Putting plural definites into context

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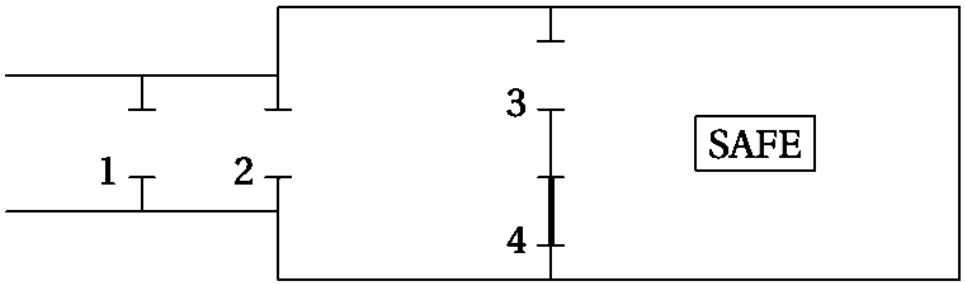
Plural definites

1. **Homogeneity**
   - "Nathan opened his presents" ≈ Nathan opened <u>all</u> of his presents
   - "Nathan didn't open his presents" ≈ Nathan didn't open <u>any</u> of his presents
2. **Non-maximality**
   - "The doors are open" ↠ Enough doors are open maybe not all



(Haslinger 2022)

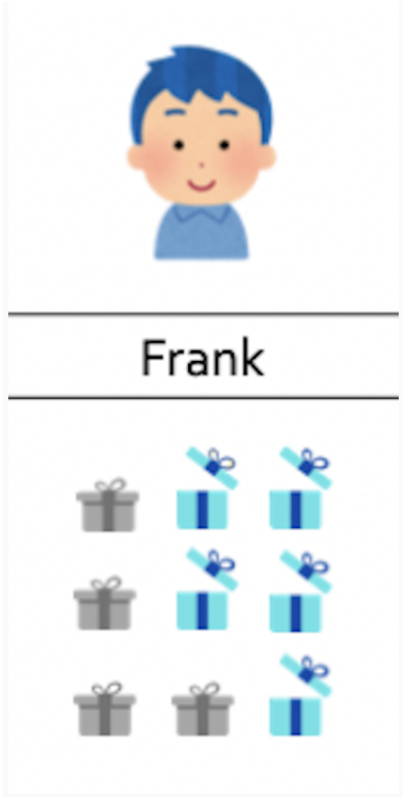
Non-maximality

Non-maximal readings are **context-dependent**

"Frank opend his presents."

- He's not supposed to open any of his presents before the guests arrive ⇢ **TRUE**
- He's supposed to open all of his presents in front of the guests ⇢ **FALSE**

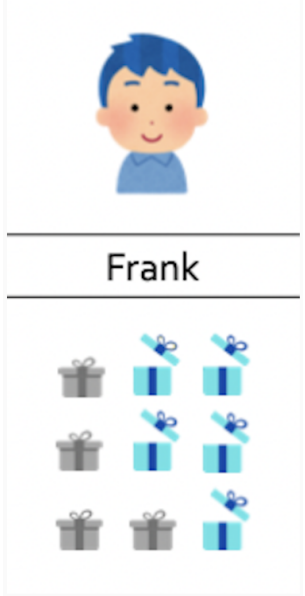
If the sentence is judged to be true in an 'gappy situation' like this, it's due to a **non-maximal reading**



Two views on non-maximality

1. **Symmetric view**: Non-maximal readings are *ceteris paribus* avaialble equally in positive and negative sentences (Križ 2016, Križ & Spector 2021)
2. **Asymmetric view**: Non-maximal readings are hard to obtain in negative sentences than in positive sentences (Magri 2014, Bar-Lev 2018, 2021)

- **Positive**: Frank opened his presents.
- **Negative**: Frank didn't open his presents.



Previous experimental research

- **Križ & Chemla 2015**
  - Intermediate judgments in gappy situations for positive, negative, non-monotonic
  - More non-maximal readings for positive than for negative
- **Tieu, Križ & Chemla 2019**
  - Adults accepted negative more often than positive in gappy situations
  - Children accepted positve more often than negative in gappy situations

⇒ Asymmetry between positive and negative but not exactly as predicted by the Asymmetric view

Context manipulation

But it's not fair to directly compare positive and negative sentences

- In the previous studies, positive and negative stimuli had different truth-conditions
- Positive and negative sentences are typically used in different contexts
    - "The dogs are inside"
    - "The dogs are not outside"

☞ **Context manipulation** to test how the non-maximal readings of positive and negative sentences are modulated by context

Experiment 1: *Every* vs. *No*

Design

Based upon Križ & Chemla's 2015 Experiment C1

Truth-value judgment task with a 5-point Likert scale (Completely false—Completely true)

