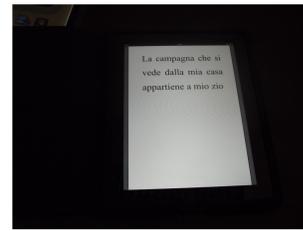
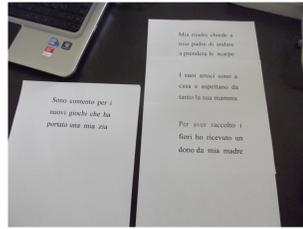




Introduction:

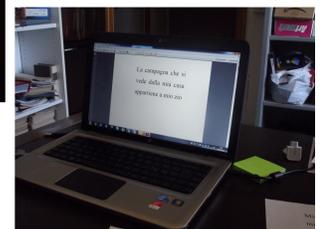
The aim of this experiment is to determine if there are any differences in the method of reading on three different devices: Ipad, computer monitor, and printed sheets. To achieve this result, we have measured the reading speed, of 40 subjects, each of them on all three devices. All the subjects were aged between 20 and 30. Many of them had refractive errors. In any case, during the testing phase, all subjects used their refractive correction.

Printed Sheets



Ipad

Pc



Methods:

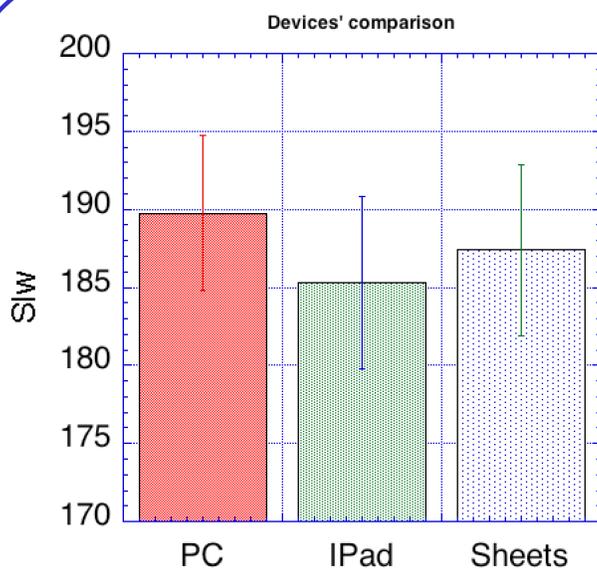
We used REX Test [1], an Italian slightly modified version of the MNREAD method, a variant of the FLASHCARD presentation method. We presented 8 flashcard for each device. The retinal image size is the same for all three situations. While they were read by the subjects, we marked reading time and errors. This was done for every subject on all of three devices. Then we processed the data with the Carver method, using the SLW (Standard Word Length) reading speed[2]. Here three examples of FLASHCARD :

La campagna che si vede dalla mia casa appartiene a mio zio

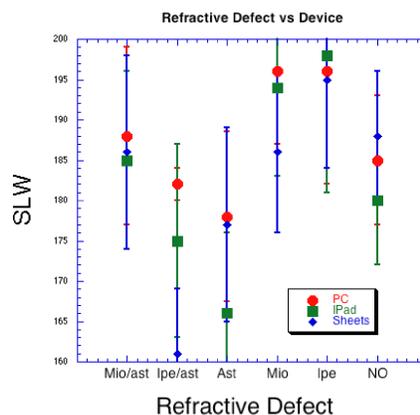
Per tutti questi mesi mia nonna usciva ogni giorno alle tre

Mi piace andare da casa mia al fiume a vedere i pesci rossi

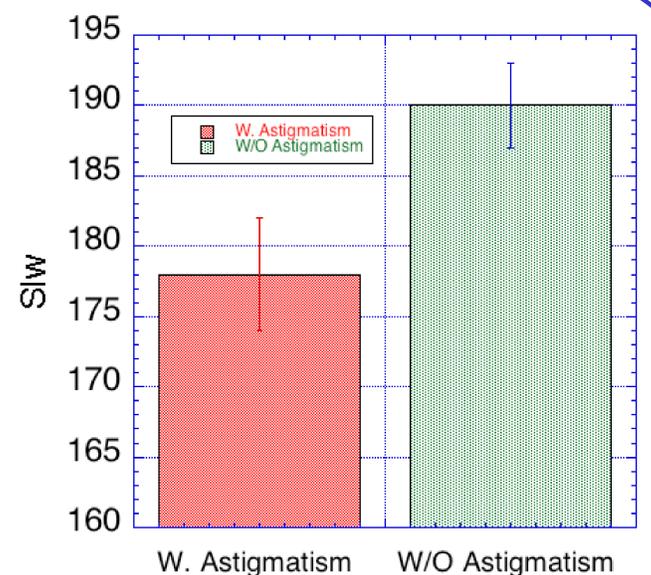
Experimental Results:



Reading speed for the three devices (larger is faster): no difference is present



Comparison of reading speeds for different refractive errors



Comparison of reading speeds in subjects with (W) and without (W/O)

Conclusion :

- The reading speed, measured using a variant of the flash card method, is independent from the device (computer monitor, E-tablet, printed sheets).
- The presence of astigmatism (even if corrected) is relevant. The reading speed for a group of subjects with astigmatism (compounded or not with other refractive errors) decreases, with a statistically significant result.
- Further research utilizing a longer reading session and a greater number of subjects will be an interesting perspective of our research.

Reference:

- [1] Giacomelli et al. "Contrast reduction and reading: assessment and reliability with the Reading Explorer test" *Europ. J. of Ophthalmology* 389-396 20 (2010).
- [2] Legge, G.E. "Psychophysics of Reading in Normal and Low Vision". Mahwah, NJ & London: Lawrence Erlbaum Associates. (2007)
- [3] J.S. Wolffsohn et al. Effect of uncorrected astigmatism on vision *J Cataract Refract Surg.* 454-60 37(3) (2011)

Corresponding authors:
alessandro.farini@ino.it and
marci.lorenzo@libero.it