

Differential Utility of Immediate Versus Delayed Memory Measures for the Identification of Episodic Memory Impairment: Systematic Review and Meta-Analysis

Supplementary Materials: Methods, Results, Tables, Figures, and Appendices

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Method

Quality Assessment

A tailored QUADAS-2 template was used to evaluate the quality of each study in four domains (1) participant selection, (2) measures, (3) control selection and patient diagnostic criteria, and (4) flow and timing (Whiting et al., 2011). For each domain, the overall risk of bias (RoB) was rated as “high”, “low”, or “unclear” based on answers to signalling questions. Signalling questions regarding the avoidance of a case-control design and index test thresholds were omitted from the QUADAS-2 template. Additional questions, drawn from the Joanna Briggs Institute Critical Appraisal Tool Checklist for Case-Control Studies (Joanna Briggs Institute, 2017), were added to address potential sources of bias specific to case-control study design. If any of the signalling questions was answered “no”, the RoB for the domain was rated as “high”. If all signalling questions were answered as “yes”, the RoB for the domain was rated as “low”. The RoB was rated as “unclear” if inadequate information was reported to answer a signalling question as “yes” or “no”. No automation tools were used for the quality assessment.

Risk of Bias

Within the participant selection domain, the signalling questions included, “Was a consecutive or random sample of participants enrolled?”, “Were the samples appropriately matched other than the presence of disease in the patient sample and the absence of disease in the control sample?”, “Were the sources of participants clearly specified?”, and “Did the study avoid inappropriate exclusions?”. All control and patient samples received individual ratings for each signalling question, and an overall participant selection RoB rating was assigned to each study.

Within the measures domain, the signalling questions included, “Was the administration the same for both patient and control samples?” and “Was the index test

administered and interpreted without knowledge of the patient diagnosis?” (i.e., was the memory measure administration blind to participant diagnosis). Each memory measure received a separate RoB rating.

Within the control selection and patient diagnostic criteria domain, the signalling questions included, “Was the reference standard or diagnostic criteria likely to correctly classify the target condition of the sample?” and “Was the diagnosis or classification made without knowledge of the memory measure results?” (i.e., was criterion contamination avoided). Each control and patient sample received a separate RoB rating.

Within the flow and timing domain, the signalling questions included, “Was there an appropriate interval between the index test(s) and reference standard for the study samples?”, “Did all participants within each sample receive a reference standard?”, “Did all participants within each sample receive the *same* reference standard?”, and “Were all clinical and control cases included in the analysis?”. Based on responses to all signalling questions, an overall flow and timing RoB rating was given for each study.

Concerns Regarding Applicability

Applicability concerns were rated as “high”, “low”, or “unclear” and assessed the extent to which the study matched the review question within the participant selection, measures, and control selection and patient diagnostic criteria domains. For the participant selection domain, concern was rated based on the extent to which the study included a patient sample with a diagnosis that may include memory impairment and a healthy control sample with no memory impairment. In the measures domain, concern was rated based on whether the memory measures utilised supra-span stimuli administered over immediate and delayed recall trials. For the patient diagnostic criteria, concern was rated based on the extent to which the patient sample was diagnosed using established criteria that would correctly classify participants as having the target condition. For the control selection criteria,

applicability concern was rated based on the extent to which the sample criteria were likely to correctly classify controls as having no conditions or illnesses that may impact memory performance. A single applicability concern rating was given for the participant selection domain, whilst each individual measure, control sample, and patient sample received an applicability concern rating.

Interrater Reliability Method

Cohen's kappa was calculated as an estimate of interrater reliability for the quality assessment. However, some challenges were encountered when computing kappa in domains with very high rates of agreement, which reflects a lack of variability in ratings. To address this, an adjusted kappa was calculated by entering a "1" into any empty cell within the three-by-three rating table to simulate greater variability. An adjusted kappa value is reported for all RoB and applicability concern ratings. In some domains, there were still relatively low kappa values despite a high level of agreement between raters, a phenomenon known as the kappa paradox (Feinstein & Cicchetti, 1990; Gwet, 2008). We have therefore also reported percentage agreement and Gwet's AC1 agreement coefficient. Gwet's AC1 is a proposed alternative interrater reliability estimate which can be used in instances where the kappa paradox occurs (Gwet, 2008). No adjustments were made to the percentage agreement or Gwet's AC1.

Interrater Reliability Results

Results showed that there was moderate to substantial agreement between raters for RoB in participant selection (72%, adjusted $\kappa = .44$, $AC_1 = 0.63$), measures (85%, adjusted $\kappa = .32$, $AC_1 = 0.83$), control selection criteria (86%, adjusted $\kappa = .52$, $AC_1 = 0.83$), patient diagnostic criteria (86%, adjusted $\kappa = .58$, $AC_1 = 0.81$), and flow and timing (72%, adjusted $\kappa = 0.32$, $AC_1 = 0.64$). For applicability concern, there was also substantial agreement between raters in participant selection (93%, adjusted $\kappa = .43$, $AC_1 = 0.93$), measures (95%, adjusted κ

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= .45, $AC_1 = 0.95$), control selection criteria (93%, adjusted $\kappa = .43$, $AC_1 = 0.93$), and patient diagnostic criteria (100%, adjusted $\kappa = .45$, $AC_1 = 1$).

Results

Table S1*Study Characteristics, Including Memory Measures, Sample Sizes, and Patient Classifications*

ID	Study	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
1	Aas et al. (2019)	HVLT-Revised	94	Schizophrenia BD	28 35
2	Abulafia et al. (2019)	RAVLT	28	Offspring of late-onset AD patients	32
3	Aguirre et al. (2019) ^{MCI, AD}	WMS-III Logical Memory	20	MCI that did not convert to AD MCI that converted to AD AD	28 21 21
4	Akıncı et al. (2023)	O-VMPT ROCFT	50	COVID-19	50
5	Alfini et al. (2019) ^{MCI}	RAVLT	17	MCI	15
6	Al-Joudi et al. (2019) ^{TLE, Epi}	WMS-III Logical Memory HVLT-Revised BVM-T-R	46	Left TLE Right TLE	21 21
7	Anderson (2021)	RAVLT	57	Mild TBI	52
8	Anderson et al. (2021) ^{MCI}	WMS-IV Logical Memory VLLT BVM-T-R ROCFT	24	Amnesic MCI	24
9	Antonucci et al. (2020)	WMS-R Logical Memory	23	Alcohol use disorder	23
10	Arch and Ferraro (2021)	RBANS	48	Mild TBI	22
11	Atherton et al. (2019) ^{Epi}	WMS-III Logical Memory RAVLT	15	TEA	15
12	Ayesa-Arriola et al. (2019)	RAVLT	184	First episode psychosis	388
13	Babicz et al. (2020)	CVLT-II	203	HIV+ HAND	287 77

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
14	Barulli et al. (2019) ^{MCI}	RAVLT	190	Amyotrophic lateral sclerosis Non-amnestic MCI Amnestic MCI	72 89 57
15	Basso et al. (2021)	CVLT-II	47 21	MS cognitively unimpaired MS with cognitive impairment MS cognitively unimpaired MS with cognitive impairment	59 26 49 30
16	Basta et al. (2019) ^{MCI, AD}	RAVLT PMT	100	MCI AD	121 50
17	Beaver et al. (2019) ^{MCI}	MAS	65	Single domain MCI Multiple domain MCI Dementia	19 33 13
18	Bedard et al. (2020)	RAVLT	13609	Mild TBI with loss of consciousness of less than 1 minute Mild TBI with loss of consciousness of 1-20 minutes	548 441
19	Beeckmans et al. (2020)	CSRT RCFT	20	Subarachnoid haemorrhage treated with endovascular coiling Subarachnoid haemorrhage treated with surgical clipping	16 19
20	Beilharz et al. (2020) ^{Epi}	Word List-ALF	14	Genetic generalized epilepsy	16
21	Benwell et al. (2020) ^{AD}	RAVLT WMS-R Logical Memory	27	T2DM AD	27 18
22	Bezdicek et al. (2019)	RAVLT BVM-T-R	31	PD	34
23	Biss et al. (2020) ^{MCI}	BVMT-R Face-Name	18	Amnestic MCI	18
24	Bomyea et al. (2019)	RAVLT BVM-T-R	308	Mild TBI Mild TBI and PTSD	183 133

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
25	Bora et al. (2019)	RAVLT	50	Offspring of BD with severe cognitive impairment	21
		VRT		Offspring of BD with intermediate cognitive impairment	32
				Offspring of BD with good cognitive functioning	18
26	Bosmans et al. (2022)	RBANS-Hearing Impaired	34	Bilateral vestibulopathy	34
27	Breuer et al. (2019) ^{Epi}	WMS-IV	16	Epilepsy	21
				Epilepsy with accelerated cognitive ageing	21
28	Broadway et al. (2019)	HVLT-Revised	21	Sub-acute mild TBI	37
29	Bruno et al. (2019) ^{MCI}	RAVLT	110	Chronic mild TBI	21
				MCI	16
30	Bussè et al. (2019)	RAVLT	27	bvFTD	41
				Phenocopy syndrome of bvFTD	16
31	Butzbach et al. (2019)	WMS Logical Memory	80	ADHD on medication	31
				ADHD off medication	53
32	Caciagli et al. (2019) ^{Epi}	AMIPB List Learning AMIPB Design Learning	20	Juvenile myoclonic epilepsy	37
33	Caillaud et al. (2020) ^{MCI}	Face-Name	30	SCD	67
				MCI	29
34	Calandri et al. (2023) ^{MCI}	3W3S-Shapes	20	Amnesic MCI	20
		3W3S-Words		Dementia of an Alzheimer's type	20
				Primary progressive aphasia	20
35	Caldwell et al. (2021) ^{MCI, AD}	RAVLT	21	MCI, male	29
		BVMT-R	AD, male	9	
			MCI, female	21	
			AD, female	7	
36	Callow et al. (2021) ^{MCI}	RAVLT	17	MCI	15

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
37	Campbell et al. (2022)	Memory Composite	32	HIV+	52
38	Can et al. (2019)	RAVLT	50	Offspring of BD who are clinical high risk	21
		VRT		Offspring of BD who are not clinical high risk	54
39	Canfora et al. (2021)	RAVLT	40	Burning mouth syndrome	40
40	Capp et al. (2020) ^{MCI}	LASSI-L	27	Amnestic MCI	21
41	Carmasin et al. (2021) ^{MCI}	CVLT-II	22	SCD	24
				Amnestic MCI	21
42	Carson et al. (2019) ^{MCI}	HVLT-Revised BVM-T-R	30	Amnestic MCI	20
43	Cecchetti et al. (2022)	RAVLT	36	COVID-19	49
44	Cerino et al. (2020) ^{MCI}	CERAD-WL	49	MCI	34
45	Chang et al. (2019) ^{TLE, Epi}	CVLT	33	Left TLE	26
		WMS-III Logical Memory		Right TLE	20
46	Chang et al. (2021) ^{MCI}	WMS-III Logical Memory	36	MCI with normal awareness of memory deficit	24
		CVLT-II		MCI with poor awareness of memory deficit	22
47	Chang et al. (2022) ^{MCI}	WLT	18	MCI	15
		CVLT-II			
48	Chang and Moscovitch (2022) ^{MCI}	WMS-III Logical Memory	34	MCI, female	25
		WMS-III Visual Reproduction CVLT-II	21	MCI, male	24
49	Chaudhary et al. (2020)	PGI Memory Test	38	PD	32
				PD with MCI	32
50	Chen et al. (2019)	RBANS	20	PD with normal cognition	19
				PD with amnestic MCI	17

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
51	C. Chen et al. (2021)	CAVLT	37	Moderate to severe white matter hyperintensities Mild white matter hyperintensities	47 33
52	L. Chen et al. (2021) ^{MCI}	CVVLT WMS Logical Memory ROCFT	26	Amnesic MCI	26
53	P. Y. Chen et al. (2021)	RAVLT ROCFT	36	Subcortical ischemic vascular disease with normal cognition Subcortical ischemic vascular disease with cognitive impairment	35 32
54	Cheng et al. (2020) ^{MCI}	CVVLT WMS Logical Memory ROCFT	23	Amnesic MCI	26
55	Cheng et al. (2021) ^{MCI}	CVVLT	32	Amnesic MCI	28
56	Contador et al. (2021) ^{TLE, Epi}	WMS-III Word List WMS-III Designs	14	TLE	14
57	Correa-Ghisays et al. (2019)	ROCFT	117	BD	140
58	Crivelli et al. (2021)	RAVLT	45	COVID-19	45
59	Cross et al. (2019)	RAVLT	19604	Probable insomnia disorder Insomnia symptoms only	1068 7813
60	da Costa et al. (2022) ^{MCI}	SOVIET Route	29	MCI	19
61	Dalkner et al. (2019)	CVLT	79	Euthymic BD	116
62	Dam et al. (2021)	VAMT-26	103	MDD	92
63	Deason et al. (2019) ^{AD}	CERAD-WL	13	Probable AD	15
64	de Carvalho Rodrigues et al. (2023)	TRIACOG	126	Stroke	126
65	Del Cerro et al. (2020)	RAVLT	28	Offspring of late-onset AD patients	31
66	Del Pino et al. (2021)	BVMT-R	22	PD	49

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
67	De Lucia et al. (2019) ^{AD}	15-WLT	30	AD	32
68	De Lucia et al. (2020)	15-WLT	30	PD	37
69	Demirci et al. (2020)	VMPS	35	Mothers of patients with DMD who are gene mutation carriers	31
		ROCFT		Mothers of patients with DMD who are not gene mutation carriers	24
70	De Simone et al. (2019) ^{MCI}	15-WLT	62	MCI that did not convert to AD	41
		Story Recall		MCI that converted to AD	39
		ROCFT			
71	De Simone et al. (2023)	15-WLT ROCFT Story Recall MCT	15	SCD	18
72	Digma et al. (2019) ^{MCI, AD}	RAVLT	55	MCI	46
		WMS-R Logical Memory		AD	30
73	Donders et al. (2022)	BVMT-R	100	TBI	100
74	Dong et al. (2019)	RAVLT	22	Prediabetes	17
				Diabetes	21
75	Doyle et al. (2019) ^{TLE, Epi}	CVLT-II	45	HAND	77
				HD	47
				TLE	21
76	Eichen et al. (2023)	VLLT-Food Words	48	Overweight and obesity	96
77	El-Khatib et al. (2021)	BVMT-R	38	TBI	42
		HVLT-Revised			
		WMS-IV Logical Memory			

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
78	Ennok et al. (2020)	RAVLT RCFT	14	Manganese-methcathinone encephalopathy	14
79	Erdal et al. (2021)	WMS-R Visual Memory	22	Acute cerebellar infarction	23
80	Erdődi et al. (2020) ^{MCI, AD}	CVLT-II	29	Cognitive complainers	35
		WMS-III Logical Memory		MCI	37
		WMS-III Visual Reproduction		AD	12
81	Fellows et al. (2022) ^{MCI}	WMS Logical Memory	432	MCI	168
82	Fett et al. (2020)	WMS-R Verbal Paired Associates	259	Schizophrenia	114
		WMS-R Visual Reproduction		Affective psychoses	90
				Other Psychoses Diagnoses	32
83	Fitzgerald et al. (2022)	RBANS	30	TBI	23
84	Flores-Vázquez et al. (2023) ^{MCI}	FNAME	35	SCD	37
				Amnestic MCI	31
85	Fong et al. (2019) ^{MCI}	RBMT-3 Story	37	MCI	34
		RBMT-3 Route		Dementia	29
		RBMT-3 Messages RBMT-3 Novel			
86	Ford et al. (2020)	NAB List Learning	530	APOE-ε4-carriers	169
87	Fortin et al. (2021)	RAVLT	14	TBI	13
		WMS-IV Visual Reproduction			
88	Fountain-Zaragoza et al. (2023) ^{MCI}	RAVLT	74	Amnestic MCI	25
		WMS-R Logical Memory			
89	Fu et al. (2021) ^{MCI, AD}	AVLT	42	SCD	35
				Amnestic MCI	43
				AD	41
90	Galandra et al. (2019)	Story Recall	22	Alcohol use disorder	19

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
91	Galtier et al. (2019)	CVLT	20	PD without SCD	8
		8/30 SRT		PD with SCD	13
				PD with MCI	22
92	Gao et al. (2019)	RAVLT	24	Severe asymptomatic carotid stenosis	19
93	Gascon et al. (2019)	HVLT	25	Human T-cell lymphocyte virus type 1 - intermediate syndrome	19
		ROCFT		Human T-cell lymphocyte virus type 1 - asymptomatic	35
94	Giffard et al. (2020)	JOL	30	Cancer patients with cognitive complaints	30
				Cancer patients without cognitive complaints	30
95	Gogos et al. (2023)	HVLT-Revised	42	BD, male	50
		BVMT-R	63	BD, female	64
96	Gómez-Gallego and Gómez-García (2019) ^{AD}	HVLT-Revised	104	AD	80
97	Grothe et al. (2021)	PD-CRS Word List	45	PD	180
98	Hahn et al. (2020)	SVLT-Elderly RCFT	150	Amyloid beta positive with normal cognition	29
99	Hammers et al. (2022) ^{MCI, AD}	RBANS	52	MCI	37
		HVLT-Revised BVMT-R		AD	34
100	He et al. (2022)	RAVLT	41	Subcortical ischemic vascular disease with cognitive impairment	39
		ROCFT		Subcortical ischemic vascular disease with normal cognition	38

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ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
101	Hegedüs et al. (2019)	RAVLT	22	Benign MS Relapsing-remitting MS	22 22
102	Heine et al. (2021)	RAVLT ROCFT	30	Anti-N-methyl-D-aspartate receptor encephalitis	40
103	Hoefijzers et al. (2019) ^{Epi}	WMS-III Logical Memory	16 16	TEA recall at 30 minutes TEA recall at 1 week	11 16
104	Hoffmeister et al. (2021)	CVLT-II	48	MS	96
105	Høifødt et al. (2019)	CVLT-II	50	Current Depression Previous Depression	37 81
106	Holden et al. (2020)	CVLT-II	54	Premanifest HD HD	23 77
107	Houston et al. (2019)	RBANS	18	Chiari malformation type I	18
108	Hsu et al. (2021)	WMS-III Word List	30	Pre-chemotherapy breast cancer Post-chemotherapy breast cancer	45 30
109	Huo et al. (2021)	RBANS	28	Schizophrenia	32
110	Hwang et al. (2019) ^{TLE, Epi}	RAVLT	58	TLE	55
111	Itoh et al. (2019)	RBANS	68	PTSD	46
112	Jantzi et al. (2019)	WMS-III Logical Memory	20	Schizophrenia	19
113	Jia et al. (2019)	RBANS	90	First-episode drug-naïve depression Medicated depression	62 111
114	Jones et al. (2020)	HVLT-Revised	175	PD	423
115	Júlio et al. (2019)	RAVLT	22	Premanifest HD	15
116	Kaestner et al. (2021) ^{TLE, Epi, MCI}	WMS-III Logical Memory	70	TLE Amnesic MCI	73 79
117	Kanmogne et al. (2020)	BVMT-R HVLT-Revised	395	HIV+	347
118	Karayannis et al. (2019)	HVLT-Revised	23	T2DM	23

