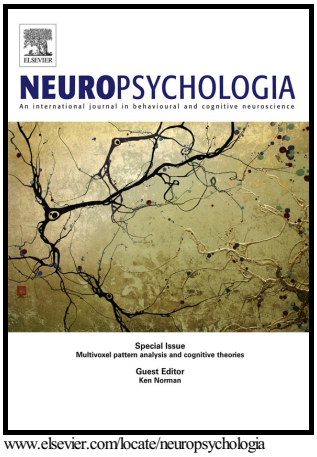

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Kristin N. Meyer, Feng Du, Emily Parks, Joseph B. Hopfinger

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Exogenous vs. endogenous attention: Shifting the balance of fronto-parietal activity

Kristin N. Meyer[1], Feng Du[2], Emily Parks[3], Joseph B. Hopfinger[1*]

[1]Department of Psychology & Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA
[2]CAS Key Laboratory of Behavioral Science, Institute of Psychology, Chinese Academy of Sciences, Beijing, 100101, China
[3]Trinity College of Arts and Sciences, Duke University; Durham, North Carolina, USA
*Corresponding author: Joseph B. Hopfinger, Ph.D., Department of Psychology & Neuroscience, CB 3270, Davie Hall, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3270. office: (919) 962-5085; FAX: (919) 962-2537. hopfinger@unc.edu

Abstract

Despite behavioral and electrophysiological evidence for dissociations between endogenous (voluntary) and exogenous (reflexive) attention, fMRI results have yet to consistently and clearly differentiate neural activation patterns between these two types of attention. This study specifically aimed to determine whether activity in the dorsal fronto-parietal network differed between endogenous and exogenous conditions. Participants performed a visual discrimination task in endogenous and exogenous attention conditions while undergoing fMRI scanning. Analyses revealed robust and bilateral activation throughout the dorsal fronto-parietal network for each condition, in line with many previous results. In order to investigate possible differences in the balance of neural activity within this network with greater sensitivity, a priori regions of interest (ROIs) were selected for analysis, centered on the frontal eye fields (FEF) and intraparietal sulcus (IPS) regions identified in previous studies. The results revealed a significant interaction between region, condition, and hemisphere. Specifically, in the left hemisphere, frontal areas were more active than parietal areas, but only during endogenous attention. Activity in the right hemisphere, in contrast, remained relatively consistent for these regions across conditions. Analysis of this activity over time indicates that this left-hemispheric regional