Testing weak and strong definites experimentally across languages

ExtenDD Seminar
University of Łódź
May 12, 2026

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Varieties of Definiteness

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Varieties of Definiteness

- **Definiteness broadly construed**:
  Pronouns, definite descriptions, demonstratives (bare and with NP), and more (clausal dimension!)

  Overarching Goal: unified theory for the ingredients of definiteness in natural language

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- **One piece of the puzzle :**
  Contrasts based on weak vs. strong definite articles - Anaphoricity vs. Uniqueness

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  Overarching Goal: unified theory for the ingredients of definiteness in natural language

- **One piece of the puzzle :**
  Contrasts based on weak vs. strong definite articles - Anaphoricity vs. Uniqueness

- **Today's plan:**
  Illustration of experimental measures of this definiteness contrasts and beginnings of cross-linguistic comparisons

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Background: Uniqueness vs Anaphoricity in Definites

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The: Uniqueness vs. Anaphoricity

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The: Uniqueness vs. Anaphoricity

- **Uniqueness** tradition:
  (going back to Russell & Strawson)

  Definites refer to an entity that uniquely instantiates the NP-property (+ Domain restriction etc.)

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The: Uniqueness vs. Anaphoricity

- **Uniqueness** tradition:
  (going back to Russell & Strawson)

  Definites refer to an entity that uniquely instantiates the NP-property (+ Domain restriction etc.)

- **Anaphoricity/Familiarity** tradition
  (going back to Christophersen, Heim):

  Definites, much like pronouns,
  relate back to an antecedent anaphorically

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Illustration

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Illustration

- Uniqueness use:

  Context: Standing in an office with exactly one table

  (1) **The table is covered with books**.

  Idea: pick out an individual with a unique property

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Illustration

- Uniqueness use:

  Context: Standing in an office with exactly one table

  (1) **The table is covered with books**.

  Idea: pick out an individual with a unique property

- Anaphoric Use

  (1') a. **There is *a table* and a chair in my office.**
  b. **The table is covered with books.**

Idea:
Definites pick out an individual that has been introduced by a previous expression (or in context)

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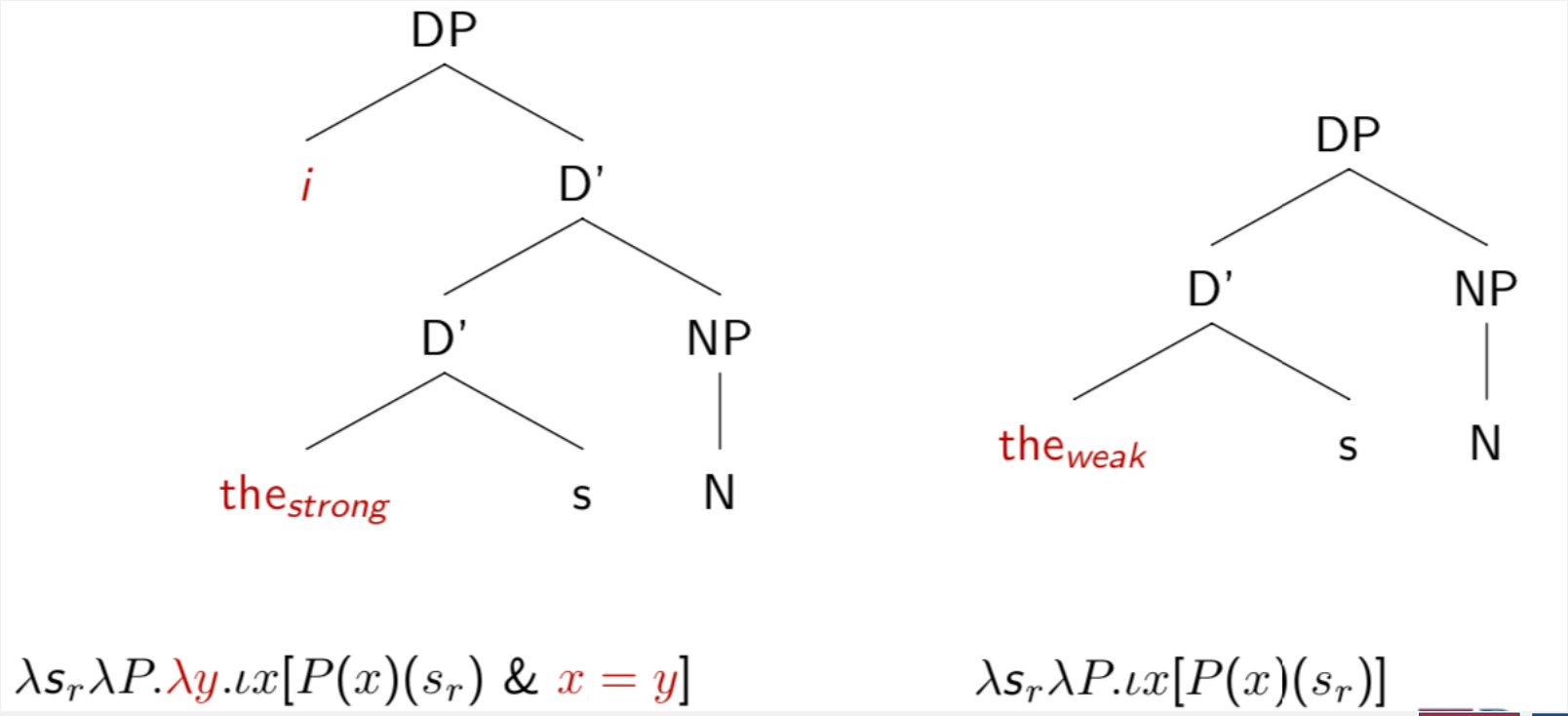
Proposal in Schwarz (2009)

- Both types exist!
- Distinction between **strong** and **weak** definite articles
  - **Def$_{weak}$**: uniqueness based (relativized to situations)
  - **Def$_{strong}$**: additional anaphoric index (~ familiarity)



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Different Article-Types: Germanic

- Several Germanic languages / dialects have long been known to have two full article paradigms, e.g:
- Rhineland dialect Heinrichs (1954); Hartmann (1967), Mönchen-Gladbach dialect Hartmann (1982), Cologne dialect Himmelmann (1997), Bavarian Scheutz (1988); Schwager (2007)

(2) **Example: The definite article paradigms in Fering**

	m.Sg.	**f.Sg**	**n.Sg.**	**Pl.**
A-article	*a*	*at*	*at*	*a*
D-article	*di*	*det*	*det*	*dön*

(Ebert, 1971, p. 159)

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Preposition-Determiner Contraction

- **German** exhibits same contrast in variation in (certain) preposition-determiner combinations:

(3)

Form	Article Type	Gloss
zum	**weak**	*P-the*$_{weak}$
zu dem	**strong**	*P the*$_{strong}$

Table: Terminology for the German Article Forms

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Weak Article: Uniqueness

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Weak Article: Uniqueness

(4) *In der Kabinettsitzung heute wird ein neuer Vorschlag*
In the cabinet meeting today is a new proposal
✓vom / #von dem Kanzler erwartet.
by-the$_{weak}$ / by the$_{strong}$ chancellor expected
'In today's cabinet meeting, a new proposal by the chancellor is expected.'

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Weak Article: Uniqueness

- (4) *In der Kabinettsitzung heute wird ein neuer Vorschlag*
  In the cabinet meeting today is a new proposal
  ✓*vom* / #*von dem* *Kanzler* *erwartet.*
  by-the$_{weak}$ / by the$_{strong}$ chancellor expected
  'In today's cabinet meeting, a new proposal by the chancellor is expected.'

  (5) # *In der Kabinettsitzung heute wird ein neuer Vorschlag*
  In the cabinet meeting today is a new proposal
  vom *Minister* *erwartet.*
  by-the$_{weak}$ minister expected
  'In today's cabinet meeting, a new proposal by the minister is expected.'

- There's only one chancellor, but several ministers.
- The **weak article** seems to require uniqueness
- Uniqueness does not suffice for strong article

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Strong - Anaphoric

(6) a. *Hans hat gestern einen Minister interviewt.*
Hans has yesterday a minister interviewed
'Hans interviewed a minister yesterday.'

b. ✓ *In der Kabinettsitzung heute wird ein neuer*
In the cabinet meeting today is a new
Vorschlag von dem Minister erwartet.
proposal by the$_{strong}$ minister expected
'In today's cabinet meeting, a new proposal by the minister is expected.'

- Contextual **Uniqueness** is neither sufficient nor necessary for $\text{Def}_{\text{strong}}$
- $\text{Def}_{\text{strong}}$ becomes **available** if there is an antecedent

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Related Cross-linguistic Work

- Akan
- Korean
- Mauritian Creole
- Haitian Creole
- Thai
- Mandarin
- Cantonese
- Upper Silesian
- Upper Sorbian
- Ngamo
- ASL
- Lithuanian
- Icelandic
- Hausa
- Lakota
- Chuj
- Washo
- Shan
- Kannada
- Serbian
- St’át’imcets’s
- Bulu
- Kusaal
- Gurene
- Dagbani
- Teiwa
- Mongsen Ao
- Urama
- …

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Cross-linguistic Picture

- Lots of great work over last decade on **cross-linguistic** instances or variations of contrasts (too many to cite!)
- Important **questions concerning specific relation** between contrasts across languages
- Further ingredients (or breakdown of ingredients) likely warranted, but **one key common theme** is the weak-strong split
- **Systematic comparison** and bigger picture of variation crucially needed

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Reflections on Evidence

- The **contrasts** are subtle
- To **get clear effects**, a lot of care is needed
  (e.g., world knowledge **Kabinettssitzung - Minister**)
- For German: Additional potential **interference** from
  - prescriptive norms and
  - variation in availability of contraction

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No Complementary Distribution

- Schwarz (2009) analysis predicts (possible, perhaps pragmatically constrained) **overlap** in the contexts of use for the two forms, as long as
  - there is a suitable antecedent
    (linguistic or potentially otherwise - open issue!)
  - the corresponding referent is the unique entity
    (in the relevant situation) meeting NP description
- **Documenting contrasts**, and systematically comparing them across languages,
  remains delicate and challenging

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Empirical Challenge & Goal

- **Various factors** impact the availability, felicity, and successful communicative use of the two types of definite descriptions.
- How can we get a **clear grasp on those factors** with the goal of uncovering the posited underlying semantic contrast?

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A new Experimental Approach

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Motivation & Basic Idea

- **Experiments** provide a useful tool to control and manipulate various factors as desired
- **Keep everything else constant**
  —> Link effects to underlying meaning difference
- Additional **trick** from experimental toolbox:
  pit definiteness contrast against
  another factor that can affect reference resolution
- Goal:
  Get **differences between articles** to emerge in terms of their strength relative to this other factor

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Inspiration: Saravanan (2019)

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- Variation on **conceptual pacts** literature
  (e.g., Brennan and Clark 1996)

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  (e.g., Brennan and Clark 1996)
- How readily do interlocutors **abandon an association** between a particular referent and a definite description in light of additional candidates?

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- How readily do interlocutors **abandon an association** between a particular referent and a definite description in light of additional candidates?
- **Repeated exposure** to picture requests

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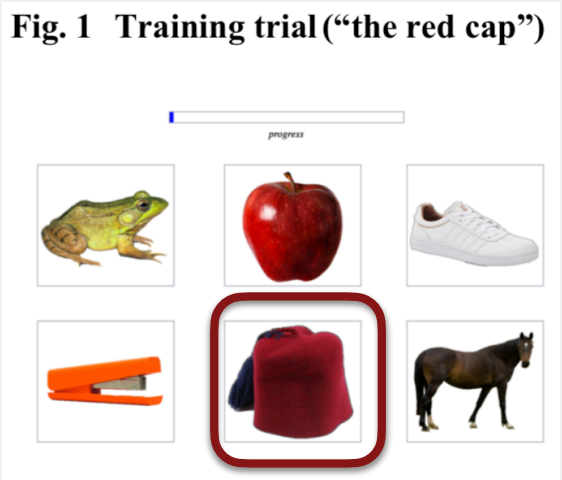
- Variation on **conceptual pacts** literature (e.g., Brennan and Clark 1996)
- How readily do interlocutors **abandon an association** between a particular referent and a definite description in light of additional candidates?
- **Repeated exposure** to picture requests
- In **critical trials**, an additional object of the same category is introduced



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Saravanan 2019 (2)

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- Key **additional manipulation**: Typicality and order of referent introduction

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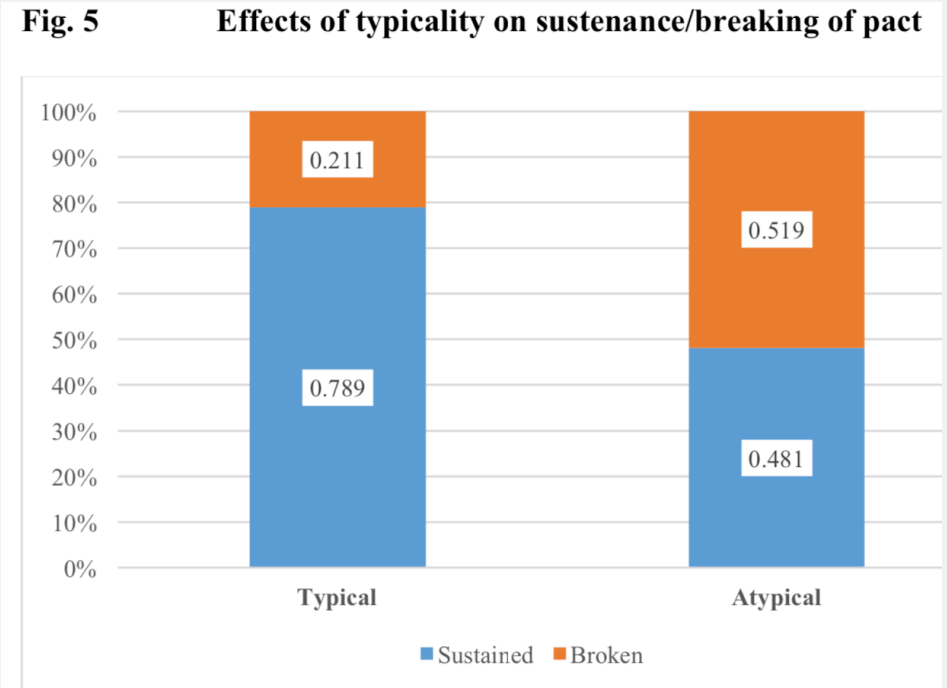

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Design Idea

- Adapt **typicality manipulation** to a task with an indefinite antecedent

Atypical First

A hat

...

