

Interpreting Slavic bare NPs

Radek Šimík

Humboldt-Universität zu Berlin

ZAS Semantics Circle

Leibniz-Zentrum für Allgemeine Sprachwissenschaft
5 June 2019



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Terminological note

Following the convention of Coppock & Beaver (2015):

- DEFINITE NP = an NP with a definite determiner
 - *The dog slept.*
- INDEFINITE NP = an NP with an indefinite determiner
 - *A dog slept.*
- BARE NP = an NP without any determiner
 - *Dogs slept* but mainly 'Dog(s) slept' in articleless languages.
- DETERMINATE NP = of type e
- INDETERMINATE NP = existential quantifier



Main claims

- Argumental bare NPs are always determinate (of type e), but



Main claims

- Argumental bare NPs are always determinate (of type e), but
- their reference is relativized to situations.



Main claims

- Argumental bare NPs are always determinate (of type e), but
- their reference is relativized to situations.
- If the situation is (existentially) introduced in the clause, an “indefiniteness” intuition arises;
- If the situation is familiar to the discourse participants (\approx topic situation), a “definiteness” intuition arises.
 - **corpus evidence**



Main claims

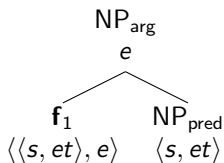
- Argumental bare NPs are always determinate (of type e), but
- their reference is relativized to situations.
- If the situation is (existentially) introduced in the clause, an “indefiniteness” intuition arises;
- If the situation is familiar to the discourse participants (\approx topic situation), a “definiteness” intuition arises.
 - corpus evidence
- Crucially, bare NPs are **presupposition-free**.
 - experimental evidence



Main claims

- I model this by Skolemized choice functions, relativized to situations:

(1)



$$\begin{aligned}
 \llbracket \text{NP}_{\text{arg}} \rrbracket^g &= \text{some } x \text{ such that} \\
 \llbracket \text{NP}_{\text{pred}} \rrbracket^g(g(1))(x)
 \end{aligned}$$

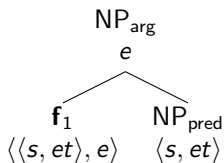
(where $g(1)$ is a situation)



Main claims

- I model this by Skolemized choice functions, relativized to situations:

(1)



$$\begin{aligned}
 \llbracket \text{NP}_{\text{arg}} \rrbracket^g &= \text{some } x \text{ such that} \\
 \llbracket \text{NP}_{\text{pred}} \rrbracket^g(g(1))(x)
 \end{aligned}$$

(where $g(1)$ is a situation)

- This contrasts with the neo-Carlsonian approach which heavily relies on the iota/sigma-shift, which in turn introduces presuppositions, which are, however not attested in experimental data.

Main claims

- I model this by Skolemized choice functions, relativized to situations:

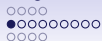
(1)

$$\begin{array}{c}
 \text{NP}_{\text{arg}} \\
 e \\
 \swarrow \quad \searrow \\
 \mathbf{f}_1 \quad \text{NP}_{\text{pred}} \\
 \langle \langle s, et \rangle, e \rangle \quad \langle s, et \rangle
 \end{array}$$

$$\llbracket \text{NP}_{\text{arg}} \rrbracket^g = \text{some } x \text{ such that} \\
 \llbracket \text{NP}_{\text{pred}} \rrbracket^g(g(1))(x)$$

(where $g(1)$ is a situation)

- This contrasts with the neo-Carlsonian approach which heavily relies on the iota/sigma-shift, which in turn introduces presuppositions, which are, however not attested in experimental data.
- The situation-sensitive choice-functional approach makes certain predictions, which are yet to be tested.



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

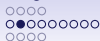
Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Definites, indefinites, and bare NPs

Definites denote the maximal entity that satisfies the NP description (uniqueness being a special case of that).

(2) Dave read **the** {article/articles}.

$\rightsquigarrow 1$ iff $\text{READ}(\sigma x \text{ARTICLE}(s)(x))(\text{DAVE})$

where

$\sigma x \text{ARTICLE}(s)(x)$ is defined if

- a. $\exists y[\text{ARTICLE}(s)(y) \wedge \forall z[\text{ARTICLE}(s)(z) \rightarrow y \geq z]]$;
if defined, then
- b. it equals the maximal entity in $\text{ARTICLE}(s)$.

Frege 1892; Strawson 1950; Link 1983; Heim 2011; Elbourne 2013

Recent refinements: von Stechow et al. 2014; Coppock & Beaver 2015; Schein 2019.



Definites, indefinites, and bare NPs

Indefinites can be treated as (dynamic) existential quantifiers (classical view):

(3) Dave read **{a/some}** {article/articles}.

