

The influence of perspective taking on the interpretation of German demonstrative pronouns

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Introduction

Introduction – Experiment 1 – Experiment 2

- Experimental evidence that the tendency for German demonstrative pronouns (DPros) to avoid topical referents as antecedents (Bosch and Umbach 2006) can at least to some extent be overwritten when the sentence containing the DPro clearly expresses the speaker's or narrator's perspective (cf. Hinterwimmer and Bosch 2016, 2017).
- Provides indirect support for the claim that DPros are sensitive to more than one kind of prominence (Schumacher et al. 2017).

Introduction

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- Research on co-referential behavior of DPros has shown that they have a general tendency to avoid the most prominent DPs as antecedents.
- In most cases, (maximal) prominence coincides with subjecthood, as in (1).

(1) Mark_i hat gestern mit Noah_j gesprochen. Der_{j/*i}/Er_{i/j} hat sich einen neuen Ferrari gekauft.

*Mark_i talked to Noah_j yesterday. He(DPro)_{j/*i}/He_{i,j} bought himself a new Ferrari.*

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- Bosch and Umbach (2006) have shown, however, that DPros can pick up non-topical subjects:

(2) Woher Karl_i das weiß? Peter_j hat es ihm_i gesagt. Der_{j/*i} / Er_{i,j} war gerade hier.
*How does Karl_i know? Peter_j told it to him_i. He(DPro)_{j/*i} / He_{i,j} has just been here.*
- According to them, DPros only seem to avoid subjects because subjects tend to be topics.

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- Schumacher et al. (2015) and Schumacher et al. (2017) have shown that prominence in terms of agentivity features is relevant for the interpretation of DPros.

(3) Dem Gärtner_i gefällt der Kapitän_j, der ein Eis isst.

The-DAT gardener is-pleasing-to the-NOM skipper who an-ACC ice cream eats.

The skipper who eats ice cream is pleasing to the gardener.

Aber der_{*i/j}/er_{i,j} redet gerade mit zwei Damen.

But DPro-NOM/ he-NOM talks now with two ladies.

*But he(DPro)_{*i,j}/he_{i,j} is talking to two ladies right now.*

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- DPros only prefer subjects of object experiencer verbs in configurations where the dative object occurs in its canonical fronted position (as in (3)), while in cases like (4) there is no clear preference.

(4) Der Kapitän gefällt dem Gärtner, der ein Eis isst.

The-NOM skipper is-pleasing-to the-DAT gardener who an-ACC ice cream eats.

The skipper is pleasing to the gardener, who eats ice cream.

Aber der/er redet gerade mit zwei Damen.

But DPro-NOM/he-NOM talks now with two ladies.

But he(DPro)_{i,j}/he_{i,j} is talking to two ladies right now.

- Conclusion of Schumacher et al. (2017): DPros are sensitive to prominence in terms of thematic role as well as topicality.

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- Finally, Hinterwimmer & Bosch (2016, 2017) have observed that in some cases DPros can even pick up topical referents (that are also prominent in terms of agentivity).

(5) Lass uns mal über $Otto_i$ reden. $Otto_i$ ist der fähigste Verkäufer, den ich kenne. $\{Der_i/Er_i\}$ könnte sogar einem Blinden einen HD-Fernseher verkaufen.

Let's talk about $Otto_i$. $Otto_i$ is the most gifted salesman I know. He $\{DPro_i/PPro_i\}$ could even sell a HD TV-set to a blind man.

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(6) Als Peter_i abends nach Hause kam, war die Wohnung wieder in einem fürchterlichen Zustand.

When Peter_i came home in the evening, the flat was in a terrible state again.

a. { *Der_i/Er_i } hatte doch gestern erst aufgeräumt.

*He { *DPro_i/PPro_i } had only tidied up yesterday, after all.*

b. { Der_i/Er_i } kann sich einfach nicht gegen seinen Mitbewohner durchsetzen.

He { DPro_i/PPro_i } is simply unable to stand his ground against his flatmate.

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- Based on these and related observations, Hinterwimmer & Bosch (2016, 2017) conclude that DPros are anti-logophoric pronouns: They avoid antecedents functioning as **perspectival centers**.
- In the case of (5), the final sentence clearly expresses an evaluation of the topical referent, *Otto*, by the speaker.
- Consequently, the speaker is the perspectival center, and the DPro is free to pick up *Otto*.

