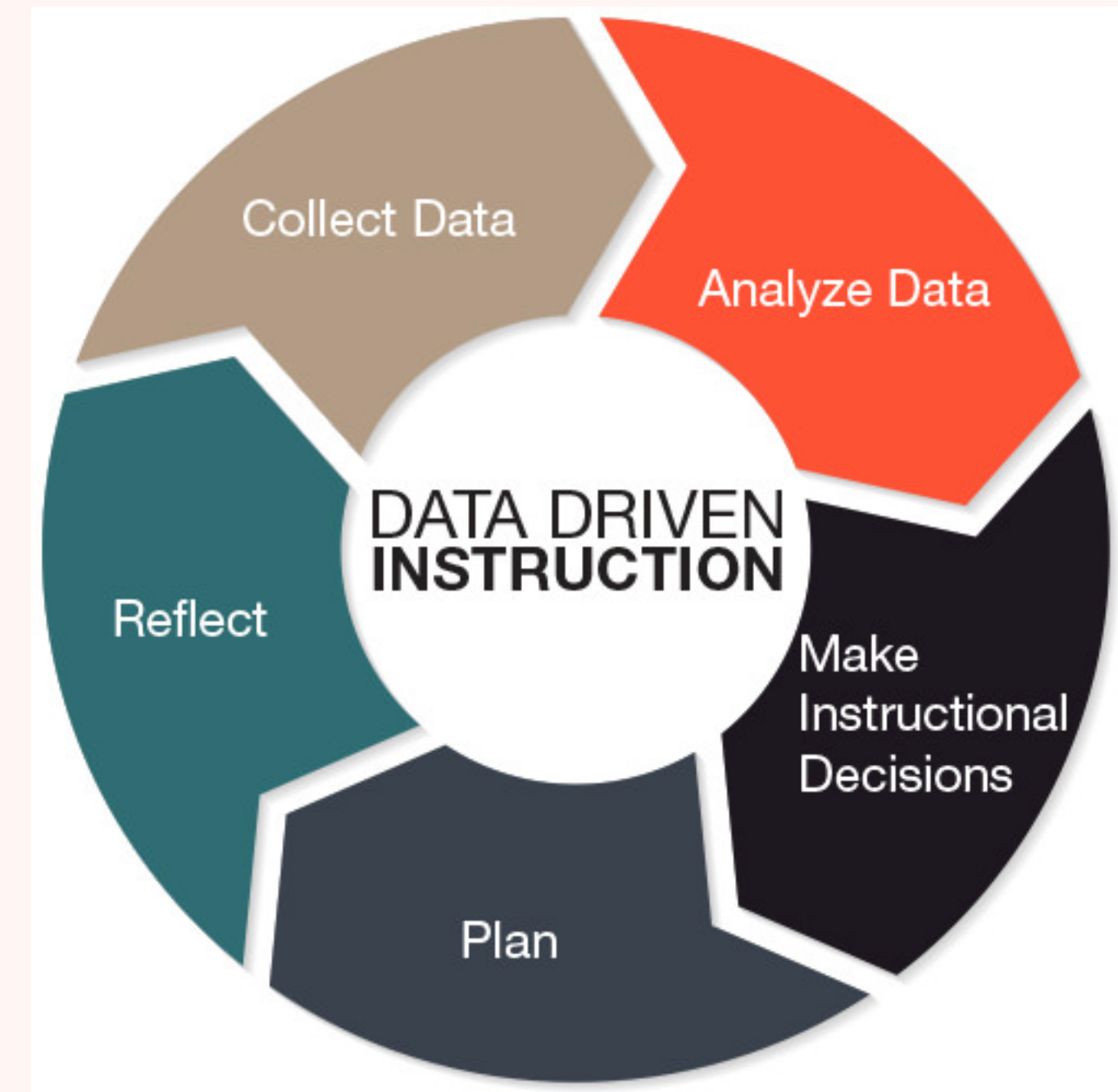

CVI Training for Effective Teaching of Students with Visual Impairments

UNDERSTANDING CVI

UNDERSTANDING CVI

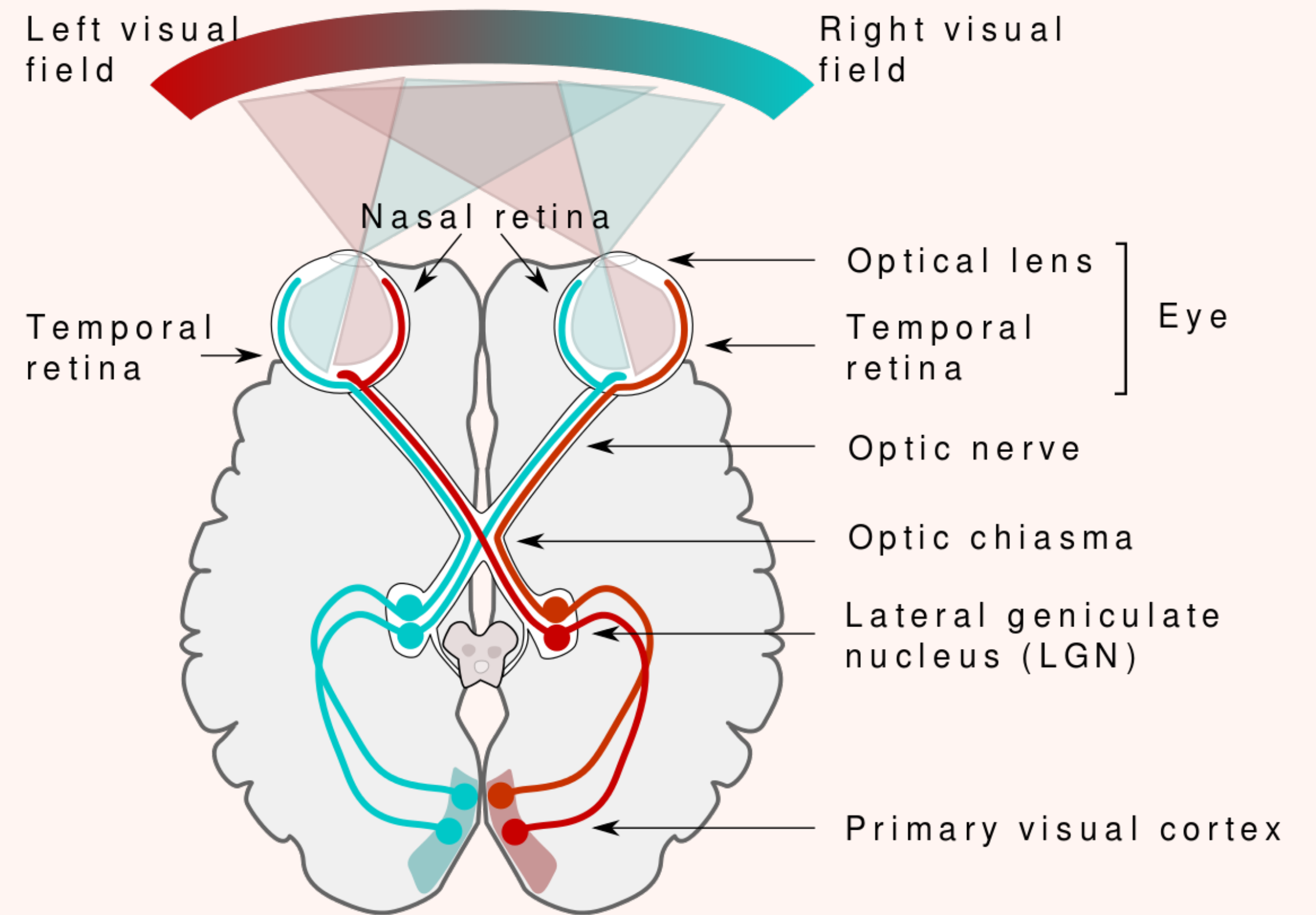
- **Learning Objectives:**
- **Participants will be able to identify students that are at risk for possible CVI**



VISION

Understanding CVI

- **Eye**
- **Optic Nerve**
- **Optic Chiasma**
- **Optic Tract**
- **Lateral Geniculate Nucleus**
- **Visual Cortex**



WHAT IT IS NOT

Understanding CVI

- **Cortical Blindness**
 - **Degenerative Condition**
 - **Vision is changing minute to minute**
-

WHAT'S IN A NAME?

