

Supplemental Material S5. Explicit intervention to improve past tense marking for early school-aged children with DLD template for intervention and description and replication (TIDieR; Hoffman et al., 2014) checklist.

TIDieR Item	Description
1. Brief Name: Provide the name or a phrase that describes the intervention	Theoretically motivated past tense (ED) intervention (TheMEDI)
2. Why: Describe any rationale, theory, or goal of the elements essential to the intervention	<p>TheMEDI was developed based on recommendations from the PDH which suggests children with DLD have impaired implicit memory and spared explicit memory. Strategies include:</p> <ul style="list-style-type: none"> - Explicit rule instruction - Repeated practice - Visual support <p>TheMEDI used the SHAPE CODING™ system (Ebbels, 2007) in combination with a systematic cueing hierarchy (Smith-Lock et al., 2015).</p>
3. What: Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in the intervention delivery or in training of intervention providers	<p>Shapes and arrows from the SHAPE CODING™ system were used as physical materials to teach past tense production (available here: https://www.moorhouseschool.co.uk/shape-coding). The arrows were modified to distinguish between different allomorphs for past tense (i.e., [d], [t], [əd] linked to orthography ‘d,’ ‘t,’ ‘ed,’ respectively).</p> <p>Intervention materials for activities from each session are reported in Table 2.</p>
4. What: Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities	<p>Detailed reporting of the 10 essential steps to each session is available in Table 3.</p> <p>Procedures involved explicit rule instruction with visual support, repeated practice of past tense production for 50 trials with systematic cueing, and consolidation exercises.</p> <p>Individual session plans are available from https://www.languageandliteracyinyoungpeople.com/apps-resources</p>
5. Who provided: For each category of the intervention provider, describe their expertise, background and any specific training given	Intervention was provided by an SLP (author) with five years’ experience working with early school-aged children with DLD. The SLP also completed the SHAPE CODING™ Part 2 advanced training with supervisor (SE). The fidelity checklist (Table 3) and session plans would facilitate implementation by other SLPs.

6. **How:** Describe the modes of delivery of the intervention and whether it was provided individually or in a group
 Intervention was provided face-to-face in 1:1 sessions.
7. **Where:** Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features
 Intervention was provided at the participants' school in a quiet space (e.g., onsite therapy room). The intervention could easily be provided in a clinic room.
8. **When and How Much:** Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose
 Dose: 50 trials, in 45 minute (Calder et al., 2018) or 20-30 minute sessions (Chapter 3, Study 1: Calder et al., 2020; Chapter 4, Study 2: Calder et al., accepted)
 Dose frequency: 2x per week (Calder et al. 2018; Chapter 3, Study 1: Calder et al., 2020) or 1x per week (Chapter 4, Study 2: Calder et al. accepted)
 Duration: 5 weeks (Calder et al., 2018) or 10 weeks (Chapter 3, Study 1: Calder et al., 2020; Chapter 4, Study 2: Calder et al., accepted)
 Cumulative intervention intensity: ~490 trials over 7.5 hours (Calder et al., 2018), 1000 trials over 7-10 hours (Chapter 3, Study 2: Calder et al., 2020), or 500 trials over 3.5-5 hours (Chapter 4, Study 2: Calder et al., accepted)
9. **Tailoring:** If the intervention was planned and personalised, titrated or adapted, then describe what, why, when and how
 One instance of tailoring (P6 in Chapter 3, Study 1: Calder et al., 2020), where trials were reduced to 30 per session, and the cueing hierarchy was simplified. This was to aid attention and engagement for this participant.
10. **Modifications:** If the intervention was modified during the course of the study, describe the changes
 Dose was variable (Calder et al., 2018) to held constant at 50 trials (Chapters 3 and 4, Studies 1 and 2: Calder et al., 2020, accepted) to evaluate optimal dose (Chapter 5, Study 3: Calder et al., in preparation).
 Intervention duration was increased from 5 weeks (Calder et al., 2018) to 10 weeks (Chapters 3 and 4, Studies 1 and 2: Calder et al., 2020, accepted) to evaluate whether an increase would amplify intervention effects.
 Dose frequency was halved from 2x per week (Chapter 3, Study 1: Calder et al., 2020) to 1x per week (Chapter 4, Study 2: Calder et al., accepted) to evaluate efficacy with a clinically relevant frequency.
 Planned fidelity procedures included using session plans and intervention fidelity checklist throughout the program of research. All sessions were video recorded so blinded raters could score percentage accuracy of inclusion of elements from a random 20% sample. Inter-observer agreement of percentage accuracy was calculated using ICC (.976)
11. **How Well:**
 Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies

were used to maintain or improve
 fidelity, describe them

12. How Well:

Actual: If intervention adherence or
 fidelity was assessed, describe the
 extent to which the intervention was
 delivered as planned

97.95% accuracy suggests all procedures were implemented during most intervention sessions.

Notes. DLD = developmental language disorder; ICC = intraclass correlation coefficients; PDH = Procedural Deficit Hypothesis; SLP = speech-language pathologist.

References

- Calder, S. D., Claessen, M., Ebbels, S., & Leitão, S. (2020). Explicit grammar intervention in young school-aged children with Developmental Language Disorder: An efficacy study using single-case experimental design. *Language, Speech, and Hearing Services in Schools*, 51(2), 298-316. doi:10.1044/2019_LSHSS-19-00060
- Calder, S. D., Claessen, M., & Leitão, S. (2018). Combining implicit and explicit intervention approaches to target grammar in young children with Developmental Language Disorder. *Child Language Teaching and Therapy*, 34(2), 171-189. doi:10.1177/0265659017735392
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- Ebbels, S. (2007). Teaching grammar to school-aged children with specific language impairment using Shape Coding. *Child Language Teaching and Therapy*, 23(1), 67-93. <https://doi.org/10.1191/0265659007072143>
- Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., . . . Michie, S. (2014). Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ : British Medical Journal*, 348, g1687. doi:10.1136/bmj.g1687
- Smith-Lock, K. M., Leitão, S., Prior, P., & Nickels, L. (2015). The Effectiveness of Two Grammar Treatment Procedures for Children With SLI: A Randomized Clinical Trial. *Language, Speech, and Hearing Services in Schools*, 46(4), 312-324. https://doi.org/10.1044/2015_LSHSS-14-0041