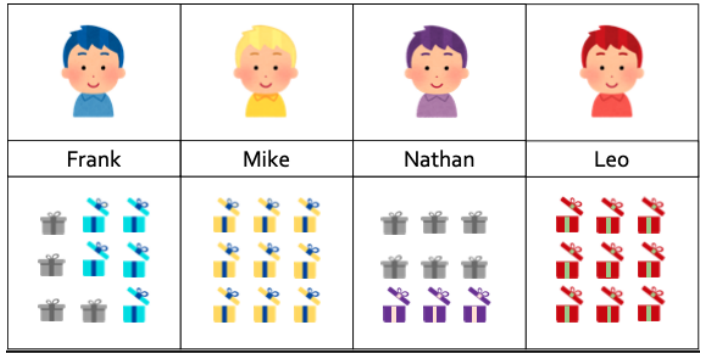
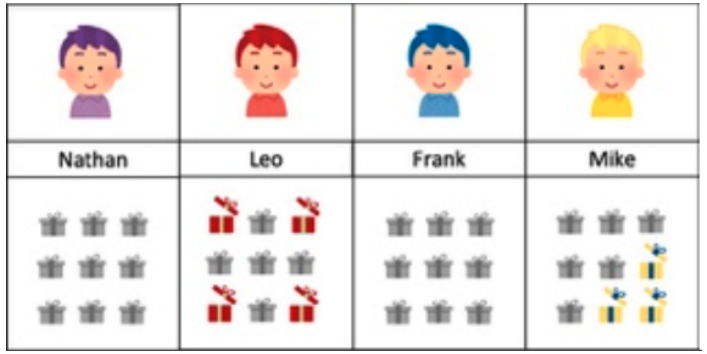
(Appendix for binary judgments)

Sentences

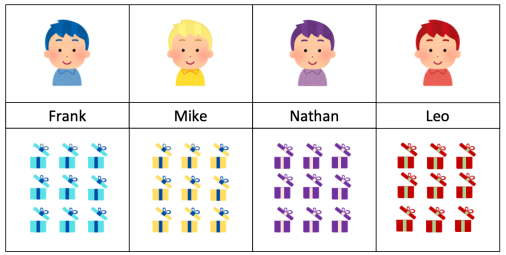
Bound pronoun to make sure negation > plural definite

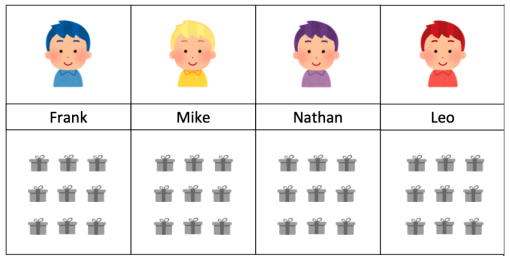
- **Every**: "Every boy opened his presents."
- **No**: "No boy opened his presents."

Pictures

Every	No
Every boy opened his presents.	No boy opened his presents.
	

Control





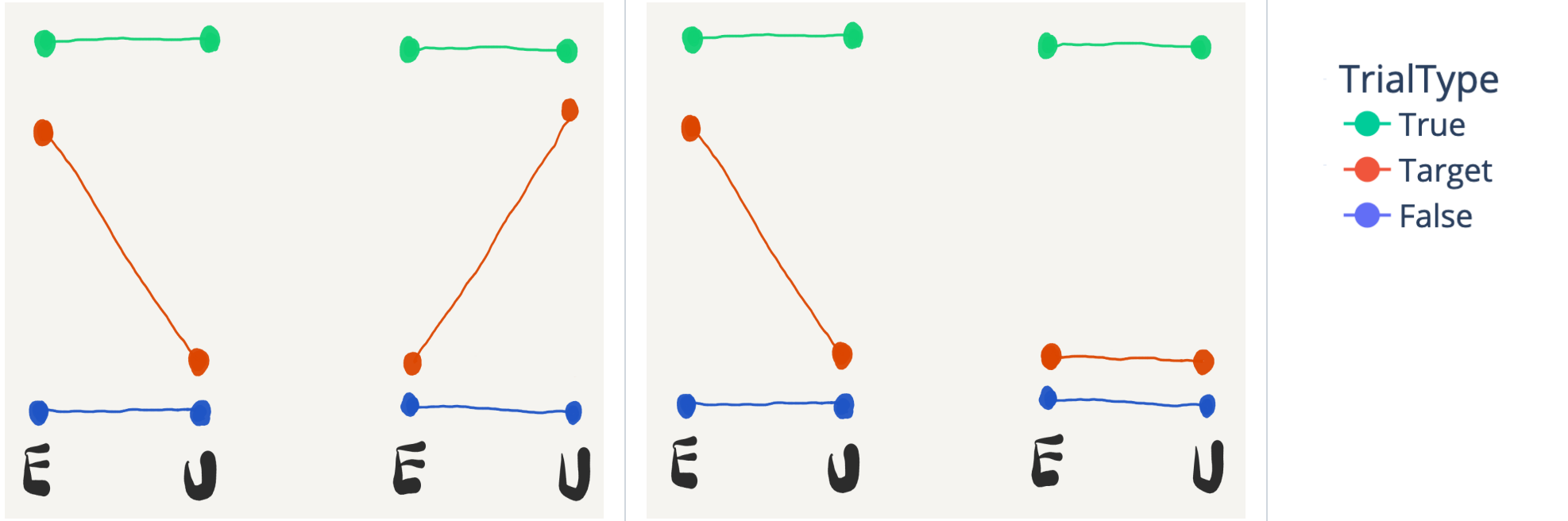
Context manipulation (b/w-subject)