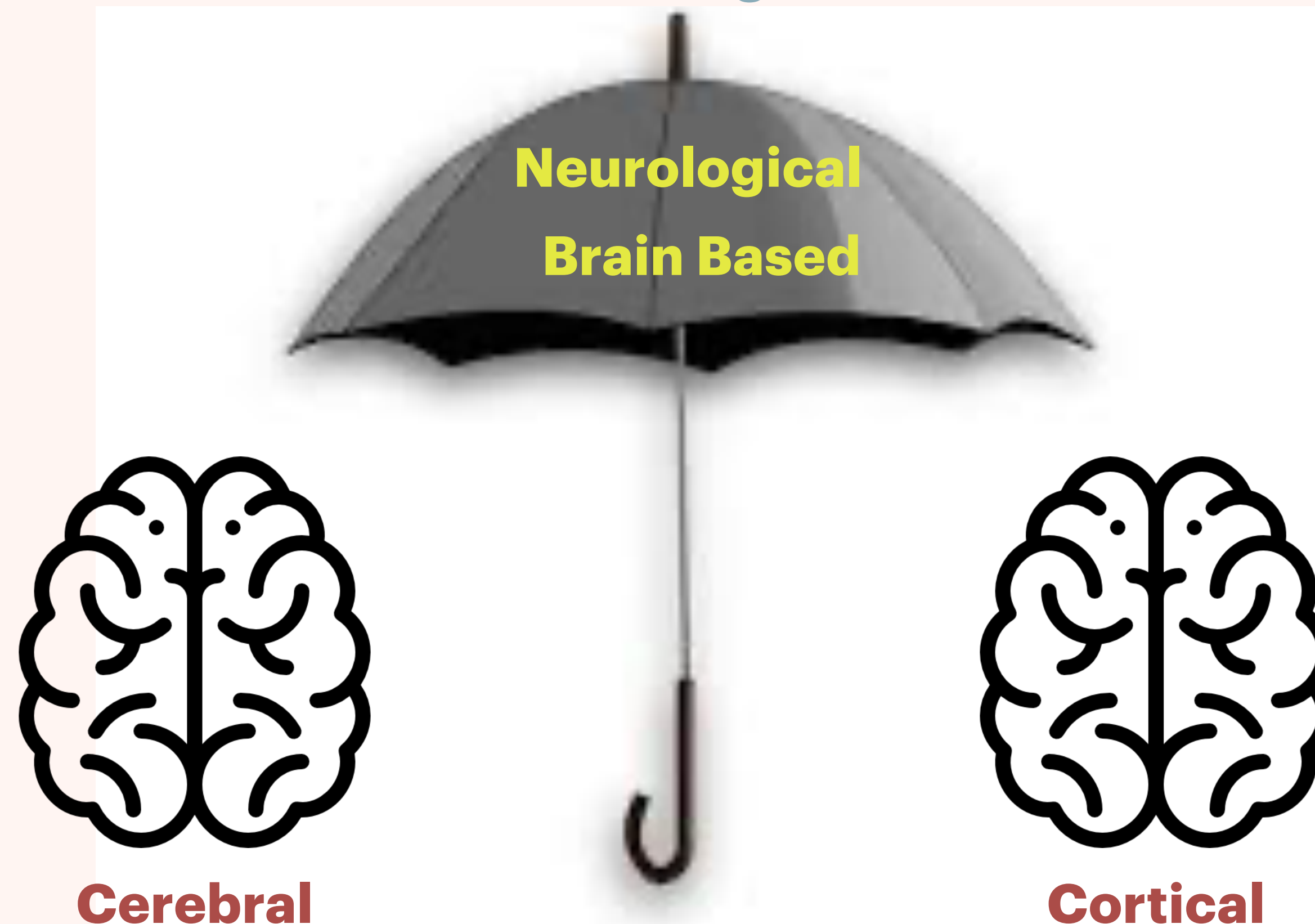
Understanding CVI

- **Neurological Visual Impairment**
- **Brain Based Visual Impairment**
- **Cerebral Visual Impairment**
- **Cortical Visual Impairment**



THE UMBRELLA

Understanding CVI



Visual Impairment

Visual Impairment

CEREBRAL VS CORTICAL

Understanding CVI

Cerebral

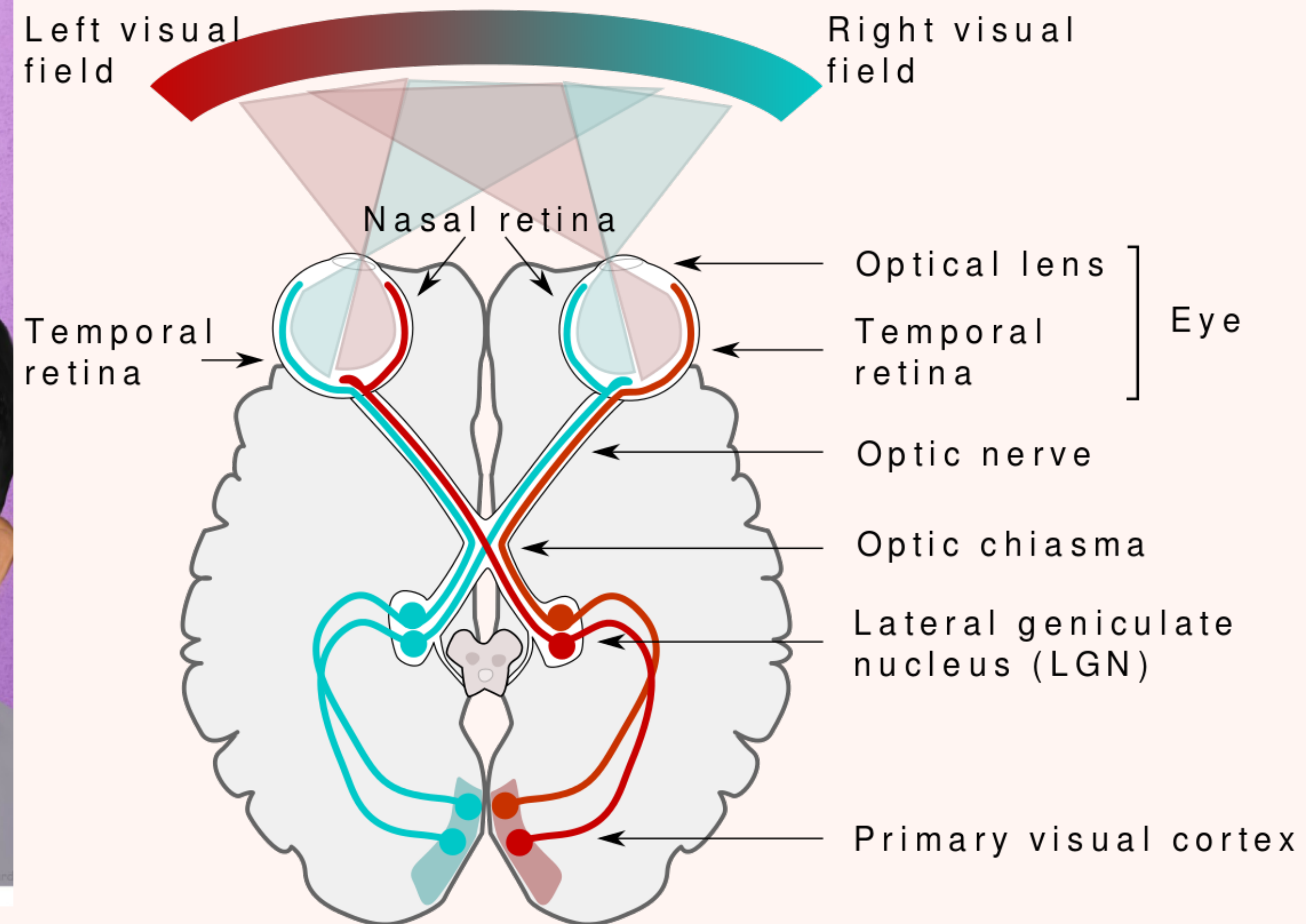
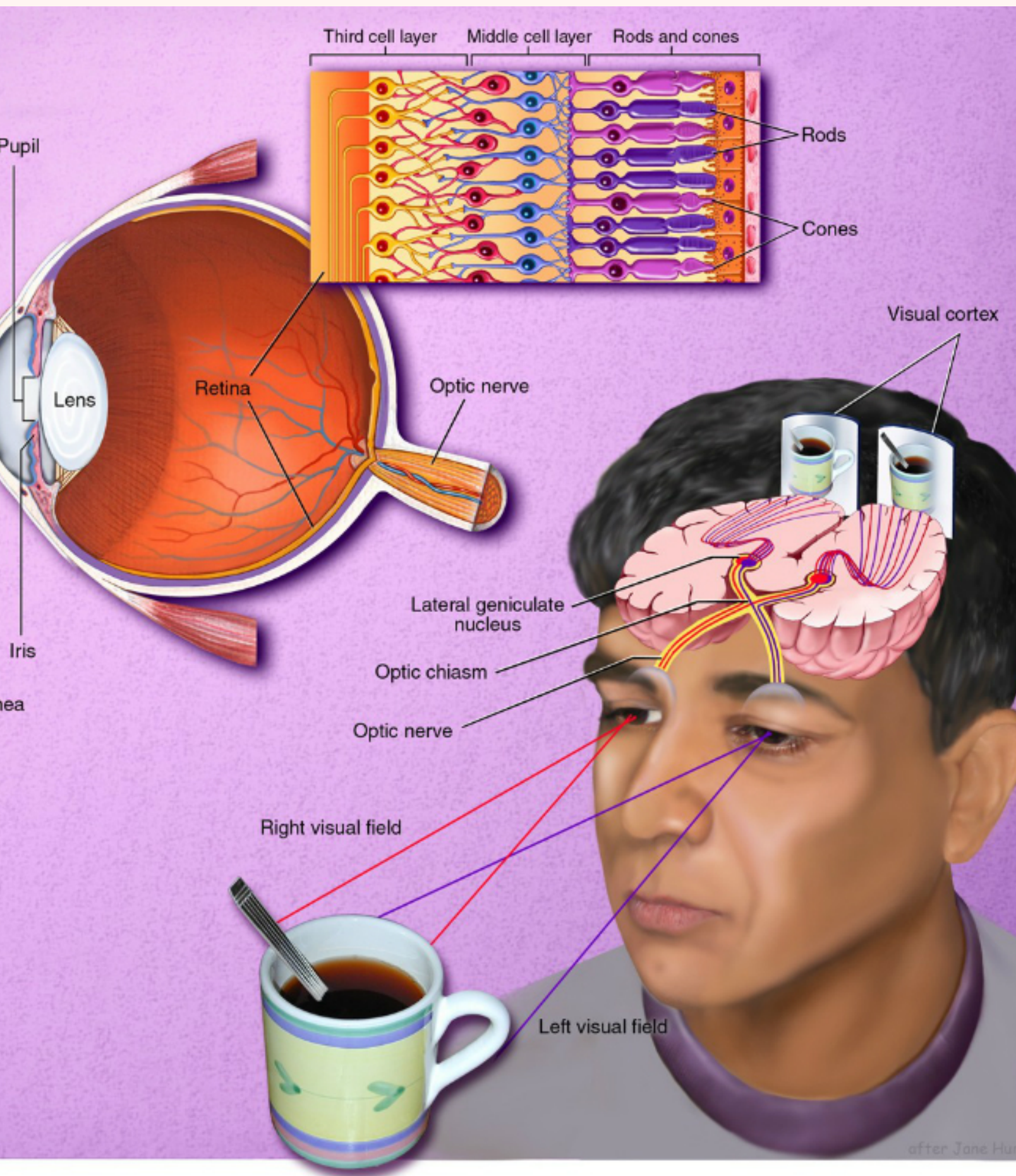
- encompasses **all forms of visual processing disorders** including those that have been associated with visual perceptual difficulties (Jan, 2011 as cited in Roman, 2018)