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
119	Kargar et al. (2019)	RAVLT ROCFT	20	Schizophrenia Schizoaffective disorder	20 20
120	Kazim et al. (2023)	RBMT-Story	82	Chronic Pain	148
121	Keilp et al. (2018)	WMS-III Logical Memory	97	Post-treatment Lyme disease syndrome MDD	81 92
122	Kim et al. (2019) ^{MCI, AD}	Memory Composite	242	MCI AD	236 115
123	B.-M. Kim et al. (2020)	RAVLT	39	Persistent post-traumatic headache Migraine	57 39
124	S.-K. Kim et al. (2020)	ROCFT	35	Binge Drinking	35
125	Knight et al. (2020)	RBANS and Colorado Assessment Tests Composite	124	Current MDD Remitted MDD	93 170
126	Kocher et al. (2020)	Word List	80	Malignant glioma	80
127	Koenig et al. (2019)	CVLT-II BVMT-R	16	MS	32
128	Kozak et al. (2019)	HVLT-Revised	14 15	Schizophrenia, smokers Schizophrenia, nonsmokers	14 15
129	Kwag et al. (2021) ^{MCI}	RAVLT	11	MCI	11
130	La et al. (2019)	CVLT-II	8	PD	29
131	Lavrencic et al. (2019) ^{MCI}	WMS-III Logical Memory	31	MCI Dementia	38 35
132	Le Berre et al. (2019)	WMS-R Logical Memory ROCFT	53	HIV+	56
133	L'Ecuyer-Giguère et al. (2019)	ROCFT	29	Mild TBI with cerebral lesions Mild TBI without cerebral lesions	19 90

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
134	Lee et al. (2020) ^{AD}	SVLT	33	Early onset AD	53
		ROCFT	31	Late onset AD	44
135	A. Lee et al. (2021) ^{MCI}	SMT WMS-III Logical Memory ALF	18	Patients with MCI or subjective memory complaints	49
136	E. S. Lee et al. (2021)	WMS-IV Verbal Paired Associates	10	Depression and MCI, with amyloid accumulation	11
				Depression and MCI, without amyloid accumulation	9
137	Lei et al. (2022) ^{MCI}	RBMT-Story	128	MCI	81
138	Lejko et al. (2022) ^{MCI}	RAVLT	15	Amnesic MCI	25
139	Levada and Troyan (2019)	RAVLT	71	MDD	119
140	Li et al. (2021) ^{MCI}	AVLT	30	T2DM without MCI	30
		ROCFT		T2DM with MCI	30
141	Liguori et al. (2020) ^{MCI, AD}	RAVLT	41	Subject cognitive impairment	54
				MCI	59
				Mild AD	56
				Moderate to severe AD	48
142	Lin et al. (2022)	AVLT	55	T2DM	80
143	Liu et al. (2019)	AVLT Huashan Version	80	Patients receiving dialysis	80
144	Liu et al. (2021) ^{MCI}	AVLT	27	Amnesic MCI	25
				Mild vascular cognitive impairment	25
145	C. Liu et al. (2023) ^{MCI}	HVLT-Revised UDS Passage	50	Amnesic MCI	24
146	Y. Liu et al. (2023) ^{MCI}	AVLT	33	Amnesic MCI	54
147	Lo Buono et al. (2019)	RAVLT	50	Migraine with visual aura	50
				Migraine no aura	50
148	Lu et al. (2019)	RAVLT	22	Chronic obstructive pulmonary disease	26

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
149	Macedo et al. (2022)	FMT	20	Progressive supranuclear palsy	21
150	Malcorra et al. (2021) ^{AD}	BALE Story Recall	48	AD	24
151	Malek-Ahmadi et al. (2023) ^{MCI, AD}	HVLT-Revised	54	MCI	35
		BVMT-R		AD	32
152	Mallas et al. (2020)	WMS-III Logical Memory	16	TBI without impairment in subsequent memory	18
		HVLT-Revised		TBI with impairment in subsequent memory	17
		People Test			
		BVMT-R			
153	Malone et al. (2021) ^{MCI, AD}	CERAD-WL	16	MCI	16
				AD	16
154	Manning et al. (2022)	WMS-R Logical Memory	113	MDD	199
155	Markova et al. (2019) ^{MCI}	RAVLT	82	SCD	85
				Amnestic MCI	57
156	Markova et al. (2023) ^{MCI}	BVMT-R	29	SCD	50
		RAVLT		Amnestic MCI due to AD	31
		WMS-R Logical Memory			
157	Martini et al. (2020)	HVLT-Revised Logical Memory	69	PD	81
158	Martins et al. (2020)	CVLT 9 Item Version	214	Non-migraine headache	24
				Migraine	35
159	Mastammanavar et al. (2020)	ROCFT RAVLT	48	Genetically confirmed spinocerebellar ataxia	41
160	Medrano-Martínez et al. (2022)	WMS-IV Verbal Paired Associates	12	Narcolepsy with cataplexy (narcolepsy type I)	12
161	Mendes et al. (2021) ^{MCI}	Logical Memory	45	MDD	47
				MCI	43

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
162	Mendoza et al. (2022) ^{MCI, AD}	HVLT-Revised	31	Amnestic MCI with low acculturation	12
				AD with low acculturation	12
			31	Amnestic MCI with high acculturation	12
				AD with high acculturation	16
163	Meng et al. (2019) ^{AD}	COMT	28	AD	30
164	Menon et al. (2019) ^{MCI}	WMS-R Visual Memory	24	Amnestic MCI	37
165	Merritt et al. (2020)	BVMT-R	31	1-2 mild TBI	21
		CVLT-II		3 or more mild TBI	21
166	Miotto et al. (2022) ^{MCI}	WMS-R Logical Memory	14	Amnestic MCI negative for amyloid beta	15
		RAVLT		Amnestic MCI positive for amyloid beta	17
		WMS-R Visual Reproduction			
167	Moore et al. (2019)	WMS-IV Verbal Paired Associates	32	Mitochondrial disease	32
		WMS-IV Logical Memory			
168	Moore et al. (2021)	Memory Composite	36	HIV+	68
169	Mulhauser et al. (2021)	RAVLT	46	Obesity	117
170	Müller-Oehring et al. (2021)	CVLT-II	37	HIV+	42
				PD	41
171	Murphy et al. (2020) ^{MCI}	HVLT-Revised	15	Amnestic MCI	16
172	Musaeus et al. (2019) ^{MCI, AD}	CERAD-WL	135	MCI	117
				AD	117
173	Myers et al. (2019)	WMS-IV Logical Memory	23	Breast cancer survivors	23
174	Nerg et al. (2021) ^{AD}	CERAD-WL	309	Idiopathic normal pressure hydrocephalus	199
				AD	236
175	Nevado et al. (2022) ^{MCI, AD}	Logical Memory	7623	MCI	5981
				AD	2040
176	Niccolai et al. (2020)	CVLT-II	25	Primary dystonia	25
		10/36 SRT			

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
177	Nici and Hom (2019)	WMS-RR Logical Memory WMS-RR Visual Reproduction	28	T2DM	28
178	Nielsen et al. (2019b)	CNTB-RPT	118	Dementia	66
179	Nielsen et al. (2019a)	CNTB-RPT	123	Dementia	66
180	Nightingale et al. (2020)	RAVLT	30	Spinal cord injury	32
181	Nikolas et al. (2019)	CVLT-II	85	ADHD Depression	109 52
182	Noriega de la Colina et al. (2019)	RAVLT	49	Controlled hypertension	28
183	Novellino et al. (2022)	RAVLT	50	Essential tremors	49
184	Núñez et al. (2020) ^{MCI, AD}	RAVLT WMS-R Logical Memory	223	MCI AD	384 178
185	Nyamayaro et al. (2020)	BVMT-R HVLTL-Revised	76	HIV+	155
186	Oltra et al. (2021)	RAVLT	30	PD without probable sleep behaviour disorder PD with probable sleep behaviour disorder	32 27
187	Overman et al. (2021)	ROCFT	19	Posterior cortical atrophy	14
188	Ozkul et al. (2020)	10/36 SRT	25	MS	112
189	Pagni et al. (2022)	RAVLT	89	ASD	106
190	Palermo et al. (2019) ^{AD}	PMT RAVLT ROCFT	9	Dementia in PD AD	21 20

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
191	Park et al. (2019) ^{MCI}	SRFT	116	Normal cognition with subjective memory complaint	65
				MCI without subjective memory complaint	17
				MCI with subjective memory complaint	21
192	Parra et al. (2022) ^{MCI}	HVLT-Revised	42	Very mild cognitive but not functional impairment	31
				MCI who did not convert to dementia	39
				MCI who converted to dementia	38
193	Patrikelis et al. (2022) ^{Epi}	ROCFT BSRT RAVLT	26	Idiopathic generalized epilepsies	26
194	Pereira et al. (2022) ^{MCI, AD}	3W3S-Words	34	Amnesic MCI	22
		3W3S-Shapes		Non-amnesic MCI	45
				AD	18
195	Picascia et al. (2019)	Rey 15-WLT	70	Idiopathic normal pressure hydrocephalus	40
				PD	47
196	Pike et al. (2023) ^{MCI}	HVLT-Revised Face-Name NPT	100	MCI	99
197	Polat et al. (2020) ^{TLE, Epi}	VLMT	24	Left TLE	26
				Right TLE	25
198	Ponto et al. (2020)	Logical Memory	17	Combined MCI and AD	10
199	Postma et al. (2020) ^{TLE, Epi}	AMIPB List Learning	39	Left TLE	76
		AMIPB Design Learning		Right TLE	69
200	Prabhakar et al. (2020)	CVLT-II	28	HIV+	28
				PD	36

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
201	Pranckevičienė et al. (2019)	HVLT-Revised	95	Meningioma patients	93
202	Prasad et al. (2019)	RAVLT	40	Essential tremors	40
203	Puteikis et al. (2022) ^{Epi}	RAVLT ALF Logical Memory ALF	57	Epilepsy	42
204	Qiao et al. (2022) ^{MCI}	AVLT	29	MCI and amyloid beta positive and no lobar cerebral microbleeds	16
				MCI and amyloid beta positive and strictly lobar cerebral microbleeds	41
				MCI and amyloid beta positive and mixed cerebral microbleeds	25
205	Qin et al. (2022) ^{MCI}	WMS-IV Visual Reproduction	28	Non-amnestic MCI	25
				Amnestic MCI	24
206	Qiu et al. (2021) ^{MCI}	WMS Logical Memory	86	Non-smokers with MCI	62
			44	Smokers with MCI	32
207	Raatikainen et al. (2020) ^{Epi}	List Learning WMS Logical Memory	18	Juvenile myoclonic epilepsy	18
208	Radoman et al. (2019)	CVLT-II	48	Marijuana User	46
				MDD	23
				Lifetime MDD and Marijuana User	24
209	Ramanan et al. (2019) ^{AD}	ACE-R	29	AD	29
				Corticobasal Syndrome	44
				Progressive supranuclear palsy	20
210	Ramanathan et al. (2022)	WMS-III Visual Reproduction CVLT-II	18	TBI	18
211	Ratovohery et al. (2019) ^{AD}	Experimental task	26	AD	13

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
212	Rayner et al. (2019) ^{TLE, Epi}	WMS-IV Verbal Paired Associates	73	TLE	30
213	Rayner et al. (2022) ^{TLE, Epi}	RAVLT	31	Left TLE Right TLE	18 19
214	Rendon et al. (2019)	CERAD-WL	25	NOTCH3 gene mutation carrier	5
215	Reyes et al. (2020) ^{TLE, Epi}	WMS-III Logical Memory WMS-III Verbal Paired Associates	150	TLE	407
216	Riegler et al. (2022)	10/36 SRT BVMC-R CVLT-II	51	MS	59
217	Rigon et al. (2020)	CVLT-II	20	TBI	29
218	Roberts et al. (2019)	RAVLT	30	TBI with posttraumatic amnesia less than 14 days TBI with posttraumatic amnesia more than 14 days	20 27
219	Rowe et al. (2023) ^{MCI}	HVLT-Revised	22	Amnesic MCI	22
220	Ruiz-Rizzo et al. (2022)	WMS-IV Composite RAVLT	21	SCD	16
221	Ryals et al. (2019) ^{MCI}	Logical Memory RAVLT	14	Amnesic MCI	15
222	Saindane et al. (2020)	RAVLT WMS-IV Logical Memory	8	Post-bariatric surgery	8
223	de Sá Sarmiento et al. (2020)	RAVLT ROCFT	17	BD Type I	43
224	Savage et al. (2019) ^{Epi}	WMS Logical Memory	12	TEA	14

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
225	Schaffert et al. (2022) ^{MCI}	CVLT-II	26	Cognitively unimpaired NFL retirees	27
		ROCFT		Cognitively impaired NFL retirees	26
				Combined MCI and Dementia	83
226	Schultz et al. (2022)	HVLT-Revised BVMT-R	23	TBI	21
227	Schwert et al. (2019)	COGBAT-FM	103	MDD	103
228	Seckin et al. (2022)	3W3S-Words	16	Primary progressive aphasia	14
				Stroke aphasia	8
229	Serra et al. (2019) ^{MCI, AD}	Rey 15-Word Test	38	Amnesic MCI	40
		Story Recall		AD	39
		ROCFT			
230	Sheppard et al. (2019)	WMS-III Logical Memory CVLT-II	133	HIV+	188
231	Shin et al. (2019)	SVLT	13	Idiopathic rapid eye movement sleep behaviour disorder	25
232	Simsekoglu et al. (2022) ^{TLE, Epi}	VMPS	20	TLE	20
				Frontal lobe epilepsy	20
233	Smith et al. (2021)	BVMT-R ROCFT CVLT-II	21	Late life depression	21
234	Snow et al. (2022) ^{MCI, AD}	WMS-III Logical Memory	13	MCI	25
		HVLT-Revised		Mild AD	16
		BVMT-R		Moderate AD	19
235	Söğütlü and Alaca (2019)	VMPT	55	Subjective memory complaints	56
236	Soman et al. (2020) ^{MCI, AD}	RAVLT	31	MCI	30
				AD	30

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
237	Sousa et al. (2022)	ROCFT	13	Amnesic patients who score more than zero on a delayed story recall	8
		WMS-R Visual Reproduction		Amnesic patients who scored zero on a delayed story recall	7
238	Stanciu et al. (2019)	WMS-III Auditory Memory	20	Korsakoff syndrome	20
239	Stedal et al. (2019)	CVLT-II	25	Remitted anorexia nervosa	26
240	Stemmler et al. (2019) ^{MCI}	SKT	250	MCI	290
				Dementia	390
241	Stevens et al. (2022) ^{MCI}	CVLT-II BVMT-R	36	MCI	47
242	Stika et al. (2021)	CVLT-II	147	Mild TBI with PTSD	62
				PTSD	37
				Mild TBI	42
243	Strijkert et al. (2022) ^{MCI, AD}	RAVLT	60	SCD	24
				MDD	27
				MCI	47
				AD	45
244	Sudo et al. (2019) ^{MCI, AD}	RAVLT	47	MCI	27
				AD	9
245	Suemoto et al. (2019)	CERAD-WL	12293	Orthostatic hypotension	533
246	Suhrie et al. (2021) ^{MCI, AD}	RBANS	54	MCI	35
				Mild AD	32
247	Sumida et al. (2021)	Memory Composite	74	PD with normal cognition	103
				PD with MCI	45

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
248	Sun et al. (2019) ^{MCI}	HVLT-Revised	53	Amnestic MCI with subthreshold depression	33
		BVMT-R		Amnestic MCI with nondepressed	33
249	Sun et al. (2021)	CVVLT Logical Memory ROCFT	19	Subjective memory complaints	16
250	Tedrus et al. (2021) ^{Epi}	BCB-Edu	40	Epilepsy	83
251	Thompson et al. (2022)	CVLT-II WMS-III Logical Memory	92	HIV+	123
252	Tian et al. (2022)	RBANS	201	Meth users Heroin users	567 78
253	Tonning Olsson et al. (2019)	CVLT-II	354	Wilms tumour survivors	158
254	Torres et al. (2020)	CVLT-II	61	BD Type I	92
255	Utoomprurkporn et al. (2022) ^{MCI}	ROCFT	30	MCI with hearing impairment Dementia with hearing impairment	30 15
256	Vandenberg and Lance (2000) ^{AD}	RAVLT RBMT-Story	59	AD bvFTD	55 85
257	Van Dyk et al. (2021)	Logical Memory NAB List Learning	407	Breast cancer survivors	427
		NAB List Learning		Breast cancer survivors with perceived cognitive impairment	435
259	Van Dyk et al. (2022)	Logical Memory	24	Breast cancer survivors without perceived cognitive impairment Perceived Cognitive Impairment	61 441
259	Veldsman et al. (2019)	ROCFT	21	Posterior cortical atrophy	18

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
260	Vila-Castelar et al. (2022)	CERAD-WL	25 50	PSEN1 carriers, male PSEN1 carriers, female	66 101
261	Visser et al. (2019) ^{TLE, Epi}	RAVLT	18	Right TLE Left TLE	17 13
262	Vuoksima et al. (2020) ^{MCI}	RAVLT	230	MCI	394
263	Wallace et al. (2020)	WMS-III Logical Memory WMS-III Visual Reproduction	106	Mild TBI Moderate to severe TBI	134 31
264	Wang et al. (2019a) ^{MCI, AD}	RAVLT	415	MCI AD	870 334
265	Wang et al. (2019b) ^{MCI, AD}	RAVLT	371	MCI AD	725 251
266	Wang et al. (2020)	RBANS	57	MDD	69
267	Wang et al. (2021) ^{MCI}	AVLT	35	SCD MCI	84 129
268	Wei et al. (2022) ^{MCI, AD}	Story Recall	89	Amnesic MCI AD	79 84
269	Weissberger et al. (2019) ^{AD}	WMS Visual Reproduction	14 20	Hispanic patients with autopsy-confirmed AD Non-Hispanic patients with autopsy- confirmed AD	14 20
270	Won et al. (2021) ^{MCI}	RAVLT WMS-III Logical Memory	16	MCI	16
271	Wong et al. (2019) ^{AD}	RAVLT VDM	22	AD bvFTD	10 21
272	Wright et al. (2020)	CVLT-II	20	Sports-related concussive/sub-concussive injury Moderate to severe single-impact TBI	35 35
273	Wu et al. (2020)	RAVLT	296	Smokers	119