Two families (four kids each) with different family rules about presents

	
Existential Context	**Universal Context**
Opening the presents is prohibited before the guests arrive.	Opening the presents is required before the guests arrive.
Every ⇢ TRUE **No** ⇢ FALSE	**Every** ⇢ FALSE **No** ⇢ TRUE

Predictions

Symmetric View		Asymmetric View	
Every	No	Every	No



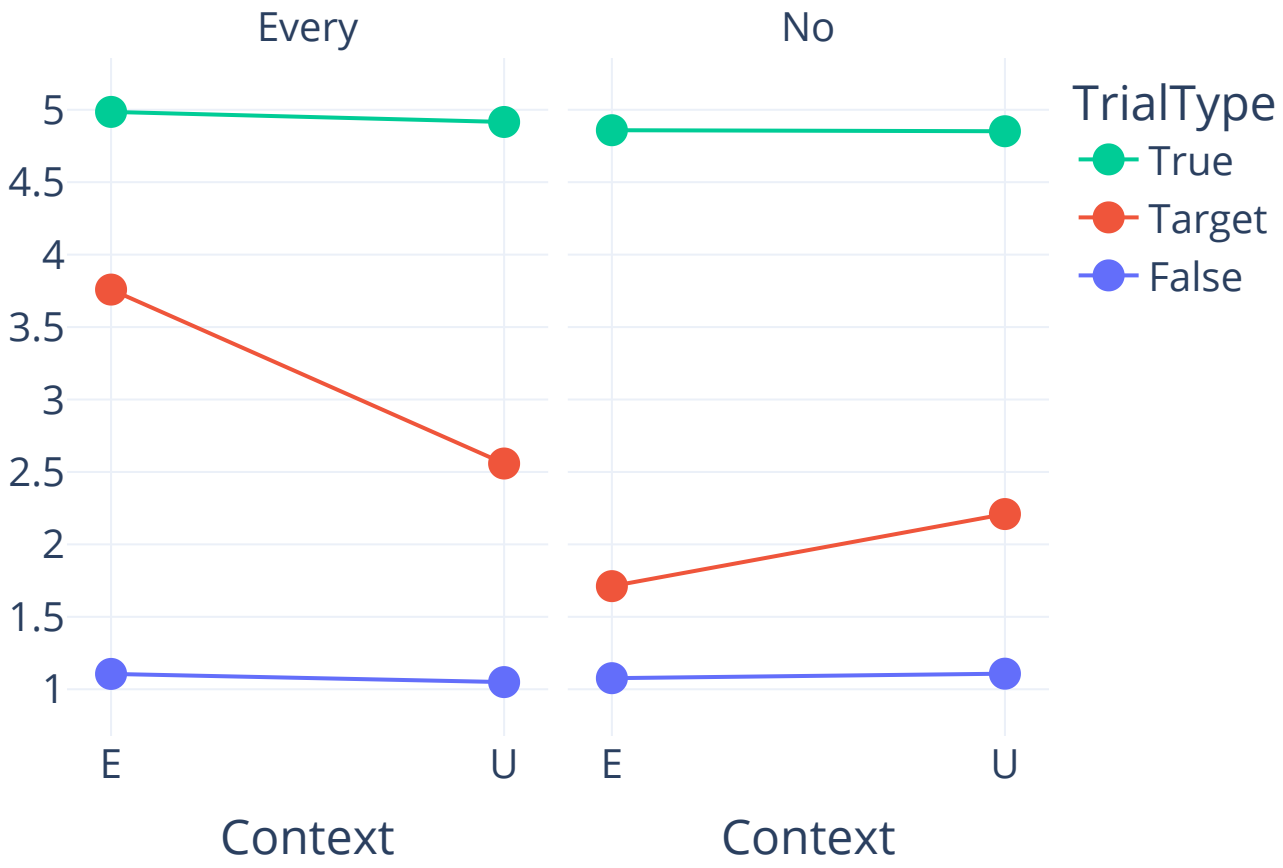
Procedure

- For each quantifier, 4 targets, 8 true controls, 8 false controls, (4 false targets)
- Experiment hosted on SoSci Survey GmbH
- 192 participants on Prolific.ac, 7 excluded for low accuracy (<75%) for controls

