# *Alteration of visuomotor processing following left-right prism adaptation*

**Alteration of visuomotor processing following left-right prism adaptation.** Brian Barton, Ling Lin, Derrik E. Asher, and Alyssa A. Brewer; J Vis August 5, 2009 9(8): 763; doi:10.1167/9.8.763

Several studies have examined the role of primate parietal cortex in visuomotor tasks involving grasping, reaching, and saccadic eye movements (e.g., Hagler et al., Neuroimage, 2007). One especially useful way to study that role is to measure how motor systems adapt to alterations in visual input. Neuroimaging measurements in humans have begun to reveal a cluster of visual field maps in posterior parietal cortex that may be involved in visuomotor integration and adaptation (Swisher et al., J. Neuroscience, 2007). Here, we examine the alterations in these parietal maps in an example of extreme visuomotor adaptation during a 14 day period of continuous left-right visual field reversal.

We combined psychophysical and neuroimaging measurements of subjects wearing left-right reversing prisms and compared them to baseline and post-experimental measurements. Throughout this adaptation period, subjects performed a daily battery of visuomotor behavioral tasks in which we tracked changes in error rates and reaction times (e.g., Richter et al., Exp. Brain Res., 2002; Sekiyama et al., Nature, 2000). In the neuroimaging experiments, we used standard retinotopic stimuli to define the posterior and dorsal visual field maps. These data were then compared across time points to the organization of these maps as defined by a delayed-saccade paradigm. Additionally, we compared the responses to a variety of visual spatial tasks across these maps. These data increase our understanding of cortical regions that underlie visuomotor adaptation to continuous, long-term left-right visual field reversal.

Received June 11, 2009.