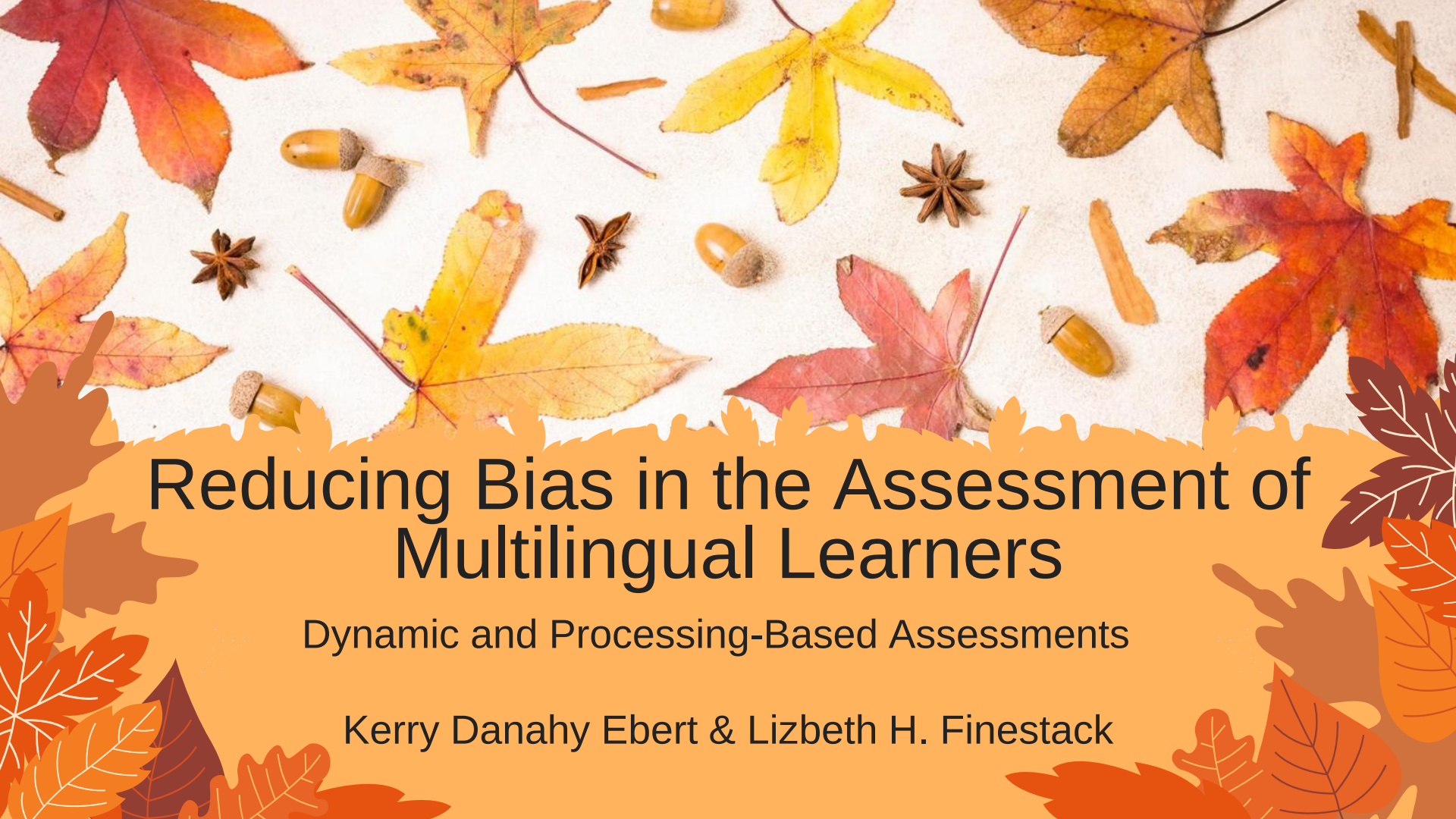




Reducing Bias in the Assessment of Multilingual Learners

Dynamic and Processing-Based Assessments

Kerry Danahy Ebert & Lizbeth H. Finestack

Presenter Disclosures

Kerry Danahy Ebert

- Financial disclosures:
 - Paid full-time employee of the University of Minnesota -Twin Cities, continuing relationship, 2019-present
 - Principal Investigator on NIDCD R01DC019613, 2021-present
 - Principal Investigator on Social Sciences Seed Grant from the University of Minnesota College of Liberal Arts, 2021-present
 - Co-author of *Language Disorders in Bilingual Children and Adults – 3rd Edition*
 - Convention fee waiver for participation in RMTTPA program
- Nonfinancial disclosures: None

Lizabeth H. Finestack

- Financial disclosures:
 - Paid full-time employee of the University of Minnesota -Twin Cities, continuing relationship, 2009-present
 - Research on dynamic assessment funded by internal University of Minnesota grants
 - Principal Investigator on NIDCD R01DC019374-01, 2021-present
 - Co-chair of the Spoken Language and Learning in School-age Individual Topic Area with convention fee waiver
- Nonfinancial disclosures: None



Learner Outcomes

1. Explain the ways in which dynamic assessments & processing-based assessments may reduce bias in language assessment
 2. Describe different types of dynamic and processing-based assessments
 3. Use at least one type of dynamic assessment and one type of processing-based assessment
- 



Land Acknowledgement



- 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.
- Honored to be on the land of the Chahta Yakni and Chitmacha where New Orleans resides.
- To learn more about the native lands you live on: <https://native-land.ca/>

<https://marlenamyl.es/project/dakota-land-map/?fbclid=IwAR2RWA7yI TEYniQVfSPwhDTdy4zwKbyAi-AVx-poHQo-hp8Aytf1AKt7hLc%20>



Overview



01

Our Challenge

Who are we assessing?
Bias in assessment

02

Dynamic Assessment

What is it?
Subtypes & tasks

03

Processing-based Assessment

What is it?
Subtypes & tasks

04

Going Forward

Summary
Questions





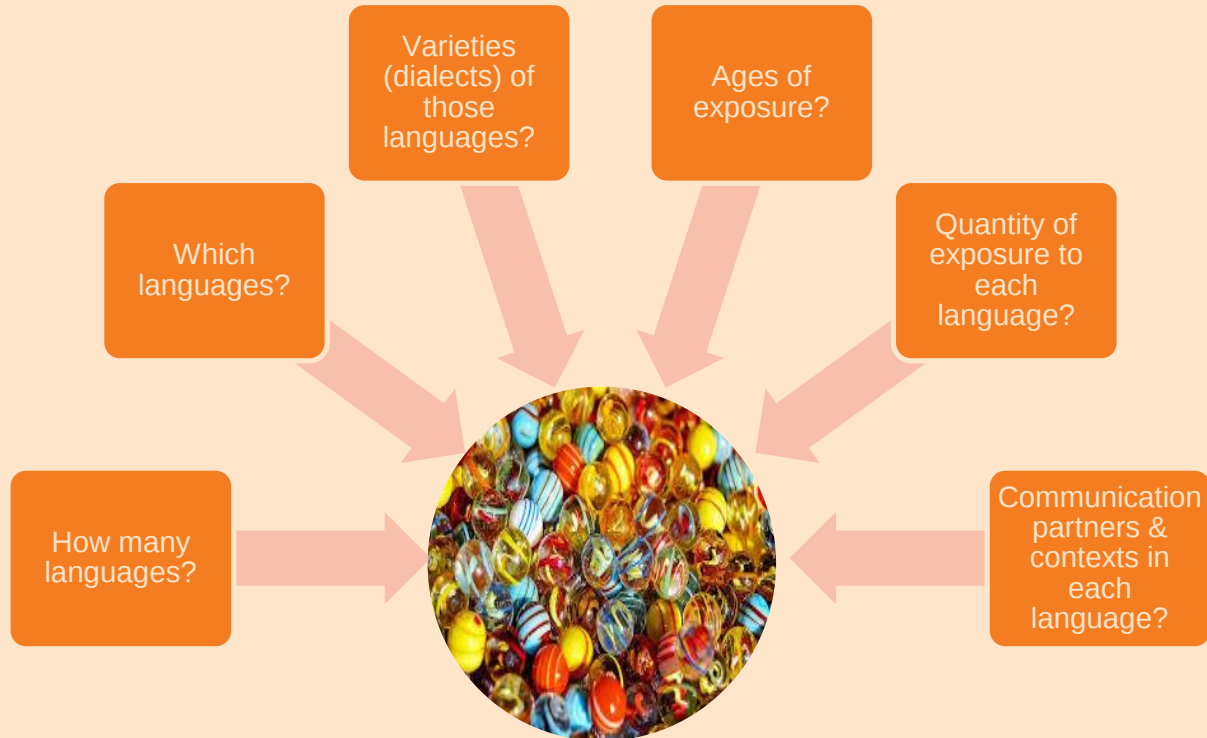
Our Challenge

The background is a light beige color. In the corners, there are decorative illustrations of autumn leaves and branches. The top-left corner shows a cluster of orange and yellow leaves. The top-right corner shows a branch with several orange leaves. The bottom-left corner shows a branch with orange leaves. The bottom-right corner shows a branch with orange leaves and some small, round, orange fruits or berries. In the center, there is a large, irregular, light orange shape that serves as a backdrop for the text.

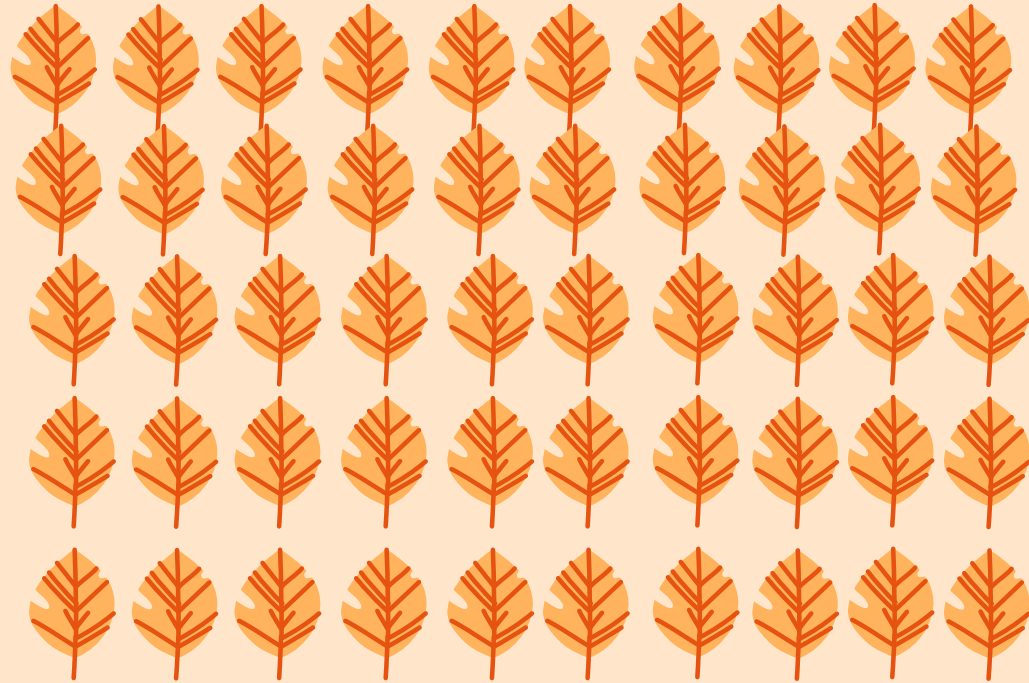
At least 23% of children in the U.S. speak a language other than English at home