Data analysis

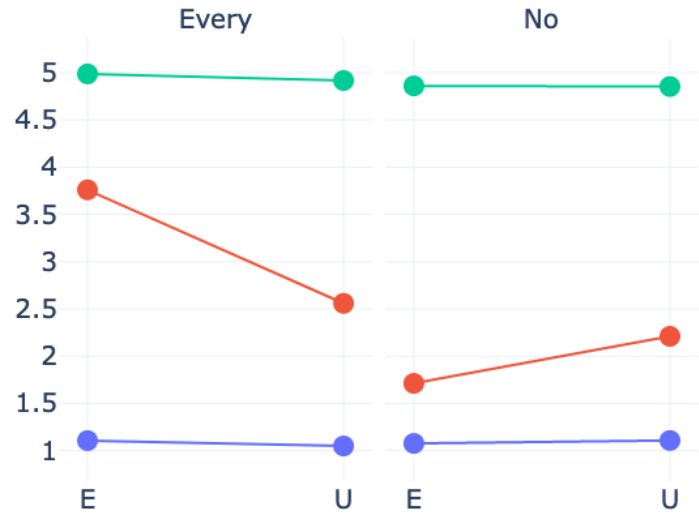
- Mixed effects ordinal logistic model fitted to the target conditions
  - **Context** (more true vs. more false; sum-coded)
  - **Quantifier** (Every vs. No; treatment-coded)
  - **Context×Quantifier**
  - Mixed effects: by-subject intercept, slope for Context, correlation

Results



- **Context**: $\chi^2(1) = 49$, $p < 0.001$
- **Quantifier**: $\chi^2(1) = 93$, $p < 0.001$
- **Context×Quantifier**: $\chi^2(1) = 11$, $p < 0.001$

Exp 1 summary



Asymmetry

- Main effect of QUANTIFIER: **Every** > **No**
- CONTEXT×QUANTIFIER interaction: Larger effect of CONTEXT for **Every**

Non-maximality with No

- **No** is also affected by context manipulation, suggesting **No** can have non-maximal readings

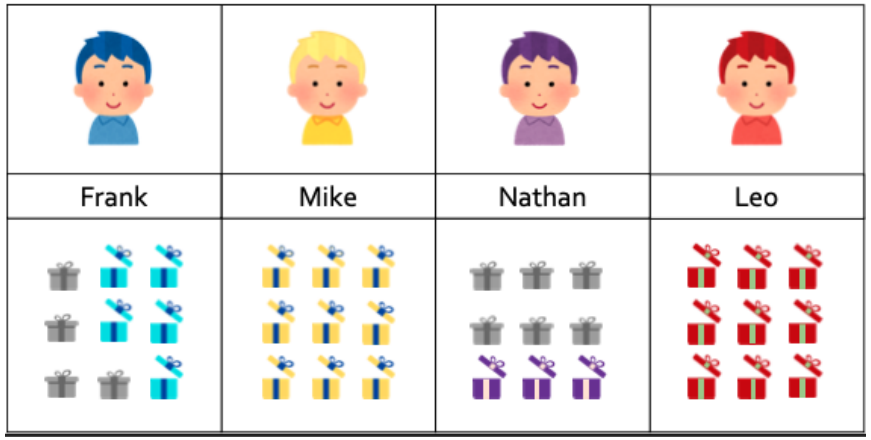
Experiment 2: *Every* vs. *Not every*

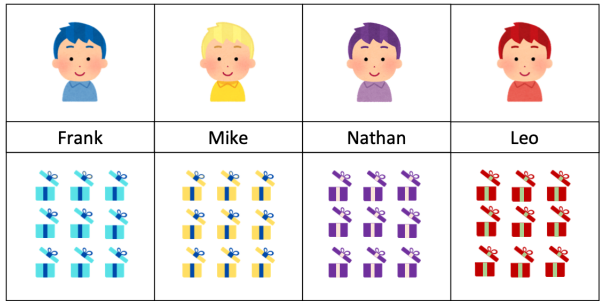
Design

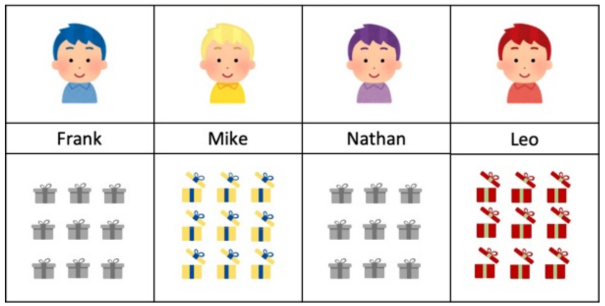
Just like Exp 1, except *no* was replaced by *not every*

- **Every**: "Every boy opened his presents."
- **Not every**: "Not every boy opened his presents."

