Intensive therapy for children with Childhood Apraxia of Speech and other co-occurring conditions in the real world

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Childhood Apraxia of Speech

- *Childhood apraxia of speech (CAS) is a:*
  - neurological childhood (pediatric) speech sound disorder
  - children's movement of their tongue, lips, jaw, vocal folds and palate are inconsistent due to poor planning and programming
  - have no muscle weakness or structural impairments

ASHA (2007) Childhood Apraxia of Speech Technical Report. p3-4.

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Key features of CAS

- Inconsistency
- Lengthened and disrupted coarticulatory transitions
- Inappropriate prosody (especially lexical and phrasal stress)
- Syllable segregation
- Groping (articulatory searching)
- Increased difficulty with polysyllabic words
- Intrusive schwa

(ASHA, 2007; Murray et al, 2018; Iuzzini-Seigel et al, 2022; Shriberg et al, 2019b)

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Best evidence and service delivery…

3 treatments with promising external evidence
(Maas et al, 2014; Murray et al, 2014; Morgan et al, 2018)

- Dynamic Temporal & Tactile Cueing (DTTC)
- Nuffield Dyspraxia Programme- 3rd Edition (NDP3)
- Rapid Syllable Transition Treatment (ReST)

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Treatment	Intensity	Age range	Participant characteristics	References
Dynamic Temporal and Tactile Cueing (DTTC)	4 - 5 x a week (10-30 sessions) 2 or 3 x a week (8-12 sessions)	5 5-6 3-6 5-7	CAS, Hx of VPI CAS, dysarthria, mild cognitive impairment, OME CAS, repaired cleft lip & palate, severe receptive language CAS, Dysarthria, some receptive lang	Strand & Debertine (2000) Strand et al (2006) Edeal & Gilversleeve-Neumann (2011) Maas & Farinella (2012) Maas et al (2012)
Nuffield Dyspraxia Programme – 3rd edition (NDP3)	4 x a week for 12 sessions	4-12 4-12	CAS CAS	Murray et al (2015) McKechnie et al (2020)
Rapid Syllable Transition Treatment (ReST)	4 x a week 4 x a week 4 x a week 2 x a week, 4 x a week for 12 sessions	7-10 4-12 4-12 6-13	CAS Mild-mod receptive language disorder (Thomas)	Ballard et al (2010) McCabe et al (2016) McCabe et al (2023) Murray et al (2015) Thomas et al (2014, 2016, 2018)

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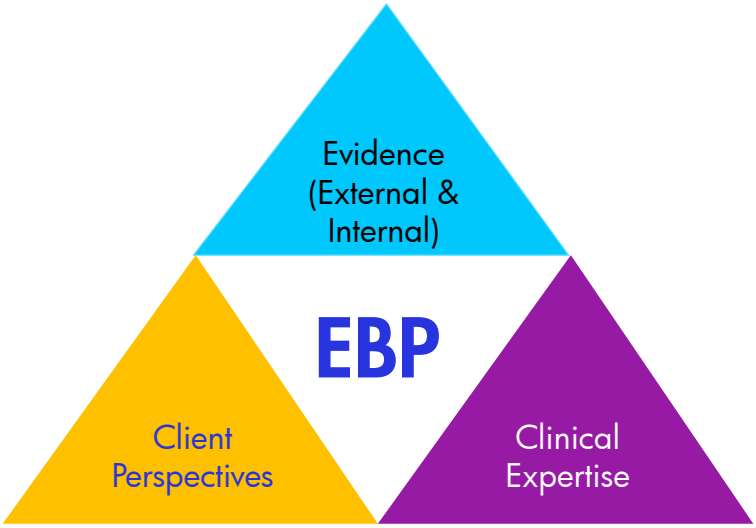
How does this work in clinical settings?



(Adapted from ASHA: Evidence-Based Practice (EBP) (asha.org))

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Aims:

- To present outcomes of our July 2022 intensive block of therapy for children with CAS and other conditions; and
- To describe how we organised the therapy block, administered the treatment, collected outcome data, and reflected on our practice.

