Familiarity with a situation frees children‘s cognitive resources

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GestENTalker: collaboration with

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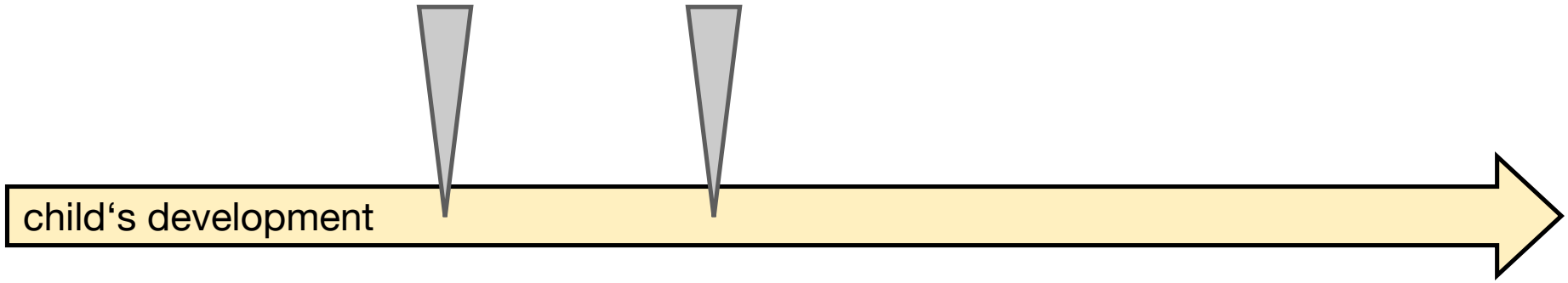
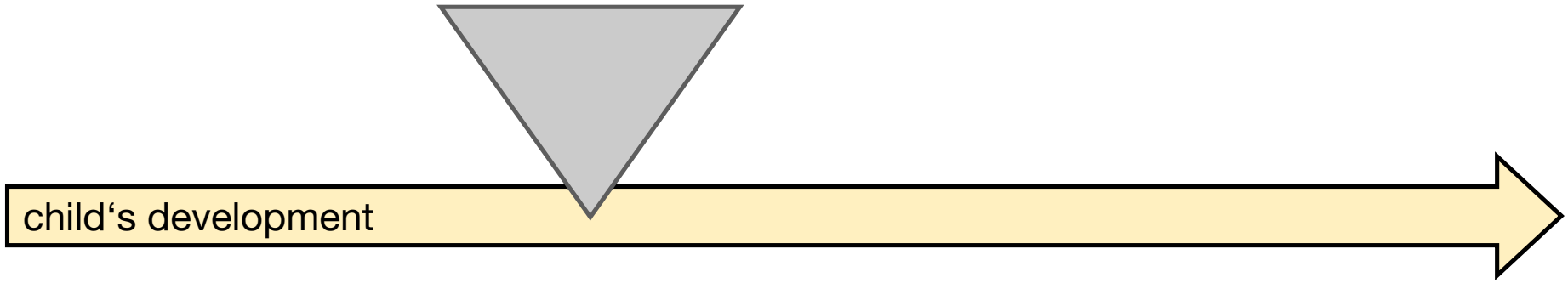
Most studies

