Efficacy of Language Games as Therapy for Post-Stroke Aphasia

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A novel, clinically relevant intervention

Collaboration between public healthcare provider and universities

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The context:

- Rising demand for healthcare, with limited resources
- An urgent need for new and productive ways of delivering aphasia therapy
- Focus on word-retrieval: an extremely common and distressing symptom, which is extensively treated with cued picture-naming therapies (eg Wisenburn & Mahony, 2009)

**Word retrieval therapy:**

- Clinically effective
  - at impairment and functional levels
  - deliver improvement in quality of life, reduce social isolation
- Cost effective
  - delivered efficiently to enable increased intensity
- Acceptable to patients
  - be motivating and engaging

**We used:**

- Impairment based cued word-retrieval
- Group therapy
- A game mode
Design:
Language game therapy

- Charade-like games
- Picture cards: 90 nouns 90 verbs
- 3 matched word groups for 3 games
  - Game P- phonemic cueing
  - Game G- phonemic+gesture cueing
  - Game S- phonemic+semantic cueing
- Each game played for 18 hours over 2 weeks
- Two teams of 3 patients, with mod-severe, expressive chronic aphasia
Assessment

- Assessment specific to game therapy:
  - Picture-naming of 180 treated words
  - Description of 9 pictured scenarios

- Assessment of general language function:
  - Comprehensive Aphasia Test
  - Boston Naming Test
  - Cinderella Story Re-tell

- Subjective assessment:
  - Participant Satisfaction Questionnaire
Picture naming: Gains by treatment order

Group scores for each word set

Interaction between word set and game type: p<0.001

- Word set P
- Word set G
- Word set S

Percent correct

Time 1 | Time 2-After Game P | Time 3-After Game G | Time 4-After Game S | Time 5-After standard therapy
--- | --- | --- | --- | ---

Treatment order
Scenario description: Gains by treatment order

Group scores for each word set

Interaction between word set and game type: p<0.001

- Word set P
- Word set G
- Word set S
Picture naming: Gains by participants

Participant data combined across game type

Main effect of therapy phase: p<0.001
Scenario description: Gains by participants

Participant data combined across game type

Main effect of therapy phase: p<0.001

Percent targets achieved

Therapy phase:
- Baseline
- After game therapy
- Maintenance
- After standard therapy

Therapy phase

Participant data combined across game type

Main effect of therapy phase: p<0.001
Summary of all language testing

<table>
<thead>
<tr>
<th>Test Type</th>
<th>% Change in Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture-naming</td>
<td>*</td>
</tr>
<tr>
<td>Target retrieval, scenario</td>
<td>*</td>
</tr>
<tr>
<td>BNT</td>
<td>*</td>
</tr>
<tr>
<td>CAT average</td>
<td></td>
</tr>
<tr>
<td>Cinderella, mean error rate</td>
<td></td>
</tr>
<tr>
<td>Cinderella, words per min</td>
<td></td>
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<tr>
<td>Cinderella, CIU%</td>
<td></td>
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<tr>
<td>Cinderella, MLU</td>
<td></td>
</tr>
</tbody>
</table>

* indicates significant change.
Participant satisfaction with therapy

Example statements:
- The therapy improved my talking
- The therapy was suited to me
- The therapy helped me achieve my goals
- I am satisfied with the therapy
- I did not get tired

Number of responses

Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree

Standard therapy | Game therapy
Summary


- This therapy is distinguished from others in that it is delivered intensively and efficiently to a group in a game format.

- The improvements were largely item-specific, similar for types of cueing.

- Gains were largely long-lasting and generalised to a connected speech context.

- This supports the validity of our game therapy for improving word-retrieval in connected speech.

- Some participants improved content of unsupported narrative.

- It was clinically effective, cost effective and had strong patient acceptability.
References


References


