

## BRIEF SUMMARY

---

**Wagner, A. D., Koutstaal, W., Maril, A., Schacter, D. L., & Buckner, R. L. (2000). Task specific repetition priming in left inferior prefrontal cortex. *Cerebral Cortex*, 10, 1176–1184.**

---

Previous neuroimaging studies have shown that activation in left inferior prefrontal cortices (LIPC) is reduced during repeated (primed) relative to initial (unprimed) stimulus processing. These reductions in anterior (similar to BA 45/47) and posterior (similar to BA 44/6) LIPC activation have been interpreted as reflecting implicit memory for initial semantic or phonological processing. However, prior studies do not unambiguously indicate that LIPC priming effects are specific to the recapitulation of higher-level (semantic and/or phonological), rather than lower-level (perceptual), processes. Moreover, no prior study has shown that the patterns of priming in anterior and posterior LIPC regions are dissociable. To address these issues, the present fMRI study examined the nature of priming in LIPC by examining the task-specificity of these effects. Participants initially processed words in either a semantic or a nonsemantic manner. Subsequently, participants were scanned while they made semantic decisions about words that had been previously processed in a semantic manner (within-task repetition), words that had been previously processed in a nonsemantic manner (across-task repetition), and words that had not been previously processed (novel words). Behaviorally, task-specific priming was observed: reaction times to make the semantic decision declined following prior semantic processing but not following prior nonsemantic processing of a word. Priming in anterior LIPC paralleled these results with signal reductions being observed following within-task, but not following across-task, repetition. Importantly, neural priming in posterior LIPC demonstrated a different pattern: priming was observed following both within-task and across-task repetition, with the magnitude of priming tending to be greater in the within-task condition. Direct comparison between anterior and posterior LIPC regions revealed a significant interaction. These findings indicate that anterior and posterior LIPC demonstrate distinct patterns of priming, with priming in the anterior region being task-specific, suggesting that this facilitation derives from repeated semantic processing of a stimulus.

---