Investigating the effectiveness of word level therapy in two different approaches

E. Efstratiadou, I. Papathanasiou, R. Holland, & K. Hilari

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### Disclosures

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Receive a salary from their employing institutions
Overview

- Thales Aphasia Project
- Research Aims
- Word Level Therapy – elaborated SFA
- Methods of the Study
- Results (RQ1 & RQ2)
- Conclusion
Thales Aphasia Project

Thales Aphasia project was:

- 47 months project
- Took place in Greece
- Host institution: University of Athens

3 different research streams:

a. Neurolinguistics

b. Neuropsychology

c. Speech and Language Therapy
Speech and Language Therapy Stream

- Efficacy of SLT

- Two interventions were evaluated:
  - Sentence level: Mapping Therapy
  - Word level: Elaborated Semantic Feature Analysis (ESFA)
Research Aims

a) Efficacy of ESFA therapy versus no therapy. There was a control / delayed treatment group.

b) Relative efficacy of ESFA delivered through different therapy approaches:

- direct therapy (one-to-one therapy),
- combination therapy (one-to-one and group).

Outcomes tapped WHO ICF framework levels and quality of life.
Word Level Therapy

- **Semantic Features Analysis (SFA)**\(^1\) aims to improve word retrieval, by strengthening the connections between the target word and its semantic network.

- **Elaborated Semantic Features Analysis (ESFA)**\(^2\)
  - modified version of SFA, which prompts the participant to elaborate the features described into a sentence.
  - **Purpose:** transferring naming ability to connected speech.

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\(^1\) Boyle & Coelho, 1995; Coelho et al, 2000; Boyle, 2004

\(^2\) Papathanasiou, 2006
Procedure of ESFA³

**Sentence:** e.g. The table is a piece of furniture in the kitchen.

³ Kladouchou et al (2017) Treatment Integrity of Elaborated Semantic Feature Analysis Aphasia Therapy Delivered One-to-one and In-group Settings. *International Journal of Language and Communication Disorders*
Methods: RCT

Double Baseline Pre – Therapy Assessment
BL1: Week 1
BL2: Week 6

Direct Approach
Week 7 to 18
Post – Therapy Assessment
Week 19
Follow – Up Assessment
Week 32

Combination Approach
Week 7 to 18
Post – Therapy Assessment
Week 19
Follow – Up Assessment
Week 32

Delayed Tx/Control Group
Week 7 to 18
Third – Baseline Assessment
Week 19
Allocation to Approach
Post – Therapy Assessment
Week 32
Duration of intervention

12 weeks / 3 hours per week

Direct therapy
3 * 1-hr one – to – one sessions per week

Combination therapy
1 * 1½-hr group
2 * 45-min one – to – one sessions per week

Control/ Delayed treatment Group
12 weeks no intervention
Methodology

RQ1
38 individuals with aphasia

- Therapy Group: 26 Participants
- Control/Delayed Treatment Group: 12 Participants

RQ2
36 individuals with aphasia

- Direct Therapy: 22 Participants
- Combination Therapy: 14 Participants
Assessments

■ Profiling measure:
Greek version of the Boston Diagnostic Aphasia Examination (BDAE)\(^4\)

■ Primary outcome measure:
Oral - Confrontation naming task of 260 colorized Snodgrass and Vanderwart nouns pictures\(^5\).

\(^4\) Papathanasiou et al., 2008
\(^5\) Rossion & Pourtois, 2004
Assessments

Secondary outcome measures

- Impairment Level:
  a) Boston Naming Test for word recall (BNT) Greek version⁶

- Activity & Participation Level:
  a) Greek version of ASHA FACS⁷
  b) Discourse scores from the BDAE Cookie Theft Picture

- Well being and Quality of Life measures:
  a) General health questionnaire -12 (GHQ-12) Greek version⁸
  b) Greek version EQ-5D⁹
  c) Greek version SAQOL-39g¹⁰,¹¹

⁶ Simos et al., 2011; ⁷ Frattali et al., 1995; ⁸ Garifalos et al., 2001; ⁹ Kontodimopoulos, 2008; ¹⁰ Kartsona & Hilari, 2007; ¹¹ Efstratiadou et al., 2012
Results

