



The effect of task on the electrophysiological correlates of visual categorization

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When investigated by electroencephalography, category-specific modulations of the visual P1 and N1 event-related potentials can be detected in a categorization task. Here, we investigated how the nature of task modulates this category effect and how its time course and topography changes. Eleven subjects participated in two sessions: a car vs. bird categorization task and a simple target-detection task. We recorded a 32-channel EEG and assessed changes of the P1 and N1 components. Moreover, scalp maps of category-specific neural activities were compared between the two tasks in the 100-600 ms time interval. As expected, we found a car vs. bird category effect over occipital regions around 140 milliseconds in both tasks. Furthermore, the type of task did not influence the category-related modulation of the N1 component. In spite of this, while in the categorization task the car vs. bird amplitude difference was present over the parieto-occipital regions almost for 600 ms, in the target-detection task it disappeared around 300 ms. Frontal effects also differed between the two tasks after 300 ms. These results suggest that early category effects are task-independent, while only active categorization is characterized by a sustained amplitude shift both over anterior and posterior regions in the 300-600 ms interval.

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