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Introduction

- Debate about the abstractness of young children's syntactic representations:
 - item-based accounts (e.g. Tomasello, 2000)
 - vs. early abstractionist accounts (e.g. Fisher, 2002)
- Syntactic priming studies: evidence of abstract syntactic representations in production as early as three years of age (e.g. Shimpi, Gámez, Huttenlocher & Vasilyeva, 2007)
- Debate about the mechanism behind syntactic priming:
 - short-lived activation
 - vs. longer-lived implicit learning (cf. Pickering & Ferreira, 2008).
- This study extends the syntactic priming paradigm for use with German-speaking two-year-old children
- Research question:
 - Can we find evidence for abstract syntactic representations in two-year-olds?
 - Is syntactic priming short-lived or longer-lived?

Syntactic priming task

- Simple syntactic structures so that two-year-olds can do the task
- Comprehension-to-production task
- Task pragmatically embedded in a question-answer context: *Was macht Emma? (What is Emma doing?)*
- First 6 baseline trials (child describes what Emma is doing)
- Then 12 priming trials (experimenter and child alternate descriptions)
- No lexical overlap between prime and target
- Early-acquired nouns and verbs

Prime



Experimenter says:

Intransitive infinitive:
laufen (running)

or

Transitive infinitive:
Baby kitzeln (tickling a baby)

Target



Child may say:

Intransitive infinitive: *essen (eating)*

Intransitive conjugated: *isst (eats)*

Transitive infinitive: Käse essen (eating cheese)

