Appendix 2: Details of Meta-Analyses

The details of the experiments in the meta-analyses of Chapter 4 are given below.

Meta-analysis 1

Immediate serial recall of ungrouped lists of phonologically dissimilar items.

Condition	List Length	Items	Rate (item/s)	Present. Modality	Recall Method	No. Lists	No. Subjects.
1	6	letters	0.50	visual	written	12	48
2	6	letters	0.75	vocalised	spoken	21	13
3	7	letters	0.75	vocalised	spoken	21	14
4	6	letters	0.75	visual	written	18	13
5	7	letters	0.75	visual	written	21	11
6	7	digits	0.60	visual	written	20	18
7	8	digits	0.60	visual	written	20	18
8	9	digits	0.60	visual	written	20	18
9	5	letters	0.75	visual	written	11	10
10	6	letters	0.75	visual	written	11	10
11	7	letters	0.75	visual	written	11	10
12	8	letters	0.75	visual	written	11	10
13	9	letters	0.75	visual	written	30	25
14	8	letters	1.00	visual	written	30	36
15	8	letters	1.00	auditory	written	30	36
16	5	words	1.00	visual	spoken	12	16
17	6	words	1.00	visual	spoken	12	16
18	5	words	1.00	visual	spoken	12	16
19	6	words	1.00	visual	spoken	12	16
20	5	words	1.00	visual	written	12	14
21	6	words	1.00	visual	written	12	14
22	5	words	1.00	visual	written	12	14

Condition	List Length	Items	Rate (item/s)	Present. Modality	Recall Method	No. Lists	No. Subjects.
23	6	words	1.00	visual	written	12	14
24	5	words	1.00	visual	written	12	16
25	6	words	1.00	visual	written	12	16
26	5	words	1.00	visual	written	12	16
27	6	words	1.00	visual	written	12	16
28	5	words	1.00	visual	written	6	16
29	6	words	1.00	visual	written	6	16
30	5	words	1.00	visual	written	6	16
31	6	words	1.00	visual	written	6	16
32	5	words	1.00	visual	written	6	16
33	6	words	1.00	visual	written	6	16
34	5	words	1.00	visual	written	6	16
35	6	words	1.00	visual	written	6	16
36	9	digits	1.00	visual	written	26	12
37	9	letters	1.00	visual	written	20	12

Condition 1 corresponds to the PN condition of Experiment 1.

Conditions 2 and 3 correspond to the PN conditions of high- and low-span groups of Experiment 2 in Henson et al. (1996).

Conditions 4 and 5 correspond to the PN conditions of high- and low-span groups of Experiment 3 in Henson et al. (1996).

Conditions 6, 7 and 8 correspond to the U7, U8 and U9 conditions of Experiment 2.

Conditions 9, 10, 11 and 12 correspond to the fixed length conditions of an unpublished study by Page and Norris (1996a) looking at list length effects.

Condition 13 corresponds to the ungrouped condition of an unpublished study by Page and Norris (1996a) looking at grouping.

Conditions 14 and 15 correspond to the visual and auditory conditions of an unpublished study by Page and Norris (1996a) looking at modality effects.

Conditions 16 to 35 correspond to four control conditions in an unpublished study of

five experiments by Page and Norris (1996a) looking at word-length effects. Conditions 18, 19, 22, 23, 26, 27, 30, 31, 34, 35 used five-syllable words; others used one-syllable words.

Conditions 36 and 37 are the ungrouped control conditions in a series of two experiments looking at irrelevant tones and grouping in Henson (1996a).

Meta-analysis 2

Immediate serial recall of grouped lists of phonologically dissimilar items. All lists were grouped temporally in the manner indicated after the list length below.

Condition	List Length	Items	Rate (item/s)	Present. Modality	Recall Method	No. Lists	No. Subjects.
1	9 (333)	digits	0.60	visual	written	20	18
2	9 (333)	letters	0.75	visual	written	30	25
3	9 (333)	letters	1.00	visual	written	9	9
4	9 (333)	digits	1.00	visual	written	26	12
5	9 (333)	letters	1.00	visual	written	20	12
6	8 (44)	digits	0.60	vocalised	spoken	24	18
7	8 (44)	digits	1.00	visual	written	33	30
8	8 (44)	digits	1.00	visual	written	57	30
9	8 (44)	digits	1.00	visual	written	140	45

Condition 1 corresponds to the G9 condition of Experiment 2.

