
- Plan greeting time at the start of each visit in order to check in with parents.
- Interact with the baby when the baby seems interested.
- Ask parents' permission before managing the baby's behavior or removing any of the baby's clothing.
- Make positive comments about the baby.
- Give regular, positive feedback about the baby's visual skills and overall development
- Deliver new information in small doses so as not to overwhelm the parents
- Suggest activities and resources
- Summarize the visit, identify next steps, and schedule a time for the next visit

VISUAL CONTINUUM

“Parents are often surprised to learn that visual acuity exists on a continuum. The range of visual acuity extends from having no light perception on one end to what is considered typical or normal vision on the other end”. P.41 <u>Babies with CVI</u>



EXAMPLE OF PROGRESSION OF VISUAL ACUITY DEVELOPMENT

At birth, the retina has not finished developing. As the baby gets older, the baby can see finer details and more colors. (Image Credit: Katrina Furth, Ph.D.)

Area of Damage Seen on MRI Scan	Visual Features to Look For
Occipital Lobes	
Left occipital lobe Right occipital lobe Both occipital lobes	• Lack of visual field on the right side for both eyes • Lack of visual field on the left side for both eyes • 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 *Severe damage affecting the cortex, white matter, or both*	• 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
Limited damage to parietal white matter	• Behavioral patterns of dorsal stream dysfunction

VISUAL FEATURES OF CVI TO CONSIDER LOOKING FOR IN RELATION TO DAMAGE IN SPECIFIC LOCATIONS REPORTED ON A BRAIN MRI SCAN

PAGE 60-62

(Description)

Home Action Plan

Baby's name: Robbie DOB: _____

Plan dated: _____

Sessions dates (Visit 1 to Visit 4):

Plan: #1 Starting Program

Team Member	Name	Goals	Strategy	Person(s) Responsible	Suggestions
Mom	*Kathy*	*Increase social responsiveness (looking toward parents' faces)*	*Put face motifs around crib area close to Robbie*	*Mom, dad, grandmother*	*Happy-face plates are good décor to include in the crib area.*
			Shine light on parents' faces while singing or talking after diaper time.		*Include flashlight play after diaper time.*
Teacher of children with visual impairments	*Ms. Smart*	*Increase visual awareness*	*Use objects identified in the FVA to create a stimulating visual play environment. Robbie can relax in this small space several times a day.*	*Mom, dad, older brother*	*Review suggestions for creating a* Little Room (Nielsen, 1992). *Create a small space for Robbie's quiet time. Try not to intervene.*
Orientation and mobility specialist	*Mr. Howe*	*Increase awareness of body parts*	*Add rattles or sound-making bracelets to wrists and ankles for short amounts of time during the day.*	*Mom, dad, grandmother, older brother*	*Periodically rotate toy from left wrist to right and then to each ankle. Create homemade wrist toys that are fun, colorful, and can be changed often.*
Physical therapist	*Mr. Strong*	*Increase head and body strength*	*During tummy time, include sound and visual objects near Robbie's head. Include a rolled towel under chest for support. Repeat several times a day.*	*All*	*Use a plain quilt and put 3-5 objects near Robbie's head. At certain times, hold Robbie facing away from the adult who is carrying him.*
Occupational therapist	*Ms. Lee*	*Increase ability to hold small objects*	*Have Robbie hold a favorite small item in one hand and gently shake that hand during bath time.*	*Mom, dad*	*Small items, such as a plastic ring and bell or soft squeak toy, are good objects for holding activities co-active movement may help Robbie increase his grasp.*
Speech and language pathologist	*Mr. Good*	*Increase attention to voices of adults*	*During routines, such as before naps or bedtime, sing and talk to Robbie.*	*All*	*Try to routinely repeat Robbie's favorite songs.*
Pediatrician	*Dr. Martinez*	*Attend all medical appointments*		*Mom, dad*	
Pediatric ophthalmologist	*Dr. Conrad*	*Attend all medical appointments*		*Mom, dad*	
Caregiving provider	*Nanny Fiona*	*Increase tolerance to touch*	*Provide Robbie with a short massage after diapering and incorporate a variety of textured toys and blankets.*	*Mom, dad, grandmother, older brother*	*Provide fun tactile exposure to Robbie including having short massages regularly*
Social worker	*Ms. Thompkins*	*Increase positive awareness of parents*	*Use a cue, such as a cheek touch or an identifying piece of jewelry, especially during bonding activities.*	*Mom, dad*	*Help Robbie touch identifying jewelry, such as a watch or ring. Use cue consistently.*

