How often have you, as a parent, wondered if your youngster was colorblind? When your 4 year old son appears in the kitchen, ready for preschool, wearing green shorts and a purple t-shirt, is this an indication that your child has difficulty identifying color or is he merely fashion-challenged? What if your 3 year old daughter insists on always coloring the sky orange in her drawings? Does she have an independent artistic flair, or does she not appreciate the different colors in her box of crayons? Should you schedule an eye examination for your little one? At what age should parents be concerned that their child may have a color vision deficit? And other than a providing a diagnosis, how will it affect the child as he or she gets older?

The cones of the retina are light-receptive cells that are located in the area where vision is the sharpest. Each cone has pigment that is sensitive to a wavelength of light from one of the primary colors: red, green and blue. Individuals with normal color vision have normally functioning cones that allow us to see images in these three colors, plus additional colors created by combinations of these. We see additional colors, such as orange, yellow and purple because normal functioning cones work with the optic nerve to allow us to appreciate many different shades and hues.

Color vision defects are caused by a problem with the cones. The gene for color vision dysfunction is carried by the mother and passed almost exclusively to male children. One in 12 boys may be affected, while it is extremely rare in girls, less than one in 200. The most common color defect is red-green, where affected individuals have difficulty in differentiating between these colors. Blue-yellow color deficiency is quite rare, and because children with blue-yellow deficits often have an associated red-green deficiency, general color recognition is very poor. Complete color blindness is a very rare condition: it is frequently associated with other medical conditions and vision is often extremely poor.

Young children may not reliably identify colors, so assessment of color vision in pediatric eye examinations is usually not performed. If there is a family history of the disorder, then color vision testing may be requested by the parents. Even then, accurate diagnosis is usually limited, as most practitioners do not have pediatric color vision tests available in the office. The Ishihara test, a book comprised of a series of plates of various colored spots, is probably used by most eye care practitioners. A series of numbers is imbedded within the dotted patterns, and the patient is asked what is seen in the pattern. Children with color vision deficiency may not recognize any number within the pattern, or identify a different number than the correct answer.

At present there is no treatment for color vision dysfunction, but parents may help their affected child adapt to a color-filled world. Labels that identify pieces of clothing that match help children to select daily outfits. Memorizing the positions of the red, yellow and green lights of traffic signals assists the color deficient young driver. And certain career paths, such as commercial and military aviation, railroad engineer, firefighting and law enforcement, require applicants to have normal color vision, so young people should be encouraged to pursue alternative employment opportunities.