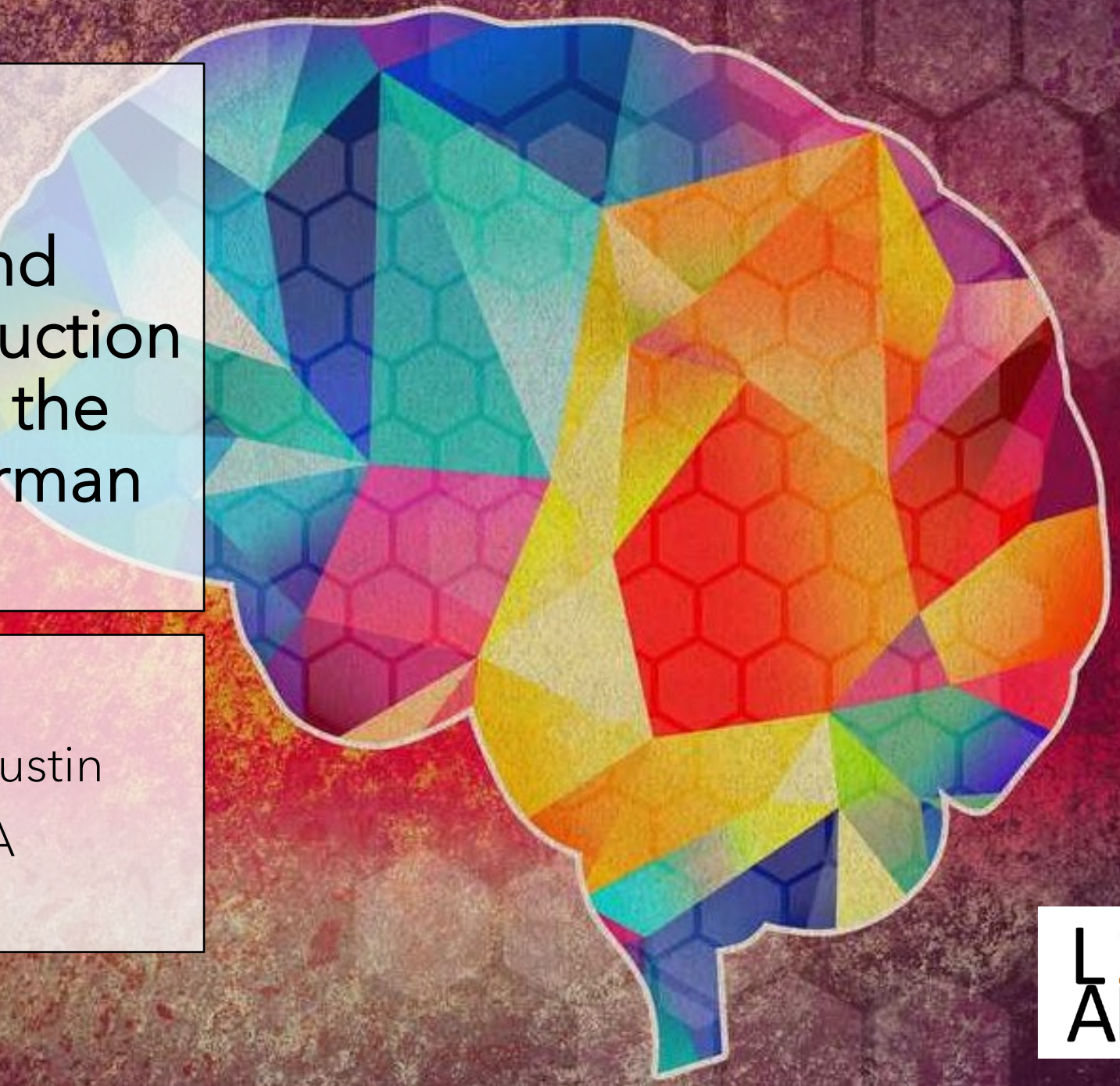
The effects of comprehension- and production-based instruction on the acquisition of the accusative case in German

Nick Henry, Ph.D.
The University of Texas at Austin

GLAC 2022, Athens, GA



Background: CBI and PBI

- One long-standing issue in second language (L2) acquisition research concerns the relative effectiveness of comprehension-based instruction (CBI) vs. production-based instruction (PBI) (Shintani et al., 2013).

- Previous research on CBI has found that it helps L2 learners create form-meaning mappings and contributes to long-term knowledge gains for both comprehension and production, which is superior to PBI (e.g., Henry 2022; VanPatten & Cadierno, 1993)

- Other studies show advantages for PBI, particularly in terms of production gains over the long term (Farley & Aslan, 2012; Morgan-Short & Bowden, 2006)

Background: CBI and PBI

- A recent meta-analysis (Shintani et al., 2013) concluded that, CBI's advantages may be limited to short-term gains on comprehension tasks, while PBI's advantages are more durable.

- Recent research (e.g., Keppenne et al., 2021) shows advantages for PBI and suggests that the difference lies in the depth of processing required ("recognition vs. recall" and "activation vs. retention")

- However, research on PBI and CBI has rarely been balanced in terms of task type and language use, and it rarely draws on the same theories of acquisition.

Input Processing

Input Processing

- VanPatten's (2004) Input Processing model consists of a set of processing principles and their corollaries that describe how learners filter input and create form meaning connections (e.g., the First Noun Principle).
- Processing Instruction is the pedagogical application of the model, aimed at helping learners to avoid a particular processing problem and promoting the processing of a target form.

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Der	Hund	beißt	den	Mann.
The	dog	bites	the	man.

The dog bites the man.

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The$_{NOM}$ dog bites the$_{ACC}$ man.

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Word Order
Plausibility
Probability
Context
Prosody

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The$_{NOM}$ dog bites the$_{ACC}$ man.

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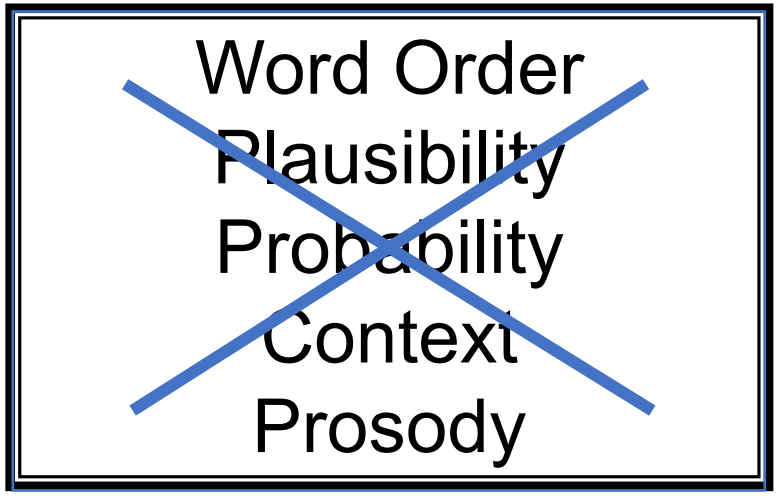


Der Hund beißt den Mann.

The$_{NOM}$ dog bites the$_{ACC}$ man.

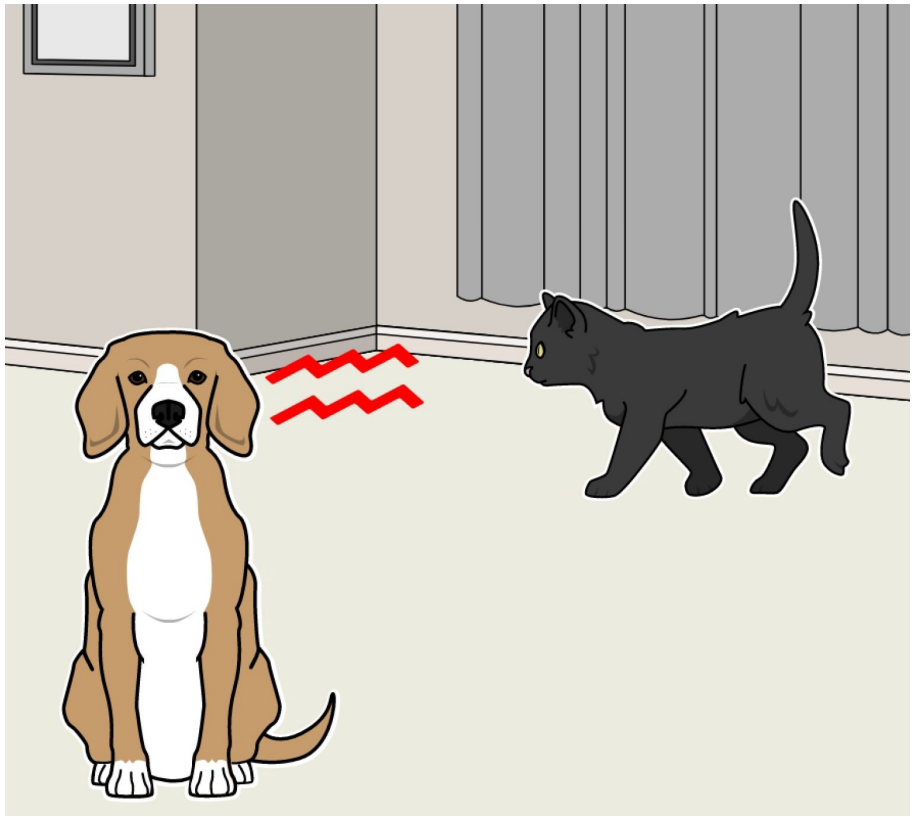
The dog bites the man.

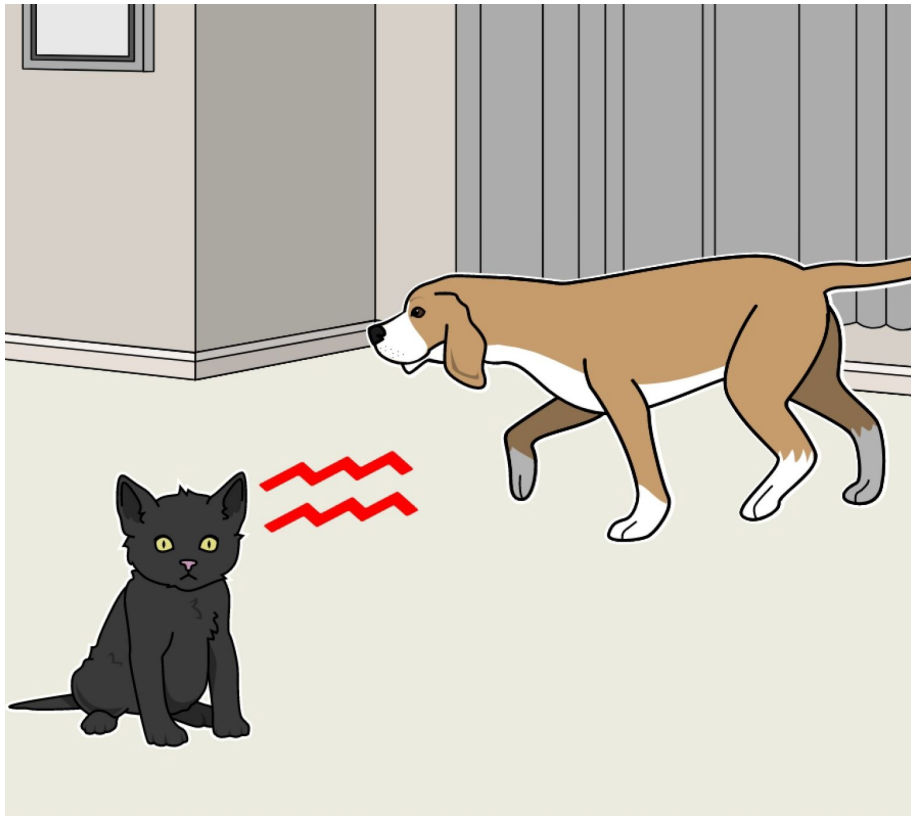
Den Hund hört die Katze.

