Phonological Word-Object Mapping is Contingent upon the Nature of the Visual Environment

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Four eye-tracking experiments investigated the impact of the nature of the visual environment on the likelihood of word-object mapping taking place at a phonological level of representation during language-mediated visual search. Dutch participants heard single spoken target words while looking at four objects embedded in displays of different complexity and were asked to indicate the presence or absence of the target object. During filler trials the target objects were present, but during experimental trials they were absent and the display contained various competitor objects. For example, given the target word '*beaker*', the display contained a phonological (a beaver, *bever*), a shape (a bobbin, *klos*), a semantic (a fork, *vork*) competitor, and an unrelated distractor (an umbrella, *paraplu*). When objects were embedded in semi-realistic scenes including four human-like characters (Experiment 1, 3, and 4a), there were no biases in looks to phonological competitors even when the objects' contours were highlighted (Experiment 3) and an object naming task was administered right before the eye-tracking experiment (Experiment 4a). In all three experiments however we observed evidence for inhibition in looks to phonological competitors, which suggests that the phonological forms of the objects had been retrieved. When objects were presented in simple four-object displays (Experiments 2 and 4b) there were clear attentional biases to phonological competitors replicating earlier research (Huettig & McQueen, 2007). These findings suggest that phonological word-object mapping is contingent upon the nature of the visual environment and add to a growing body of evidence that the nature of our visual surroundings induces particular modes of processing during language-mediated visual search.

References

Huettig, F., & McQueen, J. M. (2007). The tug of war between phonological, semantic and shape information in language-mediated visual search. *Journal of Memory and Language, 57*(4), 460-482. doi: 10.1016/j.jml.2007.02.001