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**Article:**

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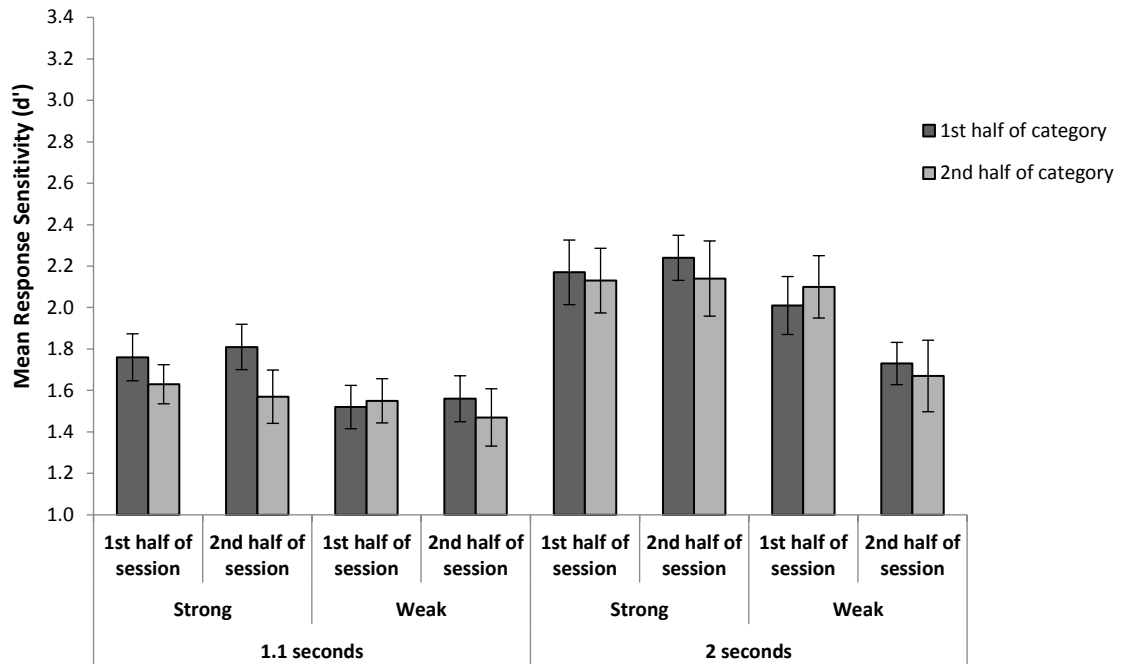
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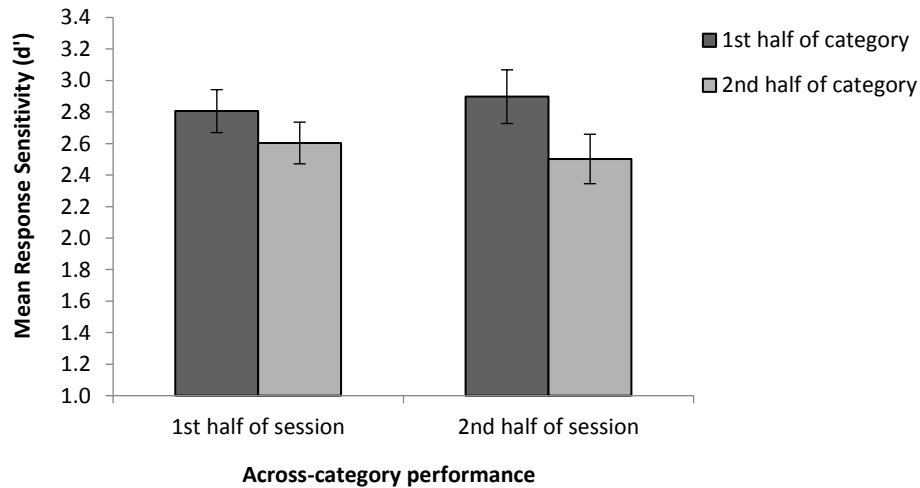
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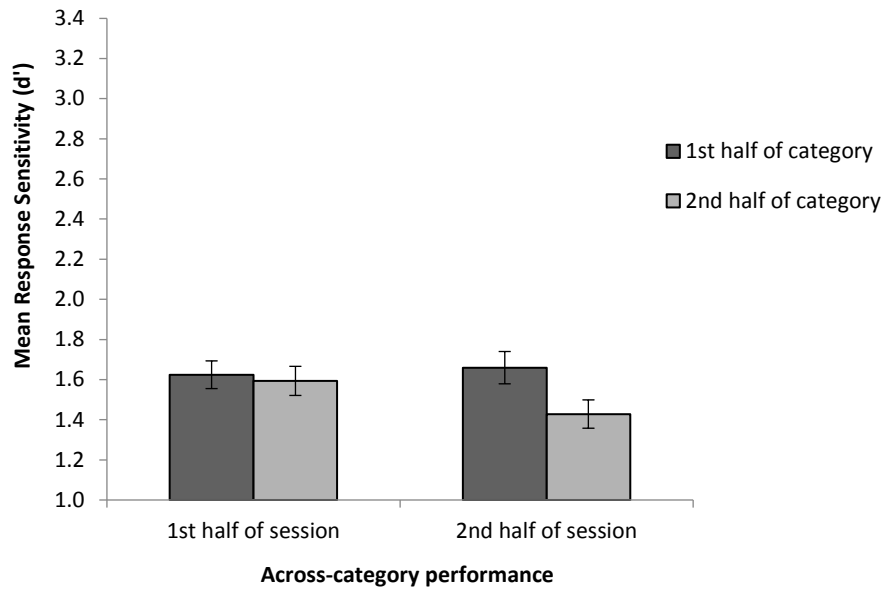
## Figures