Federal Interagency Forum on Child and Family
Statistics, 2019

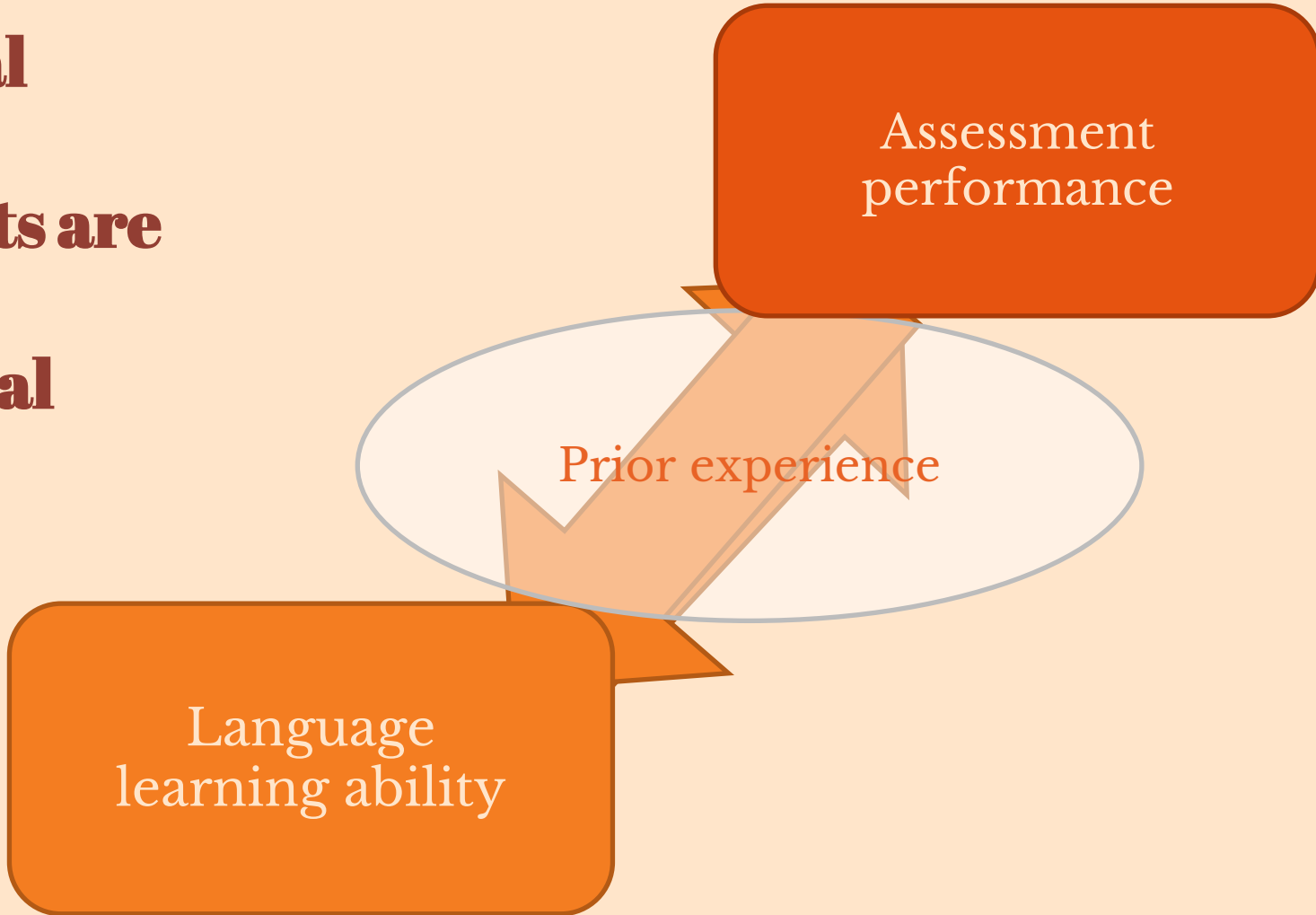
Language learning experiences are highly variable among multilingual learners

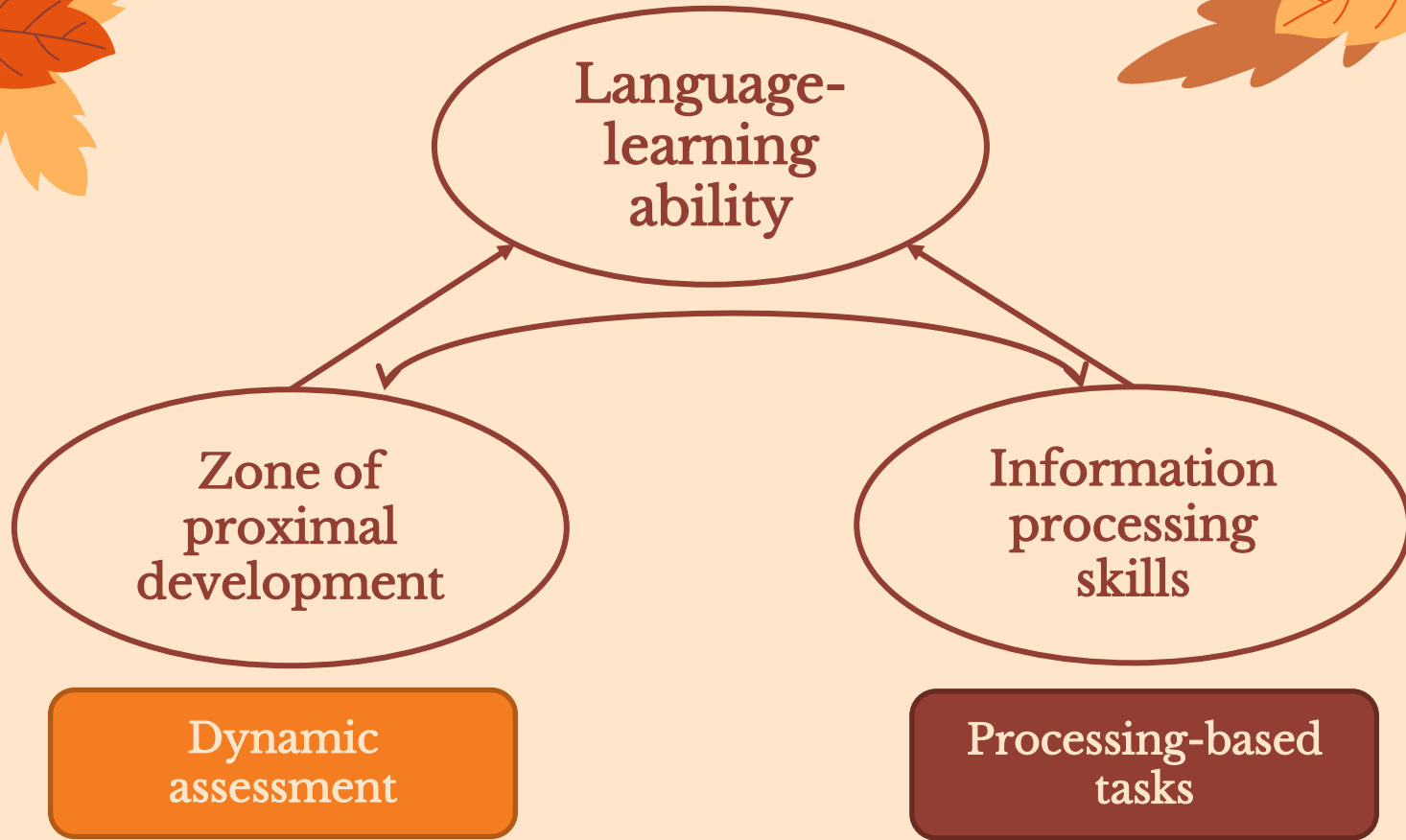


Traditional language assessments are invalid for multilingual learners

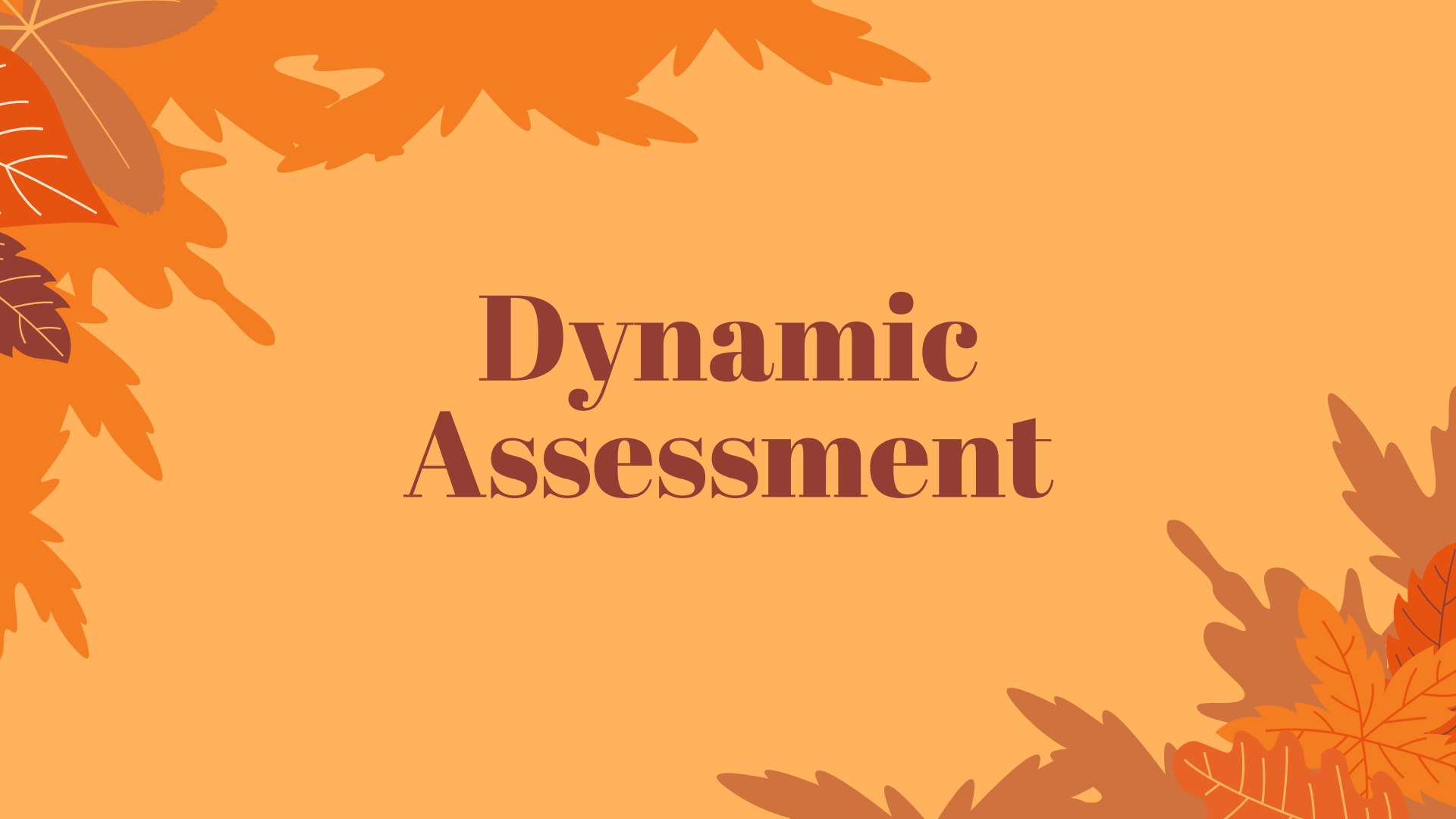


**Traditional
language
assessments are
invalid for
multilingual
learners**



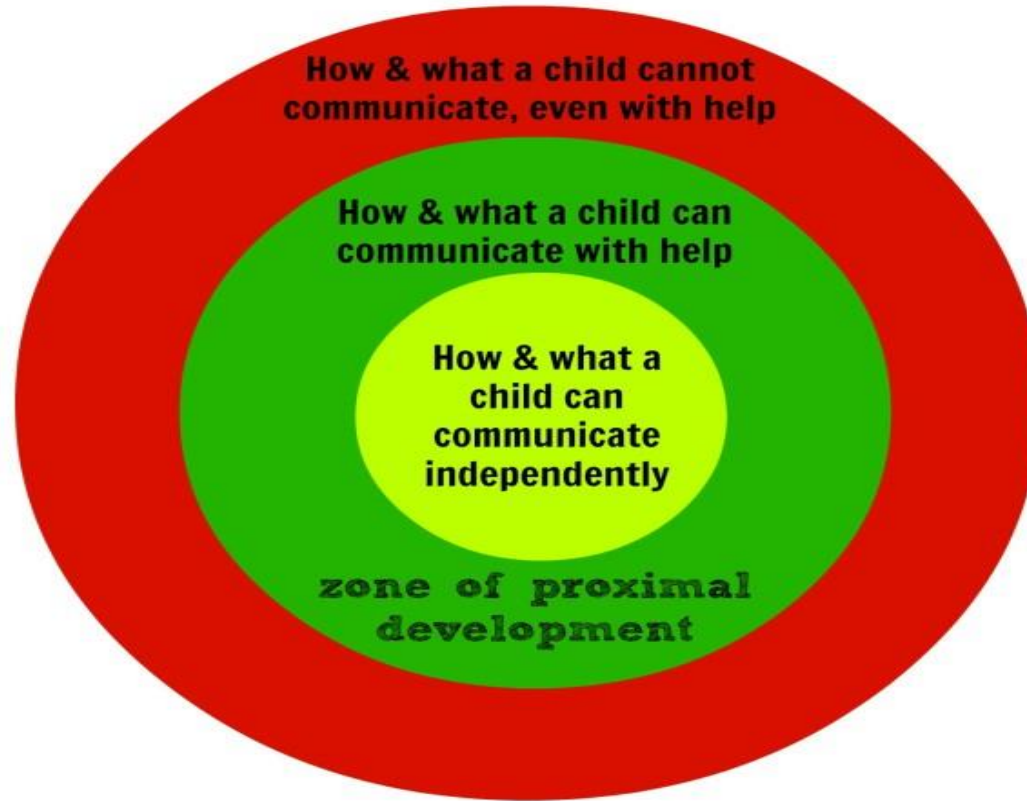


Alternative approaches try to get at language-learning ability in other ways



Dynamic Assessment

The zones of language development





Types of Dynamic Assessments

(Gutiérrez-Clellen & Peña, 2001)

Graduated Prompting

- Vary level of contextual support

Testing the Limits

- Elaborate feedback
- Thought prompts

Test-Teach-Retest

- Mediated learning experience
- 

Graduated Prompting



- Say, “They are running.”



