

Thinking, Alpha and Theta: Neural Indicators of System 1 and System 2

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Abstract: Every day we must sort and process an abundance of information to make complex decisions. In some cases, this is achieved by quickly simplifying the information at hand, while in other cases it is necessary to rigorously contemplate all of the available information. These approaches to problem solving are broadly described as System 1 and System 2, respectively. Here, we replicate a pioneer eye tracking study conducted by Dr. Daniel Kahneman and extend findings by collecting electroencephalographic measures. Our results demonstrate that, in comparison to System 1 processing, frontal theta was increased for System 2 processing, while parietal alpha was decreased. Furthermore, theta was positively associated with, and alpha was negatively associated with, pupil diameter. This signifies that cognitive control and attentional mechanisms are major contributors in distinguishing these types of processing.