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The interplay between visual attention and saccade motor intention

Calculations required for humans to interact within the environment are quite complicated, but in a most simple form, both the location of salient sensory information and the desired movement trajectory must be selected from all alternatives. Attention may be the 'selector' for both the sensory and motor components of the task. This hypothesis suggests that a single attentional mechanism, simply acting on modality-specific information, may exist for both visual attention and motor attention. If visual attention and motor attention utilize the same pool of attentional capacity, it would suggest that as attentional loads increase in one system, performance based on the opposite attentional system would correspondingly decrease. The purpose of our current set of experiments was to test these predictions. Healthy men and women aged 18-50 years performed tasks in which either the visual attention system (using a RSVP task) or the saccade trajectory selection system (motor attention) was stressed while the other component of the task was held constant. Based on preliminary results of these experiments, it appears that these two attentional systems rely on different sources of attentional capacity and are separable. A third experiment is being performed, using functional magnetic resonance imaging, to determine differential activity in parietal cortex for these tasks.

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