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
274	Wu et al. (2021)	RAVLT	34	Left side stroke Right side stroke	28 26
275	Xiao et al. (2022) ^{AD}	CAVLT	62	AD	60
276	Yan et al. (2021) ^{AD}	CAVLT	29	AD	37
277	Yang et al. (2021)	WMS-III Word List	18	Carbon monoxide poisoning	18
278	Ye et al. (2021) ^{MCI}	AVLT	25	Amnestic MCI	28
279	Yin et al. (2019)	RBANS	119	Schizophrenia	34
280	Zane et al. (2021)	CVLT-II RBANS	30	Mild TBI Moderate or severe TBI	30 30
281	Zeng et al. (2019)	AVLT-R Chinese Version	20	Gynaecological cancer patient post-chemotherapy	20
282	J. Zhang et al. (2019)	CERAD-WL	95	T2DM without orthostatic hypotension T2DM with orthostatic hypotension	107 94
283	Xuan Zhang et al. (2019)	AVLT-R Chinese Version	23	Idiopathic rapid eye movement sleep behaviour disorder PD with rapid eye movement sleep behaviour disorder	15 12
284	Xiaofei Zhang et al. (2019)	RBANS	115	BD Type I	83
285	Zhang et al. (2022) ^{MCI}	RAVLT	20	Amnestic MCI MCI from cerebral small vessel disease	33 25
286	Zhen et al. (2019)	RBANS	248	T2DM	230
287	Zhu et al. (2021) ^{MCI}	AVLT	33	SCD Amnestic MCI	26 27

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

ID	Study (<i>cont.</i>)	Measure(s)	Control (n)	Patient Diagnosis	Patient (n)
288	Zibetti et al. (2019) ^{AD}	RAVLT	25	AD	25
289	Ziengs et al. (2023)	15-WLT	175	Kidney transplant recipients	131
290	Zortea et al. (2019)	Word List	20	Left side stroke Right side stroke	10 10
			Total controls N=71381	Total patients N=45054	

Notes. See Appendix 2 for the definition of memory measure abbreviations. AD = Alzheimer’s disease, ADHD = attention deficit/hyperactivity disorder, ALF = accelerated long-term forgetting, ASD = autism spectrum disorder, BD = bipolar disorder, bvFTD = behavioural variant fronto-temporal dementia, DMD = Duchenne muscular dystrophy, HAND = HIV associated neurocognitive disorders, HD = Huntington’s disease, HIV+ = human immunodeficiency viruses positive, MCI = mild cognitive impairment, MDD = major depressive disorder, MS = multiple sclerosis, PD = Parkinson’s disease, PTSD = post-traumatic stress disorder, SCD = subjective cognitive decline, T2DM = type 2 diabetes mellitus, TBI = traumatic brain injury, TEA = transient epileptic amnesia, TLE = temporal lobe epilepsy. ^{TLE} = Study included in the TLE diagnostic subgroup analysis, ^{Epi} = Study included in the combined epilepsy diagnostic subgroup analysis, ^{AD} = Study included in the AD diagnostic subgroup analysis, ^{MCI} = Study included in the MCI diagnostic subgroup analysis.

Table S2*Proportion of Total Patient Samples Grouped by Major Diagnostic Classification*

Major Diagnostic Classification	Number of Patient Samples	Percentage of Patient Samples (Total Samples = 452)
Mild cognitive impairment	106	23%
Alzheimer's disease	48	11%
Traumatic brain injury	31	7%
Mood disorders (Major depressive and bipolar disorder)	26	6%
Parkinson's disease	22	5%
Temporal lobe epilepsy	19	4%
Subjective cognitive impairment	17	4%
Epilepsy (FLE, GGE, JME, TEA, IGE)	13	3%
Schizophrenia or psychosis	12	3%
Human immunodeficiency virus (HIV)	10	2%
Multiple sclerosis	9	2%
Type 2 diabetes and diabetes not otherwise specified	9	2%
Cancer patients	9	2%
Dementia not otherwise specified	9	2%
Stroke	6	1%
Behavioural variant fronto-temporal dementia	4	1%
Huntington's disease	4	1%
Other	98	22%

Note. FLE = Frontal Lobe Epilepsy, GGE = Genetic Generalised Epilepsy, JME = Juvenile

Myoclonic Epilepsy, TEA = Transient Epileptic Amnesia, IGE = Idiopathic Generalised Epilepsy.

Table S3*Summary of Stimuli Type Used in Memory Measures Across Studies*

Stimuli Type to be Recalled	Total Number of Studies
Word list	214
Story/Prose	68
Shape/Design	79
Mixed (Composite score of various memory tasks)	25
Other (e.g., behaviour tasks)	8
Photographic images	6
Face-name association	4

Table S4*Memory Measures Used Across Studies*

Measure	Total Number of Studies
Auditory Verbal	
Rey Auditory Verbal Learning Test	77
California Verbal Learning Test	41
Hopkins Verbal Learning Test	27
Wechsler Memory Scale-III Logical Memory	20
Auditory Verbal Learning Test	11
Wechsler Memory Scale-Revised Logical Memory	10
Consortium to Establish a Registry for Alzheimer's Disease Word List Memory Task	9
Wechsler Memory Scale Logical Memory (edition not specified)	7
15 Word Learning Test	5
Wechsler Memory Scale-IV Logical Memory	5
Rivermead Behavioural Memory Test-3 Story Subtest	4
Wechsler Memory Scale-III Verbal Paired Associates	4
Wechsler Memory Scale-IV Verbal Paired Associates	4
Three Words-Three Shapes - Words	3
Neuropsychological Assessment Battery - List Learning	3
Seoul Verbal Learning Test	3
Adult Memory and Information Processing Battery - List Learning	2
Addenbrooke's Cognitive Examination - Revised	1
People Test from the Doors and People Test battery	1
Wechsler Memory Scale-III Auditory Memory	1
Wechsler Memory Scale-Revised Verbal Paired Associates	1
Heterogeneous Word List Recall Tests	25
Heterogeneous Story Recall Tests	21
Visuospatial	
Rey Complex Figure Test / Rey-Osterrieth Complex Figure Test	33
Brief Visuospatial Memory Test	25
10/36 Spatial Recall Test	5
Wechsler Memory Scale-Revised Visual Reproduction	4
Wechsler Memory Scale-III Visual Reproduction	4
Three Words-Three Shapes - Shapes	2
Adult Memory and Information Processing Battery - Design Learning	2
Wechsler Memory Scale-Revised Visual	2
Wechsler Memory Scale-IV Visual Reproduction	2
8/30 Spatial Recall Test	1

Measure (<i>cont.</i>)	Total Number of Studies
Visuospatial (<i>cont.</i>)	
Rivermead Behavioural Memory Test-3 Novel Subtest	1
Wechsler Memory Scale Visual Reproduction (edition not specified)	1
Wechsler Memory Scale-III Designs	1
Heterogeneous Visual Recall Tests	12
Auditory Visual	
Repeatable Battery for the Assessment of Neuropsychological Status	16
Mixed Composite Score	8
Face-Name Task	3
FNAME	1
Behavioural Memory	
Rivermead Behavioural Memory Test-3 Route Subtest	1
Rivermead Behavioural Memory Test-3 Messages Subtest	1

Note. Most studies report more than one memory measure.

Table S5

Delayed Recall Intervals Used Across Studies

Delayed Recall Intervals	Total Number of Studies
40 seconds filled delay	1
1 minute filled delay	31
3 minutes filled delay	1
5 minutes	11
10 minutes	18
12 minutes	1
15 minutes	19
20 minutes	92
25 minutes	42
30 minutes	159
40 minutes	6
45 minutes	1
90 minutes	1
24 hours	2
1 week	5
2 weeks	1
4 weeks	1
6 weeks	1

Delay Length as a Categorical Variable**Table S6***Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable in the Combined Patient Samples*

Moderators	Hedges' g (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	1.015 (0.917, 1.112)	0.049	20.528	293	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	-0.001 (-0.053, 0.051)	0.026	-0.044	293	.965				
3 to 5 minutes (17 effects)	0.046 (-0.086, 0.178)	0.067	0.685	293	.494	F(7,293) = 3.665, $p < .001$	$\tau^2_{\text{Level 2}} = 0.362$ $\tau^2_{\text{Level 3}} = 0.599$	$R^2_{\text{Level 2}} = 0.007$ $R^2_{\text{Level 3}} = 0$	Q(1406) = 25623.281, $p < .001$
10 to 15 minutes (74 effects)	0.231 (0.070, 0.392)	0.082	2.821	293	.005				
20 to 25 minutes (268 effects)	0.089 (0.023, 0.156)	0.034	2.630	293	.009				
30 minutes (309 effects)	0.056 (-0.011, 0.122)	0.034	1.643	293	.102				
40 to 90 minutes (13 effects)	0.029 (-0.546, 0.604)	0.292	0.100	293	.920				
24 hours + (16 effects)	0.046 (-0.270, 0.361)	0.160	0.284	293	.777				

Note. Confidence intervals and p values are based on robust variance estimations.

Sensitivity Analyses

Influence of Correlated Effect Sizes

The estimated pooled effect sizes for immediate and delayed recall with the covariance matrix specified at correlations of 0.4 and 0.8 are shown in Table S7.

Correlation of 0.8. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.084$ (95% CI [-0.127, -0.042], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1417} = 36821.918$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.546$ and $\tau^2_{\text{Level 2}} = 0.374$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level 3}} = 0.006$ and $R^2_{\text{Level 2}} = 0$.

Results of the meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{3,297} = 4.801$, $p = .003$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95% CI [< -0.001 , < 0.001], $p = .960$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.021$ (95% CI [-0.088, 0.130], $p = .710$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1410} = 36302.521$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.544$ and $\tau^2_{\text{Level 2}} = 0.371$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level 3}} = 0.004$ and $R^2_{\text{Level 2}} = 0$.

Correlation of 0.4. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.083$ (95% CI [-0.125, -0.041], $p < .001$). The Q statistic

was significant, indicating residual heterogeneity of effect sizes ($Q_{1417} = 23932.375, p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.692$ and $\tau^2_{\text{Level } 2} = 0.359$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.006$ and $R^2_{\text{Level } 2} = 0$.

Results of the meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{3,297} = 4.774, p = .003$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = < 0.001$ (95% CI [$< -0.001, < 0.001$], $p = .976$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.019$ (95% CI [$-0.093, 0.130$], $p = .740$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1413} = 23699.414, p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.689$ and $\tau^2_{\text{Level } 2} = 0.356$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.003$ and $R^2_{\text{Level } 2} = 0$.

Table S7

Estimated Pooled Effect Sizes for Immediate and Delayed Recall with the Variance-Covariance of Effects Imputed with a Correlation of 0.8 and 0.4

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Correlation of 0.8								
Immediate Recall	1.063 (0.964, 1.162)	0.050	21.096	300	<.001	$I^2_{\text{Level 2}} = 59.529\%$ $I^2_{\text{Level 3}} = 37.680\%$ $I^2_{\text{Total}} = 97.21\%$	$\tau^2_{\text{Level 2}} = 0.571$ $\tau^2_{\text{Level 3}} = 0.361$	$Q(647) = 19982.259$, $p < .001$
Delayed Recall	1.133 (1.022, 1.244)	0.056	20.075	300	<.001	$I^2_{\text{Level 2}} = 46.114\%$ $I^2_{\text{Level 3}} = 51.439\%$ $I^2_{\text{Total}} = 97.55\%$	$\tau^2_{\text{Level 2}} = 0.535$ $\tau^2_{\text{Level 3}} = 0.597$	$Q(770) = 24847.873$, $p < .001$
Correlation of 0.4								
Immediate Recall	1.085 (0.981, 1.191)	0.053	20.504	300	<.001	$I^2_{\text{Level 2}} = 51.867\%$ $I^2_{\text{Level 3}} = 45.542\%$ $I^2_{\text{Total}} = 97.41\%$	$\tau^2_{\text{Level 2}} = 0.536$ $\tau^2_{\text{Level 3}} = 0.471$	$Q(647) = 13768.854$, $p < .001$
Delayed Recall	1.162 (1.045, 1.279)	0.059	19.559	300	<.001	$I^2_{\text{Level 2}} = 39.494\%$ $I^2_{\text{Level 3}} = 58.250\%$ $I^2_{\text{Total}} = 97.74\%$	$\tau^2_{\text{Level 2}} = 0.497$ $\tau^2_{\text{Level 3}} = 0.733$	$Q(770) = 17132.189$, $p < .001$

Note. Confidence intervals and p values are based on robust variance estimations.

Table S8

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable with the Variance-Covariance of Effects

Imputed with a Correlation of 0.8

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	0.989 (0.895, 1.083)	0.048	20.687	293	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	-0.002 (-0.054, 0.051)	0.027	-0.067	293	.947				
3 to 5 minutes (17 effects)	0.047 (-0.086, 0.179)	0.067	0.694	293	.488	F(7,293) = 3.634, $p < .001$	$\tau^2_{\text{Level 2}} = 0.372$ $\tau^2_{\text{Level 3}} = 0.537$	$R^2_{\text{Level 2}} = 0.006$ $R^2_{\text{Level 3}} = 0$	Q(1406) = 36179.806, $p < .001$
10 to 15 minutes (74 effects)	0.228 (0.065, 0.391)	0.083	2.758	293	.006				
20 to 25 minutes (268 effects)	0.090 (0.024, 0.157)	0.034	2.667	293	.008				
30 minutes (309 effects)	0.058 (-0.010, 0.127)	0.035	1.686	293	.093				
40 to 90 minutes (13 effects)	0.021 (-0.545, 0.587)	0.287	0.073	293	.942				
24 hours + (16 effects)	0.034 (-0.271, 0.340)	0.155	0.222	293	.824				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S9

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable with the Variance-Covariance of Effects

Imputed with a Correlation of 0.4

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	1.042 (0.940, 1.144)	0.052	20.147	293	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	<0.001 (-0.052, 0.052)	0.026	0.004	293	.996				
3 to 5 minutes (17 effects)	0.045 (-0.086, 0.175)	0.066	0.676	293	.499	F(7,293) = 3.690, <i>p</i> < .001	$\tau^2_{\text{Level 2}} = 0.357$ $\tau^2_{\text{Level 3}} = 0.681$	$R^2_{\text{Level 2}} = 0.007$ $R^2_{\text{Level 3}} = 0$	Q(1406) = 23566.267, <i>p</i> < .001
10 to 15 minutes (74 effects)	0.234 (0.074, 0.394)	0.081	2.885	293	.004				
20 to 25 minutes (268 effects)	0.089 (0.022, 0.157)	0.034	2.604	293	.010				
30 minutes (309 effects)	0.053 (-0.012, 0.119)	0.033	1.598	293	.111				
40 to 90 minutes (13 effects)	0.038 (-0.546, 0.621)	0.297	0.127	293	.899				
24 hours + (16 effects)	0.054 (-0.271, 0.379)	0.165	0.327	293	.744				

Note. Confidence intervals and *p* values are based on robust variance estimations.

Removal of Outlier Effect Sizes

There were six effect sizes with a value greater than 10. These effect sizes were from Beeckmans et al. (2020) (delayed $g = 25.745$, 95% CI [20.00, 31.49]; immediate $g = 18.645$, 95 % CI [14.46, 22.83]), Ratovohery et al. (2019) (immediate $g = 11.669$, 95% CI [9.00, 14.34]; delayed $g = 11.572$, 95% CI [8.92, 14.23]), and Pereira et al. (2022) (verbal delayed $g = 10.915$, 95% CI [8.74, 13.09]; visual delayed $g = 10.657$, 95% CI [8.53, 12.78]). These six effect sizes were excluded, and the main analyses were run again. The estimated pooled effect sizes for immediate and delayed recall are shown in Table S10.

In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.079$ (95% CI [-0.124, -0.034], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1411} = 25934.453$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.590$ and $\tau^2_{\text{Level 2}} = 0.369$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level 3}} = 0.005$ and $R^2_{\text{Level 2}} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{3,297} = 3.773$, $p = .011$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = < 0.001$ (95% CI [< -0.001 , < 0.001], $p = .890$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.019$ (95% CI [-0.095, 0.133], $p = .748$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1404} = 25627.445$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.588$ and $\tau^2_{\text{Level 2}} = 0.366$. The

proportional reductions in heterogeneity associated with the trial type by delay length

interaction moderator were $R^2_{\text{Level } 3} = 0.003$ and $R^2_{\text{Level } 2} = 0$.

Removal of Influential Effect Sizes

A Cook's distance analysis was conducted to determine whether any effect sizes were exerting influence over the estimated pooled effect sizes for immediate and delayed recall (Weisberg & Cook, 1982). Results showed that no effect sizes had a Cook's distance that exceeded the value of 0.5 which is used as a guide for further inspection (Viechtbauer & Cheung, 2010). However, based on a plot of Cook's distance values, there were some visually outlying cases. Amongst the immediate recall effect sizes, there were six visually outlying effects from studies by Ratovohery et al. (2019), De Lucia et al. (2019), Noriega de la Colina et al. (2019), Xiao et al. (2022), Chen et al. (2019), and Stanciu et al. (2019). Amongst the delayed recall effect sizes there were four visually outlying cases from studies by Noriega de la Colina et al. (2019), De Lucia et al. (2019), Xiao et al. (2022), and Stanciu et al. (2019). These 10 potentially influential immediate and delayed effects were excluded, and the main analyses were run again. The estimated pooled effect sizes for immediate and delayed recall are shown in Table S10.

In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.083$ (95% CI [-0.125, -0.041], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1407} = 25531.347$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.483$ and $\tau^2_{\text{Level } 2} = 0.354$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.006$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size

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($F_{3,293} = 4.766, p = .003$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95% CI [$< -0.001, < 0.001$], $p = 1.00$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.027$ (95% CI [$-0.096, 0.150$], $p = .664$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1400} = 25224.299, p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.481$ and $\tau^2_{\text{Level } 2} = 0.351$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.003$ and $R^2_{\text{Level } 2} = 0$.

