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Dissociable neurocognitive signatures in scene perception

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Abstract

The neurocognitive processes involved in understanding objects and scenes remains debated, such as the separability of electrophysiological responses thought to index object identification (N300) and semantic access (N400). Yet, studies typically introduce incongruities which evoke N300/N400 patterns, not different deflections. We measured EEG to naturalistic comic strips with panels that "zoomed-in" on scene content. In Experiment 1, zoom and full-scene panels were compared within sequences that were in/congruous to the sequence. Incongruities evoked larger negativities for both the N300 and N400, while zoom panels elicited attenuated N300s yet enhanced N400s. In Experiment 2, zoom and full-scene panels appeared in succession. Both types evoked attenuated N400s when appearing second, benefiting from the repetition effect, but N300s were less negative for zooms than full panels. Across both experiments, these opposite patterns of deflections across components suggest differential processes of object identification (N300) and semantic access (N400) in the processing of visual information.

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