Treatment for people with chronic aphasia
Investigation of high and low intensity, constraint and multimodal treatments

1/3 of stroke survivors experience aphasia
(Dickey et al., 2010)

140,000 people living with aphasia
(Deloitte Access Economics, 2013)

↓ Return to work
↓ Relationship quality
↓ Number of friends
↓ Quality of life
(Hilari, 2011)

↑ Loneliness
↑ Depression
↑ Anxiety
↑ Carer responsibilities
(Patrício, Jesus, & Cruice, 2013)
High level evidence for superiority of aphasia treatment over no treatment. (Brady, Kelly, Godwin, Enderby, & Campbell, 2016)
Need for comparison of treatment approaches

“There was insufficient evidence within this review to establish the effectiveness of one SLT theoretical approach over another”

Cochrane review
(Brady, Kelly, Godwin, Enderby, & Campbell, 2016, p.51)
Need for investigation of intensity

“...some indication of the benefits of high-intensity approaches”

Cochrane review
(Brady, Kelly, Godwin, Enderby, & Campbell, 2016, p.51)
Questions

1. What is the comparative evidence for constraint and multimodal approaches in chronic aphasia?

2. What intensity (hrs/week) is most effective for chronic aphasia?
1

Constraint and Multimodal Treatments
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>1. Intensive training</strong></td>
<td><strong>30 hours in 2 weeks</strong></td>
</tr>
<tr>
<td><strong>2. Communicatively relevant</strong></td>
<td><strong>Group therapy, communicative games</strong></td>
</tr>
<tr>
<td><strong>3. Constraint</strong></td>
<td><strong>Barriers limit modalities</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Shaping</strong></td>
</tr>
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</table>
Clock?

Blue clock?

Can I have the blue clock?

Can I have the shiny, blue clock?

Can I have the shiny, blue clock is ticking?
Multimodal treatments = other modalities cue speech

- Drawing
- Gesture
- Music
- Reading/orthographic
- Writing
Repeat word while gesturing

Repeat word while drawing item

Repeat word while copying item

Repeat word x3 looking at written word and card

M-MAT
Multi-Modal Aphasia Therapy

Rose & Attard (2013)
<table>
<thead>
<tr>
<th></th>
<th>CIAT</th>
<th>MMAT</th>
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<tbody>
<tr>
<td>Intensive training</td>
<td>✓ 15 hours/week, 2 weeks</td>
<td>✓ 15 hours/week, 2 weeks</td>
</tr>
<tr>
<td>Communicatively relevant</td>
<td>Communication Action Games</td>
<td>Communication Action Games</td>
</tr>
<tr>
<td>Shaping of responses</td>
<td>➕ Constrained to verbal</td>
<td>➕ Multimodal cues - gesture,</td>
</tr>
<tr>
<td></td>
<td>Minimal cueing</td>
<td>drawing, writing, reading</td>
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</table>
Constraint and Multi-Modal approaches to therapy for chronic aphasia: A systematic review and meta-analysis.

Systematic review conclusions:

• Encouraging but low-moderate quality evidence for efficacy:
  • Constraint – small RCTs and non-randomised controlled trials, few comparing to equivalent non-constraint controls
  • Multimodal – single case experimental designs and non-randomised trials, varied amount by modality
• Insufficient evidence to demonstrate clear superiority of constraint vs multimodal approaches
• Minimal use of activity/participation and quality of life outcomes

Treatment intensity
“Possibly the biggest challenge facing speech-language pathologists (SLP) today... how much treatment is enough to be effective?”