The dog hears the cat.

“The cat hears the dog”

A





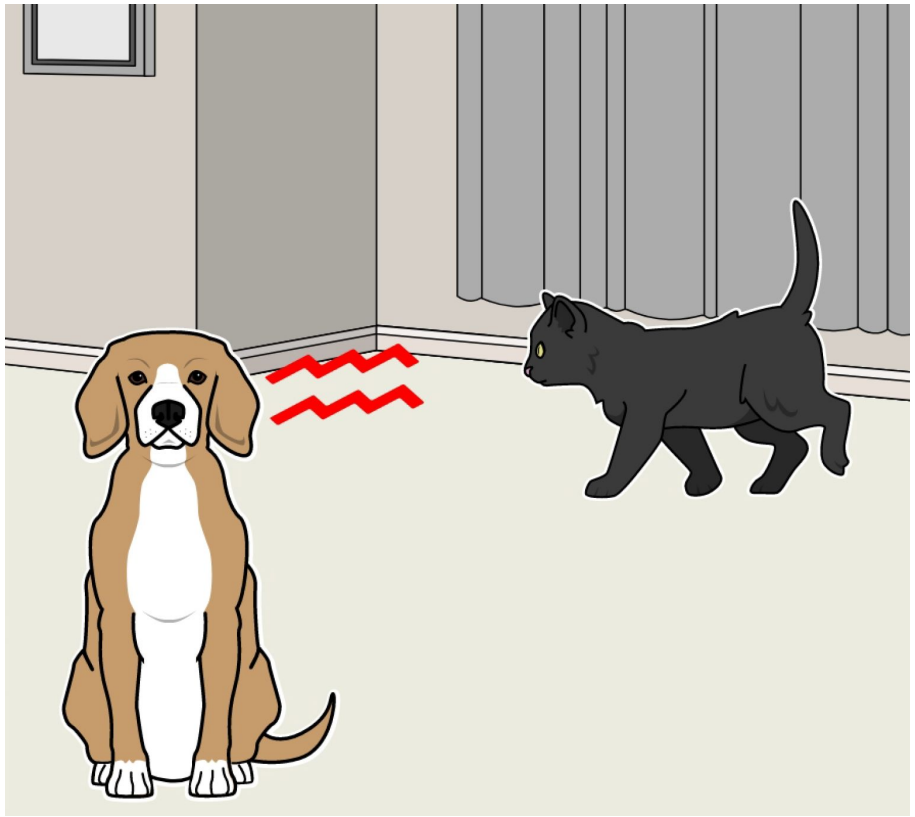
B

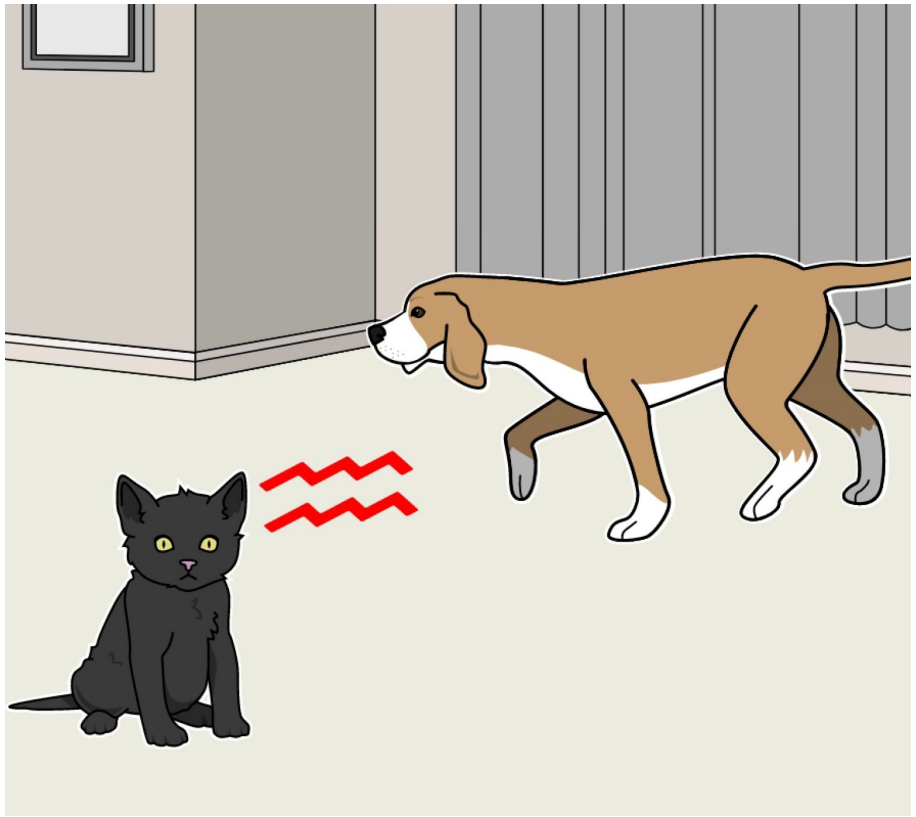
Den$_{ACC}$ Hund hört die$_{NOM}$ Katze.

The dog hears the cat.

“The cat hears the dog”

A





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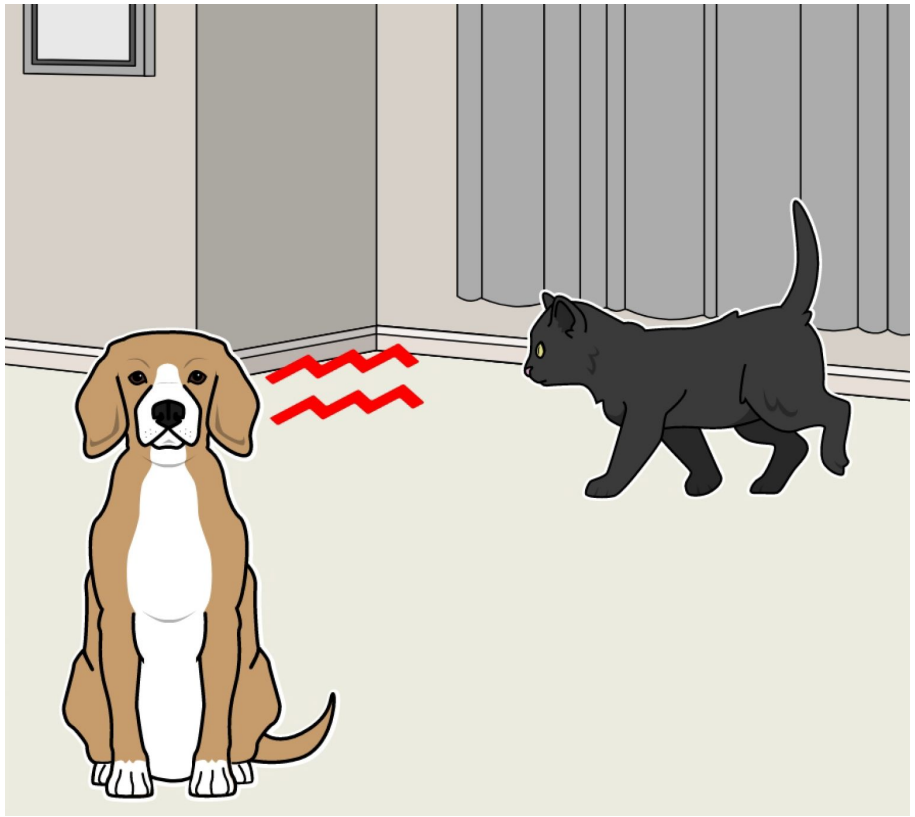

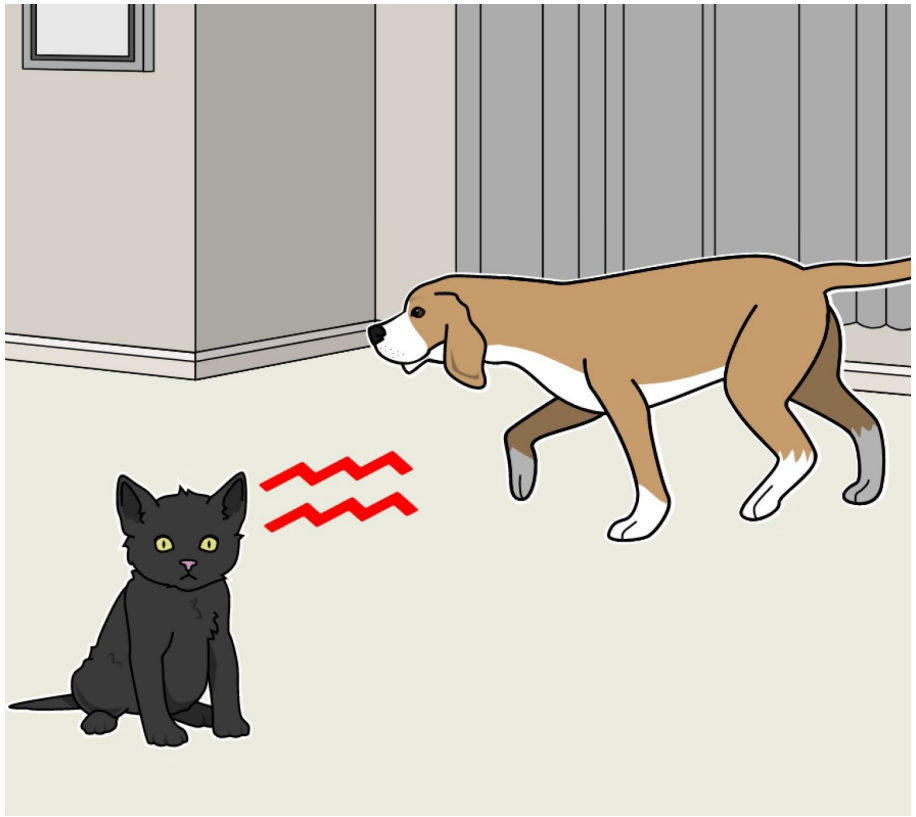

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Correct! Good Job!

