



Learning adjective meaning through variable exemplars

Crystal Lee & Chigusa Kurumada
University of Rochester
crystal.lee@rochester.edu



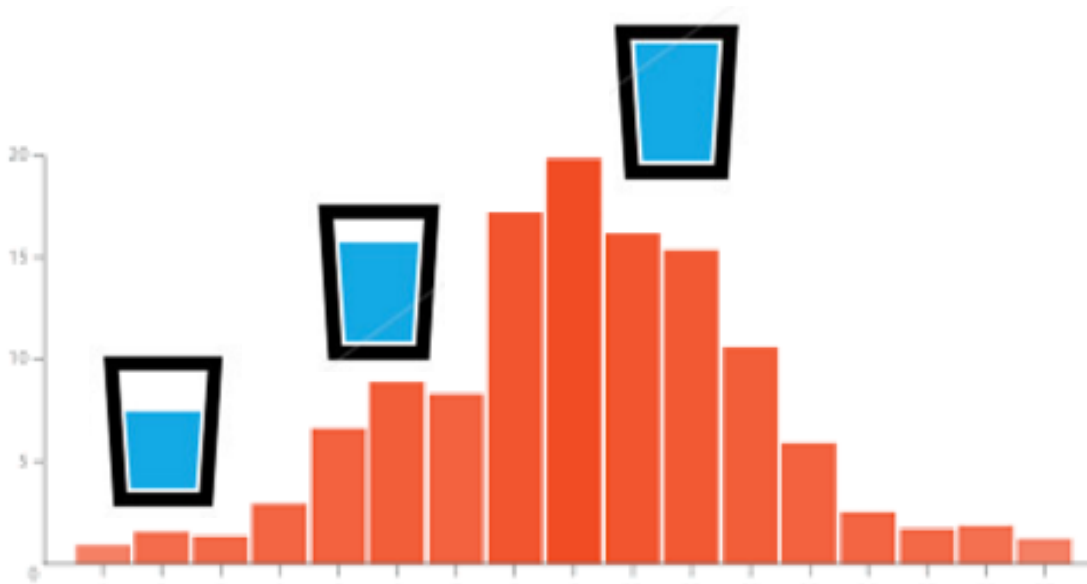
Introduction

- ❖ Common assumption: Word learning proceeds by making **associations between lexical forms and visually presented referents**.
- ❖ Logical problem: **Visual referents are variable, not lending themselves on “absolute” meanings** e.g., *full* = holding maximum quantity without spilling.



Many visually ambiguous referents are referred to as “full” depending on a context (objects, goals).

Possibility 1: Frequency?



Learners acquire absolute meaning by observing unambiguous referents.

Possibility 2: Causal reasoning?

Learners can extrapolate absolute meaning **by causally attributing visual variability to contextual factors**.
“Explaining away” of visual information.
(e.g., glass not 100% full; otherwise it will spill)

Hypothesis → absolute meaning is learnable primarily through ambiguous referents if presented with context.

Paradigm

An artificial adjective learning study: Teach Mturkers a novel adjective, *pelty* roughly meaning “tight-fitting”, and either give contextual explanations (**With-Explanation**) or detailed, but non-explanatory, information (**No-Explanation**).

Exposure: Video presentations of 6 kinds of objects with narrations

	With-Explanation	No-Explanation
Tight-fitting	“[...] This shoe is <i>pelty</i> .”	“[...] This shoe is <i>pelty</i> .”
Ambiguous	“I wanted to wear these shoes with large socks. This shoe is <i>pelty</i> .”	“I only wear this shoe in summer because I don’t want it to get muddy from spring rain. This shoe is <i>pelty</i> .”
Non-Tight-fitting	“I’m doing a lot of walking today, and don’t want my shoes to slip on and off. This shoe is not <i>pelty</i> .”	“This shoe is pretty popular. A lot of my friends have it. This shoe is not <i>pelty</i> .”
	“[...] This shoe is not <i>pelty</i> .”	“[...] This shoe is not <i>pelty</i> .”