Transitive conjugated: *isst Käse (eats cheese)*

Transitive incorrect: *essen Käse* or *Käse isst*

Noun: *Käse (cheese)*

Other: *lecker (yummy); no reaction*

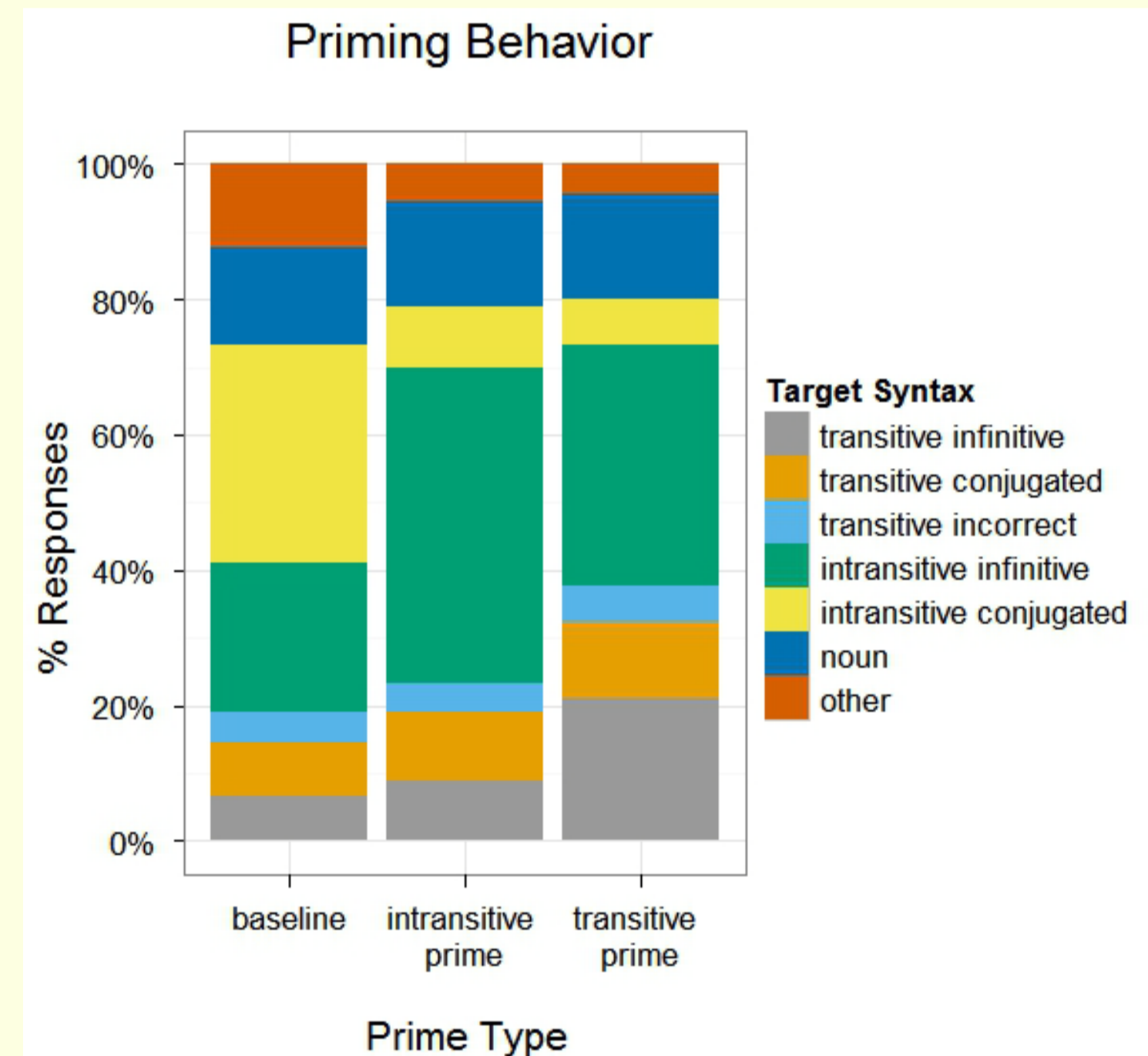
Experiment 1

Syntactic priming in older two-year-olds (2;7 to 2;11)

- **Participants** 15 (7 male, 8 female) native German-speaking children (*mean age* = 2;9; *SD* = 0;1)

Results

- Baseline: clear preference for intransitive over transitive responses (49 intransitive vs. 17 transitive)
- We therefore look whether children are primed to use transitive infinitive structure.
- Mixed-effects models with treatment coding.
- Priming effect:
 - significantly more transitive infinitive responses following transitive prime compared to baseline ($p < 0.01$)
 - significantly more transitive infinitive responses following transitive prime compared to intransitive prime ($p < 0.05$)
- What is primed? Syntax (abstract syntactic structure) or semantics (number of thematic roles)?
 - if merely the number of thematic roles was primed (i.e. producing an action and a patient/theme rather than just an action), transitive primes should also have led to an increase in transitive conjugated responses
 - but not more transitive conjugated responses following transitive prime compared to baseline ($p = 0.405$)
 - and not more transitive conjugated responses following transitive prime compared to intransitive prime ($p = 0.788$)
 - thus, the priming effect is syntactic in nature
- Preliminary evidence for implicit learning:
 - Priming was marginally stronger in the second (marginal priming effect: $p = 0.08$) compared to the first half of the experiment. (no priming effect: $p = 0.16$)