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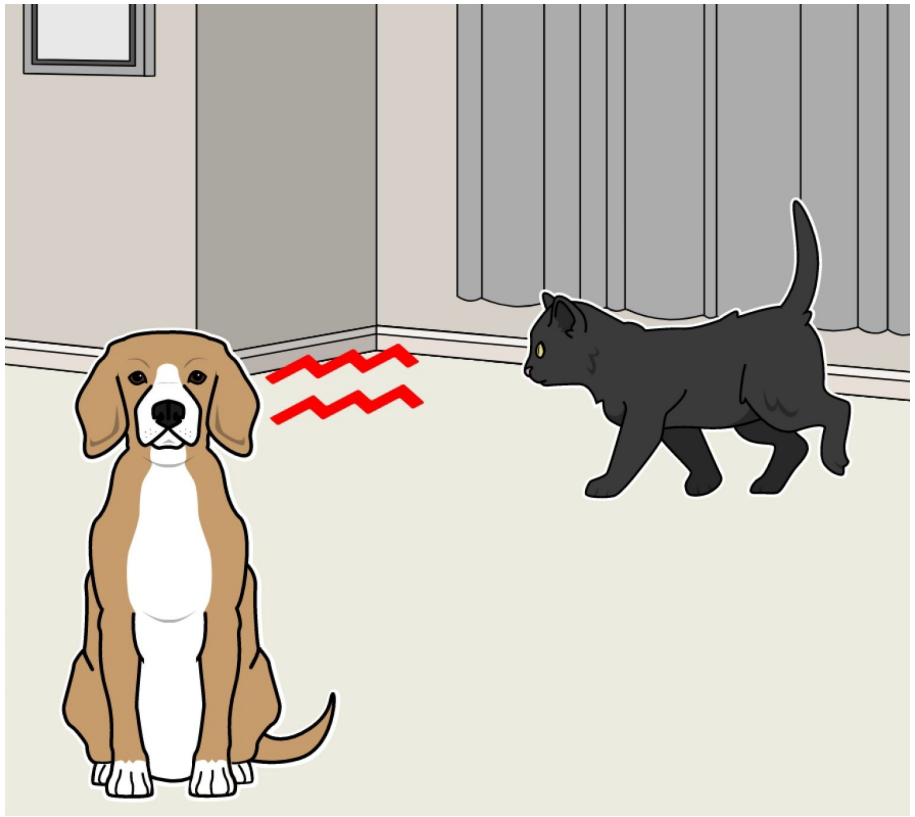
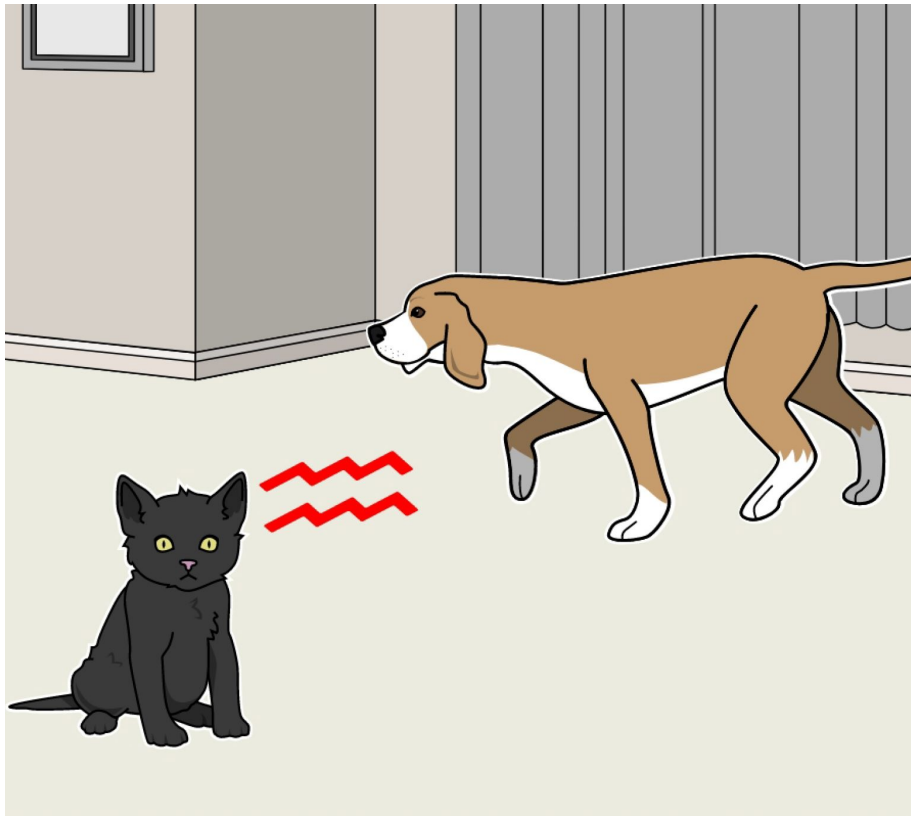




B

Incorrect.

Motivation

- The primary goal of this study is to test comparable versions of CBI and PBI, which were both created using principles of Processing Instruction (PI), which draws on VanPatten's Input Processing model. (VANPATTEN, 2004)

- In addition, this study will test whether the mixture of CBI and PBI leads to more robust and durable training effects.

Research Questions

- RQ1: Does CBI, PBI, or MIX lead to more accurate comprehension of accusative case markers?
- RQ2: Does CBI, PBI, or MIX lead to more accurate production of accusative case markers?
- RQ3: Do CBI, PBI, or MIX lead learners to process SVO and OVS sentences correctly sooner during training.

Participants

- 42 Second & Third Semester German learners from 5 Universities
  - No established knowledge of case-markers and OVS sentence structure (determined by <66% on the pretest)

- Randomly divided into 3 treatment groups:
  - Comprehension-Based Instruction (CBI)= 14
  - Production-Based Instruction (PBI) = 15
  - Mixed Instruction (MIX) = 13

- *Data Collection is ongoing*

CBI, PBI, and MIX Instruction

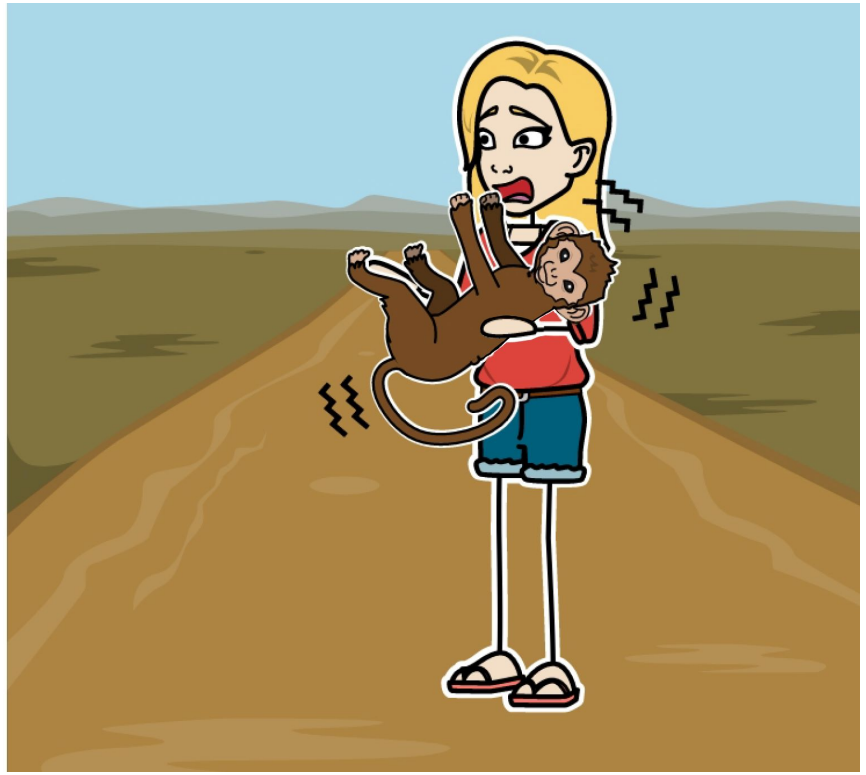
- Each instructional training consisted of 52 SVO or OVS items.
  - 39 OVS items (Targets)
  - 13 SVO items (Distractors)

- Items were presented randomly and pseudo-randomly distributed such that no more than 6 OVS items appeared in a row.

- Items were counterbalanced for:
  - Answer Choice
  - Order of pictures on the screen (CBI)

Comprehension-Based Instruction (CBI)

A



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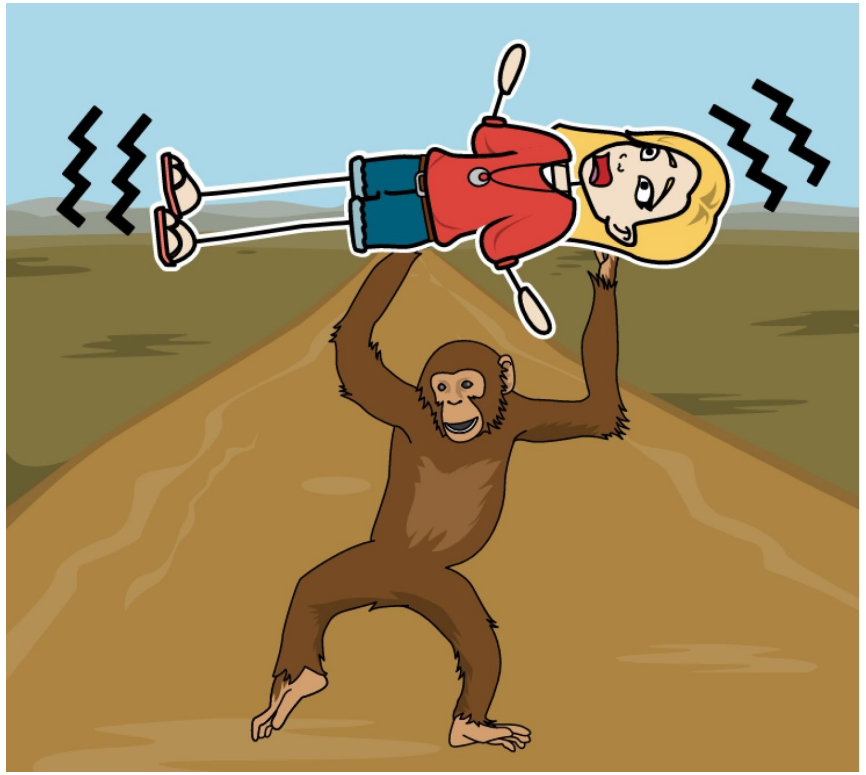
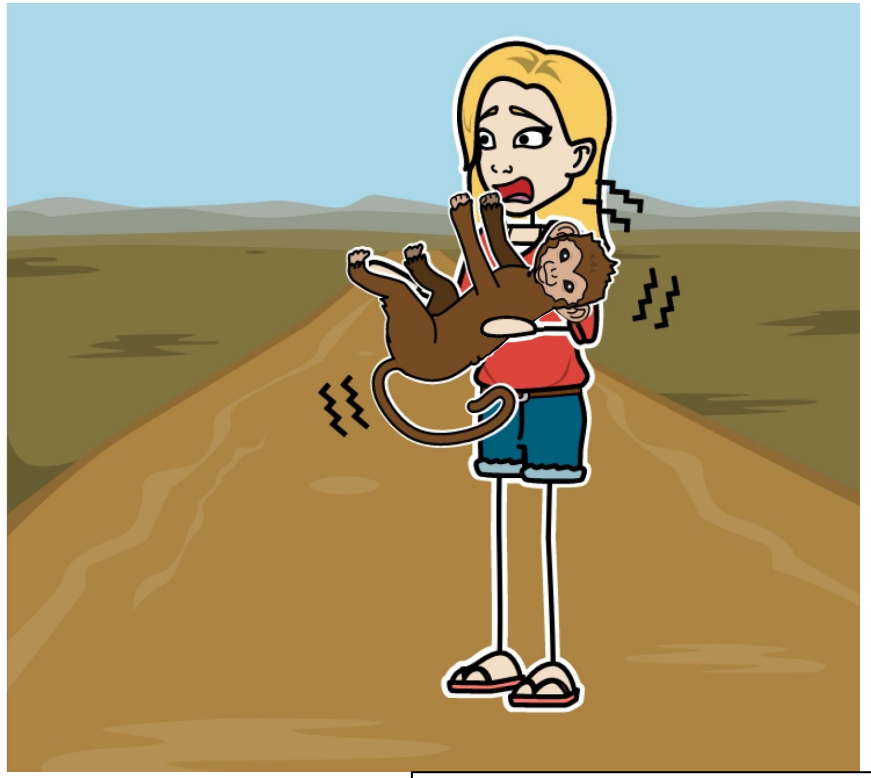


schütteln = to shake

Comprehension-Based Instruction (CBI)