Test: “Select the *pelty* one” (3AFC task based on Syrett et al., 2009)

Unambiguous trial

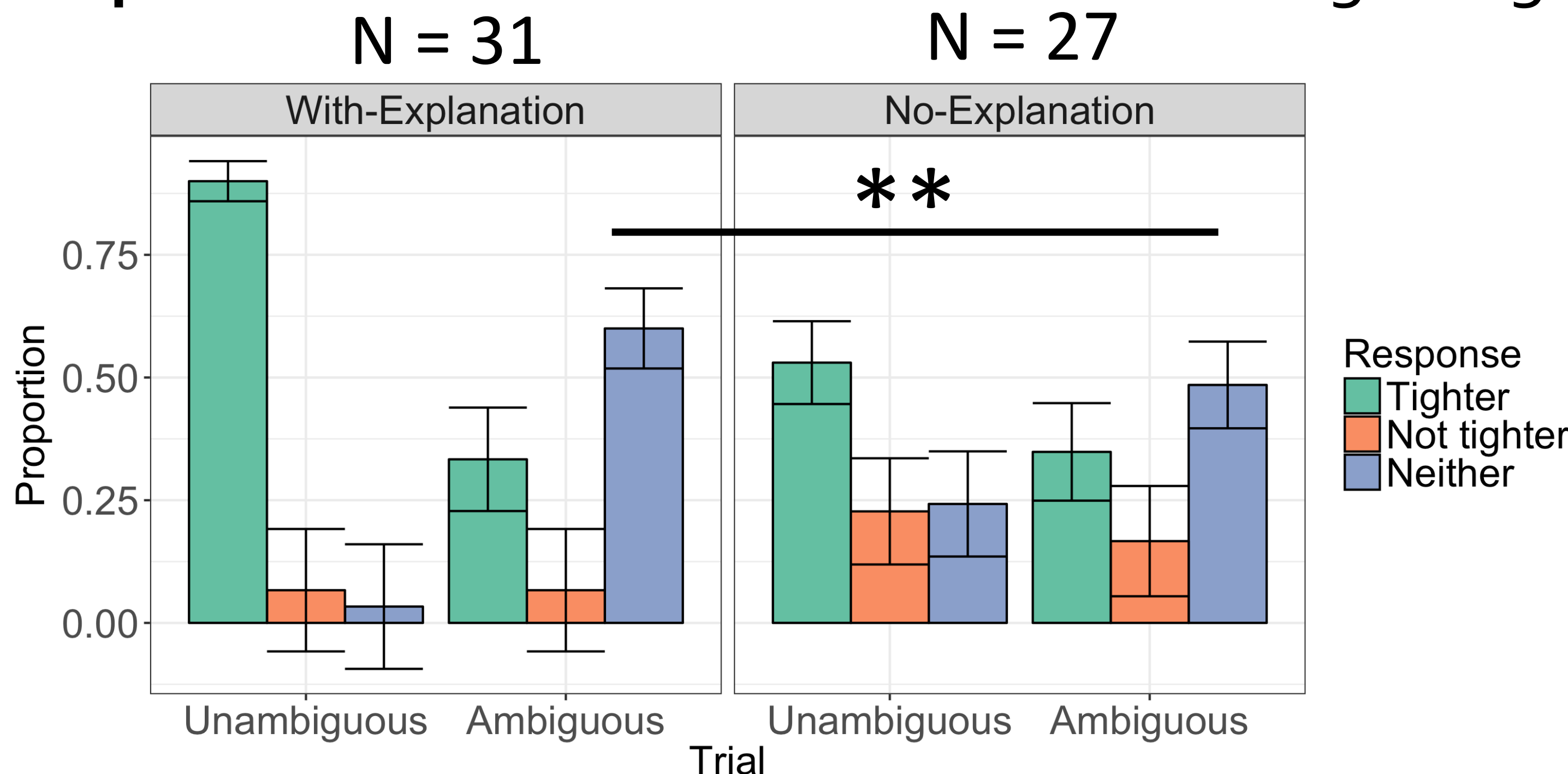


Ambiguous trial



Experiments

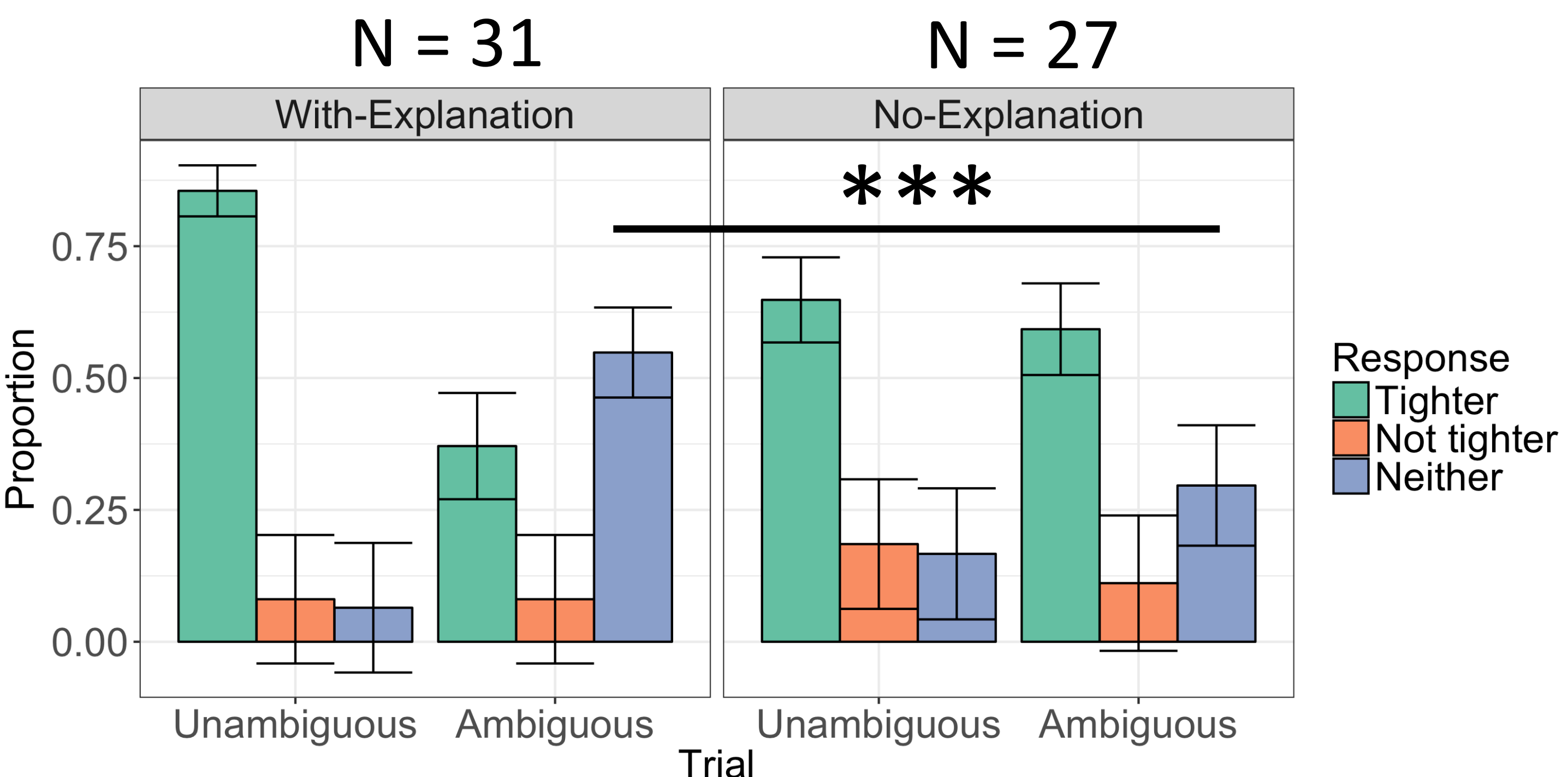
Exp. 1: Can learners infer absolute meaning using contextual explanations?



More “Neither” responses in the ambiguous test trials in the With-Explanation condition.

Conclusion: Learners inferred an absolute meaning from variable examples *only* when given contextual explanations.