Condition 2 corresponds to the grouped condition of an unpublished study by Page and Norris (1996a) looking at grouping.

Condition 3 corresponds to a grouped condition of an unpublished study by Frankish (personal communication, 1995).

Conditions 4 and 5 correspond to the grouped control conditions in a study of two experiments looking at irrelevant tones and grouping in Henson (1996a).

Condition 6 corresponds to the forward recall condition in Henson (1995).

Conditions 7, 8 and 9 correspond to an unpublished study of three experiments by Page and Norris (1996a) looking at proactive interference in grouped lists.

Meta-analysis 3

Immediate serial recall of ungrouped lists of alternating phonologically similar and phonologically dissimilar items.

Condition	List Length	Items	Rate (item/s)	Present. Modality	Recall Method	No. Lists	No. Subjects.
1	6	letters	0.60	visual	written	12	48
2	6	letters	0.60	visual	written	12	48
3	6	letters	0.75	visual	written	18	13
4	6	letters	0.75	visual	written	18	13
5	7	letters	0.75	visual	written	21	11
6	7	letters	0.75	visual	written	21	11
7	6	letters	0.75	vocalised	spoken	18	13
8	6	letters	0.75	vocalised	spoken	18	13
9	7	letters	0.75	vocalised	spoken	21	11
10	7	letters	0.75	vocalised	spoken	21	11

Conditions 1 and 2 correspond to the AC and AN conditions of Experiment 1.

Conditions 3 and 4 correspond to the AC and AN conditions of the low-span group in Experiment 2 of Henson et al. (1996).

Conditions 5 and 6 correspond to the AC and AN conditions of the high-span group in Experiment 2 of Henson et al. (1996).

Conditions 7 and 8 correspond to the AC and AN conditions of the low-span group in Experiment 3 of Henson et al. (1996).

Conditions 9 and 10 correspond to the AC and AN conditions of the low-span group in Experiment 3 of Henson et al. (1996).

Experimental Procedure for Serial Recall

These meta-analyses have collapsed over differences in list-length, items, presentation rate, presentation modality and recall method. Such differences were of secondary concern to the models described in Chapters 4 and 5. Nonetheless, they may have subtle effects on error

patterns in serial recall. For example, longer lists are more likely to be grouped subjectively, affecting the pattern of transpositions (Chapter 3); digits, letters and words come from vocabularies of different sizes, affecting the incidence of intrusions; slower presentation rates allow more time-based decay of phonological representations, but greater opportunity for rehearsal (Chapter 5); auditory presentation may introduce additional effects of echoic storage (Chapter 5); written recall may allow more scope for reordering and editing responses.

In the author's opinion, the experimental design most suitable for examining short-term memory for serial order (in the absence of other constraints) is the following:

Lists of between 4-7 items, minimising the risk of subjective grouping and producing performance levels close to span (performance too good will suffer from ceiling effects; performance too low is likely to produce a large proportion of omissions and random guesses).

Lists of consonants, balanced and low in predictability (Henson et al., 1996), and with obvious acronyms removed (digits lead to too many erroneous runs, such as *5678...*, and have little scope for phonological similarity and intrusions, while words can be semantically recoded, though they are of course necessary to study effects of word-length, familiarity, etc.).

Visual, sequential presentation of items with vocalisation (to aid concentration and allow monitoring by the experimenter) in a regular, monotone voice (to reduce grouping).

Presentation rates of about 2 items per second, which gives little time for rehearsal (Baddeley & Lewis, 1984), but ensures few errors in encoding (Aaronson, 1968), given concurrent vocalisation.

A short delay of shadowing irrelevant distractors (e.g., digits) to prevent rehearsal, minimise potentially confounding effects of auditory information from vocalisation of list items (Tell, 1971) and possibly allow titration of performance to appropriate levels.

Spoken recall to enforce forward recall (spoken responses being harder to reorder than written responses), prevent reperception of previous responses (as in written recall, which allows editing of responses such as those causing repetitions) and possibly allow measurement of response times.