- Start with “They...”

Testing the Limits

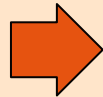
- “That was correct, you added *—ing* to the end.”
- “Why do you say *is running* sometimes and *are running* other times?”



Test-Teach-Retest



Test

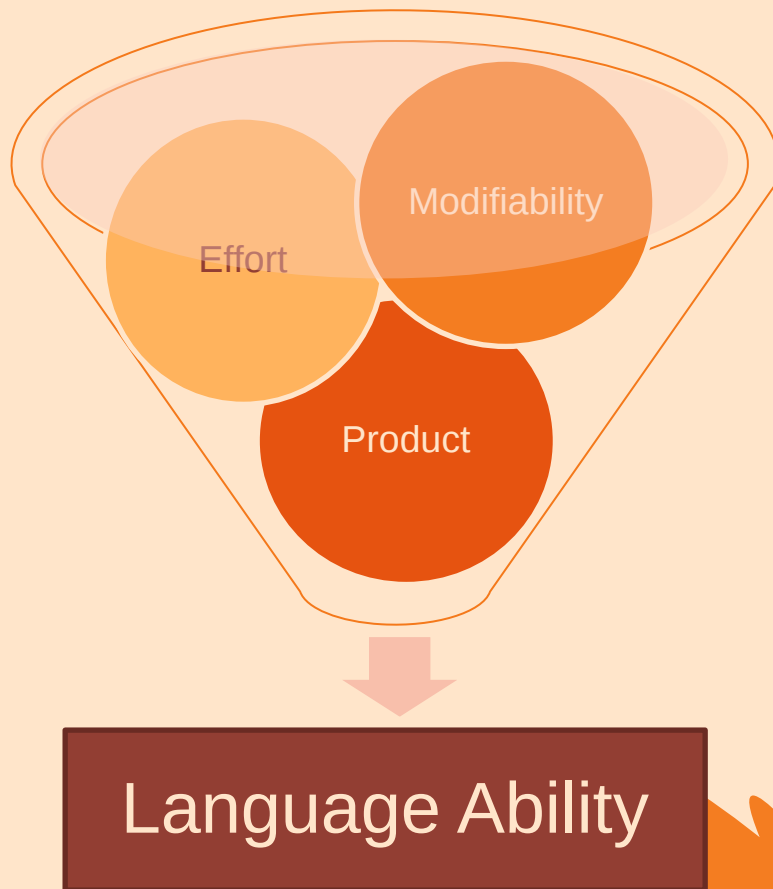


Teach

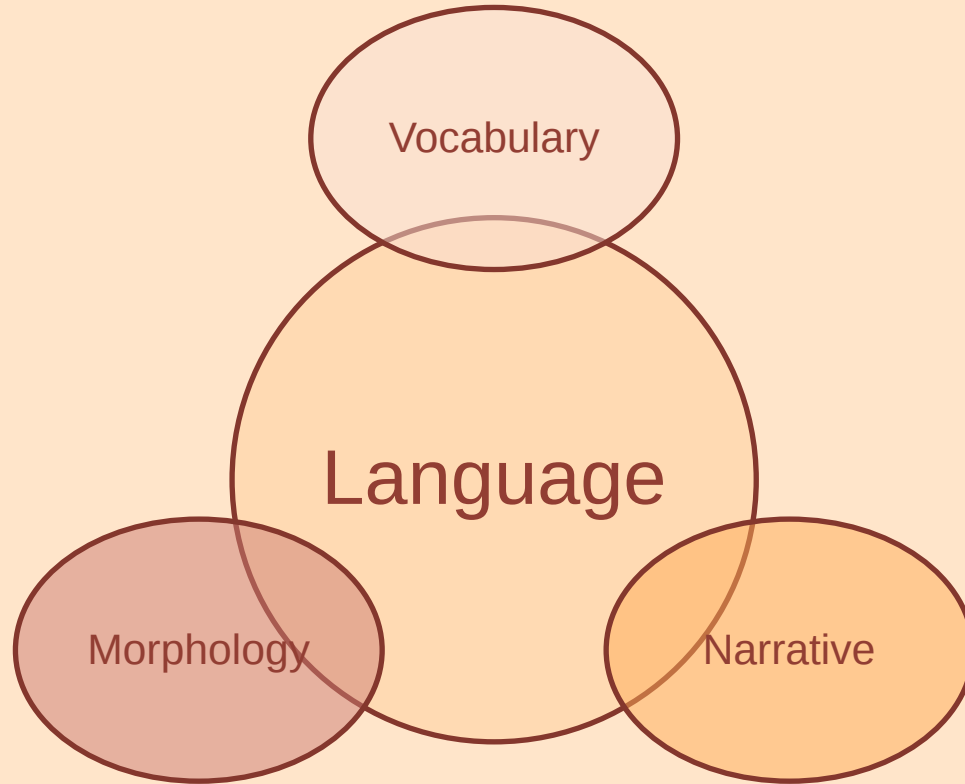


Retest

Key Measures



But wait!! What am I Teaching???





Morphological Dynamic Assessment

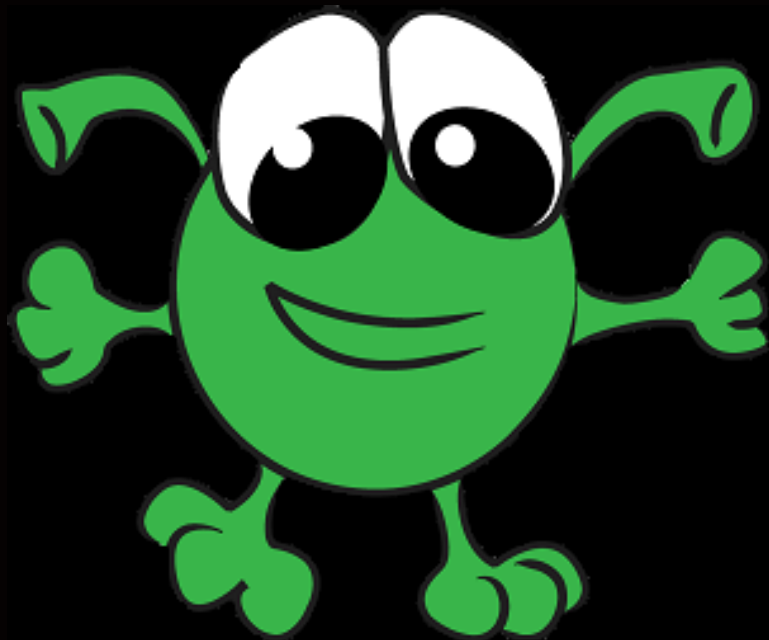
Teach a novel grammatical rule

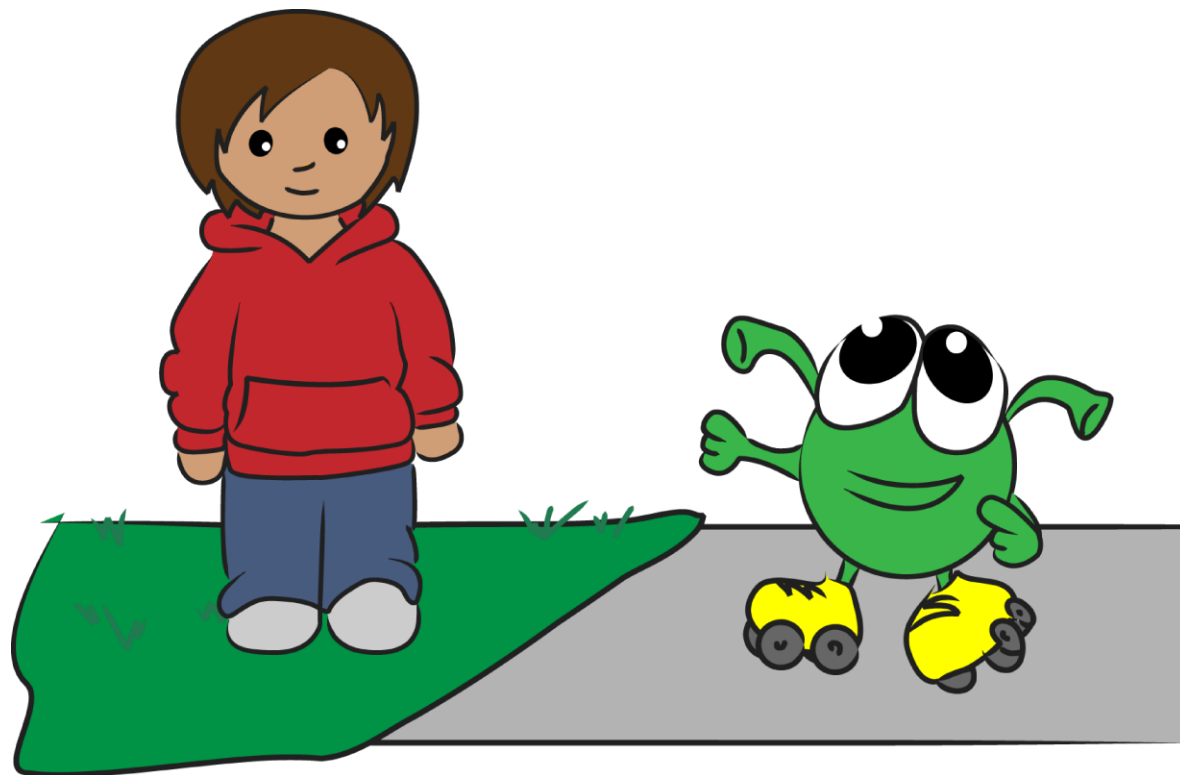
1. Add a noun suffix to indicate *part of* (Roseberry & Connell, 1991)
 2. Add verb inflection to indicate gender, person, or aspect (Finestack, 2014; 2018)
- 



Novel Verb Inflection



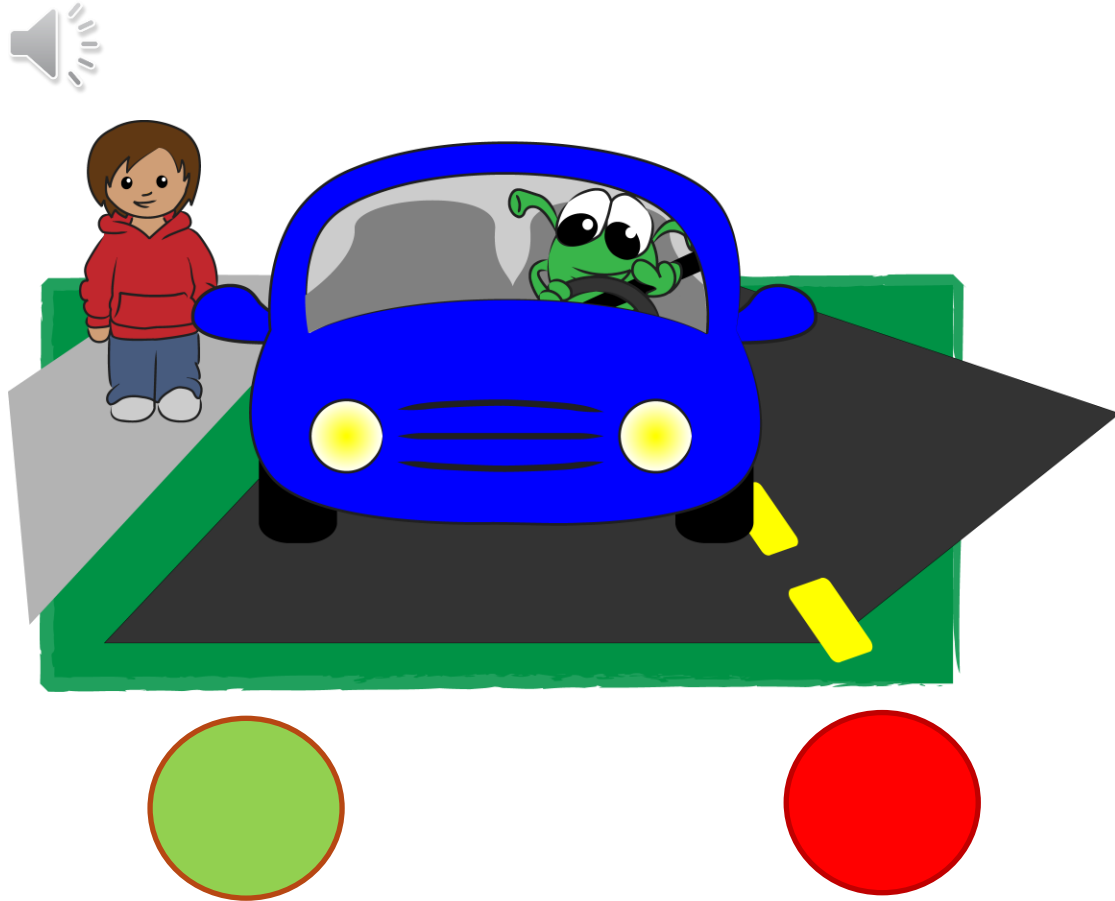






Novel Verb Inflection

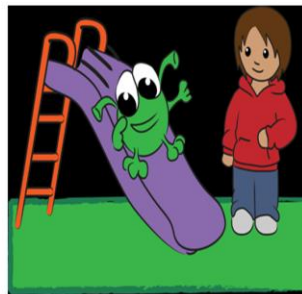






Novel Verb Inflection







Novel Verb Inflection





Types of Dynamic Assessments

(Gutiérrez-Clellen & Peña, 2001)