A



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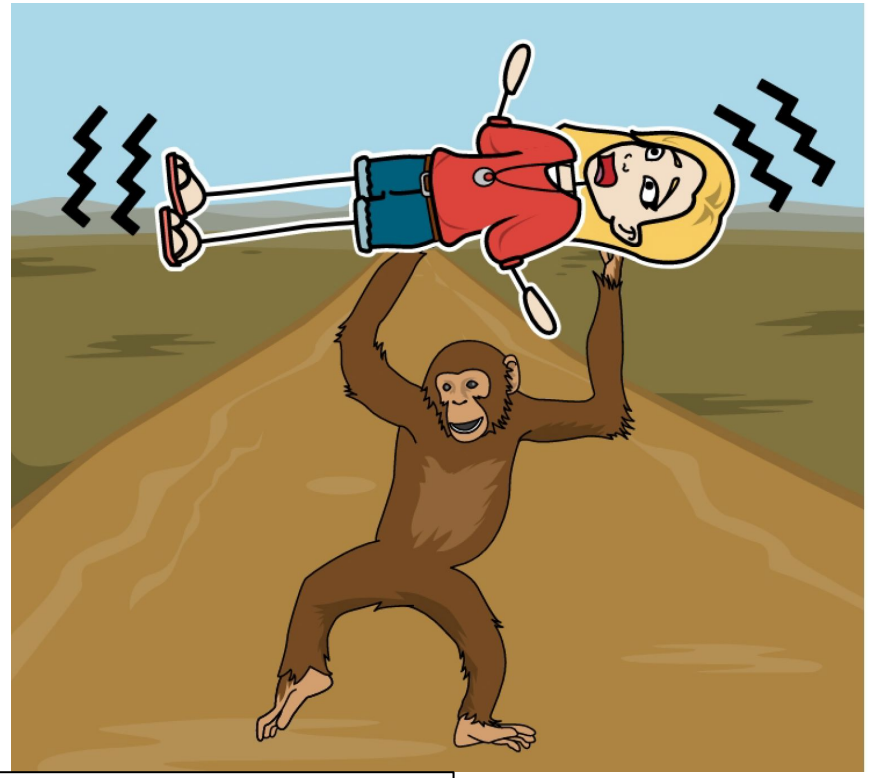
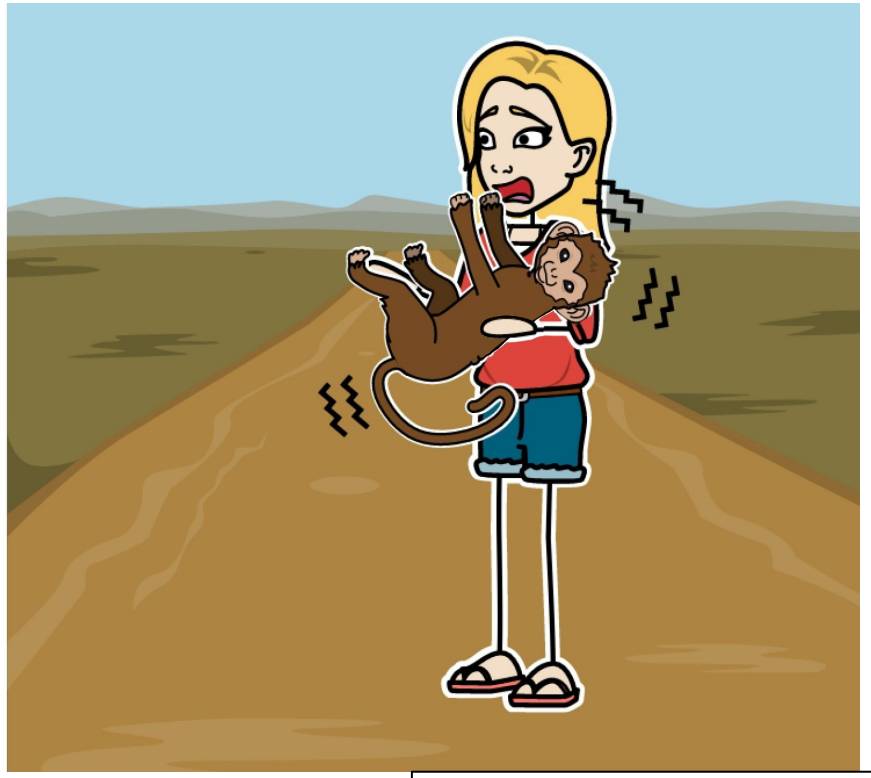


Correct! Good Job!

Comprehension-Based Instruction (CBI)

A



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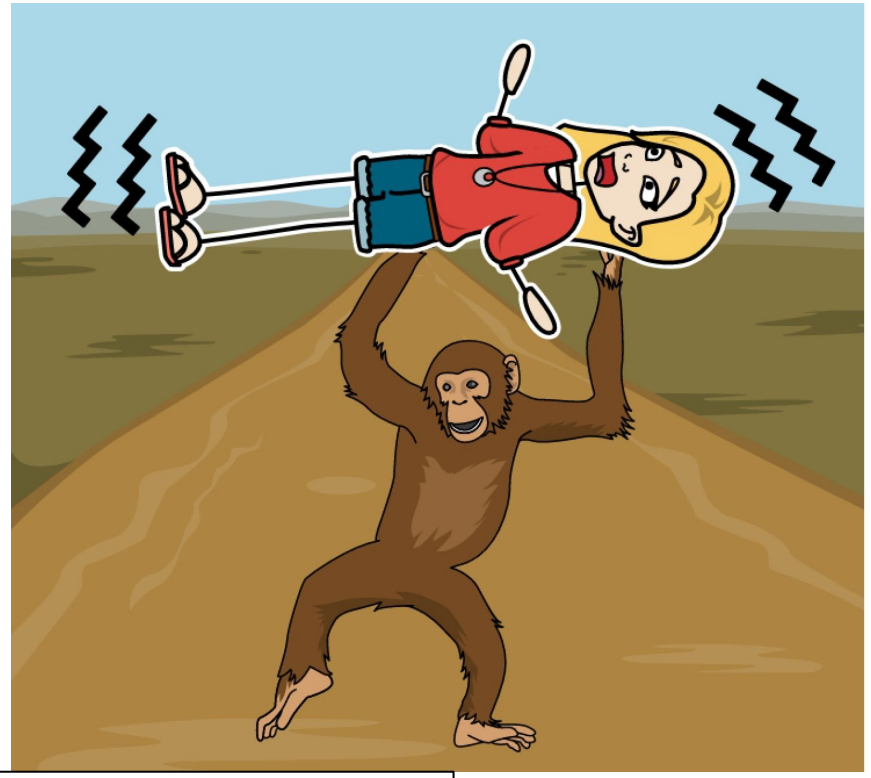
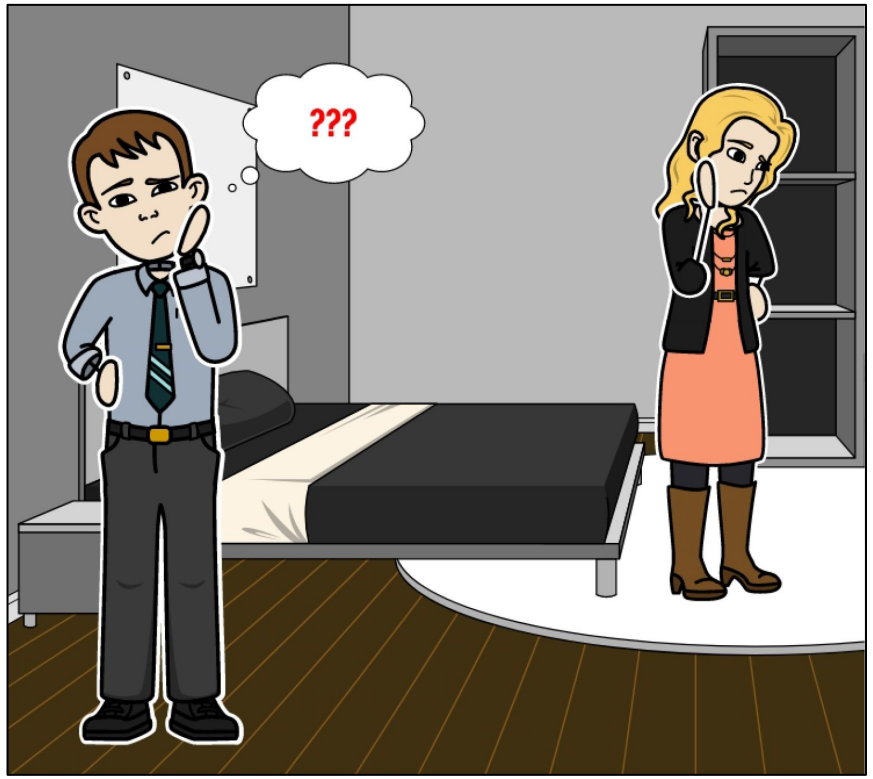


Incorrect.

Production-Based Instruction (PBI)

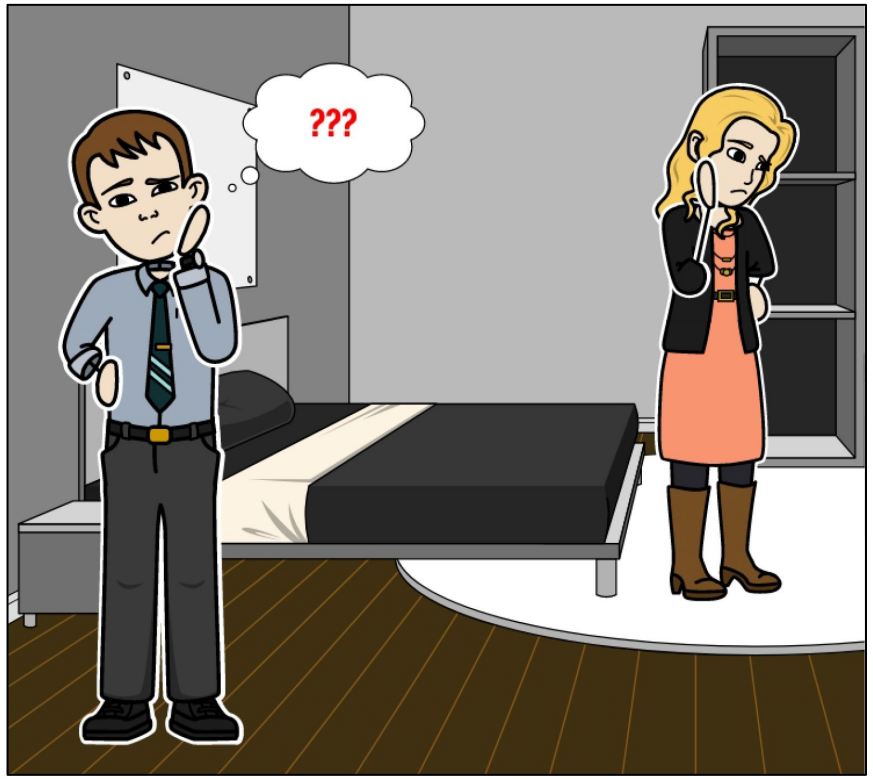


Die Frau versteht _____ Mann nicht.

der	den

vehrsteht = to understand

Production-Based Instruction (PBI)



Die Frau versteht _____ Mann nicht.

der

den

Correct! Good Job!