Cortical

- brain damage or conditions that affect the part of the brain known as the **posterior visual system** (Huo, Burden, Hoyt, & Good, 1999 as cited in Roman, 2018)
-

VISION

Understanding CVI

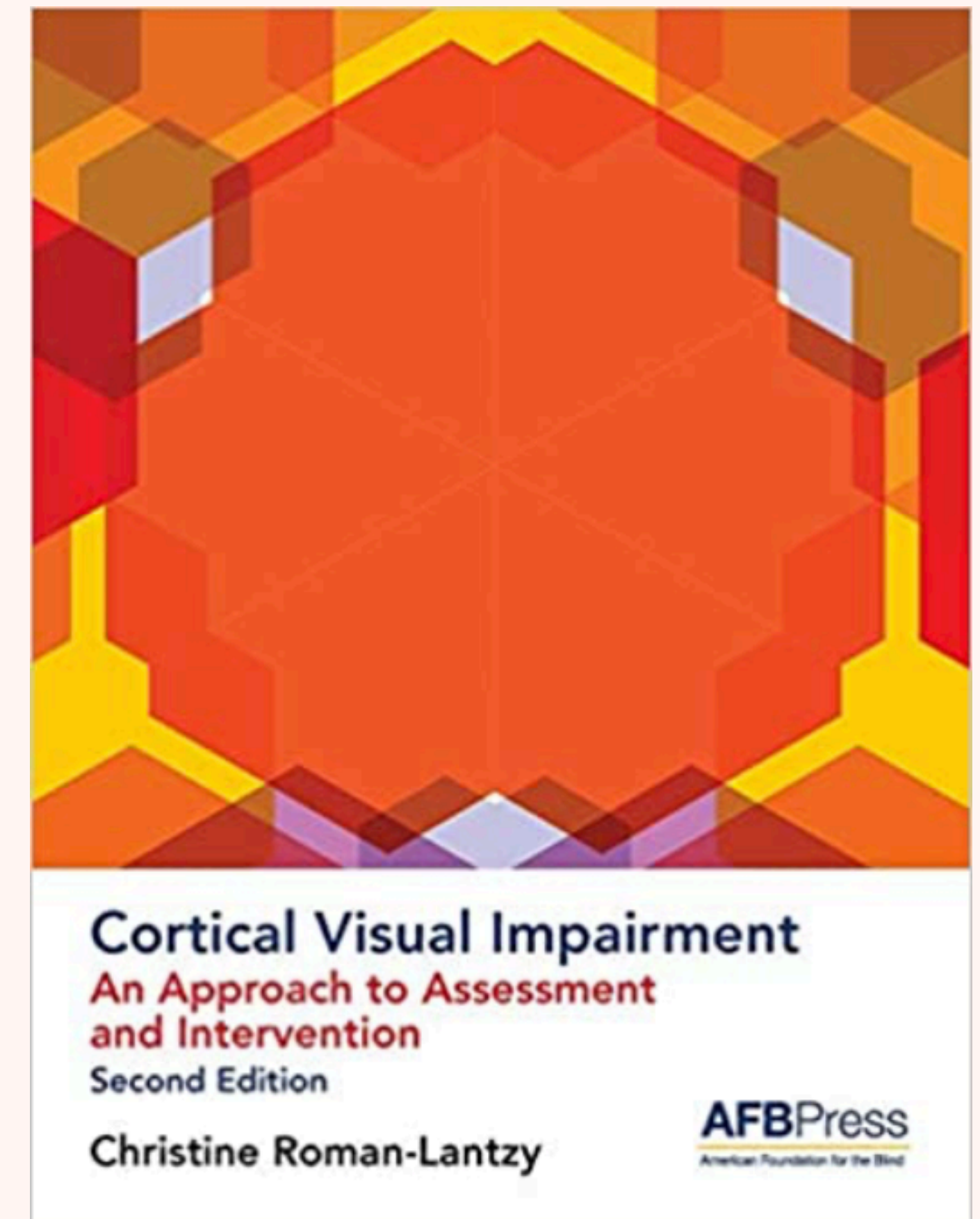


IDENTIFYING CVI

Understanding CVI

Three Elements:

- 1. An eye exam that does not explain the individual's functional use of vision**



