To squeam or not to squeam: On (asserted?) DP presuppositions
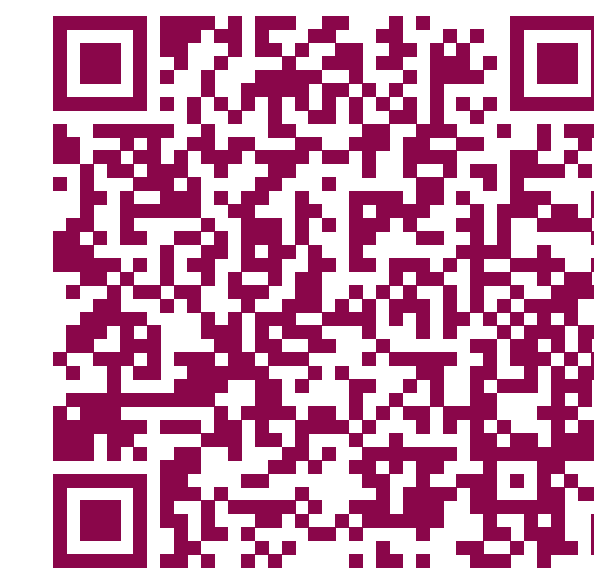
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Introduction and Main Issues

> Definite determiners are often taken to be presuppositional.
> The most prominent ones are existence and uniqueness presuppositons for singular definites and the homogeneity effect for definite plurals, (1) and (6)
> The proposals in the literature, especially when it comes to singular definite DPs, differ; for an overview, see Coppock & Beaver (2015) and (3)
> We ran an experiment using the design in (7) to test whether:
>> different kinds of determiner inferences are treated differently by experimental participants; i.e., whether undefinedness is a homogenous category
>> the presuppositional proposals for singular definites can be teased apart
>> as argued by Strawson (1950) and others, information structure affects truth-value intuitions, contra von Fintel (2004)

(1) Das Dreieck steht links neben dem Quadrat. *Existence*

true   undefined   false

Generally the debate for singular definite descriptions centers around the presuppositional component, a violation of which, illustrated in the undefined scenario above, is said to trigger 'squeamishness'. The following presuppositions are discussed:

(2) ± Existence/Familiarity   For any bivalent $P_{\langle e,t \rangle}$, $[\![P(\textbf{the heart})]\!] = \#/0$ in scenario ...
    ± Uniqueness $[\![P(\textbf{the heart})]\!] = \#/0$ in scenario ...

These choices lead to various views on the < presuppositions of the singular definite article >:

(3) 'Russelian' $\varnothing$ −Existence; −Uniqueness,
    'Fregean' $|P| = 1$ +Existence; +Uniqueness; see Elbourne (2013)
    'Weak Familiarity' $|P| \leqslant 1$ −Existence; +Uniqueness; see Coppock & Beaver (2015)

But it has been noticed that sometimes, instead of feeling squeamish about assigning a truth value, speakers will judge a sentence as true or false, especially in the presence of context:

(4) Context: *You are compiling a list of noteworthy people who own a Volkswagen to send promotional material to. A colleague says:*
    The king of France owns a Volkswagen. (false)

The accounts add to the picture in (3) by postulating a < pragmatic influence on truth values >:

(5) Topicality: Influence of information structure/the QUD may lead to falsity judgments for presupposition failure when trigger is in the comment/not part of the topic
   (Strawson 1950, Partee 1996, Schoubye 2009)
    Verification: Transformation of semantic truth-values, $\{1, 0, \#\}$, into pragmatic ones, $\{\textsc{true}, \textsc{false}\}$, when truth value is identifiable independently of the presupposition
    (Lasersohn 1993, von Fintel 2004)

