Supplement B

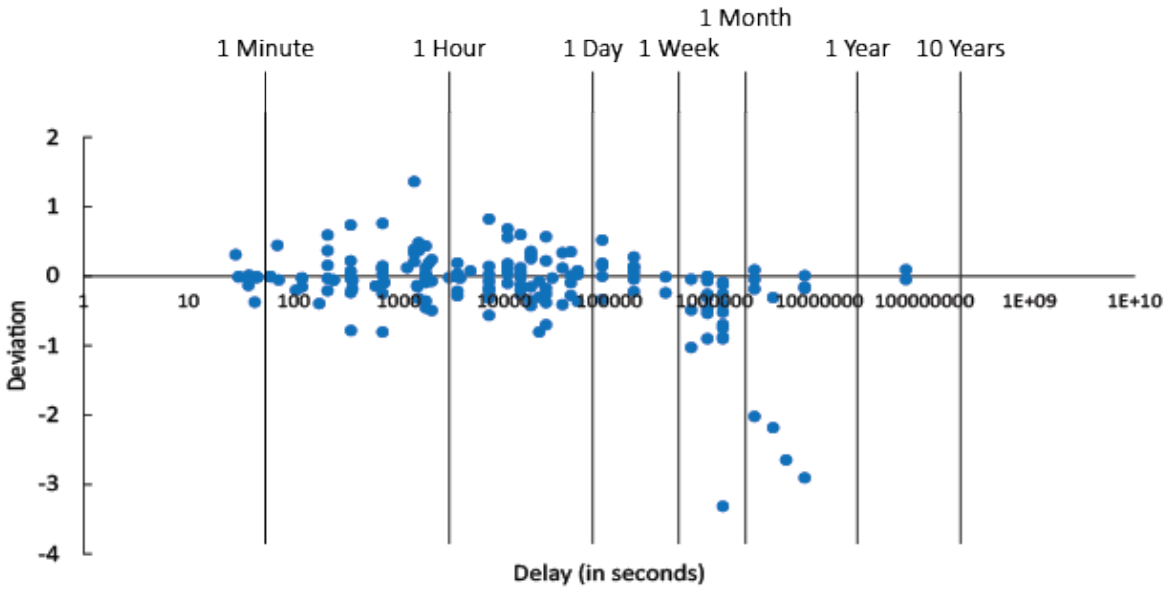
In our primary analysis, measures of signal detection were excluded because they provide information about the ability to discriminate new from old information, but they do not provide information about the amount of information remembered. The aim of the analysis in this supplement is to assess the predictability of memory when signal detection measures are used. For this analysis, we focus exclusively on *d'* measures, again for studies with five or more retention intervals. These *d'* values were either reported explicitly in papers (e.g., Wickelgren, 1972), or were derived from papers containing recognition studies in which hit and false alarm rate information was available (e.g., Strong, 1913).

This supplement is divided into two sections. The first is an analysis of the ability of *d'* to predict future memory performance. The second is an analysis of changes in power function exponents from one memory phase to the next. Note, overall, that there are far less data to work with for these analyses than for the main analyses.

Prediction Analysis for Signal Detection Measures

A plot of the difference between predicted and actual performance at various retention intervals with *d'* as the outcome measure is shown in Figure B.1. Positive values reflect better than predicted memory, and negative values reflect worse than predicted memory.

Figure B.1
Prediction data plotted against log time as a function of deviation from predicted memory.