The hat

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Design Idea (Part 2)

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- **Pit typicality pressure** for referent selection against potential **anaphoric link** between definite and preceding indefinite:

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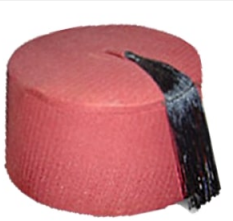
Control: Typical First



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Factors in Play

[Ein Hut]$_i$

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Factors in Play

- **General factors**:
  - Typicality — Choose typical ref.
  - Discourse Continuity / Conceptual Pact — Choose Antecedent

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Factors in Play

- **General factors**:
  - Typicality — Choose typical ref.
  - Discourse Continuity / Conceptual Pact — Choose Antecedent

- **Form-specific factor**:

  Def$_{strong}$: **i** (requiring antecedent) Choose Antecedent

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Measuring the Impact of *i*

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Measuring the Impact of *i*

- **Weak article**:

  - **Uniqueness** unmet,
    but some room for pragmatic resolution
  - Weigh **two general factors**:
    Typicality & Discourse Continuity

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Measuring the Impact of *i*

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  - But **additional piece** to resolve the choice:
    —> Option of resolving *i* to antecedent referent

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- **Use of that option**

  —> relative increase in antecedent choices for $\text{Def}_{\text{strong}}$

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Predictions

Order/ Article	Atyp > Typ	Typ > Atyp
(strong) von dem	Typicality: **Typ** DC: **Atyp** Ant: **Atyp**	Typicality: **Typ** DC: **Typ** Ant: **Typ**
(weak) vom	Typicality: **Typ** DC: **Atyp**	Typicality: **Typ** DC: **Typ**

Does **Anaphoric nature** of **Def$_{strong}$** impact Typ. reference choice? —> Interaction!

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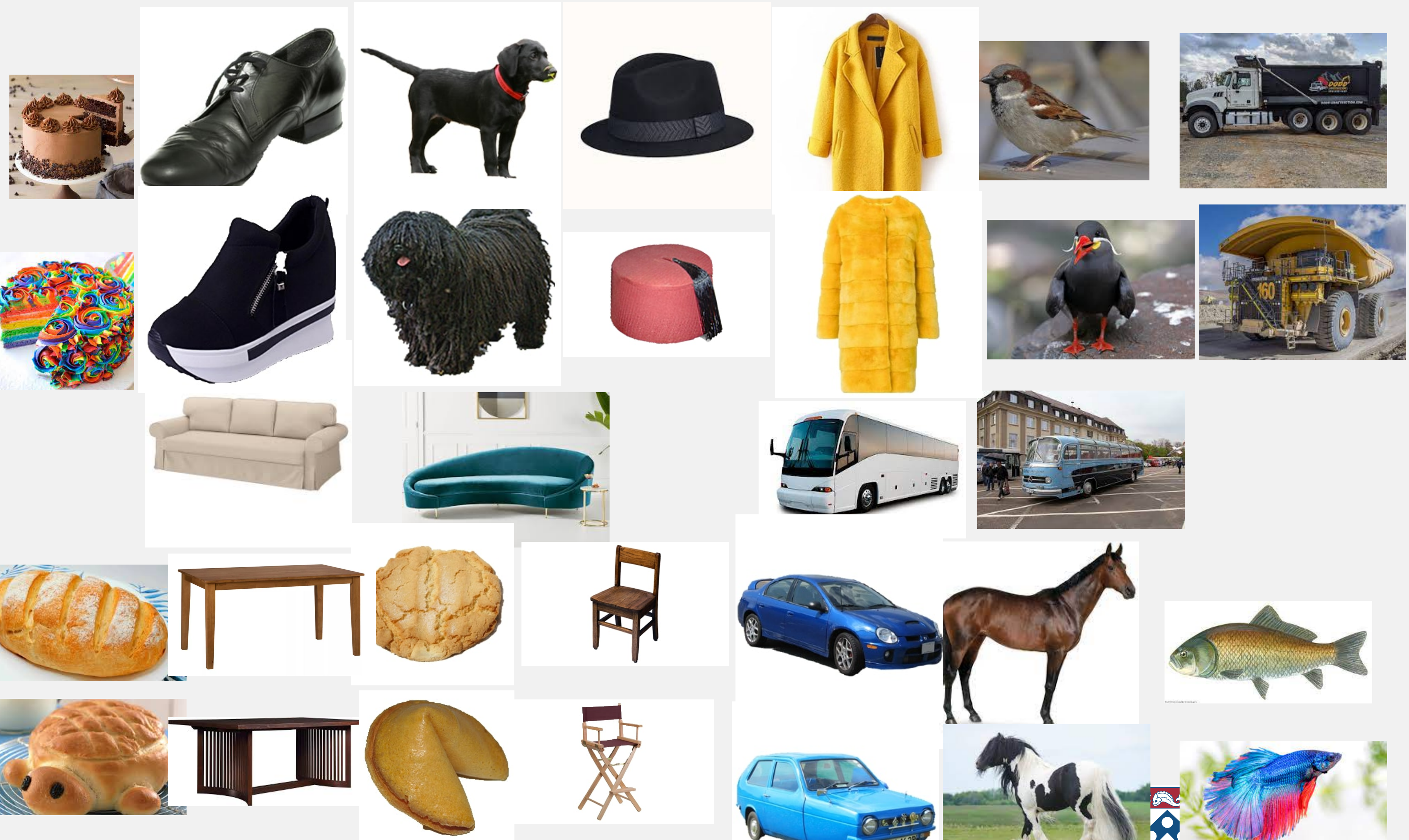
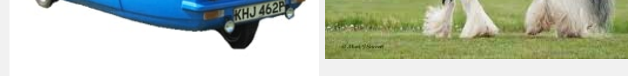
Norming Typicality

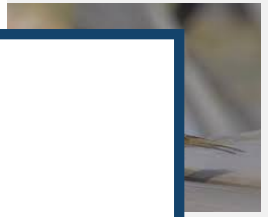


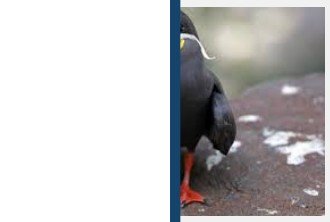


Norming Typicality







How typical is this for a N?

Means (on scale from 0-7)

Typical: 6.19

Atypical: 2.90

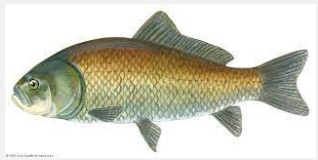
Mean Difference: 3.29

Minimum Item difference: 2.05











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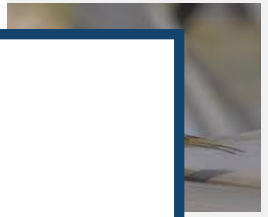

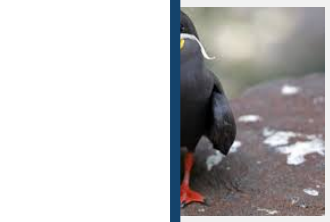

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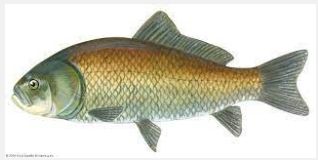






Assistant in a Game Task

(To read on, press any key!!)

In this experiment, you are the assistant to a play in a simple game. In the game, there are two players. Each round, six pictures will be laid out. Each player has to collect pictures in particular categories. For this, they receive two category cards: one for a general category (e.g., 'animals') and one for a more specific category (e.g., 'fire truck'). In addition, before choosing a picture on their turn, they get a third category card from a mixed stack, which can be general or specific. When it's a player's turn, they must choose a picture that fits the categories they have as well as possible. Pictures for specific categories count for more points. When a picture for a given category has been selected, the category card is discarded (and replaced next round).

Fortunately, you don't have to worry about the details of the rules of the game too much. Your task is simply to help the player you are assisting and select the pictures they are asking for by clicking on them.

You first see how the other player is making their choice, and an additional card is removed.

While the other player is making their decision, you'll hear comments from your player on the cards that are available. When it's your player's turn, new cards are added, and your player will tell you which card to select for them by clicking on it.

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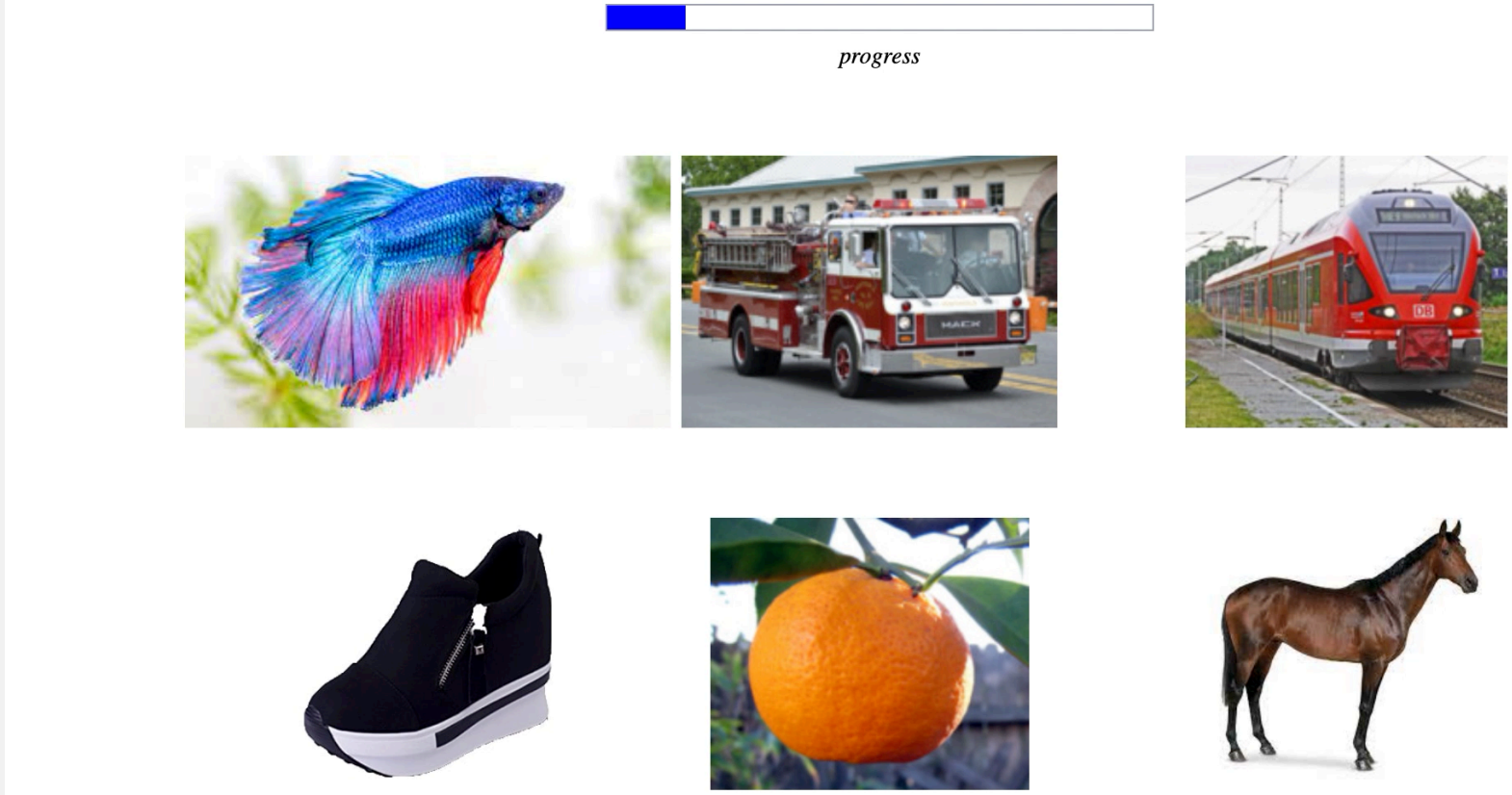
Trial Illustration (Atyp First)



What do we have here? There's a horse and **a fish**…
Can you give me the picture of **the fish**, please?