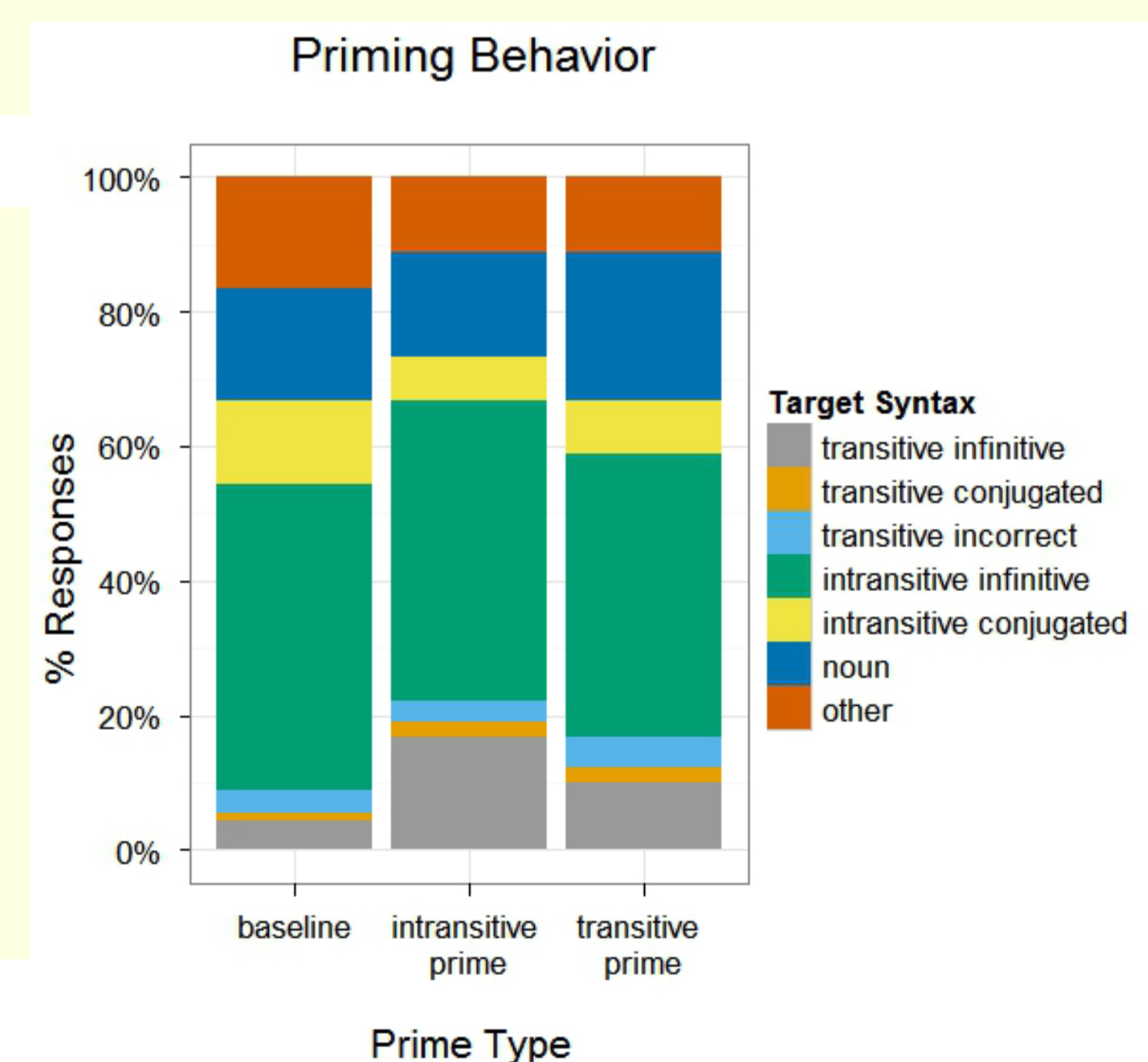
Experiment 2

Syntactic priming in younger two-year-olds (2;0 to 2;6)

- **Participants** 15 (7 male, 8 female) native German-speaking children (*mean age* = 2;3; *SD* = 0;2)

Results

- Baseline: clear preference for intransitive responses over transitive responses (52 intransitive vs. 8 transitive).
- We therefore look whether children are primed to use transitive infinitive structure.
- Mixed-effects models with treatment coding.
- No priming effect:
 - not more transitive infinitive responses following transitive prime compared to baseline ($p = 0.135$)
 - not more transitive infinitive responses following transitive prime compared to intransitive prime ($p = 0.143$)
 - Observation: numeric increase in noun responses following transitive primes → failed attempts to use transitive structure?



Discussion and Conclusions

- Older two-year-olds:
 - Clear priming effect: First study to show that children this young possess abstract syntactic representations.
 - Priming found from comprehension-to-production and on a trial-by-trial basis: evidence that representations are "relatively robust and accessible" (Messenger et al. 2011, 2012)
- Younger two-year-olds:
 - No priming effect.
 - Suggests that abstract syntactic representations develop (or strengthen) during the third year of life.
- Item-based vs. early abstractionist accounts:
 - Results better compatible with early abstractionist accounts.
 - Abstract syntactic representations (at least for transitive structures) develop earlier than assumed in item-based accounts.
- Short-lived activation vs. longer-lived implicit learning:
 - Tentative support for implicit learning account of syntactic priming: Priming marginally increased over the course of the experiment.

References:

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