EYE CONDITIONS MOST COMMONLY ASSOCIATED WITH CVI

Understanding CVI

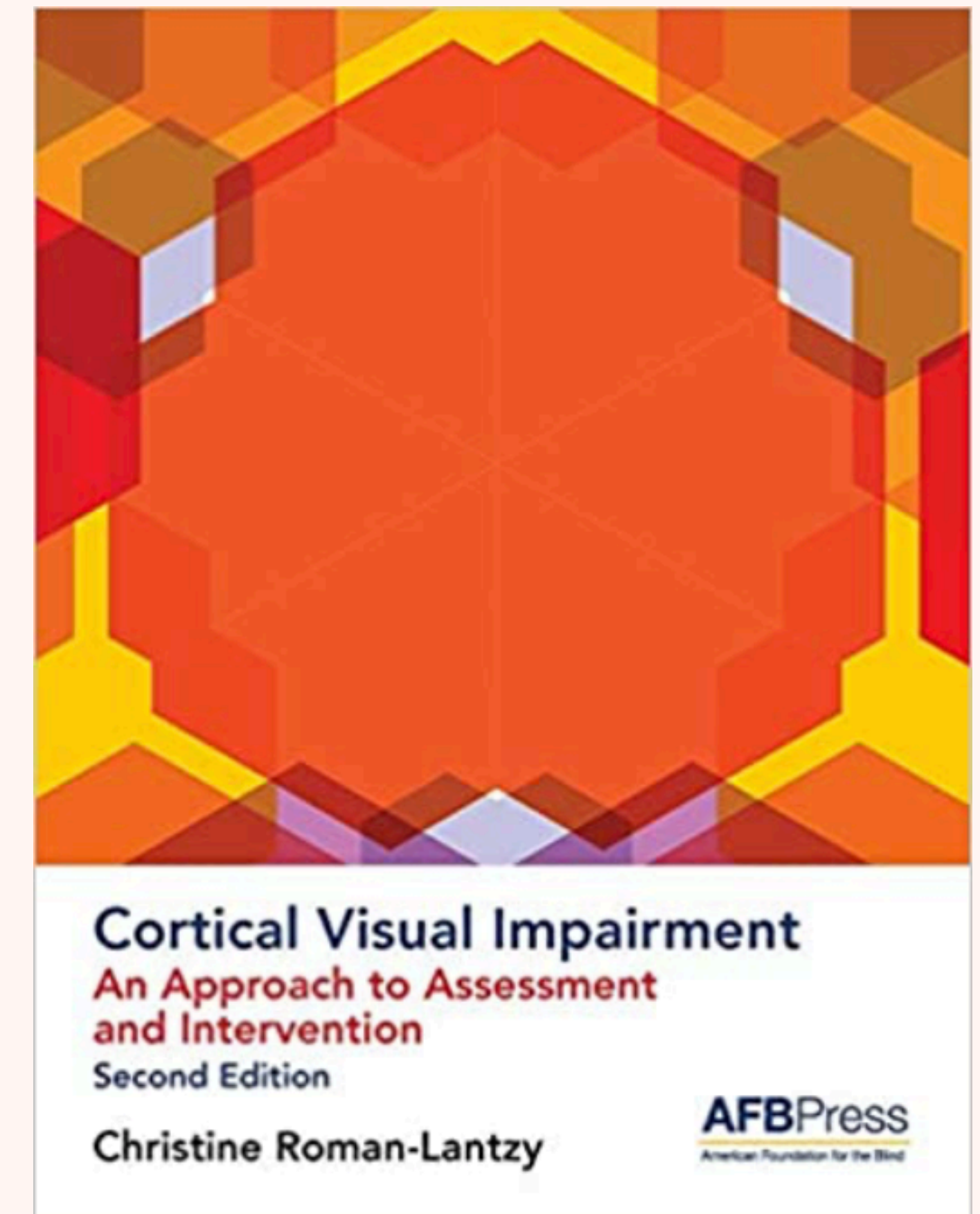
- **Optic Nerve Atrophy**
- **Optic Nerve Hypoplasia**
- **Optic Nerve Dysplasia**
- **Strabismus**

IDENTIFYING CVI

Understanding CVI

Three Elements:

- 1. An eye exam that does not explain the individual's functional use of vision**
- 2. A history of a brain condition, trauma, or damage associated with CVI**



COMMON MEDICAL CONDITIONS ASSOCIATED WITH CVI

Understanding CVI

- **Asphyxia**
- **Encephalopathy**
- **Periventricular leukomalacia (PVL)**
- **Meningitis**
- **Epilepsy**
- **Seizure disorders**
- **Brain Structural Abnormalities**

- **Metabolic Conditions**
- **Genetic and chromosomal Disorders**
- **Stroke**
- **Intraventricular hemorrhage (IVH)**
- **Infection**
- **Trauma (TBI)**

Associated with but not a cause:

- **Cerebral Palsy (CP)**
- **Prematurity**

COMMON MEDICAL CONDITIONS ASSOCIATED WITH CVI

Understanding CVI

Information from Cortical Visual Impairment: An Approach to Assessment and Intervention by Dr. Christine Roman

Eye conditions most commonly associated with CVI

- Optic Nerve Atrophy
- Optic Nerve Hypoplasia
- Optic Nerve Dysplasia
- Strabismus

Medical Conditions Associated with the diagnosis of CVI

- Asphyxia
- Intraventricular Hemorrhage
- Periventricular Leukomalacia
- Cerebral Vascular Accident
- Infection
- Structural Abnormalities
 - Spina Bifida
 - Dandy Walker Syndrome
 - Microcephaly
 - Lissencephaly
 - Schizencephaly
 - Congenital Hydrocephalus
 - Polymicrogyria
 - Agenesis of the Corpus Callosum
 - Chromosomal Disorders
 - Infections in utero (CMV)
- Metabolic Conditions

- Severe Hypoglycemia (low blood sugar)
- Kernicterus (high bilirubin levels)
- Encephalopathy
- Acquired CVI
 - Hypoxia (Near Drowning, Near SIDS)
 - Gun Shot Wounds or blows to the head
 - Auto Accidents involving the head
 - Shaken Baby Syndrome
 - Any serious Injury to the Brain
 - Childhood Infections
 - Encephalitis
 - Meningitis

Compiled By:

