Five Evidence-based Principles to **Facilitate English Grammar Development for Children with Developmental Language Disorder**

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Presented online at the International Developmental Language Disorder Research Conference (IDLDRC2023), 11-13 September, 2023 – The DLD Project.

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The Child Language Intervention Lab



 The University of Minnesota - Twin Cities is located on traditional, ancestral, and contemporary lands of Indigenous people. The University resides on Dakota land ceded in the Treaties of 1837 and 1851.



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Current Study

- Grammatical Language Intervention Study:
 https://www.finestackclil.com/studies-enrolling-participants/
- Funded by National Institutes of Health: NIDCD, R01 DC019374-01
- Targeting the development of grammatical forms for 5-9 year olds with Developmental Language Disorder (DLD)

Evidence-based Approaches when Targeting Grammatical Forms

Ten Principles of Grammar Facilitation for Children With Specific Language Impairments

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10 Principles

TABLE 1. Ten principles of grammatical intervention for children with SLI.

- The basic goal of all grammatical interventions should be to help the child to achieve greater facility in the comprehension and use of syntax and morphology in the service of conversation, narration, exposition, and other textual genres in both written and oral modalities.
- 2. Grammatical form should rarely, if ever, be the *only* aspect of language and communication that is targeted in a language intervention program.
- Select intermediate goals in an effort to stimulate the child's language acquisition processes rather than to teach specific language forms.
- The specific goals of grammatical intervention must be based on the child's "functional readiness" and need for the targeted forms.
- Manipulate the social, physical, and linguistic context to create more frequent opportunities for grammatical targets.

- Exploit different textual genres and the written modality to develop appropriate contexts for specific intervention targets.
- Manipulate the discourse so that targeted features are rendered more salient in pragmatically felicitous contexts.
- Systematically contrast forms used by the child with more mature forms from the adult grammar, using sentence recasts.
- Avoid telegraphic speech, always presenting grammatical models in well-formed phrases and sentences.
- Use elicited imitation to make target forms more salient and to give the child practice with phonological patterns that are difficult to access or produce.

5 Additional Principles





Clinical Focus

Five Additional Evidence-Based Principles to Facilitate Grammar Development for Children With Developmental Language Disorder

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ARTICLE INFO

Article History: Received February 6, 2023 Revision received April 27, 2023 Accepted May 14, 2023

ABSTRACT

Purpose: Because the development of grammatical forms is difficult for many children with developmental language disorder (DLD), language interventions often focus on supporting children's use of grammatical language. This article proposes five additional principles to those suggested by Fey et al. (2003) to facilitate the development of grammatical forms by children with DLD. Three of

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5 Additional Principles

Principle 11: Present Target Forms Using a Large Number of Unique Verbs Principle 12: Present Target Forms Using Verbs that Vary in Difficulty

Principle 13: Present Target Forms in Sentences that Vary in Syntactic Structure

Principle 14: Incorporate the Use of Auditory Bombardment to Teach Target Forms Principle 15: Incorporate the Use of Explicit Instruction to Teach Target Forms



Large Number of Unique Verbs

Plante et al., 2014

 4- to 5-year olds with DLD were randomized to either the high verb variability group or low verb variability group within intervention sessions.

High Variability Group

(n = 9)

 Randomly assigned to hear 24 unique verbs per session in conversational recasts

Low Variability Group

(n = 9)

 Randomly assigned hear 12 unique verbs repeated twice per session in conversational recasts



Large Number of Unique Verbs

Plante et al., 2014 cont.

- The high verb variability group outperformed the low verb variability group on the targeted grammatical forms.
- 4- to 5-year olds with DLD had better outcomes when targeted grammatical forms were modeled across a large number of unique verbs.
- Intervention targets included -ed, auxiliary is, she, third person -s

High Verb Variability

Low Verb Variability



Large Number of Unique Verbs

Principle into Practice:

Include a large number of different verbs across session tasks

1. Imitation

1. The unicorns appear

- 2. The unicorn appears
- 3. The cat and dog look
- 4. The cat looks
- 5. I know where they live
- 6. I know where he lives
- 7. The cookies need milk
- 8. The cookie needs milk
- 9. They picture the ocean
- 10. She pictures the ocean
- 11. They give a present
- 12. He gives a present
- 13. They stay after school
- 14. He stays after school

2. Story Retell

Asha wants to play by herself today. Sometimes she just likes to be alone at recess, so she can think.