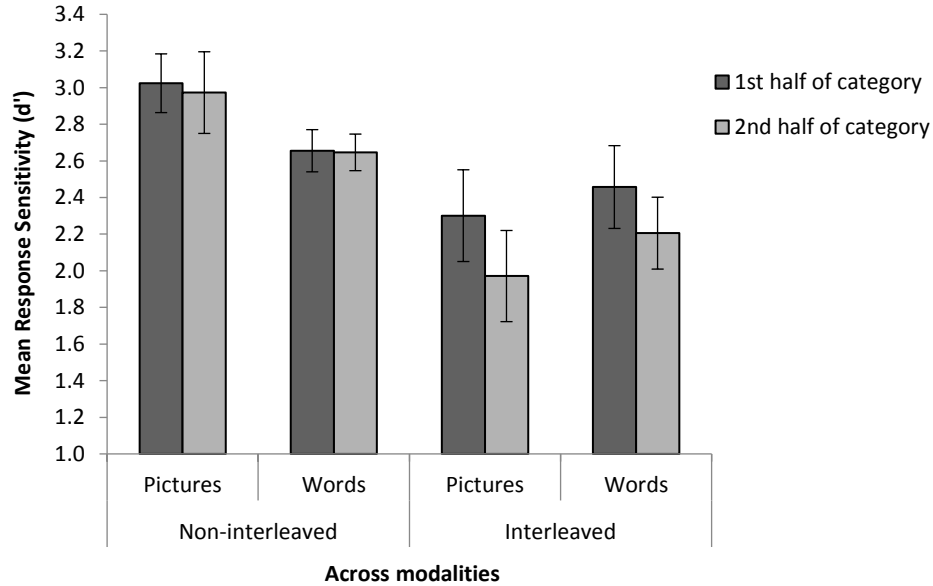
**Figure 1:** Mean response sensitivity ( $d'$ ) in Experiment 1 (Thematic-matching), for the first and second half of each category (within-category fatigue) and across the testing session (across-category fatigue), split by strong and weak targets, at the two presentation speeds. Error bars show SE of the mean.