(Togher, 2012)
## Meta-analysis of high vs low intensity RCTs

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Direction of Effect</th>
<th>Significance</th>
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</thead>
<tbody>
<tr>
<td>Functional Communication</td>
<td><strong>Favours high intensity</strong></td>
<td>$Z = 3.01 \ (P = 0.0026)$</td>
</tr>
<tr>
<td>Aphasia Battery Score</td>
<td><strong>Favours high intensity</strong></td>
<td>$Z = 2.43 \ (P = 0.015)$</td>
</tr>
<tr>
<td>Auditory Comprehension</td>
<td>Favours high intensity</td>
<td>$Z = 0.85 \ (P = 0.40)$</td>
</tr>
<tr>
<td>Naming</td>
<td>Favours high intensity</td>
<td>$Z = 0.75 \ (P = 0.46)$</td>
</tr>
<tr>
<td>Repetition</td>
<td>Favours low intensity</td>
<td>$Z = 0.16 \ (P = 0.88)$</td>
</tr>
<tr>
<td>Reading comprehension</td>
<td>Favours high intensity</td>
<td>$N/A - single study$</td>
</tr>
<tr>
<td>Written expression</td>
<td>Favours low intensity</td>
<td>$N/A - single study$</td>
</tr>
<tr>
<td>Fluency</td>
<td>Favours high intensity</td>
<td>$N/A - single study$</td>
</tr>
<tr>
<td>Mood</td>
<td>Favours high intensity</td>
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(Brady, Kelly, Godwin, Enderby, & Campbell, 2016)
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<td>Functional Communication</td>
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<td>No data</td>
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Meta-analysis of high vs low intensity RCTs
*Chronic aphasia only*
Mozeiko, Coelho and Myers (2015)

<table>
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<tr>
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<th>Intensive CIAT (15hrs/week, 2 weeks)</th>
<th>Distributed CIAT (3hrs/week, 10 weeks)</th>
</tr>
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<tr>
<td>WAB AQ change</td>
<td>9.18 (SD 3.88)</td>
<td>3.95, SD 5.28</td>
</tr>
<tr>
<td>Connected speech measures effect size (Beeson and Robey technique)</td>
<td>4.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Connected speech measures effect size (Tau-U)</td>
<td>0.52, p = 0.0</td>
<td>0.13, p = 0.38</td>
</tr>
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How many hours per week are provided in CIAT/MMAT studies?
Effect size vs Intensity – Expressive language
Effect size vs Intensity – aphasia battery scores
Conclusions

• Limited investigation of treatment intensity in chronic aphasia, especially constraint and multimodal approaches

• One small constraint study comparing intensities (Mozeiko, Coelho and Myers, 2015)

• No multimodal studies comparing intensities
How much therapy per week is ideal for a patient with chronic aphasia?

Should I use a constraint or multimodal treatment?
COntraint Induced or Multi-Modal Personalised Aphasia REhabilitation
Single-blinded RCT
3 treatment arms
n=216
2015-2018

Controls (Usual Care)

Multi-Modal Aphasia Therapy
(Low Intensity)

Constraint Induced Aphasia Therapy
(Low Intensity)

Constraint Induced Aphasia Therapy
CIAT vs MMAT
Lower intensity

Multi-Modal Aphasia Therapy
(Low Intensity)

Controls
(Usual Care)

Single-blinded RCT
3 treatment arms
n=216
2015-2018

Constraint Induced Aphasia Therapy
(Low Intensity)

Constraint Induced Aphasia Therapy

CIAT vs MMAT
High intensity

Multi-Modal Aphasia Therapy
High vs low intensity

CIAT vs MMAT
Lower intensity

Multi-Modal Aphasia Therapy
(Low Intensity)

Controls (Usual Care)

CIAT vs MMAT
High intensity

Single-blinded RCT
3 treatment arms
n=216
2015-2018

Constraint Induced Aphasia Therapy
(Low Intensity)

Constraint Induced Aphasia Therapy
Expected outcomes of COMPARE

- High level evidence for constraint and multimodal treatments in chronic aphasia
  - Impairment
  - Activity/participation
  - Quality life
- Evidence for *comparative effectiveness* of constraint and multimodal treatments
- Evidence for intensity in chronic aphasia
Please contact: Miranda Rose, Melanie Hurley, or Cassie Wilcox

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