- > Today she begins on the trampoline. The trampoline is one of her favorite places to play, but she gets worn out.
- > She jumps > as high > as she > can go.
- > Suddenly, Asha sees that the swings are empty. She loves to swing.
- > Asha does a lot of thinking as she swings higher and higher and higher!

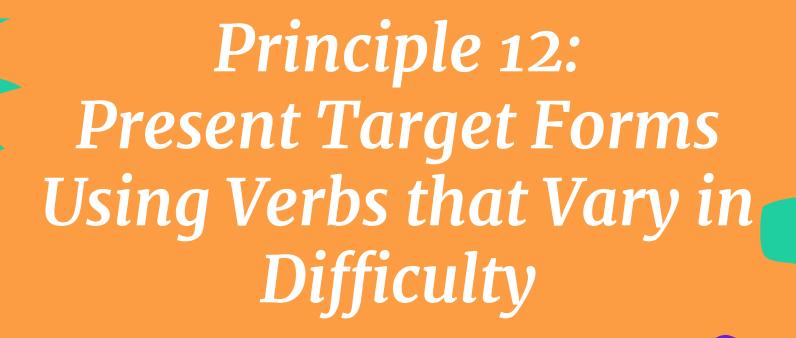
3. Structured Play

More unique verbs

4. Bombardment

More unique verbs





Verbs that Vary in Difficulty

Defining Difficulty:

Easy

- High Frequency
 - o "Wanted"
- Low Phonological Complexity
 - o "Popped"
 /p_pt/

Hard

- Low Frequency
 - o "Figured"
- High Phonological Complexity
 - "Confused"k_n.'fj_zd

Verbs that Vary in Difficulty

Targeting *past tense -ed* in Owen Van Horne et al. (2017):

Learning was maximized when models and recasts in intervention with to 4- to 10-year olds included HARD verbs along with EASY verbs, as defined (in part) by the **frequency** and **complexity** of the verbs.

Verbs that Vary in Difficulty

Principle into Practice:

Get familiar with verb characteristics

Frequency and complexity characteristics available for past tense -ed, third person singular -s, present progressive is/are + ing, and do/does questions

CLAN Output	Verb	IPA with	Average Frequency Rating	Frequency Code	WCM Score	Complexity Code
v tip-PAST	tip	t_pt	12	Low	2	Low
v peek-PAST	peek	p_kt	11	Low	3	Low
v spy-PAST	spy	sp_d	12	Low	3	Low
v confuse-PAST	confuse	k_n.'fj_zd	10.5	Low	9	High
v figure-PAST	figure	'fgjıd	12	Low	6	High
v spoil-PAST	spoil	'spld	12	Low	6	High
v want-PAST	want	'w_n.t_d	4	High	2	Low
v pop-PAST	pop	p_pt	7.5	High	2	Low
v open-PAST	open	'p_nd	9	High	3	Low
v color-P <mark>A</mark> ST	color	'kl_ud	3	High	5	High
v climb-PAST	climb	kl_md	8	High	5	High
v compare-PAST	compare	k m.'p ud	10	High	5	High

Resource Link: https://conservancy.umn.edu/handle/11299/241882

Verbs that Vary in Difficulty

Principle into Practice:

Include verbs with different difficulties in a variety of activities

- Imitation
- Story Retell
- Structured Play
- Auditory Bombardment

Imitation

- She will want the ice cream
- She wanted the ice cream
- They will tip it
- They tipped it
- The yogurt will spoil
- The yogurt spoiled

Easy
High Frequency
Low Complexity
Mixed
Low Frequency
Low Complexity
Hard
Low Frequency
High Complexity



Principle 13: Present Target Forms in Sentences that Vary in Syntactic Structure

Variation in Syntactic Structure

Syntactic Structure: Verb Placement

Easy

- Sentence final verb placement
- He is **looking**

Hard

- Sentence medial verb placement
- He is **looking** out the window.