(5) Lass uns mal über *Otto_i* reden. *Otto_i* ist der fähigste Verkäufer, den ich kenne. {Der_i/Er_i} könnte sogar einem Blinden einen HD-Fernseher verkaufen.

Let's talk about Otto_i. Otto_i is he most gifted salesman I know. He {DPro_i/PPro_i} could even sell a HD TV-set to a blind man.

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- The same reasoning applies to (6b), while (6a) is an instance of *Free Indirect Discourse* (FID) (see Eckardt 2014 and references therein) expressing a thought of Peter.
- Consequently, Peter is the perspectival center in (6a) and can accordingly not be picked up by the DPro.

(6) Als Peter_i abends nach Hause kam, war die Wohnung wieder in einem fürchterlichen Zustand.

When Peter_i came home in the evening, the flat was in a terrible state again.

a. {*Der_i/Er_i} hatte doch gestern erst aufgeräumt.

*He {*DPro_i/PPro_i} had only tidied up yesterday, after all.*

b. {Der_i/Er_i} kann sich einfach nicht gegen seinen Mitbewohner durchsetzen.

He {DPro_i/PPro_i} is simply unable to stand his ground against his flatmate.

Introduction

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- Concerning cases with two potential referents, Hinterwimmer and Bosch (2016, 2017) assume that since neither of them are perspectival centers, the DPro as the marked variant (cf. Patel-Grosz and Grosz 2017 and Hinterwimmer 2015) is resolved to the referent that is less prominent in terms of topicality and/or agentivity.
- Alternative hypothesis: DPros generally avoid the most prominent individual as antecedent, but in sentences clearly expressing either the speaker's/narrator's or a prominent protagonist's view, the respective perspectival center becomes highly prominent.

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- To test these hypotheses, we conducted two acceptability rating studies.
- In the first study test items consisted of two sentences, as in (7). The **first sentence** always established an individual referred to by a proper name as topic.

(7) *Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.*

When Fabian went to work, he found 100 Euros on the sidewalk.

(a-b) Er/Der hat einfach immer so ein unverschämtes Glück.

He/He_{DPRO} simply always is so incredibly lucky.

(c-d) Toll, er/der würde heute Abend davon schick essen gehen.

Great, he/he_{DPRO} would spend that for a posh dinner tonight.

(e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.

He/He_{DPRO} bought a pair of new shoes for the money.

Experiment 1

Introduction – Experiment 1 – Experiment 2

- For second sentence six different conditions.
- In conditions *a and b*, the second sentence always clearly expressed an evaluation of the topical referent by the narrator, as indicated by the content in combination with a switch from past tense to present tense.

- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (a-b) *Er/Der hat einfach immer so ein unverschämtes Glück.*
He/He_{DPro} simply always is so incredibly lucky.
- (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
- (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In condition *a*, topical referent referred to by a personal pronoun (**narr-judg-PPro**).

- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (a-b) **Er/Der hat einfach immer so ein unverschämtes Glück.**
He/He_{DPro} simply always is so incredibly lucky.
- (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
- (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In condition *b*, topical referent referred to by a demonstrative pronoun (**narr-judg-DPro**).

- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (a-b) Er/**Der** hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
- (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
- (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In conditions *c-d*, second sentence most plausibly interpreted as a thought of the topical referent in FID-mode.
- Indicators for FID: Interjection and deictic element that can most sensibly be interpreted with respect to topical referent's context.

- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
- (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
- (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In condition **c**, topical referent referred to by a PPro (**top-judg-PPro**).
 - (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
 - (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
 - (c-d) **Toll, er/der würde heute Abend davon schick essen gehen.**
Great, he/he_{DPro} would spend that for a posh dinner tonight.
 - (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In condition *d*, topical referent referred to by a DPro (**top-judg-DPro**).
 - (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
 - (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
 - (c-d) **Toll, er/der würde heute Abend davon schick essen gehen.**
Great, he/he_{DPro} would spend that for a posh dinner tonight.
 - (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

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- Conditions *e-f* are both neutral continuations.
 - (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
 - (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
 - (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
 - (e-f) Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

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- In condition *e*, topical referent referred to by a PPro (**neut-PPro**).
 - (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
 - (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
 - (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
 - (e-f) **Er/Der kaufte sich von dem Geld ein Paar neue Schuhe.**
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

Introduction – Experiment 1 – Experiment 2

- In condition *f*, topical referent referred to by a DPro (**neut-DPro**).
 - (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
 - (a-b) Er/Der hat einfach immer so ein unverschämtes Glück.
He/He_{DPro} simply always is so incredibly lucky.
 - (c-d) Toll, er/der würde heute Abend davon schick essen gehen.
Great, he/he_{DPro} would spend that for a posh dinner tonight.
 - (e-f) Er/**Der kaufte sich von dem Geld ein Paar neue Schuhe.**
He/He_{DPro} bought a pair of new shoes for the money.

