

Multi-Modal Matching with MossTalk Words

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Raymer, A.M., Kohen, F., & Saffell, D. (2006). Computerized training for impairments of word comprehension and retrieval in aphasia. *Aphasiology*, 20, 257-268.

Raymer, A.M., Carwile, K., Matthews, M., Johnson, T., & Todd, E. (2009, May). MossTalk training for word retrieval: Generalization across semantic categories. Presentation at the annual Clinical Aphasiology Conference, Keystone, Colorado.

Multi-Modal Matching Tasks

- Spoken word to Picture Matching
- Written word to Picture Matching
- Spoken word to Written word Matching
- 4 choices: Semantically related foils

Multi-Modal Matching Tasks

- 4 choices: Semantically related foils
- E.g. "banana"



Touch screen for correct picture
Say the word aloud 3 times
-(study 1) **with** clinician assistance
- (study 2) **without** clinician assistance

Study 1 Purpose:

Evaluate effects of MMM with varied treatment intensities on spoken naming and auditory comprehension

- Participants: n=5 chronic aphasia (LCVA)
4 severe anomia, 1 moderate anomia
- 2 semantic anomia: word comprehension and retrieval deficits
- 3 phonologic anomia: word retrieval deficits with intact comprehension

Study 1: Treatment Design and Outcomes

- Single Participant Experimental Design
- Training: MMM with clinician assistance
- N=20 trained words 3-4 times/week to 12 hrs
- N=20 trained words 1-2 times/week to 12 hrs
- N=20 untrained control words
- Probe Outcome Tasks:
 - Picture naming for 60 nouns (all 5 patients)
 - Word/Picture yes/no verification for 60 nouns (2 patients with semantic anomia)

Figure 1: CO1 word/picture verification accuracy for trained and untrained words (diamonds: set trained 3-4 x/wk; squares: set trained 1-2 x/wk; triangles: untrained control set).

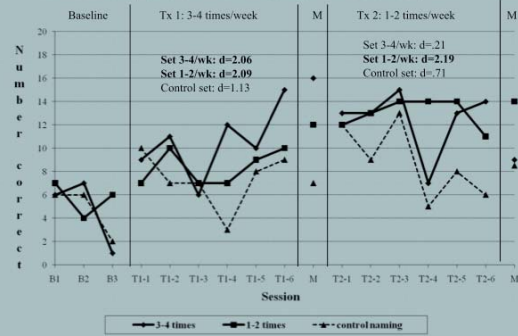
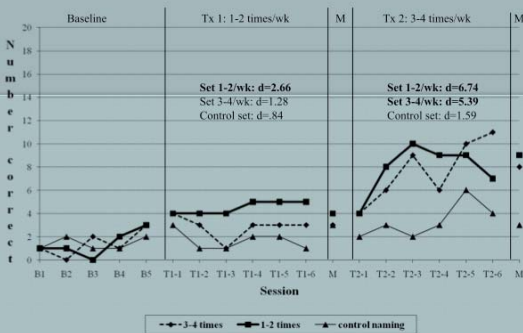


Figure 5: CO3 picture naming accuracy for trained and untrained words (diamonds: set trained 3-4 x/wk; squares: set trained 1-2 x/wk; triangles: untrained control set).



Study 1: Word/Picture Verification

	Pt. 1	Pt. 2
1-2 x/wk	(2)	(1)
• Tx set 1-2x	2.19	2.65
• Tx set 3-4x	.21	1.16
• Control set	.71	2.85
3-4 x/wk	(1)	(2)
• Tx set 1-2x	2.09	.52
• Tx set 3-4x	2.06	.12
• Control set	1.13	1.02

Study 1: Picture Naming

	Pt1	Pt2	Pt3	Pt4	P5
1-2 x/wk	(2)	(1)	(1)	(2)	(2)
• Tx set 1-2x	8.36	2.28	2.66	1.84	2.25
• Tx set 3-4x	.39	1.14	1.28	.87	.35
• Control set	.81	1.50	.84	.72	1.59
3-4 x/wk	(1)	(2)	(2)	(1)	(1)
• Tx set 1-2x	.17	.70	6.74	6.25	6.53
• Tx set 3-4x	3.02	3.51	5.39	11.0	7.84
• Control set	.78	.00	1.59	5.29	2.38

