Intervention in Primary Progressive Aphasia (PPA)

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Intervention for PPA

- Emerging field of study/practice in Speech-Language Pathology (SLP)

- Various intervention types reported by SLPs:
  - Individual or group therapy
  - Intermittent review
  - Client carer intervention

(Taylor et al., 2009)

Impairment-Directed Intervention

Examples of Interventions for Progressive nonfluent aphasia (PNFA)

<u>Impairment-Directed Interventions:</u>

- Adjective retrieval: cueing hierarchy and pharmacological (dextroamphetamine) (McNeil et al., 1995)
- Verb retrieval with sentence modelling (Schneider et al., 1996)
- rTMS for verb retrieval (Fincchiario et al., 2006)

Activity-Participation Intervention

Examples of Interventions for Progressive nonfluent aphasia (PNFA)

Activity-Participation-Directed Interventions:

- Three principles:
  i. Implementation of goals in anticipation of decline;
  ii. Use of dyad-focused therapy;
  iii. Use of AAC relying on residual abilities
  (Rogers et al., 1998; Rogers et al., 2000)
- AAC- receptive communication board
  (Cress & King, 1999)
- Preparation of key words for group activities
  (Cartwright & Elliot, 2009)

Impairment-Directed Intervention

- Jokel, R., Cupit, J., Rochon, E., Leonard, C. (2009). Relearning lost vocabulary in nonfluent progressive aphasia with MossTalk Words. Aphasiology, 23, 175-191.

PNFA P1

- 58-year old retired teacher/librarian with 3-4 year history of difficulties in word retrieval and math
- Native English speaker
- Lived alone, went to gym, movies and theatre regularly

(Jokel, Cupit, Rochon & Leonard,2009)

PNFA P2

- 75-year old retired pharmacist with history of several years' impairment in 'memory for words' and depression
- Native English speaker
- Lived alone and had many hobbies such as singing in local choir (later moved to assisted living due to a fall)

(Jokel, Cupit, Rochon & Leonard,2009)

Jokel et al., 2009

Test/Task	P1	P2
Spontaneous speech	hesitant	hesitant
Errors (occasional)	circ. & phon.	circ. & phon.
Naming (BNT, n=60)	43%	48%
Word repetition (BDAE, n=10)	90%	80%
Word comprehension (PPVT, n=204)	66th %tile	66th %tile
Sentence comprehension (TROG, n=80)	47th %tile	47%tile
Word reading – irregular (PALPA, n=20)	93%	93%
Spelling – irregular (PALPA, n=20)	80%	85%
Access to semantics (PPTT, n=52)	98%	96%
Memory (story retell, ABCD)	Intact	Intact
Object matching (BORB, n=25)	100%	96%
Semantic & phonemic fluency	<10th %tile	<10 %tile

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MossTalk Words

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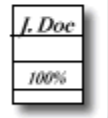
Latest Results



