

## Strategies used by deaf and hearing children during online reading: insights from an eye-tracking study

Poor literacy is an enduring and critical issue in the deaf population. The factors that lead to skilled reading for deaf children and adults are currently under debate and not well understood. Here we investigated the potential relationship between visuo-spatial skills and reading comprehension during online reading.

Specifically, we investigated online reading strategies in deaf and hearing teens, asking: (1) what differences exist between print-based reading on a screen and reading web-based text with more visual information? And (2) do hearing and deaf readers use different strategies to search for online information? We hypothesised that signing participants would rely more on visual information compared to both the English-speaking deaf readers and hearing readers. We further hypothesized that the degree to which participants rely on visual information would be directly correlated with their visual-spatial skills.

Twenty participants with reading levels an average of 1 Standard Deviation below age-matched norms (age 13-14) completed two 30-minute reading comprehension tasks using an eye-tracker. Three groups (n=10 Deaf with BSL as preferred language, n=9 deaf with English as preferred language, n=7 hearing bilingual English speakers also fluent in Somali) were included. Task- 1 involved reading a text document on screen, Task-2 used an interactive website. Both tasks required answering comprehension questions related to source materials.

Data comparing Task-1 and Task-2 indicate that all groups perform better when using web- based compared with text-only materials (75% correct vs. 62%). Comparison of Signing Deaf, Oral Deaf and Hearing readers revealed that both groups of deaf readers make significantly more use of visual aids (pictures, tables, video) compared with hearing readers (23% & 22% vs. 12%). There were no significant differences between the Oral Deaf and Signing Deaf readers. As predicted, there was a significant correlation between visual-spatial skills (as evidenced by the Corsi Block visual-spatial working memory task, Milner, 1969) and use of visual aids ( $r(46) = .44, p = .02$ ). Overall, the data suggest visual aids can help readers when searching for information. However, deaf teens (oral or signing) may be more able to use this strategy than hearing teens.

Reference:

Milner, B. (1969). Interhemispheric differences in the localization of psychological processes in man. *British Medical Bulletin*, 27, 272 – 277.