\rightsquigarrow 1 iff $\boxed{\exists x[\text{ARTICLE}(S)(x)] \wedge \text{READ}(x)(\text{DAVE})}$

But, many other theories of indefinites (often accounting for exceptional scope):

- Restricted variable-based approaches (Heim 1982; Nishigauchi 1990)
- Choice-functional approaches (Reinhart 1997; Winter 1997; Kratzer 1998)
- Property-based approaches (Landman 2004)



Definites, indefinites, and bare NPs

Bare NPs denote properties or the corresponding kinds; on the Neo-Carlsonian approaches.

(4) Dave read $\{*\text{article/articles}\}$.

$\rightsquigarrow 1$ iff $\exists x[\cup \boxed{\cap \text{ARTICLES}}(x) \wedge \text{READ}(x)(\text{DAVE})]$

- $\exists x$ and \cup in (4) get introduced by the rule Derived Kind Predication (narrow scope quantification over kind instances).
- Bare NPs can also type-shift to individuals (maximal entities) and, according to some, to existential quantifiers.

Chierchia 1998; Krifka 2003; Dayal 2004, 2011; Geist 2010



Bare NPs and type-shifting

Property quantified over in restrictors of generic operators

- (5) **Pes** má (běžně) čtyři nohy. GENERIC EXISTENTIAL
 dog has normally four legs
 'A dog has four legs.'
 $\text{GEN } s[\exists x[\text{DOG}(x) \text{ in } s] \rightarrow \text{HAS FOUR LEGS}(x) \text{ in } s]$

Property used predicatively

- (6) Ferda je pes. PREDICATE
 Ferda is dog
 'Ferda is a dog.'
 $\text{DOG}(\text{FERDA})$



Bare NPs and type-shifting

Property \rightarrow kind: the \cap -shift (cap)

(7) **Pes** se vyvinul z **vlka**.

KIND

dog REFL evolved from wolf

'The dog evolved from the wolf.'

EVOLVED FROM(\cap WOLF)(\cap DOG)

Property \rightarrow unique/maximal entity: the ι/σ -shift &

Property \rightarrow existential quantifier: the \exists -shift

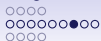
(8) **Souseda** pokousal **pes**.

(IN)DETERMINATE

neighbor.ACC bit dog.NOM

'The neighbor was bitten by a dog.'

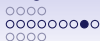
$\exists x[\text{DOG}(x)] \wedge \text{BIT}(\iota y \text{ NEIGHBOR}(y))(x)$



Summary

Bare NPs and their meaning range in the neo-Carlsonian view

| | meaning | formally | how it came to be |
|---|---------------|---|--------------------|
| 1 | property | $\text{DOG} / \cup \text{DOG}$ | lexical/up-shift |
| 2 | kind | $\cap \text{DOG}$ | lexical/down-shift |
| 3 | determinate | $\iota x \text{DOG}(x)$ | iota-shift |
| 4 | indeterminate | $\lambda Q \exists x [\text{DOG}(x) \wedge Q(x)]$ | exist-shift |



Worries about the existence of the \exists -shift

Can bare NPs be genuine existential quantifiers?

- Dayal (2004): No
- Geist (2010): Yes, but only non-specific (narrow scope)

Data: Indeterminate bare NPs always take narrow scope

- (9) a. **Kot ne** sidit na stule. [$\neg > \exists$]
 cat NEG sits on stool
 'There isn't a cat sitting on the stool.'
- b. Mne **kažetsja**, što v komnate **myš**'. [seem $> \exists$]
 me.DAT seems that in room mouse
 'It seems to me that there's a mouse in the room.'
- (Dayal 2004:405)

NB: Determinate readings exist, but are disregarded here.



Worries about the existence of the \exists -shift

Dayal's (2004) solution:

(10) $\{\cap, \iota\} > \exists$ (Revised Meaning Preservation; p. 419)

Consequence: Bare NPs are never genuinely existential.

Evidence:

- (11) a. **Sobaki** byli vezde. $\forall s \exists x [\cup \text{DOGS}(x)]$ in s
 dogs were everywhere
 'There were dogs (different groups) everywhere.'
- b. #**Sobaka** byla vezde. $*\forall s \exists x [\cup \text{DOG}(x)]$ in s
 dog was everywhere
 'The dog/A particular dog (the same one) was everywhere.'
 (Dayal 2004:406)



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Heim (2011): Bare NPs as indefinites

Heim (2011): Bare NPs are always indeterminate (existential), but they can correspond to definites because of the lack of a definite article that would block determinate readings (by Maximize Presupposition)

→ Determinacy is not even a category in articleless languages.

*“[Bare NPs in articleless languages] are **semantically equivalent to English indefinites**, but have a wider range of felicitous uses because they do not compete with definites and therefore do not induce the same implicatures.”*
(Heim 2011:1006; my emphasis)

Cf. also Bunčić (2014).