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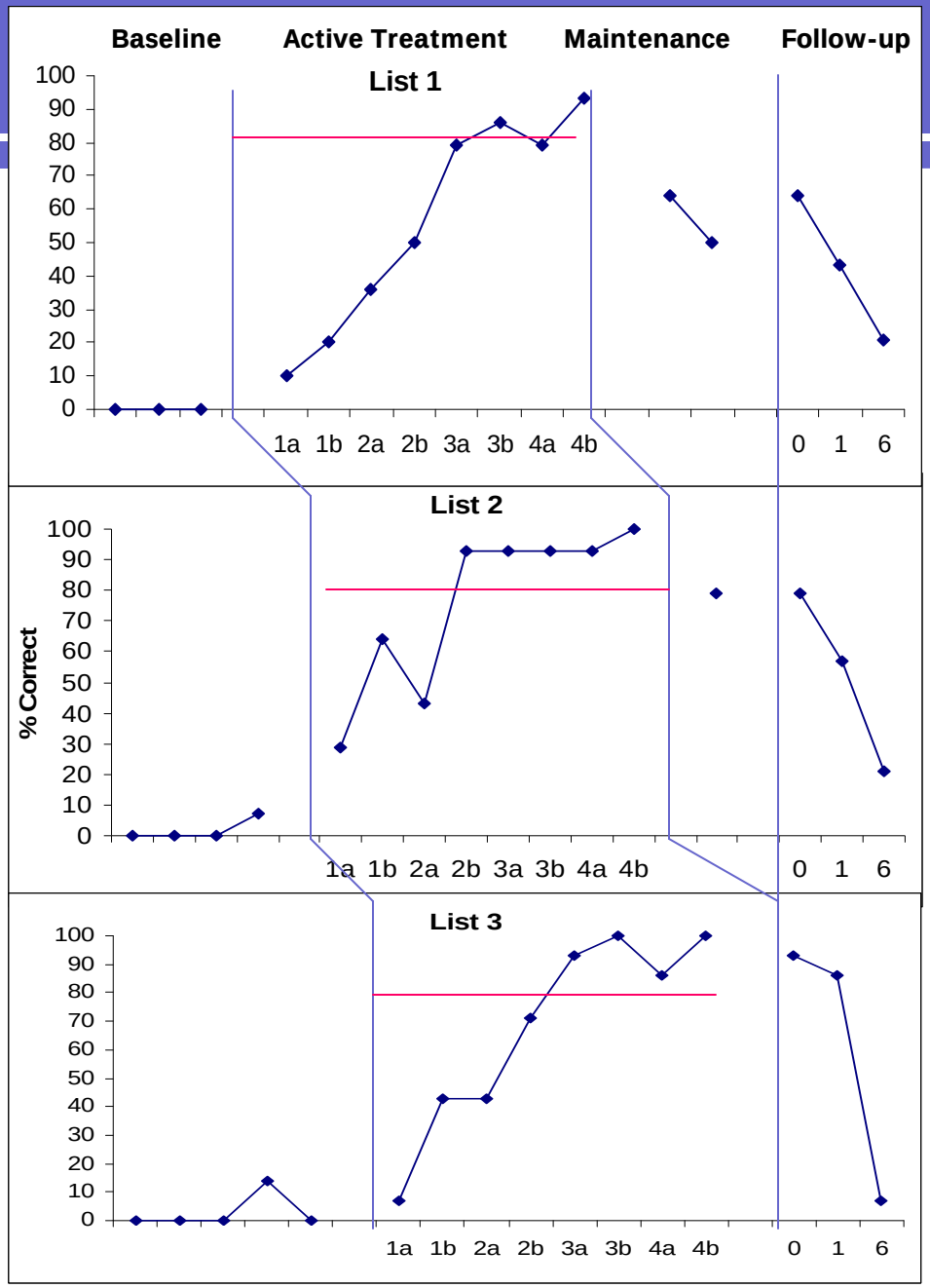
