This study hypothesized that conceptual priming can across modalities. In order to test out this hypothesis, a paradigm which composed of a pictographic memory task and category fluency test (CFT) was used. This paradigm could allow the priming effect to be demonstrated by crossing different modalities from pictorial to word forms. In order to demonstrate this, we recruited twenty-seven patients with mesial temporal lobe damages which were known to have intact priming but impaired explicit learning. Twenty-seven normal controls were matched for the patient group. Both groups were tested on the CFT as baseline measure first. After studying on the pictographic memory task, their performance was measured by CFT again. Their individual performance of these two CFTs was compared. Results showed that the patient group demonstrated intact priming like the normal control group while the patient group was significantly impaired in their explicit learning when compared to the normal control group. Based on these results, this study can conclude that conceptual priming can act across modalities under our paradigm.