


8 Visual Processing Disorders

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8 Types of Visual Processing Issues

- ▶ Visual Discrimination Disorder
- ▶ Visual Figure-Ground Discrimination
- ▶ Visual Motor-Processing Issue
- ▶ Visual Sequencing Disorder
- ▶ Long or Short Term Visual Memory Problems
- ▶ Visual-Spatial Condition
- ▶ Visual Closure Issues
- ▶ Letter and Symbol Reversal Problems

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Visual Discrimination Disorder

Visual Discrimination Disorder is a type of visual processing disorder that can cause problems with the way the brain processes visual information.

It is the ability to recognize similarities and differences between shapes, sizes, objects, colors and patterns.

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Visual Figure Ground

- ▶ Visual figure ground and discrimination involves being able to filter out irrelevant visual features in a busy visual environment or image.
- ▶ Children who struggle with visual figure ground often become overwhelmed by visual features.

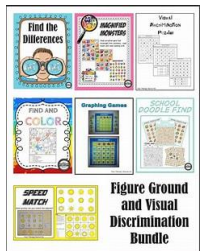


Figure Ground and Visual Discrimination Bundle

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Visual Motor Processing

- ▶ Visual motor processing issues are problems with how the brain makes sense of what it sees. Children with visual processing issues often struggle with visual memory, visual-motor skills and processing what they see, which can affect their reading, tracking, writing and math abilities.



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Visual Sequencing Disorder

Visual sequential memory is the ability to remember and recall a sequence of objects and/or events in the correct order. Signs of visual sequential memory issues include:

Difficulty remembering forms (including orientation, size, shape and color) or characters in the correct order
 Difficulty spelling – misses, adds or jumbles letters within words

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Visual-Spatial Condition

Visual-spatial condition is a term that can refer to a variety of conditions that affect the ability to process visual-spatial information

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Visual Closure Issues

Visual closure is the ability to visualize a complete whole when given incomplete information or a partial picture. This ability helps children to read and comprehend information quickly; their eyes don't need to process each letter in each word separately in order to understand the word by sight.

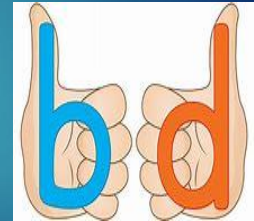
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Letter and Symbol Reversal Problems

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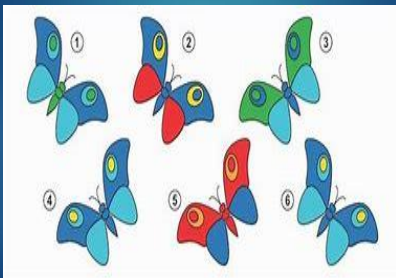
Letter and Symbol Reversal Problems

Similar-looking letters and numbers are confused and used interchangeably.



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Visual Discrimination Disorder



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Visual Discrimination Disorder Symptoms

- Your child confuses letters and numbers
- Your child has trouble enjoying highly visual activities like puzzles or reading
- Your child loses his or her place while reading aloud
- Your child has trouble finding information during open book quizzes
- Your child has trouble telling picking out details and differences

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What is the difference between color blindness and achromatopsia?

In **color blindness**, people have normal vision and **see some color**.

In **achromatopsia**, **vision is reduced**, there is a lack of color vision, and other vision issues arise such as rapid eye movements.



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Population with colorblindness?

- ▶ According to the Howard Hughes Medical Institute, about 1 in 12 million Americans are colorblind (8.6 % of the males, and 0.4% of the female population).
- ▶ Achromatopsia is a relatively uncommon disorder, with a prevalence of 1 in 30,000 people.
- ▶ Less than 1%

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What is Achromatopsia?

- ▶ Achromatopsia is a condition characterized by a partial or total absence of color vision. People with **complete achromatopsia** cannot perceive any colors.
- ▶ They see only **black, white, and shades of gray**. Incomplete achromatopsia is a milder form of the condition that allows some color discrimination.
- ▶ Achromatopsia also involves other problems with vision, including an increased sensitivity to light and glare (photophobia), involuntary back-and-forth eye movements (nystagmus), and significantly reduced sharpness of vision (low visual acuity).

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Blue/green color blindness

- ▶ Blue-yellow color blindness is less common. The two types of color blindness in this category both make it difficult to tell the difference between blue and green, as well as yellow and red. There are two types of blue-yellow color blindness:
 - **Tritanopia (aka blue-blind)** – Individuals have no blue cones.
 - **Tritanomaly (aka blue-weak)** – Individuals have blue cones and can usually see some shades of blue.

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Acquired types of color blindness

- ▶ **Age** – A subtle blue-yellow color blindness can develop with age
- ▶ **Brain trauma** – Head injury or stroke can sometimes (though rarely) result in color blindness.
- ▶ **Chronic illness** – Individuals suffering from serious illnesses such as Alzheimer's disease, leukemia, Parkinson's disease and others may develop color blindness in different forms.
- ▶ **Environmental chemicals** – Even at low levels, carbon disulphide and lead can cause color blindness.

