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Mechanisms of Attentional Control in Human Cortex

Vision is active and selective. Visual attention is the mechanism by which observers select behaviorally relevant locations, features, or objects from visual scenes. Top-down signals from prefrontal and parietal cortex (the source of attentional control) modulate the strength of cortical activity in extrastriate cortex (the effects of attentional control). Thus task-related cortical feedback can directly or indirectly enhance relevant and/or suppress irrelevant cortical representations and thereby gate access to visual awareness.

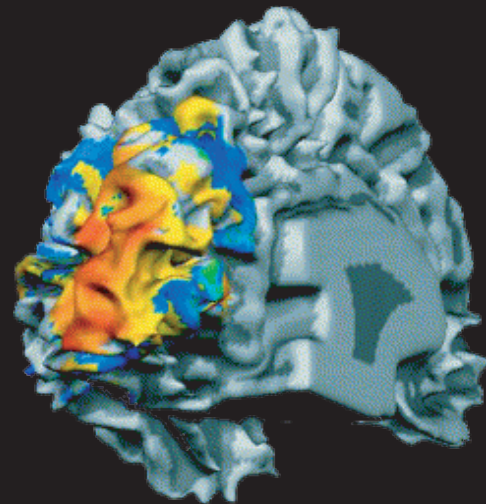
We have investigated the time course of attentional control signals in human cortex using rapid event-related fMRI during tasks that require shifts of attention between locations, features, and objects in vision, and between sensory modalities (vision and audition). Cortical activity is strongly modulated by the locus of attention. For example, auditory (superior temporal) cortex is more active than visual cortex when attention is directed to auditory input, and vice-versa. More importantly, we have observed transient activity in the superior parietal lobule (SPL) that is time-locked to shifts of attention in each of the domains we have studied. The transient signal reflects abrupt changes in the focus of attention, complementing sustained signals in the intraparietal sulcus (IPS) that appear to maintain a given attentive state. These temporal profiles suggest a consistent role for SPL and IPS, respectively, in shifting and maintaining the locus of attention.

Vision Research Seminar Series

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4:00 p.m. • 115 Wilson Hall

Refreshments prior to seminar



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