Graduated Prompting

- Vary level of contextual support

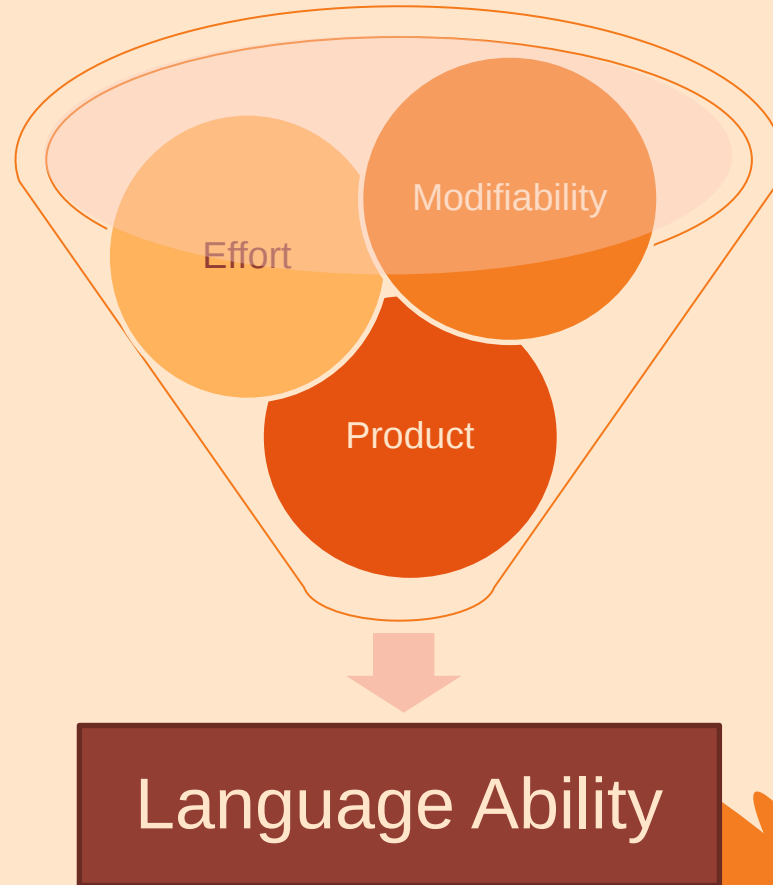
Testing the Limits

- Elaborate feedback
- Thought prompts

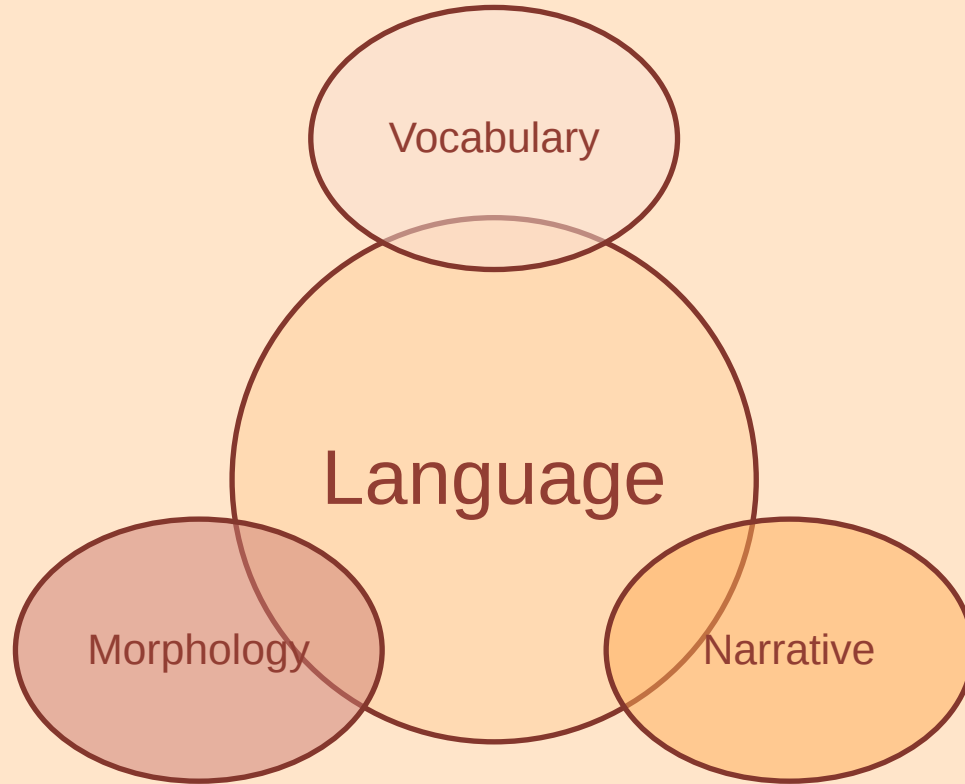
Test-Teach-Retest

- Mediated learning experience
- 

Key Measures



But wait!! What am I Teaching???



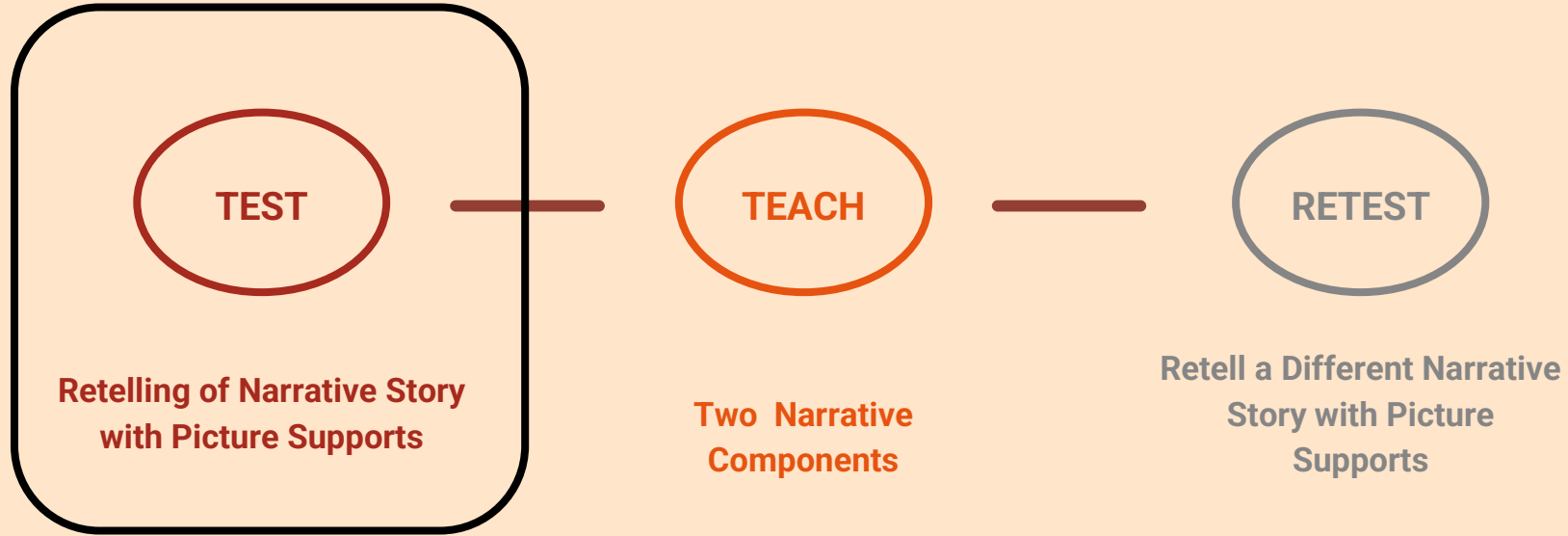


Narrative Dynamic Assessment

Test-Teach-Retest

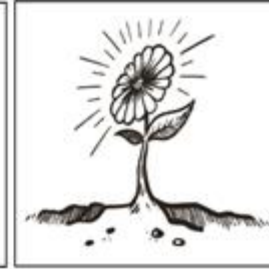
- ❖ Teach story grammar elements (Peña et al., 2014; Petersen et al., 2017, Petersen & Spencer, 2016)
 - ❖ Predictive Early Assessment of Reading and Language (PEARL) (Petersen & Spencer, 2016)
- 

An Experimental Narrative Dynamic Assessment Protocol



Test

Establish Expectations: Provide overview of each story component



Characters

Setting

Problem

Plan

Action

Consequence

Feelings



Characters



Setting



Problem



Characters



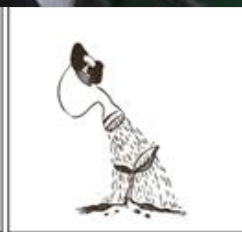
Setting



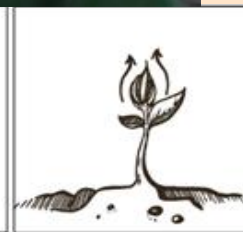
Problem



Plan



Action



Consequence



Feelings

Test

Review Story Pictures



**MAIN: Multilingual Assessment Instrument for Narratives
(Gagarina et al., 2019)**

<https://main.leibniz-zas.de/en/>

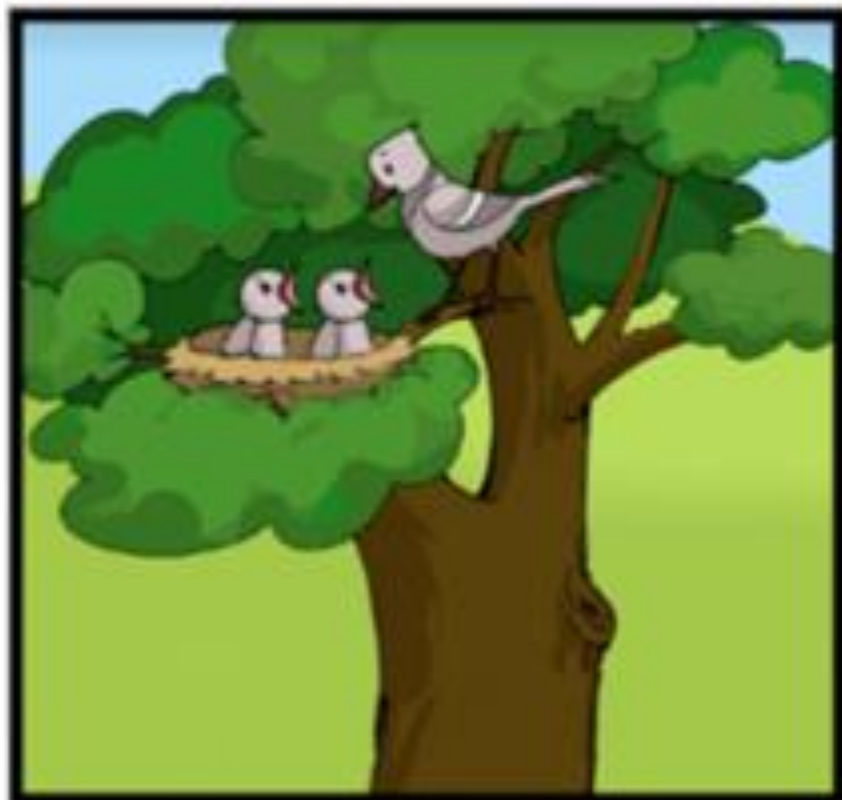


BABY BIRDS



MAIN: Multilingual Assessment Instrument for Narratives
<https://main.leibniz-zas.de/en/>





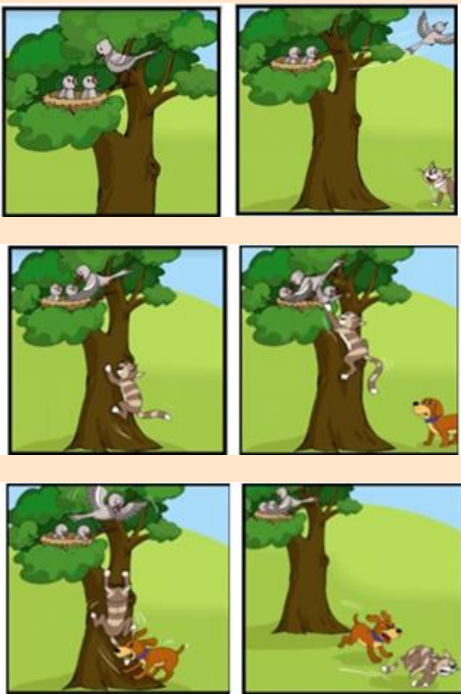




Test **Model Scripted Story**



Model



Child Retells Story with Pictures

Prompt A

If participant says nothing at all after 5 sec then prompt with “What’s happening in this part of the story?”