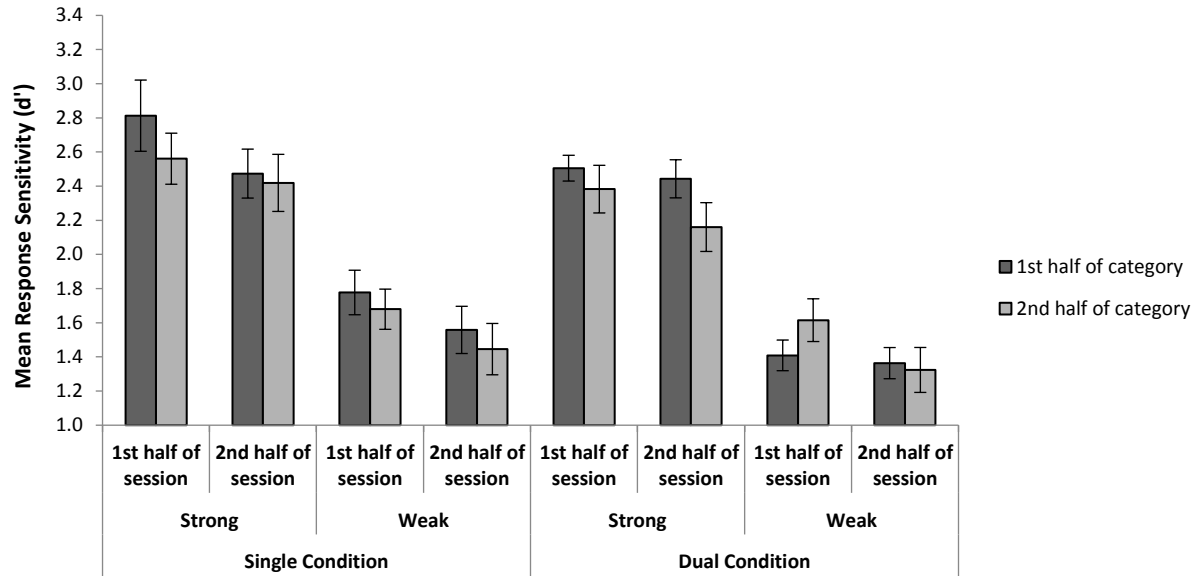
**Figure 2:** Mean response sensitivity ( $d'$ ) in Experiment 2 (Taxonomic-matching), for the first and second half of each category (within-category fatigue) and across the testing session (across-category fatigue). Error bars show SE of the mean.



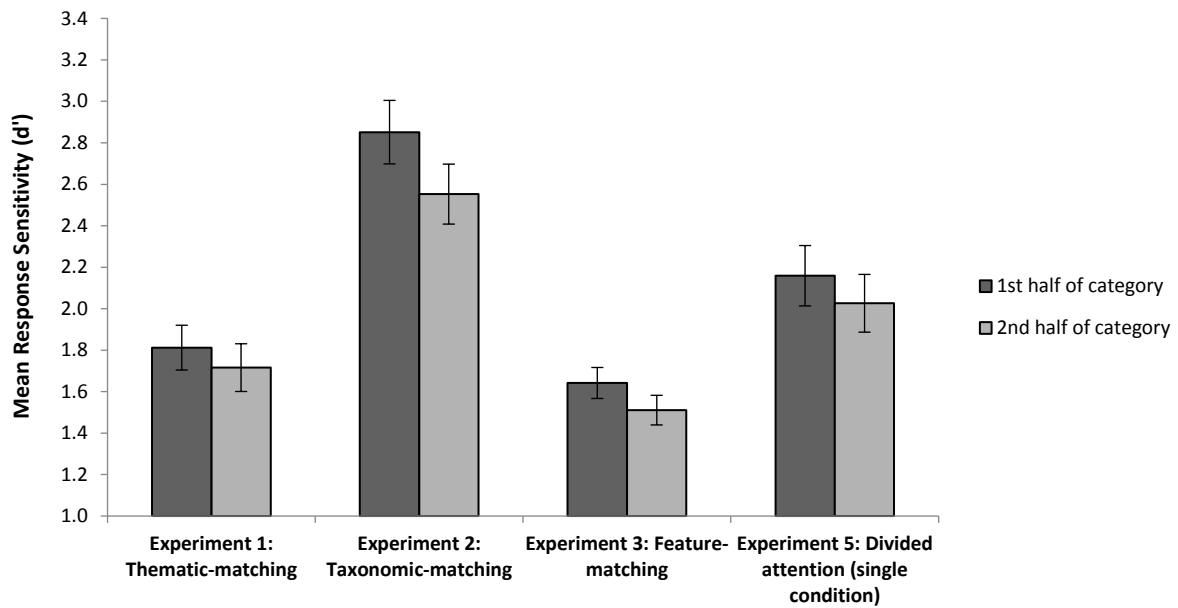
**Figure 3:** Mean response sensitivity ( $d'$ ) in Experiment 3 (Feature-matching), for the first and second half of each category (within-category fatigue) and across the testing session (across-category fatigue). Error bars show  $SE$  of the mean.