These complicate the theoretical picture further, especially when homogeneity inferences associated with definite plurals are taken into account:
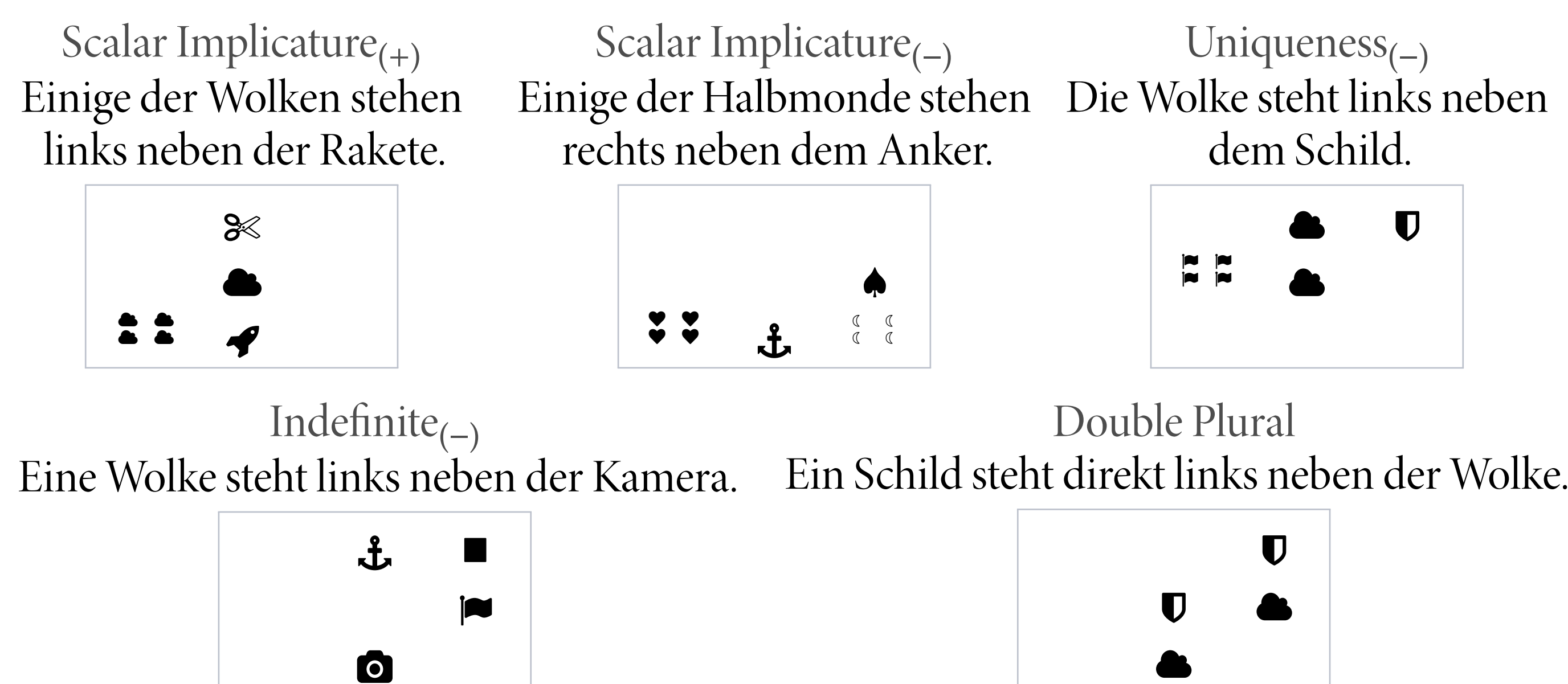
(6) Die Dreiecke stehen links neben dem Quadrat. *Homogeneity*
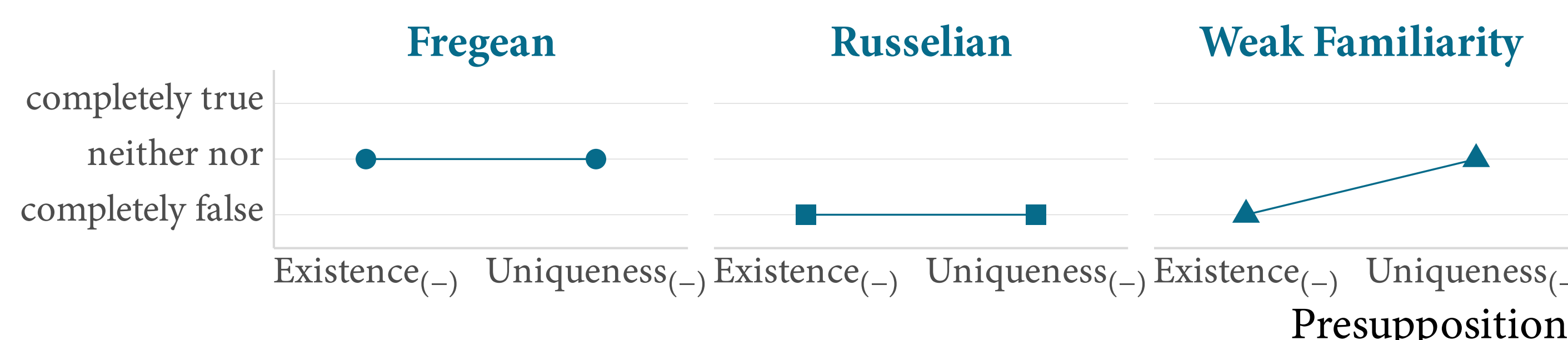