Table S10

Estimated Pooled Effect Sizes for Immediate and Delayed Recall with Outliers and Potentially Influential Effects Based on Cook's Distance

Removed

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Removal of Outlier Effects								
Immediate Recall	1.065 (0.966, 1.165)	0.051	21.025	299	<.001	$I^2_{\text{Level 2}} = 56.203\%$ $I^2_{\text{Level 3}} = 41.012\%$ $I^2_{\text{Total}} = 97.22\%$	$\tau^2_{\text{Level 2}} = 0.538$ $\tau^2_{\text{Level 3}} = 0.393$	$Q(645) = 14770.117$, $p < .001$
Delayed Recall	1.147 (1.034, 1.260)	0.057	19.997	300	<.001	$I^2_{\text{Level 2}} = 42.003\%$ $I^2_{\text{Level 3}} = 55.599\%$ $I^2_{\text{Total}} = 97.60\%$	$\tau^2_{\text{Level 2}} = 0.495$ $\tau^2_{\text{Level 3}} = 0.655$	$Q(766) = 18375.083$, $p < .001$
Removal of Influential Effects								
Immediate Recall	1.027 (0.932, 1.123)	0.049	21.168	295	<.001	$I^2_{\text{Level 2}} = 57.269\%$ $I^2_{\text{Level 3}} = 39.684\%$ $I^2_{\text{Total}} = 96.95\%$	$\tau^2_{\text{Level 2}} = 0.499$ $\tau^2_{\text{Level 3}} = 0.346$	$Q(641) = 14444.662$, $p < .001$
Delayed Recall	1.104 (0.998, 1.211)	0.054	20.352	296	<.001	$I^2_{\text{Level 2}} = 46.213\%$ $I^2_{\text{Level 3}} = 51.144\%$ $I^2_{\text{Total}} = 97.36\%$	$\tau^2_{\text{Level 2}} = 0.494$ $\tau^2_{\text{Level 3}} = 0.547$	$Q(766) = 18098.923$, $p < .001$

Note. Confidence intervals and p values are based on robust variance estimations

Table S11*Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable with the Removal of Outliers*

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	1.020 (0.923, 1.117)	0.049	20.773	293	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	-0.004 (-0.057, 0.048)	0.027	-0.166	293	.869				
3 to 5 minutes (17 effects)	0.045 (-0.089, 0.179)	0.068	0.667	293	.505	F(7,293) = 2.795, $p = .008$	$\tau^2_{\text{Level 2}} = 0.368$ $\tau^2_{\text{Level 3}} = 0.583$	$R^2_{\text{Level 2}} = 0.002$ $R^2_{\text{Level 3}} = 0$	Q(1400) = 25518.482, $p < .001$
10 to 15 minutes (74 effects)	0.169 (-0.021, 0.358)	0.096	1.755	293	.080				
20 to 25 minutes (268 effects)	0.090 (0.022, 0.158)	0.035	2.604	293	.010				
30 minutes (309 effects)	0.057 (-0.010, 0.124)	0.034	1.667	293	.097				
40 to 90 minutes (13 effects)	0.028 (-0.548, 0.603)	0.292	0.095	293	.925				
24 hours + (16 effects)	0.164 (-0.312, 0.639)	0.241	0.678	293	.498				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S12

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable with the Removal of Influential Effects

Based on Cook's Distance

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	0.969 (0.880, 1.059)	0.045	21.418	289	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	-0.004 (-0.057, 0.048)	0.027	-0.158	289	.874				
3 to 5 minutes (17 effects)	0.057 (-0.085, 0.199)	0.072	0.785	289	.433	F(7,289) = 3.603, $p < .001$	$\tau^2_{\text{Level 2}} = 0.352$ $\tau^2_{\text{Level 3}} = 0.475$	$R^2_{\text{Level 2}} = 0.007$ $R^2_{\text{Level 3}} = 0$	Q(1396) = 25117.310, $p < .001$
10 to 15 minutes (74 effects)	0.227 (0.066, 0.387)	0.082	2.776	289	.006				
20 to 25 minutes (268 effects)	0.087 (0.020, 0.154)	0.034	2.567	289	.011				
30 minutes (309 effects)	0.057 (-0.008, 0.122)	0.033	1.723	289	.086				
40 to 90 minutes (13 effects)	0.034 (-0.544, 0.613)	0.294	0.117	289	.907				
24 hours + (16 effects)	0.085 (-0.274, 0.444)	0.182	0.466	289	.642				

Note. Confidence intervals and p values are based on robust variance estimations.

Overlapping Samples Across Studies

In total, 22 studies reported results based on samples overlapping with samples from other studies. To examine the effect of the interdependence between studies that included the same samples, studies with at least a proportion of overlapping participants were clustered together. This resulted in 285 sample-based clusters with 2-36 effect size estimates per cluster. The main analyses were then replicated and the estimated pooled effect sizes for immediate and delayed recall are shown in Table S13.

In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.084$ (95%CI -0.126, -0.043, $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1417} = 27639.832$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.579$ and $\tau^2_{\text{Level } 2} = 0.381$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.005$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{3,281} = 4.896$, $p = .002$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95%CI < -0.001 , < 0.001 , $p = .998$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.023$ (95% CI [-0.095, 0.140], $p = .704$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{1410} = 27330.525$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.576$ and $\tau^2_{\text{Level } 2} = 0.379$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.003$ and $R^2_{\text{Level } 2} = 0$.

Table S13

Estimated Pooled Effect Sizes for Immediate and Delayed Recall When Clustering Effects Based on Overlapping Samples Across Studies

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Immediate Recall	1.065 (0.961, 1.169)	0.053	20.120	284	<.001	$I^2_{\text{Level 2}} = 55.229\%$ $I^2_{\text{Level 3}} = 42.2073\%$ $I^2_{\text{Total}} = 97.30\%$	$\tau^2_{\text{Level 2}} = 0.548$ $\tau^2_{\text{Level 3}} = 0.417$	$Q(647) = 15153.636, p < .001$
Delayed Recall	1.141 (1.025, 1.258)	0.059	19.310	284	<.001	$I^2_{\text{Level 2}} = 43.945\%$ $I^2_{\text{Level 3}} = 53.698\%$ $I^2_{\text{Total}} = 97.64\%$	$\tau^2_{\text{Level 3}} = 0.647$ $\tau^2_{\text{Level 2}} = 0.529$	$Q(770) = 19023.807, p < .001$

Note. Confidence intervals and p values are based on robust variance estimations

Table S14

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable When Clustering Effects Based on Overlapping Samples Across Studies

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (648 effects)	1.008 (0.911, 1.105)	0.049	20.506	293	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	< -0.001 (-0.052, 0.052)	0.026	-0.016	293	.987				
3 to 5 minutes (17 effects)	0.047 (-0.085, 0.180)	0.067	0.706	293	.481	F(7,293) = 3.655, $p < .001$	$\tau^2_{\text{Level 2}} = 0.362$ $\tau^2_{\text{Level 3}} = 0.592$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0.050$	Q(1406) = 26929.062, $p < .001$
10 to 15 minutes (74 effects)	0.229 (0.069, 0.389)	0.081	2.818	293	.005				
20 to 25 minutes (268 effects)	0.090 (0.023, 0.157)	0.034	2.649	293	.009				
30 minutes (309 effects)	0.055 (-0.011, 0.122)	0.034	1.635	293	.103				
40 to 90 minutes (13 effects)	0.026 (-0.550, 0.602)	0.293	0.089	293	.929				
24 hours + (16 effects)	0.046 (-0.270, 0.362)	0.160	0.288	293	.774				

Note. Confidence intervals and p values are based on robust variance estimations.

Quality Assessment Analysis

Quality Summary

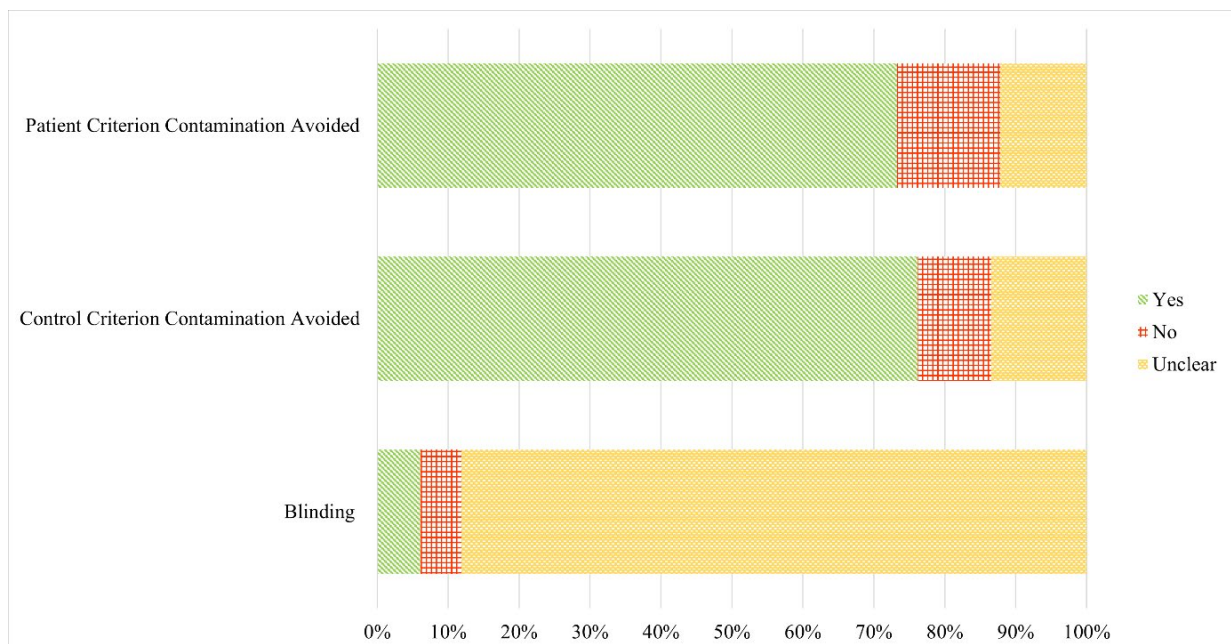
Figure S1

Applicability Concerns for QUADAS-2 Domains for Participant Selection, Control Selection Criteria, Patient Diagnostic Criteria, and Measures



Figure S2

Ratings for the Implementation of Blinding and the Avoidance of Criterion Contamination



*Moderating Effect of Risk of Bias**Comparison of combined high and unclear to low ratings.***Table S15***Multivariate Meta-Regression Models for the Moderating Effect of Risk of Bias (RoB) on Immediate Recall, Comparison of Combined**High/Unclear to Low RoB Ratings*

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	<i>df</i>	<i>p</i>	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Participant Selection RoB									
High/Unclear (Intercept)	1.129 (0.999, 1.259)	0.066	17.117	299	<.001	F(1, 299) = 3.586, <i>p</i> = .059	$\tau^2_{\text{Level 2}} = 0.552$ $\tau^2_{\text{Level 3}} = 0.409$	R ² _{Level 2} = 0.011 R ² _{Level 3} = 0	Q(648) = 14831.961, <i>p</i> < .001
Low	-0.187 (-0.382, 0.007)	0.099	-1.894	299	.059				
Memory Measure RoB									
High/Unclear (Intercept)	1.086 (0.979, 1.191)	0.054	20.020	299	<.001	F(1, 299) = 1.058, <i>p</i> = .305	$\tau^2_{\text{Level 2}} = 0.552$ $\tau^2_{\text{Level 3}} = 0.414$	R ² _{Level 2} = 0 R ² _{Level 3} = 0	Q(648) = 14880.471, <i>p</i> < .001
Low	-0.169 (-0.492, 0.154)	0.164	-1.029	299	.305				
Control Selection Criteria RoB									
High/Unclear (Intercept)	1.176 (1.040, 1.312)	0.069	16.998	299	<.001	F(1, 299) = 2.433, <i>p</i> = .120	$\tau^2_{\text{Level 2}} = 0.547$ $\tau^2_{\text{Level 3}} = 0.408$	R ² _{Level 2} = 0.012 R ² _{Level 3} = 0.002	Q(648) = 13338.263, <i>p</i> < .001
Low	-0.152 (-0.344, 0.040)	0.098	-1.560	299	.120				
Patient Diagnostic Criteria RoB									
High/Unclear (Intercept)	1.350 (1.152, 1.547)	0.101	13.421	299	<.001	F(1, 299) = 9.990, <i>p</i> = .002	$\tau^2_{\text{Level 2}} = 0.556$ $\tau^2_{\text{Level 3}} = 0.370$	R ² _{Level 2} = 0.105 R ² _{Level 3} = 0	Q(648) = 13938.603, <i>p</i> < .001
Low	-0.378 (-0.613, -0.143)	0.120	-3.161	299	.002				
Flow and Timing RoB									
High/Unclear (Intercept)	1.140 (1.022, 1.258)	0.060	18.991	299	<.001	F(1, 299) = 3.624, <i>p</i> = .058	$\tau^2_{\text{Level 2}} = 0.548$ $\tau^2_{\text{Level 3}} = 0.407$	R ² _{Level 2} = 0.014 R ² _{Level 3} = 0.005	Q(648) = 13026.582, <i>p</i> < .001
Low	-0.219 (-0.446, 0.007)	0.115	-1.904	299	.058				

Note. Confidence intervals and *p* values are based on robust variance estimations.

Table S16

Multivariate Meta-Regression Models for the Moderating Effect of Blinding and Criterion Contamination on Immediate Recall Effect Sizes, Comparison of Combined No/Unclear to Yes Ratings

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	<i>df</i>	<i>p</i>	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Clinical Group Criterion Contamination Avoided									
No/Unclear (Intercept)	1.397 (1.196, 1.599)	0.102	13.653	299	<.001	F(1, 299) = 13.649, <i>p</i> < .001	$\tau^2_{\text{Level } 2} = 0.554$ $\tau^2_{\text{Level } 3} = 0.367$	R ² _{Level 2} = 0.111 R ² _{Level 3} = 0	Q(648) = 13940.539, <i>p</i> < .001
Yes	-0.434 (-0.665, -0.205)	0.117	-3.694	299	<.001				
Control Group Criterion Contamination Avoided									
No/Unclear (Intercept)	1.275 (1.118, 1.431)	0.080	16.019	299	<.001	F(1, 299) = 7.329, <i>p</i> = .008	$\tau^2_{\text{Level } 2} = 0.548$ $\tau^2_{\text{Level } 3} = 0.398$	R ² _{Level 2} = 0.038 R ² _{Level 3} = 0.005	Q(648) = 13431.913, <i>p</i> < .001
Yes	-0.273 (-0.473, -0.073)	0.102	-2.690	299	.008				
Blinding									
No/Unclear (Intercept)	1.086 (0.979, 1.193)	0.054	20.020	299	<.001	F(1, 299) = 1.058, <i>p</i> = .305	$\tau^2_{\text{Level } 2} = 0.552$ $\tau^2_{\text{Level } 3} = 0.414$	R ² _{Level 2} = 0 R ² _{Level 3} = 0	Q(648) = 14880.471, <i>p</i> < .001
Yes	-0.169 (-0.491, 0.154)	0.164	-1.029	299	.305				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S17

Multivariate Meta-Regression Models for the Moderating Effect of Risk of Bias (RoB) Ratings on Delayed Recall, Comparison of Combined High/Unclear to Low RoB Ratings

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Participant Selection RoB									
High/Unclear (Intercept)	1.226 (1.081, 1.372)	0.074	16.585	299	<.001	F(1, 299) = 5.616, $p = .018$	$\tau^2_{\text{Level 2}} = 0.514$ $\tau^2_{\text{Level 3}} = 0.651$	$R^2_{\text{Level 2}} = 0.013$ $R^2_{\text{Level 3}} = 0.003$	Q(769) = 18430.826, $p < .001$
Low	-0.264 (-0.484, -0.045)	0.111	-2.370	299	.018				
Memory Measure RoB									
High/Unclear (Intercept)	1.165 (1.046, 1.285)	0.061	19.174	299	<.001	F(1, 299) = 2.001, $p = .158$	$\tau^2_{\text{Level 2}} = 0.515$ $\tau^2_{\text{Level 3}} = 0.661$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	Q(769) = 18466.921, $p < .001$
Low	-0.258 (-0.617, 0.101)	0.182	-1.415	299	.158				
Control Selection Criteria RoB									
High/Unclear (Intercept)	1.368 (1.199, 1.538)	0.086	15.875	299	<.001	F(1, 299) = 8.382, $p = .004$	$\tau^2_{\text{Level 2}} = 0.514$ $\tau^2_{\text{Level 3}} = 0.629$	$R^2_{\text{Level 2}} = 0.046$ $R^2_{\text{Level 3}} = 0.001$	Q(769) = 16185.342, $p < .001$
Low	-0.327 (-0.550, -0.105)	0.113	-2.895	299	.004				
Patient Diagnostic Criteria RoB									
High/Unclear (Intercept)	1.510 (1.277, 1.743)	0.118	12.778	299	<.001	F(1, 299) = 12.008, $p < .001$	$\tau^2_{\text{Level 2}} = 0.522$ $\tau^2_{\text{Level 3}} = 0.576$	$R^2_{\text{Level 2}} = 0.128$ $R^2_{\text{Level 3}} = 0$	Q(769) = 16977.965, $p < .001$
Low	-0.493 (-0.772, -0.213)	0.142	-3.465	299	<.001				
Flow and Timing RoB									
High/Unclear (Intercept)	1.252 (1.113, 1.392)	0.071	17.679	299	<.001	F(1, 299) = 8.636, $p = .004$	$\tau^2_{\text{Level 2}} = 0.512$ $\tau^2_{\text{Level 3}} = 0.641$	$R^2_{\text{Level 2}} = 0.028$ $R^2_{\text{Level 3}} = 0.006$	Q(769) = 16204.129, $p < .001$
Low	-0.349 (-0.582, -0.115)	0.119	-2.939	299	.004				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S18

Multivariate Meta-Regression Models for the Moderating Effect of Blinding and Criterion Contamination on Delayed Recall Effect Sizes,

Comparison of Combined No/Unclear to Yes Ratings

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	<i>df</i>	<i>p</i>	Test of Moderators	τ ²	R ²	Test for Residual Heterogeneity
Patient Group Criterion Contamination Avoided									
No/Unclear (Intercept)	1.557 (1.328, 1.786)	0.117	13.362	299	<.001	F(1, 299) = 16.227, <i>p</i> < .001	τ ² _{Level 2} = 0.519 τ ² _{Level 3} = 0.579	R ² _{Level 2} = 0 R ² _{Level 3} = 0.059	Q(769) = 16998.655, <i>p</i> < .001
Yes	-0.545 (-0.811, -0.279)	0.135	-4.028	299	<.001				
Control Group Criterion Contamination Avoided									
No/Unclear (Intercept)	1.483 (1.289, 1.677)	0.099	15.039	299	<.001	F(1, 299) = 14.294, <i>p</i> < .001	τ ² _{Level 2} = 0.514 τ ² _{Level 3} = 0.610	R ² _{Level 2} = 0.076 R ² _{Level 3} = 0.002	Q(769) = 16329.937, <i>p</i> < .001
Yes	-0.452 (-0.687, -0.217)	0.120	-3.781	299	<.001				
Blinding									
No/Unclear (Intercept)	1.165 (1.046, 1.285)	0.061	19.174	299	<.001	F(1, 299) = 2.001, <i>p</i> = .158	τ ² _{Level 2} = 0.515 τ ² _{Level 3} = 0.661	R ² _{Level 2} = 0 R ² _{Level 3} = 0	Q(769) = 18466.921, <i>p</i> < .001
Yes	-0.258 (-0.617, 0.101)	0.182	-1.415	299	.158				

Note. Confidence intervals and p values are based on robust variance estimations.