Prompt B

“Tell me everything that is happening in this part of the story.”

Prompt C

“Anything else?”

Prompt D

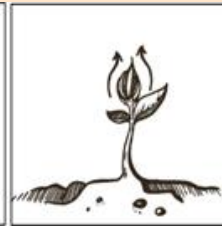
“Okay. Here’s the next part of the story.”

Test

Examiner Scores Test Story (5 min)

Elements Scored:

- Characters
- Setting
- Problem/Internal State
- Plan
- Attempt
- Consequence
- End/Internal State
- Use of Internal State Terms (e.g., see, thirsty, alive, want, say)



Characters

Setting

Problem

Plan

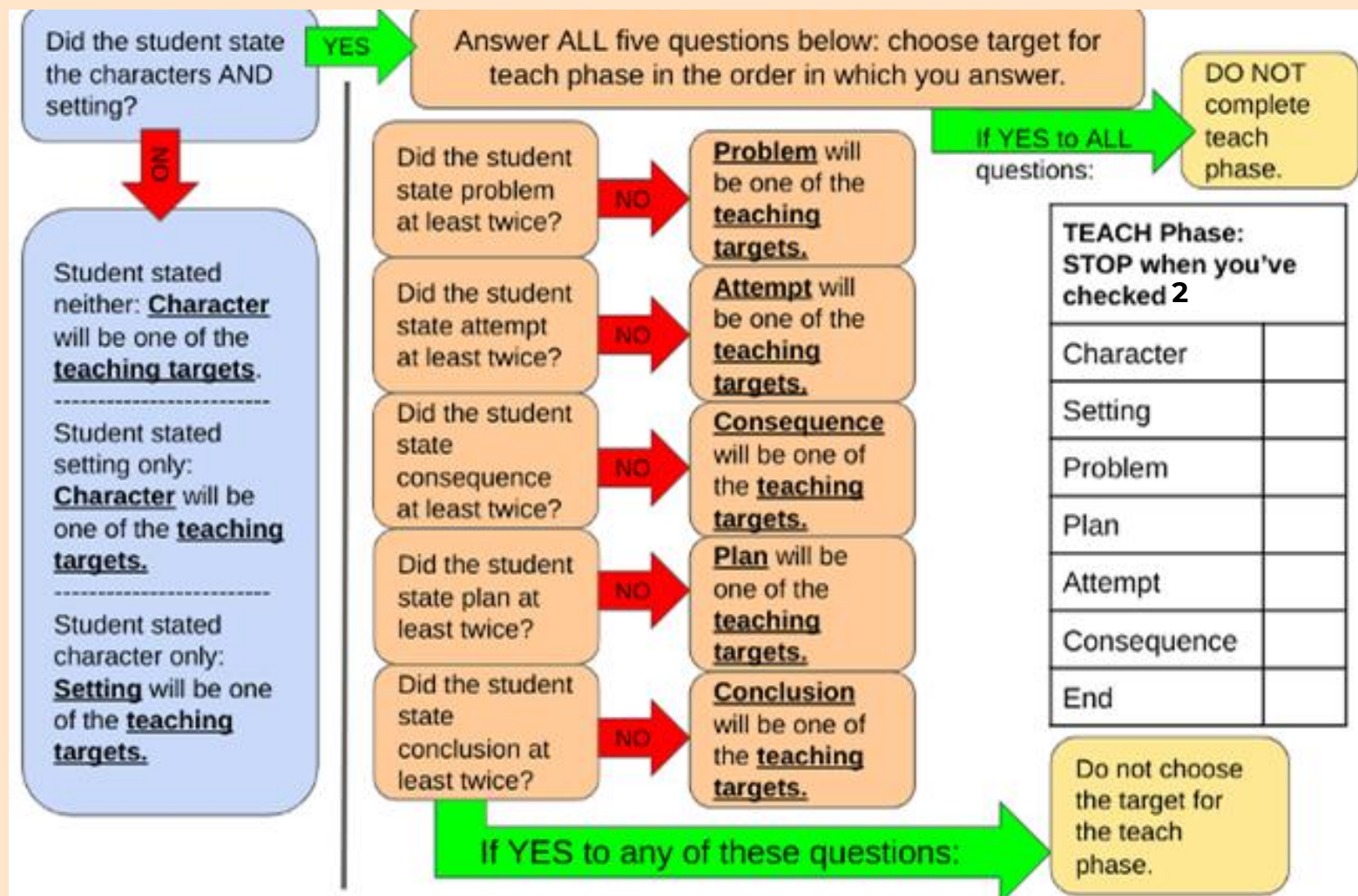
Action

Consequence

Feelings

Element	Example	Score
Characters <u>Teach 1A</u>	Circle the characters that are labeled or named. 0 no specific characters mentioned. 1 at least two characters mentioned but not introduced. 2 at least two characters introduced and mentioned. 3 three to four characters introduced and mentioned.	
Setting: reference to time and place <u>Teach 1B</u>	Once upon a time / One morning / In a forest / tree / nest	0 (neither time nor place) 1 (either time OR place) 2 (time AND place) # of conjunctions/ adverbial phrases (then, when, because, after): ____ # of internal states: ____
Problem and internal state <u>Teach 2A</u> <u>Teach 3B</u>	Mother/parent saw that the baby birds were hungry/wanted food OR Baby birds were hungry/ wanted food / cried / asked for food	0 1 # of conjunctions/ adverbial phrases: ____ # of internal states: ____
Plan <u>Teach 2B</u>	Mother wanted to feed babies / find worms / get food	0 1 # of conjunctions/ adverbial phrases: ____ # of internal states: ____

Examiner Selects Targets



Examiner Selects Targets

Did the student state
the characters AND
setting?

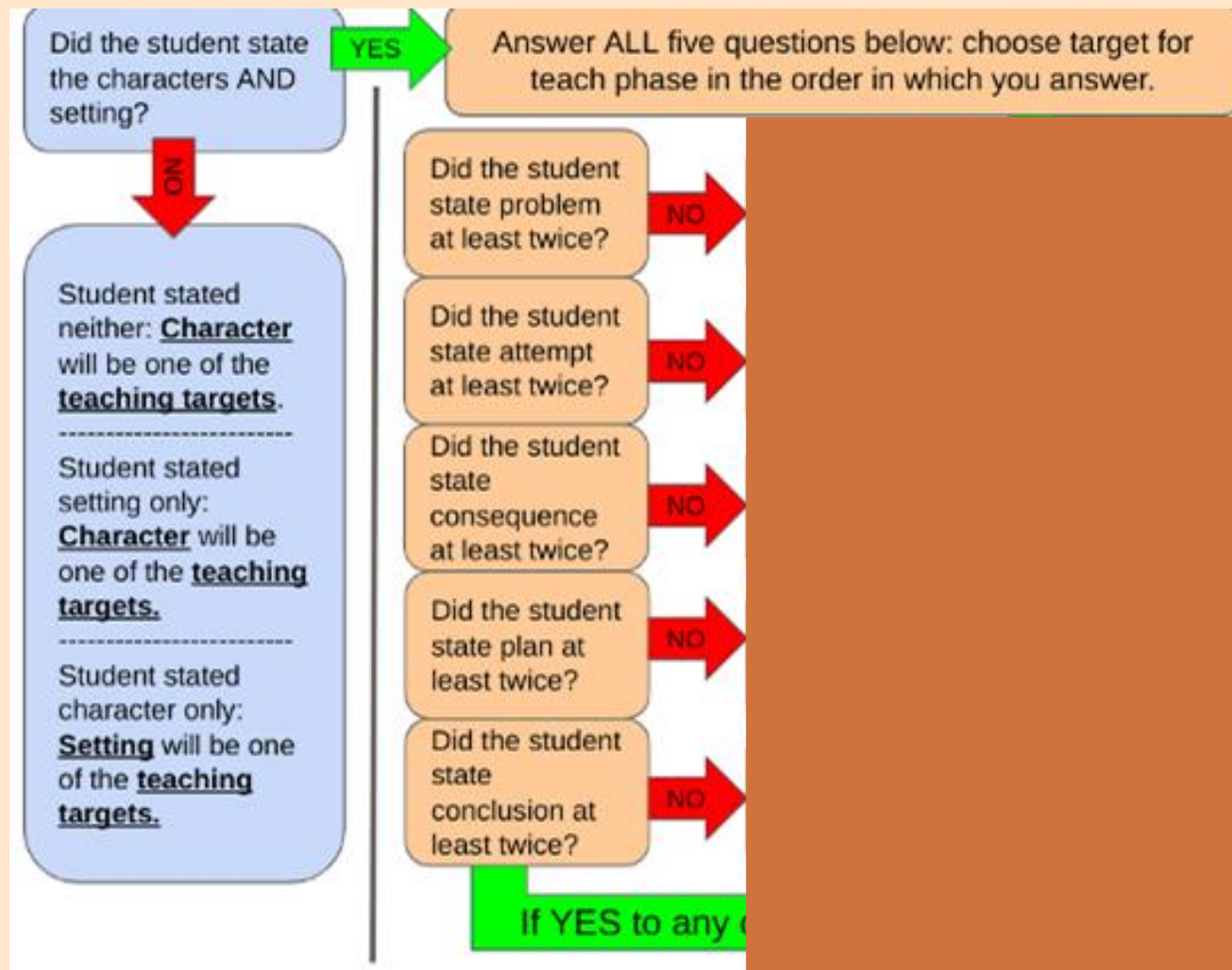


Student stated
neither: Character
will be one of the
teaching targets.

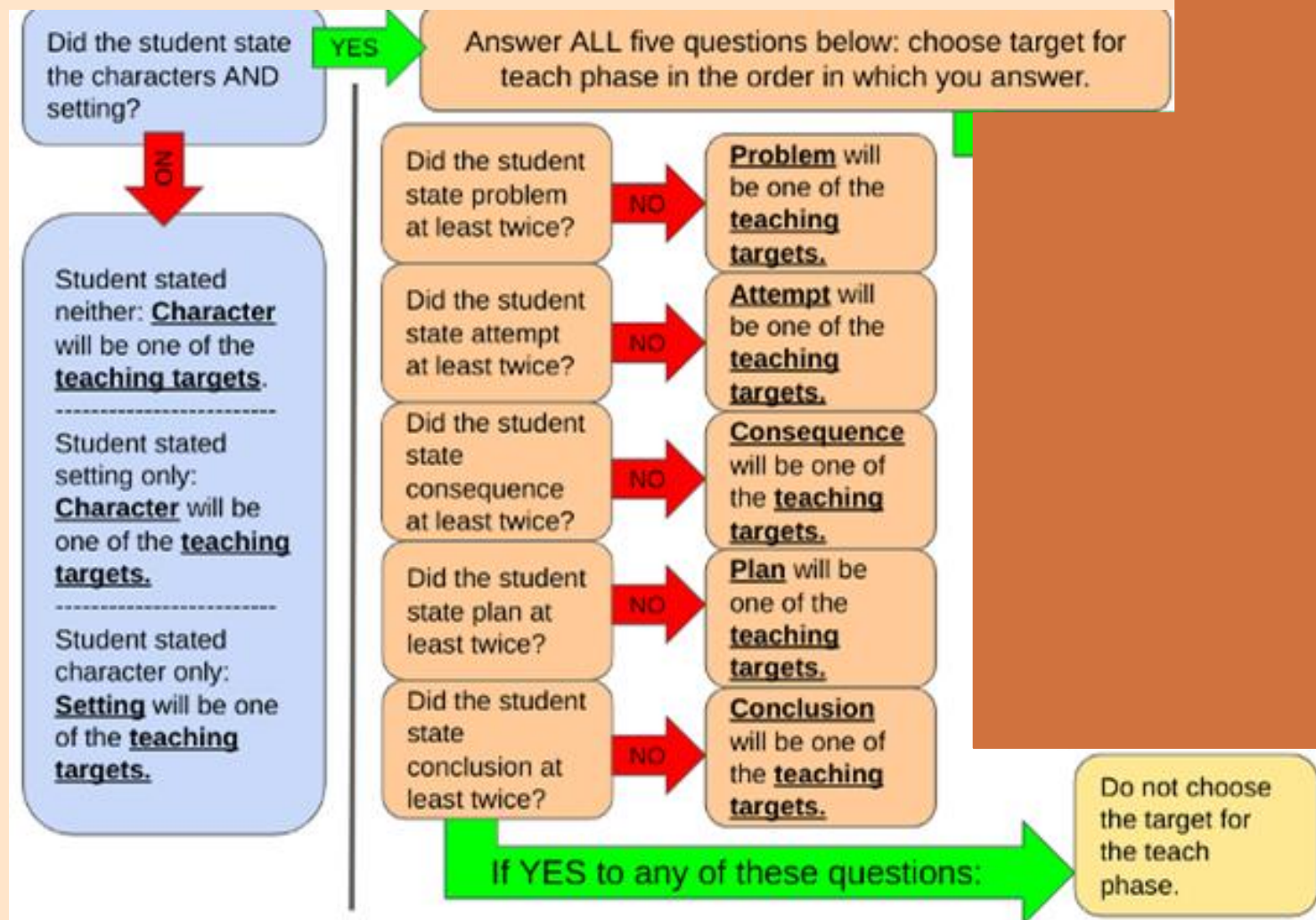
Student stated
setting only:
Character will be
one of the teaching
targets.

