

# Language experience may modulate attentional disengagement to scene grammar inconsistencies during free-viewing

Poster Presentation 23.414: Saturday, May 18, 2024, 8:30 am – 12:30 pm, Pavilion  
Session: [Visual Search: Attention, phenomena 1](#)

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Orienting oneself in real-world scenes relies on a set of rules (“scene grammar”), which support object localization and identification (e.g., knowing that a spatula goes neither in a toaster nor a bathroom). The acquisition of these rules might be linked to language, drawing on many of the same cognitive mechanisms. As such, scene grammar inconsistencies (e.g., a pot on the sofa) may impair object processing as viewers need to disengage attention and resolve ambiguity resulting from the unexpected element of the scene. Psycholinguistic research suggests that multilingual individuals face similar challenges as they experience concurrent activation of all known languages. This may increase resilience to distraction from task-irrelevant information in a domain-general manner. We conducted two experiments in which multilingual participants either viewed realistic indoor scenes freely for five seconds (Experiment 1; N = 27) or performed a word-cued visual search task (Experiment 2; N = 24) while their eye movements were recorded. Across both experiments scenes contained semantic, syntactic or no violations. Experiment 2 also involved a target present/ absent decision. Additionally, participants responded to a language background questionnaire. During free-viewing semantic violations were fixated earlier than syntactic violations and for longer than syntactic violations and neutral areas in the scene. In the visual search task, this effect was attenuated when the target was absent, and participants showed no indication of distraction from either type of inconsistency when there was a target to be found. During free-viewing bilingual experience was associated with shorter dwell times on the inconsistent object. More specifically, individuals with higher second language proficiency and earlier age of acquisition were able to move past scene grammar inconsistencies more efficiently. These results suggest that while task demands guide attention, there may be some influence of individual differences in language experience on attentional disengagement from object-scene inconsistencies.

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