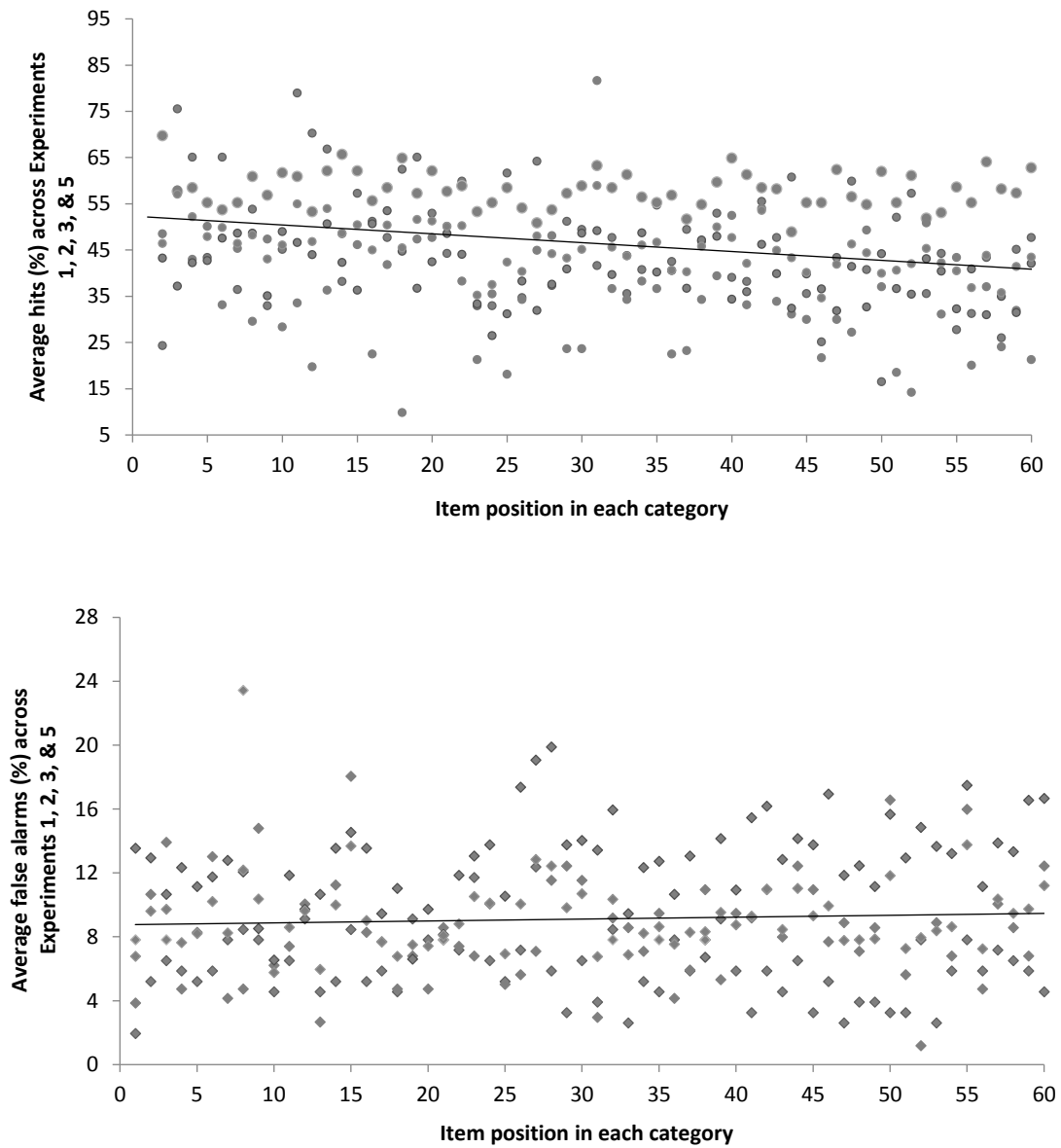
**Figure 4:** Mean response sensitivity ( $d'$ ) in Experiment 4 (Effect across modalities), shown individually for the pictures and words modality in the interleaved and non-interleaved conditions, in the first and second half of each category (within-category decline), Error bars show  $SE$  of the mean.