true   undefined   false

The Experiment

> We carried out a continuous trivalent truth-value judgment task:

(7) $2 \times 2 \times 3$-Design (within-within; 72 items, 24 participants)
    a. Trigger-Type (DP_{SG} vs. DP_{PL}), (1) and (6)
    b. Word Order (sentence-initial vs. sentence-medial)
    c. Truth-Value Scenario (true vs. undefined vs. false), see (1) and (6)

> Though we additionally tracked various indices related to processing by recording the slider movements in the real-time, we will not discuss these data here.
> The ternary judgment task is inspired by the work on homogeneity effects in Križ & Chemla (2015), which employed the same (albeit discrete) scale.
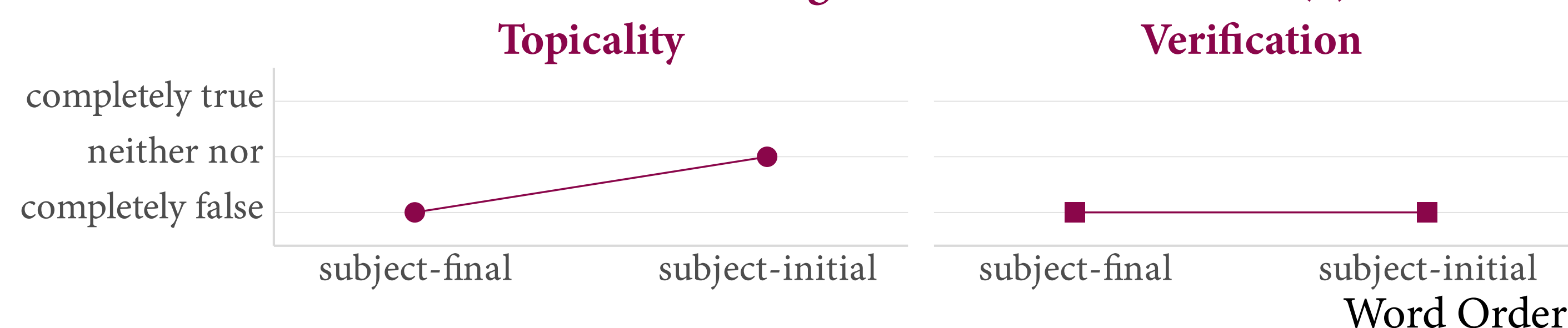
(completely false)   (neither nor)   (completely true)
    −2   0   2
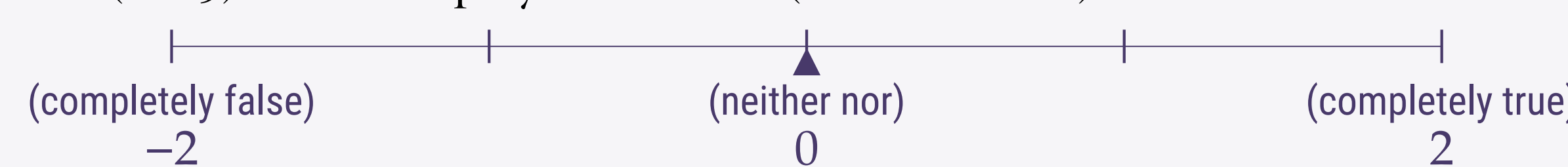
Filler and Control Items 84 items, 7 conditions, 5 shown below; just like the critical items, in two syntactic permutations (not shown below)

Scalar Implicature(+)   Scalar Implicature(−)   Uniqueness(−)
Einige der Wolken stehen   Einige der Halbmonde stehen   Die Wolke steht links neben
links neben der Rakete.   rechts neben dem Anker.   dem Schild.

