On Measuring the Impact of Hyperlinks on Reading
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Introduction

• We spend a vast amount of time on the Web and much of that time is spent reading
• One of the main differences between reading Web and non-Web based text is the presence of hyperlinks
• We therefore set out to measure the impact of hyperlinks on reading
• We conducted two studies:
  • an initial experiment examining reading non-Web text
  • a main experiment examining reading Web-based text

Experiment

Does a hyperlinked word impair reading behaviour?

32 participants
80 experimental sentences inserted into 20 edited Wikipedia pages (4 in each; 1 per condition)

Experimental Conditions:
High Frequent/Hyperlinked
High Frequent/Unlinked
Low Frequent/Hyperlinked
Low Frequent/Unlinked

Figure 1. SR Research Eyelink 1000 eye tracker

Figure 2. Example stimuli

No effect of hyperlinks on early eye movement measures (first fixation duration, single fixation duration and gaze duration)
This shows that hyperlinks were not harder to process

Results

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Significant effect of hyperlinks on later eye movement measures (go-past times and total reading time), see red outlines in Figure 3. This indicates rereading of preceding content

Conclusion

• The initial experiment showed that a coloured word is skipped less often than a black word
• In comparison, the main experiment showed that hyperlinked words are not skipped any more than non-hyperlinked words, indicating that coloured words are processed differently to hyperlinked words
• Low frequency hyperlinked words had significantly longer fixation times in the late measures of reading. Participants had difficulty with these words and would reread the preceding content to re-evaluate it
• Hyperlinks indicate that the word is important. When the hyperlinked word is a low frequency word the reader may wonder why that word is hyperlinked and want to re-evaluate the preceding content to make sure that they understood it, or try to decide why it is important

What does this mean for reading on the Web?

• Hyperlinks do not make the text any more difficult to read
• However, when the link is a low frequent/uncommon word, readers are more likely to reread the preceding sentence in order to re-evaluate the content
• The key lesson here is that Web designers should only take extra caution when deciding to hyperlink words that are uncommon, unless necessary