Word and Sentence Level Spatial Information In Reading

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Abstract

Reading is considered a task that requires a specific detection of individual, discrete, integral word or sentence information. We studied eye-movement and sentence-processing in reading with spatially-matched eye-movements in subjects with retinal diseases. Our results indicate that word resolution and sentence level processing are influenced by visual distortions, providing evidence for the importance of word recognition and sentence shape in reading.

Introduction

Metamorphopsia (Visual Distortion) is a common symptom of visual impairment – e.g. in patients with maculopathy (Wiecek et al 2015) and amblyopia (Pugh, 1958).

Single letter acuity scales non-linearly with distortion magnitude and scale (Wiecek et al 2014).

Is the functional impact of metamorphopsia task-dependent?

Does reading require each letter to reach identification threshold (Pelli et al 2003)?

Conclusions

Letter Identification, Word Recognition and Reading are affected by visual distortions at task-relevant spatial scales. The expected level of functional impairment and clinical outcomes caused by metamorphopsia are therefore task dependent. Reading depends on word and sentence shape, not simply letter identification.

References