Indefinite(−)   Double Plural
Eine Wolke steht links neben der Kamera.   Ein Schild steht direkt links neben der Wolke.

Predictions: Presuppositions of DP_{SG}; see (3)

Fregean   Russelian   Weak Familiarity

Presupposition

Predictions: Pragmatic Truth Values; see (5)

Topicality   Verification
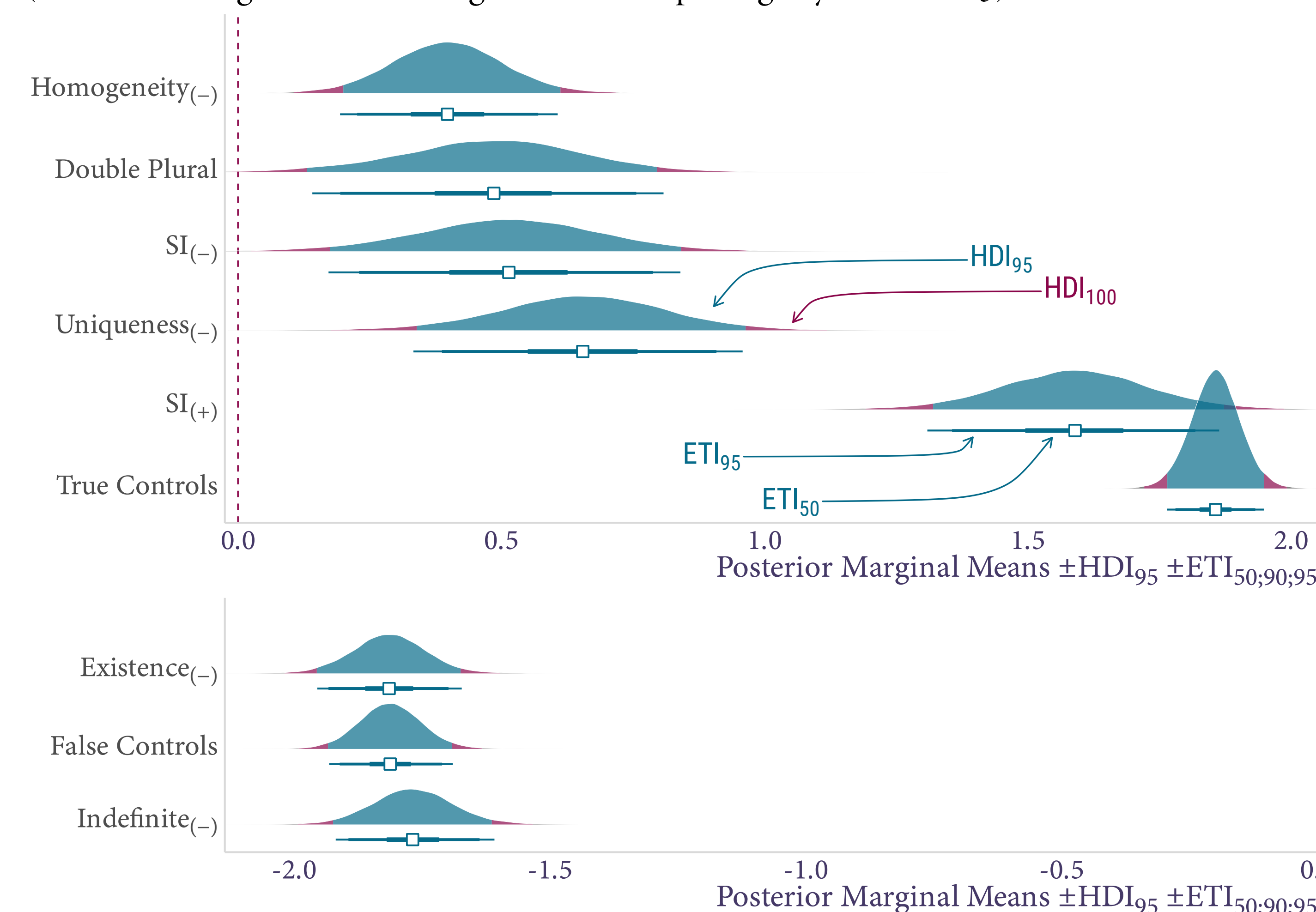

Word Order

Data Analysis We fit the following maximal (Barr et al. 2013) Bayesian linear mixed models with sum-coded predictors in R (4.3.0; R Core Team 2023) using brms (Bürkner 2021) with 10k iterations, 4 chains, weakly informative $t(0, .25, 3)$ slope and default priors otherwise:

M_{CRIT}: $y \sim 1 + \textsc{scen} * \textsc{trig} * \textsc{wo} + (1 + \textsc{scen} * \textsc{trig} * \textsc{wo} \mid \textsc{item}) + (1 + \textsc{scen} * \textsc{trig} * \textsc{wo} \mid \textsc{id})$

M_{FILL}: $y \sim 1 + \textsc{cond} + (1 + \textsc{cond} \mid \textsc{item}) + (1 + \textsc{cond} \mid \textsc{id})$

Model for the critical items without the true scenario

Intercept   TRIG   WO   SCEN
WO:SCEN   WO:TRIG   SCEN:TRIG   WO:SCEN:TRIG

Posterior Coefficients $\pm HDI_{95} \pm ETI_{50;90;95}$
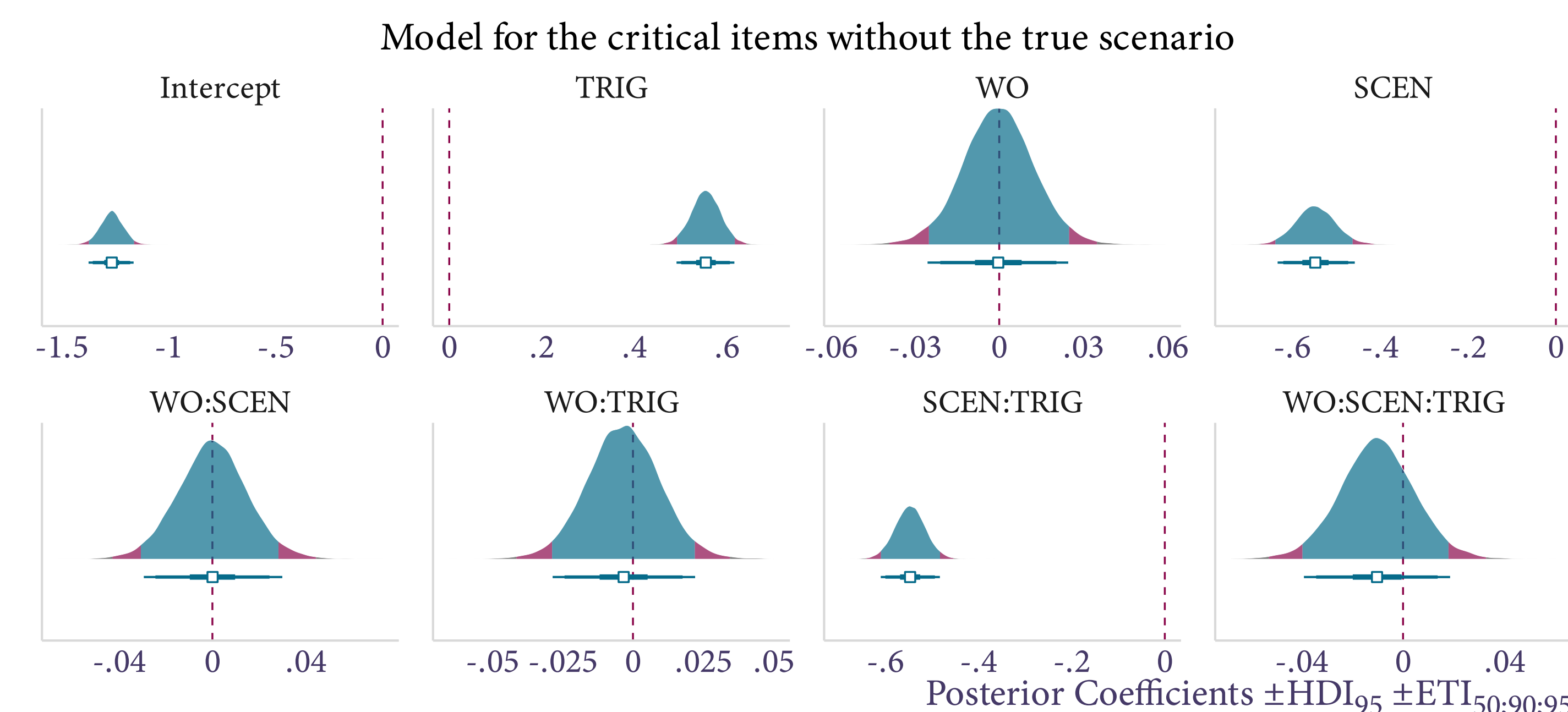
Now, let's compare the posterior distributions for the different item types in the two models (estimated marginal effects using the emmeans package by Lenth 2023):

