NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Paper: TREATMENT (CAP-T)

CLINICAL BOTTOM LINE: Stimulability Training Protocol (STP) in combination with a phonologically focused modified core vocabulary treatment (McVT) has been shown to be effective in increasing the PCC(percent consonants correct) of children with CAS (childhood apraxia of speech) and increasing their consistency of productions.

Clinical Question: *In children with CAS does intervention (e.g., DTTC, Integrated Phonological Awareness Approach, AAC, Combined Melodic Intonation Therapy + Multimodal approach, +/- PML principles) improve speech (+/- literacy, overall communication skill) when compared to no intervention?*

Citation: Iuzzini, J & Forrest K:(2010). Evaluation of a combined treatment approach for childhood apraxia of speech. *Clinical Linguistics & Phonetics; 24(4-5); 335-345*

Method: Design and Procedure

- A single-subject, multiple-baseline-across- subjects design was used for this study.
- Treatment onset was staggered across subjects
- No changes in target production accuracy evident for all children until at least the 3rd week of Tx (suggesting experimental control maintained – inventory changes related to Tx)
- Comparisons were made between pre-treatment & post-treatment phonetic inventories for each child by the evaluation of the no. of sounds added to inventory, PCC, CSIP & ISP changes.

Baseline data:

- Collected via sound specific probes for each Tx target. 3-4 pre-treatment administrations of the probe with final probe administered within the first week of treatment.

Treatment:

- 20 x 1hr treatment sessions over the course of 10 weeks
- Each session comprised of 10min stimulability training & 45mins of mCVT
- Direct intervention on 1 or 2 complex phonological targets within the mCVT framework
- Range of targets included: [l, th, s & r]
- Two phases: imitation & spontaneous production for both STP & mCVT
- Feedback during each phase for both STP & mCVT was provided on a continuum that ranged from continuous to variable. Imitation + spontaneous phase - Initially feedback immediate following production → reduced to variable reinforcement (on average every 3 responses) when 18/20 accurate productions across three sets of trials feedback.

STP:

- Stimulability targets determined in first session by presentation of each sound omitted from child's inventory. Any non-stimulable sound was included in STP.
- As productions more accurate, verbal models were decreased & primarily responses elicited from pictorial targets (verbal model when necessary).
- Once independently produced one of STP stimuli accurately in 90% of trials across 3 sessions, sound removed from STP training & accurate production of that sound was then cued for the child in mCVT trials.

mCVT:

- 30 meaningful & commonly used words containing the target sound/s generated by parents. 10 of these were selected by clinician such that Tx sound(s) occurred at least once in each possible WP
- The 10 words were changed once the child produced accurate responses on 18/20 trials, across 3 trials with variable reinforcement.
- Progress in Tx monitored by use of sound-specific generalisation probes which tested production of target sounds & their cognates in all WP on 30 untreated words.
- Termination for Tx: 20 correct productions out of 30 trials on generalisation probe, or completion of 20 Tx sessions – whichever was achieved first.

Critically Appraised Paper: TREATMENT (CAP-T) *continued....*

Method: Participants

Participants were two males and two females between the ages of 3;7 and 6;10 who were recruited via advertisements in local media. Three children had received treatment prior to this study but persisted in severely disordered speech, characterised by low PCC and highly variable sound substitutes. If SS <85 on GFTA-2 then eligible for study and CELF-P and 200 word sound probe administered. All children exhibited a consonant substitute inconsistency percentage (CSIP) of greater than 25% during pre-treatment testing and were thus designated as having CAS. Children also demonstrated:

- PPVT-3 SS > 90
- ISP <25%
- PCC <40%

Results:

- No changes in target production accuracy were seen in any subject until the third week of treatment. Overall, on average a 20% increase in PCC, range 9-32%.
- On average, subjects gained 5 phonemes, range 1-10.
- Two added the treatment target and other complex sounds to their inventories: the other two did not show the target sound.
- Three subjects showed substantial decrease in variability but one showed constant level of inconsistency.
- All 4 subjects remained throughout the entire study, no effect size reported.

Level of Evidence (NHMRC, 2009) *Level* **IV**

Quality of Evidence: ❒Rated X Not Rated

(i) rating system (e.g., PEDRo, SCED Scale from SpeechBITE) _____

(ii) score _____

Nature of Evidence: ❒ **feasibility** ❒ **efficacy study** X **effectiveness study**

Relevance to practice

Participants were similar to clinical cases seen in practice. Replication of the treatment was achievable re. method and materials. The occasions of service (ie. intensity) may not be practical but the essential components of therapy could be replicated. The approach could still be used within the limited session model, however data should be collected on outcomes.

Appraised By: EBP Paediatric Speech Group

Date: 22.5.2012