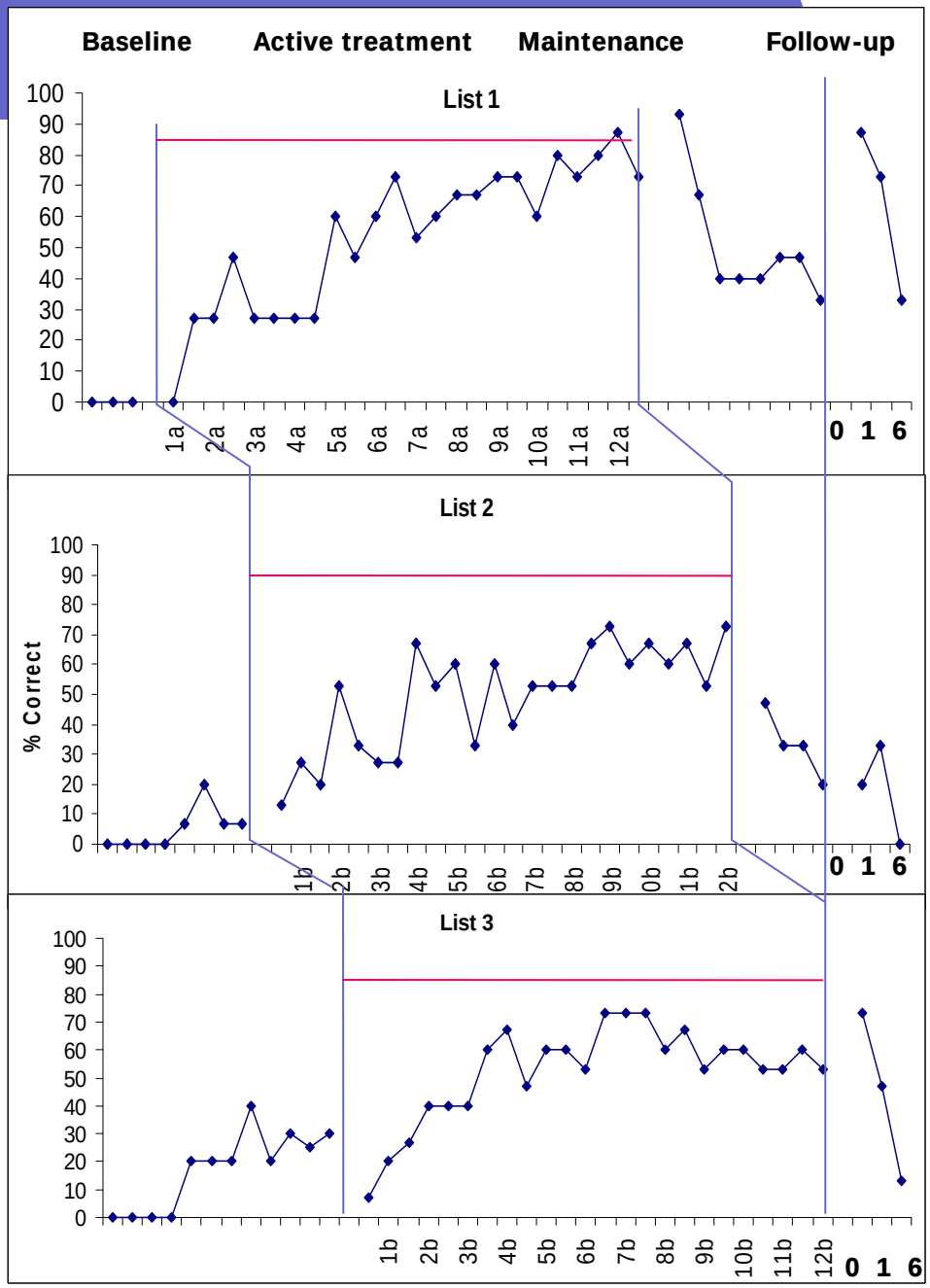
Results P1