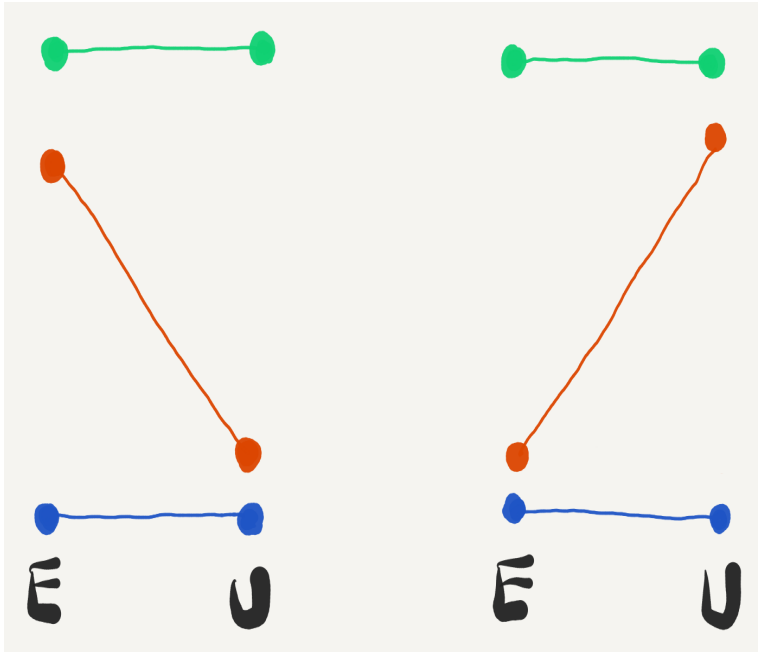
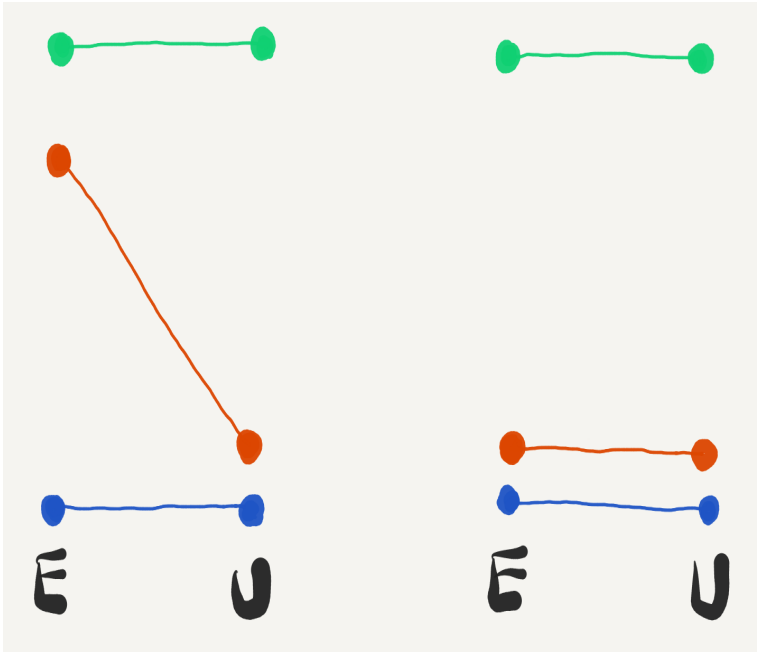
Pictures