Comparison of high to low and unclear ratings.**Table S19** Multivariate Meta-Regression Models for the Moderating Effect of Risk of Bias (RoB) on Immediate Recall, Comparison of High to Low and Unclear RoB Ratings

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	<i>df</i>	<i>p</i>	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Participant Selection RoB									
High (Intercept)	1.111 (0.965, 1.257)	0.074	14.990	298	<.001	F(2, 298) = 1.791, <i>p</i> = .169	$\tau^2_{\text{Level 2}} = 0.552$ $\tau^2_{\text{Level 3}} = 0.412$	R ² _{Level 2} = 0.004 R ² _{Level 3} = 0	Q(645) = 14685.182, <i>p</i> < .001
Low	-0.169 (-0.375, 0.037)	0.105	-1.616	298	.107				
Unclear	0.055 (-0.243, 0.352)	0.151	0.336	298	.715				
Memory Measure RoB									
High (Intercept)	1.345 (1.037, 1.652)	0.156	8.606	298	<.001	F(2, 298) = 2.025, <i>p</i> = .134	$\tau^2_{\text{Level 2}} = 0.552$ $\tau^2_{\text{Level 3}} = 0.410$	R ² _{Level 2} = 0.006 R ² _{Level 3} = 0	Q(645) = 14822.043, <i>p</i> < .001
Low	-0.428 (-0.861, 0.006)	0.220	-1.941	298	.053				
Unclear	-0.278 (-0.603, 0.045)	0.165	-1.689	298	.092				
Control Selection Criteria RoB									
High (Intercept)	1.281 (1.035, 1.527)	0.125	10.253	298	<.001	F(2, 298) = 1.691, <i>p</i> = .186	$\tau^2_{\text{Level 2}} = 0.550$ $\tau^2_{\text{Level 3}} = 0.408$	R ² _{Level 2} = 0.012 R ² _{Level 3} = 0.002	Q(645) = 13332.284, <i>p</i> < .001
Low	-0.258 (-0.539, 0.023)	0.143	-1.808	298	.072				
Unclear	-0.164 (-0.457, 0.130)	0.149	-1.097	298	.274				
Patient Diagnostic Criteria RoB									
High (Intercept)	1.431 (1.138, 1.725)	0.149	9.601	298	<.001	F(2, 298) = 5.443, <i>p</i> = .005	$\tau^2_{\text{Level 2}} = 0.556$ $\tau^2_{\text{Level 3}} = 0.370$	R ² _{Level 2} = 0.103 R ² _{Level 3} = 0	Q(645) = 13890.641, <i>p</i> < .001
Low	-0.460 (-0.777, -0.142)	0.161	-2.850	298	.005				
Unclear	-0.172 (-0.656, 0.311)	0.246	-0.702	298	.483				
Flow and Timing RoB									
High (Intercept)	1.382 (1.160, 1.604)	0.113	12.264	298	<.001	F(2, 298) = 4.845, <i>p</i> = .008	$\tau^2_{\text{Level 2}} = 0.549$ $\tau^2_{\text{Level 3}} = 0.393$	R ² _{Level 2} = 0.048 R ² _{Level 3} = 0.004	Q(645) = 12990.608, <i>p</i> < .001
Low	-0.462 (-0.756, -0.167)	0.150	-3.084	298	.002				
Unclear	-0.306 (-0.566, -0.046)	0.132	-2.310	298	.022				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S20

Multivariate Meta-Regression Models for the Moderating Effect of Blinding and Criterion Contamination on Immediate Recall Effect Sizes, Comparison of High to Low and Unclear Ratings

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Patient Sample Criterion Contamination Avoided									
No (Intercept)	1.436 (1.142, 1.731)	0.149	9.606	298	<.001	F(2, 298) = 6.689 , $p = .001$	$\tau^2_{\text{Level 2}} = 0.554$	$R^2_{\text{Level 2}} = 0.108$	Q(645) = 13896.354, $p < .001$
Yes	-0.472 (-0.788, -0.156)	0.161	-2.938	298	.004		$\tau^2_{\text{Level 3}} = 0.369$	$R^2_{\text{Level 3}} = 0$	
Unclear	-0.088 (-0.604, 0.426)	0.262	-0.336	298	.737				
Control Sample Criterion Contamination Avoided									
No (Intercept)	1.282 (1.036, 1.528)	0.125	10.254	298	<.001	F(2, 298) = 3.609 , $p = .028$	$\tau^2_{\text{Level 2}} = 0.549$	$R^2_{\text{Level 2}} = 0.030$	Q(645) = 13428.972, $p < .001$
Yes	-0.280 (-0.556, -0.004)	0.140	-2.000	298	.046		$\tau^2_{\text{Level 3}} = 0.400$	$R^2_{\text{Level 3}} = 0.004$	
Unclear	-0.013 (-0.331, 0.306)	0.162	-0.077	298	.938				
Blinding									
No (Intercept)	1.371 (1.039, 1.704)	0.169	8.122	298	<.001	F(2, 298) = 2.064 , $p = .129$	$\tau^2_{\text{Level 2}} = 0.551$	$R^2_{\text{Level 2}} = 0.004$	Q(645) = 14816.907, $p < .001$
Yes	-0.454 (-0.906, -0.003)	0.229	-1.980	298	.049		$\tau^2_{\text{Level 3}} = 0.411$	$R^2_{\text{Level 3}} = 0$	
Unclear	-0.304 (-0.655, 0.046)	0.178	-1.708	298	.088				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S21

Multivariate Meta-Regression for the Moderating Effect of Risk of Bias (RoB) Ratings on Delayed Recall Effect Sizes, Comparison of High to Low and Unclear Ratings

Moderators	Hedges' g (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Participant Selection RoB									
High (Intercept)	1.214 (1.044, 1.385)	0.087	13.999	298	<.001	F(2, 298) = 2.800, <i>p</i> = .062	$\tau^2_{\text{Level 2}} = 0.515$	R ² _{Level 2} = 0.007	Q(768) = 18274.381, <i>p</i> < .001
Low	-0.252 (-0.489, -0.015)	0.120	-2.095	298	.037		$\tau^2_{\text{Level 3}} = 0.655$	R ² _{Level 3} = 0	
Unclear	0.036 (-0.286, 0.358)	0.164	0.218	298	.827				
Memory Measure RoB									
High (Intercept)	1.336 (1.061, 1.611)	0.140	9.569	298	<.001	F(2, 298) = 1.879, <i>p</i> = .155	$\tau^2_{\text{Level 2}} = 0.515$	R ² _{Level 2} = 0	Q(768) = 18399.432, <i>p</i> < .001
Low	-0.428 (-0.865, 0.008)	0.222	-1.933	298	.054		$\tau^2_{\text{Level 3}} = 0.660$	R ² _{Level 3} = 0	
Unclear	-0.184 (-0.479, 0.112)	0.150	-1.224	298	.222				
Control Selection Criteria RoB									
High (Intercept)	1.479 (1.186, 1.772)	0.149	9.926	298	<.001	F(2, 298) = 4.581, <i>p</i> = .011	$\tau^2_{\text{Level 2}} = 0.514$	R ² _{Level 2} = 0.045	Q(768) = 16185.342, <i>p</i> < .001
Low	-0.438 (-0.765, -0.112)	0.166	-2.639	298	.009		$\tau^2_{\text{Level 3}} = 0.630$	R ² _{Level 3} = 0.003	
Unclear	-0.169 (-0.528, 0.189)	0.182	-0.929	298	.354				
Patient Diagnostic Criteria RoB									
High (Intercept)	1.608 (1.229, 1.987)	0.192	8.360	298	<.001	F(2, 298) = 6.336, <i>p</i> = .002	$\tau^2_{\text{Level 2}} = 0.522$	R ² _{Level 2} = 0.125	Q(768) = 16955.679, <i>p</i> < .001
Low	-0.591 (-0.999, -0.182)	0.208	-2.842	298	.005		$\tau^2_{\text{Level 3}} = 0.578$	R ² _{Level 3} = 0	
Unclear	-0.203 (-0.844, 0.438)	0.326	-0.623	298	.534				
Flow and Timing RoB									
High (Intercept)	1.536 (1.264, 1.808)	0.138	11.112	298	<.001	F(2, 298) = 7.310, <i>p</i> < .001	$\tau^2_{\text{Level 2}} = 0.513$	R ² _{Level 2} = 0.058	Q(768) = 16182.037, <i>p</i> < .001
Low	-0.633 (-0.963, -0.302)	0.168	-3.765	298	<.001		$\tau^2_{\text{Level 3}} = 0.621$	R ² _{Level 3} = 0.003	
Unclear	-0.354 (-0.668, -0.040)	0.160	-2.216	298	.027				

Note. Confidence intervals and p values are based on robust variance estimations.

Table S22

Multivariate Meta-regression Models for the Moderating Effect of Blinding and Criterion Contamination on Delayed Recall Effect Sizes,

Comparison of No to Yes and Unclear Ratings

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Clinical Group Criterion Contamination Avoided									
No (Intercept)	1.613 (1.233, 1.994)	0.193	8.351	298	<.001	F(2, 298) = 8.087, $p < .001$	$\tau^2_{\text{Level 2}} = 0.519$	$R^2_{\text{Level 2}} = 0.120$	Q(768) = 16978.733, $p < .001$
Yes	-0.601 (-1.008, -0.193)	0.207	-2.901	298	.004		$\tau^2_{\text{Level 3}} = 0.581$	$R^2_{\text{Level 3}} = 0$	
Unclear	-0.127 (-0.803, 0.550)	0.344	-0.369	298	.713				
Control Group Criterion Contamination Avoided									
No (Intercept)	1.479 (1.186, 1.772)	0.149	9.924	298	<.001	F(2, 298) = 7.115, $p < .001$	$\tau^2_{\text{Level 2}} = 0.514$	$R^2_{\text{Level 2}} = 0.070$	Q(768) = 16329.145, $p < .001$
Yes	-0.448 (-0.770, -0.126)	0.164	-2.738	298	.007		$\tau^2_{\text{Level 3}} = 0.614$	$R^2_{\text{Level 3}} = 0.001$	
Unclear	0.006 (-0.385, 0.398)	0.199	0.032	298	.975				
Blinding									
No (Intercept)	1.318 (0.995, 1.642)	0.164	8.023	298	<.001	F(2, 298) = 1.518, $p = .221$	$\tau^2_{\text{Level 2}} = 0.515$	$R^2_{\text{Level 2}} = 0$	Q(768) = 18402.436, $p < .001$
Yes	-0.411 (-0.879, 0.058)	0.238	-1.726	298	.085		$\tau^2_{\text{Level 3}} = 0.661$	$R^2_{\text{Level 3}} = 0$	
Unclear	-0.163 (-0.510, 0.184)	0.176	-0.926	298	.355				

Note. Confidence intervals and p values are based on robust variance estimations.

Subgroup Analysis by Diagnosis**Table S23***Summary of Studies and Effect Sizes Included in the Diagnostic Subgroup Analyses*

Subgroup	Included Studies	Controls (n)	Patients (n)	Effect Sizes (Hedges' <i>g</i>)
TLE	13	621	950	29 Immediate 40 Delayed
Combined Epilepsy	23	855	1,249	48 Immediate 64 Delayed
MCI	85	13,193	12,490	163 Immediate 173 Delayed
AD	42	10,776	4,526	72 Immediate 75 Delayed

Note. AD = Alzheimer's disease, MCI = mild cognitive impairment, TLE = temporal lobe epilepsy.

Temporal Lobe Epilepsy

Estimated pooled effect sizes for the immediate and delayed recall in the TLE subgroup are shown in Table S26. In the meta-regression with trial type (immediate or delayed) as the moderator, there was no difference between immediate and delayed recall, $g = 0.049$ (95% CI [-0.128, 0.227], $p = .580$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{67} = 296.874$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.109$ and $\tau^2_{\text{Level 2}} = 0.097$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level 3}} = 0$ and $R^2_{\text{Level 2}} = 0.020$.

In the meta-regression with the trial type by delay length interaction as the moderator, the interaction variable was found to be a redundant predictor and was therefore dropped from the model. This was due to the high correlation between the delay length and trial type variables in the TLE subgroup. The model therefore only included the trial type and delay length variables as separate predictors. The test of moderators showed that the overall model did not predict the pooled effect size ($F_{2,66} = 0.217$, $p = .806$). The length of delay used did

not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95% CI [< -0.001 , < 0.001], $p = .720$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{66} = 296.694$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.113$ and $\tau^2_{\text{Level } 2} = 0.099$. The proportional reductions in heterogeneity associated with the trial type by delayed length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S24*Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable in the TLE Subgroup*

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (29 effects)	0.998 (0.722, 1.274)	0.138	7.227	63	<.001				
Delayed Recall Intervals									
1 minute filled delay (4 effects)	-0.225 (-0.669, 0.218)	0.222	-1.016	63	.313	$F(5,63) = 0.464$, $p = .802$	$\tau^2_{\text{Level 2}} = 0.098$ $\tau^2_{\text{Level 3}} = 0.137$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	$Q(63) =$ $286.734, p <$.001
20 to 25 minutes (9 effects)	-0.127 (-0.430, 0.177)	0.152	-0.835	63	.407				
30 minutes (20 effects)	0.006 (-0.208, 0.220)	0.107	0.059	63	.954				
40 to 90 minutes (1 effect)	-0.428 (-1.382, 0.526)	0.477	-0.897	63	.373				
24 hours + (6 effects)	0.063 (-0.348, 0.473)	0.205	0.306	63	.761				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Epilepsy

Estimated pooled effect sizes for the immediate and delayed recall in the epilepsy subgroup are shown in Table S26. In the meta-regression with trial type (immediate or delayed) as the moderator, there was no difference between immediate and delayed recall, $g = 0.005$ (95% CI [-0.136, 0.145], $p = .948$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{110} = 448.992$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.101$ and $\tau^2_{\text{Level } 2} = 0.098$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.007$.

Results of the multivariate meta-regression with the trial type by delay length interaction variable as the moderator showed that the overall model did not predict the pooled effect size ($F_{3,108} = 0.111$, $p = .954$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95% CI [< -0.001 , < 0.001], $p = .791$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = -0.116$ (95% CI [-0.575, 0.342], $p = .615$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{108} = 448.343$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.099$ and $\tau^2_{\text{Level } 2} = 0.101$. The proportional reductions in heterogeneity associated with the trial type by delayed length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.023$.

Table S25*Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable in the Combined Epilepsy Subgroup*

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (48 effects)	0.793 (0.598, 0.988)	0.098	8.068	105	<.001				
Delayed Recall Intervals									
1 minute filled delay (5 effects)	-0.127 (-0.518, 0.263)	0.197	-0.646	105	.520				
10 to 15 minutes (1 effect)	0.044 (-0.794, 0.882)	0.423	0.104	105	.917	F(6,105) = 0.651, <i>p</i> = .689	$\tau^2_{\text{Level 2}} = 0.100$ $\tau^2_{\text{Level 3}} = 0.105$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	Q(105) = 433.498, <i>p</i> < .001
20 to 25 minutes (10 effects)	-0.070 (-0.349, 0.209)	0.141	-0.498	105	.619				
30 minutes (33 effects)	0.054 (-0.116, 0.224)	0.086	0.629	105	.531				
40 to 90 minutes (4 effects)	-0.390 (-0.883, 0.103)	0.249	-1.570	105	.119				
24 hours + (11 effects)	0.083 (-0.205, 0.372)	0.145	0.573	105	.568				

Note. Confidence intervals and *p* values are based on standard statistics, not robust variance estimation.

Table S26*Estimated Pooled Effect Sizes for Immediate and Delayed Recall for TLE and Combined Epilepsy Samples*

Meta-Analysis Models	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Temporal Lobe Epilepsy								
Immediate Recall	1.012 (0.740, 1.285)	0.133	7.605	28	<.001	$I^2_{\text{Level 2}} = 22.604\%$ $I^2_{\text{Level 3}} = 55.245\%$ $I^2_{\text{Total}} = 77.85\%$	$\tau^2_{\text{Level 2}} = 0.056$ $\tau^2_{\text{Level 3}} = 0.136$	$Q(28) = 94.282, p < .001$
Delayed Recall	0.927 (0.700, 1.154)	0.112	8.251	39	<.001	$I^2_{\text{Level 2}} = 57.005\%$ $I^2_{\text{Level 3}} = 18.758\%$ $I^2_{\text{Total}} = 75.76\%$	$\tau^2_{\text{Level 2}} = 0.142$ $\tau^2_{\text{Level 3}} = 0.047$	$Q(39) = 206.208, p < .001$
Combined Epilepsy								
Immediate Recall	0.799 (0.598, 1.000)	0.100	8.014	47	<.001	$I^2_{\text{Level 2}} = 37.185\%$ $I^2_{\text{Level 3}} = 39.232\%$ $I^2_{\text{Total}} = 76.42\%$	$\tau^2_{\text{Level 2}} = 0.100$ $\tau^2_{\text{Level 3}} = 0.106$	$Q(47) = 185.272, p < .001$
Delayed Recall	0.800 (0.634, 0.966)	0.083	9.624	63	<.001	$I^2_{\text{Level 2}} = 54.257\%$ $I^2_{\text{Level 3}} = 17.126\%$ $I^2_{\text{Total}} = 71.38\%$	$\tau^2_{\text{Level 2}} = 0.128$ $\tau^2_{\text{Level 3}} = 0.040$	$Q(63) = 281.645, p < .001$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Mild Cognitive Impairment

Estimated pooled effect sizes for the immediate and delayed recall in the MCI subgroup are shown in Table S29. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small and negative effect size estimate for immediate recall relative to the delayed recall, $g = -0.125$ (95% CI $[-0.235, -0.016]$, $p = .025$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{334} = 3110.493$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.422$ and $\tau^2_{\text{Level } 2} = 0.222$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.021$ and $R^2_{\text{Level } 2} = 0$.

For the multivariate meta-regression with the trial type by delay length interaction as the moderator, the interaction variable was found to be a redundant predictor and was therefore dropped from the model. This is due to the high correlation between the delay length and trial type variables in the MCI subgroup. The model therefore only included the trial type and delay length variables as separate predictors. The test of moderators showed that the overall model did not predict the pooled effect size ($F_{2,331} = 2.742$, $p = .066$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI $[< -0.001, < 0.001]$, $p = .933$). The Q statistic was significant, indicating heterogeneity of effect sizes ($Q_{331} = 3061.057$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.420$ and $\tau^2_{\text{Level } 2} = 0.221$. The proportional reductions in heterogeneity associated with the trial type by delayed length interaction moderator were $R^2_{\text{Level } 3} = 0.018$ and $R^2_{\text{Level } 2} = 0$.