Experiment 1

Introduction – Experiment 1 – Experiment 2

- The experiment involved a yes/no judgment task where participants were shown 36 mini-texts consisting of the first sentence followed by one of the variants in (7e-f), interspersed with 36 fillers.
- Participants were instructed that these were beginnings of stories produced by advanced German learners and their task was to judge whether the student had reached German native proficiency (by responding "yes, they have" or "no, they haven't").
- The experiment was run online (hosted on: <http://spellout.net/ibexfarm/> and participants were recruited from: <https://prolific.ac/>).
- Data was collected from 85 participants.

Experiment 1

Introduction – Experiment 1 – Experiment 2

Predictions if in sentences with only one potential antecedent **avoidance of the perspectival center** is the only relevant constraint (Hinterwimmer & Bosch 2016, 2017):

1. The variant with the PPro should always be judged at least as native as the variant with the DPro.
2. *top-judg-DPro* should reliably be judged as native less often than both *narr-judg-DPro* and *neut-DPro*, since it clearly violates the constraint.
3. At the same time, *narr-judg-DPro* should reliably be judged as native more often than both *top-judg-DPro* and *neut-DPro*, since it clearly does **not** violate the constraint.
4. Finally, *neut-DPro* should be somewhere in between since it only violates the constraint if the topic is taken to be the perspectival center by default.

Experiment 1

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- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (b) Der hat einfach immer so ein unverschämtes Glück. **Narr-judg-DPro**
He_{DPro} simply always is so incredibly lucky.
- (d) Toll, der würde heute Abend davon schick essen gehen. **Top-judg-DPro**
Great, he_{DPro} would spend that for a posh dinner tonight.
- (f) Der kaufte sich von dem Geld ein Paar neue Schuhe. **Neut-DPro**
He_{DPro} bought a pair of new shoes for the money.

Prediction 1: **Narr-judg-DPro > Neut-DPro > Top-judg-DPro**

Experiment 1

Predictions if in sentences with only one potential antecedent DPro always avoids the most prominent individual, where in the absence of a perspectival center the topic is maximally prominent, while otherwise the perspectival center is maximally prominent

1. The variant with the PPro should always be judged least as native as the variant with the DPro.
2. Both *top-judg-DPro* and *neut-DPro* should reliably be judged as native less often than *narr-judg-DPro*, since *narr-judg-DPro* does not violate the constraint.
3. There should be no reliable difference between *top-judg-DPro* and *neut-DPro* since they both violate the constraint.