- P1 required only four sessions to reach the criterion of 80% correct on each list
- Naming accuracy on untreated lists remained at 0-14% correct at all times
- The effects of treatment were evident on all 3 lists after treatment ($p<.001$, McNemar Change Test)

Results P2

- P2 required all 12 sessions for each list and never reached criterion on Lists 2 and 3
- Naming accuracy on untreated lists remained between 0-20% correct (one occurrence of 36% on List 3during List 1 training)
- Treatment effects were significant on all lists after treatment (p<.001, McNemar Test)



Effect Sizes

	B vs. Tx	B vs. M	B vs. M and 1 month post	B vs. M and 1 & 6 months post
P1	28.34 Large	22.36 Large	19.59 Large	16.08 Large
P2	7.57 Medium	6.05 Medium	5.58 Small	4.77 Small

B = Baseline

Tx = Treatment (i.e., acquisition)

M = Maintenance (including immediate post testing)

(Weighted d as per Beeson & Robey, 2006)

Generalization

	P1			P2		
	Pre	Post	6	Pre	Post	6
PNT (N=175)	132	124	121	143	132	110
SP (N=135)	95	120	92	94	107	95

6= 6 months post treatment
PNT= Philadelphia naming Test, (Roach et al., 1996)
SP=Sentence Production (Caplan & Hanna, 1998)

MossTalk Words - Conclusions

- Both patients benefited (although to differing extents) from a computer-based treatment for anomia
- Examination of the efficacy of a promising, theoretically motivated program for naming -MossTalk Words
- Information regarding the effectiveness of treatment for anomia in NPA (maintenance in our pts comparable or better than in some pts recovering from a post-stroke anomia)
- Computer-based treatment may be a viable therapy approach for patients who suffer from PPA, in the absence of a generalized cognitive impairment

Intervention in PPA (NFPA) Conclusions

- Despite cautions raised in Bourgeois, 2010, effect sizes were large for both patients.
- More research is needed (i.e., across the spectrum impairment-activity-participation approaches).

Intervention in Semantic Dementia Errorless Learning

- Jokel, R., Rochon, E., Anderson, N. (2010). Errorless learning of computer-generated words in a patient with semantic dementia. *Neuropsychological Rehabilitation*, 20 (1), 16-41

Computer-based Errorless Retraining of words in Semantic Dementia (SD)

(Jokel, Rochon & Anderson., 2010)

- The study had the potential to address the following questions:

  (1) Can individuals with SD benefit from a computer-based treatment approach (i.e., MossTalk)?

  (2) Is the errorless procedure effective in re-learning lost words (-N+C) in SD?

  (3) Is practicing known words (+N+C) beneficial to individuals with SD?

CS

- CS - 56 year old accountant with a 3-year hx of language decline
- Problems with understanding single words and difficulty retrieving words in conversations
- L-anterior temporal hypoperfusion (SPECT) consistent with atrophy in the same region (MRI)

CS - Language Testing

- Naming: **8%** (BNT)
- Repetition: 100% (PALPA)
- Word comprehension: **<1 percentile** (PPVT)
- Sentence comprehension: 81% (TROG)
- Semantics: pictures 80%, **words 54%** (PPTT)
- Word fluency: phonemic 22, **semantic 0**
- Executive function: 47th percentile (WCST)
- Visuo-spatial function: 100% (BORB)
- MMSE: 26/30 (word retrieval)

Selection of stimuli

340 pictures from MossTalk Words® presented for naming on 3 occasions

3 Treatment Lists:

-20 LOST words: named incorrectly or not at all on all three occasions

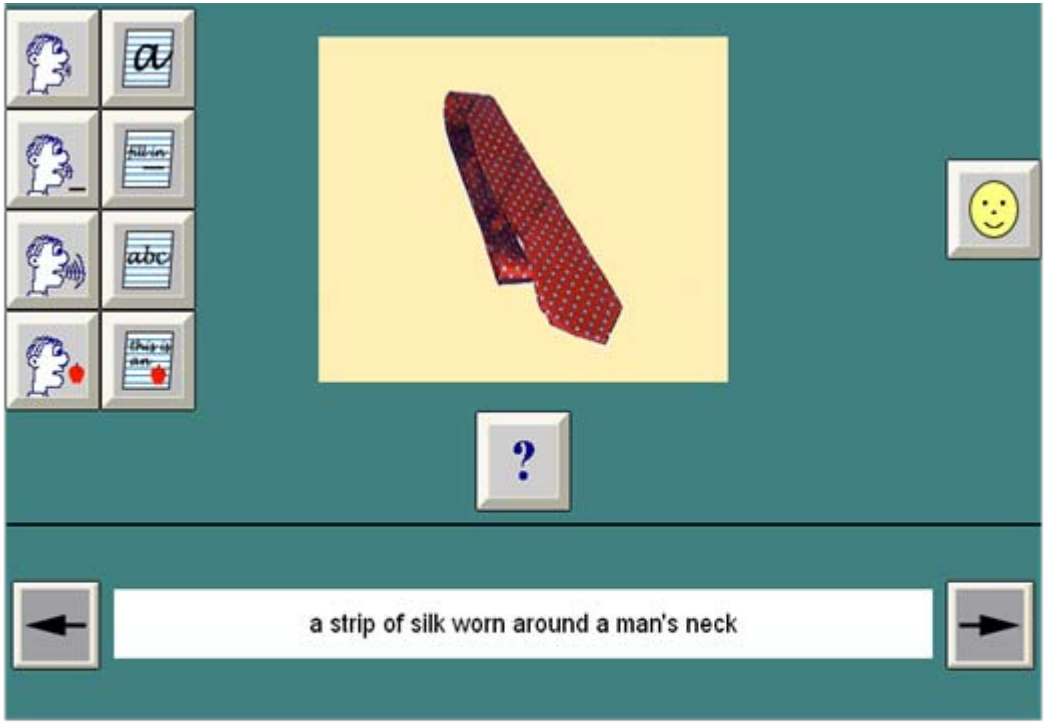
-10 KNOWN words: named correctly each time