Table S27*Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable in the MCI Subgroup*

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (163 effects)	1.402 (1.239, 1.565)	0.083	16.914	326	<.001				
Delayed Recall Intervals									
1 minute filled delay (2 effects)	0.207 (-0.602, 1.016)	0.411	0.504	326	.615				
3 to 5 minutes (5 effects)	0.033 (-0.484, 0.551)	0.263	0.126	326	.900	F(7,326) = 2.149, $p = .038$	$\tau^2_{\text{Level 2}} = 0.218$ $\tau^2_{\text{Level 3}} = 0.406$	$R^2_{\text{Level 2}} = 0.032$ $R^2_{\text{Level 3}} = 0.032$	Q(326) = 2835.181, $p < .001$
10 to 15 minutes (18 effects)	0.316 (0.023, 0.610)	0.149	2.123	326	.034				
20 to 25 minutes (64 effects)	0.215 (0.057, 0.374)	0.081	2.668	326	.008				
30 minutes (76 effects)	0.014 (-0.136, 0.165)	0.076	0.189	326	.850				
40 to 90 minutes (2 effects)	0.736 (-0.031, 1.503)	0.390	1.887	326	.060				
24 hours + (4 effects)	-0.332 (-1.020, 0.357)	0.350	-0.948	326	.344				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Alzheimer's Disease

Estimated pooled effect sizes for the immediate and delayed trials in the AD subgroup are shown in Table S29. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a medium, negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.449$ (95% CI [-0.680, -0.217], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{145} = 1629.542$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 1.736$ and $\tau^2_{\text{Level } 2} = 0.423$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.146$ and $R^2_{\text{Level } 2} = 0.002$.

For the multivariate meta-regression with the trial type by delay length interaction as the moderator, the interaction variable was found to be a redundant predictor and was therefore dropped from the model. This is due to the high correlation between the delay length and trial type variables in the AD subgroup. The model therefore only included the trial type and delay length variables as separate predictors. The test of moderators showed that the overall model did predict the pooled effect size ($F_{2,143} = 7.292$, $p < .001$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.001$ (95% CI [-0.002, 0.001], $p = .469$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{143} = 1610.823$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 1.852$ and $\tau^2_{\text{Level } 2} = 0.425$. The proportional reductions in heterogeneity associated with the trial type by delayed length interaction moderator were $R^2_{\text{Level } 3} = 0.141$ and $R^2_{\text{Level } 2} = 0$.

Table S28*Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable in the AD Subgroup*

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (72 effects)	2.796 (2.374, 3.219)	0.214	13.089	138	<.001				
Delayed Recall Intervals									
1 minute filled delay (1 effect)	-0.552 (-2.178, 1.074)	0.822	-0.671	138	.503				
3 to 5 minutes (1 effect)	0.301 (-1.362, 1.964)	0.841	0.358	138	.721	F(7,138) = 3.432, $p = .002$	$\tau^2_{\text{Level 2}} = 0.421$ $\tau^2_{\text{Level 3}} = 1.657$	$R^2_{\text{Level 2}} = 0.068$ $R^2_{\text{Level 3}} = 0.149$	Q(138) = 1429.313, $p < .001$
10 to 15 minutes (13 effects)	1.049 (0.512, 1.586)	0.272	3.860	138	<.001				
20 to 25 minutes (27 effects)	0.316 (-0.023, 0.656)	0.172	1.841	138	.068				
30 minutes (30 effects)	0.326 (0.003, 0.650)	0.164	1.994	138	.048				
40 to 90 minutes (1 effect)	1.454 (-0.037, 2.945)	0.754	1.929	138	.056				
24 hours + (1 effect)	-0.023 (-2.308, 2.263)	1.156	-0.020	138	.984				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Table S29*Estimated Pooled Effect Sizes for Immediate and Delayed Recall for MCI and AD Samples*

Meta-Analysis Models	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Mild Cognitive Impairment								
Immediate Recall	1.420 (1.266, 1.574)	0.078	18.225	162	<.001	$I^2_{\text{Level 2}} = 49.869\%$ $I^2_{\text{Level 3}} = 44.572\%$ $I^2_{\text{Total}} = 94.44\%$	$\tau^2_{\text{Level 2}} = 0.303$ $\tau^2_{\text{Level 3}} = 0.271$	$Q(162) = 1426.433$, $p < .001$
Delayed Recall	1.556 (1.377, 1.734)	0.090	17.221	172	<.001	$I^2_{\text{Level 2}} = 38.868\%$ $I^2_{\text{Level 3}} = 56.604\%$ $I^2_{\text{Total}} = 95.47\%$	$\tau^2_{\text{Level 2}} = 0.310$ $\tau^2_{\text{Level 3}} = 0.452$	$Q(172) = 2124.394$, $p < .001$
Alzheimer's Disease								
Immediate Recall	2.822 (2.403, 3.241)	0.210	13.431	71	<.001	$I^2_{\text{Level 2}} = 19.578\%$ $I^2_{\text{Level 3}} = 78.124\%$ $I^2_{\text{Total}} = 97.7\%$	$\tau^2_{\text{Level 2}} = 0.396$ $\tau^2_{\text{Level 3}} = 1.582$	$Q(71) = 660.211$, $p < .001$
Delayed Recall	3.339 (2.851, 3.828)	0.245	13.081	74	<.001	$I^2_{\text{Level 2}} = 20.632\%$ $I^2_{\text{Level 3}} = 77.515\%$ $I^2_{\text{Total}} = 98.15\%$	$\tau^2_{\text{Level 2}} = 0.577$ $\tau^2_{\text{Level 3}} = 2.167$	$Q(74) = 1027.271$, $p < .001$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Subgroup Analysis by Memory Measures

Word List

Combined Patient Sample. Estimated pooled effect sizes for the immediate and delayed recall for word list measures are shown in Table S44. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.047$ (95% CI [-0.099, 0.006], $p = .084$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{809} = 12654.013$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.634$ and $\tau^2_{\text{Level } 2} = 0.369$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.001$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{3,218} = 100.354$, $p < .001$). The length of delay did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95%CI < -0.001 , < 0.001 , $p = .450$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = -0.096$ (95% CI [-0.123, -0.069], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes $Q_{807} = 12650.036$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.634$ and $\tau^2_{\text{Level } 2} = 0.370$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S30

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Word List Recall in the Combined Patient Samples

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (348 effects)	1.031 (0.911, 1.151)	0.061	16.966	214	<.001				
Delayed Recall Intervals									
1 minute filled delay (69 effects)	-0.017 (-0.070, 0.036)	0.027	-0.642	214	.521				
3 to 5 minutes (11 effects)	-0.015 (-0.131, 0.100)	0.059	-0.259	214	.796	F(7,214) = 3.914, $p < .001$	$\tau^2_{\text{Level 2}} = 0.372$ $\tau^2_{\text{Level 3}} = 0.623$	$R^2_{\text{Level 2}} = 0.014$ $R^2_{\text{Level 3}} = 0$	Q(803) = 12470.104, $p < .001$
10 to 15 minutes (49 effects)	0.195 (-0.006, 0.397)	0.102	1.909	214	.058				
20 to 25 minutes (195 effects)	0.085 (0.013, 0.156)	0.036	2.335	214	.020				
30 minutes (123 effects)	-0.015 (-0.124, 0.093)	0.055	-0.277	214	.782				
40 to 90 minutes (7 effects)	-0.384 (-0.614, -0.155)	0.116	-3.306	214	.001				
24 hours + (9 effects)	0.087 (-0.352, 0.525)	0.222	0.390	214	.697				

Note: Confidence intervals and p values are based on robust variance estimation.

Temporal Lobe Epilepsy. Amongst studies of TLE, 12 studies reported word list measures. Estimated pooled effect sizes for the immediate and delayed recall for word list measures in the TLE subgroup are shown in Table S45. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and positive effect size estimate for immediate recall relative to the delayed recall coefficient, $g = 0.066$ (95% CI [-0.160, 0.292], $p = .557$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{45} = 160.778$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.045$ and $\tau^2_{\text{Level } 2} = 0.101$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.044$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,44} = 0.209$, $p = .812$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI [< -0.001 , < 0.001], $p = .780$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{44} = 160.272$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.048$ and $\tau^2_{\text{Level } 2} = 0.104$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S31

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Word List Recall in the TLE Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (18 effects)	0.923 (0.667, 1.180)	0.127	7.277	41	<.001				
Delayed Recall Intervals									
1 minute filled delay (4 effects)	-0.011 (-0.508, 0.486)	0.246	-0.045	41	.964	$F(5,41) = 0.27$ $7, p = .923$	$\tau^2_{\text{Level 2}} = 0.114$ $\tau^2_{\text{Level 3}} = 0.048$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	$Q(41) =$ 158.347, $p < .001$
20 to 25 minutes (7 effects)	0.057 (-0.330, 0.444)	0.192	0.299	41	.767				
30 minutes (11 effects)	-0.137 (-0.448, 0.175)	0.154	-0.886	41	.381				
40 to 90 minutes (1 effect)	-0.318 (-1.280, 0.644)	0.476	-0.668	41	.508				
24 hours + (6 effects)	-0.043 (-0.481, 0.395)	0.217	-0.197	41	.845				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Epilepsy. Amongst studies of epilepsy, 18 studies reported word list measures.

Estimated pooled effect sizes for the immediate and delayed recall for word list measures in the combined epilepsy subgroup are shown in Table S46. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and positive effect size estimate for immediate recall relative to the delayed recall coefficient, $g = 0.049$ (95% CI [-0.136, 0.234], $p = .598$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{63} = 216.107$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.076$ and $\tau^2_{\text{Level } 2} = 0.092$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.013$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{3,61} = 0.380$, $p = .768$). The length of delay did not predict the delayed recall effect, $\hat{\beta} < 0.001$ (95% CI [< -0.001 , < 0.001], $p = .476$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = -0.135$ (95% CI [-0.589, 0.320], $p = .556$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{61} = 213.031$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.076$ and $\tau^2_{\text{Level } 2} = 0.095$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.006$.

Table S32

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Word List Recall in the Combined Epilepsy Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (25 effects)	0.762 (0.543, 0.980)	0.109	6.979	59	<.001				
Delayed Recall Intervals									
1 minute filled delay (5 effects)	-0.019 (-0.435, 0.397)	0.208	-0.092	59	.927	F(5, 59) = 0.780 , $p = .568$	$\tau^2_{\text{Level 2}} =$ 0.096	$R^2_{\text{Level 2}} = 0.102$ $R^2_{\text{Level 3}} = 0$	Q(59) = 206.599, $p < .001$
20 to 25 minutes (7 effects)	0.096 (-0.261, 0.453)	0.178	0.540	59	.591		$\tau^2_{\text{Level 3}} =$ 0.069		
30 minutes (16 effects)	-0.077 (-0.320, 0.167)	0.122	-0.632	59	.530				
40 to 90 minutes (3 effects)	-0.452 (-1.003, 0.098)	0.275	-1.644	59	.105				
24 hours + (9 effects)	0.062 (-0.266, 0.390)	0.164	0.378	59	.707				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Mild Cognitive Impairment. Amongst studies of MCI, 63 studies reported word list measures. Estimated pooled effect sizes for the immediate and delayed recall for word list measures in the MCI subgroup are shown in Table S47. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.133$ (95% CI [-0.296, 0.029], $p = .107$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{164} = 1704.941$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.661$ and $\tau^2_{\text{Level } 2} = 0.240$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.019$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,163} = 1.353$, $p = .261$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.003$ (95% CI [-0.022, 0.016], $p = .749$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{163} = 1654.697$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.659$ and $\tau^2_{\text{Level } 2} = 0.242$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.008$ and $R^2_{\text{Level } 2} = 0$.

Table S33

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Word List Recall in the MCI Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (80 effects)	1.598 (1.364, 1.833)	0.119	13.452	160	<.001				
Delayed Recall Intervals									
1 minute filled delay (2 effects)	0.184 (-0.719, 1.086)	0.457	0.402	160	.688	F(5,160) = 1.0 37, $p = .398$	$\tau^2_{\text{Level 2}} = 0.249$ $\tau^2_{\text{Level 3}} = 0.627$	$R^2_{\text{Level 2}} = 0.046$ $R^2_{\text{Level 3}} = 0$	Q(160) = 1591.273, $p < .001$
3 to 5 minutes (4 effects)	0.031 (-0.601, 0.663)	0.320	0.096	160	.923				
10 to 15 minutes (13 effects)	0.245 (-0.142, 0.632)	0.196	1.251	160	.213				
20 to 25 minutes (39 effects)	0.224 (-0.008, 0.457)	0.118	1.908	160	.058				
30 minutes (28 effects)	-0.030 (-0.301, 0.241)	0.137	-0.218	160	.828				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Alzheimer's Disease. Amongst studies of AD, 32 studies reported word list measures. Estimated pooled effect sizes for the immediate and delayed recall for word list measures in the AD subgroup are shown in Table S48. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, significant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.369$ (95% CI [-0.637, -0.101], $p = .008$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{75} = 706.303$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 1.335$ and $\tau^2_{\text{Level } 2} = 0.279$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.161$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{2,74} = 4.097$, $p = .021$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.015$ (95% CI [-0.048, 0.019], $p = .388$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{74} = 590.882$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 1.320$ and $\tau^2_{\text{Level } 2} = 0.283$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.147$ and $R^2_{\text{Level } 2} = 0$.

Table S34

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Word List Recall in the AD Subgroup

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (38 effects)	2.856 (2.430, 3.283)	0.214	13.351	72	<.001				
Delayed Recall Intervals									
1 minute filled delay (1 effect)	-0.488 (-1.821, 0.845)	0.669	-0.730	72	.468	F(4,72) = 3.62 9, <i>p</i> = .009	$\tau^2_{\text{Level 2}} = 0.260$ $\tau^2_{\text{Level 3}} = 1.211$	$R^2_{\text{Level 2}} = 0.082$ $R^2_{\text{Level 3}} = 0.218$	Q(72) = 498.808, <i>p</i> < .001
10 to 15 minutes (9 effects)	0.764 (0.221, 1.306)	0.272	2.806	72	.006				
20 to 25 minutes (17 effects)	0.455 (0.081, 0.830)	0.188	2.422	72	.018				
30 minutes (12 effects)	0.032 (-0.406, 0.470)	0.220	0.146	72	.885				

Note. Confidence intervals and *p* values are based on standard statistics, not robust variance estimation.

Story

Combined Patient Sample. Estimated pooled effect sizes for the immediate and delayed recall for story measures are shown in Table S44. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.149$ (95% CI [-0.228, -0.070], $p < .001$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{208} = 7650.895$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.880$ and $\tau^2_{\text{Level 2}} = 0.386$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level 3}} = 0.014$ and $R^2_{\text{Level 2}} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{2,68} = 6.673$, $p = .002$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI [< -0.001 , < 0.001], $p = .090$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{206} = 7636.828$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.858$ and $\tau^2_{\text{Level 2}} = 0.388$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level 3}} = 0.001$ and $R^2_{\text{Level 2}} = 0.001$.

Table S35

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Story Recall in the Combined Patient Samples

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R ²	Test for Residual Heterogeneity
Immediate Recall (Intercept) (103 effects)	1.198 (0.953, 1.442)	0.122	9.782	64	<.001				
Delayed Recall Intervals									
3 to 5 minutes (1 effect)	-0.432 (-0.513, -0.351)	0.041	-10.640	64	<.001	F(6,64) = 26.890, <i>p</i> < .001	$\tau^2_{\text{Level 2}} = 0.390$ $\tau^2_{\text{Level 3}} = 0.808$	R ² _{Level 2} = 0.059 R ² _{Level 3} = 0	Q(202) = 7494.551, <i>p</i> < .001
10 to 15 minutes (3 effects)	1.440 (0.474, 2.407)	0.484	2.978	64	.004				
20 to 25 minutes (13 effects)	0.046 (-0.236, 0.328)	0.141	0.326	64	.746				
30 minutes (80 effects)	0.110 (0.035, 0.185)	0.038	2.935	64	.005				
40 to 90 minutes (4 effects)	0.629 (-0.207, 1.464)	0.418	1.503	64	.138				
24 hours + (5 effects)	-0.106 (-0.553, 0.342)	0.224	-0.471	64	.639				

Note. Confidence intervals and *p* values are based on robust variance estimation.

Temporal Lobe Epilepsy. Amongst studies of TLE, 4 studies reported story recall measures. Estimated pooled effect sizes for the immediate and delayed recall for story recall measures in the TLE subgroup are shown in Table S45. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.159$ (95% CI [-0.516, 0.198], $p = .344$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{10} = 33.834$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.082$ and $\tau^2_{\text{Level } 2} = 0.052$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.008$ and $R^2_{\text{Level } 2} = 0.016$. All story recall measures in the TLE subgroup elicited delayed recall at 30 minutes (6 effects). Therefore, multivariate meta-regression using trial type by delay length interaction or categorical delay length as moderators were redundant.

Epilepsy. Amongst studies of epilepsy, 10 studies reported story recall measures. Estimated pooled effect sizes for the immediate and delayed recall for story measures in the combined epilepsy subgroup are shown in Table S46. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, non-significant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.085$ (95% CI [-0.288, 0.117], $p = .394$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{25} = 99.411$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.334$ and $\tau^2_{\text{Level } 2} = 0.031$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.001$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,24} = 1.434$, $p = .258$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI [< -0.001 , < 0.001], $p = .164$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{24} = 89.592$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.326$ and $\tau^2_{\text{Level } 2} = 0.027$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.107$ and $R^2_{\text{Level } 2} = 0.024$.

Table S36

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Story Recall in the Combined Epilepsy Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (13 effects)	0.954 (0.559, 1.349)	0.191	4.999	23	<.001				
Delayed Recall Intervals						$F(3,23) = 1.142,$ $p = .353$	$\tau^2_{\text{Level 2}} = 0.031$ $\tau^2_{\text{Level 3}} = 0.286$	$R^2_{\text{Level 2}} =$ 0.144 $R^2_{\text{Level 3}} = 0$	$Q(23) =$ 82.581, $p < .001$
30 minutes (11 effects)	0.150 (-0.070, 0.369)	0.106	1.413	23	.171				
40 to 90 minutes (1 effect)	-0.271 (-1.043, 0.502)	0.373	-0.725	23	.475				
24 hours + (2 effects)	-0.152 (-0.617, 0.312)	0.225	-0.678	23	.505				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Mild Cognitive Impairment. Amongst studies of MCI, 29 studies reported story recall measures. Estimated pooled effect sizes for the immediate and delayed recall for story measures in the MCI subgroup are shown in Table S47. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, significant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.212$ (95% CI [-0.371, -0.053], $p = .010$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{70} = 611.678$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.699$ and $\tau^2_{\text{Level } 2} = 0.082$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.180$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{2,69} = 3.687$, $p = .030$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI [< -0.001 , < 0.001], $p = .559$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was significant residual heterogeneity of effect sizes ($Q_{69} = 611.200$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.707$ and $\tau^2_{\text{Level } 2} = 0.083$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.167$ and $R^2_{\text{Level } 2} = 0$.