Production-Based Instruction (PBI)

Die Frau versteht _____ Mann nicht.

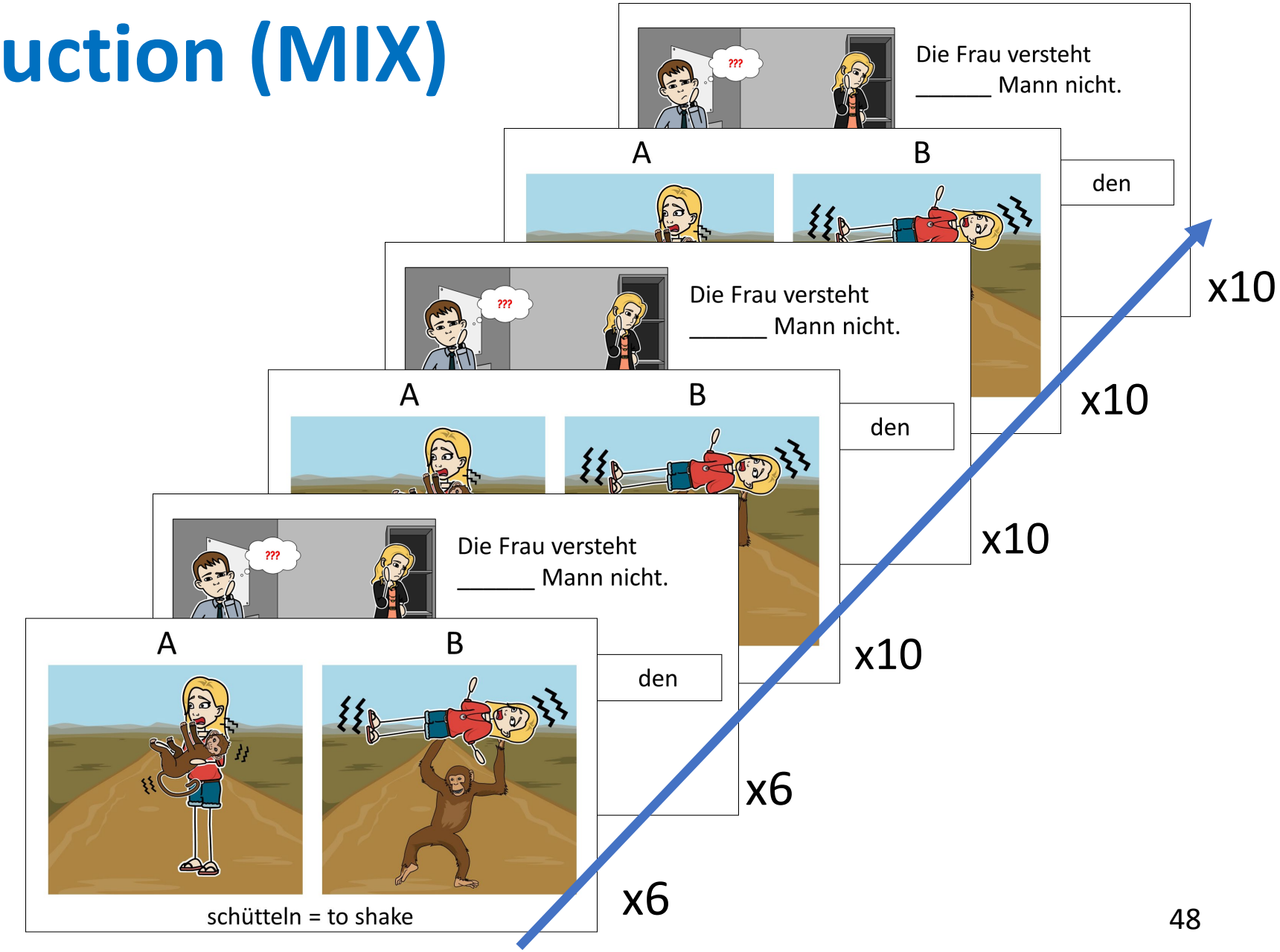
der

den

Incorrect.

Mixed Instruction (MIX)

Alternating blocks of CBI and PBI

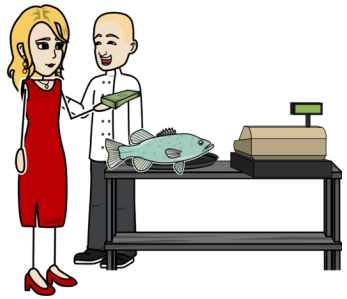


Pretest / Posttest / Delayed Posttest

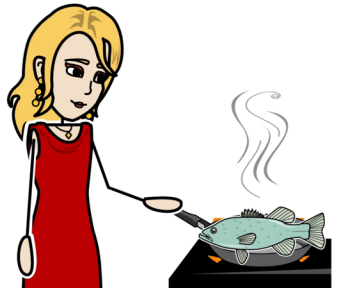
Picture story-telling task.

- *der* and *den* % correct

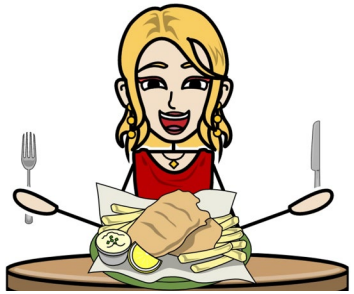
What is the girl doing with fish (der Fisch)?



kaufen



kochen



essen

Sentence interpretation task

- Accuracy (Correct / Incorrect)

Die Oma überrascht der Opa während der Party.

Is the grandpa surprising the grandma?

Yes No

Trials to Mastery (TTM)

- Correct / Incorrect responses were tracked during the training.

- Trials to Mastery (TTM) represented the number of trials needed before a participant demonstrated “mastery”:
  - 75% accuracy on the remaining OVS items in the training, AND
  - 75% accuracy on the remaining SVO items in the training

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1	2	3	4	5	6	7	8	9	10
✗	✗	✗	✗	✓	✓	✓	✓	✓	✓
60%	67%	75%	86%	100%	100%	100%	100%	100%	100%

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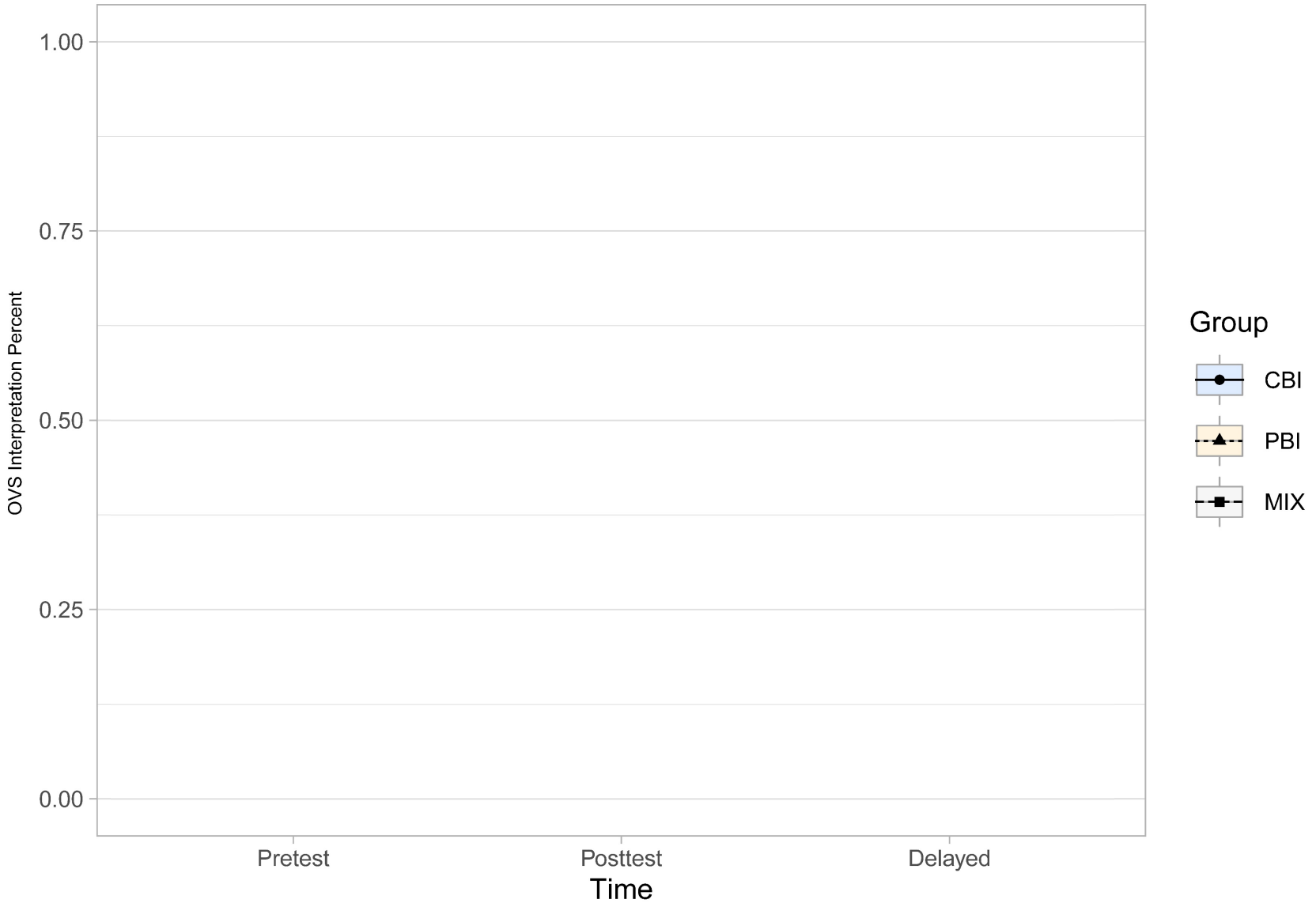
Results: Trials to Mastery

Group	TTM (SD)	# Met (%)
CBI	39.07 (18.16)	5 / 14 (36%)
PBI	26.21 (24.79)	7 / 15 (47%)
Mix	27.46 (21.73)	9 / 13 (69%)