Student stated
character only:
Setting will be one
of the teaching
targets.

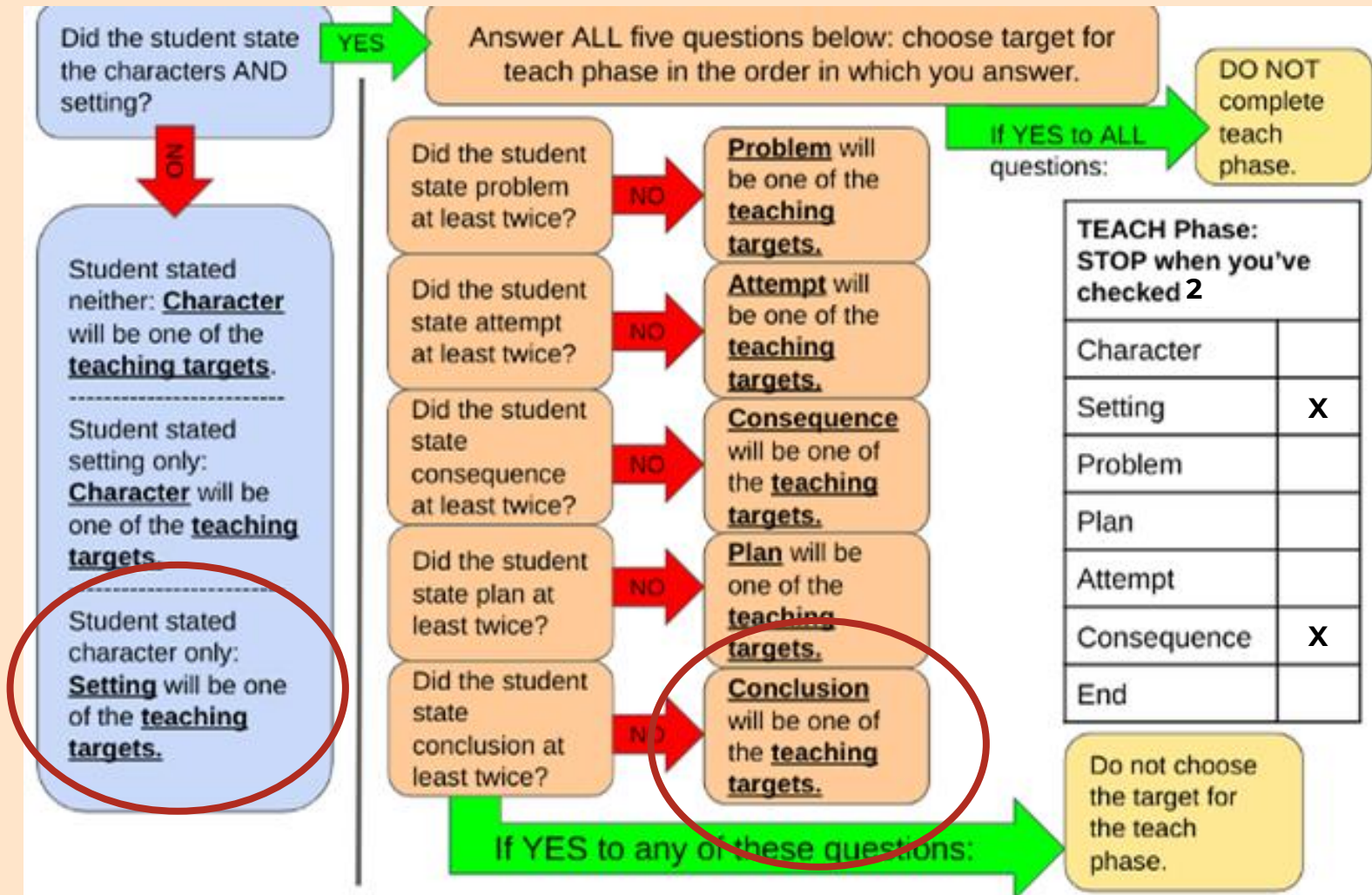
Examiner Selects Targets



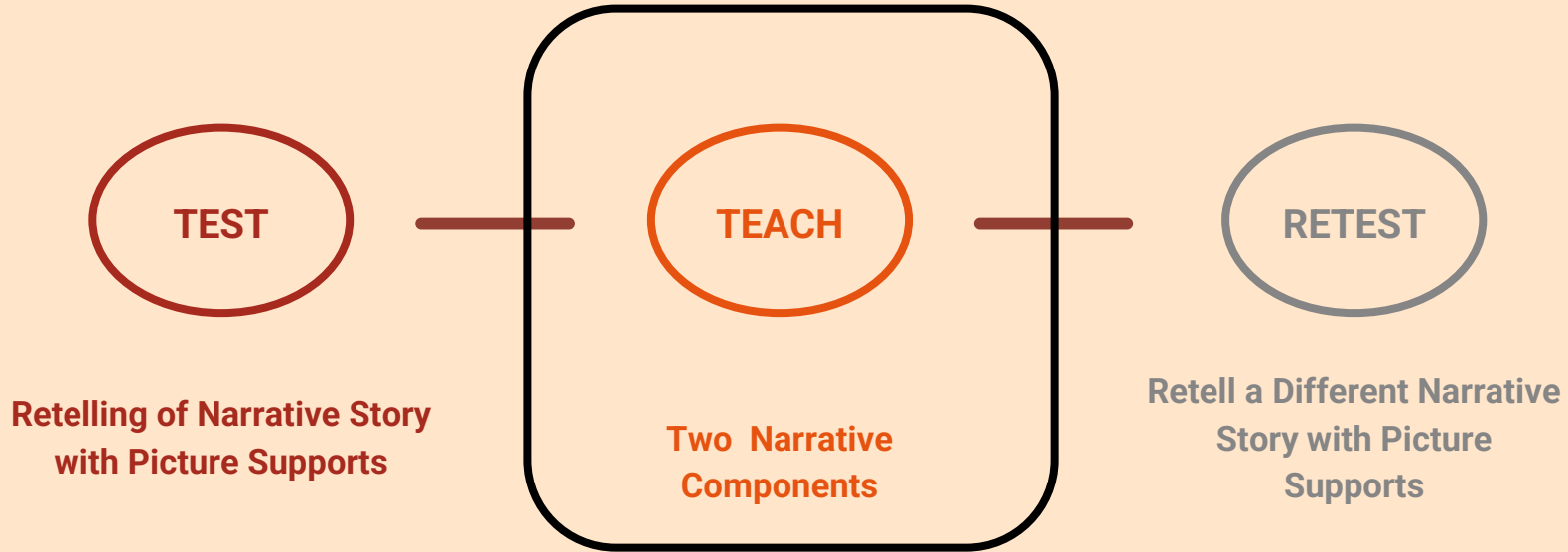
Examiner Selects Targets



Examiner Selects Targets



An Experimental Narrative Dynamic Assessment Protocol



Great job telling the bird story!

Now, we are going to work on telling some of our story parts. We are going to focus on two goals: **setting** and **consequence**. Then, we will practice those parts again, with another story. Let's start.



A. Setting IS teaching target:

Episode 1: SETTING (Birds)

Examiner: Now that we know the characters in our story, we are going to talk about the setting of the story. There are two parts to the setting of a story. The setting is where and when the story takes place. It is important to include the setting in our story, so our listeners know where the characters are and they can picture the story in their heads.

Examiner: Where and when does this story take place?

Acceptable response: "The story happens in a tree in the morning." (something with a tree and morning/day)

Incorrect Student Response

Examiner: Remember that you need to tell where AND when the story happens. You told "___" which is where/when the story happens. Now we also need to tell when/where the story happens.

Examiner: (if the student told where only): You could say "In the morning" or "Once upon a time"

Examiner: (if the student told when only): This story happens in a tree. Or you could say the forest.

Examiner: Now you tell me the setting. Say both where and when the story happens.

Correct
Student
Response

Incorrect Student Response

Examiner: Remember where is a place. The story takes place "___" (student fills in). Remember when is a time. The story is in "___" (student fills in)

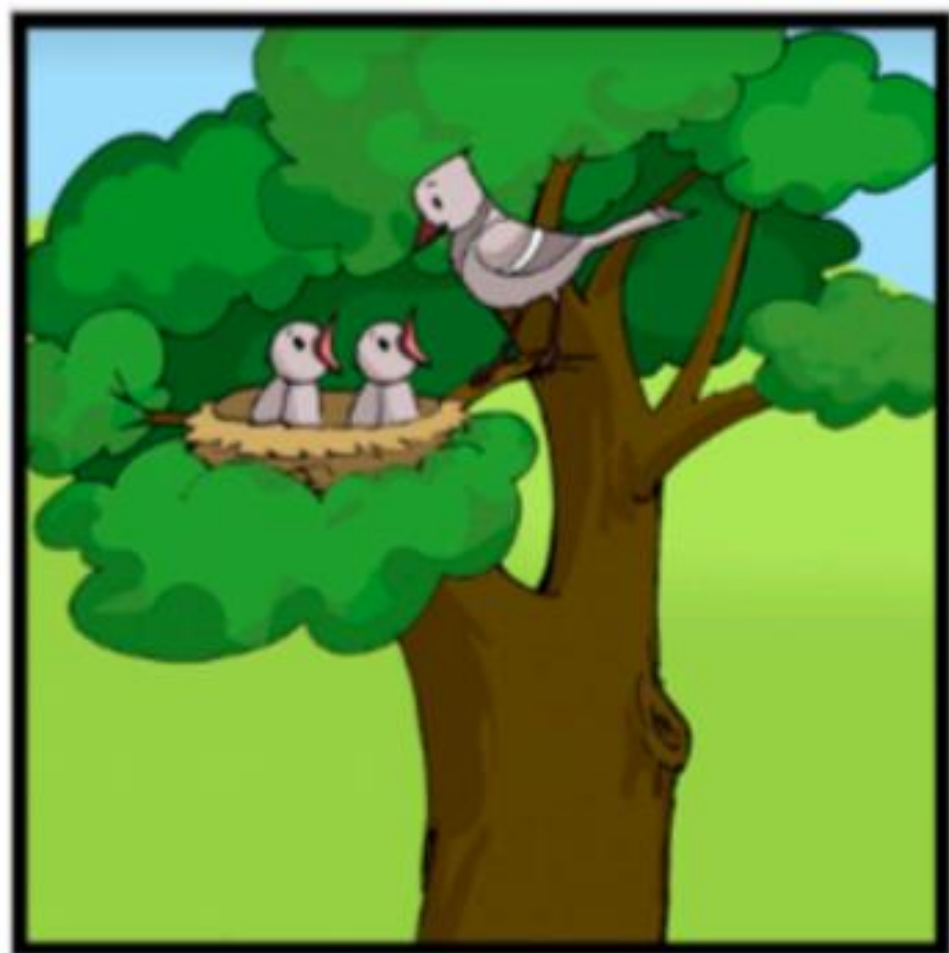
Incorrect Student Response

Examiner: Let's tell when the story happened. It looks like the story happens in the morning. Or you can say once upon a time. That is when the story happened.