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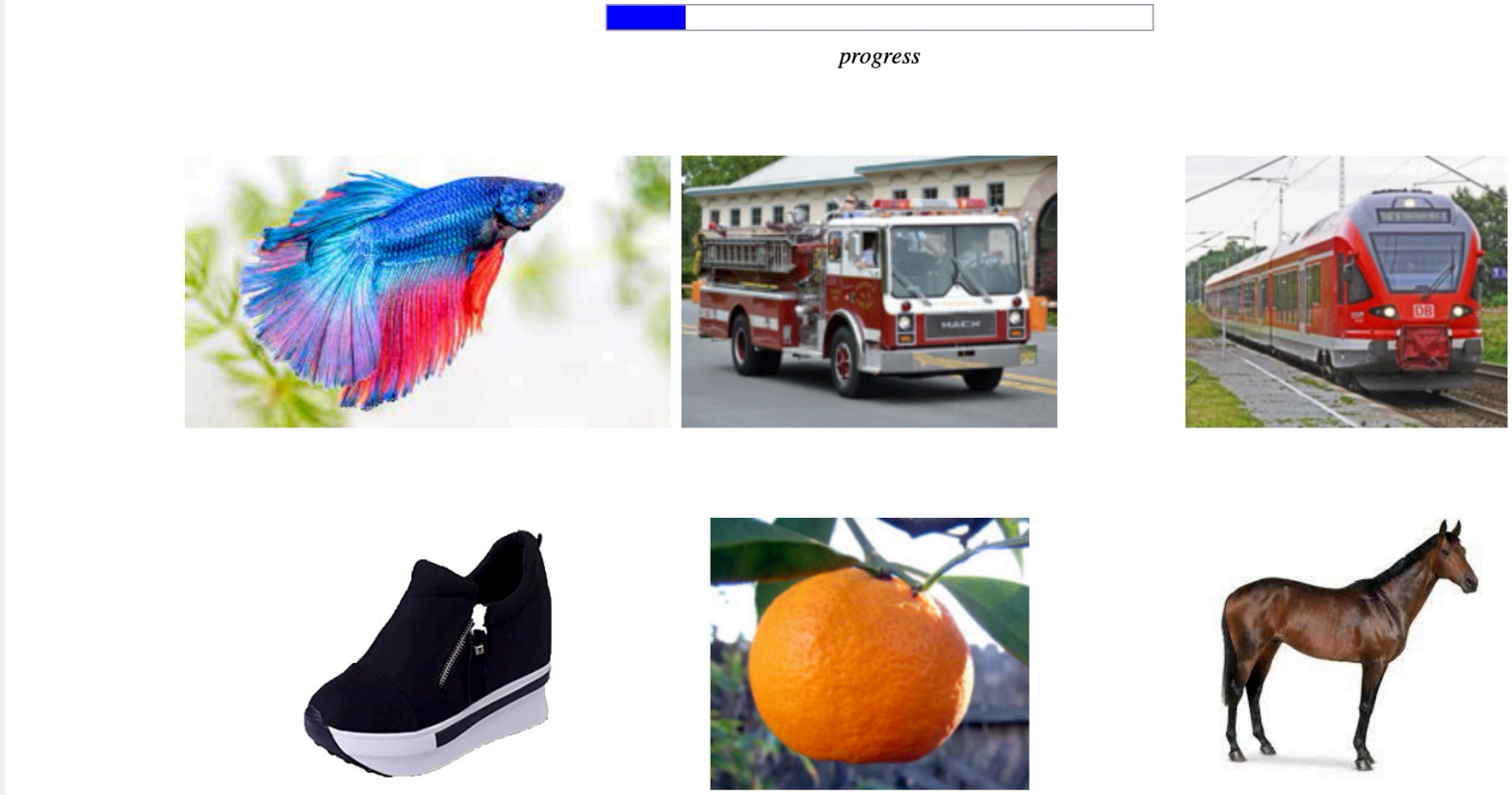
Trial Illustration (Atyp First)



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Materials

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Materials

- Audio stimuli aimed to match across conditions

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Materials

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- 16 **critical items** in Def_{weak} and Def_{strong} variants

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Materials

- Audio stimuli aimed to match across conditions
- 16 **critical items** in Def_{weak} and Def_{strong} variants
- 16 **fillers** with unique referent in final display
  - 4 **referred back** to antecedent (3 Def_{strong}, 1 fem)
  - 12 **referred** to newly added item (8 Def_{weak}, 4 fem)

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Materials

- Audio stimuli aimed to match across conditions
- 16 **critical items** in Def_{weak} and Def_{strong} variants
- 16 **fillers** with unique referent in final display
  - 4 **referred back** to antecedent (3 Def_{strong}, 1 fem)
  - 12 **referred** to newly added item (8 Def_{weak}, 4 fem)
- 24 **fillers** with plural context sentences:
  (15 Def_{weak}, 9 fem)

So, what do we have here? There's some animals and some furniture.

Target reference to items in mentioned categories,
12 to newly added items, 12 to initially present items

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2x2 Design

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2x2 Design

- **Factor 1**: Definiteness type
  vom vs. **von dem** (between subjects)

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2x2 Design

- **Factor 1**: Definiteness type
  vom vs. **von dem** (between subjects)

- **Factor 2**: Typicality order:
  Typical - Atypical vs. Atypical - Typical
  (within subjects)

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Methods

- 97 participants on Prolific
- Same Materials as before except for noted changes
- Dependent variable: Rate of Typical image choices
- 2x2 - Typicality Order x Definite Type
- PCIbex Demo Link
  (with access to underlying code for 1-click replication):

  https://farm.pcibex.net/r/jfgGsL/

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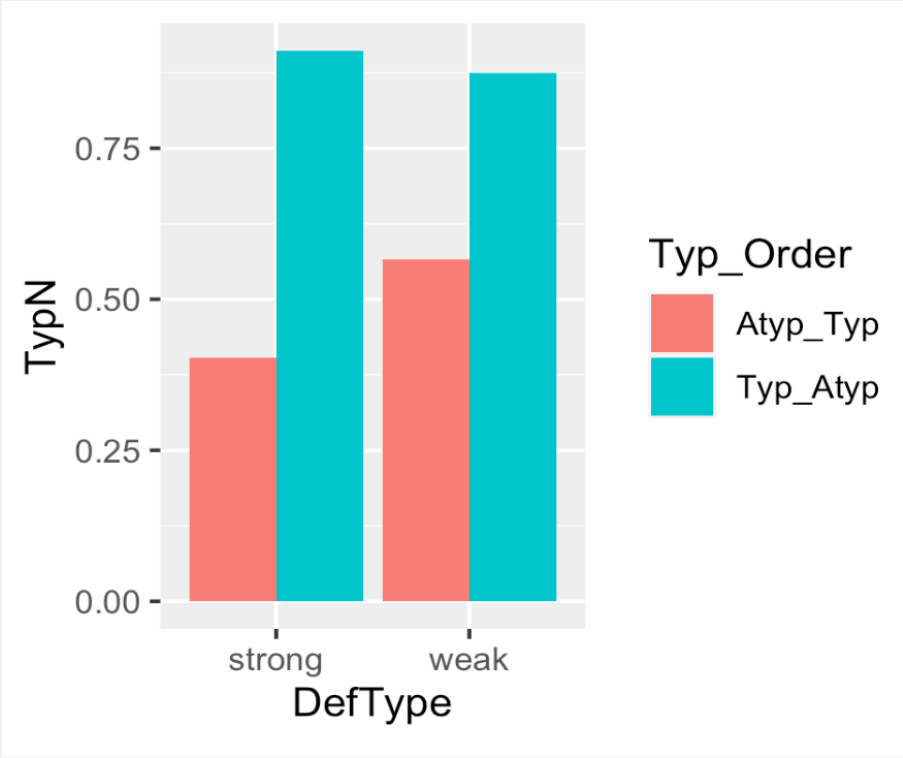
Full Expt - Results



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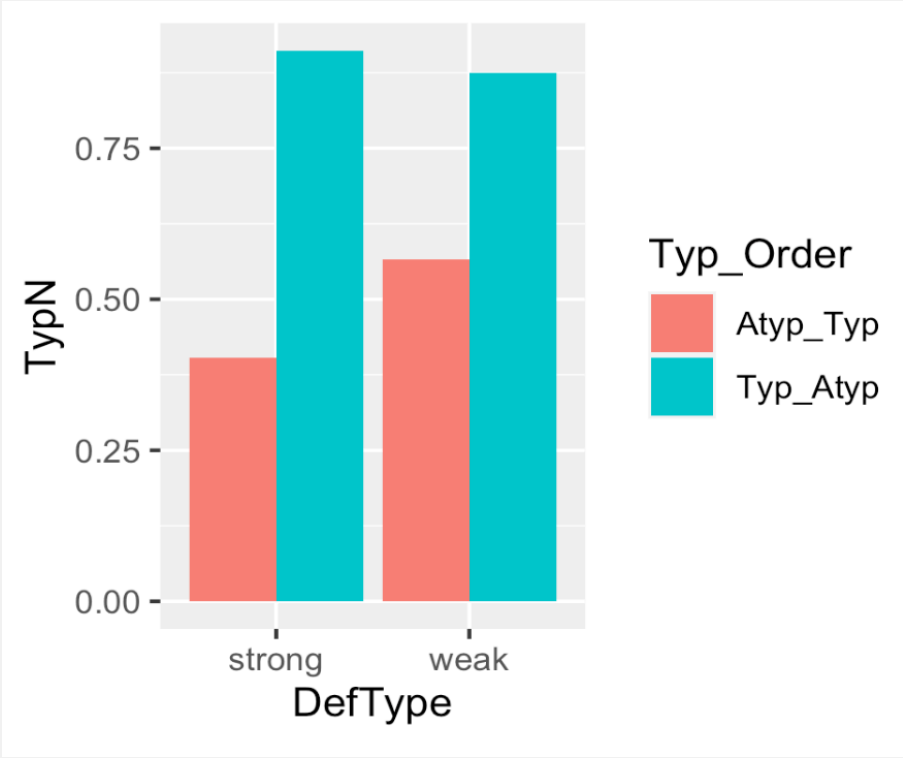
Full Expt - Results

- Expected effects of Typ_Order and of Typicality difference between picture pairs



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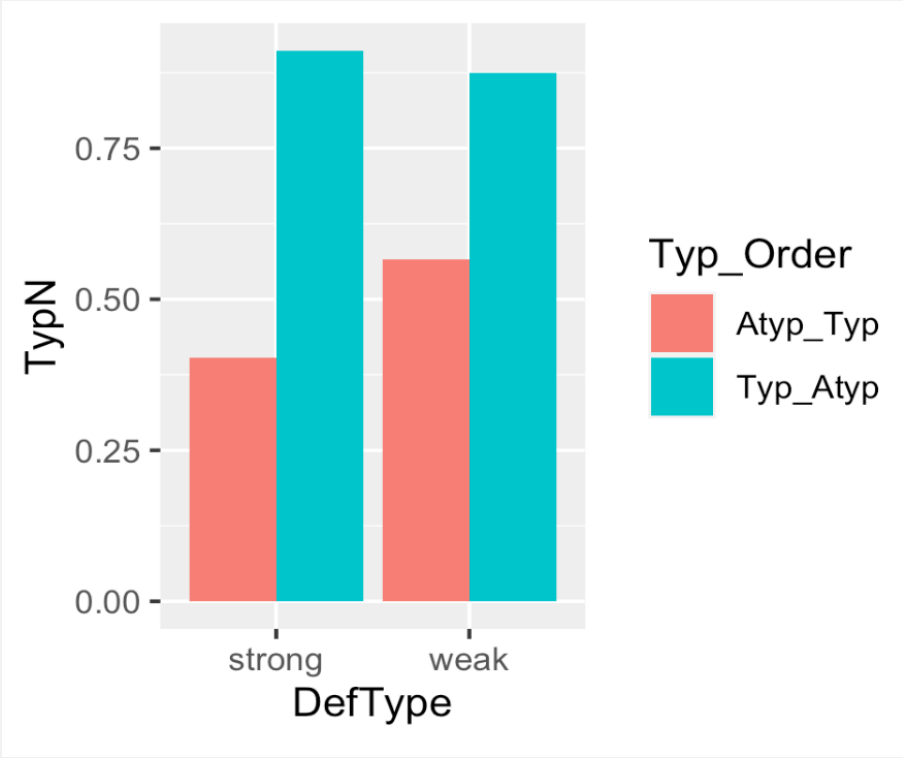
Full Expt - Results

- Expected effects of Typ_Order and of Typicality difference between picture pairs
- **Significant Interaction** ($p < .001$)



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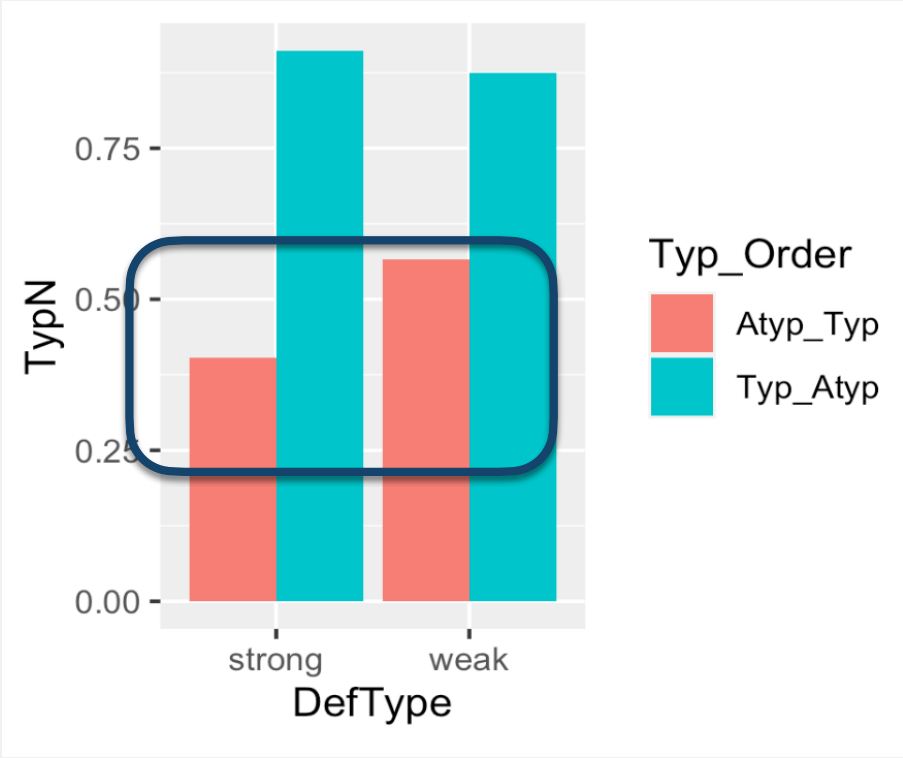
Full Expt - Results

