

Smart research into Smartphones

Research into smartphones and vision crosses many disciplines. Here are three recent publications illustrating the diversity of research on this topic.

Catching the attention of smartphone users

Many pedestrians read from their smartphone while walking. Why not place lights on the ground to warn them of a road crossing, rather than lights and signs placed at eye level?



Some cities have already installed LED in footpaths to warn distracted pedestrians of road hazards, but few studies have evaluated their effectiveness¹.

Larue and co-authors¹ investigated whether flashing lights on the ground are sufficient to attract the attention of distracted smartphone users. Their laboratory study shows that it does work: distracted people detected floor-lights with a similar accuracy to undistracted people who viewed warnings located at eye level.

The authors recommend future research in real-world conditions to confirm the laboratory findings.

What happens to your eyes when you read a novel on a smartphone?

You only have to look around to see that many people hold their smartphone close to their eyes when they read from the display. Is this bad for your eyes, especially if you are reading for long periods of time?

Golebiowski and co-authors asked 12 subjects to read a novel on a smartphone for 60 minutes and measured if there were any changes in visual comfort, binocular vision function, tear function and blink rate². Subjects in the experiment blinked more at the end of the 60 minute reading task and were more likely to make incomplete blinks (that is, the eye lids did not fully close when blinking, which can affect eye dryness). This was associated with greater reports of tiredness.

Subjects also showed a decrease in binocular accommodative facility (ability of the eye to change focus between close and distant objects) at the end of the reading task. This has implications for seeing clearly in the distance after reading from the smartphone.

Do you use a magnifier app?

The traditional way to determine how often someone uses a digital device is to ask them about past usage. This can be inaccurate if people recall their past behaviour incorrectly.

To overcome this problem, Luo³ used runtime user data to measure how often people used a magnification app on their iPhone or iPad. He collected data from the app, which was used by 16,787 people from 129 countries for 1 month.

Most people used the magnifier app for 1-3 minutes per day, but some used it more than 30 minutes at a time. Luo surmises that most people who used the app were vision impaired and that the short period use was for spot reading (e.g. to read labels and menus) and the long period use was for reading books. He suggests future research could include pattern recognition algorithms to help researchers understand why people use the app.



- References:**
1. Accident Analysis and Prevention (2020) 134: 105346
 2. Current Eye Research (2020) 45(4): 428-434
 3. Clinical and Experimental Optometry (2019) Early view <https://doi.org/10.1111/cxo.12996>



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