LUNA: Intervention for Personal Storytelling in Aphasia

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Acknowledgements

The LUNA Team

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& Alice Thompson
What is LUNA?

Linguistics Underpins Narrative in Aphasia

- Linguistic analysis to identify treatment targets
- Multiple linguistic levels targeted
- Personal narratives to support everyday talk
Aims & Research Questions

We aimed to improve personal storytelling in order to bridge from clinical to real-life talk.

RQs
1. Is LUNA feasible and acceptable to participants?
2. Does LUNA therapy improve linguistic features and discourse structure of a treated personal story?
3. Do gains generalise to an untreated fairy-tale?
### Methods - Participants

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>4 male: 1 female</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>36-61 years</td>
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<tr>
<td><strong>Time Post Onset</strong></td>
<td>3 – 14 years</td>
</tr>
<tr>
<td><strong>Aphasia Type</strong></td>
<td>3 anomic, 1 conduction, 1 Broca</td>
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<tr>
<td><strong>WAB Aphasia Quotient</strong></td>
<td>62.7-81.1 (M = 78.02)</td>
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<tr>
<td><strong>Spontaneous Speech</strong></td>
<td>13-18 (M = 15.2)</td>
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Methods - Therapy

“Tell a story that is meaningful for you and that you might want to tell to family or friends.”

- Narrative analysed using a step-by-step protocol of linguistic analysis to generate a list of treatment targets

- 60 minutes of 1:1 therapy, once per week, x7 weeks
Methods - Analysis Protocol

- Colour code the **lexical** categories (N, V, P, A, Adv)
- Mark the **phrases** (NP, PP, AP)
- Mark the simple & complex **sentences**
- Identify the **connectives** (*and, or, but, because, so*)
- Highlight the **reference** chains
- Identify **story** grammar elements (setting, events, resolution)

- Throughout: **summarise** strengths and difficulties
- And: **identify targets** for therapy (words, phrases, sentences, connectives, pronouns, story elements)
## Methods – Participant profiles

<table>
<thead>
<tr>
<th></th>
<th>Strengths</th>
<th>Difficulties</th>
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<tbody>
<tr>
<td>JB</td>
<td>Word (Ns, Vs, Adjs)</td>
<td>Word (pronouns, function words), simple sentence, narrative</td>
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<tr>
<td>JS</td>
<td>Simple sentence, narrative</td>
<td>Word (phonological errors and neologisms), complex sentences</td>
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<tr>
<td>JW</td>
<td>Simple sentences</td>
<td>Word (lack of variety, light verbs), narrative</td>
</tr>
<tr>
<td>MS</td>
<td>Word (Ns, some Adjs)</td>
<td>Word (Vs), simple sentence, narrative</td>
</tr>
<tr>
<td>SM</td>
<td>Word (Ns, Adj, Adv), simple sentences</td>
<td>Word (Vs, pronouns), complex sentences, narrative</td>
</tr>
</tbody>
</table>
Methods - Participant Stories
Methods – example therapy

<table>
<thead>
<tr>
<th>Intervention Target</th>
<th>Intervention Activity</th>
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</table>
| **Word**            | Creation of list of key words relevant to story  
|                     | Naming key words from pictures  
|                     | Generating synonyms using SFA |
| **Simple Sentence** | **Mapping Therapy** activities – generating sentences using key words and colour-coded sentence frames. |
| **Complex Sentence**| Discussion of cause and effect & relevant connectives  
|                     | Linking sentences using connective prompt cards |
| **Narrative**       | Creating list of **Story Grammar** elements  
|                     | Linking elements to key words and practiced sentences  
|                     | Practicing story using Story Grammar prompt cards |
Outcomes Measures

- Story
  - Micro
    - Word
      - % narrative words
    - Sentence
      - PAS accuracy
      - % complete utterances
  - Macro
    - Discourse
      - Local coherence
      - Story Grammar
Results – Word Level (% narrative words)

Significant gain
pre intervention (Mdn=71.43, IQR=57.44-75.59); post intervention (Mdn=72.51, IQR=65.26-83.71); P < 0.05 reflecting a shift in IQR
Results – Sentence Level (PAS)

% PAS as a total of verb structures

No significant change
Results – Sentence Level (% complete utterances)

Significant gain
pre intervention (Mdn=63.01, IQR=17.38-83.82); post (Mdn=77.42, IQR=36.44-88.48); W=0.00, p=0.04, reflecting increase in median %.
Results – Story Level (local coherence)

significant increase in the presence of entirely related utterances post intervention

(Mdn=58.14, IQR=48.75-67.55) compared to pre-intervention (Mdn=52.27, IQR=33.08-55.73; W=0.00, p=0.04
Results – Story Level (Story Grammar)

Gains were variable across individuals and were not significant for the group.
Results - SUMMARY

- **Story**
  - **micro**
    - **word**
      - % narrative words
    - **sentence**
      - PAS accuracy
      - % complete utterances
  - **macro**
    - **discourse**
      - Local coherence
      - Story Grammar
Results - Generalisation to untreated Cinderella

- Story
  - micro
    - word
      - % narrative words
  - sentence
    - PAS accuracy
    - % complete utterances
  - macro
    - discourse
      - Local coherence
      - Story Grammar
Discussion:

1. Is LUNA feasible and acceptable to participants?

- Feasibility:
  - stories told spontaneously & with relative ease;
  - Stories produced enough language for analysis
  - Stories produced (more than) enough language for identifying treatment targets and for generating therapy materials
  - 7 week multi-level intervention resulted in improvement

- Acceptability to participants
Discussion:

2. Does LUNA therapy improve linguistic features and discourse structure of a treated personal story?

3. Do gains generalise to an untreated fairy-tale?

➢ The ‘worked-on’ language improved for all participants at three levels – word, sentence, story
Conclusion

- relatively low dose and non-intensive treatment (7 hrs) produces significant change for these 5 individuals on treated narrative

- Improvements did not generalise to an untreated fairytale, but would they have generalised to an untreated personal story?

- Changes reported here are statistically significant at the group level, but do they constitute clinically significant and personally meaningful change?
it’s mine isn’t it…it’s a proper…it’s a cruise…it’s a proper…if it was just fiction it would be a fiction story but this is proper, so I was pleased about that…it was good
Thank you