- Expected effects of Typ_Order and of Typicality difference between picture pairs
- **Significant Interaction** ($p < .001$)
- Driven by **Significant diff.** for Atyp_Typ order ($p < .01$)

  —> **More Typ** for Def_{weak}



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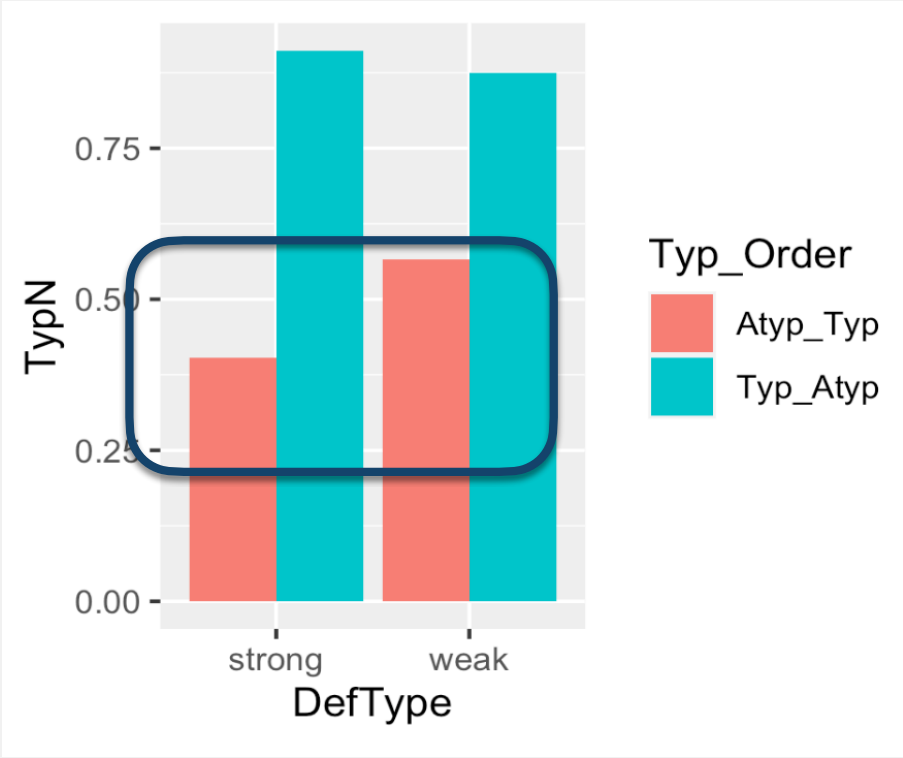
Full Expt - Results

- Expected effects of Typ_Order and of Typicality difference between picture pairs
- **Significant Interaction** ($p < .001$)
- Driven by **Significant diff.** for Atyp_Typ order ($p < .01$)

  —> **More Typ** for Def_{weak}
- (No sig. diff for Typ_Atyp)



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Discussion

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Discussion

- **Two pressures** pitted against one another:
  - **Typicality preference** when faced with multiple candidate referents
  - **Propensity of a given definite** form to pick up referent from previous indefinite antecedent

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  - **Typicality preference** when faced with multiple candidate referents
  - **Propensity of a given definite** form to pick up referent from previous indefinite antecedent
- **Result**:
  - Overall large effect of typicality (but not main focus here)
  - Importantly, Def_{weak} and Def_{strong} **differ** in their propensity to stick to an Atypical antecedent referent

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Interpretation

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Interpretation

- **Novel empirical support** to analysis of definiteness contrast in terms of uniqueness vs anaphoricity

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- Note that the **gradual result** is consistent with a categorical analysis of the contrast

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- Note that the **gradual result** is consistent with a categorical analysis of the contrast

  —> Many factors at play, including plausible pragmatic pressures (independent of presence of index) to maintain referent across context and target sentence
- **Key Point:**
  controlling for all other factors,
  small and auditorily subtle difference in form has a **significant impact** on reference choice patterns.

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Interim Assessment

- **New empirical evidence** in favor of contrast in 'role of anaphoricity'
- **Simple** and **replicable method** that allows us to **measure** for a given determiner how (relatively) 'anaphoric' it is.
- **Tool** for systematic and quantitative comparison of article-/definite-paradigms **across languages**

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Beyond German

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Next Step - Other Languages!

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Next Step - Other Languages!

- **Obvious next step**: turn to other languages

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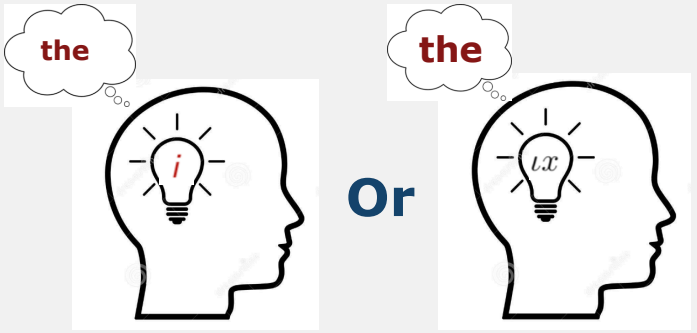

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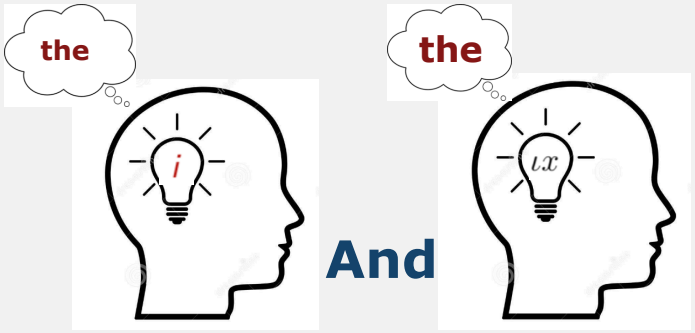
  - Uniqueness or Anaphoricity (Familiarity)?
  - Or ambiguous between both?



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Implementation

- **Recorded English stimuli** to match the German ones (listen to German sentence, then record English)
- **Alternated** Def_{weak} and Def_{strong} German sentences as listening sample
  —> **avoid potential biases** in prosodic realization
- Otherwise, all identical to German study (with recalibrated norming)
- 48 subjects
  (since there was no between subjects definite type manipulation)
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Predictions

- [[**the**]] = Def_{weak}

  —> data pattern like **vom**

- [[**the**]] = $\text{Def}_{\text{strong}}$

  —> data pattern like **von dem**

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Results

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Results

- Reminder of **German** results:

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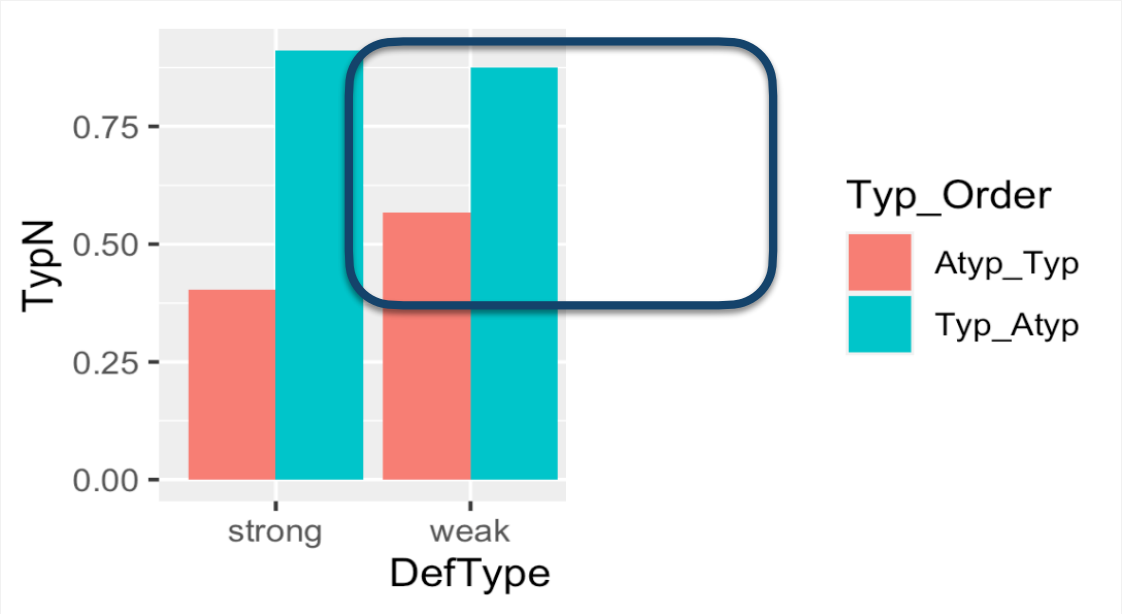
Results

- Reminder of **German** results:



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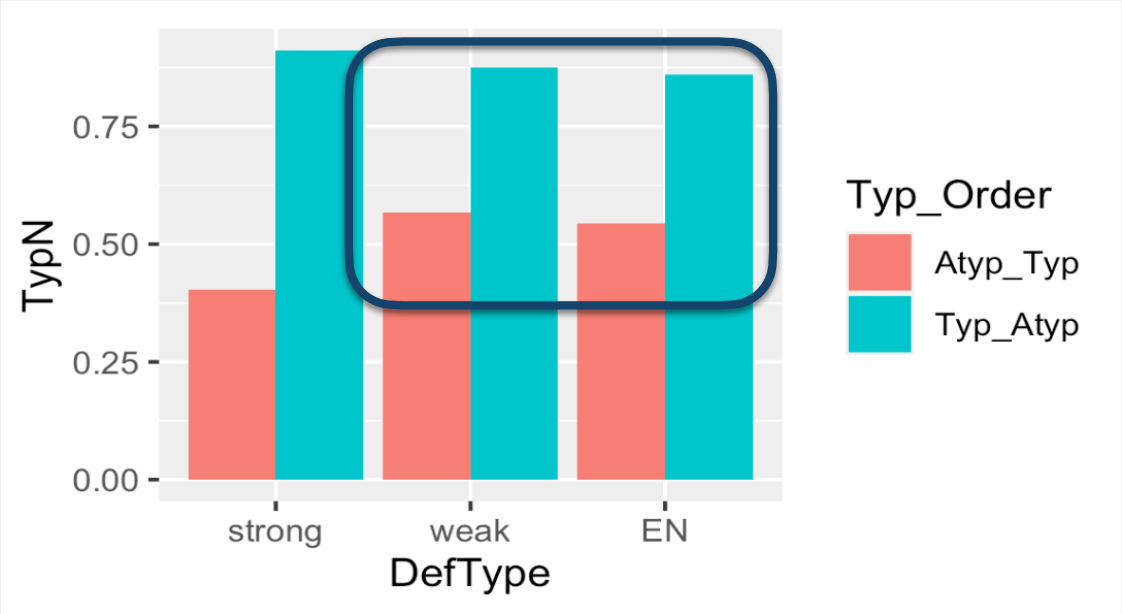

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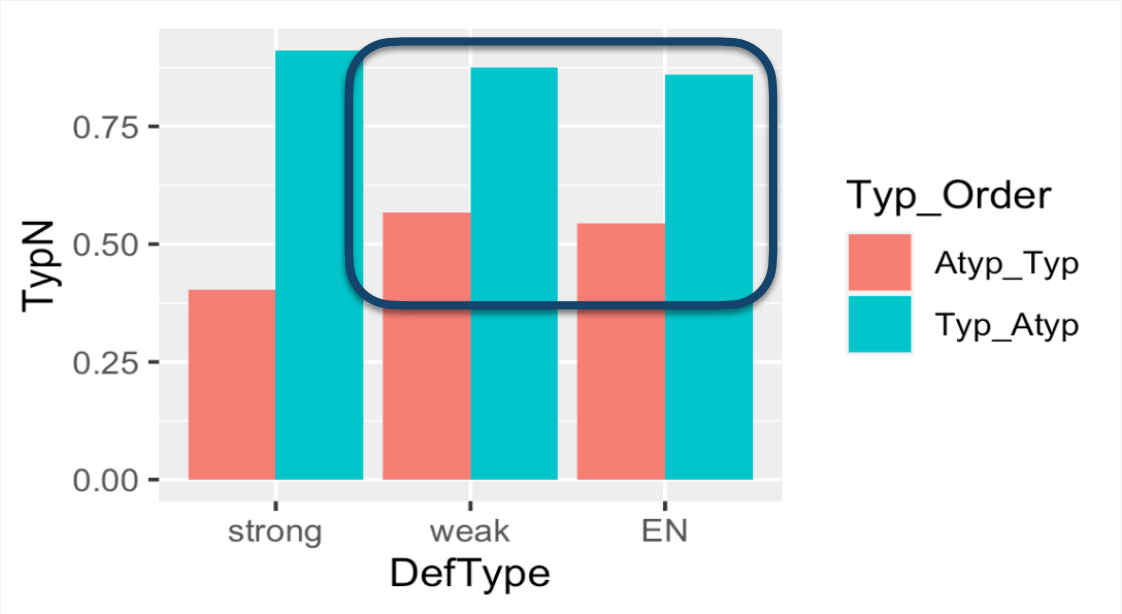

- **the** descriptive on par with Def_{weak}

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Data Analysis

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Data Analysis

- Pooling Data across three article types: Def_{weak}, Def_{strong}, **the**

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- 2x3 interaction analysis

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- Baselines: Def_{strong}, Atyp_Typ

  - Parallel interactions with Def_{weak} and **the**

  - Simple effects in Atyp_Typ condition

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Data Analysis

- Pooling Data across three article types: Def_{weak}, Def_{strong}, **the**
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- Baselines: Def_{strong}, Atyp_Typ
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  - Simple effects in Atyp_Typ condition
- No sig. differences between Def_{weak} and **the**

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Discussion

- If **English the** = $\text{Def}_{\text{strong}}$ with a genuinely anaphoric component, that should show here
- But it's **behaving exactly** as Def_{weak} in German, which arguably has non-anaphoric semantics
- Does this suggests that **English the** indeed is just a uniqueness article, **on par** with Def_{weak} in German?