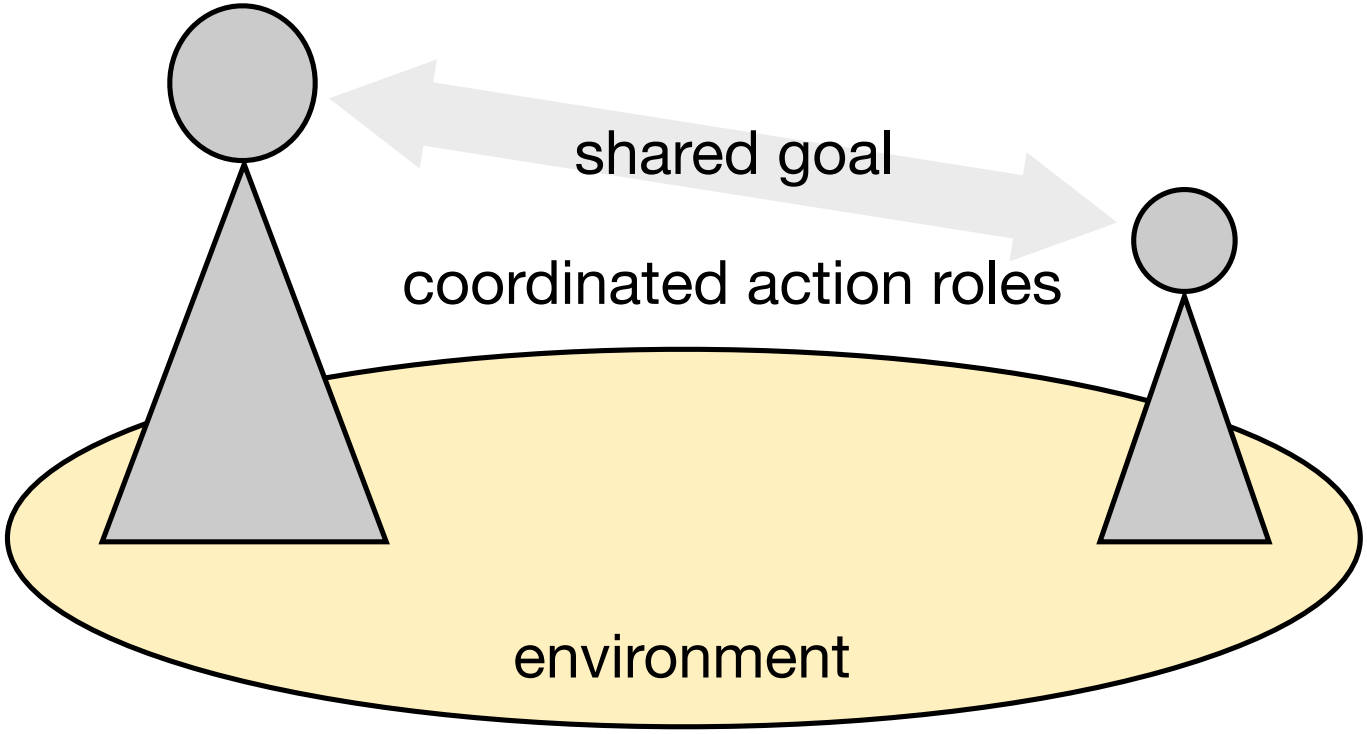


Our approach



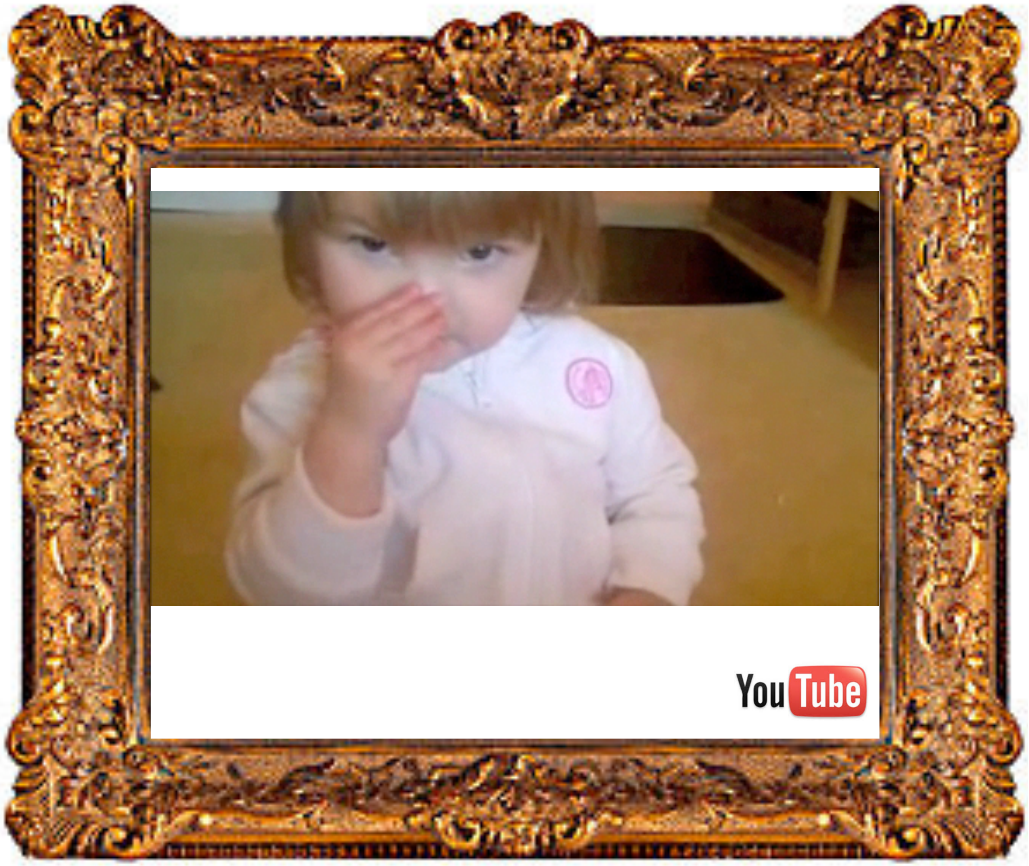
Familiarization with a situation

Białek, Białecka-Pikul, Stępień-Nycz, 2013



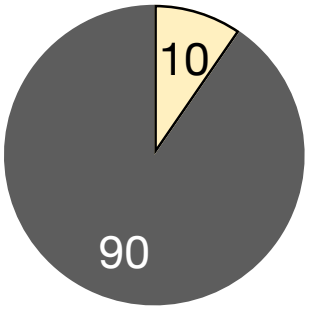
Familiarization with a situation

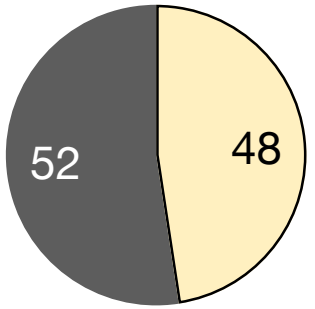
- predictable recurrent interactive structure (Ninio & Snow, 1996)
- sequential reconstructable patterns (Quasthoff, 2009)