RQ1: ESFA versus waitlist control group

E.g. if therapy works and control does not -> sig. interaction effect
## Participants Characteristics RQ1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Therapy Group (n = 26)</th>
<th>Control/ Delayed Therapy Group (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>20 Male, 6 Female</td>
<td>6 Male, 6 Female</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td>58.38 (11.26) 38-84</td>
<td>58.42 (11.99) 44-79</td>
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<tr>
<td><strong>Stroke Type</strong></td>
<td>26</td>
<td>11</td>
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<tr>
<td><strong>Ischaemic</strong></td>
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<td>1</td>
</tr>
<tr>
<td><strong>Haemorrhagic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time post stroke (months)</strong></td>
<td>36.73 (49.30) 4-207</td>
<td>16.00 (21.89) 4-78</td>
</tr>
<tr>
<td><strong>Mean (SD)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Participants’ aphasia  
(based on BDAE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Therapy Group (n = 26)</th>
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<tbody>
<tr>
<td>Aphasia Severity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Moderate</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Severe</td>
<td>14</td>
<td>5</td>
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<tr>
<td>Aphasia Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broca</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Wernicke</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Anomic</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Global</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Conduction</td>
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</tr>
<tr>
<td>Unclassified</td>
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<td>1</td>
</tr>
<tr>
<td>Fluency Status</td>
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<td></td>
</tr>
<tr>
<td>Fluent</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Non Fluent</td>
<td>21</td>
<td>7</td>
</tr>
</tbody>
</table>
Primary Outcome Measure
Oral – Confrontation naming Task (Snodgrass Pictures)
Primary Outcome Measure
Oral – Confrontation naming Task (Snodgrass Pictures)

- Significant main effect of time:
  \[ F(1.09, 39.38) = 26.04, \ p < .001, \text{ large effect size } \eta^2_p = .42 \]

- Significant interaction effect:
  \[ F(1.09, 39.38) = 9.56, \ p = .003, \text{ large effect size } \eta^2_p = .21 \]

- No significant group effect

\( \eta^2_p \) Cohen's guidelines (1988): 0.01 = small, 0.06 = medium, 0.14 = large
Secondary Outcome Measure
BNT

- Significant main effect of time:
  \[ F(1.45, 52.14) = 8.37, \ p = .002 \]
  \[ \eta_p^2 = .19 \]

- No significant interaction or group effect
Secondary Outcome Measure
SAQOL-39g Psychosocial Domain

- Significant interaction effect:
  $F (1.72, 61.87) = 5.00, p = .013$
  with a medium effect size ($\eta^2_p = .12$)

- No significant time or group effect
Secondary Outcome Measure
SAQOL-39g Overall score

- Significant interaction effect:
  $F (2, 72) = 4.47, p = .015$, medium effect size ($\eta^2_p = .11$)

- No significant time or group effect
Results

RQ2: Direct ESFA versus combination ESFA

E.g. if both therapies work similarly -> significant time effect
## Participants Characteristics RQ2

<table>
<thead>
<tr>
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<th>Direct Approach (n = 22)</th>
<th>Combination Approach (n = 14)</th>
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<tbody>
<tr>
<td>Gender</td>
<td>16 Male, 6 Female</td>
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<tr>
<td>Age (yrs) Mean(SD) Range</td>
<td>58.23 (11.45) 38-84</td>
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<tr>
<td>Time post stroke (months) Mean (SD) Range</td>
<td>30.55 (45.99) 4-207</td>
<td>33.29 (42.68) 4-127</td>
</tr>
</tbody>
</table>
# Participants’ aphasia
*(based on BDAE)*

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<th>Variable</th>
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</tr>
</tbody>
</table>
Primary Outcome Measure
Oral – Confrontation naming Task (Snodgrass Pictures)
Primary Outcome Measure
Oral – Confrontation naming Task (Snodgrass Pictures)

- Significant main effect of time:
  \[ F (1.90, 64.53) = 32.95, p< .001 \] with large effect size \( \eta^2_p = .49 \)

- No significant interaction effect between time and approach:

- No significant group effect:
Secondary Outcome Measure

BNT

- Significant main effect of time:
  \[ F(1.91, 64.77) = 13.88, \ p < .001 \] with large effect size
  \( \eta_p^2 = .29 \)

- No significant interaction or group
Secondary Outcome Measure
ASHA - FACS

- Significant main effect of time:
  $F (2.16, 73.26) = 7.26, p = .001$
  with a large effect size ($\eta_p^2 = .176$)

- No significant interaction or group effect
Secondary Outcome Measure

- **SAQOL-39g**

- No significant time, interaction, or group effect.

- The effect size for time was large ($\eta^2_p = .50$)
Secondary Outcome Measure

• SAQOL-39g

- Significant main effect of time: $F (2.06, 70.17) = 3.18, p = .046$, with a medium effect size ($\eta^2_p = .09$).

- No significant group or interaction effect
Limitation of the study: small number of participants; issues of power.

This study is the first which explored and provided evidence of the efficacy of ESFA in a randomised design.
Conclusion for RQ1: therapy vs. control

- ESFA therapy was effective in increasing naming ability in people with varying degrees of aphasia severity, different aphasia types, and at different times post onset.

- Therapy group participants showed therapy gains on the primary outcome measure, in contrast to the control / delayed treatment group.

- No gains in measures of communication and emotional wellbeing.

- Gains in psychosocial and overall health-related quality of life.
Both groups of participants that received ESFA therapy increased their naming ability, maintained this ability, and generalised their naming skills to untrained words.

Positive change in how their functional communication skills were perceived by their significant others.

Patterns of change and effect sizes in psychosocial and overall health-related quality of life (large - medium) suggest a larger study is needed to explore these meaningfully.
Thank you!

Questions?