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Alternative hypothesis: Ambiguity

- What if [[**the**]] were **ambiguous** between the two?

  Possible predictions for behavior in this paradigm:

  - **mixed** pattern (if both readings are accessed)
  - like **strong**
  - like **weak**

- Can we independently test ambiguous forms in task?

  -> **Well, yes**:
  German environments that **don't allow contraction**:
  (presumably) **ambiguous** between weak & strong!

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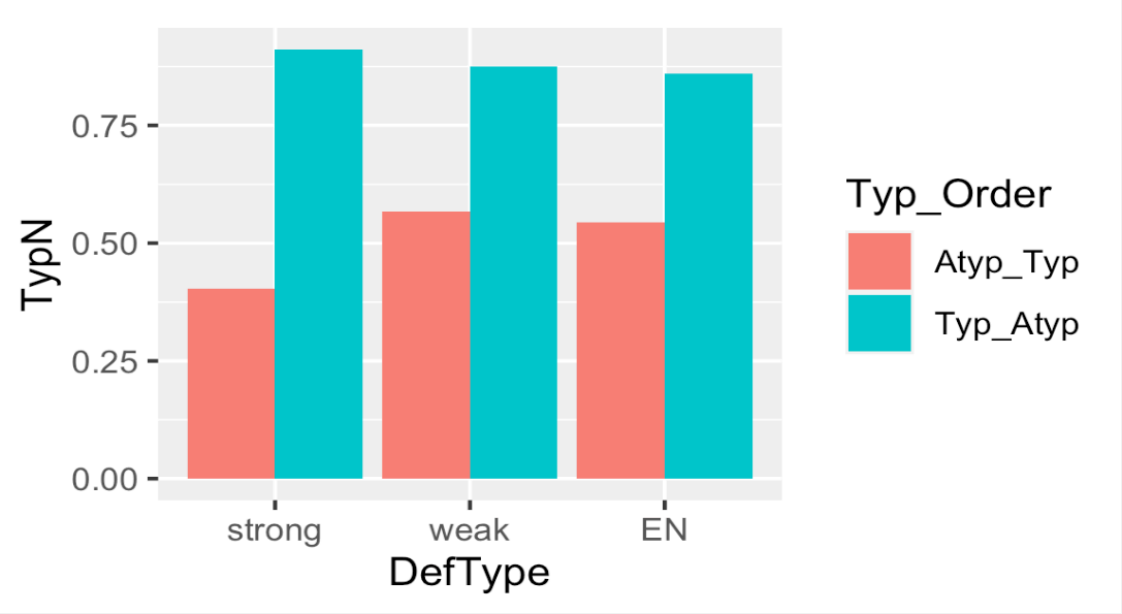
German Ambiguous Baseline: NoPP



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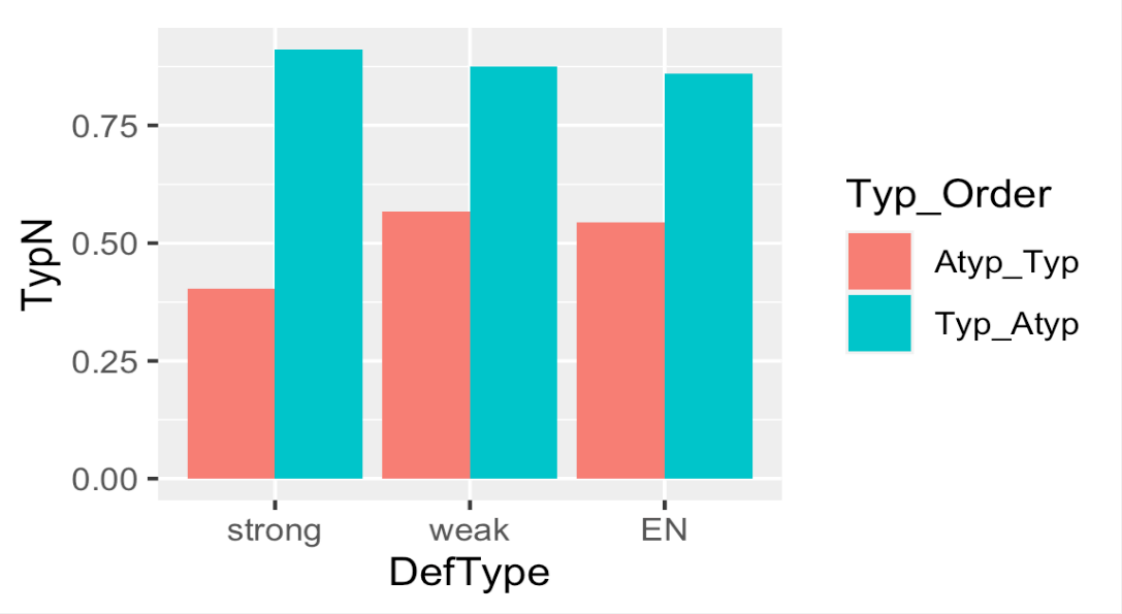
German Ambiguous Baseline: NoPP

- Re-run experiment without PP:

Gibst Du mir bitte den Hut?
Give you me please the hat



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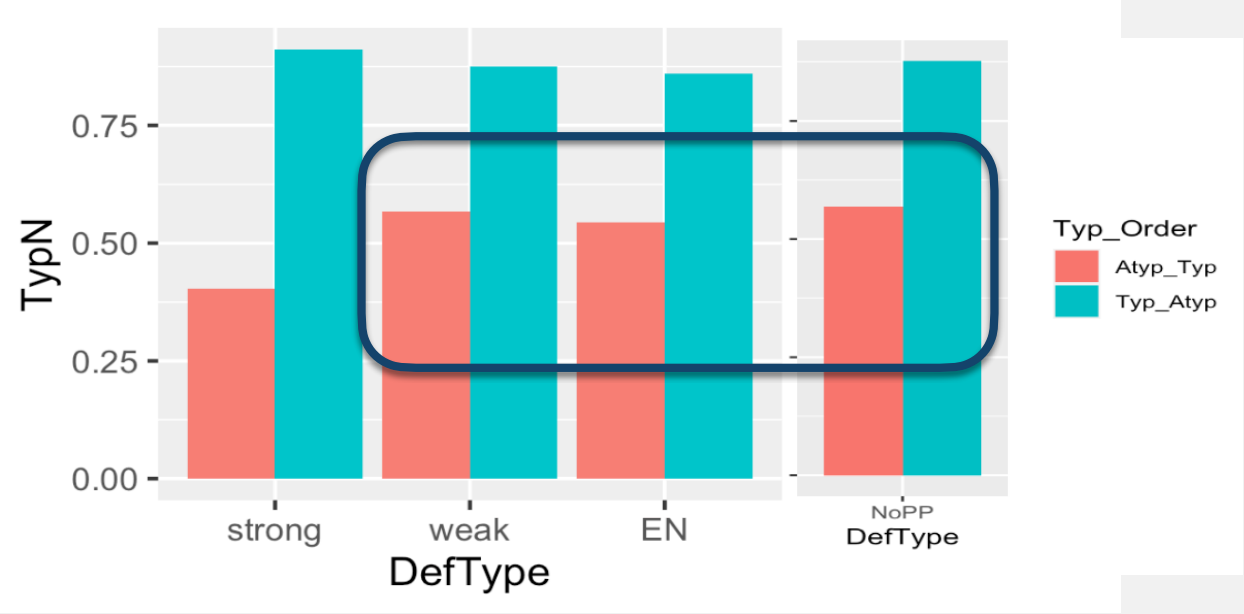

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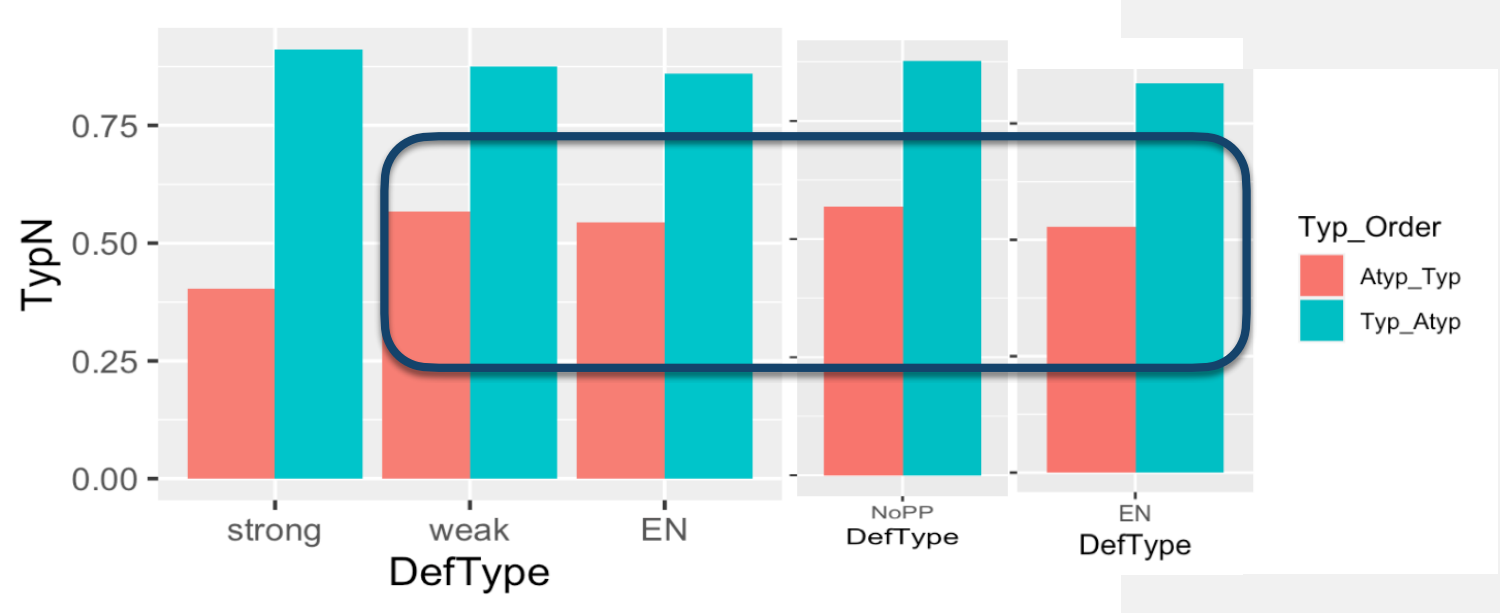

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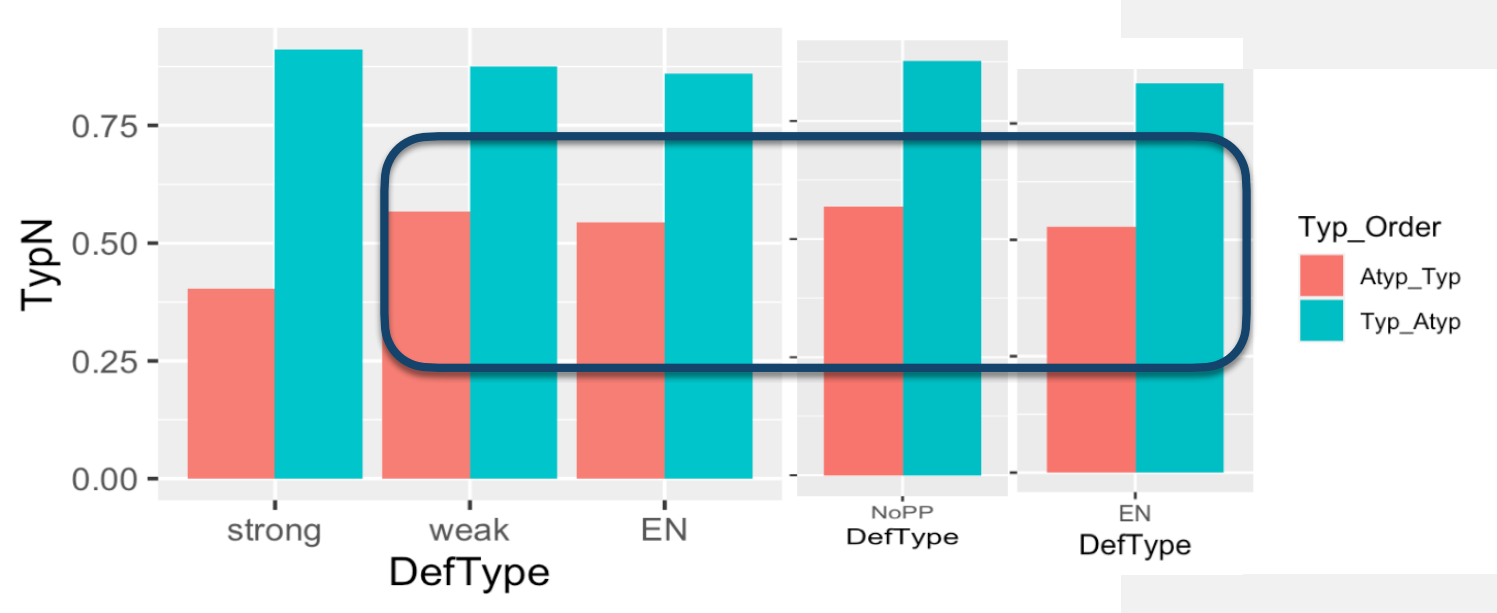

- **NoPP** patterns with Def_{weak} and **the**
  (And NoPP makes no difference for **the**)

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NoPP - Ambiguous Baseline

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NoPP - Ambiguous Baseline

- The **NoPP** and original data are minimally different

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NoPP - Ambiguous Baseline

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- **Same** items & pictures and thus typicality

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- **Statistical comparison** of German **NoPP** with original weak and strong data:
  - **NoPP** statistically patterns with weak
  - **Same** interactions & simple effects relative to strong

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NoPP - Ambiguous Baseline

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- Parallel results with a Feminine baseline variant (-> in Appendix)

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Interpretation Revisited

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- The current data under-determine whether

  the = Def_{weak} **OR the** is ambiguous

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- German **forms where contraction is unavailable** and English **the** pattern together

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Interpretation Revisited

- The current data under-determine whether

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- German **forms where contraction is unavailable** and English **the** pattern together

- **Ambiguous + weak** interpretation preference?