- frames (Bruner, 1985; Tomasello, 2003)



Bookreading: particular pragmatic infrastructure

Rohlfing, Grimminger & Nachtigäller, in press



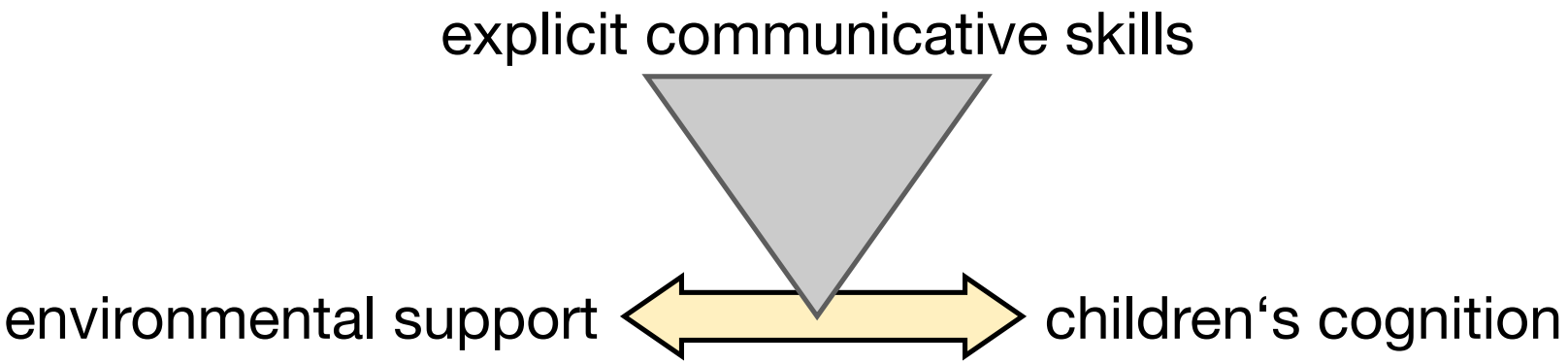


labeling and pointing

other behavior

Effects of familiarization on child‘s cognition

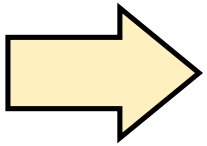
- verbal behavior (Farrar, Friend & Forbes, 1993)
- multimodal communicative behavior (Marcos, 1991)