Experiment 1

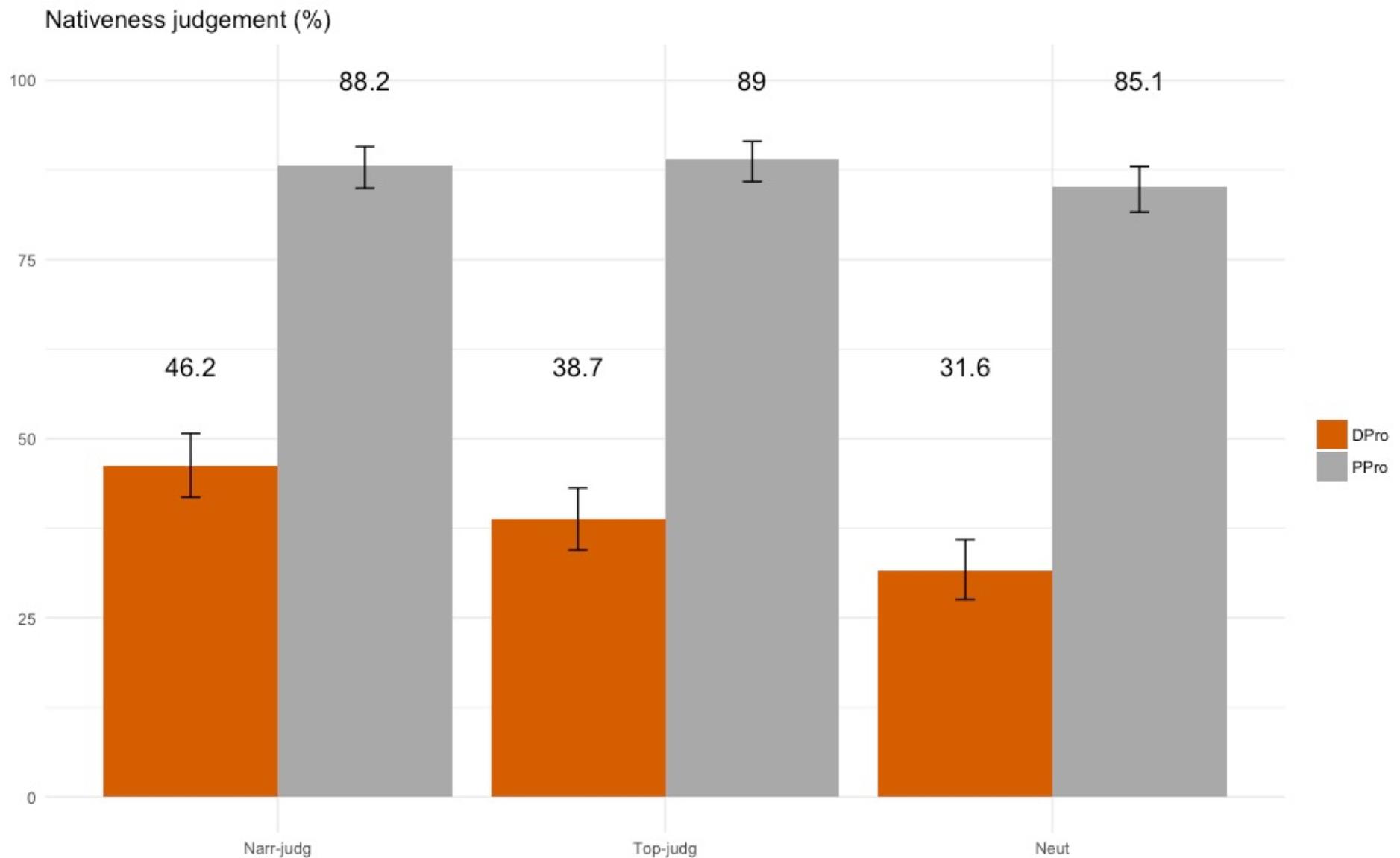
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- (7) Als Fabian zur Arbeit ging, fand er 100 Euro auf dem Gehweg.
When Fabian went to work, he found 100 Euros on the sidewalk.
- (b) Der hat einfach immer so ein unverschämtes Glück. **Narr-judg-DPro**
He_{DPro} simply always is so incredibly lucky.
- (d) Toll, der würde heute Abend davon schick essen gehen. **Top-judg-DPro**
Great, he_{DPro} would spend that for a posh dinner tonight.
- (f) Der kaufte sich von dem Geld ein Paar neue Schuhe. **Neut-DPro**
He_{DPro} bought a pair of new shoes for the money.

Prediction 2: **Narr-judg-DPro > Top-judg-DPro, Neut-DPro**

Experiment 1

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Experiment 1

- **Generalized Linear Mixed Models** with logit link function (Jaeger, 2008)
- **Dependent variable:** binary response (*native* or *non-native*)
- **Fixed effects:**
 1. Sentence type (three levels: *Narr-judg*, *Top-judg* and *Neut*)
 2. Pronoun type (two levels: *PPro* and *Dpro*)
 3. Their interaction
- Since we wanted to compare the effect of *Narr-judg* and *Top-judg* conditions with the *Neut* conditions, and also the effect between the *Narr-judg* and *Top-judg* conditions, we fit two different models with treatment contrast:
 1. *Neut* as the reference level
 2. *Top-judg* as the reference level

Experiment 1

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- **Random effects:** random intercepts for participants and items in both the models (the models didn't converge with maximal random effects structure)
- In first model significant main effects of
 - sentence type: *Narr-judg* and *Top-judg* sentences were judged "better" than *Neut* sentence.
 - pronoun type: PPros were judged better than Dpros.
- Interaction of sentence types *Narr-judg* and *Neut* with pronoun type was also significant.
- But the second interaction of sentence types *Top-judg* and *Neut* with pronoun type was not significant.