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Method - participants

Child	Age	Dx	Other diagnoses	Therapy
1	3;7	CAS	Tongue & lip tie (released)	DTTC
2	5;9	CAS	Prader-Willi Syndrome, Flaccid Dysarthria	DTTC
3	6;7	CAS	None	ReST
4	7;2	CAS	Autism	ReST
5	8;7	CAS	DLD, Dyslexia, Dysgraphia	ReST
6	8;10	CAS	Dysarthria, Hx of Stuttering, Anxiety, ADHD, Developmental Coordination Disorder, genetic condition (22q11.2 distal duplication)	ReST
7	9;5	CAS	Dysarthria (flaccid)	DTTC
8	11;10	CAS	Anxiety, Sensory Processing Disorder	ReST

CAS diagnosed using DEMSS (Strand, 2019), ASHA CAS criteria (2007) and/or Mayo 10+1 (Shriberg et al., 2019)

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Our Team:

- Two treatment SLPs
  - 6-15 years post graduation
  - Both had some research experience
  - Both had previous experience with DTTC & ReST
- Third SLP with PhD in CAS
  - supported 2 primary SLPs
  - conducted some sessions due to scheduling.
- Allied Health Assistant
  - Not directly involved in the sessions
  - Involved in scheduling, and making sure materials were ready

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Therapy delivery:

- School holiday intensive – July 2022
  - 4 sessions a week for 3 weeks (like ReST and NDP3 studies showing promising outcomes)
  - Clinic based and/or telehealth
- Therapy approach
  - Decided based on individuals' age, severity, strengths and needs
    - ReST delivered as per procedures – see: ReST website
    - No child needed NDP3 - see ndp3.org
    - DTTC delivered as per manual – see: Strand et al, 2020

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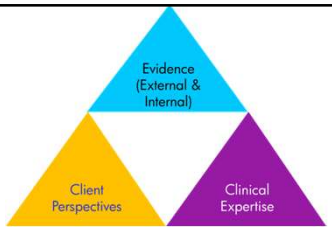
Outcome measures



- Quantitative outcomes:
  Assessed before, immediately after and 1-month after therapy
  - DTTC: spontaneous items correct in sessions, in probes, untreated words (NDP3 assessment or polysyllable words).
  - ReST: treated 3 syllable pseudo-words / phrases, untreated polysyllable words and sentences.
- Qualitative outcomes:
  After therapy surveys using Microsoft forms
  - Carers
  - Clinicians
    - Rating scales and open comments.

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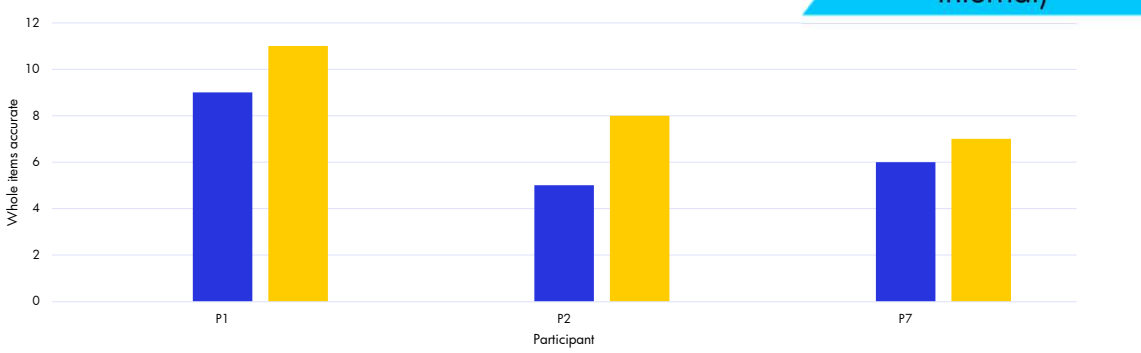
Quantitative results:



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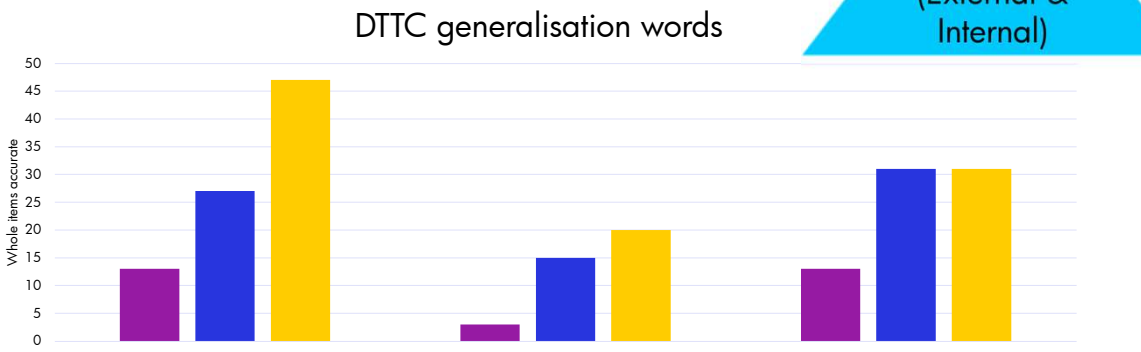
Quantitative results:



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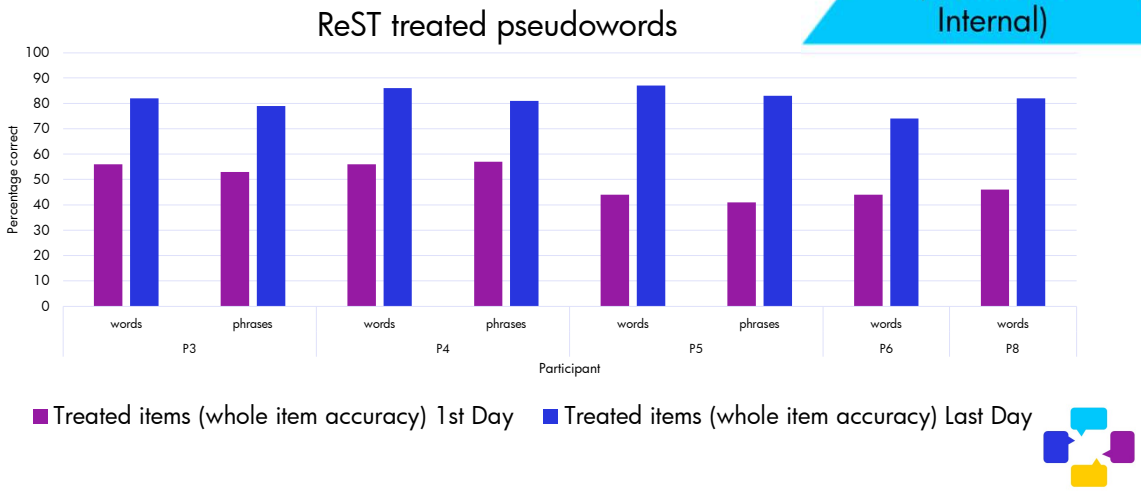
Quantitative results:

Evidence (External & Internal)



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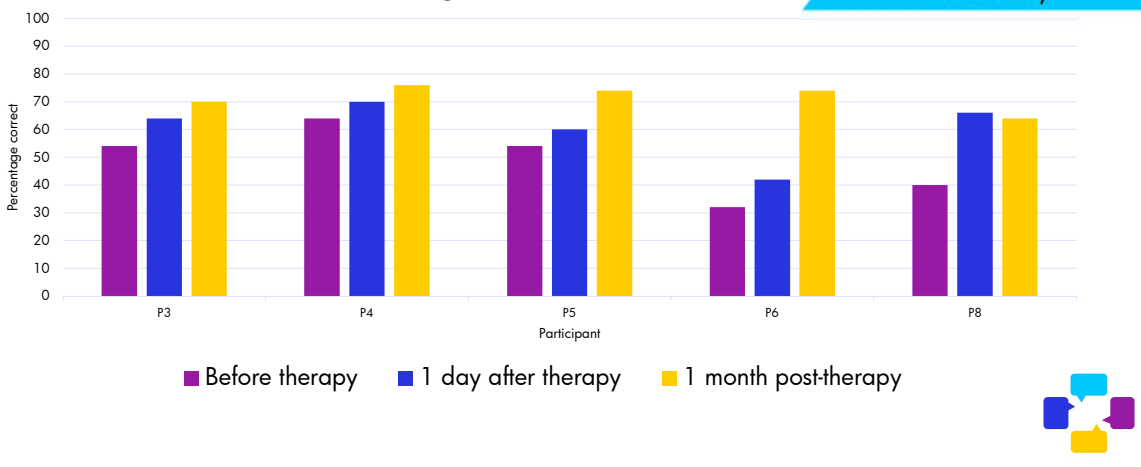
Quantitative results:

Evidence (External & Internal)



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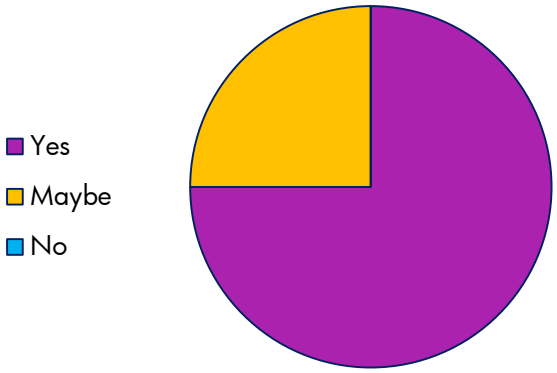
Qualitative: Carer feedback

Client Perspectives

- Would you do a 3-week intensive again?



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Qualitative: Carer Comments

Client Perspectives

What do you think worked well?

- "I have noticed some improvements in X's speech and in (their) confidence and I feel like (X) is speaking in a more age appropriate manner"
- "The consistency of the therapist; the repetition of the course; and attending everyday."
- "I was impressed that X stayed focused for the hour each day, (they) also loved the challenge."

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Qualitative: Carer Comments

Client Perspectives

What do you think could be better?

- "More time slots available"
- "I think X was getting a bit too distracted by playing with the computer at times, therefore not hearing the word correctly".
- "I can't think of anything that could be "done better" about the intensive"

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Qualitative: Clinician feedback

Clinical Expertise

Would you do a 3-week intensive again?

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Qualitative: Clinician Comments

What do you think worked well?

- You see progress faster and don't need to re-establish the same skills each session but can build on the previous session
- Small caseload – reduced cognitive load
- Good way to use school holidays while regular clients have a break
- Massed practice of the treatments and problem solving together led to increased skills and confidence

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Qualitative: Clinician Comments

What do you think could be better?

- Sharing out timeslots more fairly
- Organisation of materials/data
- Book pre/post + 4 week follow up at the same time as the other sessions
- Clear info for families about what comes next

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Discussion

- The intensives were successful.
- Clients made similar gains to published literature despite having co-occurring needs.
- Satisfaction for families and team members was high.

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Adjustments for clients with CAS+

Clinical Expertise

- Using breaks well, break activities individualised
- For those with anxiety:
  - Visual timetable
  - Clear expectations, individual goal setting
  - Choices about how we said correct/incorrect, e.g. yes/no
- Visual Stimuli –
  - Some had cards/ PowerPoint
  - some imitated ReST words without visuals

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Limitations

- Quality improvement project
- Design not optimal – should be single case experimental design with 5 baselines prior to therapy over at least 3 sessions
- Clinicians were experienced and had delivered DTTC & ReST therapy previously

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Could you do this? This is what you need to know:

- Intensives are tiring!
- Intensive therapy looks different – need to clear on:
  - what the therapy is for
  - the commitment required,
  - how we are measuring clients' improvement.
- Scheduling is hard – but possible with good systems and using timeslots.

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Clinical bottom line

- Intensives are possible and effective
  - Planning & scheduling
  - Training & support for clinicians
  - Preparation of session resources
  - Templates – progress notes, reports etc.
  - Collaborate – divide and conquer.

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Helpful resources:

DTTC: https://childapraxiatreatment.org/

ReST: https://rest.sydney.edu.au/

These and more on our website:

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Thank you

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