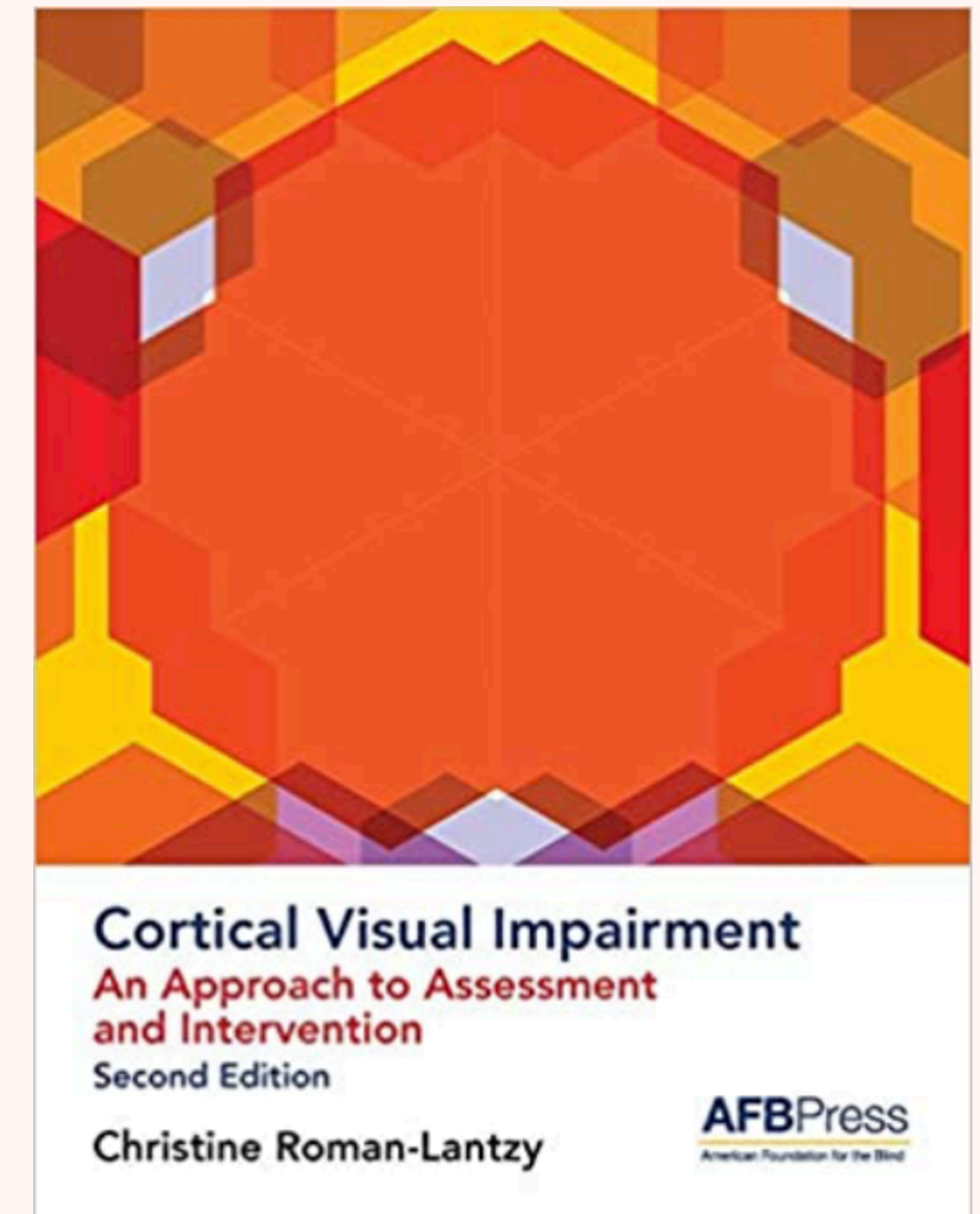
MDE-LIO CVI Project Team 2013

IDENTIFYING CVI

Understanding CVI

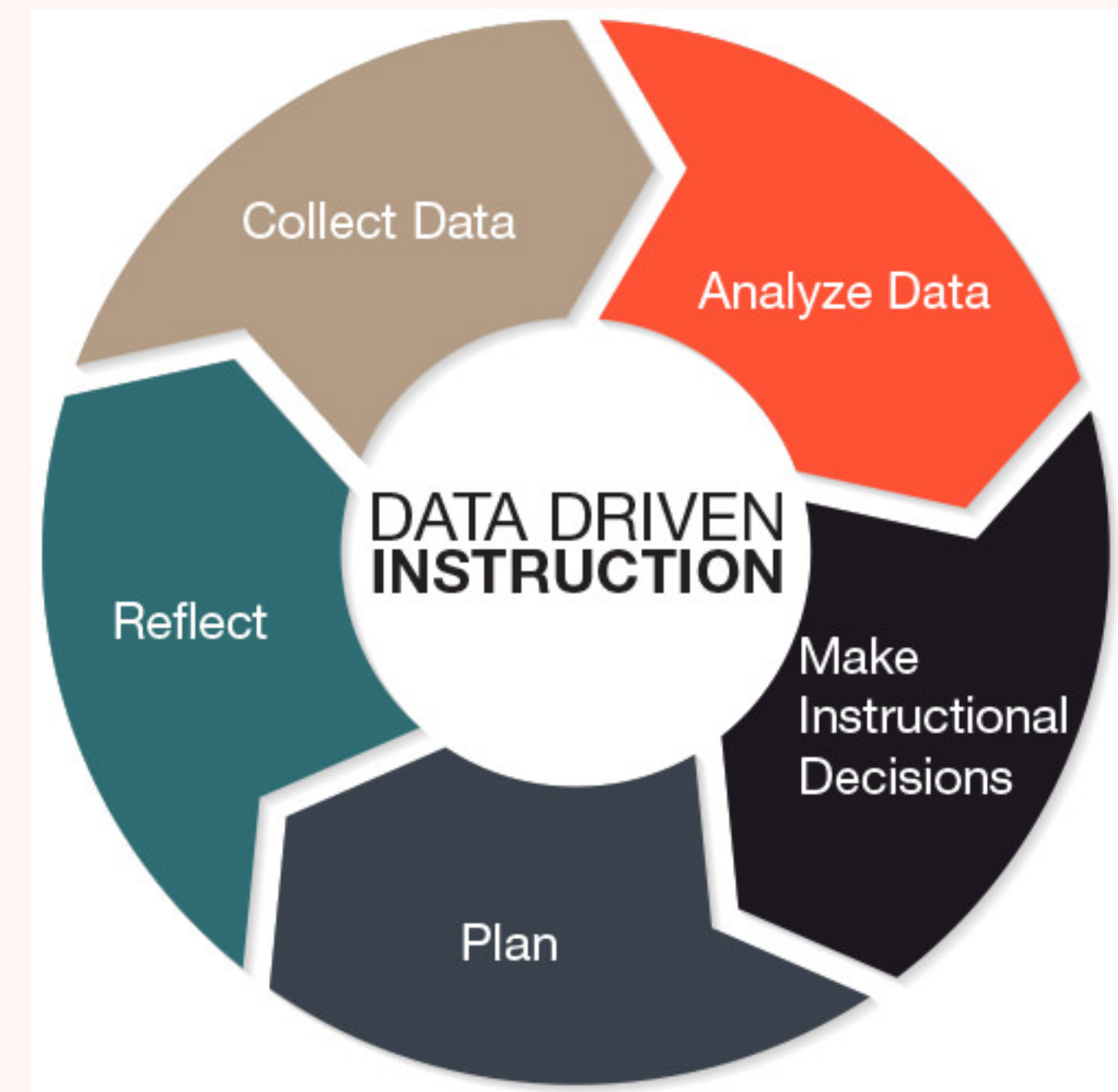
Three Elements:

- 1. An eye exam that does not explain the individual's functional use of vision**
- 2. A history of a brain condition, trauma, or damage associated with CVI**
- 3. The presence of certain visual and behavioral characteristics**



UNDERSTANDING CVI

- **Learning Objectives:**
- **Participants will be able to identify the 10 Characteristics of CVI**



10 CHARACTERISTICS OF CVI

Understanding CVI

➤ **Color preference**

- Need for light

➤ **Need for movement**

- Difficulty with distance viewing

➤ **Visual latency**

- Atypical visual reflexes

➤ **Visual field preference**

- Difficulty with visual novelty

➤ **Dorsal Stream Vision**

- Absence of visually guided reach

➤ **Ventral Stream Vision**

10 CHARACTERISTICS OF CVI

Understanding CVI

➤ **Difficulty with visual complexity**

➤ **Complexity of Objects**

- Need for light
- Difficulty with distance viewing
- Atypical visual reflexes
- Difficulty with visual novelty
- Absence of visually guided reach



