Perspective effects on reading and memory

Iuliia Fokina, Peter C. Gordon
The University of North Carolina at Chapel Hill

Readers allocate more attention to information relevant to their perspective during reading (Goetz et al., 1982; Kaakinen & Hyönä, 2008), but the processing of perspective-irrelevant information and its subsequent recall remain uncertain. We examined how a shift in perspective during recall affects memory for initially irrelevant information and explores the relationship between eye-movement patterns and memory performance. Prior studies (e.g., Anderson & Pichert, 1978; Kaakinen & Hyönä, 2007) were extended by introducing a second recall stage immediately after a perspective change and a third recall stage following rereading (see Figure 1). Unlike Anderson & Pichert (1978), who included two recall stages without eye-tracking, and Kaakinen & Hyönä (2007), who recorded eye movements but delayed recall until after rereading, our modifications allowed us to investigate how readers adapt to perspective changes during both recall and rereading.

Method. Participants (N=45), all native English speakers, read six short texts (~170 words each) containing sentences relevant to the perspective either of a real-estate buyer or of a babysitter, along with neutral sentences. Participants read the texts twice while their eye movements were recorded. Recall was assessed after the initial reading, after a perspective shift, and after rereading under the new perspective. Sentences were categorized as neutral or relevant to the real estate buyer, or babysitter. Different processing measures were computed from the data to examine the eye movements during reading: total reading time (summed duration of all fixations on a word), probability of skipping a word (leaving a word unfixated), and probability of making a regression during reading. These metrics were calculated for each word and then averaged by sentence type. To examine the recall data the number of information units was calculated for each sentence. Participants were instructed to type as much as they could remember from each text. Then they were credited one point for each information unit they could correctly recall.

Results and discussion. Eye-movement data (shown for total reading time in Figure 2) replicated findings by Kaakinen & Hyönä (2007), showing repetition costs (slowing down) for sentences congruent with the reading perspective and repetition benefits (speeding up) for incongruent ones during rereading. This supports the idea that text relevance strongly influences resource allocation across repeated exposures to the same text (Kaakinen & Hyönä, 2007). Recall data aligned with Anderson & Pichert (1978), showing a significant increase in the recall of information congruent with the new perspective during the second recall stage (see Table 1) and a decrease in recall of non-congruent and neutral information. Specifically, participants recalled 12.9% more information units from sentences congruent with their new perspective, while recall of non-congruent and neutral information declined by 19.2% and 19.4%, respectively. However, after a third recall following additional exposure to the text, recall improved substantially across all conditions. Participants recalled 150.5% more congruent information units, 63.4% more neutral information units, and 34% more non-congruent information units relative to their initial recall. This suggests that rereading the text significantly enhanced memory performance, reinforcing the idea that repeated exposure strengthens retrieval, particularly for information relevant to the reader's perspective.

These findings contribute to our understanding of selective attention in text processing and the interplay between encoding and retrieval processes in memory. Namely that some irrelevant information is encoded and can be retrieved when a relevant perspective is invoked. However, despite the significant patterns observed in eye-movement data, LMM and GLMM analyses revealed that the eye-movement processing measures are weak predictors of recall. Eye movement processing measures and their interaction with congruency had no significant effect on recall, suggesting that while eye movements reflect processing effort, they do not reliably predict successful retrieval.

References

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Kaakinen, J. K., & Hyönä, J. (2007). Perspective effects in repeated reading: An eye movement study. *Memory & Cognition*, *35*(6), 1323–1336. https://doi.org/10.3758/BF03193604

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Figures and Tables

Figure 1. Present study outline

Figure 2. Comparison of congruency levels in Reading 1 and Reading 2

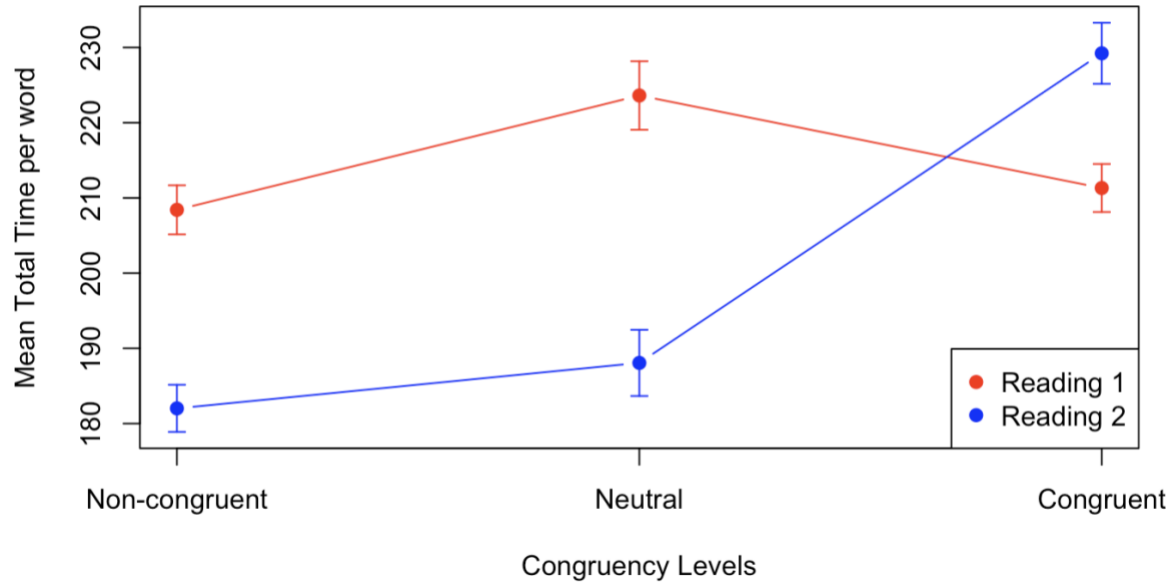

Table 1. Percentage of information recalled

congruency levels (for recalls 2, 3)	% information units recalled			% difference in recall 2 relative to recall 1	% difference in recall 3 relative to recall 1
	recall 1	recall 2	recall 3		
neutral	17.4%	14%	28.4%	-19.4%	63.4%
congruent	14%	15.9%	35.2%	12.9%	150.5%
non-congruent	22.2%	17.9%	29.8%	-19.2%	34%