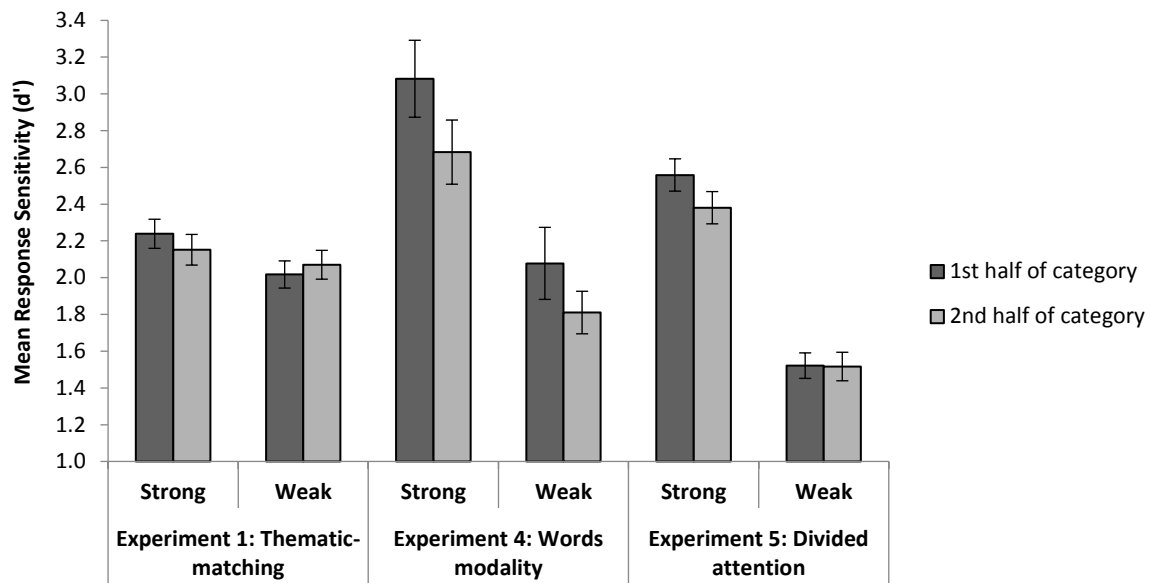
**Figure 5:** Mean response sensitivity ( $d'$ ) in Experiment 5 (Effect of divided attention), shown individually for the strong/weak targets, in the two conditions (single/dual), and split by first and second half of each category (within-category fatigue) and across the testing session (across-category fatigue). Error bars show SE of the mean.