Homogeneity(−)
Double Plural
SI(−)
Uniqueness(−)
SI(+)
True Controls

HDI_{95} HDI_{100}
ETI_{95} ETI_{50}

Posterior Marginal Means $\pm HDI_{95} \pm ETI_{50;90;95}$

Existence(−)
False Controls
Indefinite(−)

Posterior Marginal Means $\pm HDI_{95} \pm ETI_{50;90;95}$

Conclusions and a Follow-Up

> Partial replication of the results in Križ & Chemla (2015) for definite plurals
> The syntactic manipulation had no effect, indicating either that word order has no effect or that it was a poor operationalization for testing the Topicality view.
> The results appear to align with the Weak Familiarity view of definite singular DPs, where Existence is not presupposed, but Uniqueness is.
> With this in mind, it would be interesting to follow up on these results with an experiment that also includes:
>> the weak-strong determiner difference in German (Schwarz 2009)
>> negation to test for projection of Existence/Uniqueness

(8) Das Dreieck steht $\left\{\begin{matrix} \varnothing \\ \text{nicht} \end{matrix}\right\}$ links $\left\{\begin{matrix} \text{vom} \\ \text{von dem} \end{matrix}\right\}$ Quadrat.

References: ● Barr, D. J., Levy, R., Scheepers, C. & Tily, H. J. 2013. Random effects structure for confirmatory hypothesis testing: Keep it maximal. *J. Mem. Lang.* 68(3). 255–278. ● Bürkner, P.-C. 2021. Bayesian item response modeling in R with brms and Stan. *J. Stat. Softw.* 100(5). 1–54. ● Coppock, E. & Beaver, D. I. 2015. Definiteness and determinacy. *Linguist. Philos.* 38(5). 377–435. ● Elbourne, P. 2013. Definite descriptions. OUP. ● von Fintel, K. 2004. Would you believe it? The King of France is back! (Presuppositions and truth-value intuitions). M. Reimer & A. Bezuidenhout (eds.), *Descriptions and beyond.* OUP. ● Križ, M. & Chemla, E. 2015. Two methods to find truth-value gaps and their application to the projection problem of homogeneity. *Nat. Lang. Semant.* 23(3). 205–248. ● Lasersohn, P. 1993. Existence presuppositions and background knowledge. *J. Semant.* 10(2). 113–122. ● Lenth, R. V. 2023. emmeans: Estimated Marginal Means, aka Least-Squares Means. R package version 1.8.8. ● Partee, B. H. 1996. Allegation and local accommodation. B. H. Partee & P. Sgall (eds.), *Discourse and meaning: Papers in honor of Eva Hajičová,* 65–86. Benjamins. ● R Core Team. 2023. *R: A Language and Environment for Statistical Computing.* R Foundation for Statistical Computing. ● Schoubye, A. J. 2009. Descriptions, truth value intuitions, and questions. *Linguist. Philos.* 32(6). 583–617. ● Schwarz, F. 2009. *Two types of definites in natural language.* UMASS Amherst dissertation. ● Strawson, P. F. 1950. On referring. *Mind* 59(235). 320–344. ●