- (Potential) **Additional question**:
  Are German **forms w/o contraction** available actually ambiguous?

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An (old) argument for Ambiguity revisited: Epithets

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Epithets - German

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Epithets - German

- Argument that German Def_{weak} CANNOT bear index: **Epithets**

Hans hat schon wieder angerufen. Ich will #vom / von dem Idioten
Hans has already again called. I want of-the$_{weak}$ / of the$_{s}$ idiot
nichts mehr hören.
not more hear.
'Hans has called again. I don't want to hear anything anymore from that idiot.

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- Same holds for very general descriptive nouns that don't ensure uniqueness

Ein Ornithologe… {#vom / von dem} Mann
An Ornithologist… of-Def_{weak} of $\text{Def}_{\text{strong}}$ man
(Schwarz 2009)

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Epithets

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Epithets

- English **the** seems much more acceptable than weak article in epithets and general descriptive nouns:

  This linguist called, and I got a real mouthful from **the idiot** before he realized he had the wrong number

  I saw a talk by **an ornithologist**,
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Epithets

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- So **the** can do things Def_{weak} cannot do, suggesting it CAN bear anaphoric index

  —> argument for ambiguity!

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  —> argument for ambiguity!

- **Open question**: Why do ambiguous forms behave like Def_{weak} in our paradigm?

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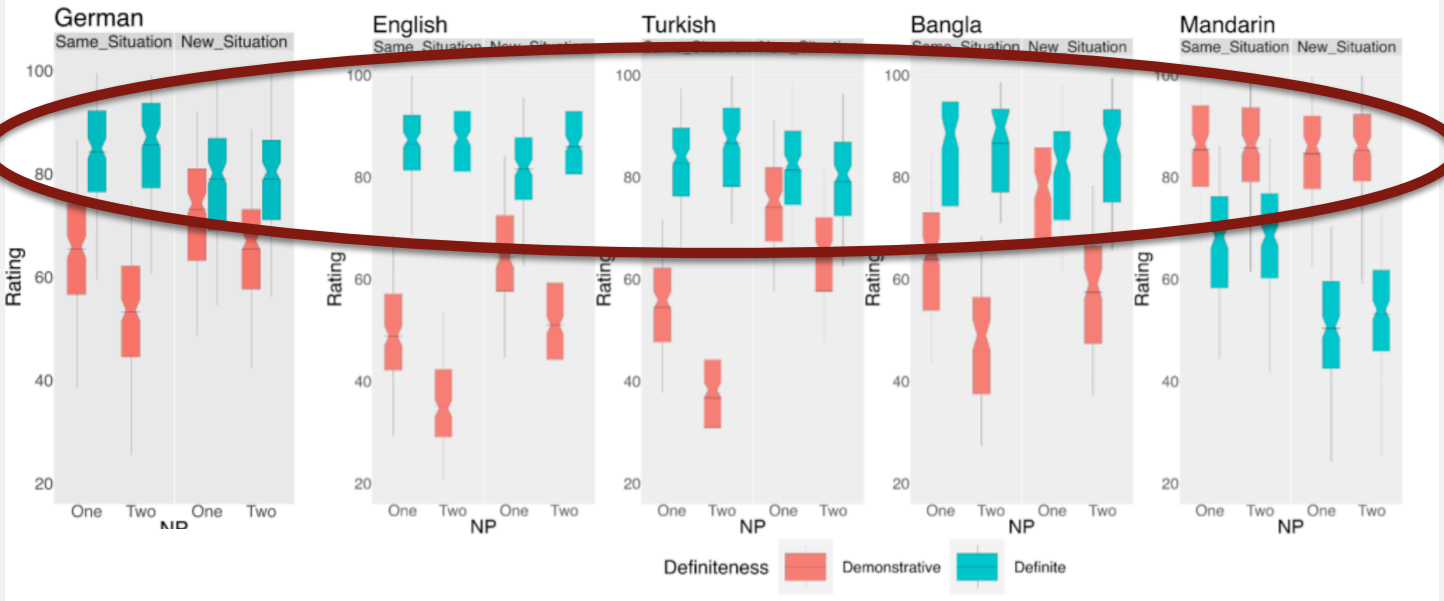
Ambiguous forms in other tasks

- Saha 2023, Saha et al. 2023, Saha et al. 2024: Acceptability judgments for anaphoric uses of demonstratives and 'definite' forms across discourse contexts:



- German ambiguous form and **the** pattern with (what arguably are) other anaphoric (or ambiguous) definites

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Further Cross-linguistic Experiments

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Cross-linguistic Extensions

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- Given the many languages where claims about contrasts in anaphoricity of definite (and nominally demonstrative) forms have been made:

  Leverage paradigm to

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  - **Compare contrasts** across languages

- Seeking **empirical support** for existence of contrasts, and
- Explore **factors** affecting their strength

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More Cross-linguistic data

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More Cross-linguistic data

- Collaboration through **Definiteness Across Domains** Network: https://www.definiteness-across-domains.org/ (funded by German Science Foundation)

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More Cross-linguistic data

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- Current extensions:

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More Cross-linguistic data

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- Current extensions:

- **Czech** (Radek Simik)
- **Polish** (Agata Renans)
- **Russian** (Ljudmila Geist)
- **Dutch** (Giuseppe Magistro, Melissa Farasyn, Alexandra Simonenko)
- **Swedish** (Imke Driemel)
- **Korean** (Dorothy Ahn)
- **Turkish** (Yagmur Sag)
- **Thai** (Nattanun (Pleng) Chanchaochai)
- **Spanish** (Carla Bombi)

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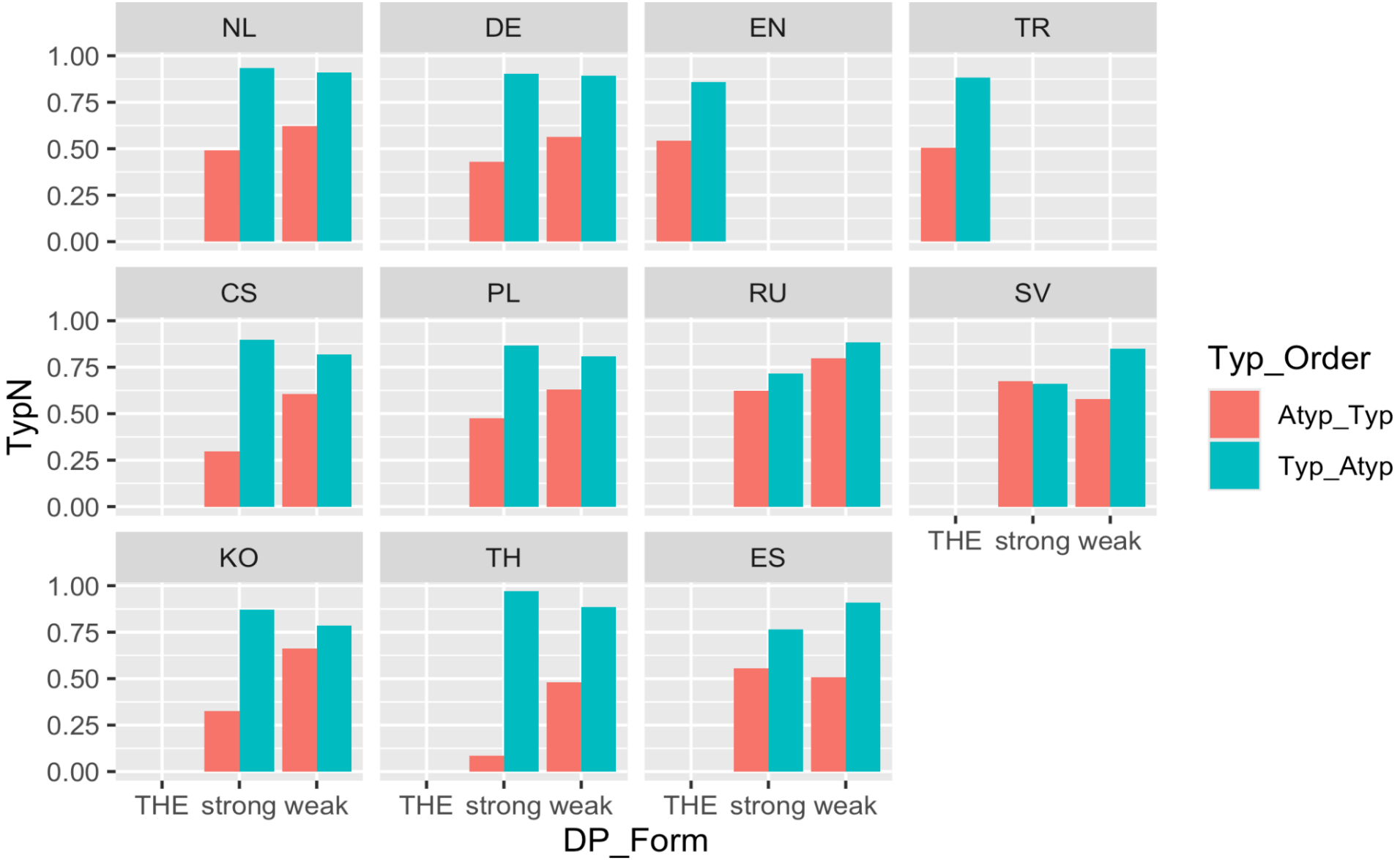
Snapshot Overview



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TLDR

- Caveats:
  - **Glossing over** many detailed aspects of form variations (bare, DEM, …) and inventories
  - **New data**, only descriptive stats so far
- Remarkably **consistent qualitative pattern** across widely varying languages
- Interesting **quantitative variation** (at least descriptively, so far) in strength of patterns
- **3 Languages** have qualitatively different pattern
- A few initial highlights…

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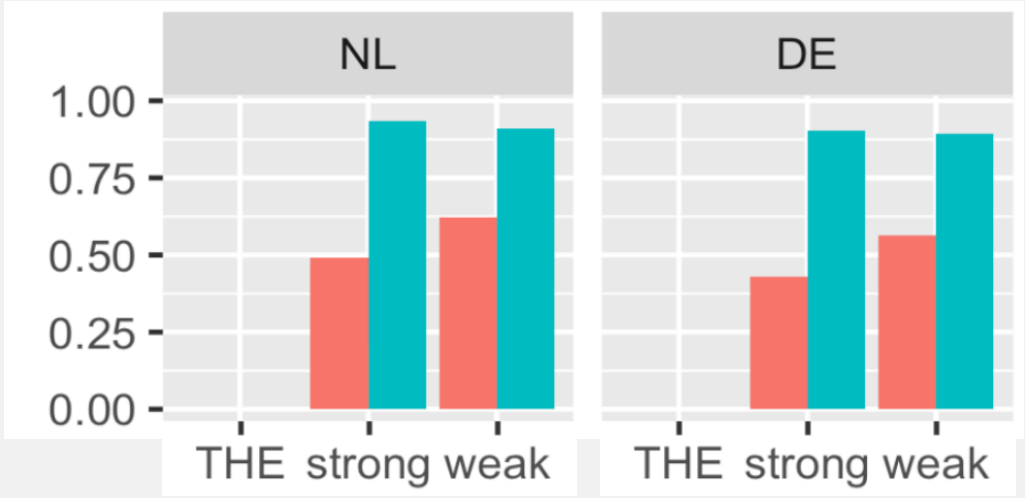
Dutch ≈ German



- Dutch **de/het** vs. **die/dat** behaves much like German **vom** vs. **von dem**

  —> Def_{weak} vs Def_{strong}

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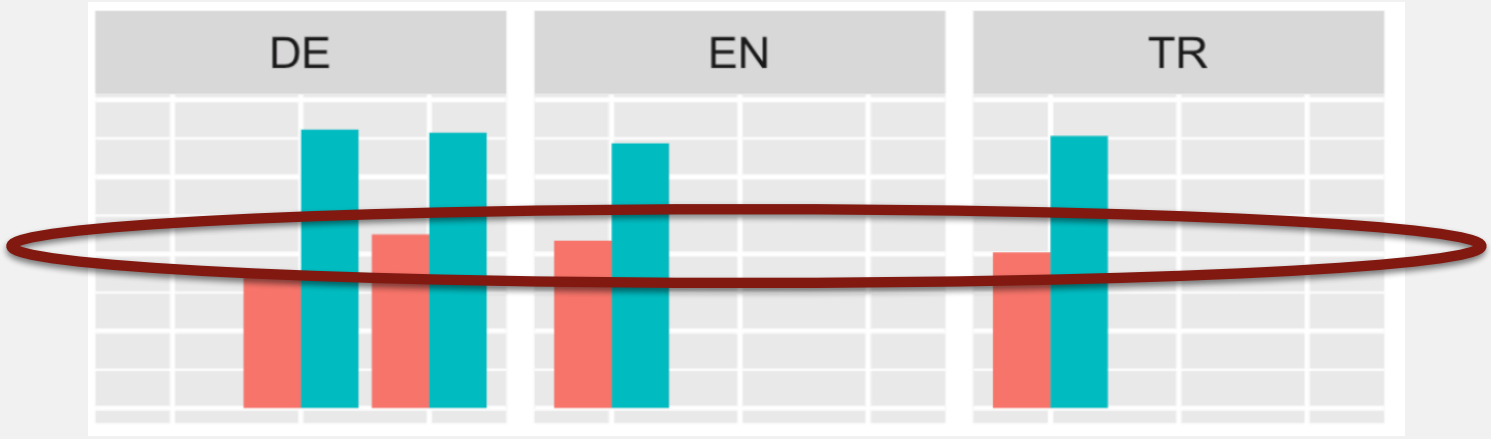
Def_{weak} ≈ Ambiguous forms



- As in Saha et al. 2023, 2024, **Turkish** forms pattern with English
- In the **present paradigm**, both pattern with German Def_{weak}

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Bare vs DEM

- Czech, Polish, Korean and Thai:
  bare NP (Def_{weak}?) vs
  Demonstrative (Def_{strong}?)
  pattern similarly to German
- **Strength** of effect variable
  (subject to statistical
  confirmation)
- To explore:
  Factors involved in variation
  - Alternative meanings
  - Form inventory
  - Stereotypicality?