SAMPLE HOME ACTION PLANS

PAGES 150-152

INTERVENTION READINESS

Source: https://www.pexels.com/search/baby/ 9-2022

EARLY VISUAL DEVELOPMENT GUIDE AND INTERVENTION IDEAS PAGE 210-211

Figure 6.1
Early Visual Development Guide
(Description)

Child's Name: _____ DOB: _____

Visual Alerting

_____ Keeps eyes open when awake
_____ Tolerates visual stimulation
_____ Alerts to light
- _____ Briefly alerts to light at near in a dark room
- _____ Briefly alerts to light at near in low light room
- _____ Alerts to light at near in a room with normal light
- _____ Alerts to a shiny or illuminated target at near

_____ Alerts to movement at near and midrange
_____ Shows preference for specific colors (Note the colors)
_____ Alerts to visually motivating targets at near
_____ Alerts to visually motivating targets at midrange and beyond

Visual Engagement

_____ Holds brief fixation on stationary, favorite, lighted objects at near
_____ Holds brief eye contact or regards face of familiar person
_____ Fixates on an increasing number of visually motivating targets at near and midrange
_____ Locates visually motivating targets that are at near and at eye level
_____ Adjusts fixation when desired target is slightly moved from view
_____ Shifts gaze between two visually motivating targets at near or midrange
_____ Spontaneously fixates on many visually motivating targets at near or midrange
_____ Fixates with less visual delay on visually motivating targets at near and midrange
_____ Gazes toward and maintains attention on targets at midrange and at far
_____ Fixates to indicate intention or a desired target
_____ Looks toward a named target or person at near or midrange
_____ Looks toward dropped visually motivating targets
_____ Fixates on a desired visually motivating target out of many at near
_____ Fixates on named photo or picture of a known object or familiar person

REGULAR VISUAL DEVELOPMENT INFORMATION

Sharing this information can be helpful to other providers and help us to understand discrepancies in visual development.

VISUAL BEHAVIORS 1-3 MONTHS

(Photo Source: burst.shopify.com/baby, 8-2022)

*Infant will blink in response to bright light or touching eye
*Attention to light sources and high-contrast forms
*Moves eyes to search visually
*Eyes may be uncoordinated and can sometimes look cross-eyed
*Eyes fixate, converge, and focus
*Able to stare at object if held 8-10 inches away
*Initially fixes eyes on a face or light then begins to follow a moving object
*Looks at contrasting black and white images
*Begins to be able to see an object as one whole image
*Distinguishes between faces
*By the end of this time, infant may start to swipe at or reach toward an object

Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)

VISUAL BEHAVIORS 3-7 MONTHS

Photo Source: https://www.istockphoto.com/photos/crawling-baby-reaching-out, 8-2022

- Eye movements become smoother
- Coordination between eyes improves, development of depth perception
- Follows with eyes, without moving head
- Moves head and eyes towards a sound
- Visual acuity improves and able to see from longer distances
- Prefers bright coloured stimuli over black-and-white
- Manipulates and looks at objects
- Gaze shifts from objects to body parts and back
- Attempts to reach for and move objects
- Recognizes bottle and other familiar objects, as well as familiar people
- Visually explores the environment
- Smiles in reaction to positive attention or someone else's smile
- Tracks objects across the entire field of vision and shifts visual attention from object to object
- Will look at self in mirror
- Full color vision is in place around 5 months

Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)

VISUAL BEHAVIORS 7-12 MONTHS

(Photo Source: https://www.medicinenet.com/what_should_a_9-month-old_baby_be_doing/article.htm, 8-2022)

- Manipulates objects while looking at the result
- Watches movement and scribbling
- Infant may begin crawling, which further develops eye-hand-foot-body coordination
- Certain colors may be preferred
- May touch image in mirror
- Visual acuity and accommodation are developed
- Can stare at small objects
- Looks for hidden objects
- Imitates facial expressions
- Plays looking games like "peek-a-boo"
- May begin pulling oneself up to a standing position
- Is shy when meeting strangers

Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)