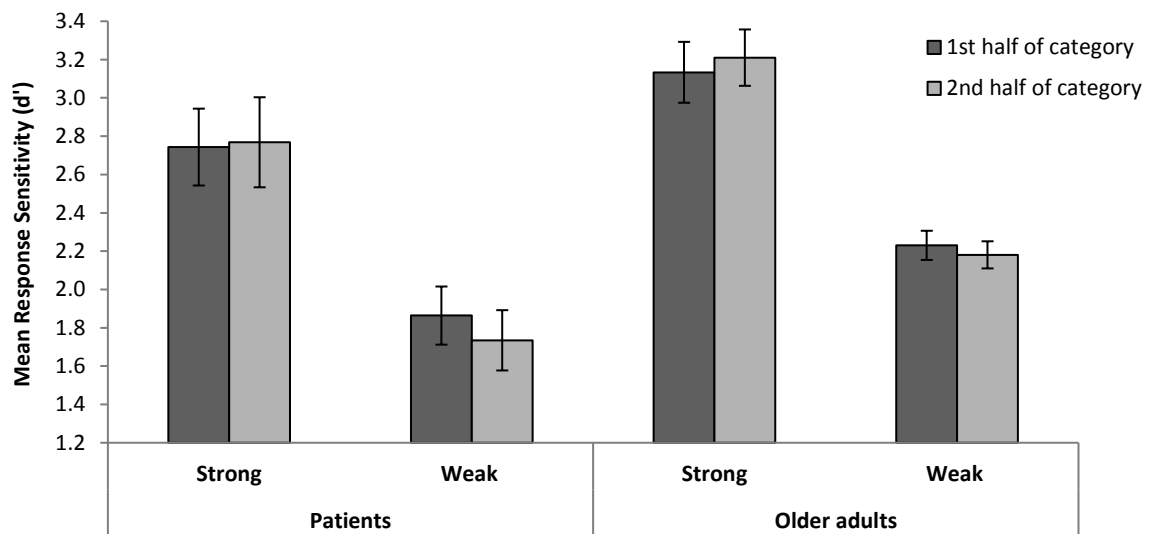
**Figure 6:** Mean response sensitivity ( $d'$ ), shown individually for the first and second half of each category (within-category fatigue) and across the testing session (across-category fatigue), for Experiments 1, 2, 3 and 5 (single condition), at the presentation speed of 1.1 seconds. Error bars show SE of the mean.



**Figure 7:** Average percentage of hits and false alarms for items within each category and across participants in Experiments 1 (Thematic-matching), 2 (Taxonomic-matching), 3 (Feature-matching) and 5 (Divided attention: single condition).



**Figure 8:** Mean response sensitivity ( $d'$ ), shown individually for the first and second half of each category (within-category fatigue) and split by strong and weak trials, for Experiments 1, 4 and 5. Error bars show SE of the mean.



**Figure 9:** Mean response sensitivity ( $d'$ ) for the first and second half of each category (within-category performance), split by strong and weak targets for patients and controls. Error bars show SE of the mean.

## Tables

**Table 1:** Summary of significant results for response sensitivity from GLM and repeated-measures ANOVA analysis, examining effects of speed and relatedness, plus within-category and across-category changes in performance, in Experiment 1: Thematic-matching.

Experiment 1: Thematic-matching			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Across-category	(1, 23)	$p > .1$	$p > .1$
Within-category	(1, 23)	$p > .1$	$p > .1$
Relatedness	(1, 23)	<b>52.45, <math>p &lt; .001</math></b>	<b>50.26, <math>p &lt; .001</math></b>
Speed	(1, 23)	<b>40.25, <math>p &lt; .001</math></b>	<b>38.57, <math>p &lt; .001</math></b>
<b>Interactions:</b>			
Within-category x Relatedness	(1, 23)	<b>29.31, <math>p &lt; .001</math></b>	<b>28.09, <math>p &lt; .001</math></b>
Speed x Relatedness	(1, 23)	<b>17.62, <math>p &lt; .001</math></b>	<b>16.89, <math>p &lt; .001</math></b>
Speed x Within-category	(1, 23)	$p > .1$	$p > .1$
Across-category x Relatedness	(1, 23)	3.24, $p = .072$	3.10, $p = .091$

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance. Other interaction terms were non-significant ( $p > .1$ ).

**Table 2:** Summary of significant results for response sensitivity from GLM and repeated-measures ANOVA analysis, examining effects of across-category and within-category changes in performance, in Experiment 2: Taxonomic-matching.

Experiment 2: Taxonomic-matching			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Across-category	(1, 23)	$p > .1$	$p > .1$
Within-category	(1, 23)	<b>24.89, <math>p &lt; .001</math></b>	<b>23.85, <math>p &lt; .001</math></b>
<b>Interactions:</b>			
Across-category x Within-category	(1, 23)	$p > .1$	$p > .1$

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance.

**Table 3:** Summary of significant results for response sensitivity from GLM and repeated-measures ANOVA analysis, examining effects of across-category and within-category changes in performance, in Experiment 3: Feature-matching.

Experiment 3: Specific feature-matching			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Across-category	(1, 23)	$p > .1$	$p > .1$
Within-category	(1, 23)	<b>13.43, <math>p &lt; .001</math></b>	<b>12.87, <math>p = .001</math></b>
<b>Interactions:</b>			
Across-category x Within-category	(1, 23)	<b>6.18, <math>p = .013</math></b>	<b>5.93, <math>p = .025</math></b>

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance.

