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## Abstract

**Purpose :** Printed sentence acuity charts have long been the standard for clinical assessment of reading behavior. However, the limited numbers of sentences and the rigid sentence order on the printed charts is a disadvantage for repeated testing during the course of interventions where memorization could cause problems. The Salzburg Reading Desk (SRD) is an instrument that displays sentences on a high-resolution screen. For each sentence text size, two sentences are randomly chosen from a large pool of possible sentences and presented at a choice of sizes, contrasts, and background luminance levels. Therefore, on every trial, a unique pair of sentences is presented. In the current work, we wished to assess to correspondence of reading behavior measured with printed charts to that obtained on the SRD.

**Methods :** Ten normally sighted participants (mean age 41.8 years) were enrolled. Subjects' letter acuities at 100% and 10% contrasts, and MARS contrast sensitivities were measured. Using a counterbalanced design, participants read printed Colenbrander sentences at 100% and 10% contrast (Precision Vision), and sentences displayed on the Salzburg Reading Desk (SRD) at 100% and 10% contrast.

**Results :** Letter acuity at 100% average  $0.07 \pm 0.18$  logMAR (median = 0.02), and at 10%,  $0.27 \pm 0.21$  logMAR (median = 0.2). The average loss in acuity between high and low contrast letters was  $0.19 \pm 0.7$  logMAR. The correlation between high and low contrast acuity was 0.94. Contrast sensitivity averaged  $1.61 \pm 0.08$  (median = 1.62). Reading speed versus text size data were fitted with a sigmoidal equation —  $y = a/(1+\exp(-(x-b)/c))$ , where "a" determines the vertical scaling of the function (equivalent to Maximum Reading Speed in log WPM), "b" determines the horizontal position of the function (equivalent to Reading Acuity in logMAR), and "c" determines the slope of the transition. Two-way repeated measures ANOVAS found no differences between any of the three parameters derived from charts read at 100% and from the SRD at 100% or between 10% sentences.

**Conclusions :** We found that reading sentences on printed charts was statistically equivalent to reading sentences on the SRD instrument. Screen-based reading charts can be substituted for printed chart, much as has been done for acuity. This would provide additional advantages of random presentation from a large pool of sentences and more precise control over size, contrast and luminance.

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