VISUAL BEHAVIORS 12-18 MONTHS

(Photo Source: Momtastic.com, 8-202

- Fits objects together
- Recognizes oneself in mirror
- Discovers likes and dislikes
- Matches objects
- Points to objects in a book
- Scribbles or scratches with a pen or paintbrush
- Baby can watch objects that are moving fast
- Can grasp objects with thumb and forefinger
- By the end of this time, most babies will be crawling and starting to walk
- Imitates movements and actions, pulls a string to pull a toy closer in order to pick it up
- Keeps looking at surroundings when in motion

Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)

VISUAL BEHAVIORS 18-24 MONTHS

(Photo Source: https://depositphotos.com/stock-photos/toddler-stacking-blocks.html, 8-2022

- Both basic skills and high visual functions are developed adequately
- Recognises oneself in a photograph
- Visually inspects objects in the distance
- Matches an object to a picture of that object
- Points to pictures and some body parts when asked
- Interaction with peers by gestures
- Builds a tower of blocks

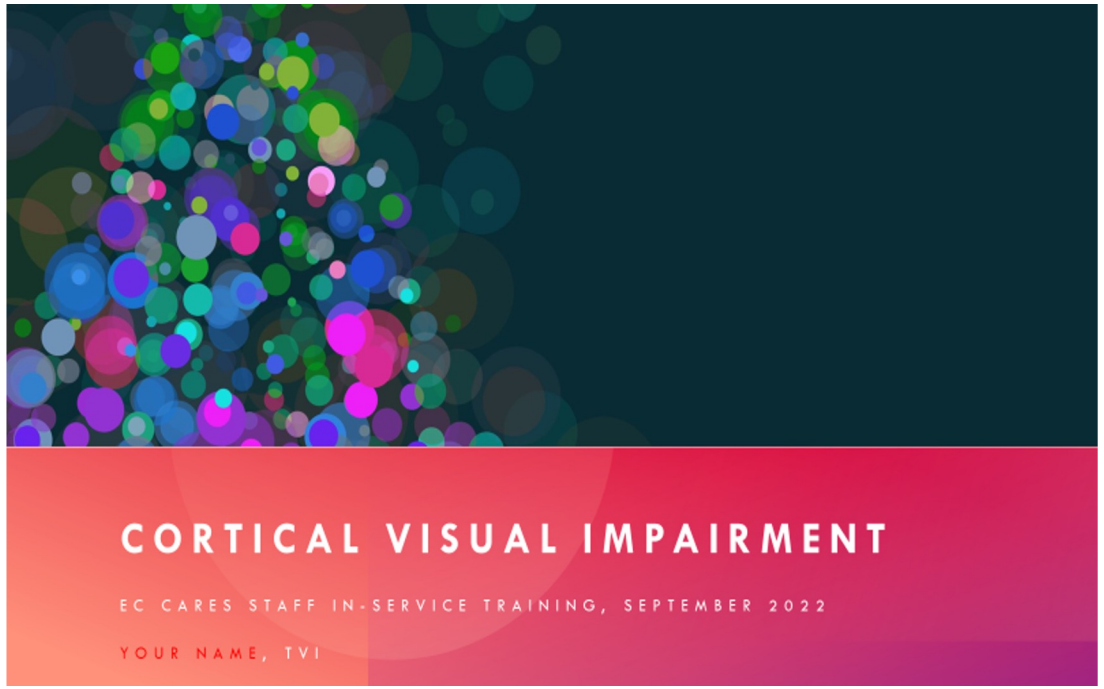
Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)

VISUAL BEHAVIORS 2-4 YEARS

(Photo Source: Empoweredparents.com, 8-2022)

- Matches colors and similar forms
- Visual memory increases
- Sorts out objects by color
- Matches geometric forms
- Draws a basic circle
- Inserts a circle, square, and triangle in a form fitting toy
- Puts pegs into holes and puts two puzzle pieces together
- Matches identical shaped objects by size

Source: Barraga "Development of efficiency in visual functioning reationale for a comprehensive program", https://lowvisiononline.researchsoftware.unimelb.edu.au/Assessment/development.htm Journal Visual Impairment and Blindness, 1990.) American Optometric Association: https://www.aoa.org and Stanford Medicine, Children's Health: Stanfordchildrens.org)



FILLABLE PRESENTATION FOR IN-SERVICES

Created by Saaron Putnam-Almaguer and Kristin Gault

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