CLINICAL BOTTOM LINE:

Therapy aimed at enhancing the physiological support for speech using principles of motor learning may be beneficial during the late stages of post traumatic amnesia (PTA).

Clinical [PICO] Question (Patient/problem, Intervention, [Comparison], Outcome):

WHAT IS THE MOST EFFECTIVE INTERVENTION FOR THE TREATMENT OF MOTOR SPEECH IMPAIRMENTS IN PEOPLE WITH A TBI WHO HAVE SEVERE MEMORY IMPAIRMENT?


Method: Design and Procedure (e.g., note type of research design, comment on randomization, summarize treatment intensity as appropriate, such as dose (trials) per session, session length, frequency, total treatment duration, summarize general procedure, resources/materials required)

- Case study design
- ABA regime where A refers to the assessment phase and B refers to the treatment phase
- GT had 45 therapy sessions and KM had 9 therapy sessions
- Each participant underwent a speech examination using the Motor speech Examination Tool and a Perceptual Speech Analysis Scale before commencing therapy.
- These same assessments were completed at emergence from PTA.
- All assessments were completed in blocks of 20 minutes under standard conditions in constant and unobtrusive surroundings.
- After assessment the Speech Pathologist determined the areas of deficit which were impacting most significantly on speech production and these were incorporated into the treatment regime.
- Two different Speech Pathologists rated the pre- and post – treatment measures with the videos presented in random order.
- Raters were aware the participants had undergone dysarthria treatment and that assessments represented pre- and post-treatment assessments but did not know the nature of the treatment regimes used.
- Therapy was provided on an individual basis for 15 minutes twice each weekday (10 sessions per week)
- Treatment tasks were chosen to improve the capacity of the respiratory, laryngeal, velopharyngeal and articulatory mechanisms as appropriate
- Principles of motor learning were followed when completing therapy tasks.
- Once the participants achieved accuracy, they commenced two blocks of 10 repetitions of the task.
- Visual and verbal cues were used to overcome potential deficits in executive abilities and memory skills.
- Therapy sessions continued until participants emerged from PTA.
- If the participant had difficulty remembering tasks, the training phase was recommenced.
- The SP used a checklist of neurobehavioural consequences of TBI to document a percentage of behaviours observed during sessions.

Method: Participants (where relevant note number of participants, inclusion/exclusionary criteria, characteristics of participants in experimental group and control group/s):

- 2 participants who had sustained a severe TBI and had a diagnosis of Dysarthria by a qualified SP
- Achieved a score of 10/12 on the Westmead PTA
- GT – 45 year old male, GCS 3/15 at scene, PTA duration of 159 days
- KM – 33 year old female, GCS 4/15 at scene, PTA duration of 63 days
- Exclusions included a speech disorder prior to the onset of TBI, pre-existing neurological disease or English as their second language.
Results: (Briefly summarize the results – you could note whether the outcome was evaluated with/without blinding; note how many (if any) of the participants ‘dropped out’ of the study; note if effect size was reported, and what it was – see manual for more information about effect sizes.)

- One out of two participants showed improvements in everyday communication through improved speech intelligibility during conversation.

- GT’s results:
  - GT’s dysarthria decreased from moderate to mild with improvements on the MSE in respiration, laryngeal control and voluntary movements of the lips and tongue.
  - GT’s sustained phonation time improved by 4.97 seconds.
  - Results from PSA showed physiological improvements resulting in functional changes in overall loudness level, maintenance of speech rate, showt rushes of speech and prolonged intervals.
  - Single word intelligibility improved to 87.5% and phrases were 100% intelligible.

- KM’s results:
  - KM’s dysarthria remained mild post treatment
  - Improvements on the MSE indicated physiological improvements in the respiratory, laryngeal, pitch, facial musculature at rest and in movement, mandibular movement and some tongue movements.
  - Minimal changes in respiratory and laryngeal function on the respiratory-phonation task of sustained phonation.
  - Improvements in speech intelligibility at the single word and two-word phrase level to 78.12% correct (increase of 6.25%) and 100% on final examination (increase of 11%) respectively.
  - KM did not show new learning of motor speech skills and required frequent multimodal cueing to achieve the task

Level of Evidence (NHMRC, 2009)  
Circle one  I II III-1 III-2 III-3 IV

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<thead>
<tr>
<th>Quality of Evidence:</th>
<th>☐ Rated</th>
<th>✗ Not Rated</th>
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<tbody>
<tr>
<td>Nature of Evidence:</td>
<td>☐ feasibility</td>
<td>✗ efficacy study</td>
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Additional comments about level, quality and/or nature of the evidence: (e.g., limitations of the study, need for further research addressing a specific issue; assessors weren’t blind, insufficient baseline or baseline not stable, effect size not reported)
  - Raters were not blind to pre- and post-treatment assessments
  - Pre- and post-intervention data only (i.e. no data presented during baseline, intervention, and withdrawal phases)
  - High inter-rater reliability (K=0.65)

Relevance to practice (e.g., In this section just note down the clinical groups thoughts about the relevant of the research findings for clinical practice. Consider some of the following questions - were the participants and/or treatment context similar/different to everyday clinical practice? Is replication possible in clinical practice? What barriers might prevent the results from be applied to everyday clinical practice? What could be done to address barriers? If barriers can’t be modified, how could the procedure be modified to accommodation limitations in clinical practice?)
  - This article is extremely relevant to our TBI caseload given the frequency of dysarthria and period of PTA post TBI.
  - Specificity of treatment sessions were vague
  - A larger sample size with the inclusion of a control group would allow for more conclusive results and control for confounding variables.

Appraised By:  
Adult TBI group (Janine Mullay & Melissa Brunner)  
Date: 09/03/16