Interpretation: Accuracy on OVS Items



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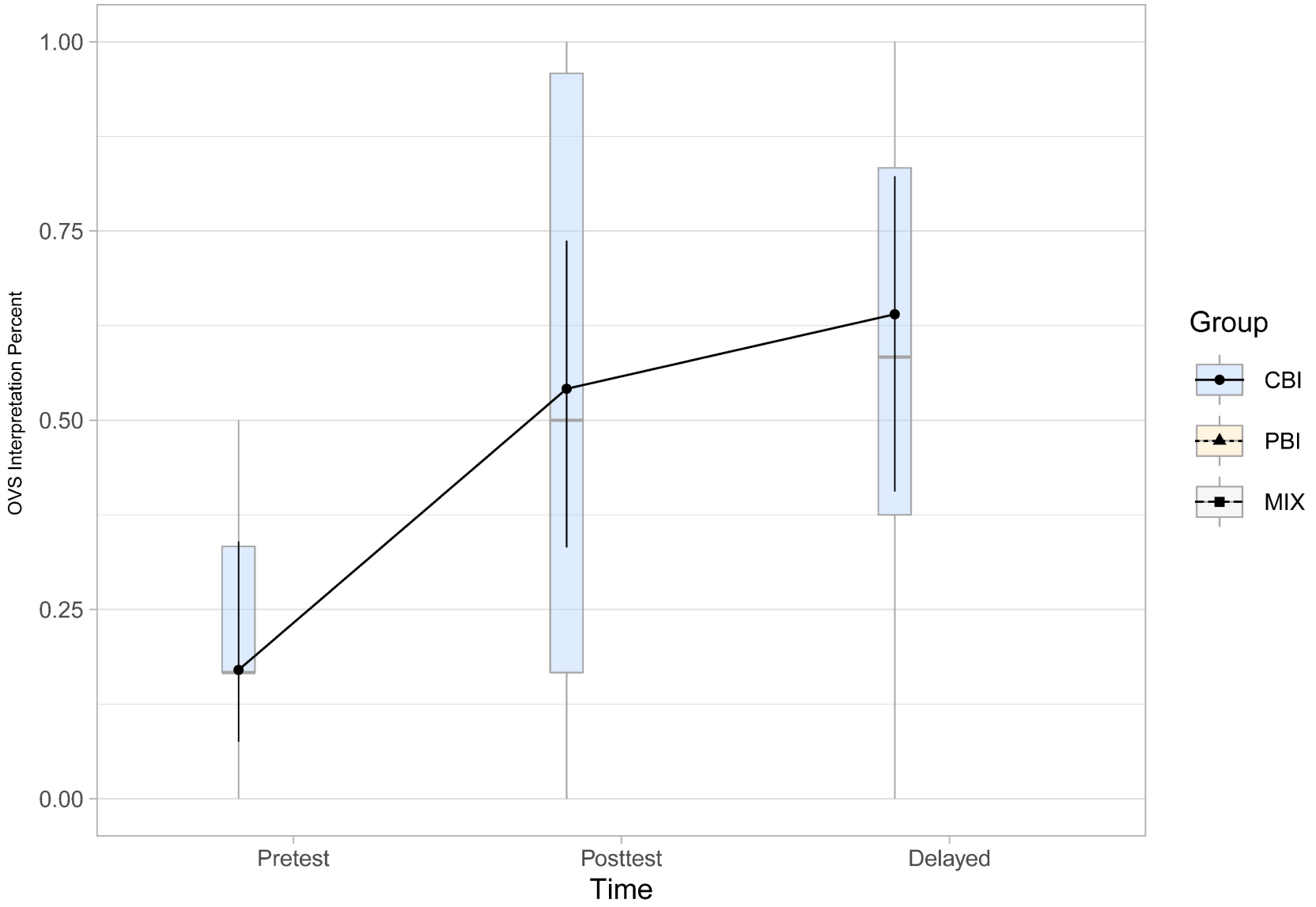

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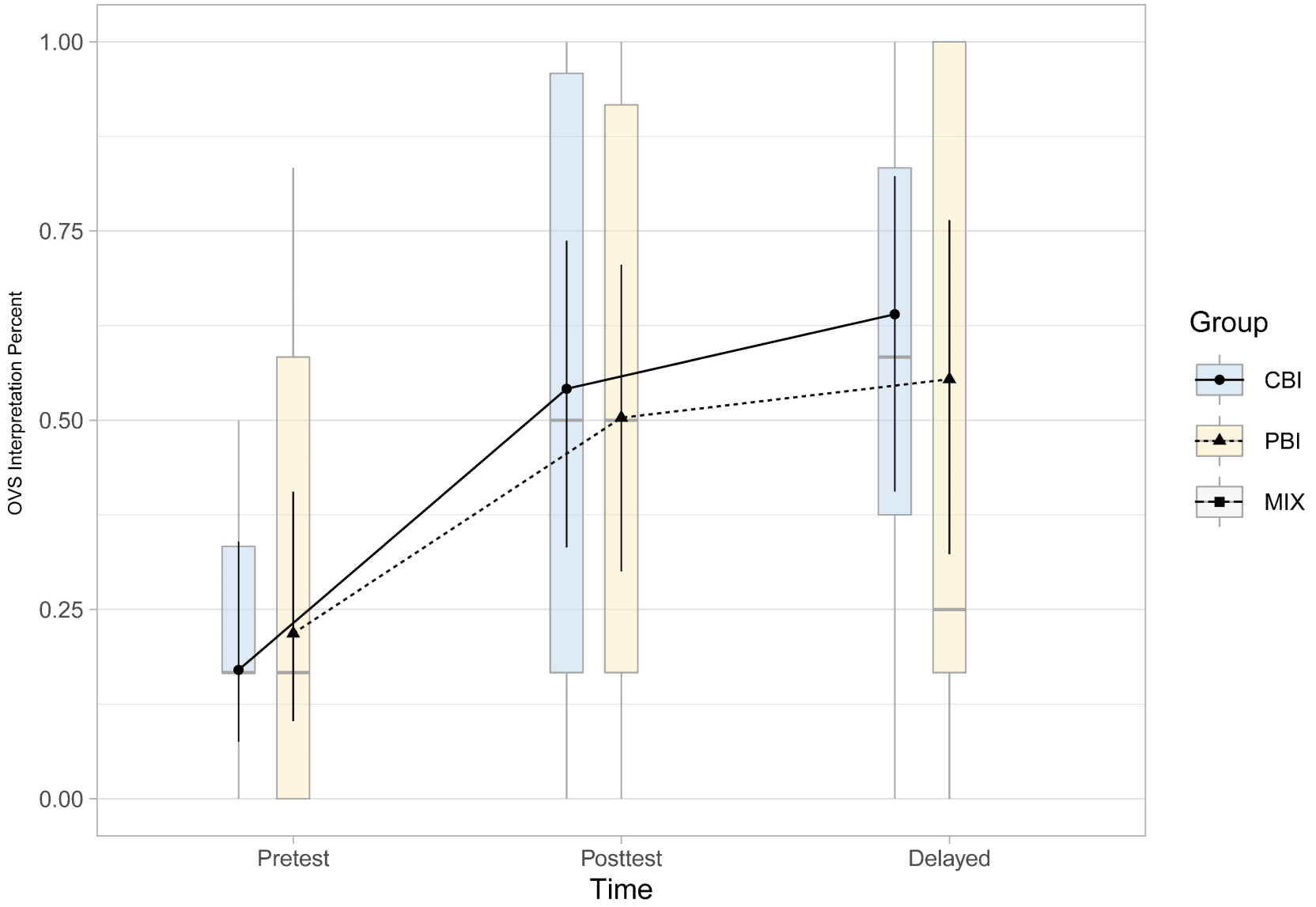

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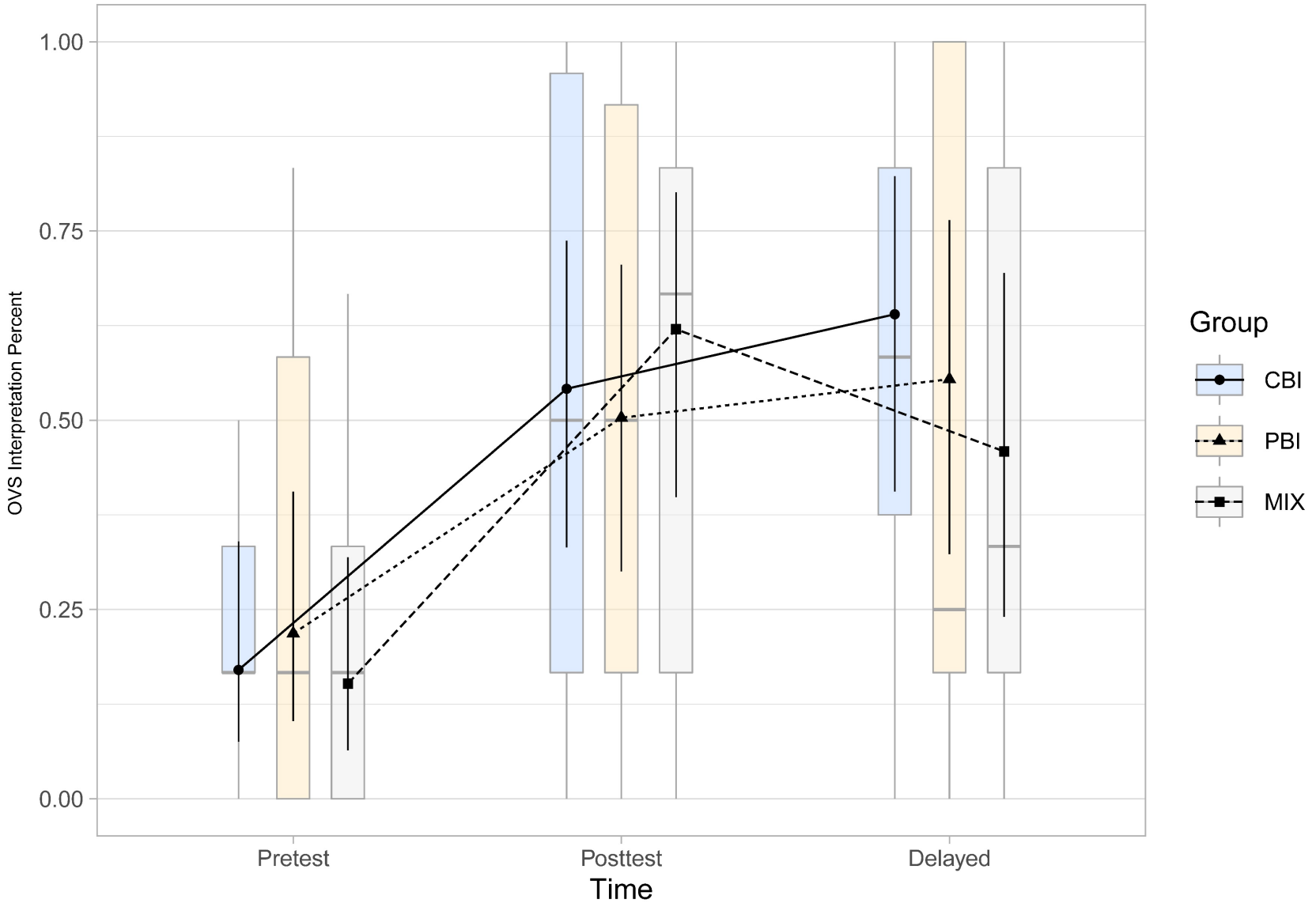

