

Supplemental Figures

AS Mitchell, MG Baxter, D Gaffan, "Dissociable performance on scene learning and strategy implementation after lesions to magnocellular mediodorsal thalamic nucleus

Supplemental Figure 1: Object-in-place scene learning. (A) Two example scene stimuli.

The white arrowheads and "+" signs do not appear on the stimuli presented to the monkey. The white arrowheads indicate the locations of the two foreground objects in each scene. One of the two foreground objects in each scene denoted by "+" is arbitrarily designated as correct. The locations and identities of the foreground objects are fixed within each scene, but vary across scenes. (B) Schematic of the way in which scenes are presented for learning in the final version of the task. 20 new scenes are presented in each session, one after the other, and the monkey responds to each by touching one of the two foreground objects. Touches anywhere else in the scene cause the screen to blank and the trial to be repeated. A touch to the incorrect foreground object causes the screen to blank. In the first run through the list of scenes only, a correction trial is then presented in which the scene appears with only the correct foreground object present. A touch to the correct background object causes it to flash for 2400 msec, then the screen blanks and a reward is delivered. The monkey learns which stimulus is correct by trial and error. The list of scenes is presented a total of 8 times in each session, in the same order. At the end of the session, a large food reward is delivered in the lunchbox.

Supplemental Figure 2: The strategy implementation task. (A) Stimuli used for the task.

Four pairs of clip art stimuli were used in all pre- and postoperative testing. One stimulus in each pair was associated with a “persistent” strategy (P), the other was associated with a “sporadic” strategy (S). Four consecutive persistent choices resulted in a reward after the fourth choice; any time after that a sporadic choice was rewarded immediately, but sporadic choices were not rewarded again until another persistent reward had been earned. Each pair was learned individually, then they were presented randomly intermixed within the test session so that performance had to be guided by the strategy associated with each object rather than a specific sequence of choices. (B) An example series of trials, progressing in time from left to right. Each black rectangle represents a screen image that might be seen by the monkey, and the white arrowheads (which did not appear when the task was presented) denote the monkey's choice on each trial. The monkey chooses four persistent objects (p) across four trials, and is rewarded on the fourth persistent choice (denoted by a capital P). On the fifth trial the monkey chooses a sporadic object and is rewarded (S). On the sixth trial the sporadic object in the pair is chosen again but no reward is earned (s). On the seventh trial a persistent object is chosen (p); three more consecutive persistent choices following this trial would be required to earn another reward. Each session continued until 50 rewards were earned, and then the large lunchbox was delivered. See also <http://www.jneurosci.org/cgi/content/full/22/16/7288/F4> for sample performance on this task by a monkey with frontal-inferotemporal disconnection.