SEMANTIC COMPLEXITY IN THE TREATMENT OF NAMING DEFICITS IN ALZHEIMER'S DISEASE

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BACKGROUND

Previous studies suggest that the **naming deficits in Alzheimer's disease originate in the deterioration of semantic feature representations** (Martin, 1992). In individuals with aphasia, a treatment protocol based on the **Complexity Account of Treatment Efficacy** (CATE, Thompson et al., 2003) has been applied by **training semantically complex items in order to induce generalization effects on untrained and less complex items** (among others: Kiran & Thompson, 2003). By relearning features of atypical items (i.e. complex), semantic features of typical category members (i.e. less complex) are inherently strengthened too. A preliminary study point to the **potential viability of this treatment approach to treat naming deficits in Alzheimer's disease** (Flanagan et al., 2016).

RESEARCH QUESTIONS

Will the training of semantic features of atypical items in patients with Alzheimer's disease lead to …

→ an increased performance in a feature elicitation task?
→ an improved naming accuracy for the trained atypical items?
→ generalization on untrained typical items?

Baseline 1	Therapy	Baseline 2	Follow-Up after 8 weeks
Naming of trained + untrained items, Feature elicitation	Trainig of atypical items 12 sessions à 45 minutes	Naming of trained + untrained items, Feature elicitation	Naming of trained + untrained items, Feature elicitation

METHODS

Exemplatory semantic category: Animals (n=30)

TRAINED: atypical items (n=10)

UNTRAINED: moderate/typical items (n=20)

Task 1: Picture Naming

Task 2: Feature Sorting with contrasting pairs

10 semantic features
- 5 TRUE: *land animal*
- 5 FALSE: *aquatic animal*

Task 3: Yes/No Answers

10 semantic features
- 5 YES: *has one hump?*
- 5 NO: *has wings?*

Further categories: fruits, vegetables, clothing, transport, instruments

3 Participants with Alzheimer's disease

Partici-pant	Age (years)	sex	Education (years)	Mini Mental State Examination Test	Post onset	Trained category
A	78	male	16	24/30	3 yrs	vegetables
B	64	female	10	20/30	4 yrs	clothes
C	69	male	17	21/30	3 yrs	animals