Now let's tell where the story happened. This story happens in a tree. Or you could say the forest. Now you put it together and tell me where and when this story happened.

Incorrect Student Response

Examiner: Yes. You stated the setting by telling where and when the story happens. "___". (repeat what the student said. What is the setting of this story?)



Setting



Teach





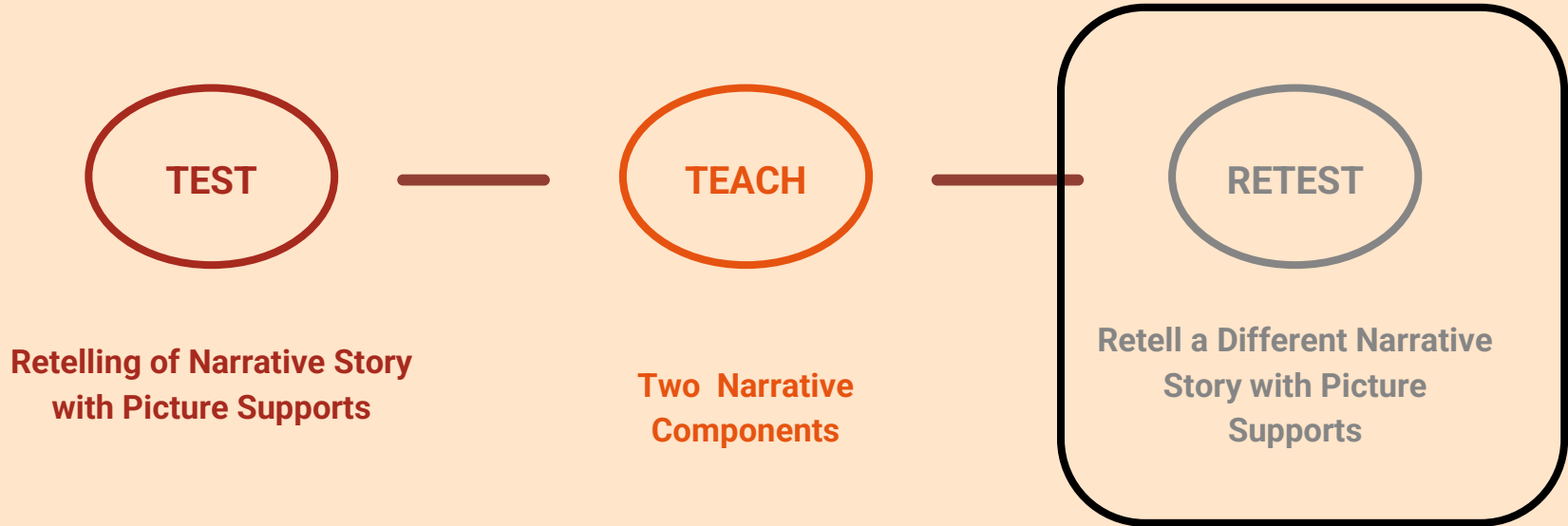
Modifiability

1. Student had high response to prompts
2. Student exhibited high degree of transfer
3. Student attended to the teaching
4. Student was easy to teach
5. Student displayed frustration
6. Student displayed few disruptions
7. Examiner's overall judgement of student's potential to learn narrative language

Petersen et al., 2017



An Experimental Narrative Dynamic Assessment Protocol



Retest: Using different story and picture set

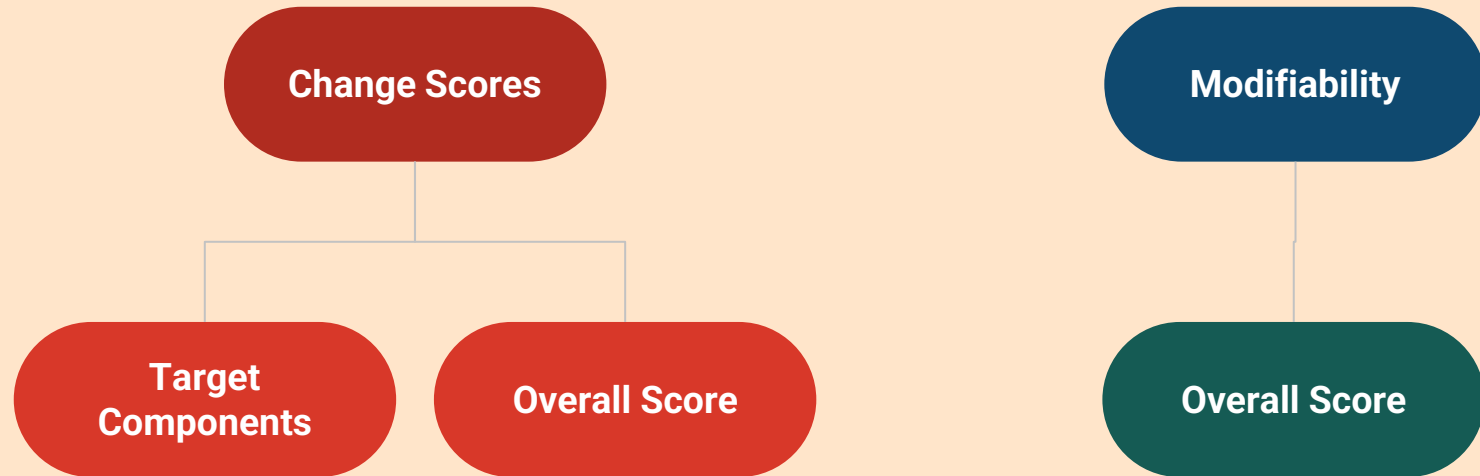
Picture preview and story presentation procedures as used in the Test

Baby Goats





Dynamic Assessment Scores

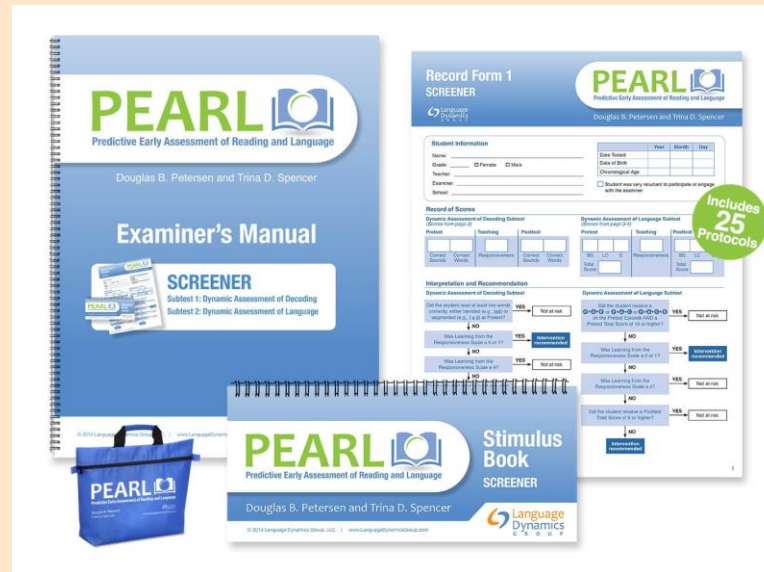


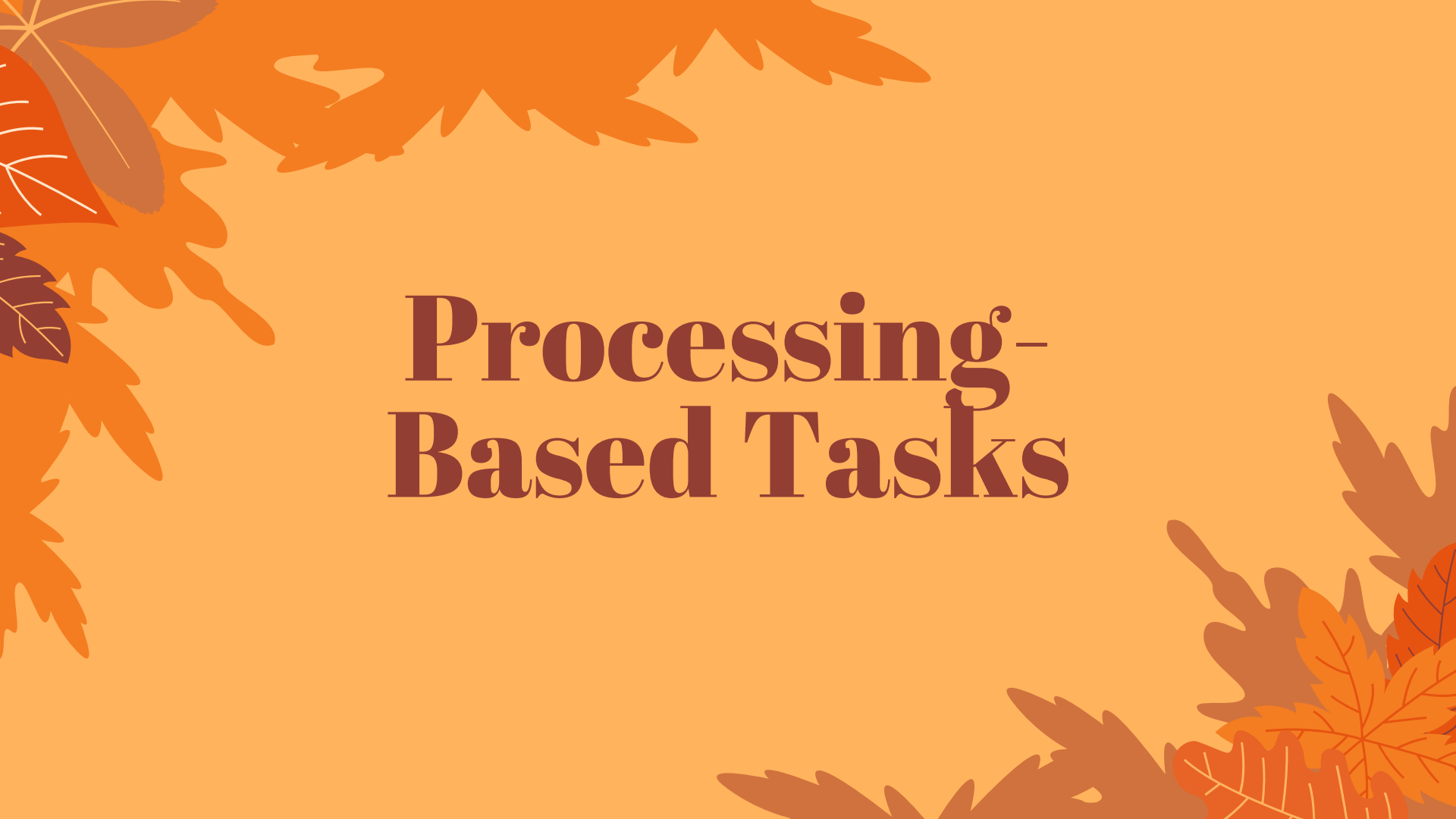
Greater the change and modifiability scores,
the less likely that child has true language impairment



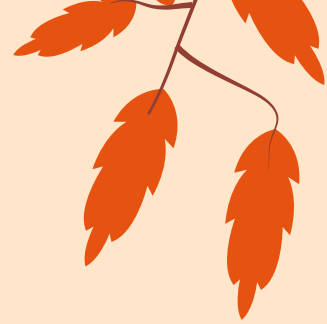
Predictive Early Assessment of Reading and Language (PEARL) (Petersen & Spencer, 2016)

- ❖ Universal kindergarten screener for dyslexia



The background is a solid light orange color. In the top-left and bottom-right corners, there are clusters of stylized autumn leaves in various shades of orange and brown. The leaves have detailed vein patterns.

Processing- Based Tasks



Processing-based assessments manipulate task stimuli and expectations...