1 Control List:

19 KNOWN words named correctly each time

Lists were balanced for word frequency (Francis & Kucera, 1982)

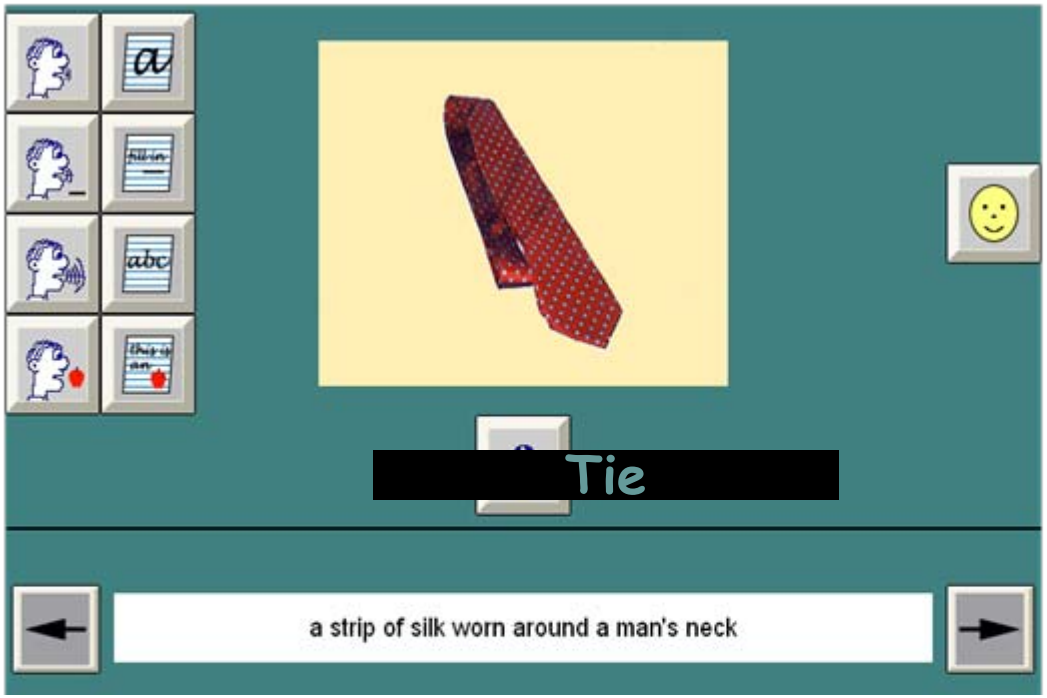
Moss Talk Words Procedure



Each picture was presented on the screen and accompanied with a written and spoken description, e.g., the picture of a tie was accompanied by:

"a strip of silk worn around a man's neck"