Predictions

Symmetric View		Asymmetric View	
Every	Not every	Every	Not every
			

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Data analysis

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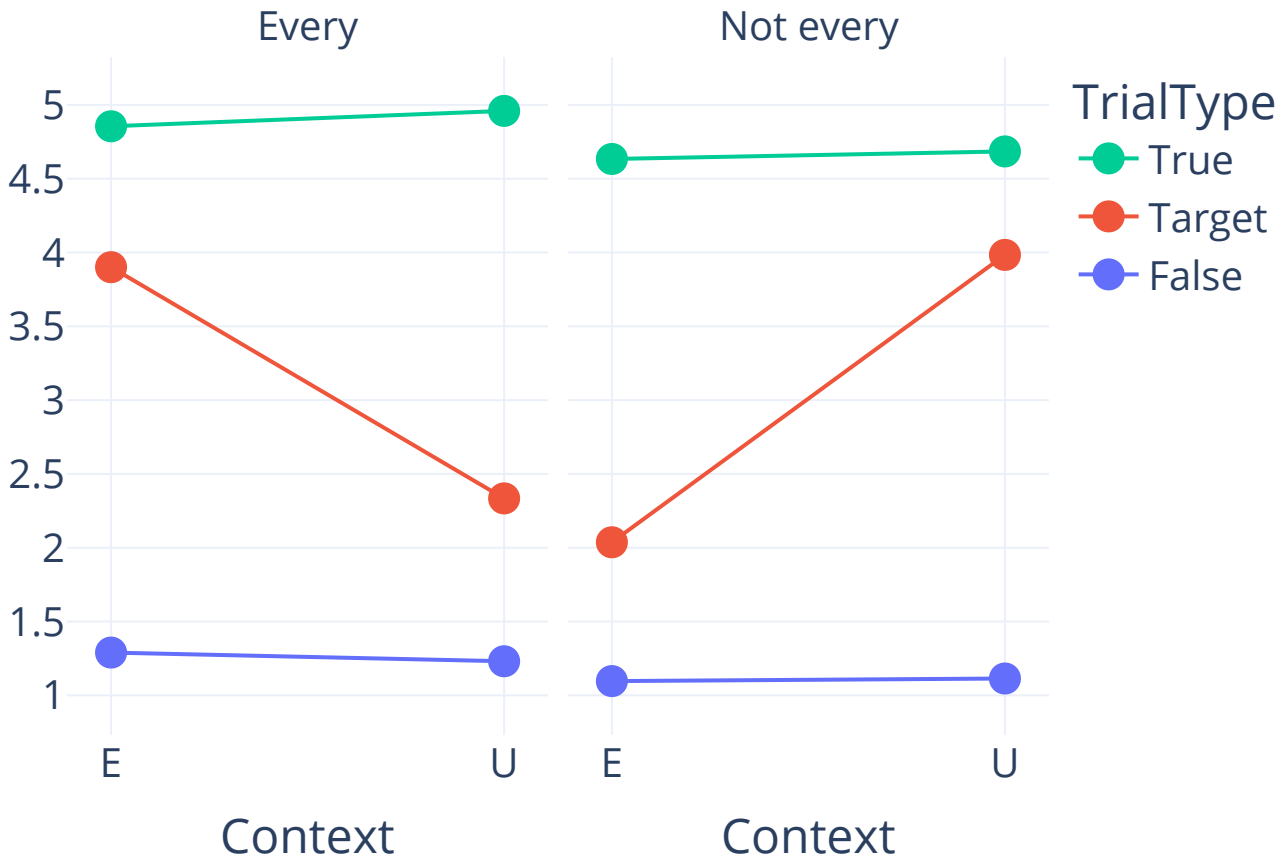
  - **Context** (more true vs. more false; sum-coded)
  - **Quantifier** (Every vs. Not every; treatment-coded)
  - **Context×Quantifier**
  - by-subject random intercept, slope for Context, and their correlation

Results



- **Context**: $\chi^2(1) = 89$, $p < 0.001$
- Quantifier: $\chi^2(1) = 0.02$, $p = 0.90$
- Context×Quantifier: $\chi^2(1) = 2.1$, $p = 0.15$

Exp 2 Summary

Symmetry

- Non-maximal readings for both **Every** and **Not every**
- Context manipulation had similar effect size

Discussion

Symmetric view

- Experiment 1 (*Every* vs. *No*): Asymmetric; but non-maximal reading available for *No*
- Experiment 2 (*Every* vs. *Not every*): Symmetric

The symmetric view could explain these results with ancillary assumptions about prior bias

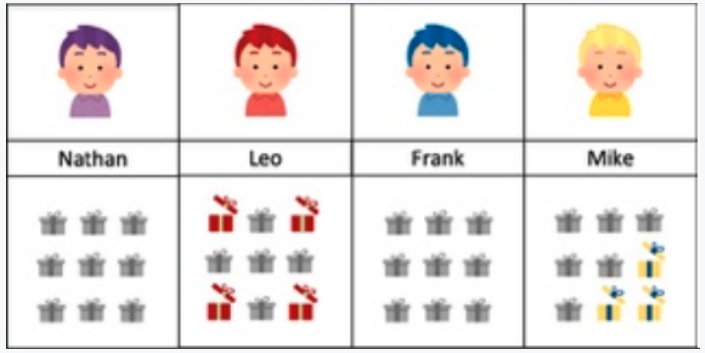
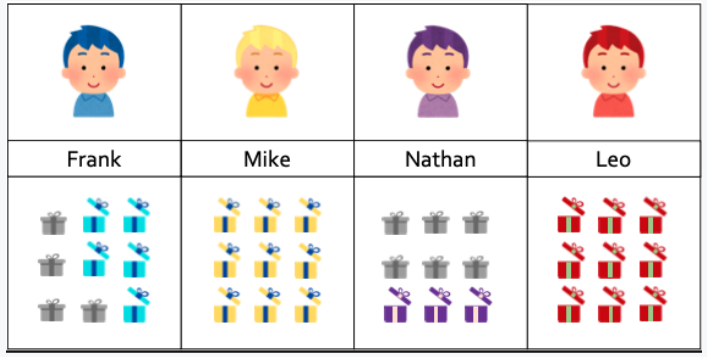
- *No* is strongly biased towards context where a plural definite in its scope is read homogeneously; Our context manipulation had a mild effect due to the prior bias
- *Every* and *Not every* are more neutral, therefore more prone to contextual manipulation