Sundara et al. (2018; 2011); Dalal & Loeb (2005)

Variation in Syntactic Structure

Principle into Practice:

The kangaroo is jumping

The kangaroos are jumping

The student is having fun

The students are having fun

The writer is telling a story

The writers are telling a story

The teacher is coming

The teachers are coming

The popsicle is starting to melt

The popsicles are starting to melt

The sink is dripping

The sinks are dripping

The cat is messing with string

The cats are messing with string

13 Variation in Syntactic Structure

Principle into Practice:

Story Example:

Today, Amir and Manny want to play baseball. Lots of people like baseball, so people are watching them play. Amir is standing at home plate with a bat.

Manny is throwing the ball over the plate.

Sometimes, Amir swings and misses.

The next throw is right down the middle.

Amir is hitting the ball with the bat.

The ball flies into the air.

The people <u>are yelling</u> excitedly. It's a home run!

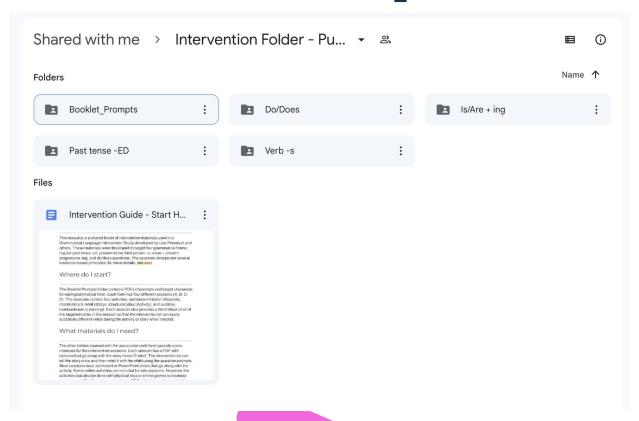


Prompt variation:

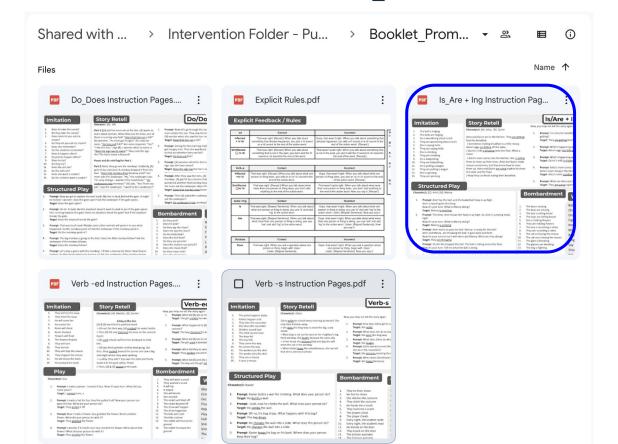
What is Amir doing at home plate? He is standing.

What is Amir doing?
He is standing at home plate.

Session Scripts



Session Scripts



Session Scripts

Imitation

- The kangaroo is jumping
- 2. The kangaroos are jumping
- 3. The student is having fun
- The students are having fun
- 5. The writer is telling a story6. The writers are telling a story
- 7. The teacher is coming
- 7. The teacher is coming
- 8. The teachers are coming
- The popsicle is starting to melt
 The popsicles are starting to melt
- The popsicles are starting to mel
- The sink is dripping
- 12. The sinks are dripping
- 13. The cat is messing with string
- .4. The cats are messing with string

Story Retell

Character/s: [A]: Amir; [B]: Manny

Today, Amir and Manny want to play baseball. / Lots of people like baseball, so people <u>are</u> watching them play.

/ Amir is standing at home plate with a bat.
/ Manny is throwing the ball over the plate.
/ Sometimes, Amir swings and misses.

/ The next throw is right down the middle. / Amir is hitting the ball with the bat.

/ The ball flies into the air.

/ The people <u>are yelling</u> excitedly. It's a home run!

Is/Are + Ing C

Now, you help me tell the story again:

- Prompt: Amir and Manny want to play baseball. What are these people doing?
 - Target: The people are watching them play.
- Prompt: Before Amir can bat, he needs to stand in the right place. Where is Amir?
 - Target: Amir is standing at home plate.
- Prompt: What is Manny doing with the ball?
 Target: Manny is throwing the ball.
- 4. Prompt: This throw is right down the middle. What is Amir doing?
 - Target: Amir is hitting the ball.
- Prompt: The ball flew into the air. What are the people doing?
 Target: The people are yelling excitedly.