10 CHARACTERISTICS OF CVI

Understanding CVI

➤ **Difficulty with visual complexity**

➤ **Complexity of Objects**

➤ **Complexity or Array**

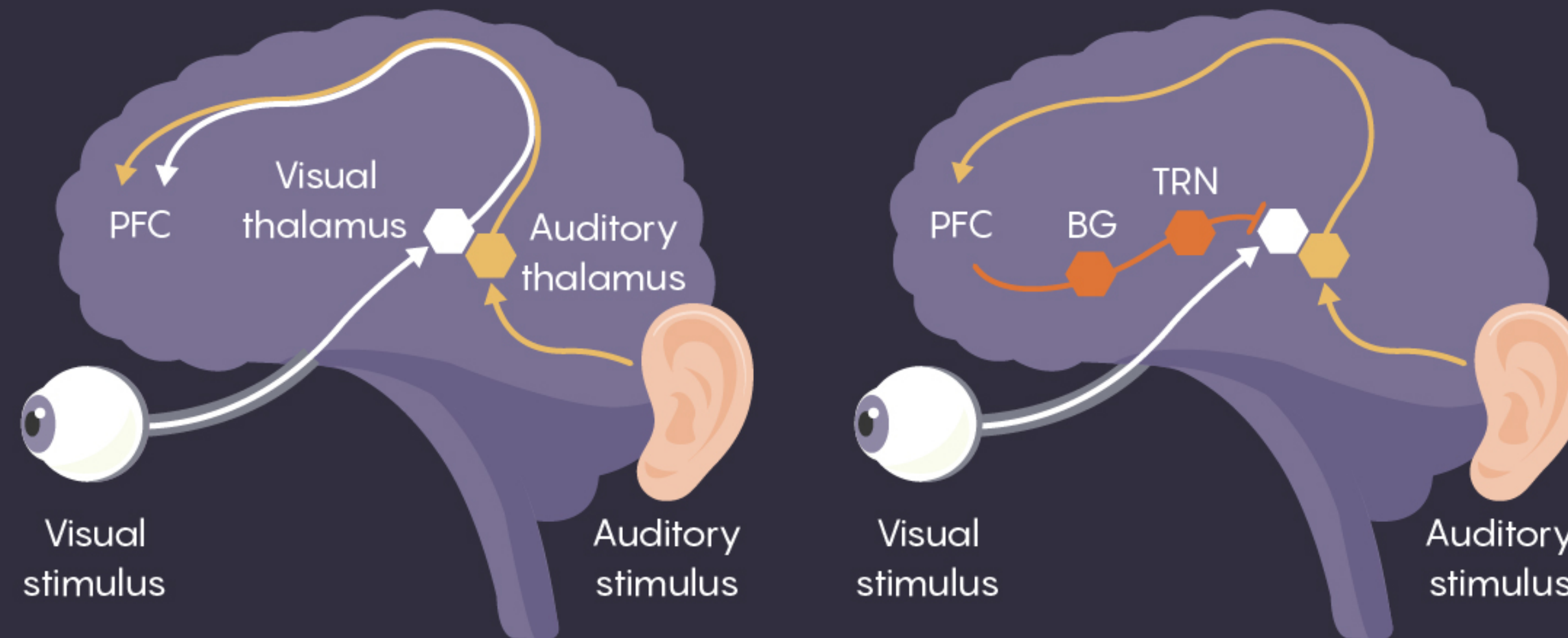
- Need for light
- Difficulty with distance viewing
- Atypical visual reflexes
- Difficulty with visual novelty
- Absence of visually guided reach

TEST YOUR AWARENESS



How the Brain Tunes Out Distractions

A massive amount of information constantly floods the senses, and yet we can focus on what's important and tune out the rest. Researchers have pinpointed a circuit in the brain that suppresses distracting and irrelevant inputs.



Overwhelming Stimuli:

The prefrontal cortex (PFC) would get overwhelmed with information if the thalamus passed along all sensory inputs.

Filtering and Focusing: When it's more important to pay attention to what's heard than what's seen, the PFC instructs the basal ganglia (BG) to employ the thalamic reticular nucleus (TRN) to inhibit the visual thalamus. This suppresses the flow of visual information and leaves the auditory signal more prominent.





10 CHARACTERISTICS OF CVI

Understanding CVI

➤ **Difficulty with visual complexity**

➤ **Complexity of Objects**

➤ **Complexity of Array**

➤ **Complexity of Faces**

➤ **Complexity of Sensory Environment**

- Need for light
- Difficulty with distance viewing
- Atypical visual reflexes
- Difficulty with visual novelty
- Absence of visually guided reach

10 CHARACTERISTICS OF CVI

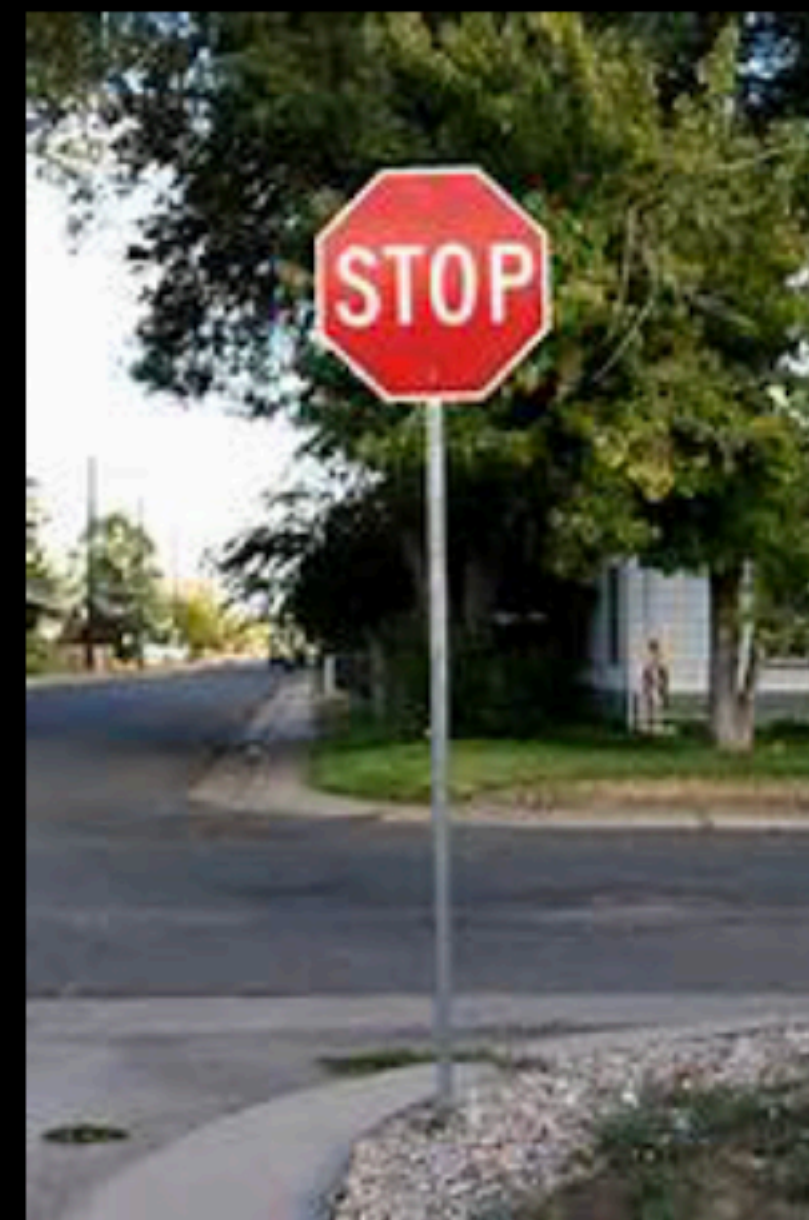
Understanding CVI

➤ **Need for light**

- Need for light

➤ **Difficulty with distance Viewing**

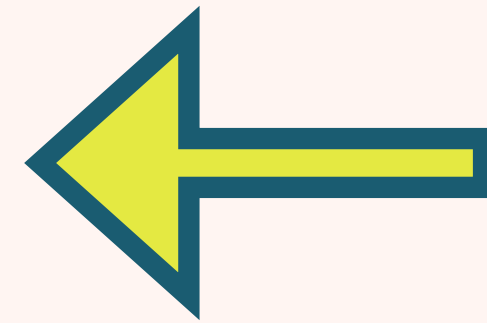
- Difficulty with distance viewing
- Atypical visual reflexes
- Difficulty with visual novelty
- Absence of visually guided reach



