Introduction

Background:
People with nonfluent aphasia (PWA-NF) often have verb production difficulty due to impaired morpho-syntactic abilities. Yet, few studies have evaluated how the semantic weight of verbs can impact their production in this population (Barde et al., 2006; Gordon & Dell, 2003; Gordon, 2008; Morean, 2017).

Methods

Participants from AphasiaBank
30 people with nonfluent aphasia (29 Broca’s & 1 TCM) 32 people without aphasia (matched for age and years of education)

Discourse Tasks
- Important Event recount
- Window sequential picture description
- Umbrella sequential picture description
- Cat rescue single picture description
- Cinderella storytelling

Verb Types based on Semantic Weight
- Heavy verbs: Provide complex semantic representations
- Light verbs: Provide minimal semantic representations
- Be-copular: Provide no semantic representations (linking verbs)

Dependent Measures
- Proportion of heavy verbs (%heavy) = #heavy verbs / #total verbs
- Proportion of light verbs (%light) = #light verbs / #total verbs
- Proportion of be-copular (%be-copular) = %be-copular verbs / #total verbs
- Heavy to light verb ratio (heavy/light) = %heavy verbs / %light verbs
- Total verbs per utterance (verbs/utt) = #heavy verbs / #utterances

Analysis: Generalized linear mixed model (QLMM) with pairwise comparisons (2 Groups x 5 Tasks)

Discussion

Verb Production in PWA-NF
- Reduced total verb production compared to PWOA
- Relatively preserved heavy verb production
- Reduced light verb production compared to PWOA
- Over-reliance on be-copular verbs for PWA-NF in Window, Umbrella, and Cat
- PWA-NF may be more descriptive in tasks with pictures

Discourse Task Effects
- Trend of higher %heavy verbs and lower %light verbs in tasks with a picture in both groups
- Lexical-semantic facilitation due to visual cues
- Higher %be-copular in Event in PWA-OA
- May be due to the flexibility of verb selection in the task

Limitations & Future Directions
- Large %be-copular for PWA-NF > Need to control for their severity or symptoms
- Not direct task comparisons due to limited methodological control

Clinical Implication
- Supporting evidence of discourse task effects on language production (Fergadiotis & Wright, 2011; Glosser et al., 1988; Olness, 2006; Stark, 2019; Stark & Cofolid, 2021; Wright & Capilouto, 2009)
- Purposefully select a discourse task based on the interest of verb measures
- These findings highlight the importance of verb production as a treatment goal for PWA-NF and suggest considering the semantic weight of verbs (heavy vs. light) should be considered as a variable when setting treatment targets.

Table 1. Verb Measure Comparisons between Tasks in each Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Task comparison</th>
<th>%Heavy</th>
<th>%Light</th>
<th>%Be</th>
<th>Heavy/Light</th>
<th>Verbs/utt</th>
</tr>
</thead>
<tbody>
<tr>
<td>People</td>
<td>Event vs. Window</td>
<td>.015*</td>
<td>.001</td>
<td>.440</td>
<td>.011*</td>
<td>.000*</td>
</tr>
<tr>
<td>Aphasia</td>
<td>vs. Umbrella</td>
<td>.049</td>
<td>.001</td>
<td>.408</td>
<td>.011*</td>
<td>.000*</td>
</tr>
<tr>
<td>No task effects, F(4, 289) = 1.08, p = .392</td>
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<tr>
<td>Nonfluent</td>
<td>vs. Cat</td>
<td>.068</td>
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</tbody>
</table>

Results

% Heavy verbs
- PWA-NF = PWOA, F(1, 289) = .01, p = .920
- Significant task effects, F(4, 289) = 4.25, p = .002

% Light verbs
- PWA-NF < PWOA, F(1, 289) = 24.00, p < .001
- Significant task effects, F(4, 289) = 6.73, p = .001
- No interaction, F(4, 289) = .66, p = .621

Heavy to Light Verb Ratio
- PWA-NF < PWOA, F(1, 216) = 6.10, p = .013
- Significant interaction, F(4, 216) = 2.93, p = .023

Verbs/Utterance
- PWA-NF < PWOA, F(1, 300) = 31.90, p = .000
- No task effects, F(4, 300) = 1.30, p = .268
- Significant interaction, F(4, 300) = 4.22, p = .002


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Semantic Aspects of Verb Production in Various Discourse Tasks in People with Nonfluent Aphasia
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