Structured Play

Characters: [C]: Keesha; [D]: Lance

- Prompt: Today we can play in the kitchen. Look, Keesha is holding a fork. Now it's your turn. What is your person doing? Target: Lance is holding a fork
- Prompt: Look at the yummy cake. Keesha is cutting the cake. Now it's your turn. What is Lance doing?

Target: Lance is cutting the cake.

- Prompt: Keesha ate some cake and is thirsty.
 She's getting milk from the fridge. Glug, glug, glug! [put milk back in fridge]
 Now it's your turn to get some milk. What is Lance doing?
 Target: Lance is getting milk.
- Prompt: The dog looks hungry. Keesha is giving the dog a treat. Now it's your turn. What is Lance doing?
 Target: Lance is giving the dog a treat.
- Prompt: It's time to clean up. Keesha is putting food in the fridge. Now it's your turn. What is Lance doing?
 Target: Lance is putting food in the fridge.

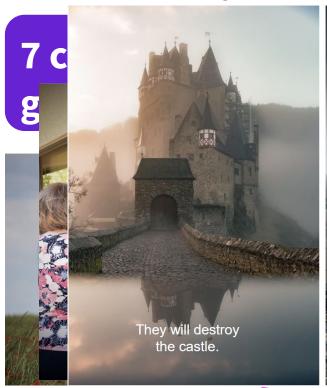
Bombardment

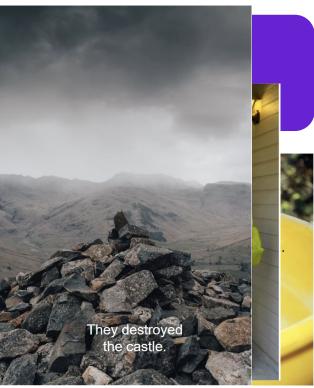
- . The kid is pretending to fly
- The kids are pretending to fly
- The raccoon is sneaking away
- The raccoons are sneaking away
- The kid is whacking the pinata
 The kids are whacking the pinata
- 7. The computer is working
- The computers are working
 The student is lying down
- 10. The students are lying down
- The flag is waving
- 12. The flags are waving
- 13. The phone is ringing
- 14. The phones are ringing

Word Bank

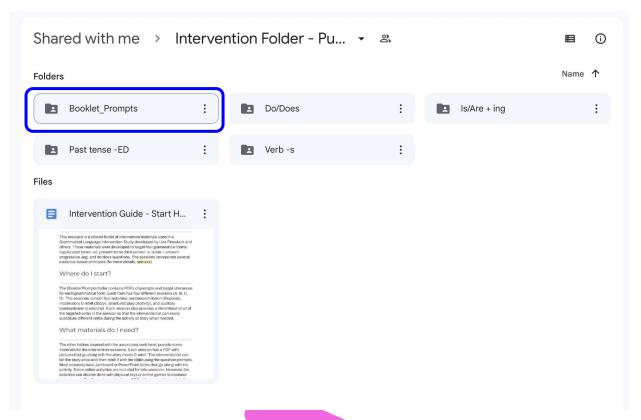
Come	Cut
Drip	Get
Give	Have
Hit	Hold
Jump	Lie
Mess	Pretend
Put	Ring
Sneak	Stand
Start	Tell
Throw	Watch
Wave	Whack
Work	Yell

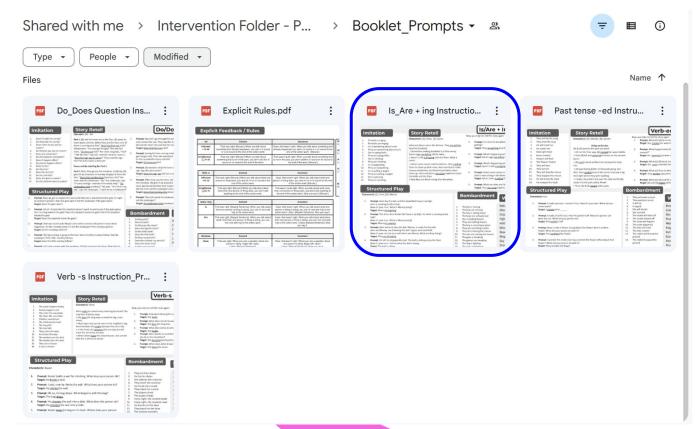
Principle 14: Incorporate the Use of Auditory Bombardment to Teach Target Forms