10 CHARACTERISTICS OF CVI

Understanding CVI

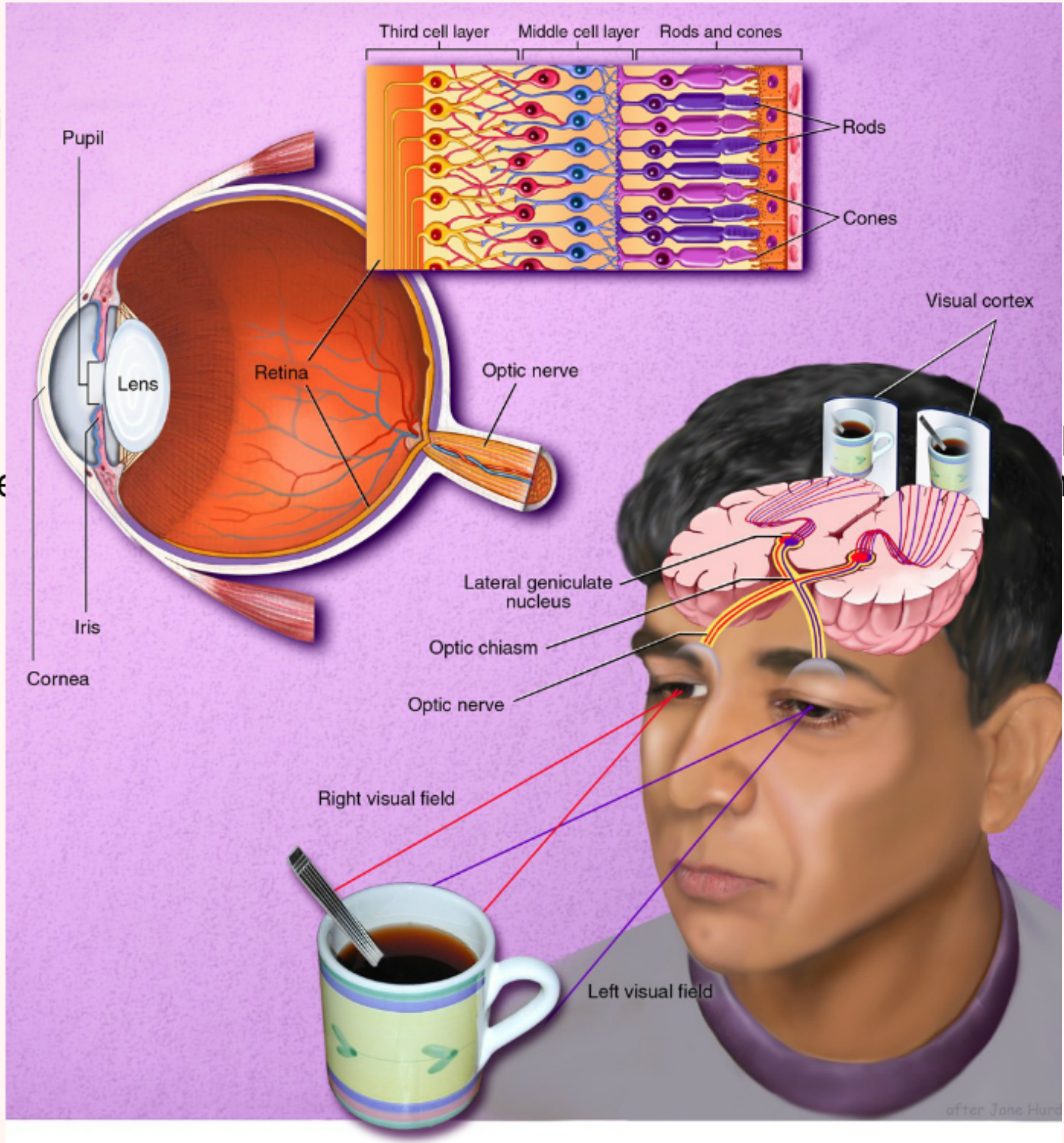
- **Need for light**
- **Difficulty with distance Viewing**
- **Atypical visual reflexes**
- **Difficulty with visual novelty**
- **Absence of visually guided reach**



**This is the only characteristic
that will not require an
accommodation.**

VISION

Understanding CVI



visual

cal lens

poral

a

c nerve

c chiasma

ral geniculate

eus (LGN)

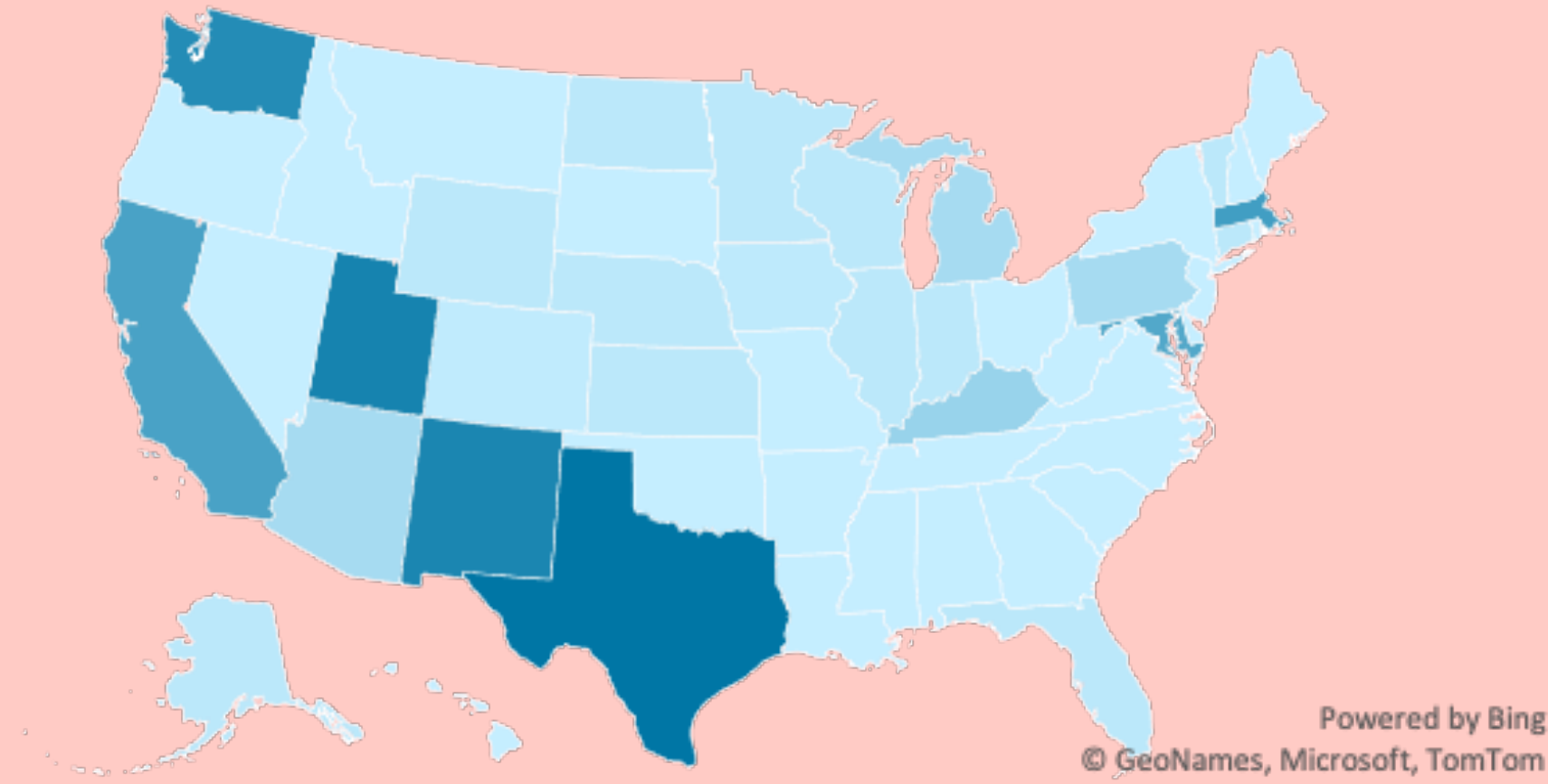
ary visual cortex

Eye

UNDERSTANDING CVI

- **Learning Objectives:**
- **Participants will understand the school's role according to IDEA**





**CVI IS THE LEADING CAUSE OF VISUAL IMPAIRMENT IN
YOUNG CHILDREN LIVING IN THE WESTERN HEMISPHERE**

Roman 2018

NICOLA MCDOWELL'S FINDINGS

Understanding CVI

- **Average age of developing CVI is 3.5 months**
- **Average age diagnosed is 3.6 years**

THE ROLE OF SCHOOLS

Understanding CVI

**Eligibility Determinations for Children Suspected of Having a Visual Impairment
Including Blindness under the Individuals with Disabilities Education Act**

