NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Paper: TREATMENT (CAP-T)

CLINICAL BOTTOM LINE: Dynamic Temporal and Tactile Cueing (DTTC) was shown to be an effective treatment for teaching specific functional utterances for 3 out of 4 children with severe CAS who attended intensive intervention sessions.

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: Strand, E.A, Stoeckel, R., Baas, B. (2006). Treatment of severe Childhood Apraxia of Speech: A treatment efficacy study. *Journal of Medical Speech-Language Pathology, 14*, 297-307

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)

Design:

- A single subject multiple baseline design

Procedure:

- Dynamic Temporal and Tactile Cueing (DTTC): involves multimodal cues (i.e. tactile, visual) and integral stimulation (i.e. the child initially produces utterance simultaneous with the clinician, then immediate repetition, then repetition after a delay).
- Baseline data for experimental stimuli were taken over several sessions
- Frequent probes, consisting of 10 random trials of each trained stimulus were scored using a 3-point scale scoring system (0 = inaccurate production, 1 = minor errors, 2 = accurate movement gestures for correct production). Probe data were always collected in direct imitation with only the first response scored
- A small stimulus set of functional utterances were chosen (5-6 utterances)
- Each utterance was practised 15-30 times/block and then another utterance was practised
- Most utterances received 2-3 blocks of practice per session
- Feedback was specific to movement performance and provided immediately and frequently. Feedback frequency and specificity reduced as production improved
- As each utterance was mastered, it was moved to a generalisation phase and new targets were introduced
- All participants received two 30-min therapy sessions/day, 5 days/week
    - Number of sessions and weeks of intervention did vary
    - Participant 1, LH: 43 sessions/4 weeks
    - Participant 2, CK: 46 sessions/6 weeks
    - Participant 3, CD: 50 sessions/6 weeks
    - Participant 4, BS: 48 sessions/4 weeks

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

Inclusionary Criteria:

- Diagnosis of CAS

Exclusionary Criteria:

- Hearing difficulties
- Diagnosis of ASD
- Severe cognitive impairment

Participants:

- 4 males (aged 5;5 – 6;1)
- All diagnosed with severe CAS and were essentially nonverbal
- 2 participants had co-existing mild dysarthria (spastic &/or ataxic)
- 3 participants had mild fine motor deficits
- All participants had attended previous therapy for 2-4 years
- 1 participant had a mild intellectual impairment

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

Results: (briefly summarize the results, 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)

- 3 participants showed improvements shortly after the onset of treatment for all targeted utterances
- Participant 1, LH: able to increase oral pressure for /p/, /b/ and /t/ and using /p/ in a number of different words. Mastered most of training items (it is unclear how many, 12?) as well as other phrases not in stimulus set.
- Participant 2, CK: made "slow but steady progress"
- Participant 3, CD: improvement in jaw and lip position for CV articulatory configuration
- Participant 4, BS: some changes made in treatment sessions but not in probe sessions. Reported as not showing "measurable change".
- 2 participants (CD and CK) were able to be followed-up into generalisation
    - "most utterances show good maintenance over time across children"

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

Quality of Evidence: ❒ Rated ❒ Not Rated

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

(ii) score _____

Nature of Evidence: ❒ feasibility ❒efficacy study ✓effectiveness study

Relevance to practice (e.g., 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?)

- Structure of each session is reproducible in clinical practice
- Participants were complex and represented typical caseload seen in community health centre
- The frequency of treatment sessions (twice per day for 5 days) is not achievable in community health settings
    - Is DTTC effective when treatment less frequent?
    - Can parents do more of the treatment at home?

Additional comments (e.g., limitations of the study, need for further research addressing a specific issue)

- only 4 participants
- results were not very clear and appeared subjective (i.e. 'most', 'mastered')
- graphic information of results available for only 3 participants
- follow-up into maintenance only done with 2 participants
- number of hours and weeks of intervention varied
- no control group and no comparison with another treatment approach
- inter-rater reliability only 70% for one participant
- further studies required to look at mass vs distributed practice and parent involvement in therapy

Appraised By: EBP Paediatric Speech Group | **Date: 2012**