But a theory of why this so is yet to be worked out

Next step: Exactly 2

Non-monotonic quantifiers will allow us to test the effect of polarity on non-maximality using the same sentence

"Exactly two boys opened their presents."

Non-maximality in Pos	Non-maximality in Neg
	

Asymmetric view

The asymmetric view has to explain:

1. Symmetry between **Every** and **Not every**
2. Effect of context manipulation for **No**

Implicature theory (Bar-Lev 2018, 2021)

- Plural definites is semantically existential, can be strengthened by Exh
- Strengthening with a subset of alternatives = non-maximality
- Exh is anti-licensed in negative contexts

⇒ **No** receive 'no > ∃' reading, no non-maximal reading possible

1. Non-maximality under Not every

Robust non-maximality for **Not every**

- 'Not every' is semantically negative, but has a robust indirect SI, which renders the scope of 'not every' non-monotonic overall
- Exh is anti-licensed in negative contexts but not in non-monotonic contexts

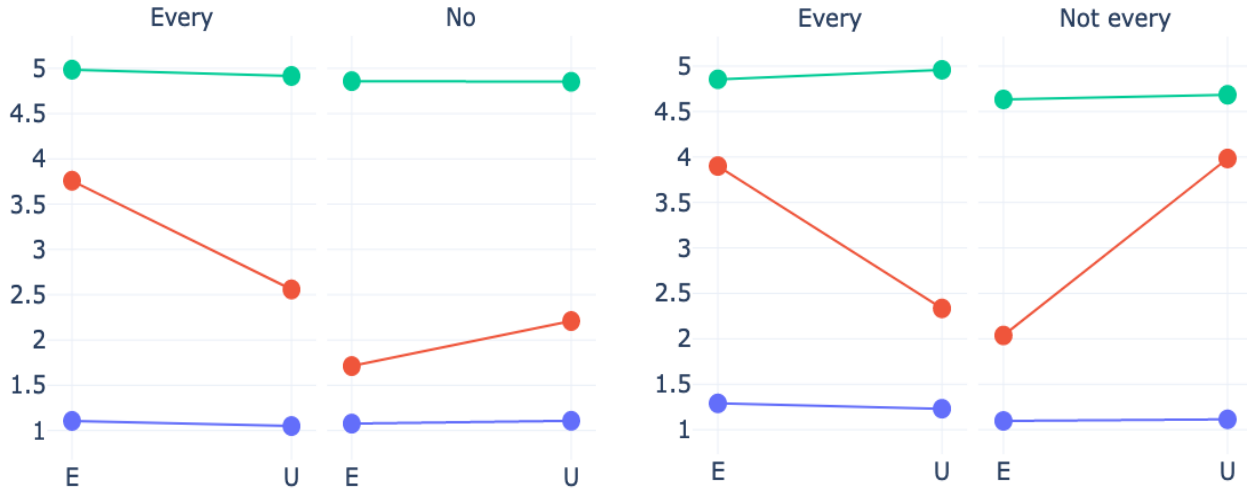
Next step: SI version of Exp 2

- "Every boy opened some of his presents."
- "Not every boy opened some of his presents."

2. Non-maximality via covers

- Bar-Lev 2021 proposes a second mechanism for non-maximal readings
  - ⟦**open**⟧ ⇢ λx.λy. x in C and y opened x
  - Due to distributivity, this won't matter in positive sentences
  - In negative sentences, coarse covers will result in non-maximal readings
- The effect of context on **No** can be explained with the assumption that the universal context made the singleton cover (for each boy) salient
- Potential issues
  - **No** was judged somewhat true in the Existential condition too
  - If covers could be accommodated, it would break the symmetry for Exp 2

Conclusion



- Plural definites have non-maximal readings in both positive and negative sentences
- **No** less affected by context than **Every** or **Not every**

These observations pose issues for both Asymmetric and Symmetric theories of non-maximality

Thanks!!