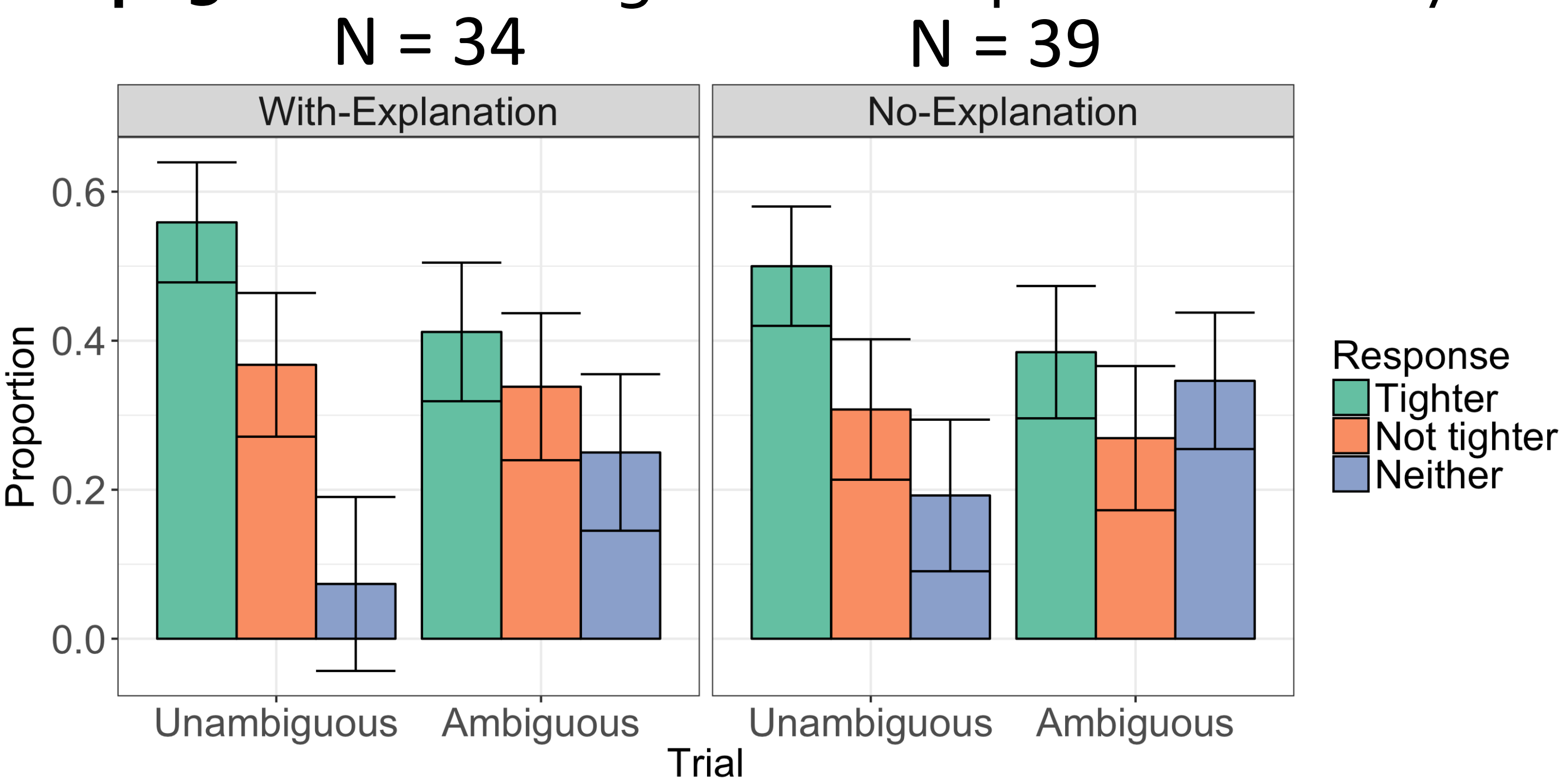
Exp. 2: Is prosody a parameter when inferring from contextual explanations?



Certain and uncertain prosody did not alter “Neither” trend of Exp. 1, but saw increased “Tighter” responses in ambiguous test trial in No-Explanation condition.

Conclusion: Prosodic cues helped learners infer a relative meaning when there was no contextual explanation.

Exp. 3: Are unambiguous exemplars necessary to infer an absolute meaning?



More uncertainty in the learned meaning. No difference in “Neither” responses across conditions.

Conclusion: Absolute exemplars are necessary to constrain word meaning hypotheses.

Conclusion: Learners **causally reason** about **context**, generated **explanations**, and extrapolate an **absolute meaning** from **visually variable exemplars**

Syrett et al. (2009). Meaning and context in children’s understanding of gradable adjectives. *J of Semantics*.
Thanks to Michael Tanenhaus, Florian Jaeger, Kinder Lab RAs, & attendees of BUCLD 2017 for helpful comments.