

Fact Sheet

Facts about Color Blindness

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Color blindness, more appropriately called color vision deficiency, is a condition in which certain colors cannot be distinguished, and is most commonly due to an inherited condition. Severity of the deficiency varies.

Red/green color blindness is the most common form (99%). 75% of people with red/green color blindness have trouble with green perception while 24% have trouble with red perception.

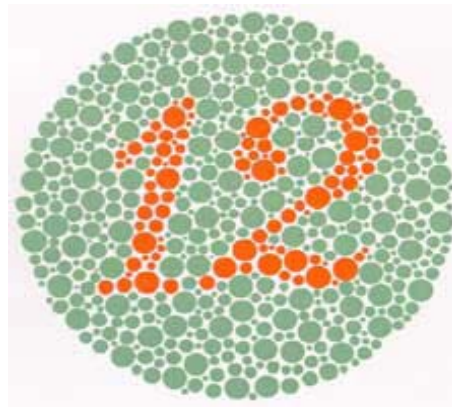
Blue/yellow color blindness and total color blindness (i.e., seeing only shades of gray) are very rare. (Currently, there is no easily available screening test for blue/yellow color blindness.)

Achromatopsia is the most severe form of color blindness and prohibits the individual from seeing any color. This condition may be associated with other eye conditions such as amblyopia (lazy eye), nystagmus (small, jerky eye movements), extreme light sensitivity, and severely poor vision (HealthScout, 2001).

Color blindness is most often inherited. It is passed from generation to generation on the X chromosome. This explains the higher prevalence in males

(approximately 1 in 10 men experience color blindness to some degree) (HealthScout, 2001).

There are some types of color blindness that are not genetic and can develop after birth. The most common type of these is caused by a drug used to treat rheumatoid arthritis called Plaquenil (HealthScout, 2001).



Color blindness is the result of one or more of the cone cell color coding structures being absent or not functioning properly. (Cones encode color. The light energy is transformed into electrical energy and sent to the brain.)

If a person is color blind, he or she will have difficulty choosing between certain hues. Difficulties are most common for pastel reds and greens.

There are various ways of testing color vision. Individuals might be asked to identify a shape or number presented in a certain color against a busy background (as shown in the figure). On some color vision tests the individual is asked to arrange color buttons in order, by color (see an example at <http://www.univie.ac.at/Vergl-Physiologie/colortest/colortestF-en.html>)

Color blindness is a minor disability. However, there are certain situations where color blindness can cause difficulties for the individual.

- In school, graphs, charts, and use of whiteboards often require the student to see color to disseminate the information, (e.g., color-coded graphs).
- Choosing clothing to wear.
- Individuals with red perception deficiencies have difficulty determining if meat is raw or well done.

There is no treatment for color blindness.

- Label items that require color recognition.
- Learn to differentiate colors based on location (e.g., traffic lights)
- Maximize color contrast if possible.
- Label coloring utensils (crayon, pen, pencil) with the color name.
- Organizing and labeling clothing to avoid colors that clash with one another.
- Specially tinted glasses can assist some individuals to tell the difference between certain colors. Although these glasses assist, they do not restore normal color vision.

Tips to help individuals with color blindness:

References

HealthScout. (2001). *Colorblind*. Retrieved August 29, 2007, from <http://www.healthscout.com/ency/1/001002.html>

Helpful Websites

Kids Health for Kids. (August, 2007). *What's color blindness?*

http://www.kidshealth.org/kid/talk/qa/color_blind.html

MedlinePlus. (lasted update May, 2007). *Color blindness*. <http://www.nlm.nih.gov/medlineplus/colorblindness.html>

Subramanian, M. (February, 2007). *Color blindness*. <http://www.nlm.nih.gov/medlineplus/ency/article/001002.htm>

University of Pittsburgh Medical Center. (March, 2007). *Color blindness*.

<http://www.upmc.com/HealthManagement/ManagingYourHealth/HealthReference/Diseases/?chunkiid=102895>

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Fact Sheets from the Colorado Services for Children and Youth with Combined Vision and Hearing Loss Project are to be used by both families and professionals serving individuals with vision and hearing loss. This information applies to children and youth, birth through 21 years of age. The purpose of the Fact Sheet is to give general information on a specific topic. More specific information for an individual student can be provided through personalized technical assistance available from the project. For more information call (303) 866-6681 or (303) 866-6605. 1/09