- to emphasize information processing
- to minimize the role of experience



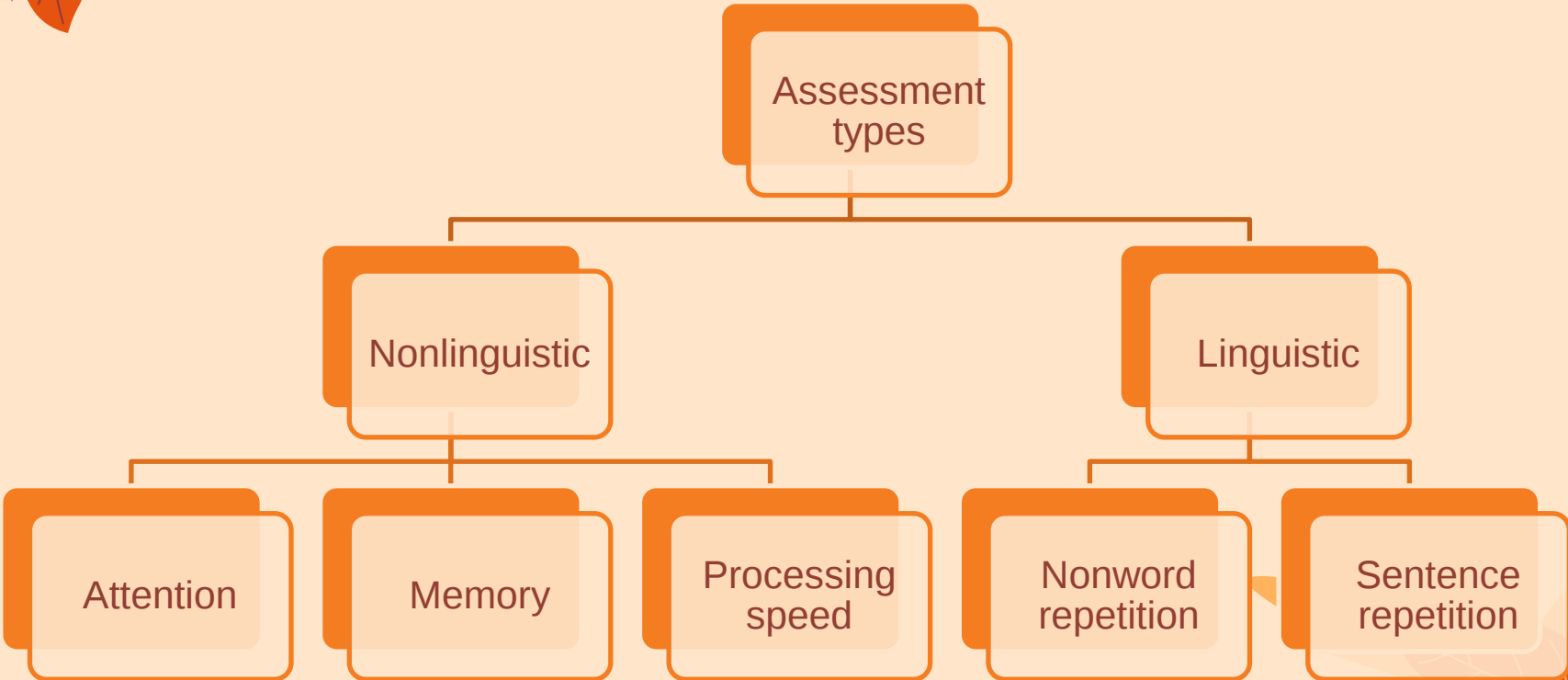
Stimuli should be
very familiar or
very unfamiliar

Tasks should
maximize
processing
expectations





Processing-based tasks can use linguistic or nonlinguistic stimuli





Nonlinguistic cognitive processing tasks

Target information processing skills that contribute
to language learning

**e.g., attention, inhibition, memory,
processing speed**

Use nonlinguistic stimuli to reduce influence of
previous language experience

e.g., tones, shapes, symbols

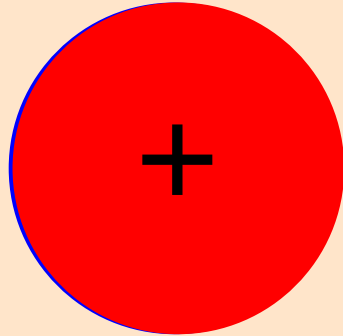
Task performance is impaired on average in
children with language disorders

Ebert & Kohnert, 2011; Ebert & Pham, 2019; Ebert et al., 2019; Leonard et al., 2007; Park et al., 2020; Vugs et al., 2013



Nonlinguistic Cognitive Processing Tasks: Examples

Visual detection
Processing speed



Measure reaction time on accurate trials

Auditory pattern matching
Working memory

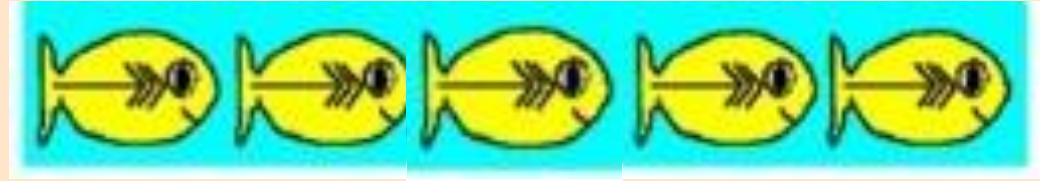


Measure accuracy over longer tone sequences

Nonlinguistic Cognitive Processing Tasks: Examples

Flanker

Attentional control or inhibition



Measure difference between incongruent and congruent trials



Why would nonlinguistic tasks have a role in language assessment?

- Robust evidence children with language disorders have difficulty on these tasks
→ Contribute to identification?
- Evidence that cognitive skills support language learning (e.g., treatment studies)
→ Characterize areas of weakness that contribute to learning difficulty?

Ebert & Kohnert, 2011; Ebert et al., 2014; Ebert & Pham, 2019; Ebert et al., 2019; Leonard et al., 2007; Park et al., 2020; Vugs et al., 2013

Task	Age	English only		Spanish-English		Combined	
		Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
Visual Detection	6						
	7						
	8						
	9						
	10						
Auditory Pattern Matching	6						
	7						
	8						
	9						
	10						
Flanker	6						
	7						
	8						

Nonword repetition

- Child hears nonsense word and is asked to repeat it

e.g., “/taʊdʒ/”; “/zɔɪwætʃɜːʒɛð/”

- Emphasizes phonological short-term memory (but also speech perception, oromotor skills, sequencing, vocabulary)
- May relate to word-learning abilities
- NWR performance notably impaired in children with language disorders

Coady & Evans, 2008; Graf Estes et al., 2007; Pigdon et al., 2020;
Whitehouse et al., 2008



NWR Examples

Dollaghan & Campbell, 1998; Ebert et al., 2008



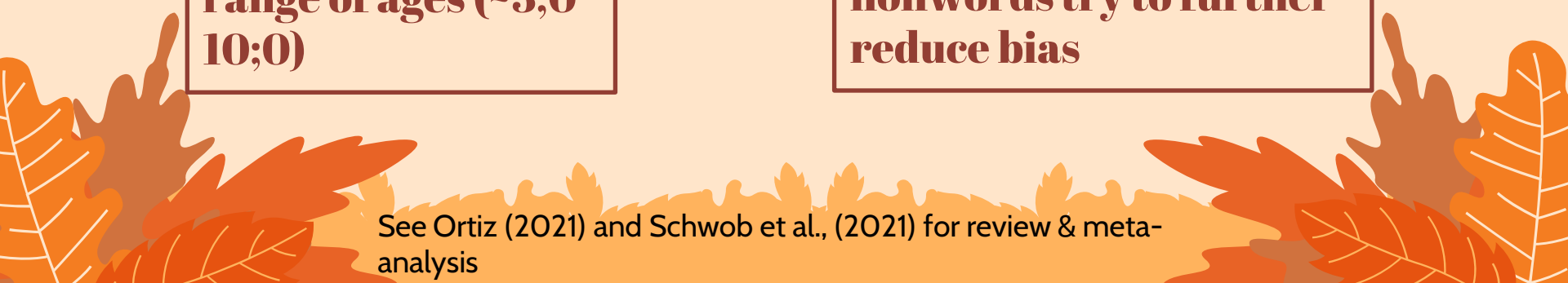
Evidence for nonword repetition

Can effectively contribute to identification of language disorder in multilinguals

But is affected by language experience (multi- vs. monolingual)

Effective across a range of ages (~3;0-10;0)

‘Quasi universal’ nonwords try to further reduce bias



See Ortiz (2021) and Schwob et al., (2021) for review & meta-analysis

Sentence repetition

- Child hears sentence and is asked to repeat it

e.g., The children are working

He is the boy who fell

The lion's teeth were cleaned with a giant toothbrush

- Robust assessment of overall language ability
 - Particularly draws on morphosyntax?
 - Role of working memory is debated

Evidence for sentence repetition

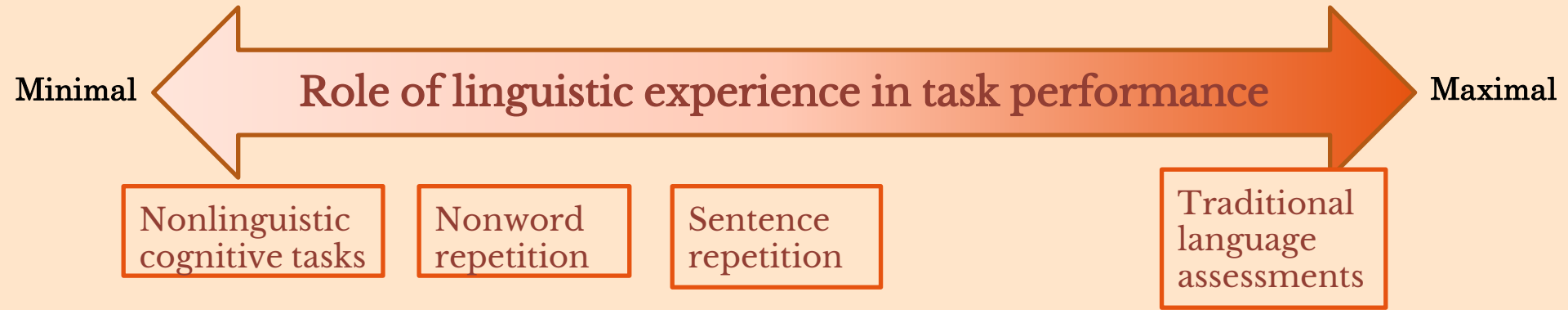
Strong evidence for identification in monolinguals

Tasks available in a range of languages

Also identifies language impairment in multilinguals

*****only in comparison to others with similar language experience*****

‘more familiar’ stimuli might reduce bias



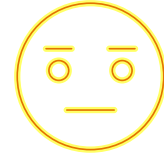
Processing-based tasks vary in their linguistic content



Summary

Summary of strengths & weaknesses in multilingual populations

	Identifying disorder	Planning Treatment	Characterizing related skills	Easy to administer	Easy to interpret	Available tools
Dynamic						
Processing						





Take aways

- Traditional language assessments measure a combination of language-learning ability and language experiences
 - Two alternative approaches are dynamic assessments & processing-based tasks
 - Dynamic assessments can measure language learning at narrative, morphological, or word levels
 - Processing-based tasks vary in linguistic content
 - Dynamic assessment & processing-based tasks may complement each other in language assessment for multilingual children
- 

Language level	Resource type	Name	Reference/Location
Narrative	Published assessment	PEARL (Predictive early assessment of reading and language)	https://www.languagedynamicsgroup.com/pearl/pearl-overview/ (Petersen & Spencer, 2016)
Narrative	Picture sets to elicit parallel stories	MAIN (Multilingual assessment instrument for narratives)	https://main.leibniz-zas.de/en/ (Gagarina et al., 2019)
Morphological	Research article: procedure and data	Novel grammatical morpheme procedure & data from typically developing children	https://doi.org/10.1044/2018_jslhr-l-17-0339 (Finestack, 2014)

Resources

Dynamic assessment

Category	Resource type	Reference/Location
Nonlinguistic	Guide to commercially available tools by skill type	See handout for ASHA 2022 presentation 1081L
Nonword repetition	List of sources for nonword repetition stimuli by language	https://pubs.asha.org/doi/full/10.1044/2021_AJSLP-20-00237#A1 (Ortiz, 2021, Appendix) https://10.1044/2021_JSLHR-20-00552 (Schwob et al., 2021, Table 1) LITMUS project site: https://www.bi-sli.org/nonword-repetition
Sentence repetition	Sources of non-English sentence repetition tasks	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8305617/ (Rujas, 2021, see Discussion/references) LITMUS project site: https://www.litmus-srep.info/

Resources

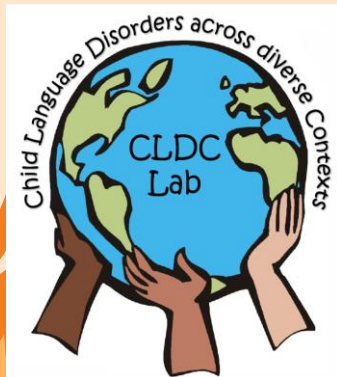
Processing-based assessments

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Questions?

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References

- Castilla-Earls, A., Bedore, L., Rojas, R., Fabiano-Smith, L., Pruitt-Lord, S., Restrepo, M. A., & Peña, E. (2020). Beyond scores: Using converging evidence to determine speech and language services eligibility for dual language learners. *American Journal of Speech-Language Pathology*, 29(3), 1116-1132.
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