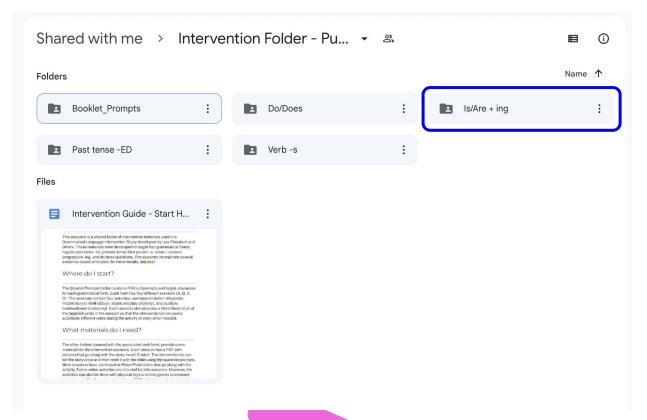


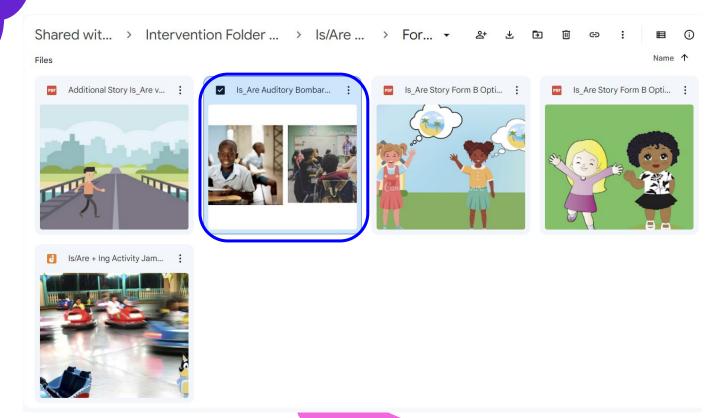












Principle 15: Incorporate the Use of **Explicit Instruction to** Teach Target Forms

Explicit Instruction

Presenting grammatical patterns and rules enhanced children's performance in producing grammatical forms (e.g., Finestack et al., 2020; Finestack & Fey, 2009)

Implicit Intervention Components	Explicit Intervention Components	
Modeling Prompting Recasting	Modeling Prompting Recasting Corrective Feedback Verbal Explicit Instruction	



Explicit Instruction

Examples: Present Progressive is/are verb+ing

When you talk about what one person or thing is doing, you add "is" and "ing" to the action word.

When you talk about what more than one person or thing is doing, you add "are" and "ing" to the action word.

Explicit Instruction

Principle into Practice:



Explicit Instruction

Principle into Practice:

Interventionist:

This one is up so high. So, what is he doing? [PROMPT]

Child: He jumping. He jumping.

Interventionist:

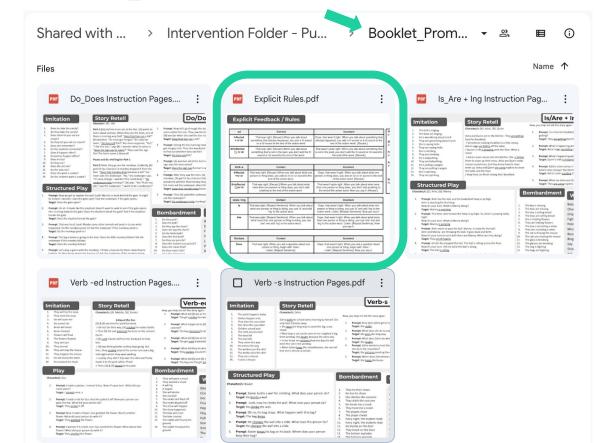
He <u>is jumping</u>. [MODEL] Let's try that again. [FEEDBACK] What is he doing? [PROMPT]

Child: He is jumping.