Table S37

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Story Recall in the MCI Subgroup

Moderators	Hedges' <i>g</i> (95% CI)	SE	<i>t</i>	df	<i>p</i>	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (35 effects)	1.365 (1.051, 1.680)	0.158	8.664	67	<.001				
Delayed Recall Intervals									
20 to 25 minutes (5 effects)	0.002 (-0.375, 0.379)	0.189	0.011	67	.992	F(4,67) = 3.985, <i>p</i> = .006	$\tau^2_{\text{Level 2}} = 0.071$ $\tau^2_{\text{Level 3}} = 0.629$	$R^2_{\text{Level 2}} = 0.069$ $R^2_{\text{Level 3}} = 0.289$	Q(67) = 476.720, <i>p</i> < .001
30 minutes (28 effects)	0.218 (0.047, 0.389)	0.086	2.547	67	.013				
40 to 90 minutes (2 effects)	0.834 (0.260, 1.408)	0.288	2.900	67	.005				
24 hours + (2 effects)	-0.243 (-0.883, 0.397)	0.321	-0.758	67	.451				

Note. Confidence intervals and *p* values are based on standard statistics, not robust variance estimation.

Alzheimer's Disease. Amongst studies of AD, 14 studies reported story recall measures. Estimated pooled effect sizes for the immediate and delayed recall for story measures in the AD subgroup are shown in Table S48. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.133$ (95% CI [-0.791, 0.525], $p = .682$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{29} = 300.262$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 2.593$ and $\tau^2_{\text{Level } 2} = 0.696$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.008$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{2,28} = 0.403$, $p = .672$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} < -0.001$ (95% CI [-0.003, 0.001], $p = .429$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was significant residual heterogeneity of effect sizes ($Q_{28} = 297.132$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 3.169$ and $\tau^2_{\text{Level } 2} = 0.674$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S38

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Story Recall in the AD Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (15 effects)	3.149 (2.137, 4.162)	0.492	6.405	25	<.001				
Delayed Recall Intervals									
10 to 15 minutes (2 effects)	1.400 (-0.711, 3.511)	1.025	1.366	25	.184	F(5,25) = 0.659, $p = .658$	$\tau^2_{\text{Level 2}} = 0.847$ $\tau^2_{\text{Level 3}} = 2.359$	$R^2_{\text{Level 2}} = 0.098$ $R^2_{\text{Level 3}} = 0$	Q(25) = 194.039, $p < .001$
20 to 25 minutes (3 effects)	-0.577 (-2.068, 0.914)	0.724	-0.797	25	.433				
30 minutes (9 effects)	0.115 (-0.796, 1.027)	0.443	0.260	25	.797				
40 to 90 minutes (1 effect)	0.899 (-1.627, 3.426)	1.227	0.733	25	.470				
24 hours + (1 effect)	0.011 (-2.966, 2.988)	1.445	0.008	25	.994				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Shape

Combined Patient Sample. Estimated pooled effect sizes for the immediate and delayed recall for shape measures are shown in Table S44. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, significant, and negative effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.096$ (95% CI [-0.185, -0.008], $p = .033$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{265} = 2690.010$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.607$ and $\tau^2_{\text{Level } 2} = 0.551$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{3,80} = 1.761$, $p = .161$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = 0.006$ (95% CI [-0.008, 0.020], $p = .411$). The estimated effect size coefficient for the trial type by delay length interaction indicated that delay length did not moderate the difference in effect size between immediate and delayed recall, $\hat{\beta} = 0.024$ (95% CI [-0.133, 0.181], $p = .758$). The Q statistic was significant, indicating residual heterogeneity of effect sizes $Q_{261} = 2565.416$, $p < .001$. The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.612$ and $\tau^2_{\text{Level } 2} = 0.540$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S39

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Shape Recall in the Combined Patient Samples

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (133 effects)	1.158 (0.951, 1.366)	0.104	11.102	79	<.001				
Delayed Recall Intervals									
3 to 5 minutes (2 effects)	-0.032 (-0.230, 0.165)	0.099	-0.326	79	.745	F(479) = 1.516, $p = .205$	$\tau^2_{\text{Level 2}} = 0.543$ $\tau^2_{\text{Level 3}} = 0.617$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	Q(260) = 2548.251, $p < .001$
10 to 15 minutes (6 effects)	0.011 (-0.036, 0.058)	0.024	0.460	79	.647				
20 to 25 minutes (53 effects)	0.111 (-0.059, 0.280)	0.085	1.302	79	.197				
30 minutes (71 effects)	0.107 (-0.036, 0.250)	0.072	1.489	79	.140				

Note. Confidence intervals and p values are based on robust variance estimation.

Temporal Lobe Epilepsy. Amongst studies of TLE, 3 studies reported shape recall measures. Estimated pooled effect sizes for the immediate and delayed recall for shape measures in the TLE subgroup are shown in Table S45. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and positive effect size estimate for immediate recall relative to the delayed recall coefficient, $g = 0.155$ (95% CI [-0.185, 0.495], $p = .324$). The Q statistic was not significant, indicating there was no residual heterogeneity of effect sizes ($Q_8 = 13.936$, $p = .083$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0$ and $\tau^2_{\text{Level } 2} = 0.027$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.010$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,7} = 0.618$, $p = .566$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.026$ (95% CI [-0.157, 0.106], $p = .657$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was no residual heterogeneity of effect sizes ($Q_7 = 13.454$, $p = .062$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0$ and $\tau^2_{\text{Level } 2} = 0.032$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0$.

Table S40

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Shape Recall in the TLE Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (5 effects)	0.879 (0.497, 1.261)	0.162	5.442	7	<.001				
Delayed Recall Intervals						$F(2,7) = 0.618,$ $p = .566$	$\tau^2_{\text{Level 2}} = 0.032$ $\tau^2_{\text{Level 3}} = 0.000$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0$	$Q(7) = 13.454,$ $p = .062$
20 to 25 minutes (2 effects)	-0.076 (-0.620, 0.468)	0.230	-0.330	7	.751				
30 minutes (3 effects)	-0.205 (-0.648, 0.238)	0.187	-1.094	7	.310				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Epilepsy. Amongst studies of epilepsy, 5 studies reported shape recall measures.

Estimated pooled effect sizes for the immediate and delayed recall for shape measures in the combined epilepsy subgroup are shown in Table S46. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and positive effect size estimate for immediate recall relative to the delayed recall coefficient, $g = 0.012$ (95% CI [-0.298, 0.322], $p = .933$). The Q statistic was significant, indicating residual heterogeneity of effect sizes ($Q_{12} = 25.277$, $p = .014$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0$ and $\tau^2_{\text{Level 2}} = 0.042$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level 3}} = 0$ and $R^2_{\text{Level 2}} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,11} = 0.905$, $p = .433$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.043$ (95% CI [-0.113, 0.027], $p = .207$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was significant residual heterogeneity of effect sizes ($Q_{11} = 20.869$, $p = .035$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level 3}} = 0.012$ and $\tau^2_{\text{Level 2}} = 0.031$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level 3}} = 0.119$ and $R^2_{\text{Level 2}} = 0$.

Table S41

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Shape Recall in the Combined Epilepsy Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (7 effects)	0.698 (0.395, 1.001)	0.138	5.066	11	<.001				
Delayed Recall Intervals						$F(2,11) = 0.371,$ $p = .698$	$\tau^2_{\text{Level } 2} = 0.041$ $\tau^2_{\text{Level } 3} = 0.000$	$R^2_{\text{Level } 2} = 0$ $R^2_{\text{Level } 3} = 0$	$Q(11) = 22.843,$ $p = .019$
20 to 25 minutes (3 effects)	0.111 (-0.332, 0.554)	0.201	0.550	11	.593				
30 minutes (4 effects)	-0.100 (-0.485, 0.284)	0.175	-0.574	11	.577				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Mild Cognitive Impairment. Amongst studies of MCI, 26 studies reported shape recall measures. Estimated pooled effect sizes for the immediate and delayed recall for shape measures in the MCI subgroup are shown in Table S47. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a small, nonsignificant, and positive effect size estimate for immediate recall relative to the delayed recall coefficient, $g = 0.009$ (95% CI [-0.189, 0.207], $p = .927$). The Q statistic was significant, indicating there was residual heterogeneity of effect sizes ($Q_{68} = 422.003$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.641$ and $\tau^2_{\text{Level } 2} = 0.133$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.001$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model did not predict the pooled effect size ($F_{2,66} = 0.638$, $p = .531$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = 0.023$ (95% CI [-0.018, 0.064], $p = .268$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was significant residual heterogeneity of effect sizes ($Q_{66} = 391.262$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 0.606$ and $\tau^2_{\text{Level } 2} = 0.132$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0$ and $R^2_{\text{Level } 2} = 0.056$.

Table S42

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Shape Recall in the MCI Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (35 effects)	1.393 (1.048, 1.738)	0.173	8.062	65	<.001				
Delayed Recall Intervals						$F(3,65) = 1.701,$ $p = .175$	$\tau^2_{\text{Level 2}} = 0.119$ $\tau^2_{\text{Level 3}} = 0.645$	$R^2_{\text{Level 2}} = 0$ $R^2_{\text{Level 3}} = 0.064$	$Q(65) =$ 389.462, $p < .001$
10 to 15 minutes (3 effects)	-0.632 (-1.292, 0.027)	0.330	-1.915	65	.060				
20 to 25 minutes (16 effects)	0.156 (-0.114, 0.426)	0.135	1.157	65	.252				
30 minutes (15 effects)	-0.017 (-0.300, 0.265)	0.141	-0.122	65	.903				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Alzheimer's Disease. Amongst studies of AD, 10 studies reported shape recall measures. Estimated pooled effect sizes for the immediate and delayed recall for shape measures in the AD subgroup are shown in Table S48. In the meta-regression with trial type (immediate or delayed) as the moderator, there was a medium, negative, and significant effect size estimate for immediate recall relative to the delayed recall coefficient, $g = -0.478$ (95% CI [-0.954, -0.002], $p = .049$). The Q statistic was significant, indicating there was residual heterogeneity of effect sizes ($Q_{26} = 213.097$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 3.156$ and $\tau^2_{\text{Level } 2} = 0.281$. The proportional reductions in heterogeneity associated with the trial type moderator were $R^2_{\text{Level } 3} = 0.219$ and $R^2_{\text{Level } 2} = 0$.

Results of the multivariate meta-regression with the trial type by delay length interaction as the moderator showed that the overall model predicted the pooled effect size ($F_{2,25} = 3.965$, $p = .032$). The length of delay used did not predict the delayed recall effect, $\hat{\beta} = -0.115$ (95% CI [-0.235, 0.006], $p = .061$). The trial type by delay length interaction term was a redundant predictor so was not included in the model. There was significant residual heterogeneity of effect sizes ($Q_{25} = 211.171$, $p < .001$). The estimated residual heterogeneity variances in the true effects were $\tau^2_{\text{Level } 3} = 2.705$ and $\tau^2_{\text{Level } 2} = 0.298$. The proportional reductions in heterogeneity associated with the trial type by delay length interaction moderator were $R^2_{\text{Level } 3} = 0.172$ and $R^2_{\text{Level } 2} = 0.120$.

Table S43

Multivariate Meta-Regression for the Moderating Effect of Delay Length as a Categorical Variable for Shape Recall in the AD Subgroup

Moderators	Hedges' g (95% CI)	SE	t	df	p	Test of Moderators	τ^2	R^2	Test for Residual Heterogeneity
Immediate Recall (Intercept) (14 effects)	2.921 (1.975, 3.868)	0.459	6.371	24	<.001				
Delayed Recall Intervals						$F(3,24) = 3.975,$ $p = .020$	$\tau^2_{\text{Level 2}} = 0.274$ $\tau^2_{\text{Level 3}} = 2.260$	$R^2_{\text{Level 2}} = 0.265$ $R^2_{\text{Level 3}} = 0.239$	$Q(24) =$ 191.087, $p < .001$
10 to 15 minutes (1 effect)	3.247 (0.908, 5.586)	1.133	2.865	24	.009				
20 to 25 minutes (7 effects)	0.627 (-0.038, 1.292)	0.322	1.945	24	.064				
30 minutes (6 effects)	0.083 (-0.598, 0.764)	0.330	0.252	24	.803				

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Table S44

Estimated Pooled Effect Sizes for Immediate and Delayed Recall for Word List, Story, and Shape Recall Memory Measures in the Combined Patient Samples

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Word List								
Immediate Recall	1.077 (0.950, 1.204)	0.064	16.704	221	<.001	$I^2_{\text{Level 2}} = 64.21\%$ $I^2_{\text{Level 3}} = 33.44\%$ $I^2_{\text{Total}} = 97.65\%$	$\tau^2_{\text{Level 2}} = 0.698$ $\tau^2_{\text{Level 3}} = 0.364$	$Q(347) = 7637.745$, $p < .001$
Delayed Recall	1.107 (0.974, 1.240)	0.068	16.384	221	<.001	$I^2_{\text{Level 2}} = 43.49\%$ $I^2_{\text{Level 3}} = 54.18\%$ $I^2_{\text{Total}} = 97.67\%$	$\tau^2_{\text{Level 2}} = 0.506$ $\tau^2_{\text{Level 3}} = 0.630$	$Q(462) = 8794.962$, $p < .001$
Story								
Immediate Recall	1.309 (1.070, 1.548)	0.120	10.927	70	<.001	$I^2_{\text{Level 2}} = 82.78\%$ $I^2_{\text{Level 3}} = 15.42\%$ $I^2_{\text{Total}} = 98.2\%$	$\tau^2_{\text{Level 2}} = 1.023$ $\tau^2_{\text{Level 3}} = 0.191$	$Q(102) = 4155.387$, $p < .001$
Delayed Recall	1.450 (1.151, 1.749)	0.150	9.667	70	<.001	$I^2_{\text{Level 2}} = 51.6\%$ $I^2_{\text{Level 3}} = 47.04\%$ $I^2_{\text{Total}} = 98.63\%$	$\tau^2_{\text{Level 2}} = 0.909$ $\tau^2_{\text{Level 3}} = 0.828$	$Q(106) = 5110.019$, $p < .001$
Shape								
Immediate Recall	1.242 (1.010, 1.474)	0.116	10.666	83	<.001	$I^2_{\text{Level 2}} = 65.3\%$ $I^2_{\text{Level 3}} = 30.22\%$ $I^2_{\text{Total}} = 95.52\%$	$\tau^2_{\text{Level 2}} = 0.909$ $\tau^2_{\text{Level 3}} = 0.421$	$Q(132) = 1530.112$, $p < .001$
Delayed Recall	1.343 (1.100, 1.586)	0.122	10.993	83	<.001	$I^2_{\text{Level 2}} = 72.88\%$ $I^2_{\text{Level 3}} = 23.14\%$ $I^2_{\text{Total}} = 96.02\%$	$\tau^2_{\text{Level 2}} = 1.168$ $\tau^2_{\text{Level 3}} = 0.371$	$Q(133) = 1678.039$, $p < .001$

Note. Confidence intervals and p values are based on robust variance estimations.

Table S45*Estimated Pooled Effect Sizes for Immediate and Delayed Recall for Word List, Story, and Shape Recall Memory Measures in the TLE Subgroup*

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Word List								
Immediate Recall	0.922 (0.658, 1.187)	0.125	7.350	17	<.001	$I^2_{\text{Level 2}} = 26.05\%$ $I^2_{\text{Level 3}} = 42.7\%$ $I^2_{\text{Total}} = 68.75\%$	$\tau^2_{\text{Level 2}} = 0.052$ $\tau^2_{\text{Level 3}} = 0.085$	$Q(17) = 45.885$, $p < .001$
Delayed Recall	0.848 (0.620, 1.075)	0.111	7.626	28	<.001	$I^2_{\text{Level 2}} = 60.51\%$ $I^2_{\text{Level 3}} = 8.22\%$ $I^2_{\text{Total}} = 68.74\%$	$\tau^2_{\text{Level 2}} = 0.132$ $\tau^2_{\text{Level 3}} = 0.018$	$Q(28) = 109.748$, $p < .001$
Story								
Immediate Recall	1.408 (0.784, 2.032)	0.243	5.800	5	.002	$I^2_{\text{Level 2}} = 15.59\%$ $I^2_{\text{Level 3}} = 64.78\%$ $I^2_{\text{Total}} = 80.37\%$	$\tau^2_{\text{Level 2}} = 0.039$ $\tau^2_{\text{Level 3}} = 0.160$	$Q(5) = 22.356$, $p < .001$
Delayed Recall	1.537 (1.108, 1.966)	0.167	9.202	5	<.001	$I^2_{\text{Level 2}} = 62.97\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 62.97\%$	$\tau^2_{\text{Level 2}} = 0.085$ $\tau^2_{\text{Level 3}} = 0.000$	$Q(5) = 15.201$, $p = .010$
Shape								
Immediate Recall	0.882 (0.403, 1.361)	0.172	5.115	4	.007	$I^2_{\text{Level 2}} = 42.53\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 42.53\%$	$\tau^2_{\text{Level 2}} = 0.049$ $\tau^2_{\text{Level 3}} = 0.000$	$Q(4) = 9.570$, $p = .048$
Delayed Recall	0.723 (0.323, 1.123)	0.144	5.022	4	.007	$I^2_{\text{Level 2}} = 12.47$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 12.47\%$	$\tau^2_{\text{Level 2}} = 0.009$ $\tau^2_{\text{Level 3}} = 0.000$	$Q(4) = 4.212$, $p = .378$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Table S46

Estimated Pooled Effect Sizes for Immediate and Delayed Recall for Word List, Story, and Shape Recall Memory Measures in the Combined Epilepsy Subgroup