Moss Talk Words Procedure

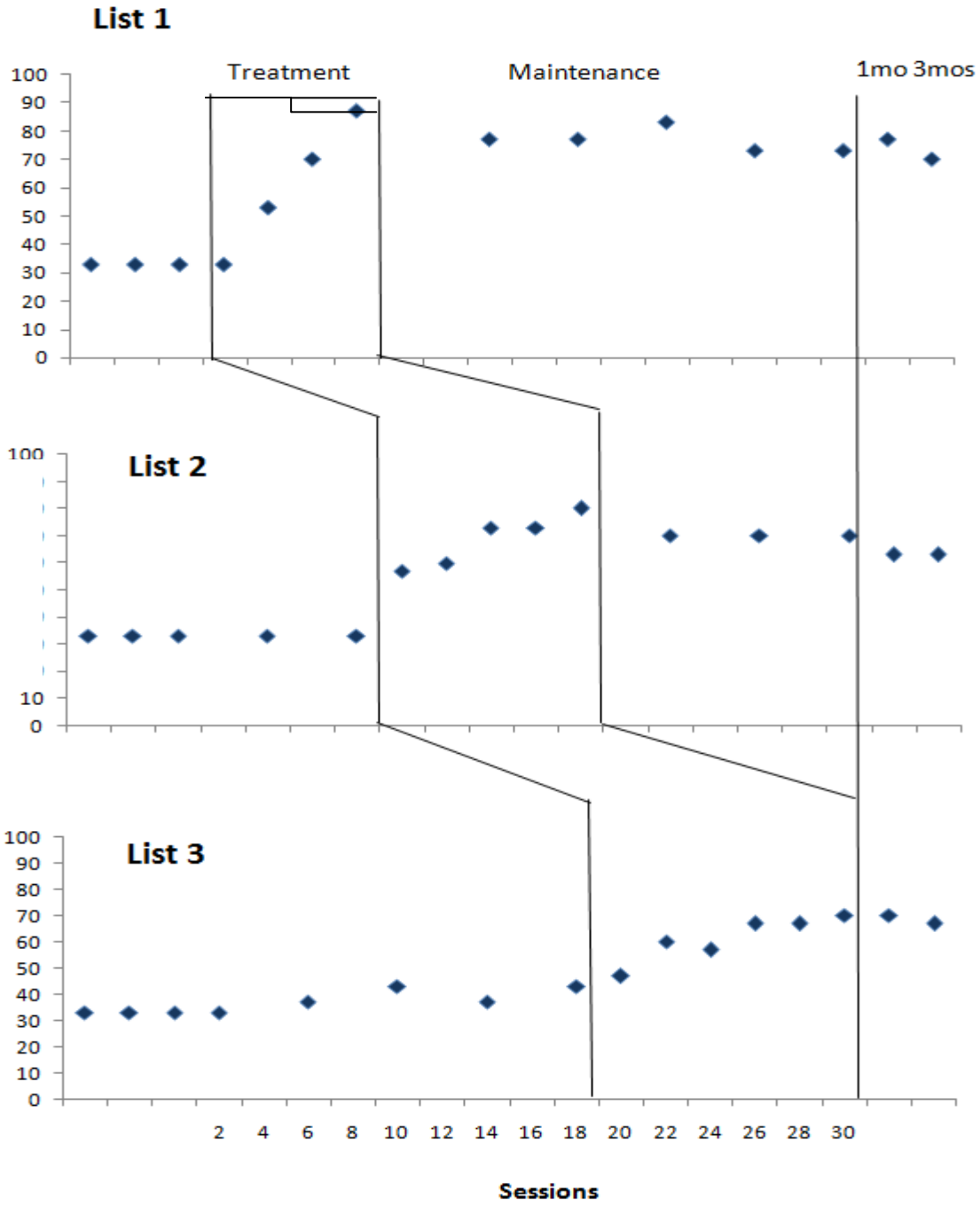


The correct name of the item would be displayed after each trial, regardless of the outcome

Moss Talk Words Procedure

- Each list was presented for naming twice within each treatment session
- 80% accuracy of naming on two consecutive probes or 12 sessions (whichever occurred first)
- Baseline measures for untreated lists and maintenance for lists that had been treated were taken regularly

