Training outcomes for manipulable verbs in persons with aphasia: implications for verb representation

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THE ISSUES — VERBS IN APHASIA
Verb retrieval difficulties in aphasia are more:
- pervasive than noun deficits
- likely to negatively impact sentence production
- correlated with daily communication difficulties

Interventions for verb retrieval:
- are few, with limited generalization to untrained verbs
- rarely target specific semantic categories
- are limited by lack of understanding of semantic representation of verbs

THE ISSUES — MANIPULABILITY
Verbs (& nouns) with fine hand actions
- Manipulable verbs (& nouns) are more impaired than other verb classes in aphasia
- Manipulability is proposed to be a semantic attribute with sensorimotor (hand action) associations. But there is insufficient confirmatory data:
  - Hand verbs prime each other in aphasia
  - Hand verbs activate sensorimotor cortex

RESEARCH QUESTION
Will training of manipulable verbs generalize to untrained manipulable verbs?
If training generalizes to untrained manipulable verb retrieval, but not to untrained non-manipulable verbs, then it confirms that manipulability is a semantic attribute of verbs

METHODS
Stimuli: 131 videos of manipulable (N=65) and non-manipulable (N=66) actions
- Manipulable Verbs Trained, N=20, inaccurate in 2/3 baselines
- Manipulable Verbs Generalization, N=45
- Non-Manipulable Verbs Generalization, N=66

Design:
Baseline testing, 3 sessions
Total Verb Therapy, 12 hours over 2 weeks
Post-testing, 2 week follow-up

Total Verb Therapy: verb naming & repetition, semantic feature generation, sentence formulation

Outcome measures:
Three verb categories (above), standardized test (Western Aphasia Battery-R), narrative language

Participants:
N=5, English speakers, single left hemisphere stroke, >6 months post-stroke, nonfluent aphasia

RESULTS & DISCUSSION

<table>
<thead>
<tr>
<th>Age / Gender</th>
<th>WAB-R AQ</th>
<th>Verb Semantics (n=52) Pre &amp; Post</th>
<th>Action Naming (n=40) Pre &amp; Post</th>
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<td>AP66</td>
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<td>73.6</td>
<td>47</td>
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Verb Naming Accuracy

- Total Verb Therapy improved retrieval of trained verbs (p<.01, Cohen’s effect size 14.1)
- There was no generalization to untrained verbs (except for one participant)

Implications
- 12 hours of intervention (for 20 verbs) is insufficient for maximizing training effects. This limits generalization to untrained verbs
- Grouping of training verbs by manipulability may offer no additional advantage compared to training an unrelated set of verbs, at least with 12 hours of training
- Results do not support manipulability as a representational attribute of verbs
- Future research could increase training hours to test if generalization could occur with greater intensity

REFERENCES

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