Interventionist:

That's right. [FEEDBACK] He <u>is jumping</u>. [RECAST]
Because we are talking about what one person is doing, you make sure to add *is* and *-ing* to the action word. [RULE]

Explicit Instruction



Explicit Instruction

Explicit Feedback / Rules

-ed	Correct	Incorrect
Inflected + /t/ /d/	That was right. [Recast.] When you talk about something that already happened, you add a /t/ sound or a /d/ sound to the end of the action word.	Oops, that wasn't right. When you talk about something that already happened, you add a /t/ sound or a /d/ sound to the end of the action word. [Recast.]
Uninflected \(\sqrt{tt} \ /\text{dt} \)	That was right. [Recast.] When you talk about something that is not in the past, you don't add the /t/ sound or /d/ sound to the end of the word.	That wasn't quite right. When you talk about something that is not in the past, you don't add the /t/ sound or /d/ sound to the end of the word. [Recast.]

Verb -s	Correct	Incorrect
Inflected +/s/ /z/	That was right. [Recast.] When you talk about what one person or thing does, you add an /s/ or /z/ sound to the end of the action word.	Oops, that wasn't right. When you talk about what one person or thing does, you add an /s/ or /z/ sound to the end of the action word. [Recast.]
Uninflected	That was right. [Recast.] When you talk about what more than one person or thing does, you don't add anything to the end of the action word.	That wasn't quite right. When you talk about what more than one person or thing does, you don't add anything to the end of the action word. Now you say it. [Recast.]

Is/are +ing	Correct	Incorrect
ls	That was right. [Repeat Sentence]. When you talk about what one person or thing is doing, you use 'is' and add 'ing' to the action word.	Oops, that wasn't right. When you talk about what one person or thing is doing, you use 'is' and add 'ing' to the action word. Listen: [Repeat Sentence]. Now you say it.
Are	That was right. [Repeat Sentence]. When you talk about what more than one person or thing is doing, you use 'are' and add 'ing' to the action word.	Oops, that wasn't right. When you talk about what more than one person or thing is doing, you use 'are' and add 'ing' to the action word. Listen: [Repeat Sentence]. Now you say it.

Do/does	Correct	Incorrect
Does	That was right. When you ask a question about one person or thing, begin with 'does.' Listen: [Repeat Sentence].	Oops, that wasn't right. When you ask a question about one person or thing, begin with 'does." Listen: [Repeat Sentence]. Now you say it.
Do	That was right. When you ask about more than one person or thing begin with 'do.' Listen: [Repeat Sentence].	Oops, that wasn't right. When you ask about more than one person or thing begin with 'do.' Listen: [Repeat Sentence]. Now you say it.

Resources

Intervention Materials https://www.finestackclil.com/resources/

VERBS MATTER!

Frequency & Phonological Complexity https://conservancy.umn.edu/handle/11299/241882



References

- Dalal, R.H., & Loeb, D.F. (2005). Imitative production of regular past tense -ed by English-speaking children with specific language impairment. *International Journal of Language & Communication Disorders*, 40(1), 67–82.
- Finestack, L. H., Engman, J., Huang, T., Bangert, K. J., & Bader, K. (2020). Evaluation of a combined explicit–implicit approach to teach grammatical forms to children with grammatical weaknesses. American Journal of Speech-Language Pathology, 29(1), 63–79. https://doi.org/10.1044/2019_AJSLP19-0056
- Finestack, L. H., & Fey, M. E. (2009). Evaluation of a deductive procedure to teach grammatical inflections to children with language impairment. American Journal of Speech Language Pathology, 18(3), 289–302. https://doi.org/10.1044/1058-0360(2009/08-0041)
- Plante, E., Ogilvie, T., Vance, R., Aguilar, J. M., Dailey, N. S., Meyers, C., . . . Burton, R. (2014). Variability in the language input to children enhances learning in a treatment context. *American Journal of Speech-Language Pathology*. doi: 10.1044/2014_ajslp-13-0038
- Sundara, M. (2018). Why do children pay more attention to grammatical morphemes at the ends of sentences? *Journal of Child Language*, 45(3), 703–716. https://doi.org/10.1017/S0305000917000356
- Sundara, M., Demuth, K., & Kuhl, P. K. (2011). Sentence-position effects on children's perception and production of English third person singular --s. *Journal of Speech, Language & Hearing Research*, 54(1), 55–71. https://doi.org/1092-4388(2010/10-0056)