• Yellow = benchmarks (Beeson & Robey, 2007)
4.0=small, 7.0=medium, 10.1=large

Study 1: Summary

Effects of MultiModal Matching

For Auditory Comprehension

1* of 2 pts improved - in lower intensity tx

For Word Retrieval

• Higher Intensity Tx: 3+2* of 5 pts improved
3 of 5 pts generalized improvement

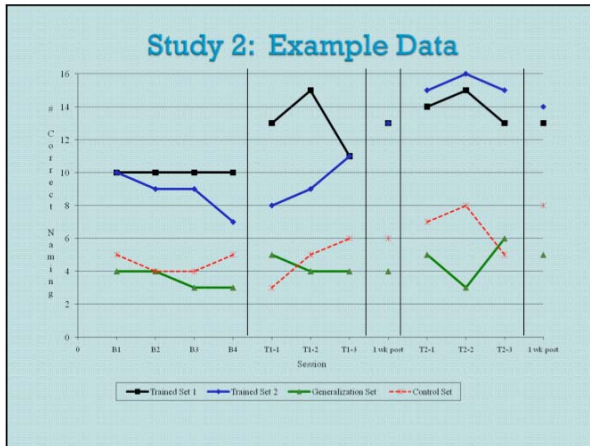
• Lower Intensity Tx: 1+1* of 5 pts improved
0 of 5 generalized improvement

Study 2 Purpose: Evaluate effects of MMM on semantic category generalization

- Participants: n=4 chronic aphasia (LCVA)
- 2/4 severe anomia, 2/4 moderate anomia
- 4 semantic anomia: word comprehension and retrieval deficits – 2 mild and 2 severe

Study 2: Treatment Design and Outcomes

- Single Participant Experimental Design
- Training: MMM **without** clinician assistance
5 days per week for 2 weeks (10 sessions)
- Probe Task: Picture Naming
 - P1 & P2
 - Tx Set 1=16 words: 4 items from 4 categories
 - Tx Set 2=16 words : 4 items same 4 categories
 - Untx Set=8 from same 4 categories
 - P3 & P4
 - Tx Set 1=16 words: 8 items from 2 categories
 - Untx Set 1=8 items from 2 categories
 - Tx Set 2=16 words: 8 items from 2 different categories
 - Untx Set 2=8 items from 2 categories



Study 2: Picture Naming

	Pt1	Pt2	Pt3	Pt4	
Phase 1					
○ Tx 1 set		4.0	3.0*	2.88	0
○ Tx 2 set (untx)		-.57	1.19	10.34	0
○ Tx 1 generalize		.14	1.29	1.73	0
○ Control			1.55	2.34	0
Phase 2					
Tx 1 set (maint)	1.07	.46	.53	1.0	
○ Tx 2 set	1.01	2.97	-.71	0	
○ Tx 2 generalize	.65	1.36	-1.4	0	
○ Control	.48	2.16	1.04*	0	

*estimated
 ○ Yellow = benchmarks (Beeson & Robey, 2007)
 4.0=small, 7.0=medium, 10.1=large

Study 2: Summary

Effects of MultiModal Matching **Without** Assistance

For Trained Picture Naming: 1+2* of 4 improved
 For Generalized Within Category Naming: 0 of 4
 For Generalized Across category Naming: 1 of 4

Effects somewhat less than 'clinician assisted' study
 -possibly due to lack of clinician
 -possibly due to pronounced semantic impairment

Overall Effects of MTW MMM

- TX Words: 8 of 9 improved
- UnTx Words: 4 of 9 improved in higher intensity training
- Improvements noted for individuals with phonologic anomia and in semantic anomia, to some extent, tho they often do not respond to treatment
- Effect sizes somewhat smaller when trained without clinician assistance
- However, all four in study 2 had semantic anomia, which often is resistant to change
- Suggests MTW MMM can lead to gains in word retrieval and warrants further exploration as a treatment modality