- **Note**: English demonstratives also have stronger effect

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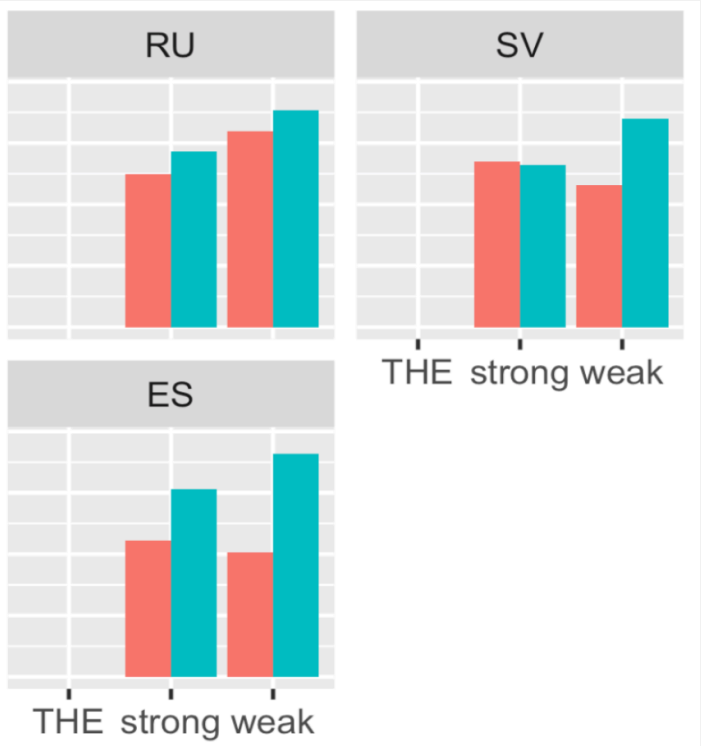
No/Reverse Interactions

- Russian **bare** vs **DEM**: no effect
- Swedish **suffix** vs. **double def** marking: Reverse effect
- Spanish **el/la** vs **ese**: reverse effect
- Language-specific details need to be explored



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Discussion

- **Much more work** to be done…
  (and more languages still in the works)
- Useful **diagnostic** for comparing 'how anaphoric' forms in a language are
- **Cross-linguistic** comparison more complicated
- Hope: **triangulating across different paradigms** may help to pin down whether a given definite form's semantics can be shown to involve:
  - uniqueness
  - anaphoricity
  - or is ambiguous

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Conclusion

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Summary

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Summary

- A **new method** for detecting anaphoricity of definite articles

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- A **measure** of difference between different types of definite articles

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- **Question** originating in philosophy crucially informed by empirical perspectives
- Easily **replicable** for cross-linguistic extensions (PCIbex links above; 1 click-replication!)
- **Cross-linguistic conclusions** will require working out refinements - discussion welcome!

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Thank You!

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Appendix

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Audio Stimulus Creation

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Audio Stimulus Creation

- Step 1) Recorded **Context sentences** with conjunction of potential antecedent
  Position of target antecedent counterbalanced
  (varying intro / hedges slightly to decrease repetition)

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  vom (**Def$_{weak}$**) vs **von dem** (**Def$_{strong}$**) variants
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- Tried to **clearly articulate** non-contracted strong form without stressing or overdoing it.

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Potential Concern: Filler Effects?

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- 3 Fillers with antecedent used Def_{strong}, 23 without individually pre-mentioned Ref used Def_{weak}.
  —> 'Training' effect?

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- Re-run with all feminine fillers (no contraction possible)

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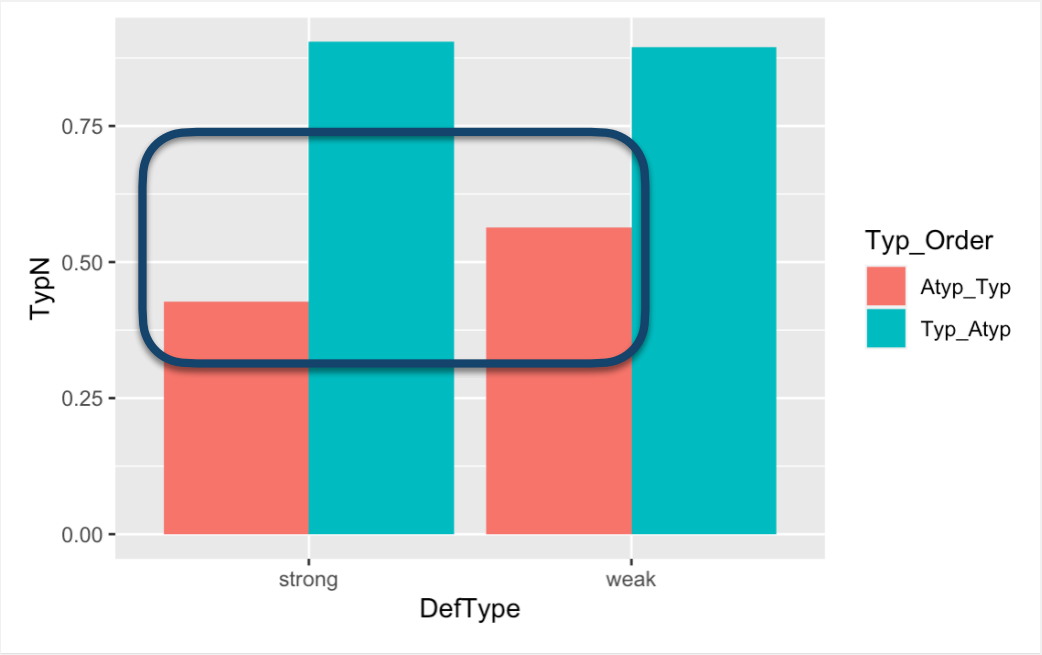
  —> 'Training' effect?
- Re-run with all feminine fillers (no contraction possible)
- Same pattern in results



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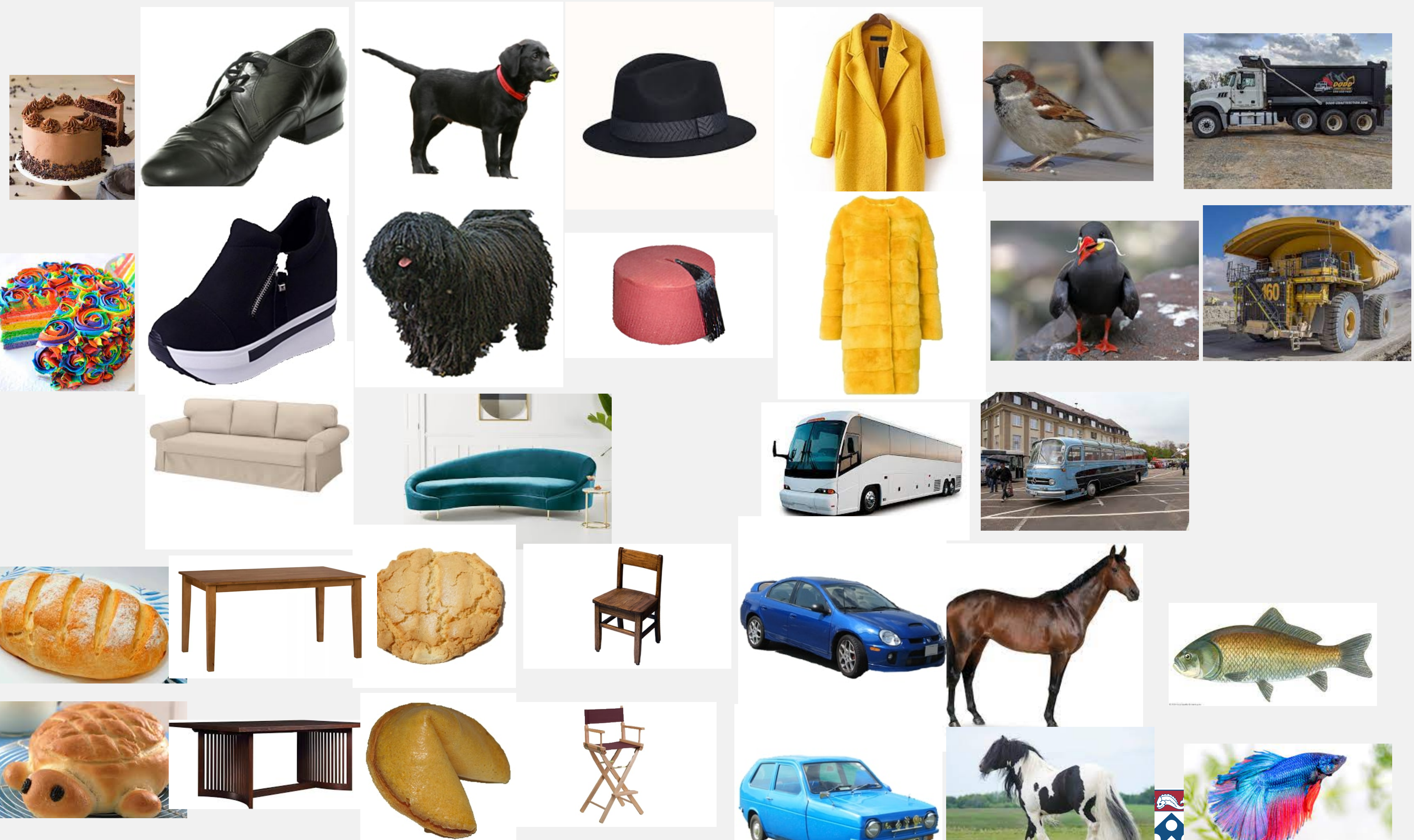
Norming Typicality (English)



Florian Schwarz - ExtenDD - Łódź, 2026

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Norming Typicality (English)

How typical is this for a N?

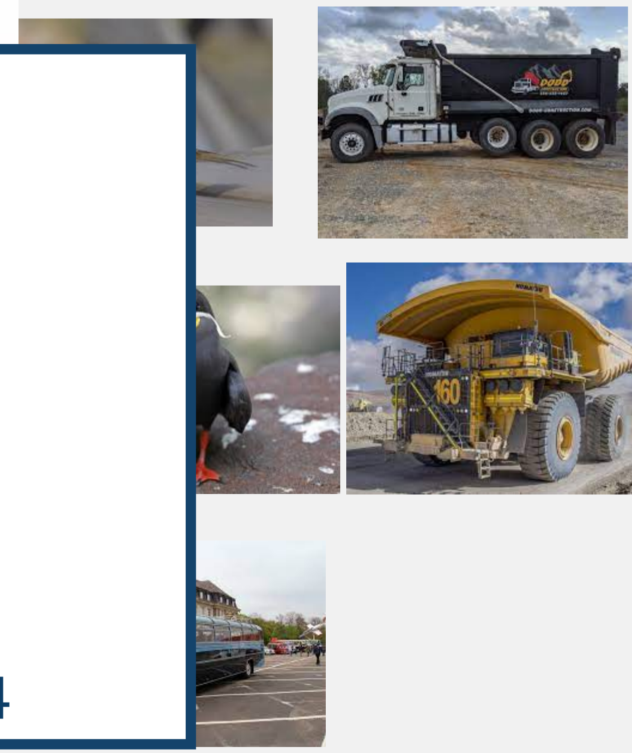
Means (on scale from 0-7)

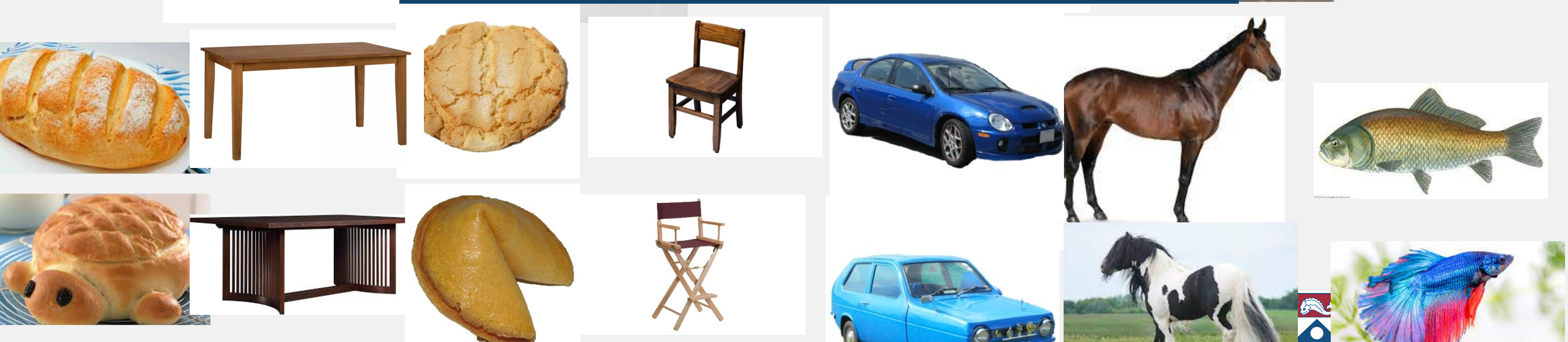
Typical: 5.96

Atypical: 2.58

Mean Difference: 3.39

Minimum Item difference: 1.24





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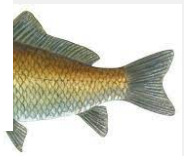
Norming Typicality (English)



Norming Typicality (English)

How typical is this for a N?