Experiment 1

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- In second model significant main effects of
 - Sentence type: *Narr-judg* sentences were judged "better" than *Top-judg* sentences and *Neut* sentences were judged better than *Top-judg* sentences.
 - Pronoun type: PPros were judged better than Dpros.
- Interaction of sentence types *Narr-judg* and *Top-judg* with pronoun type was (marginally) significant.
- But the second interaction of sentence types *Neut* and *Top-judg* with pronoun type was not significant.

Experiment 1

Introduction – Experiment 1 – Experiment 2

- Pairwise comparisons for the effects of DPro between
 - *Narr-judg* and *Neut*
 - *Narr-judg* and *Top-judg*
- Between *Narr-judg* and *Neut*, DPro was judged significantly better in *Narr-judg* condition.
- Between *Narr-judg* and *Top-judg*, DPro was judged significantly better in *Narr-judg* condition.

Experiment 1

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- Results more compatible with the hypothesis that DPros avoid the most prominent individual, which may either be the topical referent or the respective perspectival center, than the hypothesis that avoidance of the perspectival center is the only relevant constraint.
- Even on that account it is unexpected, however, that top-judg-DPro is judged better than neut-DPro.
- Likewise unexpected that narr-judg-DPro was judged so much worse than narr-judg-PPro.

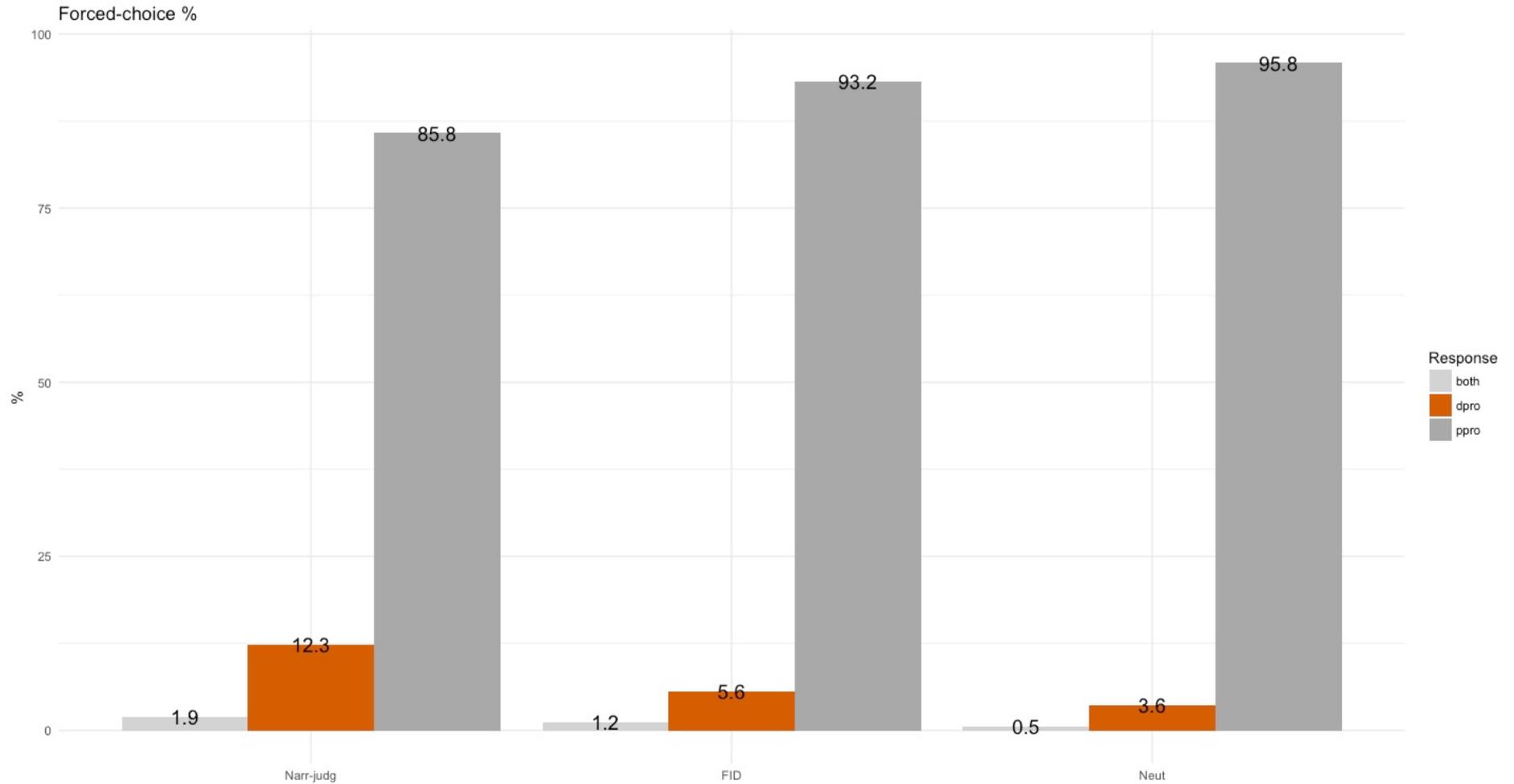
Experiment 2

Introduction – Experiment 1 – Experiment 2

- In Experiment 2 the same test items and fillers were used as in Experiment 1.
- Experimental set-up different, though.
- Participants 46 native speakers from the University of Cologne.
- Task: In a questionnaire, they first had to choose either the PPro- or the DPro-version of the second sentence for the three conditions (narr-judg, top-judg, neut) as the more natural one.
- Secondly, they had to decide how natural the dispreferred variant sounded to them on a 1-7 scale.
- If they found both variants equally (un)natural, they only had to do the second task.

Experiment 2

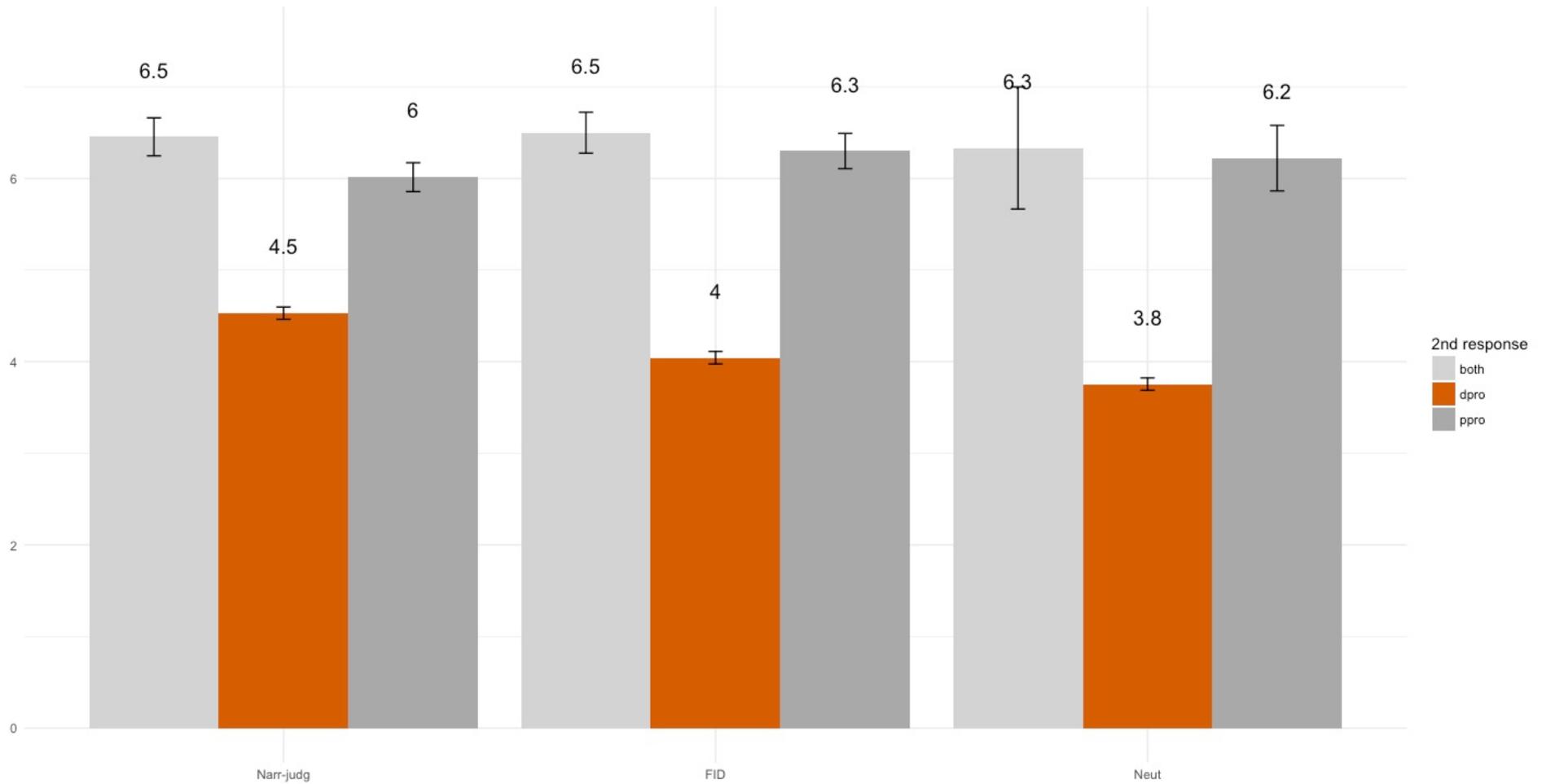
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Experiment 2