THE ROLE OF SCHOOLS

Understanding CVI

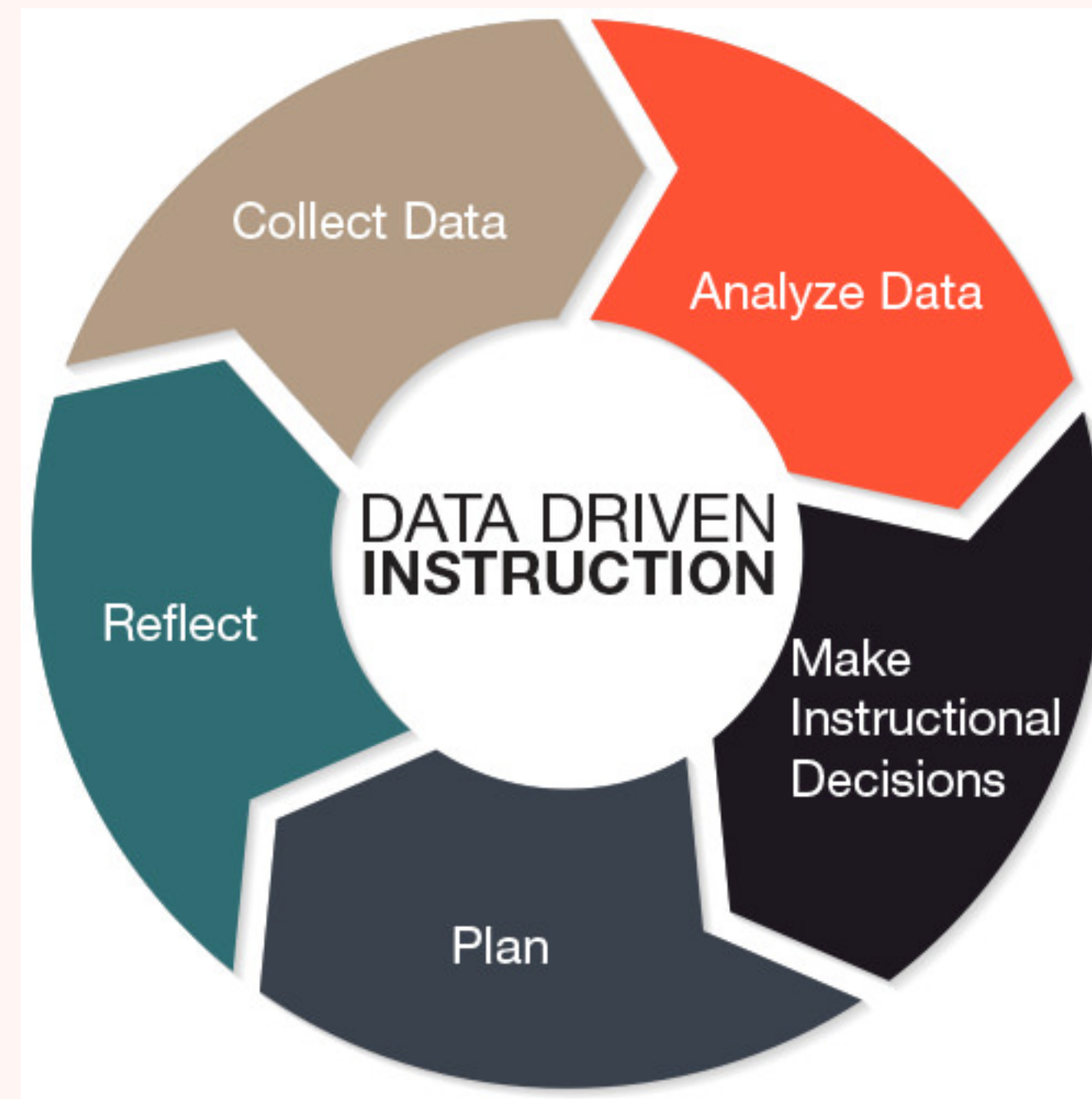
IF: Vision negatively impacts access to the curriculum

THEN: Provide access through accommodations

Provide direct instruction on those accommodation methods

THE ROLE OF SCHOOLS

Understanding CVI



CVI ASSESSMENTS

Understanding CVI

- **Functional Vision Assessments**
 - **The CVI Range (Dr Roman Lantzy)**
 - **Learning Media Assessments**
 - **Sensory Balance (Dr Roman-Lantzy and Matt Tietjen)**
 - **Additional Assessments/Inventory tools**
 - **"What's the Complexity?" Framework(Matt Tietjen)**
 - **2-D Image Assessment (Matt Tietjen)**
-

THE CVI RANGE

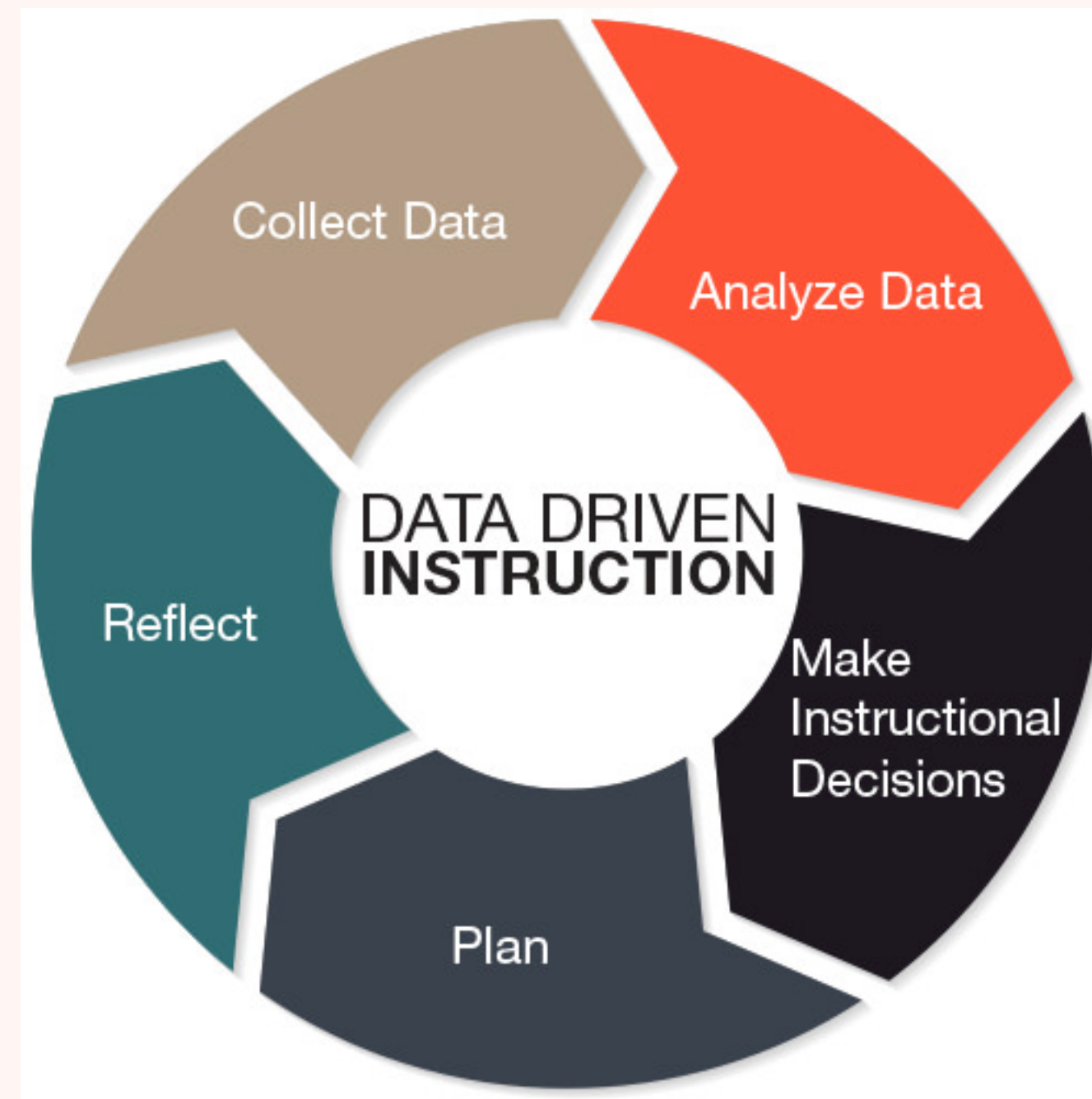
Understanding CVI

- Functional Vision Evaluation
- 3 parts
 - Observation
 - Parent Interview
 - Direct assessment

CVI Range 1–2: Student functions with minimal visual response												
O	I	D	R	+	+/	-						
0	1	2	3	4	5	6	7	8	9	10	ate fixations	
No functional vision			Typical or near-typical visual functions or perhaps									
											Prolonged periods of latency in visual tasks	
											Responds only in strictly controlled environr	
											Objects viewed are a single color	

THE ROLE OF SCHOOLS

Understanding CVI



THE CVI RANGE

Understanding CVI

- **Phase I (Range 0-3): the goal is to build consistent visual behavior**
- **Phase II (Range 3+-7): the goal is to integrate vision with function**
- **Phase III (Range 7+-10): the goal is to facilitate refinement of the characteristics**

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