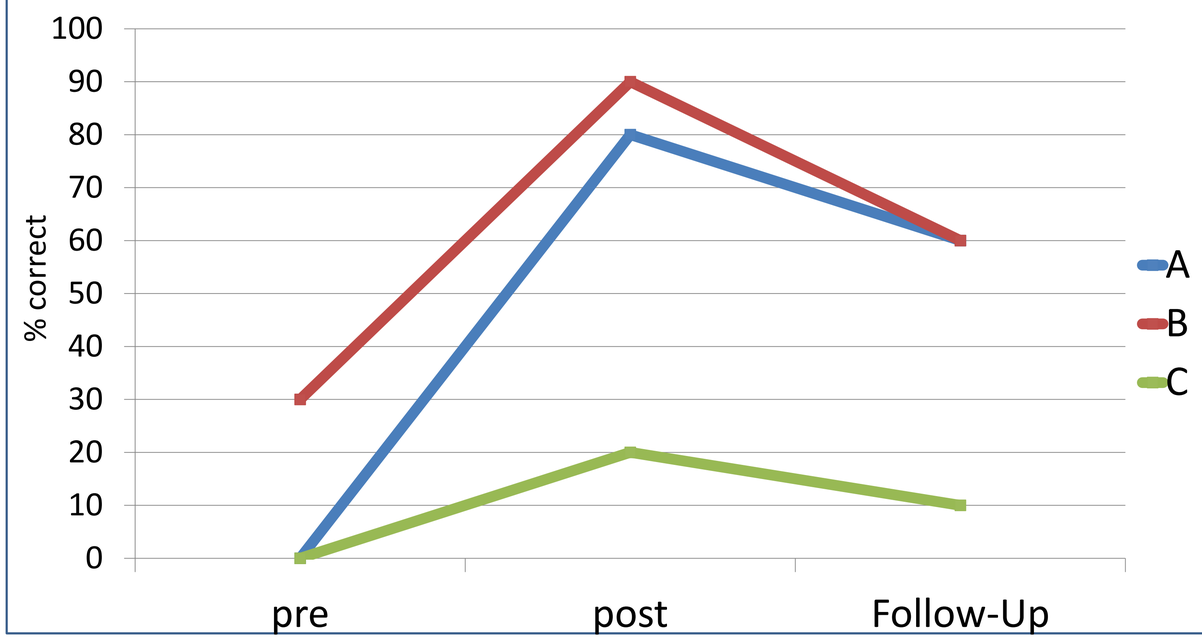
RESULTS

Individual **control task:** stable performance $p>.05$

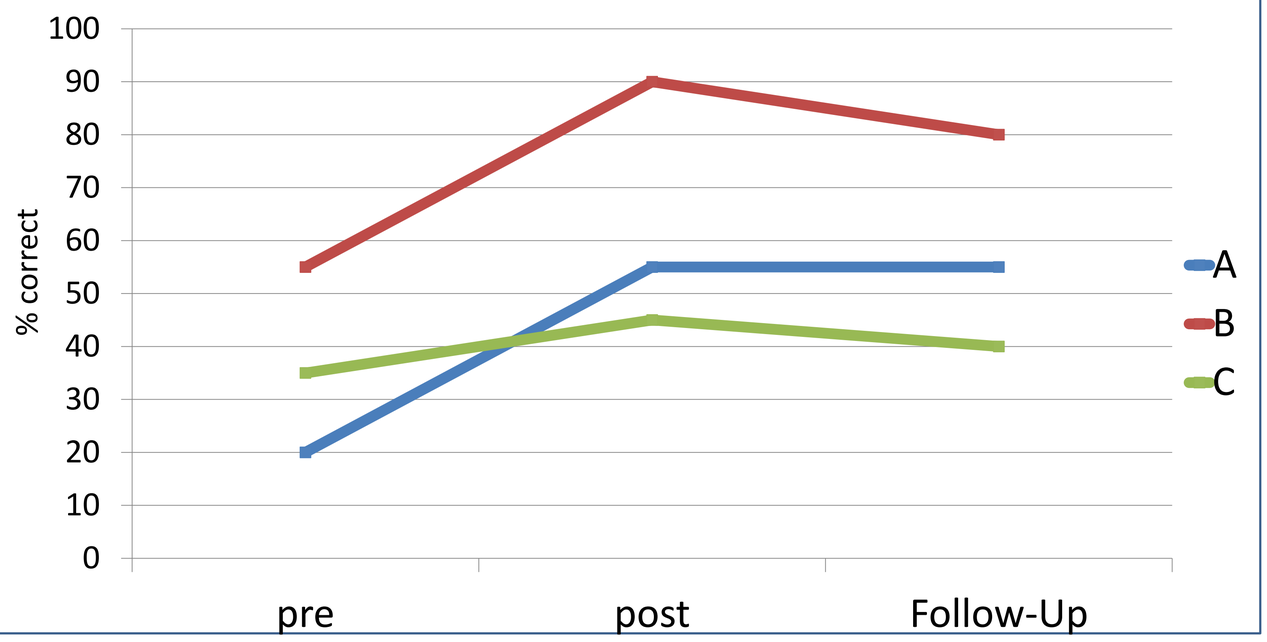
Elicitation Task: duration 1 minute, „Tell me everything you know about [trained item]"

	A	B	C
Mean number of elicitated features before therapy	3,7	1,9	5,7
Mean number of elicitated features after therapy	6,4	3,2	6,7
Paired t-test	$p<.0001$	$p<.0001$	$p=.034$

PRACTICE EFFECTS: NAMING OF TRAINED ITEMS



GENERALIZATION EFFECTS: NAMING OF UNTRAINED ITEMS



CONCLUSION

The repetitive naming and training of semantic features lead to a reactivation of semantic representations as indicated by the increase of produced semantic features in the elicitation task. The co-occuring significant improvement in naming accuracy of trained atypical items in 2 out of 3 participants strengthens the assumption that the naming deficits originate from a semantic deficit in these two participants and that re-learning semantic features supports the access to phonological word forms. In line with the CATE-approach the training of atypical items lead to a generalization on untrained more typical category members in these individuals with Alzheimer's disease. It has been evidenced that the Complexity Account of Treatment Efficacy (CATE) can result in positive outcomes not only in stroke-induced aphasia but also in patients with Alzheimer's disease.

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