

Cognitive Adjustments & Network Interactions

Derek M. Smith

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Directed by Dr. Eric H. Schumacher

Our understanding of the neural substrates of cognitive adjustments is fairly limited. Given the growing body of work showing that brain connectivity network interactions are behaviorally relevant, more attention should be paid to network interactions when studying adjustments of cognitive control. Both the Frontoparietal Network (FPN) and the Cingulo-Opercular Network (CON) have been associated with elements of cognitive control. The aim of this study was to gain a better understanding of how these networks contribute to cognitive adjustments, specifically the congruency sequence effect, by testing the hypothesis that increased coupling between these networks is associated with more adjustment in behavior. Additionally, it was predicted that CON activity over and above FPN activity would predict both the neural response in the FPN and behavior on the subsequent trial. A significant congruency sequence effect was not observed in this data set. Inter-network connectivity was shown to be greater prior to relatively fast trials for a subset of subjects. In addition, significant negative modulation of current trial FPN was observed but this modulation could not be clearly linked to behavioral adjustments. Overall, the findings suggest that interactions between these networks have some role to play in performance but the primary hypotheses were not supported.