Limits in Monitoring and Recall with Constant and Changing Memory Sets

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Abstract: Monitoring of the environment for consistency with working memory is a common aspect of human performance, as is updating working memory to reflect changes in the environment. In two experiments, we examined limits in monitoring performance and working memory retention as the number of items to be held and monitored varied from one to eight. In Experiment 1, participants monitored a display on the basis of a static memory load. In Experiment 2, participants sometimes updated the memory load by substituting new information in the display. Both monitoring and retention were quite good in Experiment 1. In Experiment 2, monitoring performance was compromised even with a single-item load, and retention was poor for loads greater than 4 or 5 items. We discuss both theoretical and applied implications of these results.