Means (on scale from 0-7)

Typical: 5.96

Atypical: 2.58

Mean Difference: 3.39

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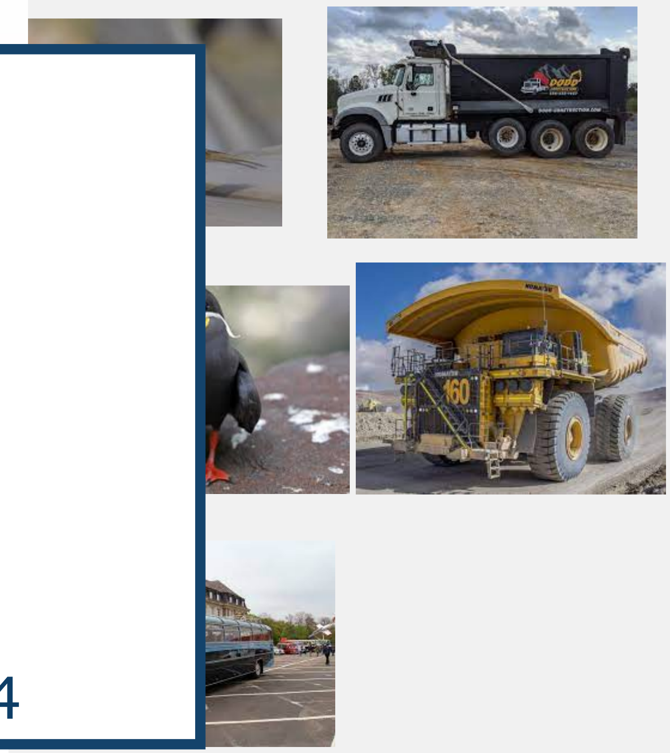

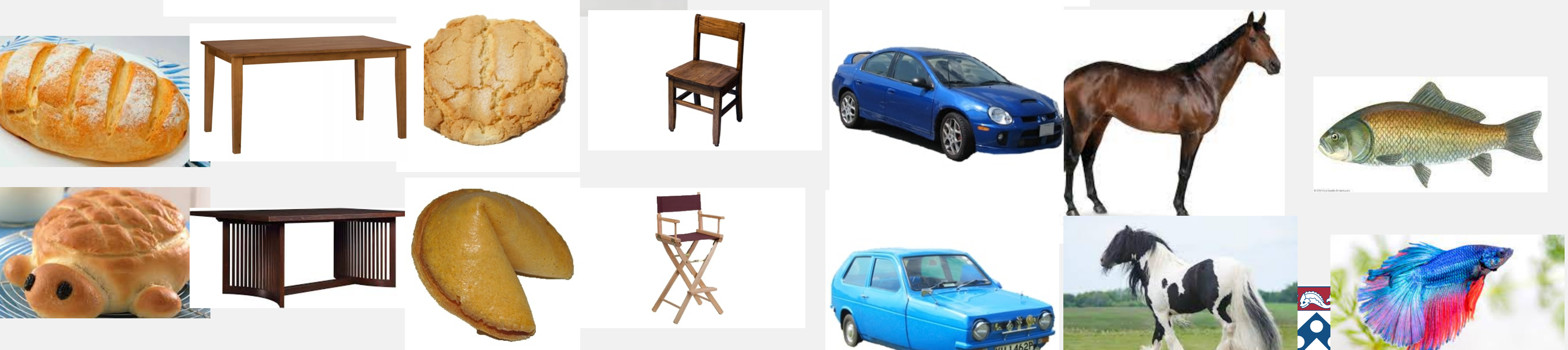

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Second Ambiguous Baseline: Fem

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- Re-run German experiment with **feminine** items
  - new pictures needed
  - parallel **typicality distribution** in norming

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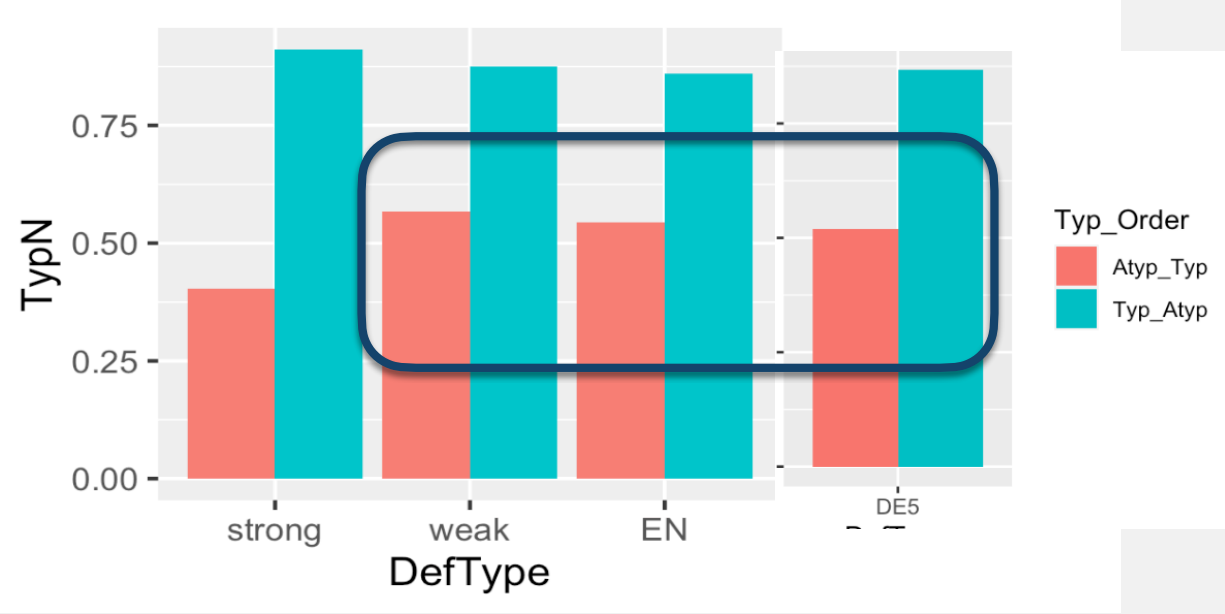

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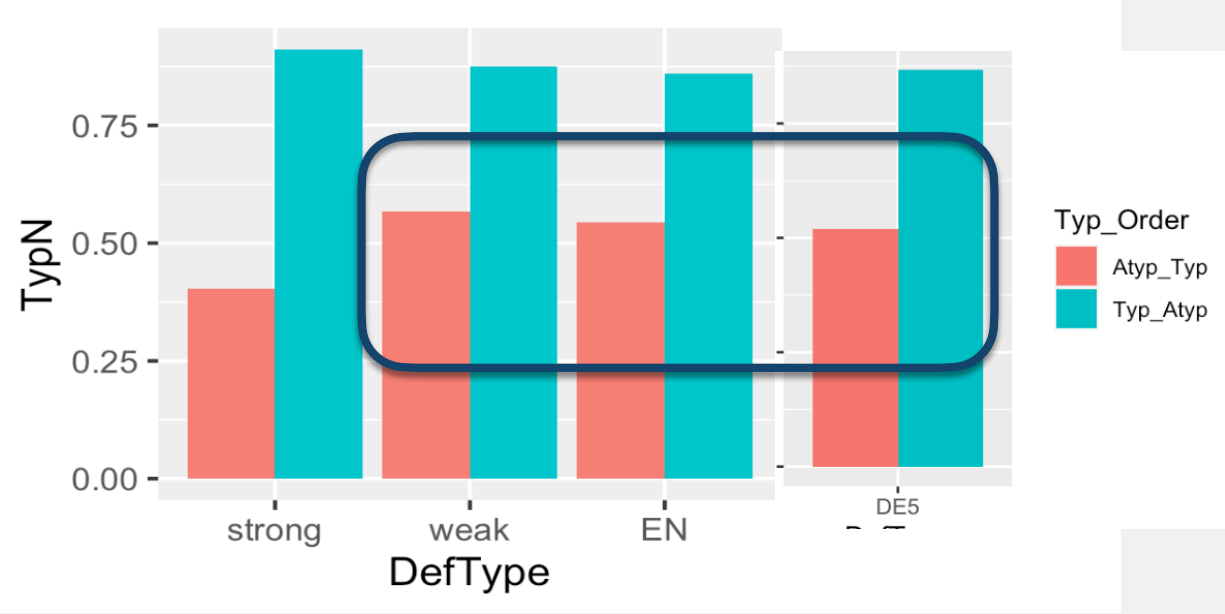

- Looks much closer to weak & EN than strong!

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Some Imperfections

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  —> Basic distribution measures may not capture typicality-driven differences

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  —> Basic distribution measures may not capture typicality-driven differences
- Therefore also **not** (all that) **well-suited** for statistical comparisons
- No English data on these items (as of yet; worth it?)
- PP-Frame (in main talk) provides a conceptually **cleaner** within-item comparison; but results for Fem are consistent

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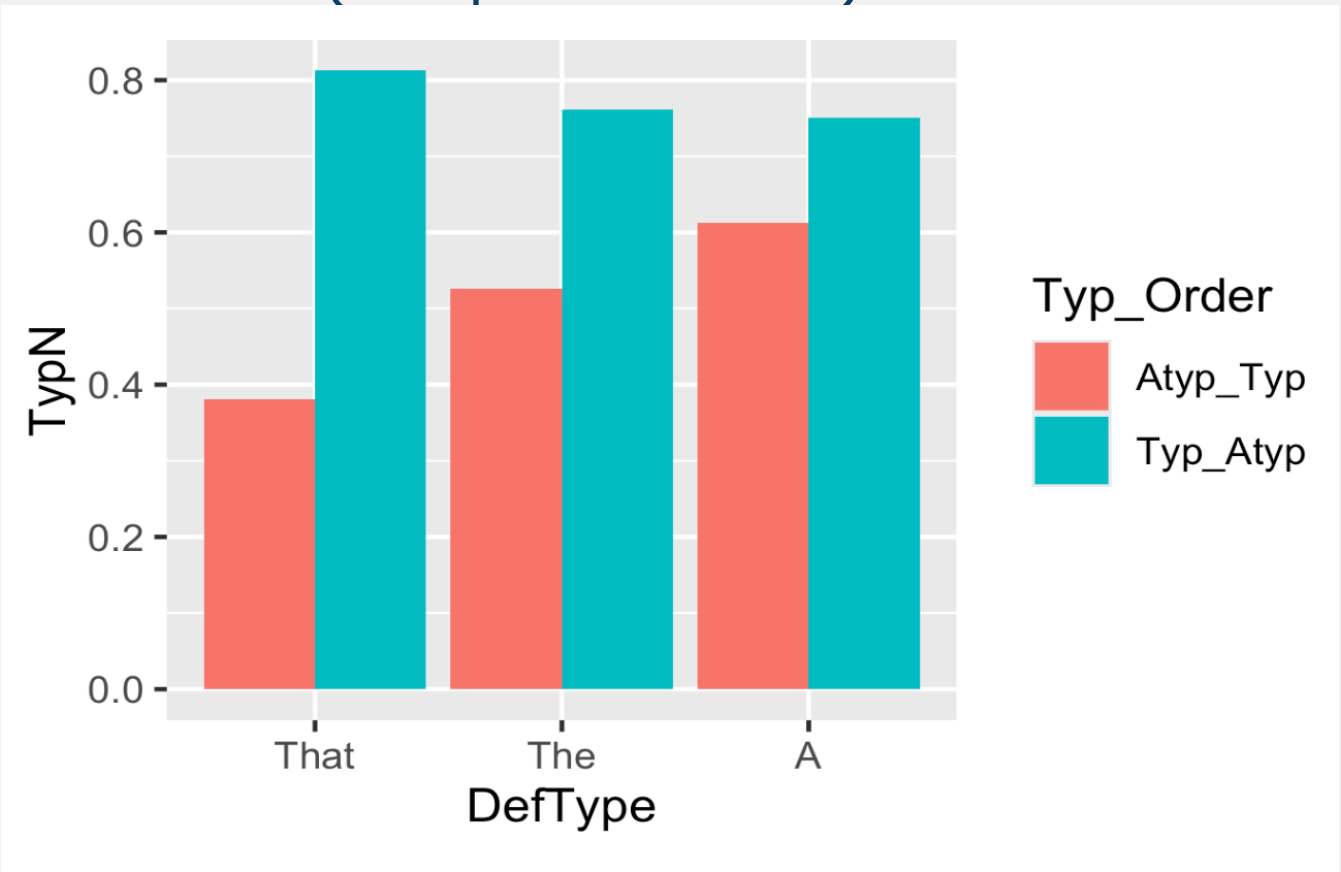
Demonstratives & Indefinites

- English data (NoPP version) on demonstratives and indefinites (compared to The)



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