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Study Group:

ABSTRACT

TITLE: Functional impact of task lighting on reading with low vision
ABSTRACT BODY:
Purpose: Individuals with low vision often complain of reading difficulties and increased lighting has been shown to enhance visual acuity (Fletcher et al. ARVO 2014 and ARVO 2015). The purpose of this study was to investigate whether: (1) lighting impacts reading function objectively; and (2) the LuxIQ is a useful or necessary tool for prescribing specific lighting needs.
Methods: Reading function of low vision and control subjects was assessed using MNRead Acuity Charts at 40cm under four light settings: ambient room illumination (280 lux), preferred setting and set points at 500 lux below and above the subjects' preferred setting. Preferred setting was measured as the participants' subjective light preference when reading their preferred size print on the MNRead chart. Temperature was kept constant at 4500 oK, 575nm. Testing began under ambient illumination and the testing order of the three remaining light settings were randomized for each subject. The LuxIQTM (Jasper Ridge, Inc) was positioned above the MNRead chart and different charts were randomly selected and alternated for each lighting condition. Charts were placed under an opaque cover revealing only the sentence which subjects were required to read. Reading rate was plotted as a function of print size to estimate critical print size and maximum reading rates.
Results: In control subjects, the different light settings had little effect on maximum reading rates, and variable effects on critical print sizes. Initial patient data suggests a more consistent impact of lighting on critical print size. Lighting preference may depend on the type of ocular pathology (e.g. Fletcher et. al, ARVO 2015), however this preference does not always confer a functional benefit to reading. The outcome measures presented here will delineate which patients are most likely to benefit from a specific lighting prescription versus simply increasing task lighting to a subjectively comfortable level.
Conclusions: Low vision practitioners commonly recommend the use of supplementary localized lighting to enhance near vision tasks. The findings from this study provide guidance as to whether practitioners can benefit low vision patients by providing an objective lighting prescription.