

ECVP 2014 Abstract

Cite as:

Ikaunieks G, Krastina I, Truksa R, Krumina G, 2014, " Age related changes in perceived display brightness "
Perception **43** ECVP Abstract Supplement, page 91

Age related changes in perceived display brightness

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Perceived brightness of display luminance usually changes with age. Older subjects have increased level of retinal straylight which causes disability glare. Another important factor is retinal illumination. It decreases with age due to absorption of the lens and due to a reduction in pupil size. The aim is to assess preferred level of display luminance for young and older subjects when different contrast stimuli are showed and to find out main optical factors which could affect these results. 18 young subjects age of 20 to 24 years and 10 older subjects age of 55 to 69 years participated in this research. Task was using method of adjustment to find out the acceptable level of display luminance when reading low (20%) and high (>90%) Weber contrast text. Pupil size was determined in each condition. Measurements were done in dark room. Results showed that with high contrast stimuli older subjects chose lower ($p < 0.05$), but with low contrast stimuli subjects chose the same level of background luminance as young group. Results were not correlated with pupil size. We can conclude that influence of different optical factors on preferred level of background luminance for older subjects depend on stimulus contrast.

[Supported by ESF project No.2013/0021/1DP/1.1.1.2.0/13/APIA/VIAA/001]

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ECVP 2014 Abstract

Cite as:

Timrote I, Alberte L, Fomins S, Pladere T, Krumina G, 2014, " Attention in adults and school-age children " *Perception* **43** ECVP Abstract Supplement, page 38

Attention in adults and school-age children

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Attention system appear to mature completely by the age of 15 (Baranov-Krylov, Kuznetsova, & Ratnikova, 2009). To understand attention in school-age children and adults, we made a computer-based visual search task consisting from Landolt-square stimulus and gave it to 66 school-age children (37 female, 29 male, 7-15 years old) and 32 adults (21 female, 11 male, 21-59 years old). Each participant started with a search through a set of 25 elements and continued with a set of 100 elements. We recorded time needed to complete the test, number of counted elements and errors. The results demonstrate that the visual search task is performed faster with age, fitted by logarithmic regression. That could demonstrate that attention is maturing with age. When looking at the errors, there are significantly more errors for school-age children ($p < 0.05$, ANOVA).

[This work has been supported by 2013/0021/1DP/1.1.1.2.0/13/APIA/VIAA/001]

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