Effects of familiarization

Farrar, Friend & Forbes, 1993

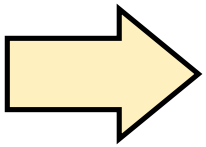
	13 two-year-olds were observed over a five-week-period	
	familiar-event	unfamiliar event
	same toy during each observation	**different** novel toy during each observation
DV	lexical type use action verb use MLU	
	increased	unchanged



verbal behavior of children varies as a function of context

Mechanisms of familiarization

- reducing cognitive load about event processing (Lucariello & Nelson, 1986)
- increasing processing space resulting in more sophisticated language skills (Farrar et al., 1993)



similar functions reported about gestural behavior

Gesture lightens the load

- gestures paves the way for language development (Iverson & Goldin-Meadow, 2005; Rowe et al., 2008)

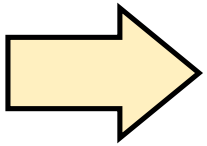
- gesturing lightens the cognitive load: Children and adults solved math problems and remember a list of words better when they gestured (Goldin-Meadow & Wagner, 2005)

- gesturing saves speakers cognitive resources (Goldin-Meadow & Wagner, 2005)

Effects of familiarization

Grimminger et al., in prep.

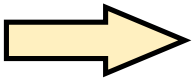
	15 14-months-olds were observed over a four-week-period	
	familiar items	unfamiliar items
	same toys and events during each observation	**different** novel toys and events during each observation
DV	children‘s pointing (handpoints, indexfingerpoints) pointing with speech	



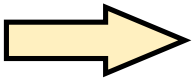
does pointing behavior of children vary as a function of context?

