The Clock Drawing Task: Common Errors and Functional Neuroanatomy

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FIGURE 1. Representative illustration of common types of clock-drawing errors.[1]

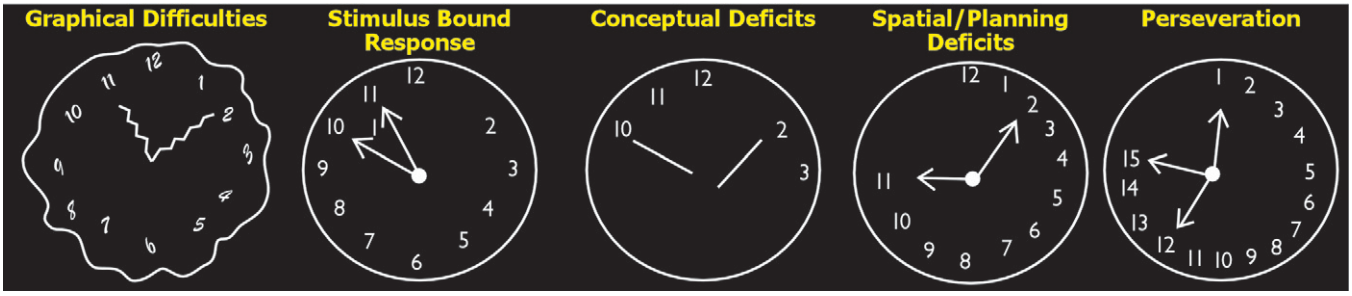

FIGURE 2. Illustrations of the left and right hemispheres, summarizing the major functions of the cortical regions. A study using functional magnetic resonance imaging (fMRI) in normal, healthy individuals mapped the areas activated by the hand-placing portion of the clock-drawing task (approximate areas indicated in green), providing a general guide to the cortical networks involved.[2]

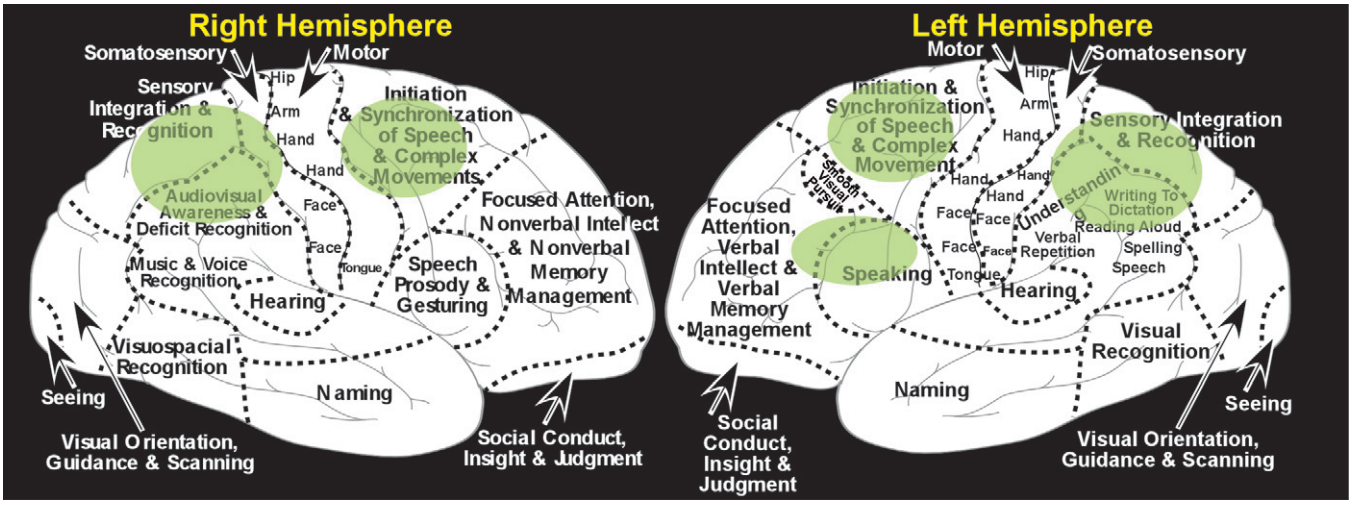

FIGURE 3. A recent study used resting-state fMRI to compare the functional connectivity of the dorsolateral area of prefrontal cortex (approximate location indicated in blue, DLPFC, BA 46) in patients with mild cognitive impairment (MCI) and healthy-controls matched for age and gender.[3] In the MCI group, DLPFC had reduced connectivity with multiple cortical (inferior parietal lobule, superior and medial frontal gyri) and subcortical (putamen, thalamus) areas, indicating changes in both the fronto-parietal and fronto-striatal-thalamic circuits. Impaired performance on the clock-drawing task in the MCI group correlated with reduced connectivity between left DLPFC and an area in the left thalamus (approximate location indicated in purple). As noted by the authors, this finding suggests that fronto-striatal-thalamic disconnection may underlie, at least in part, the executive deficits found in these patients.