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Word List								
Immediate Recall	0.745 (0.506, 0.984)	0.116	6.432	24	<.001	$I^2_{\text{Level 2}} = 17.83\%$ $I^2_{\text{Level 3}} = 54.67\%$ $I^2_{\text{Total}} = 72.51\%$	$\tau^2_{\text{Level 2}} = 0.043$ $\tau^2_{\text{Level 3}} = 0.133$	$Q(24) = 73.536$, $p < .001$
Delayed Recall	0.725 (0.534, 0.916)	0.095	7.669	39	<.001	$I^2_{\text{Level 2}} = 55.11\%$ $I^2_{\text{Level 3}} = 12.16\%$ $I^2_{\text{Total}} = 67.27\%$	$\tau^2_{\text{Level 2}} = 0.122$ $\tau^2_{\text{Level 3}} = 0.027$	$Q(39) = 140.207$, $p < .001$
Story								
Immediate Recall	0.958 (0.508, 1.408)	0.207	4.640	12	<.001	$I^2_{\text{Level 2}} = 8.37\%$ $I^2_{\text{Level 3}} = 77.19\%$ $I^2_{\text{Total}} = 85.56\%$	$\tau^2_{\text{Level 2}} = 0.037$ $\tau^2_{\text{Level 3}} = 0.346$	$Q(12) = 60.080$, $p < .001$
Delayed Recall	1.051 (0.647, 1.455)	0.187	5.624	13	<.001	$I^2_{\text{Level 2}} = 26.62\%$ $I^2_{\text{Level 3}} = 56.69\%$ $I^2_{\text{Total}} = 83.31\%$	$\tau^2_{\text{Level 2}} = 0.100$ $\tau^2_{\text{Level 3}} = 0.213$	$Q(13) = 66.998$, $p < .001$
Shape								
Immediate Recall	0.692 (0.304, 1.080)	0.159	4.366	6	.005	$I^2_{\text{Level 2}} = 49.89\%$ $I^2_{\text{Level 3}} = 3.67\%$ $I^2_{\text{Total}} = 53.56\%$	$\tau^2_{\text{Level 2}} = 0.074$ $\tau^2_{\text{Level 3}} = 0.005$	$Q(6) = 16.178$, $p = .013$
Delayed Recall	0.701 (0.417, 0.985)	0.116	6.046	6	<.001	$I^2_{\text{Level 2}} = 5.69\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 5.69\%$	$\tau^2_{\text{Level 2}} = 0.004$ $\tau^2_{\text{Level 3}} = 0.000$	$Q(6) = 4.658$, $p = .588$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Table S47*Estimated Pooled Effect Sizes for Immediate and Delayed Recall for Word List, Story, and Shape Recall Memory Measures in the MCI Subgroup*

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Word List								
Immediate Recall	1.586 (1.385, 1.787)	0.101	15.674	79	<.001	$I^2_{\text{Level 2}} = 93.59\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 93.59\%$	$\tau^2_{\text{Level 2}} = 0.705$ $\tau^2_{\text{Level 3}} = 0$	$Q(79) = 776.031$, $p < .001$
Delayed Recall	1.743 (1.499, 1.987)	0.123	14.181	85	<.001	$I^2_{\text{Level 2}} = 39.77\%$ $I^2_{\text{Level 3}} = 55.26\%$ $I^2_{\text{Total}} = 95.03\%$	$\tau^2_{\text{Level 2}} = 0.405$ $\tau^2_{\text{Level 3}} = 0.562$	$Q(85) = 1236.307$, $p < .001$
Story								
Immediate Recall	1.335 (1.086, 1.584)	0.123	10.896	34	<.001	$I^2_{\text{Level 2}} = 80.01\%$ $I^2_{\text{Level 3}} = 14.03\%$ $I^2_{\text{Total}} = 94.04\%$	$\tau^2_{\text{Level 2}} = 0.362$ $\tau^2_{\text{Level 3}} = 0.063$	$Q(34) = 307.771$, $p < .001$
Delayed Recall	1.575 (1.229, 1.922)	0.171	9.229	36	<.001	$I^2_{\text{Level 2}} = 40.98\%$ $I^2_{\text{Level 3}} = 55.63\%$ $I^2_{\text{Total}} = 96.62\%$	$\tau^2_{\text{Level 2}} = 0.364$ $\tau^2_{\text{Level 3}} = 0.494$	$Q(36) = 532.409$, $p < .001$
Shape								
Immediate Recall	1.399 (1.037, 1.761)	0.178	7.854	34	<.001	$I^2_{\text{Level 2}} = 26.92\%$ $I^2_{\text{Level 3}} = 63.87\%$ $I^2_{\text{Total}} = 90.79\%$	$\tau^2_{\text{Level 2}} = 0.246$ $\tau^2_{\text{Level 3}} = 0.584$	$Q(34) = 277.803$, $p < .001$
Delayed Recall	1.410 (1.062, 1.757)	0.171	8.246	34	<.001	$I^2_{\text{Level 2}} = 46.22\%$ $I^2_{\text{Level 3}} = 44.06\%$ $I^2_{\text{Total}} = 90.29\%$	$\tau^2_{\text{Level 2}} = 0.402$ $\tau^2_{\text{Level 3}} = 0.383$	$Q(34) = 284.248$, $p < .001$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

Table S48*Estimated Pooled Effect Sizes for Immediate and Delayed Recall for Word List, Story, and Shape Recall Memory Measures in the AD Subgroup*

Meta-Analysis Model	Hedges' g (95% CI)	SE	t	df	p	I^2	τ^2	Test for Heterogeneity
Word List								
Immediate Recall	2.866 (2.436, 3.297)	0.212	13.493	37	<.001	$I^2_{\text{Level 2}} = 20.76\%$ $I^2_{\text{Level 3}} = 75.11\%$ $I^2_{\text{Total}} = 95.87\%$	$\tau^2_{\text{Level 2}} = 0.560$ $\tau^2_{\text{Level 3}} = 1.134$	$Q(37) = 273.199$, $p < .001$
Delayed Recall	3.308 (2.785, 3.832)	0.258	12.801	38	<.001	$I^2_{\text{Level 2}} = 17\%$ $I^2_{\text{Level 3}} = 80.09\%$ $I^2_{\text{Total}} = 97.09\%$	$\tau^2_{\text{Level 2}} = 0.381$ $\tau^2_{\text{Level 3}} = 1.797$	$Q(38) = 508.596$, $p < .001$
Story								
Immediate Recall	3.267 (2.179, 4.355)	0.507	6.439	14	<.001	$I^2_{\text{Level 2}} = 98.74\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 98.74\%$	$\tau^2_{\text{Level 2}} = 3.581$ $\tau^2_{\text{Level 3}} = 0$	$Q(14) = 123.625$, $p < .001$
Delayed Recall	3.463 (2.252, 4.674)	0.568	6.093	15	<.001	$I^2_{\text{Level 2}} = 46.12\%$ $I^2_{\text{Level 3}} = 52.71\%$ $I^2_{\text{Total}} = 98.84\%$	$\tau^2_{\text{Level 2}} = 2.081$ $\tau^2_{\text{Level 3}} = 2.378$	$Q(15) = 212.042$, $p < .001$
Shape								
Immediate Recall	2.980 (2.045, 3.915)	0.433	6.885	13	<.001	$I^2_{\text{Level 2}} = 93.53\%$ $I^2_{\text{Level 3}} = 0\%$ $I^2_{\text{Total}} = 93.53\%$	$\tau^2_{\text{Level 2}} = 2.370$ $\tau^2_{\text{Level 3}} = 0$	$Q(13) = 136.094$, $p < .001$
Delayed Recall	3.499 (2.177, 4.821)	0.612	5.717	13	<.001	$I^2_{\text{Level 2}} = 33.86\%$ $I^2_{\text{Level 3}} = 62.32\%$ $I^2_{\text{Total}} = 96.18\%$	$\tau^2_{\text{Level 2}} = 1.646$ $\tau^2_{\text{Level 3}} = 3.029$	$Q(13) = 166.744$, $p < .001$

Note. Confidence intervals and p values are based on standard statistics, not robust variance estimation.

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Appendices

Appendix 1

PsycINFO and MEDLINE Search Terms

Database	Search Terms
PsycINFO	1 ("Neuropsychological test*" or "Neuropsychological assessment*" or "Cognitive Assessment*" or "memory measure*" or "Memory test*" or "Memory assessment*" or "Immediate test*" or "Delayed test*" or "Free recall" or "Cued recall" or "Recognition test*" or "Delayed Recall" or "Immediate Recall" or "memory task*" or "story recall" or "word list*" or "list learning" or "verbal recall" or "visual recall" or "logical memory" or "Wechsler Memory Scale*" or "Rey Auditory Verbal Learning Test*" or "California Verbal Learning Test*").ab,ti.
	2 "memory and learning measures"/ or "neuropsychological assessment"/ or "cognitive assessment"/ or "free recall"/
	3 1 or 2
	4 ("memory disorder*" or "memory impairment*" or "memory deficit*" or "neurocognitive disorder*" or "Neurodegenerative Disease*" or "Dementia" or "Alzheimer's Disease" or "Huntingtons Disease" or "Parkinson's Disease" or "parkinsonism" or "mild cognitive impairment" or "Traumatic Brain Injury" or "Epilepsy" or "wernicke's syndrome" or "Korsakoff syndrome" or "Wernicke–Korsakoff syndrome" or "Stroke" or "Amnesia").ab,ti.
	5 "memory disorders"/ or "neurodegenerative diseases"/ or "neurocognitive disorders"/ or "dementia"/ or "mild cognitive impairment"/ or "alzheimer's disease"/ or "parkinson's disease"/ or "parkinsonism"/ or "huntingtons disease"/ or "wernicke's syndrome"/ or "korsakoffs psychosis"/ or "epilepsy"/ or "traumatic brain injury"/ or "amnesia"/
	6 ("Rapid forgetting" or "Accelerated forgetting" or "Accelerated long-term forgetting" or "ALF").ab,ti.
	7 4 or 5 or 6
	8 (Memory or "Episodic memory" or "Memory Consolidation" or "Long*Term Memory" or Forgetting or "Delayed memory" or "Immediate Memory").ab,ti.
	9 memory/ or episodic memory/ or explicit memory/ or forgetting/ or long term memory/ or memory consolidation/
	10 8 or 9
	11 3 and 7 and 10
	12 limit 11 to (peer reviewed journal and human and english language and adulthood <18+ years> and last 5 years)

IMMEDIATE VERSUS DELAYED MEMORY MEASURES

Database	Search Terms (<i>cont.</i>)
MEDLINE	1 ("Neuropsychological test*" or "Neuropsychological assessment*" or "Cognitive Assessment*" or "memory measure*" or "Memory test*" or "Memory assessment*" or "Immediate test*" or "Delayed test*" or "Free recall" or "Cued recall" or "Recognition test*" or "Delayed Recall" or "Immediate Recall" or "memory task*" or "story recall" or "word list*" or "list learning" or "verbal recall" or "visual recall" or "logical memory" or "Wechsler Memory Scale*" or "Rey Auditory Verbal Learning Test*" or "California Verbal Learning Test*").ab,ti.
	2 "memory and learning tests"/ or "neuropsychological tests"/ or "Wechsler Memory Scale"/
	3 1 or 2
	4 ("memory disorder*" or "memory impairment*" or "memory deficit*" or "neurocognitive disorder*" or "Neurodegenerative Disease*" or "Dementia" or "Alzheimer's Disease" or "Huntingtons Disease" or "Parkinson's Disease" or "parkinsonism" or "mild cognitive impairment" or "Traumatic Brain Injury" or "Epilepsy" or "wernicke's syndrome" or "Korsakoff syndrome" or "Wernicke–Korsakoff syndrome" or "Stroke" or "Amnesia").ab,ti.
	5 "memory disorders"/ or "neurocognitive disorders"/ or "neurodegenerative diseases"/ or "dementia"/ or "alzheimer's disease"/ or "huntington disease"/ or "parkinson disease"/ or "parkinsonian disorders"/ or "cognitive dysfunction"/ or "Brain Injuries, traumatic"/ or "epilepsy"/ or "wernicke encephalopathy"/ or "korsakoff syndrome"/ or "amnesia"/ or "stroke"/
	6 ("Rapid forgetting" or "Accelerated forgetting" or "Accelerated long-term forgetting" or "ALF").ab,ti.
	7 4 or 5 or 6
	8 (Memory or "Episodic memory" or "Memory Consolidation" or "Long*Term Memory" or Forgetting or "Delayed memory" or "Immediate Memory").ab,ti.
	9 "memory"/ or "memory, episodic"/ or "memory consolidation"/ or "memory, long-term"/ or "mental recall"/
	10 8 or 9
	11 3 and 7 and 10
	12 limit 11 to (english language and humans and "all adult (19 plus years)" and journal article and last 5 years)

Appendix 2*Memory Test Name Abbreviations*

Abbreviation	Definition
10/36 SRT	10/36 Spatial Recall Test
15-WLT	15 Word List Learning Test
3W3S-Shapes	Three Words-Three Shapes - Shapes
3W3S-Words	Three Words-Three Shapes - Words
8/30 SRT	8/30 Spatial Recall Test
ACE-R	Addenbrooke's Cognitive Examination – Revised
AMIPB	Adult Memory and Information Processing Battery
AVLT	Auditory Verbal Learning Test
BALE Story Recall	Bateria de Avaliacao da Linguagem no Envelhecimento Story Recall
BCB-Edu	Brief Cognitive Battery-Education
BSRT	Babcock Story Recall Test
BVMT-R	Brief Visuospatial Memory Test - Revised
CAVLT	Chinese Version Auditory Verbal Learning Test
CERAD-WL	Consortium to Establish a Registry for Alzheimer's Disease Word List Memory Task
CNTB-RPT	European Cross-Cultural Neuropsychological Test Battery - Recall of Pictures Test
COGBAT-FM	Cognitive Basic Assessment – Figure Memory
COMT	Common Objects Memory Test
CSRT	Coetsier Story Recall Test
CVLT	California Verbal Learning Test
CVVLT	Chinese Version Verbal Learning Test
Face-Name	Face-Name Association Task
FMT	Figure Memory Test
FNAME	Face Name Associative Memory Exam
HVLT	Hopkins Verbal Learning Test
JOL	Judgment of Learning Task
LASSI-L	Loewenstein-Acevedo Scales for Semantic Interference and Learning
MAS	Memory Assessment Scale
MCT	Memory Capacity Test
NAB List Learning	Neuropsychological Assessment Battery List Learning Task
NPT	Car Numberplate Recall Test
O-VMPT	Öktem Verbal Memory Processes Test
PD-CRS	Parkinson's Cognitive Rating Scale
People Test	People Test from the Doors and People Test Battery
PGI	P.G.I. Memory Scale
PMT	Passage Memory Test
RAVLT	Rey Auditory Verbal Learning Test
RBANS	Repeatable Battery for the Assessment of Neuropsychological Status
RBMT-3	Rivermead Behavioural Memory Test, 3rd Edition

Abbreviation	Definition (<i>cont.</i>)
RCFT	Rey Complex Figure Test
Rey 15-WLT	Rey 15 Word List Test
ROCFT	Rey-Osterrieth complex figure test
SKT	Short Cognitive Performance Test
SMT	Scene Memory Task
SOVIET Route	Spatial Orientation in Immersive Virtual Environment Test Route Task
SRFT	Simple Rey Figure Test
SVLT	Seoul Verbal Learning Test
TRIACOG	Cognitive Screening Post-Stroke Evaluation
UDS Passage	Uniform Data Set Passage Recall
VAMT-26	Verbal Affective Memory Task-26
VDM	Value-Directed Memory Task
VLLT	Verbal List Learning Test
VLMT	Verbal Learning Memory Test
VMPS	Verbal Memory Processes Scale
VMPT	Verbal Memory Processes Test
VRT	Visual Reproduction Test
WLT	Word List Test
WMS-III	Wechsler Memory Scale, 3 rd Edition
WMS-IV	Wechsler Memory Scale, 4 th Edition
WMS-R	Wechsler Memory Scale, Revised
WMS-RR	Wechsler Memory Scale, Russell's Revision

Appendix 3.*Patient Group Abbreviations for Forest Plots*

Abbreviation	Definition
AB	amyloid-beta
ACA	Accelerated Cognitive Ageing
ACI	Acute cerebellar infraction
AD	Alzheimer's disease
ADHD	Attention Deficit Hyperactivity Disorder
ALS	Amyotrophic Lateral Sclerosis
aMCI	Amnesic Mild Cognitive Impairment
AN	Anorexia nervosa
AP	Affective Psychoses
APOE4	Apolipoprotein E gene
ASD	Autism Spectrum Disorder
AUD	Alcohol use disorder
BCS	Breast cancer survivors
BD	Bipolar Disorder
BD Type I	Bipolar Disorder Type I
BMS	Benign multiple sclerosis
bvFTD	Behavioural variant frontotemporal dementia
CBS	Corticobasal syndrome
CC	Cognitive complaints
CH	Controlled hypertensive
CI	Cognitive impairment
CMI	Chiari malformation type I
CN	Cognitively normal
CO	Carbon monoxide
COPD	Chronic obstructive pulmonary disease
COVID-19	COVID-19
CSVD	Cerebral small vessel disease
DAT	Dementia of an Alzheimer's type
DMD	Duchenne muscular dystrophy
EOAD	Early onset Alzheimer's disease
ET	Essential tremor
FDDP	First-episode drug-naïve depressive patients
FLE	Frontal lobe epilepsy
GCP	Gynaecological cancer patients
GGE	Genetic generalized epilepsy
HAND	HIV-associated neurocognitive disorders
HD	Huntington's Disease
HI	Hearing impairment
HIV+	HIV Positive
HTLV-1	Human T-cell lymphocyte virus type 1
IGE	Idiopathic Generalized Epilepsies

Abbreviation	Definition (<i>cont.</i>)
iNPH	Idiopathic normal pressure hydrocephalus
iRBD	Idiopathic rapid eye movement sleep behaviour disorder
JME	Juvenile myoclonic epilepsy
KS	Korsakoff Syndrome
LOAD	Late-onset Alzheimer's disease
LOC	Loss of consciousness
L-TLE	Left Temporal Lobe Epilepsy
MCI	Mild Cognitive impairment
M-CMB	Mixed Lobar cerebral microbleeds
MDD	Major Depressive Disorder
mdMCI	Multiple Domain MCI
MME	Manganese-methcathinone encephalopathy
MS	Multiple sclerosis
msTBI	Moderate-to-severe traumatic brain injury
naMCI	Non-amnestic MCI
NFL	National Football League
NMDAR	Anti-N-methyl-D-aspartate receptor
OLOAD	Offspring of late-onset Alzheimer's disease patients
PD	Parkinson's Disease
PDD	Dementia in Parkinson's disease
PSEN1	Presenilin-1 E280A mutation
PTA	Posttraumatic amnesia
PTLDS	Post-Treatment Lyme Disease Syndrome
PTSD	Post-traumatic stress disorder
RBD	Rapid eye movement sleep behaviour disorder
R-TLE	Right Temporal Lobe Epilepsy
SAH	Subarachnoid haemorrhage
SCD	Subjective cognitive decline
SCI	Subjective cognitive impairment
S-CMB	Strictly lobular cerebral microbleeds
SD	Sub-threshold depression
sdMCI	Single Domain MCI
SIVD	Subcortical ischemic vascular disease
SMC	Subjective memory complaint
SZ	Schizophrenia
SZAD	Schizoaffective disorder
T2DM	Type 2 diabetes mellitus
TBI	Traumatic brain injury
TEA	Transient Epileptic Amnesia
TLE	Temporal Lobe Epilepsy
WMH	White Matter Hyperintensities
ZMS	Zero memory score