Introduction – Experiment 1 – Experiment 2

Acceptability rating for the second option



Experiment 2

Introduction – Experiment 1 – Experiment 2

- Generalized Linear Mixed Models with logit link function (Jaeger, 2008) for the first response (*forced-choice*)
- **Dependent variable:** binary judgment (*PPro* or *DPro*)
- **Fixed effect:** sentence type (three levels: *Narr-judg*, *FID* and *Neut*)
- Since we wanted to compare the effect of *Narr-judg* and *FID* conditions with the *Neut* conditions, and also the effect between the *Narr-judg* and *FID* conditions, we fit two different models with treatment contrast:
 1. *Neut* as the reference level
 2. *FID* as the reference level

Experiment 2

Introduction – Experiment 1 – Experiment 2

- **Random effect:**
 - First model – random intercepts for participants and items, and random slope for participants
 - Second model – only random intercepts for participants and items
- First model
 - (marginally) significant main effect of sentence type: in *Narr-judg* and *FID* sentences DPro was chosen more often than in *Neut* sentences
- Second model
 - significant main effect of sentence type:
 - in *Narr-judg* sentences DPro was chosen more often than in *FID* sentences
 - in *Neut* sentences DPro was chosen less often than in *FID* sentences

Experiment 2

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- For the second response, we fitted Linear Mixed Models (Baayen et al. 2008) with
 - **Dependent variable:** acceptability rating for the DPro
 - **Fixed effect:** sentence type with treatment contrast
 - **Random effects:** maximal random effects structure (random intercepts and slopes for participants and items)
- As in the analysis for the first response we fitted two linear models:
 1. *Neut* as the reference level and
 2. *FID* as the reference level

Experiment 2

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- First model
 - significant main effect of sentence type: in *Narr-judg* and *FID* sentences DPro was rated better than *Neut* sentences.
- Second model
 - significant main effect of sentence type:
 - in *Narr-judg* sentences DPro was rated better than in *FID* sentences.
 - in *Neut* sentences DPro was rated worse than in *FID* sentences.

Experiment 2

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- Results thus similar to results of Experiment 1.
- Again, more compatible with that hypothesis that DPros avoid the most prominent individual, which may either be the topical referent or the respective perspectival center, than the hypothesis that avoidance of the perspectival center is the only relevant constraint.
- Still unexpected, however, that *top-judg-DPro/FID-DPro* is judged better than *neut-DPro*, and that *narr-judg-DPro/FID-DPro* was judged so much worse than *narr-judg-PPro/FID-PPro*.

Experiment 2

Introduction – Experiment 1 – Experiment 2

- Concerning the second point, plausible explanation that people are often told that DPros are generally to be avoided in written discourse.
- Concerning the first point, potential explanation that at least some participants misinterpreted *top-judg/FID*-sentences as *narr-judg* sentences.
- Conceivable reason: First, *FID* rather marked stylistic device that is rather unexpected in short texts. Second, participants maybe primed to interpret strongly perspective-dependent statements as expressing narrator's judgement because they encountered many *narr-judg*-sentences.

We would like to thank

- You for your attention
- David Brinkhaus, Felix Jüstel, Janne Schmandt and Magdalena Schmitz for help with developing the test items and carrying out the experiment
- Sara Meuser and Carina Rothkegel for general discussion and comments
- the DFG for financial support (project *The Binding Options of Demonstrative Pronouns, Complex Demonstratives and Definite Descriptions* and project C05 *Discourse Referents as Perspectival Centers* of the SFB 1252 *Prominence in Language*).