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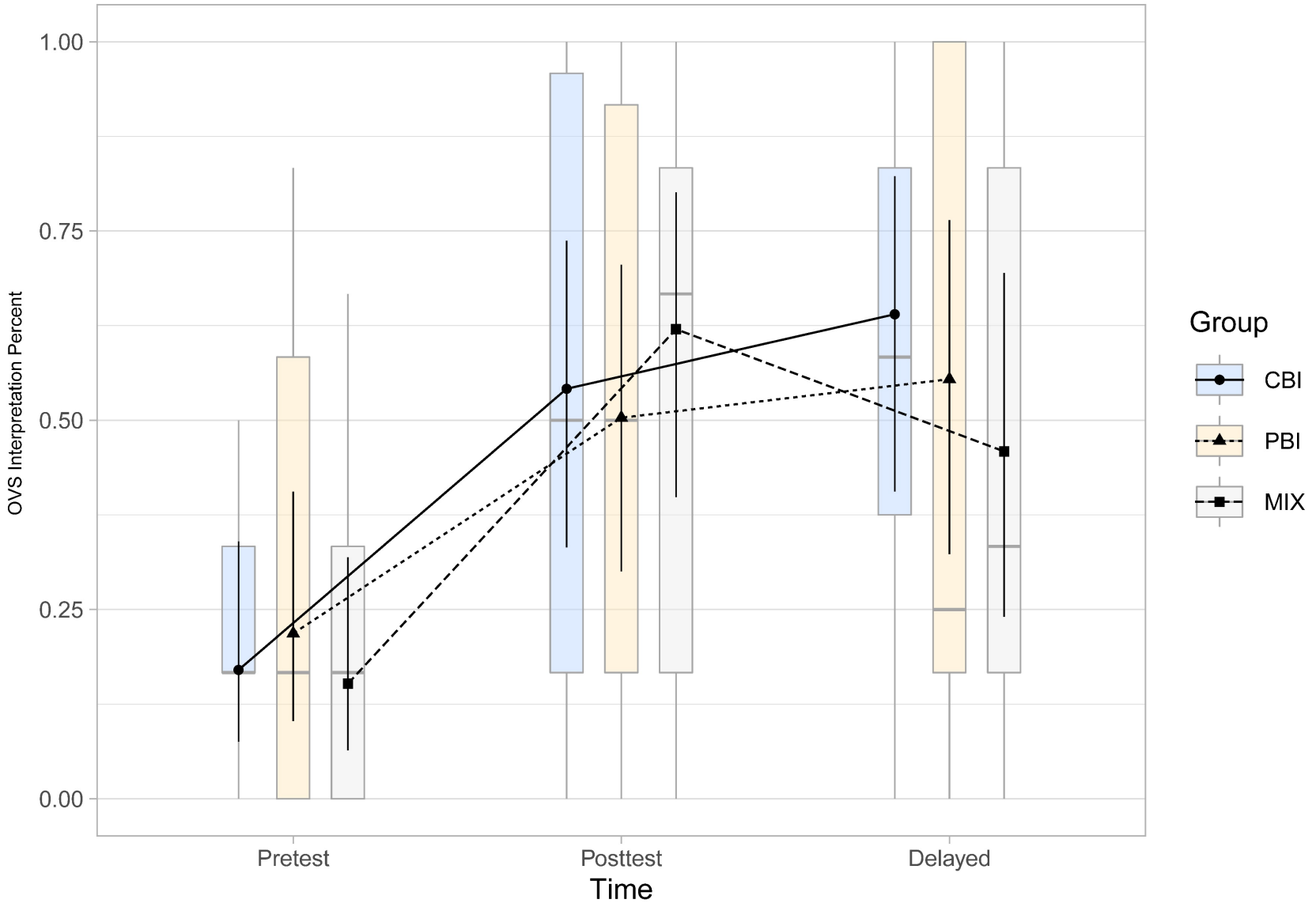
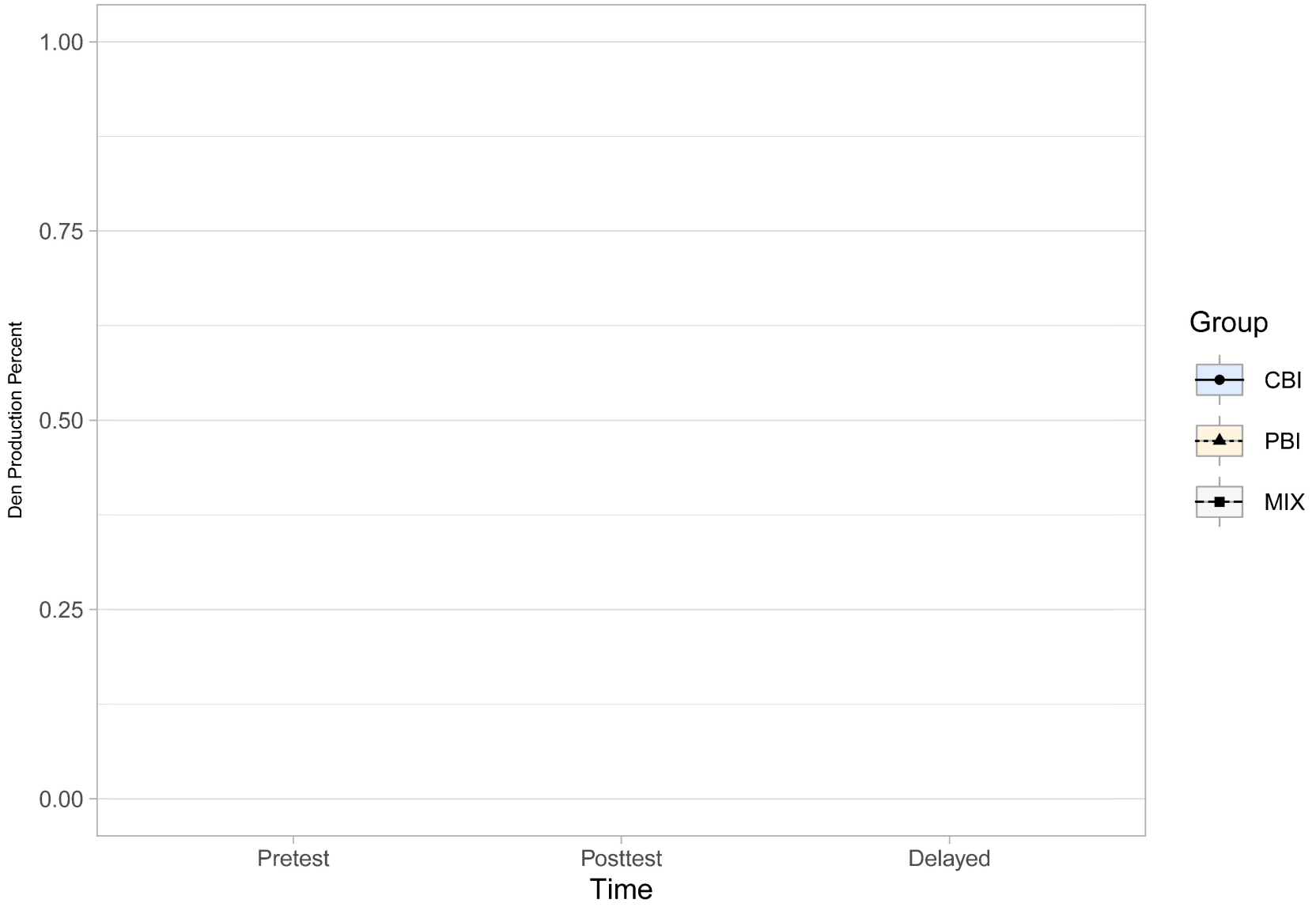
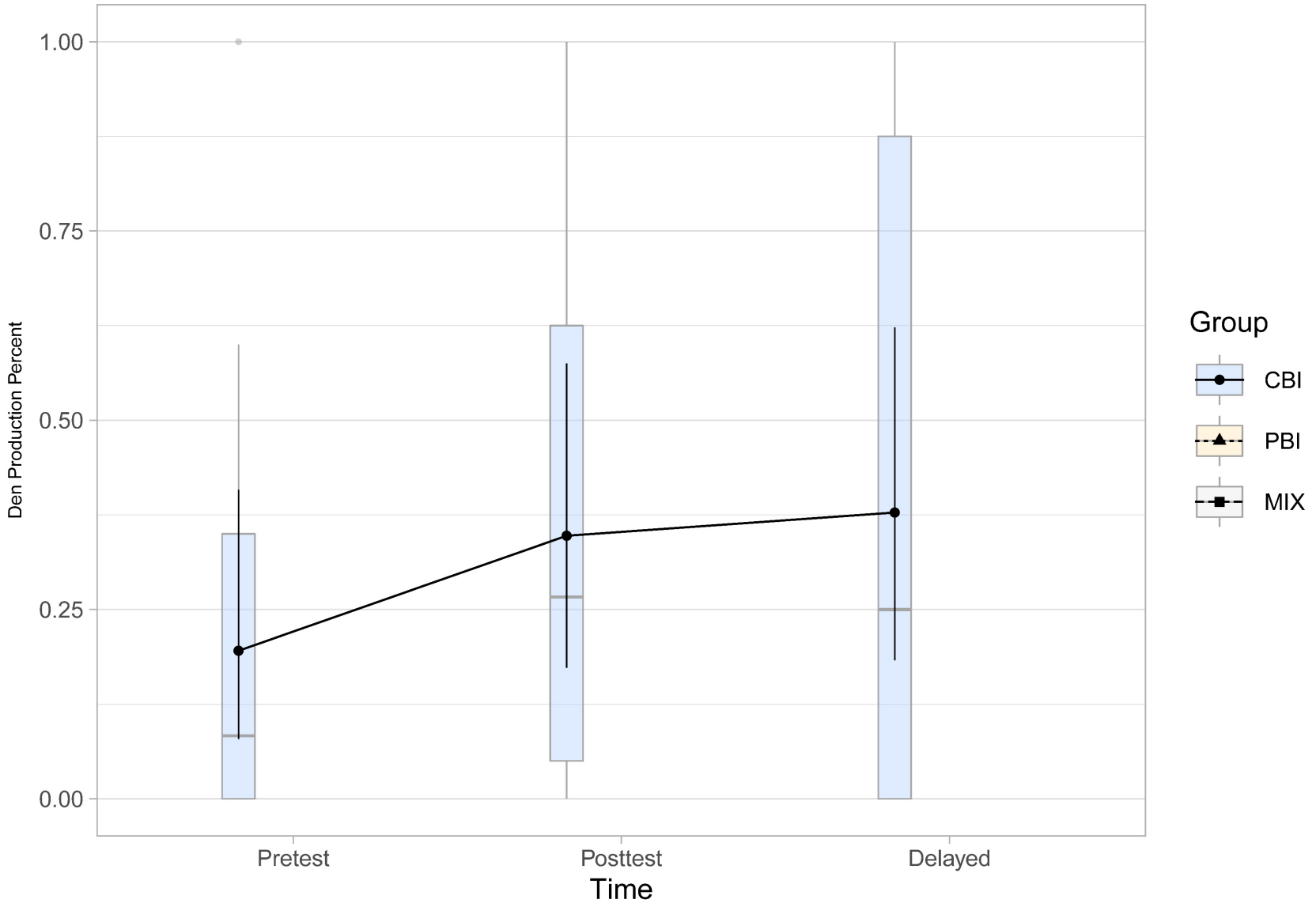


- Significant main effect for Time ($p < .001$)
- No effect for Group or the Time X Group interaction