Children‘s pointing as a function of familiarization

saves resources and frees resources for speaking

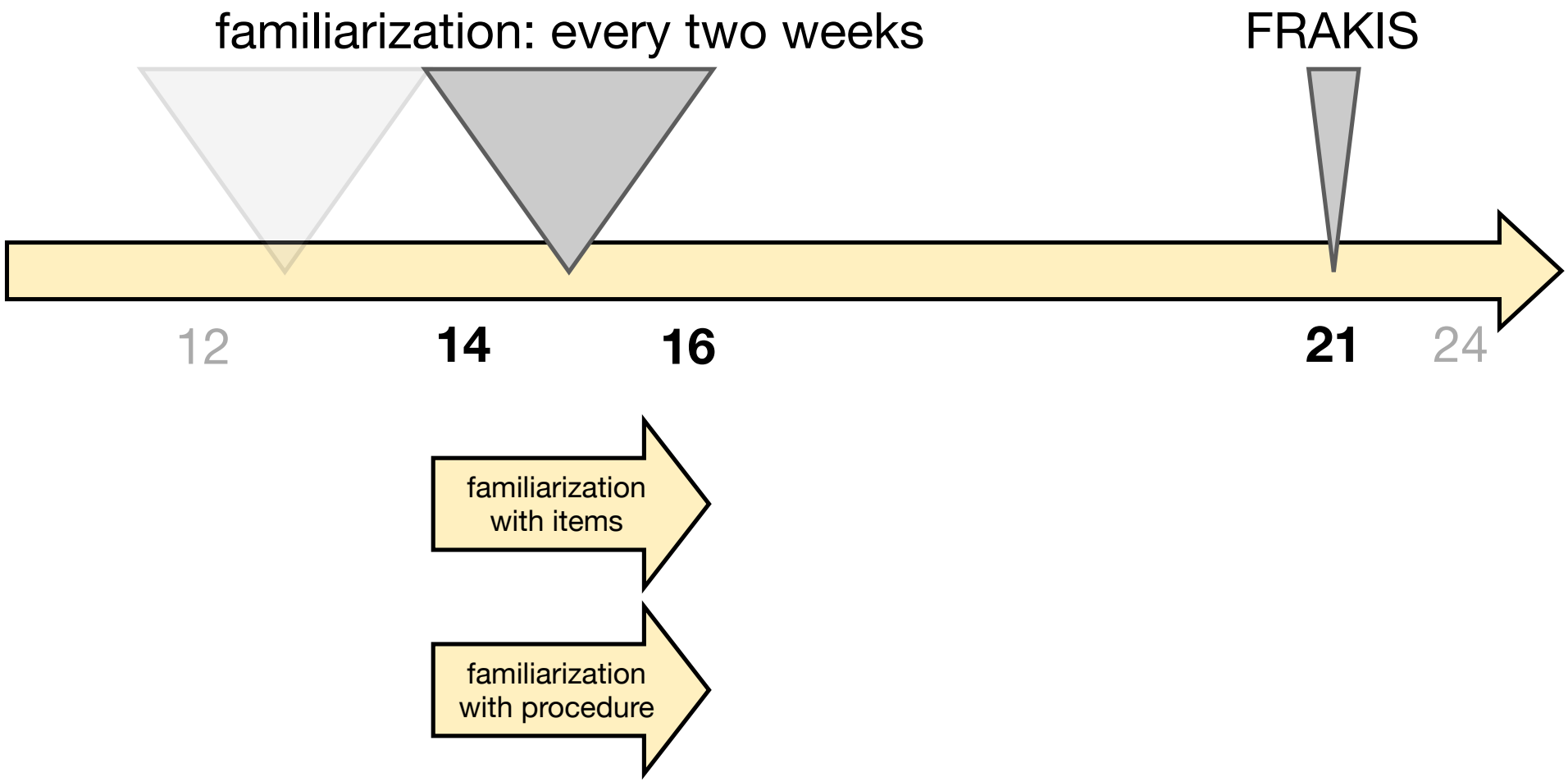


increase in pointing with speech



increase in speech

Procedure


familiarization: every two weeks
FRAKIS
12
14
16
21
24
familiarization with items
familiarization with procedure

Operationalization: pointing

indexfinger points

hand points

Indexfinger pointing

Lüke et al, in prep.
N = 60

- 12-month-olds hand pointing does not predict any language variable

- 12-month-olds indexfinger pointing explains:

  - productive and receptive vocabulary at 24 months

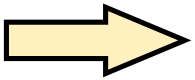
  - sentence comprehension and production at 24 months

Method: Participants

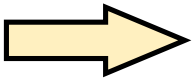
- 15 children at the age of 14;2 to 16;2, native German (7 girls, 8 boys)
- FRAKIS 21
  - HighVocabulary Group
  - LowVocabulary Group (below 50 words)
- analysis:
  - 2(data points) x 2(familiarity) x 2(vocabulary group) repeated measures
  - posthoc tests: nonparametric