**Table 4:** Summary of significant results for response sensitivity from GLM and repeated-measures ANOVA analysis, examining effects of modality and interleaving, plus within-category changes in performance, in Experiment 4: Cross-modality alternative-forced-choice decisions.

Experiment 4: Across modalities			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Within-category	(1, 21)	$p > .1$	$p > .1$
Modality	(1, 21)	$p > .1$	$p > .1$
Interleaved	(1, 21)	<b>15.72, <math>p &lt; .001</math></b>	<b>15.03, <math>p = .001</math></b>
<b>Interactions:</b>			
Modality x Interleaved	(1, 21)	<b>7.39, <math>p = .007</math></b>	<b>6.59, <math>p = .018</math></b>
Interleaved x Within-category	(1, 21)	<b>4.85, <math>p = .028</math></b>	<b>4.48, <math>p = .046</math></b>
Modality x Within-category	(1, 21)	$p > .1$	$p > .1$
Modality x Interleaved x Within-category	(1, 21)	$p > .1$	$p > .1$

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance.



**Table 5:** Summary of significant results for response sensitivity from GLM and repeated-measures ANOVA analysis, examining effects of condition (single/dual), relatedness, plus within-category changes in performance, in Experiment 5: Effect of divided attention.

Experiment 5: Divided attention			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Across-category	(1, 23)	3.79, <i>p</i> = .052	2.52, <i>p</i> = .127
Within-category	(1, 23)	<i>p</i> > .1	<i>p</i> > .1
Condition (single/dual)	(1, 23)	<b>6.81, <i>p</i> = .009</b>	<b>7.55, <i>p</i> = .012</b>
Relatedness	(1, 23)	<b>401.28, <i>p</i> &lt; .001</b>	<b>327.25, <i>p</i> &lt; .001</b>
<b>Interactions:</b>			
Relatedness x Within-category	(1, 23)	<b>6.60, <i>p</i> = .010</b>	<b>9.59, <i>p</i> = .005</b>
Condition x relatedness x within-category	(1, 23)	3.55, <i>p</i> = .060	2.59, <i>p</i> = .123

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance. Other interaction terms were non-significant (*p* > .1).

**Table 6:** Summary of significant results from GLM and repeated-measures ANOVA analysis, examining across-category and within-category changes in performance across Experiments 1 (Thematic-matching), 2 (Taxonomic-matching), 3 (Feature-matching), and 5 (Effect of divided attention, single condition).

Cross-Experiment comparison			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Experiment	(1, 92)	<b>72.64, <i>p</i> &lt; .001</b>	<b>27.79, <i>p</i> &lt; .001</b>
Across-category	(1, 92)	<i>p</i> > .1	<i>p</i> > .1
Within-category	(1, 92)	<b>15.53, <i>p</i> &lt; .001</b>	<b>14.83, <i>p</i> &lt; .001</b>
<b>Interactions (all n.s.):</b>		<i>p</i> > .1	<i>p</i> > .1

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance. Experiment was included as a between-subjects factor.

**Table 7:** Summary of significant results from GLM and repeated-measures ANOVA analysis, examining relatedness and within-category performance across Experiments 1 (Thematic-matching), 4 (Words modality), and 5 (Effect of divided attention).

Cross-experiment relatedness comparison			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, <i>p</i></b>	<b><i>F</i>, <i>p</i></b>
Experiment	(1, 67)	<b>6.83, <i>p</i> = .033</b>	<b>4.38, <i>p</i> = .016</b>
Within-category	(1, 67)	<b>7.16, <i>p</i> = .007</b>	<b>7.09, <i>p</i> = .010</b>
Relatedness	(1, 67)	<b>289.14, <i>p</i> &lt; .001</b>	<b>299.72, <i>p</i> &lt; .001</b>
<b>Interactions:</b>			
Relatedness x Experiment	(1, 67)	<b>265.26, <i>p</i> &lt; .001</b>	<b>45.72, <i>p</i> &lt; .001</b>
Relatedness x Within-category	(1, 67)	<b>10.83, <i>p</i> = .001</b>	<b>11.12, <i>p</i> = .001</b>
Within-category x Experiment	(1, 67)	<i>p</i> > .1	2.84, <i>p</i> = .066

Footnote: Table presents two parallel analyses employing (i) mixed effects modelling (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest) and (ii) analysis of variance. Experiment was included as a between-subjects factor. Other interaction terms were non-significant (*p* > .1).