Errorless Re-learning in SD



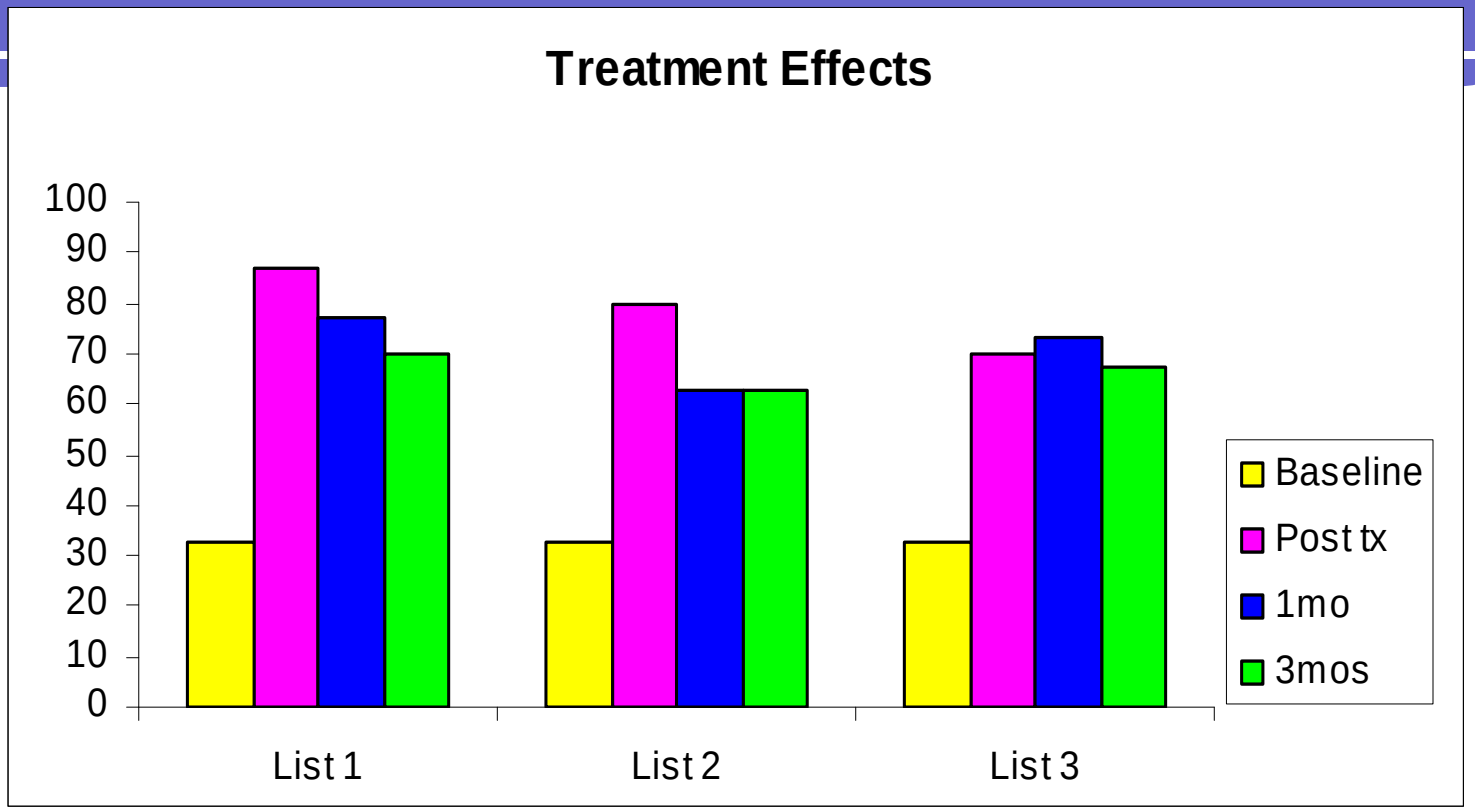
CS required:

8 sessions for List1

10 sessions for List2

12 sessions for List3

Results – All treated words



The effects of intervention were maintained

- Immediately after the treatment ($p<.001$, McNemar Test)
- 1 month post ($p<.001$), and
- 3 months post on all lists ($p<.001$).

