

illustration of the use of midazolam to study memory tests the theoretical position that forgetting is the result of a failure to consolidate information.

Example 1: Contextual cuing under midazolam

The effect of midazolam on the visual search (Park, Quinlan, Thornton, & Reder, 2004)

Chun and Jiang (1998) conducted a visual search task, in which subjects searched a display of composed letter Ls rotated 90° for the target, a single rotated T (see Figure 14.1). Once the subjects located the target in the visual field, their task was to indicate whether the T was pointing to the left or the right. Subjects viewed 24 different displays for 30 trials. Unbeknownst to them, half of the displays were repeated patterns of Ts and Ls. Chun and Jiang (1998) found that there was general speed-up during the process of the task, as well as specific speed-up for the repeated, previously viewed configurations. This specific speed-up in target identification during the test period was the result of a learned association between the repeated context and the location of the target. Although the subjects were not aware of having seen the repeated fields during the study phase, their faster reaction

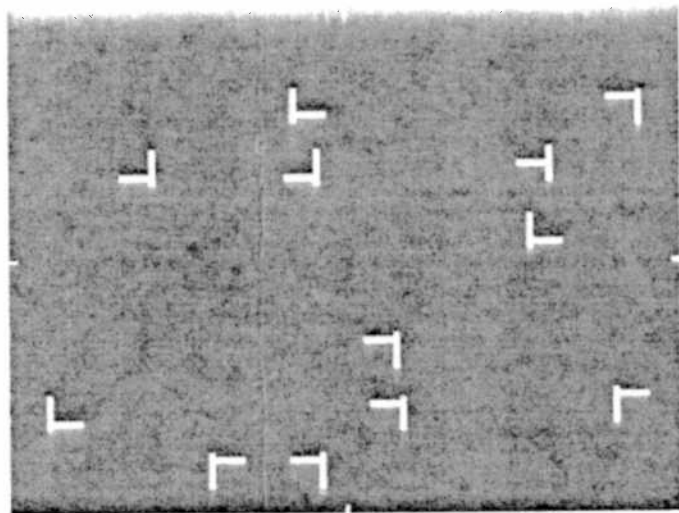


Figure 14.1 Rotated T & L visual search task. Adapted from Chun and Jiang (1998).

times indicated that they had unconsciously processed the location of the target within the field. These findings indicate the presence of an implicit contextual cuing effect for this visual search task.

Chun and Phelps (1999) repeated this visual search task with amnesic patients. The subjects with amnesia got faster with practice over blocks, but did not show the benefit of faster reaction time for the repeated, previously viewed configurations, indicating that there was no effect of contextual cuing. In other words, the subjects with amnesia did show context-independent learning over time, performing increasingly better on the task with time as a result of practice, but not learning that depended on the contextual cuing of the target's location (see Figure 14.2). These results provide support for the notion that not all forms of implicit learning are affected by specific brain damage.

The results of Chun and Phelps (1999) challenged the conventional notions of the deficits that occur with anterograde amnesia, leading Manns and Squire (2001) to suggest that the Chun and Phelps findings were caused by brain damage outside the region typically associated with clinical amnesia. We decided to use pharmacologically induced amnesia to adjudicate between

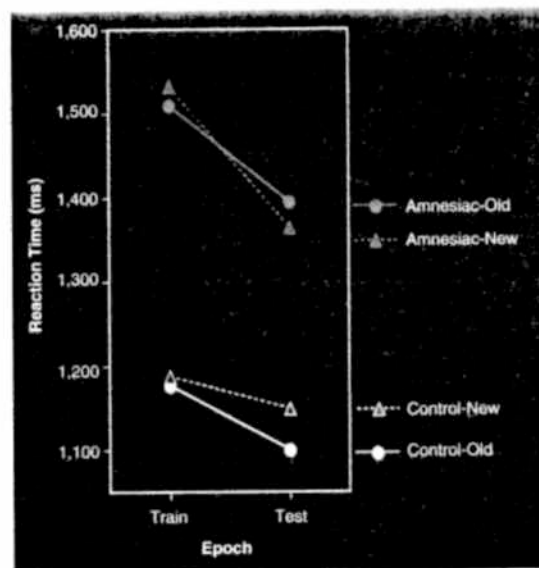


Figure 14.2 Reaction times on visual search task for control and amnesic patients. Adapted from Chun and Phelps (1999).