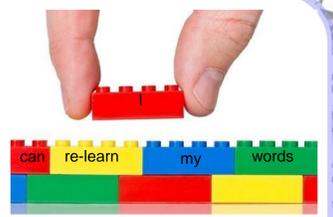


Relearning in Semantic Dementia: Word retraining programs to help rebuild vocabulary



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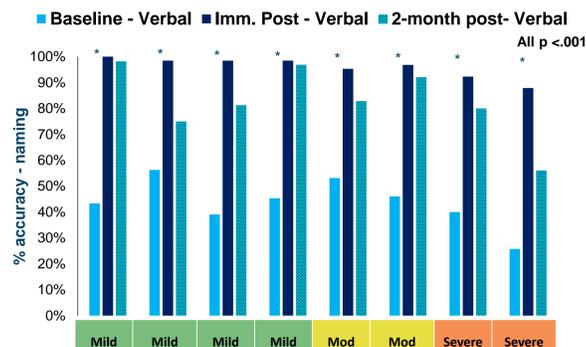
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Background & Aims

- Semantic dementia (SD) significantly impacts word knowledge, resulting in marked deficits in both spoken and written word retrieval.¹
- Word retraining has been shown to improve spoken word retrieval in patients with mild through to severe impairments.²⁻⁴
- Remediation of written retrieval has not been studied. This study aims to:
 - investigate the effectiveness of word retraining for both spoken and written word retrieval.
 - explore the impact of disease severity on treatment success.

Results – Spoken retrieval

- All participants significantly improved on naming trained words:
 - Learning:** accuracy of naming increased for people with mild, moderate & severe impairments.
 - Maintenance:** improvements were maintained at the 2-month follow-up compared to baseline.



Results – Error type

- Rate of “don’t know” and semantic errors reduced while spelling errors increased for trained words; error rates remained unchanged for untrained words.
- Although mild-moderately impaired patients made fewer errors than the severe patients, error patterns were similar across all participants.

Error Type	Σ Baseline Errors – All lists (n=486)	Σ Imm.Post Errors – Trained (n=67)	Σ Imm.Post Errors – Untrained (n=165)
Don't Know	225 (46%)	12 (18%)	86 (52%)
Spelling error	59 (12%)	39 (58%)	22 (13%)
Semantic error	180 (37%)	7 (10%)	48 (29%)
Non-related error	15 (3%)	3 (4%)	6 (4%)
Neologism	7 (1%)	6 (9%)	3 (2%)

Materials & Methods

- 8 SD patients completed word retraining.

Patient*	Age	Sex	Education (y)	Disease Duration (y)	ACE-R (100)	SYDBAT Naming ⁵ (30)
Mild-1	69	M	15	5.5	86	16
Mild-2	62	F	15	6	80	16
Mild-3 ^a	63	F	11	6.5	79	14
Mild-4	62	M	13	5	84	10
Mod-1	63	M	16	6.5	68	8
Mod-2	71	F	16	9	56	8
Severe-1 ^a	50	M	12	8	57	4
Severe-2	63	M	11	6.5	49	2

* severity was categorised by performance on a semantic battery⁶

^a indicates predominately R>L anterior temporal lobe atrophy on MRI

Word Retraining Procedure



Fig 1: Example training slide

- Stimuli:** 3 matched lists x 30 photographs of objects + word (visual + audio presentation); 2 trained lists; 1 untrained list
- Delivery:** home computer
- Method:** “Look, Listen, Repeat”³; 5 times/ week x 4 weeks

Assessment Measures

Weekly assessments were conducted throughout:

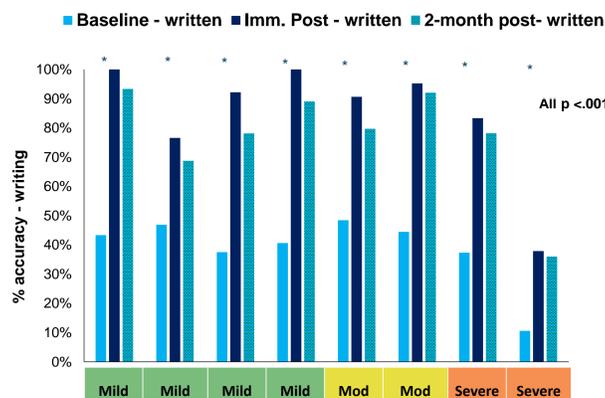
Baseline Testing (Weeks 1-4)	Training List 1 (Weeks 5-8)	Training List 2 (Weeks 9-12)	Follow-up Testing (Weeks 13-20)
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- Naming accuracy:** % words correctly spoken when shown each picture (scored 1 = correct word; 0 = incorrect word/ incorrect pronunciation of word);
- Written accuracy:** % words correctly typed when shown each picture (scored 1 = correct word with correct spelling; 0 = incorrect word and/or incorrect spelling);
- Error type:** frequency of different incorrect responses (categories : i) ‘don’t know’/ no response; ii) correct word but spelt incorrectly; iii) semantic error – related word or description; iv) other error – unrelated word; or v) neologism /non-word).

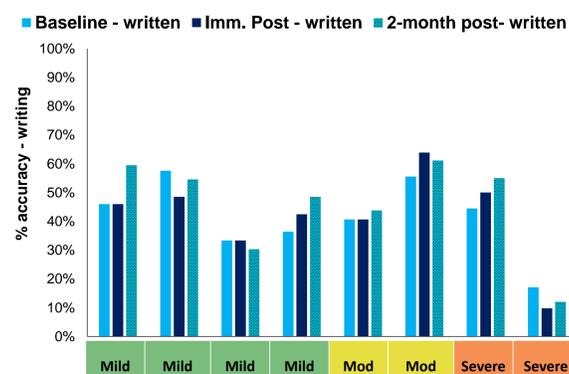
Results – Written retrieval

- Significant improvements were also seen when writing trained words:
 - Learning:** written accuracy increased for people with mild, moderate & severe impairments. Improvements in writing were similar in magnitude to those achieved for spoken retrieval, with the exception of two cases (Mild-2 and Severe-2), where the change in written accuracy was smaller.
 - Maintenance:** improvements were again well maintained at the 2-month follow-up.



Results – Untrained words

- No change in performance was observed for untrained words at either the immediate post or the 2-month follow-up assessment.



Discussion / Conclusions

- Significant improvements in both spoken and written retrieval can be achieved in SD following an 8-week retraining program.
- These improvements are specific to words that are actively trained; word retraining does not affect untrained words (either positively or negatively).
- Performance is largely retained over the short-term (2-months), although patients with severe semantic deficits are likely to require ongoing revision.
- After training, “don’t know” and semantic errors are less common, but spelling errors may occur, particularly for patients with severe impairments.
- A simple home-practice program can benefit people with SD, even in cases of severe semantic impairment.

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