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Acquired types of color blindness/ SELF TEST.

- ▶ Final Reason:
- ▶ **Alcohol consumption** – Reduced color discrimination can be symptom of **alcoholism**, with blue-yellow being particularly affected.



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Summary

- Color blindness is a common condition that causes problems seeing the difference between certain colors
- Most people who are "color-blind" actually have a color vision deficiency—true colorblindness is rare
- There are different types of color vision deficiencies based on the light wavelengths your eyes can detect
- An eye doctor can diagnose color blindness with color vision tests

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X-Chrome Contact LENSES

- ▶ X-Chrome contact lens is a red contact lens worn in one eye and is used to overcome red-green color vision deficiencies.
- ▶ The lens is named the "X-Chrome" lens because the gene that causes the problem is carried on the X chromosome.



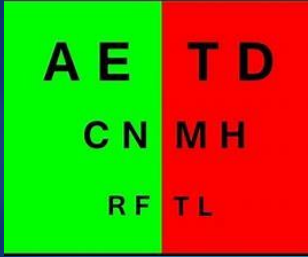
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Eyeglasses for Colorblindness

- ▶ EnChroma
- ▶ ColorCorrection System
- ▶ Cost= \$200-500




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Chromatic aberration of the eye, the shorter wavelengths (green) are focused in front of the longer red wavelengths.


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Self- test

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Treatment for color blindness

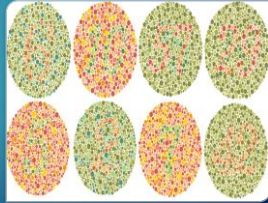


- Gene Therapy
- Eyeglasses and Contact Lenses.
- EnChroma glasses
- An app called Color Blind Pal

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Color blind Pal APPS

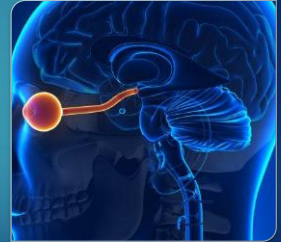
Color Blind Pal helps people who are color blind see the colors around them. It also lets people with normal vision see what it's like to be color blind.



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The eyes see but:

A visual processing disorder is not a physical disability of the eye, but a deficit in the brain's ability to identify, organize, and process visual information.



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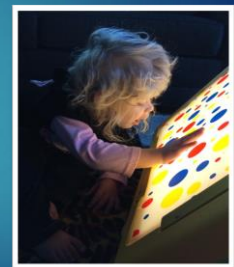
2 cases where the eyes work perfectly

Cortical Visual Impairment(CVI)

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Cortical Visual Impairment: "Cortical visual impairment (CVI)

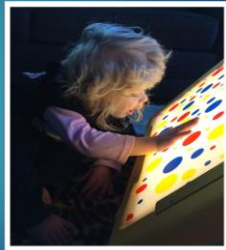
- ▶ Cortical visual impairment (CVI) is a **neurological disorder**, which results in unique visual responses to people, educational materials, and to the environment.



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CVI

- ▶ When students with these visual/behavioral characteristics are shown to have loss of acuity or judged by their performance to be visually impaired, they are considered to have CVI."



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What causes CVI?

CVI is caused by an injury to the brain. Most of the time, these injuries happen before, during, or shortly after birth.

Common causes of CVI in babies and young children include:

- ▶ Lack of oxygen or blood supply to the brain — often because of a stroke
- ▶ Hydrocephalus (when fluid builds up in the brain)
- ▶ Infections that reach the brain
- ▶ Head injury

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Latest research

- ▶ The latest research shows that up to 1 in 30 kids have CVI-related visual difficulties.
- ▶ CVI is common in neurodevelopmental conditions, and complications from premature birth, lack of oxygen, pediatric stroke, and genetic conditions are common causes of CVI.
- ▶ Up to 70% of kids with Cerebral Palsy and 38% percent with Down Syndrome have CVI.

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What Is Charles Bonnet Syndrome?

Charles Bonnet Syndrome (CBS) is a condition that some people get when they lose some or all their vision. It causes them to have visual hallucinations (seeing things that aren't really there).

A new study suggests this condition is surprisingly common among people with certain types of vision loss.

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What Are Symptoms of Charles Bonnet Syndrome?

- ▶ The main symptom of CBS is having visual hallucinations. Most people have them when they wake up. What people see varies, but can include:
 - repeating patterns of lines, dots, or other geometric shapes
 - landscapes, such as mountains or waterfalls
 - people, animals, or insects
 - people dressed in costume from an earlier time
 - imaginary creatures, like dragons



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Charles Bonnet Syndrome

One study indicated that more than 12% of people with ARMD will develop Charles Bonnet syndrome.

An estimated 1 in 2 people with severely impaired vision may develop hallucinations.

Charles Bonnet syndrome can happen in anyone, but it's more frequent in patients 80 years or older.

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