Children‘s pointing as a function of familiarization

saves resources and frees resources for speaking



increase in pointing with speech



increase in speech

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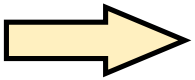
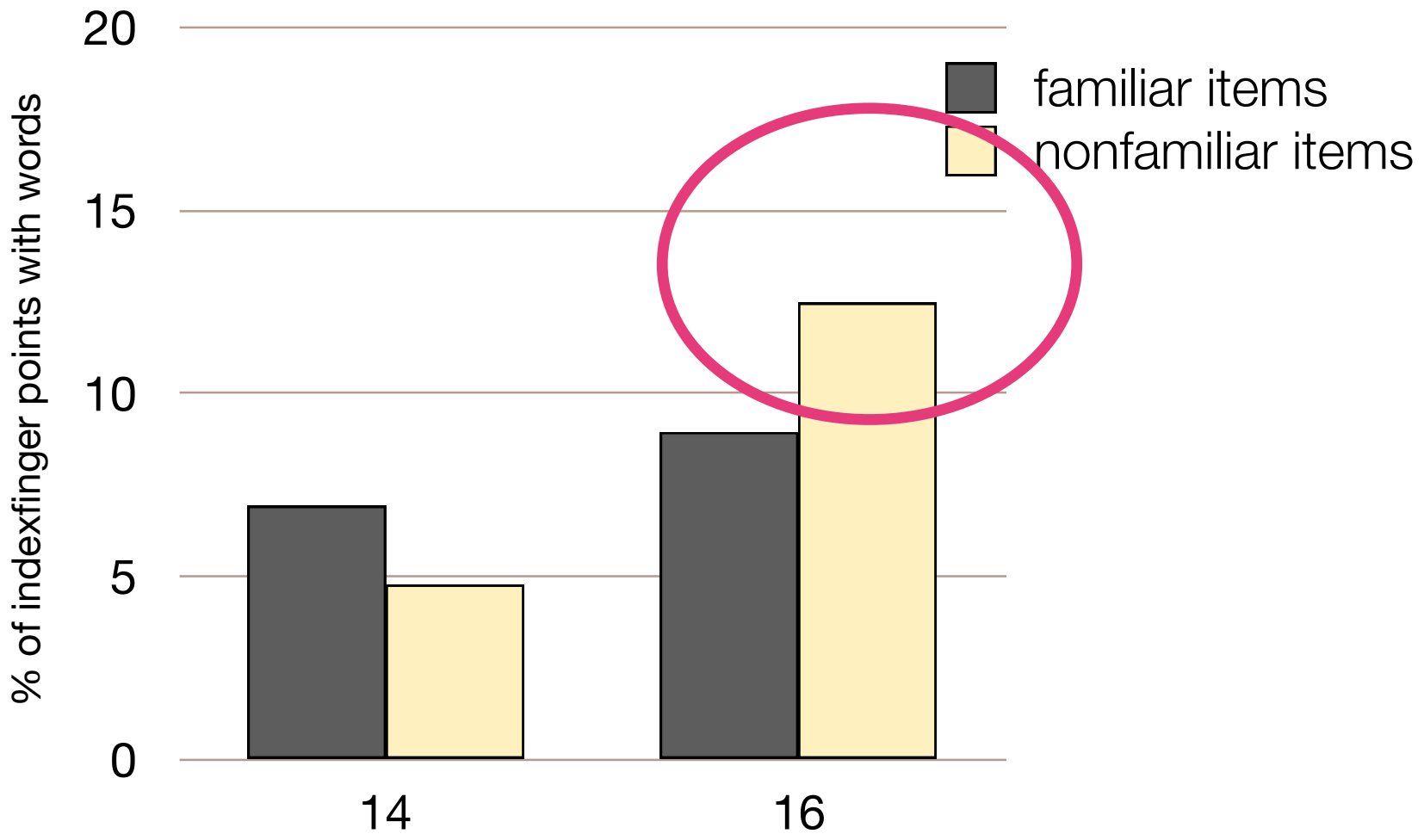