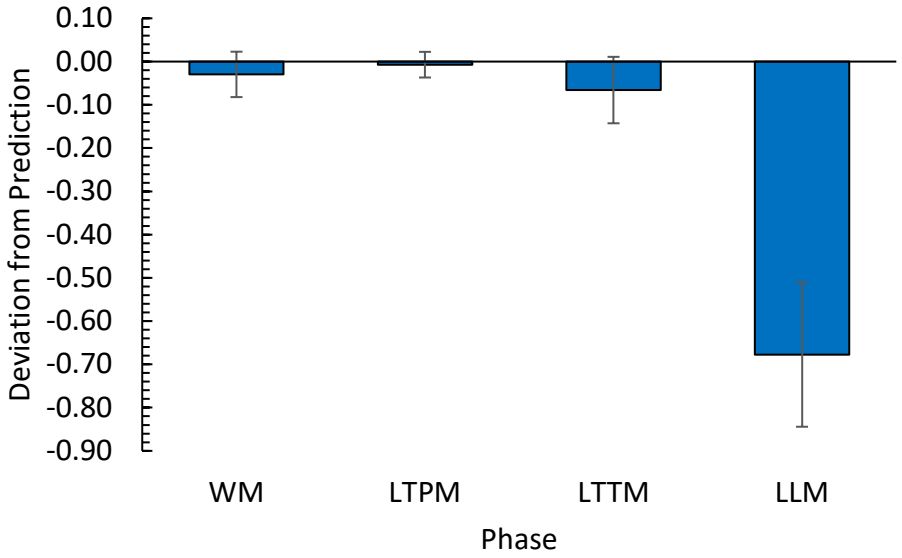


As can be seen, the pattern of data resembles that for the primary analysis. We reassessed this data considering the Memory Phase Framework by calculating the average deviation from the predicted

value for each phase. These data are shown in Figure B.2. While the general shape of the pattern was like that of the primary analysis, many of the differences were not significant. First, while memory was worse for the WM phase (n = 10), relative to the e-LTM phase (n = 114), and worse again for the t-LTM memory (n = 19) phase, these conditions were very similar to one another and to the predicted performance. That said, memory was notably worse than predicted for LLM (n = 31).

Figure B.2

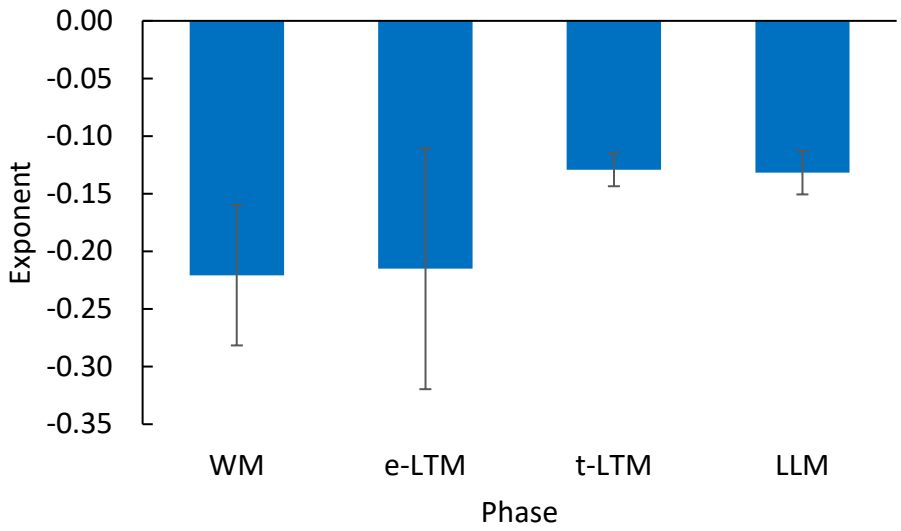
Average deviation from predicted memory grouped by phases of memory. Error bars represent standard errors.



Prediction Analysis for Signal Detection Measures

For the data that either reported *d'* measures, or from which *d'* could be calculated, we could fit power functions from each of these data sets across phases. Note that rather than separating out the single and multiple exposure studies, because there were no multiple exposure studies for the WM and t-LTM phases, we collapsed the data across exposure type. The average exponents within each phase are shown in Figure B.3. The exponents in the different phases were only marginally significantly different from one another, $F(3,63) = 2.39$, $MSE = .009$, $p = .08$, $\eta_p^2 = .10$. This is likely due to the much smaller sample size, and the much larger variability in these data.

Figure B.3. Exponents for studies within each phase as defined by longest retention interval.


0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
Exponent
WM
e-LTM
t-LTM
LLM
Phase

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