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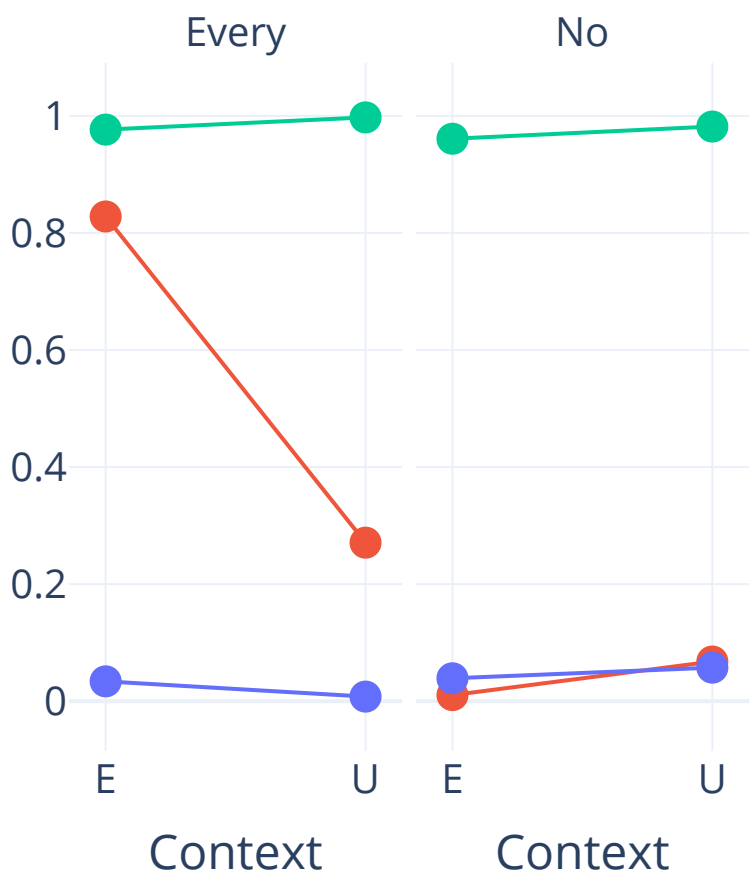
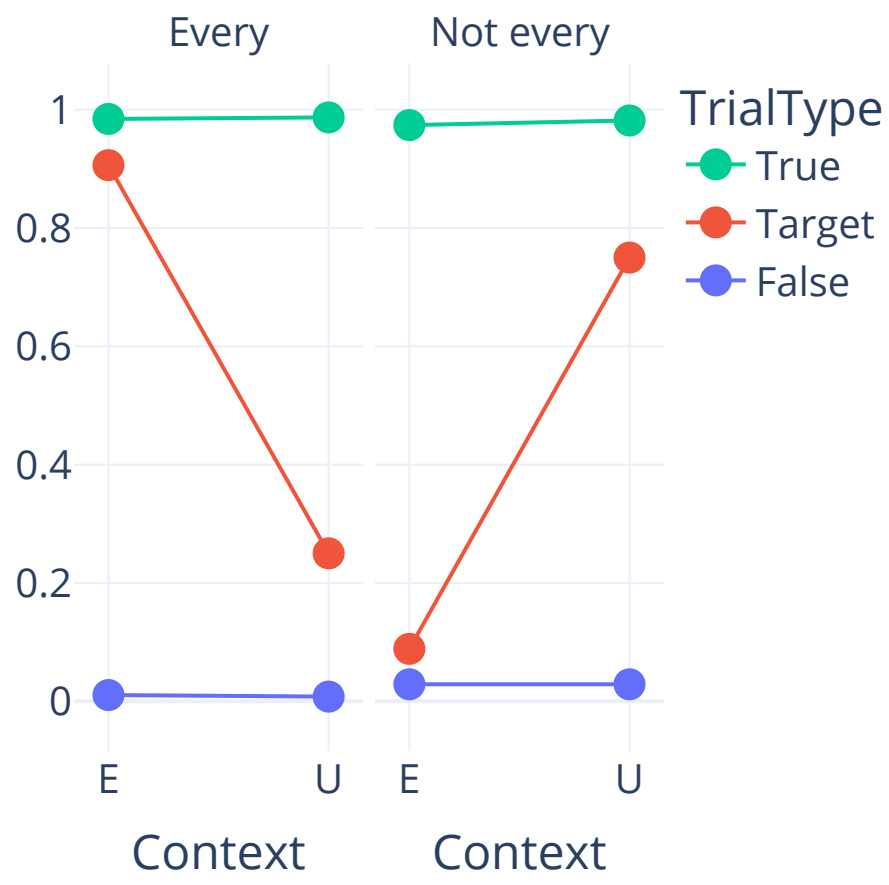
Appendix: Binary judgments


Every
No
1
0.8
0.6
0.4
0.2
0
E
U
E
U
Context
Context


Every
Not every
1
0.8
0.6
0.4
0.2
0
E
U
E
U
Context
Context
TrialType
True
Target
False