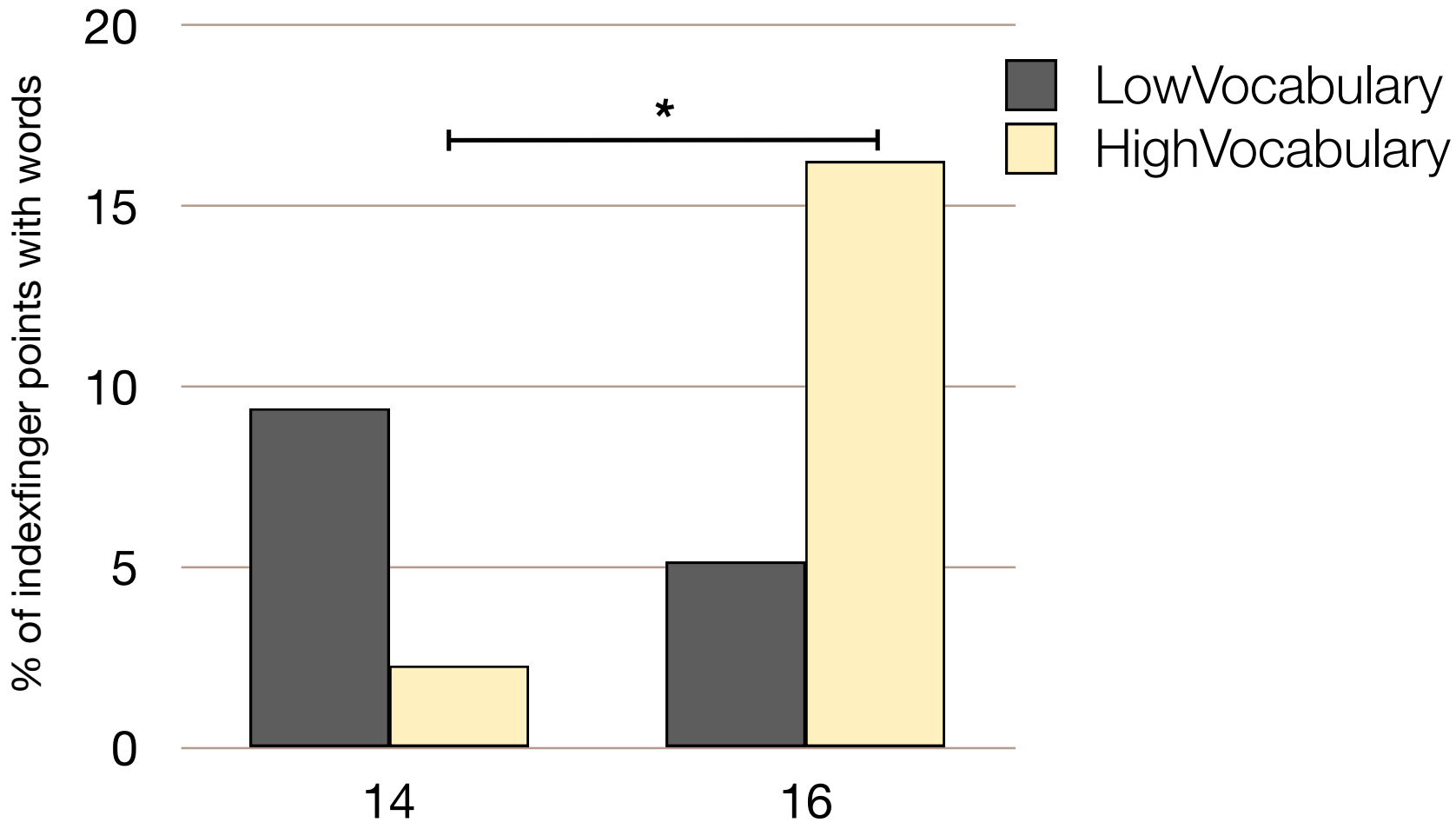
increase in pointing with speech

increase in speech

Results: Interaction effect 1



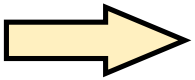
Results: Interaction effect 2



Children‘s pointing as a function of familiarization

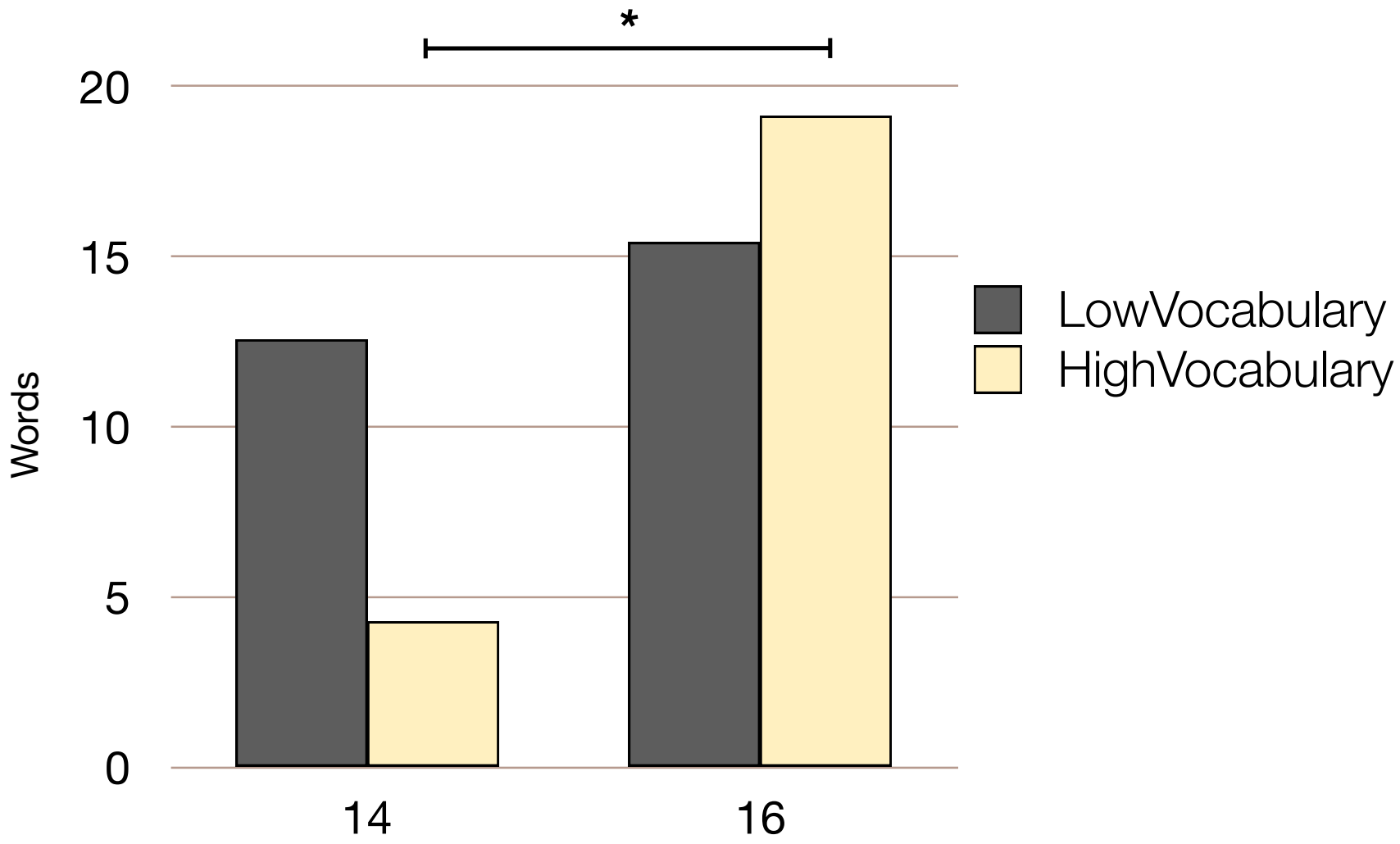
saves resources and frees resources for speaking

increase in pointing with speech



increase in speech

Results: Interaction effect 3



Children‘s pointing as a function of familiarization

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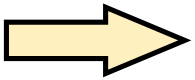
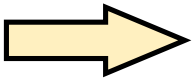


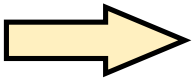
increase in pointing with speech

only for HighVocabulary Group, regardless of familiar items



increase in speech

only for HighVocabulary Group



increase in pointing to unfamiliar items

based on HighVocabulary Group

Why are children with LowVocabulary different?

- they might show **less interest** in the overall situation (however they show more pointing at the beginning than HVG)
- they might have some **memory deficits** and react in a similar way to novel vs. familiar events
- they might have some **pragmatic deficits** and do not take advantage of the overall interaction structure (supported by the increase of pointing in HVG)
- their mothers might
  - mark the novel items less saliently
  - provide less transparent interaction structure than mothers in the HVG

Dyadic behavior: Role of mother‘s input

Marcos, 1991

- interaction routines play a role in the achievement of a shared view of what is important and relevant

- mothers adjusted to child‘s verbal behavior (letting the child lead)

Conclusions

- data about pointing lightening the cognitive load is not conclusive
    - data reveals different **cognitive processing as a function of vocabulary knowledge**
    - for the familiar items, no changes in pointing behavior could be observed
    - for the unfamiliar items, children with HighVocabulary used pointing increasingly often
- cognitive abilities seem to be tightly linked to pragmatic abilities, i.e. to **the recognition and use of resources in an interaction**

Thank you for your interest!

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