The Anterior Attentional System Consists of Several Components: Consistency of Findings

Historically the Anterior Attentional System has been often described as a unitary system. We recently proposed that the functions of the frontal lobes can be divided into four categories which are related to different anatomical regions. Two of these categories can be considered to be key components of the Anterior Attention System. "Energization" is functionally defined as the initiation and sustaining of any response mode. Slowness in responding, and difficulty in sustaining speed of behaviour over time, is strongly related to regions of the superior medial frontal lobes. It is a failure to raise tonic attention to a sufficient level to drive the response to the stimulus. The other category is labeled "Executive", and closely relates to the definitions provided for the executive functions of the frontal lobes. This category is most strongly associated with the lateral frontal regions.

Our data indicate that there are two major processes that can be called "executive". One we label "task setting", defined as the ability to set the response contingencies for the task, including the criterion for making a response. Damage to the right lateral region resulted in an impairment in "monitoring", both over time and for correctness of performance. These different anterior attentional processes are observable in many different tasks, and are consistent across different patient groups. Similar results have also been observed in functional imaging experiments.