**Table 8:** Background neuropsychological data for each patient

	Max score	Control mean	Cut-off	EKD	ONLY	YHE	SSR	RTJ	NNZ	NHY	NGW	ESU	NNF	LHN	HNA
<b><i>Semantic tasks:</i></b>															
WPM	64	64	63	64	63	62*	52*	63	64	62*	64	62*	60*	62*	63
CCT pictures	64	59	53	58	60	61	54	61	53	57	56	45*	45*	44*	31*
CCT words	64	61	57	63	58	60	57	56*	61	52*	53*	59	29*	43*	39*
Synonym Judgement	96	95	91	90*	87*	81*	87*	81*	78*	76*	74*	66*	71*	59*	57*
Object use: canonical	37	36	34	NA	36	37	33*	37	37	35	35	37	29*	31*	32*
Object use: non-canonical	37	34	29	NA	32	29	22*	32	26*	22*	21*	34	14*	13*	14*
Ambiguity: cues	60	60	59	NA	52*	54*	47*	57*	50*	51*	40*	43*	39*	35*	46*
Ambiguity: miscues	60	59	57	NA	50*	45*	39*	54*	42*	34*	22*	30*	27*	23*	19*
<b><i>Executive tasks:</i></b>															
Trail making	23	23	17	23	23	22	23	21	19	5*	12*	1*	16*	23	2*
RCPM	36	33	28	32	29	33	34	33	21*	30	24*	19*	31	29	31
BSRA	54	33	28	39	45	30	31	39	31	23*	26*	24*	18*	7*	21*
<b><i>Phonological deficits:</i></b>															
Cookie theft WPM		NA		NA	58	37	0*	38	54	37	12	60	9	18	0*
PALPA - repetition	80	NA	73	NA	NA	77	1*	7*	74	79	75	78	42*	71	0*

\* Denotes impaired performance. NA = not available. Patients are arranged according to composite semantic severity scores; this is a single factor extracted from WPM = word picture matching, CCT = Camel and Cactus Task (both from Bozeat et al., 2000), and synonym judgement. RCPM = Raven's Coloured Progressive Matrices (Raven, 1962). BSRA = Brixton Spatial Attainment Task (Burgess & Shallice, 1997). PALPA = Psycholinguistic Assessments of Language Processing in Aphasia (Kay, Lesser, & Coltheart, 1992). Cookie theft description assesses fluency (words-per-minute; Goodglass & Kaplan, 1983)

**Table 9:** Summary of significant results from the GLM analysis for SA patients and age-matched controls – looking at the effects of group, relatedness, set and within-category performance, for our key dependent measures- response sensitivity, response accuracy and response times.

SA patients vs. age-matched controls			
		GLM (RT covariate)	ANOVA
<b>Fixed effects:</b>	<b>df</b>	<b>Wald <math>\chi^2</math>, p</b>	<b>F, p</b>
Group	(1,23)	3.19, $p = .074$	<b>5.51, <math>p = .027</math></b>
Relatedness	(1,23)	<b>126.95, <math>p &lt; .001</math></b>	<b>287.58, <math>p &lt; .001</math></b>
Set	(1,23)	$p > .1$	$p > .1$
Within-category	(1,23)	$p > .1$	$p > .1$
<b>Interactions:</b>			
Group x Relatedness	(1,23)	<b>8.08, <math>p = .004</math></b>	$p > .1$
Group x Set	(1,23)	3.42, $p = .064$	$p > .1$
Relatedness x Within-category	(1,23)	<b>4.77, <math>p = .029</math></b>	$p > .1$

Footnote: Table presents analyses employing (i) mixed effects modelling for response sensitivity (i.e., GLM preserving performance information for each category for each participant and treating participants as a random effect – this allowed RT per category to be included as a covariate of no interest).