Effect Sizes

	B vs. Tx	B vs. M	B vs. M and 1 month post	B vs. M and 1 & 3 months post
CS	8.18 Medium	11.06 Large	11.02 Large	10.68 Large

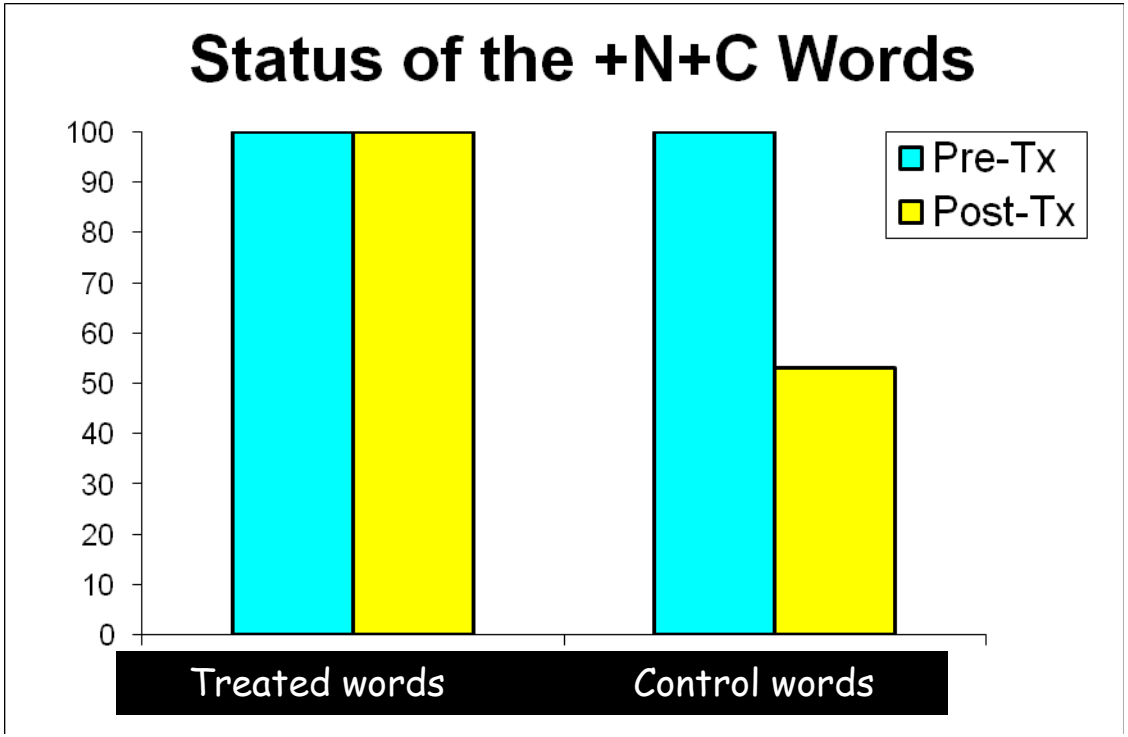
B = Baseline

Tx = Treatment (i.e., acquisition)

M = Maintenance (including immediate post testing)

(d as per Beeson & Robey, 2006)

Errorless Re-learning in SD



- CS retained <u>all</u> 30 +N+C words from all three treatment lists immediately post-intervention, but
- <u>only 10/19</u> from the untreated control set

Generalization Effects

	Pre-Tx	Post-Tx
Philadelphia Naming Test ($p<.001$)	43/175 (25%)	57/175 (33%)
Oral Sentence Production (ns)	119/135 (88%)	126/135 (93%)
Quality of Communication Life Scale (ns)	54/80 (3.375)	59/80 (3.687)

Theoretical Implications

- Feasibility of computer-based treatments for anomia in semantic dementia
- Effectiveness of an errorless approach in SD in re-teaching lost words
- Justification for including in treatment the words that patients with SD still have in their vocabulary

Acknowledgments

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QUESTIONS?

THANK YOU!