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Color vision problems become more common with age

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Abnormal color vision increases significantly with aging—affecting one-half or more of people in the oldest age groups, reports a study in *Optometry and Vision Science*, official journal of the American Academy of Optometry.

While few people younger than 70 have problems with color vision, the rate increases rapidly through later decades of life, according to the new research by Marilyn E. Schneck, PhD, and colleagues of The Smith-Kettlewell Eye Research Institute, San Francisco. They write, "We find the color discrimination declines with age and that the majority of color defects among the older population are of the blue-yellow type."

Color Vision Abnormalities Increase with Age

The researchers administered color vision tests to a random sample of 865 older adults—age range 58 to 102 years. The study excluded subjects with any type of congenital color-vision defect ("color blindness."). The types and rates of color vision abnormalities were assessed in different age groups.

Overall, 40 percent of the participants had abnormal results on one of the two color vision tests used in the study. Twenty percent failed both tests.

The failure rate was markedly higher in older age groups. Although color-

vision abnormalities were uncommon in people younger than 70, they were present in about 45 percent of people in their mid-70s, up to 50 percent of those 85 and older, and nearly two-thirds of those in their mid-90s.

Nearly 80 percent of the abnormalities involved confusion of the lighter (pastel) shades of blue versus purple and yellow versus green and yellow-green. These "blue-yellow" errors are distinct from the "red-green" errors observed in people with inherited color blindness, which affects about eight percent of males and 0.5 percent of females. Although the two tests had different failure rates, they detected similar frequencies of blue-yellow errors.

More Severe Defects May Affect Daily Functioning

The results confirm previous studies showing that color vision "deteriorates measurably" with aging. Most subtle aging-related color vision abnormalities are likely to go unnoticed, the researchers suggest.

However, they note that nearly 20 percent of older adults failed the easier of the two tests, "designed to only detect defects sufficiently severe to affect performance in daily life." Dr Schneck and coauthors note, "These individuals would have problems carrying out some tasks that rely on color vision."

The researchers discuss factors that may contribute to changes in color vision with aging, and to blue-yellow defects in particular. These may include reduced pupil size, admitting less light into the eye; increased yellowing of the lens inside the eye; and changes in the sensitivity of the vision pathways. All of these are known changes with age to the human eye.

Increased rates of eye diseases are another potentially important

contributor. Dr Schneck and coauthors add, "The most common age-related eye diseases (glaucoma, age-related macular degeneration, and diabetic eye disease) all produce blue-yellow color vision anomalies, at least in the preclinical or early stages."

Provided by Wolters Kluwer Health