Supplemental Materials for Structured word-lists as a model of basic schema: Deviations from content and order in a repeated event paradigm

The use of schema, correct recall, and source memory across delay

In a final set of analyses, we abstracted from the investigation of deviation effects and explore how schemata are used in guiding recall. At longer delay intervals, memory reconstruction should be based on the schema or 'gist' (e.g., Bartlett, 1932; Brainerd & Reyna, 2002). But what are the relations between schema-based reconstruction, correct recall, and source memory, and (how) do these relations change with delay? One possible scenario—an extreme case of schema-based reconstruction, where little or no instance-specific (source) memory is retained—would be indicated by positive associations of recall organization measures with correct recall as well as internal intrusions. In other words, the schema would help participants recall words, but it would also increase confusion of words across instances. Alternatively, a positive association of recall organization with correct recall paired with weak or no association of recall organization with internal intrusions would indicate that schema aided memory reconstruction and that source memory enabled discrimination between instances.

Our aim in this set of analyses was to explore associations between recall organization measures and (a) correct recall, and (b) internal intrusions, and any time-dependent changes in those associations. We speculated that increasing positive associations between recall organization and both correct recall and internal intrusions across sessions would indicate schema-driven reconstruction paired with little source memory for specific lists. This pattern would indicate an extreme case of schematic recall, where participants cannot discriminate between instances. In contrast, a positive association between organization and correct recall weak or no association between organization and internal intrusions would indicate that the schema aided recall of correct details without compromising source memory.

The respective results are shown in Table 1. Correct details showed strong positive correlations with clustering and weak to moderate positive correlations with sequencing. A test for dependent correlations using the `paired.r` function from the `psych` package in R (Revelle, 2017) revealed that the increase in correlation between Sessions 1 and 4 was not significant for clustering ($t(318) = 1.13$, $p = .26$), but was significant for sequencing ($t(318) = 2.20$, $p = .03$).

The pattern was different for internal intrusions. In Sessions 1 to 3, the correlations were weak and largely nonsignificant. However, both measures of recall organization showed positive correlations with internal intrusions in Session 4, and the increase in correlation between delayed Sessions 1 and 4 was significant (clustering: $t(318) = 4.00$, $p < .001$; sequencing: $t(318) = 3.34$, $p < .001$).

In summary, the pattern of results suggests that, up to Session 3, the use of schema became more noticeable and helped participants recall correct words. In addition, up to Session 3, participants retained good source memory that helped them discriminate between lists. By Session 4, however, both measures of recall (correct recall as well as internal intrusions) showed positive correlations with recall organization. This pattern is consistent with the idea that memory reconstruction of repeated events is strongly based on schema, and, following long delay intervals, the decreased accessibility of source memory makes it more difficult for participants to discriminate between instances.

Table 1

Correlations between recall organization measures and correct details/internal intrusions

	Correct details			Internal Intrusions		
Measure	*r* [95% *CI*]		*p*	*r* [95% *CI*]		*p*
Clustering						
Session 1	.67	[.60,.72]	<.001	.02	[-.08,.13]	.703
Session 2	.70	[.64,.75]	<.001	.04	[-.07,.15]	.430
Session 3	.71	[.65,.76]	<.001	.16	[.05,.26]	.005
Session 4	.70	[.64,.76]	<.001	.27	[.17,.37]	<.001
Sequencing						
Session 1	.17	[.06,.27]	.003	-.01	[-.12,.10]	.839
Session 2	.39	[.29,.48]	<.001	-.11	[-.22,-.0007]	.049
Session 3	.42	[.33,.51]	<.001	-.05	[-.15,.06]	.419
Session 4	.27	[.17,.37]	<.001	.20	[.10,.31]	<.001

References

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