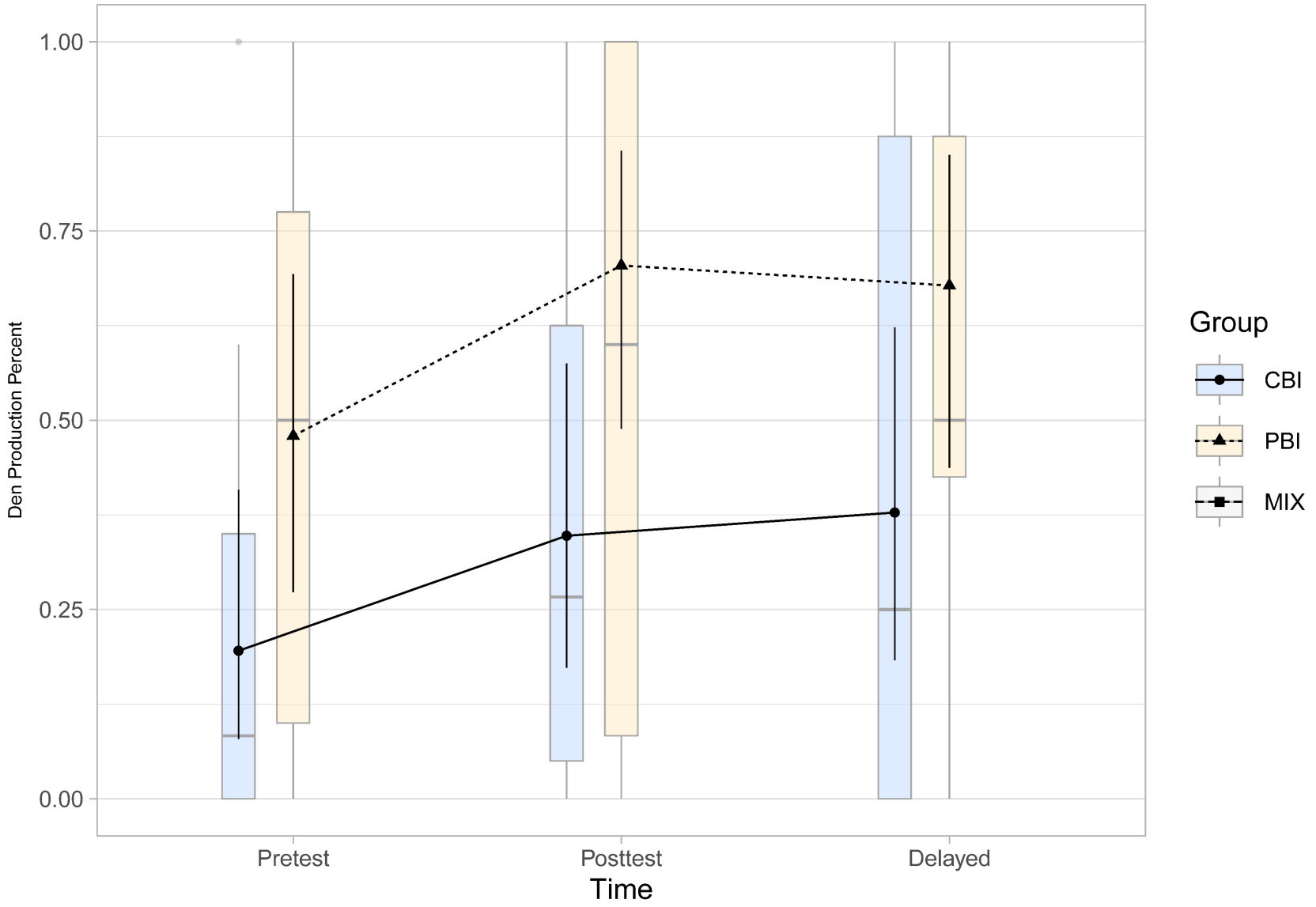
Production: Accuracy on *den*



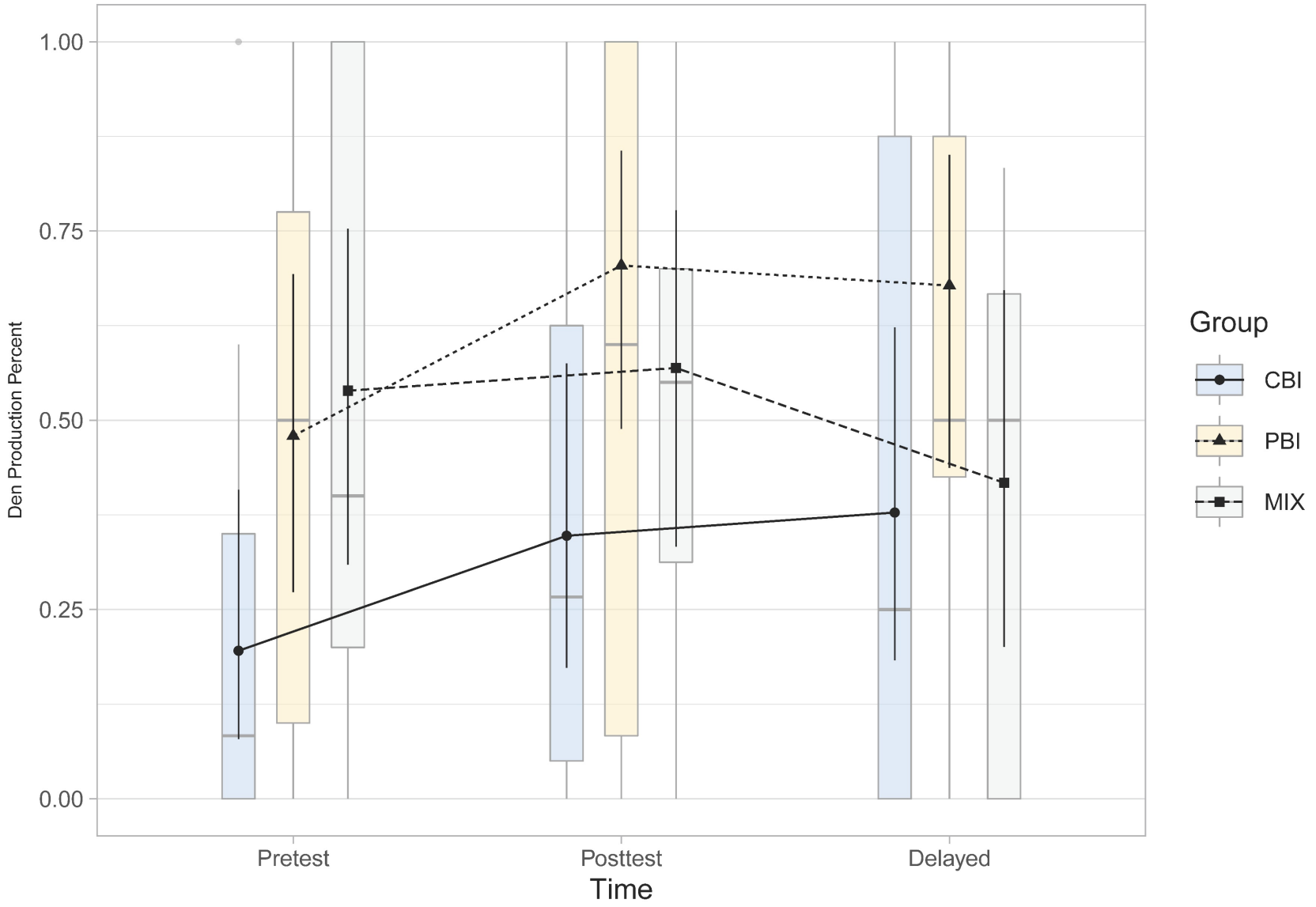
Production: Accuracy on *den*



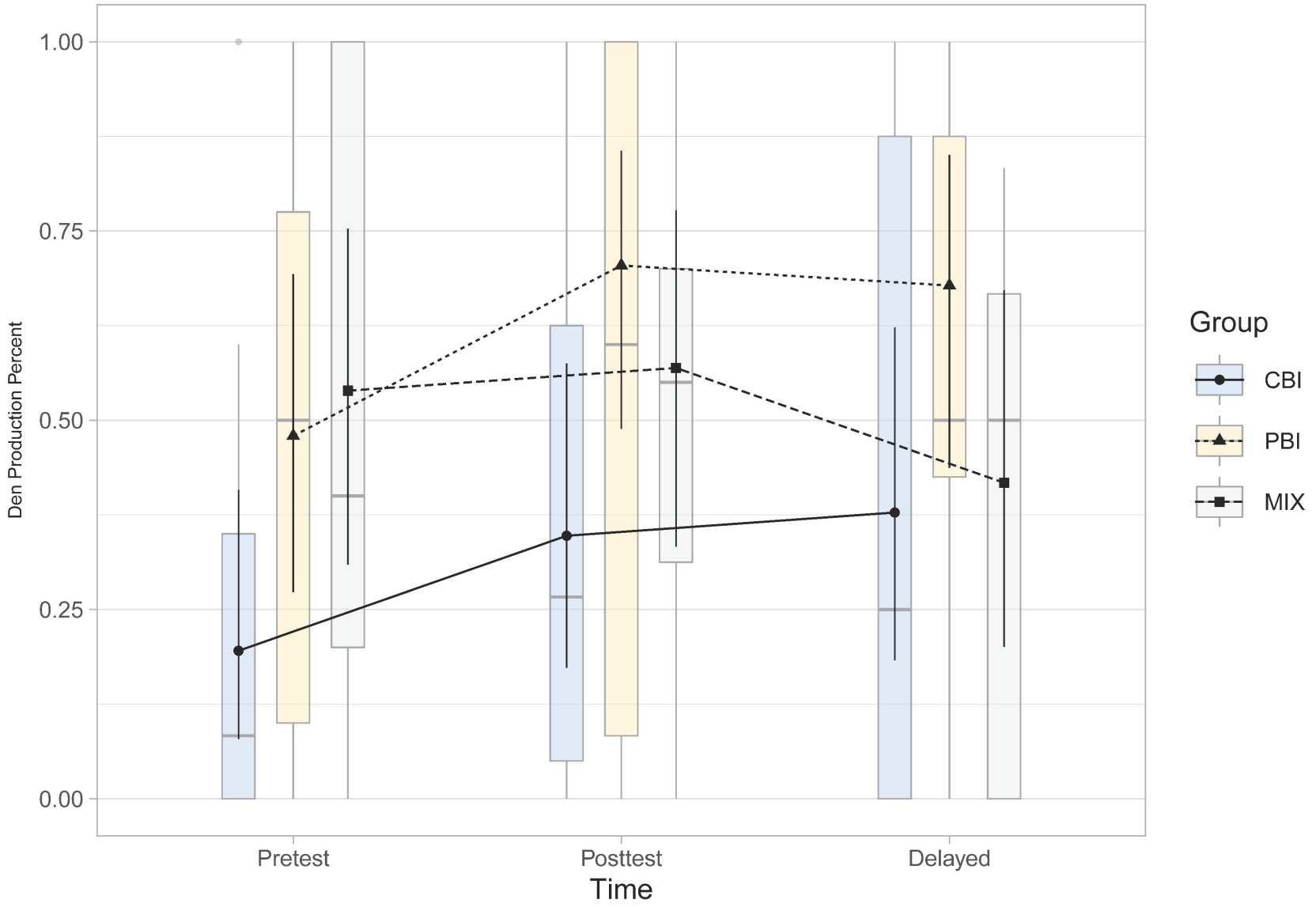
Production: Accuracy on *den*



Production: Accuracy on *den*



Production: Accuracy on *den*



- Significant main effect for Time ($p = .037$)
- Marginally significant main effect of group ($p = .07$)
- No Time x Group interaction

Discussion

- CBI, PBI, and MIX instruction all produced comparable results on the posttest and delayed posttest measures.
- Both CBI and PBI evidence transfer-of-training effects to the “opposite skill”.
- Data collected during training point to early advantages for the PBI and MIX groups.

Discussion

- Taken together, results suggest that CBI and PBI lead to comparable outcomes when the goals and methods of the training are kept constant.

- These data therefore do not suggest differences in the depth of processing required by CBI and PBI.
  - Advantages in PBI observed during the training may suggest that learners were better able to understand their errors, which were made salient by the active choice of “der” and “den” in each training item.

- Training data suggest pedagogical advantages for MIX training.

Thank you!

- Karoline Kiefel
- Valerie Keppene
- Carrie Jackson
- Julia Goetze
- Hyoun-A Joo
- Andrew Wisely
- Janice McGregor
- All of the participants
- Lindsey Henry for moral support

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