Heim (2011): Bare NPs as indefinites

Definites: Uniqueness presupposition present & satisfied

(12) The bike was fine after **the** seat was replaced.

$\text{REPLACED}(\iota x \text{ SEAT}(x))(s_{\text{bike}})$

Indefinites: Uniqueness presupposition absent **but** satisfied; this leads to an “implicated presupposition” of anti-uniqueness (Hawkins 1981; Sauerland 2008; Bade & Schwarz 2018).

(13)#The bike was fine after after **a** seat was replaced.

$\exists x[\text{SEAT}(x)(s_{\text{bike}}) \wedge \text{REPLACED}(x)]$

Bare NPs: Uniqueness presupposition absent, but **no way to express it anyway** → existential semantics covers definite use.

(14) Kolo bylo v pořádku po výměně **sedla**.

bike was in order after change.LOC seat.GEN

‘The bike was fine after the seat was replaced.’

$\exists x[\text{SEAT}(x)(s_{\text{bike}}) \wedge \text{REPLACED}(x)]$



Heim (2011): Issues

- Heim's suggestion is not really worked out and appears to suffer from one major problem: **Scope**. If bare NPs are existential quantifiers, then they should scope relatively freely, unlike what has been argued in the literature (Dayal 2004; Geist 2010).
- Still, it can be taken to be **the null hypothesis**. Plus it makes the clear prediction that **uniqueness/maximality presupposition should not be present** with bare NPs in articleless languages, which I will show is borne out by experimental findings.



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment

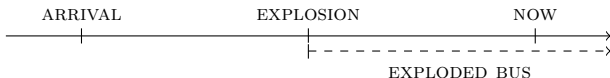


Bare NPs and their situation dependency

Bare NPs are necessarily evaluated wrt a situation pronoun:

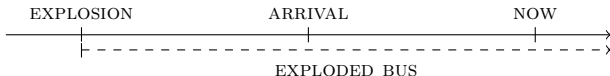
- (15) **Explodovaný autobus** přijel do hlavního města v pět.
 exploded bus arrived in capital city at five
 ‘The exploded bus arrived in the capital at five [still unexploded when arrived].’

$$\exists s, x [s \prec s_T \wedge \text{EXPLODED BUS}(s_T)(x) \wedge \text{ARRIVED}(s)(x)]$$



- (16) #V pět přijel do hlavního města **explodovaný autobus**.
 at five arrived in capital city exploded bus
 ‘The exploded bus arrived in the capital at five [already exploded when arrived].’

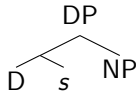
$$\exists s, x [\text{EXPLODED BUS}(s)(x) \wedge \text{ARRIVED}(s)(x)]$$



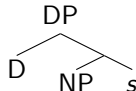
Bare NPs and their situation dependency

Schwarz (2012) argues that situation pronouns in NPs are arguments of D, i.e. (19) rather than (20)

(19)



(20)



→ Evidence for D in articleless languages? Possibly...



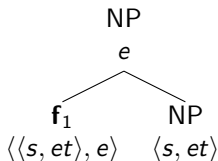
Functional situation pronouns

Basic idea

Bare NPs are referential (of type e), but their value crucially depends on the situation with respect to which they are evaluated.

Configuration:

(21)



Interpretation:

(22) $\llbracket \mathbf{f}_1 \rrbracket^g = \lambda P[\text{some } x \text{ such that } P(g(1))(x) = 1]$

(23) $\llbracket \mathbf{f}_1 \text{ autobus} \rrbracket^g = \text{some } x \text{ such that } x \text{ is a bus in situation } g(1)$

Notabene: The index 1 is a variable that can get bound by the topic situation or by various situation operators.



Some tentative evidence

Wide-scoping bare NPs are evaluated wrt wide-scoping situations:

Situation: All witnesses were persuaded (by somebody) that the murderer is a particular guy and that he's a hair-dresser (even though he's actually a truck-driver).

- (24) Every witness believes that **the hair-dresser** is guilty.
 ≈ Every witness_i believes that the guy they_i believe to be a hair-dresser is guilty.
- (25) #Každý svědek je přesvědčen, že **kadeřník** je vinen.
 every witness is persuaded that hair-dresser is guilty
 'Every witness believes that the hair-dresser (an actual one) is guilty.'

Some tentative evidence

Compare with narrow-scoping bare NPs:

Situation: All witnesses were persuaded (by somebody) that the murderer is a hair-dresser.

- (26) Every witness believes that **a hair-dresser** is guilty.
 ≈ The witness believes that there's a hair-dresser who is guilty.
- (27) Každý svědek je přesvědčen, že vinen je **kadeřník**.
 every witness is persuaded that guilty is hair-dresser
 'Every witness believes that there's a hair-dresser who is guilty.'

Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Predicative bare NPs

Predicative bare NPs are not shifted by the choice function:

- (28) Ferda je pes.
 Ferda is dog
 'Ferda is a dog.'

$\text{DOG}_{\text{PRED}}(s_T)(\text{FERDA})$

The same representation is needed for intersective attributes:

- (29) starý pes
 old dog
 'old dog'

$\llbracket \text{starý pes} \rrbracket^g$ derived by predicate modification from
 $\lambda s \lambda x [\text{DOG}_{\text{PRED}}(s)(x)]$ and $\lambda s \lambda x [\text{OLD}(s)(x)]$

Kind NPs

Possibility: Kind-denoting NPs are taxonomic NPs, i.e., essentially a different *sort* (Dayal 2004), marked here by the K-subscript.

- (30) {**Pes** / **Psi**} se vyvinul(i) z {**vlka** / **vlků**}.
 dog dogs REFL evolved(.PL) from wolf / wolves
 ‘{The dog / Dogs} evolved from {the wolf / wolves}.’
 EVOLVED FROM($f_{s_T}(\text{WOLF}/\text{VES}_K)$) ($f_{s_T}(\text{DOG}(S)_K)$)

Notational remark: $f_{s_T}(\text{DOG}(S)_K)$ corresponds to ‘a dog(s)-kind in s_T ’ (type e).

Generic NPs

Relativized to the minimal situation quantified over by GEN:

(31) {**Pes** jí / **Psi** jedí} (běžně) maso.

dog eats dogs eat normally meat

'A dog (normally) eats / Dogs (normally) eat meat.'

$$\text{GEN } s [\text{EAT}(s)(f_s(\text{DOG}(s)))$$

$$\rightarrow \exists s' \geq s [\text{EAT}(s')(f_{s'}(\text{DOG}(s)))(f_{s'}(\text{MEAT}))]]$$

≈ 'Normally when a dog eats, it eats meat.'

cf. Herburger 2000

“(In)Definite” NPs

So called “indefinite” bare NPs (i.e., bare NPs that are translated as indefinite NPs) correspond to bare NPs relativized to clause-internally introduced situations. “Definite” bare NPs, on the other hand, correspond to bare NPs relativized to topic situations.

(32) Do **místnosti** vešel **chlapec**.

into room entered boy

a. ‘A boy entered the room.’ (roughly)

$$\exists s [\text{ENTERED}(s) (\boxed{f_{s_T}}(\text{ROOM})) (\boxed{f_s}(\text{BOY}))]$$

b. ‘The boy entered the room.’ (roughly)

$$\exists s [\text{ENTERED}(s) (\boxed{f_{s_T}}(\text{ROOM})) (\boxed{f_{s_T}}(\text{BOY}))]$$



“(In)Definite” NPs

So called “indefinite” bare NPs (i.e., bare NPs that are translated as indefinite NPs) correspond to bare NPs relativized to clause-internally introduced situations. “Definite” bare NPs, on the other hand, correspond to bare NPs relativized to topic situations.

(32) Do **místnosti** vešel **chlapec**.
 into room entered boy

a. ‘A boy entered the room.’ (roughly)

$$\exists s [\text{ENTERED}(s) (\boxed{f_{s_T}}(\text{ROOM})) (\boxed{f_s}(\text{BOY}))]$$

b. ‘The boy entered the room.’ (roughly)

$$\exists s [\text{ENTERED}(s) (\boxed{f_{s_T}}(\text{ROOM})) (\boxed{f_{s_T}}(\text{BOY}))]$$

Consequence: The interaction between word order and definiteness is a result of the general tendency for surface scope.



More on “definite” bare NPs

- “Definite” bare NPs correspond to NPs evaluated with respect to the topic situation, whereby the properties of the topic situation (the situation the utterance is about; Austin 1961; Kratzer 2014) are familiar to both the speaker and the addressee. In other words, the speaker and the addressee both know very well what type of situations their utterances are updating.
- The tendency to interpret clause-initial bare NPs relative to the topic situation is therefore natural → tendency toward the “definiteness” of clause-initial NPs.
- This “familiarity” of the topic situation is not supported in newspaper headlines: the author of the headlines starts from zero, he’s introducing the situation from scratch. Interestingly, clause-initial bare NPs in newspaper headlines are very naturally “indefinite” (cf. English lack of articles in headlines):

(33) Řidič zavinil smrt tří lidí (Běličová & Uhlířová 1996)
 driver caused death three people.GEN
 ‘A driver caused the death of three people.’

(34) Soudce v Mississippi zrušil zákaz potratů... <https://www.novinky.cz/>
 judge in Mississippi blocked ban abortion
 ‘A judge in Mississippi blocked the abortion ban...’



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Corpus evidence

Šimík & Burianová (to appear) show, based on corpus evidence from Czech (315 non-predicative bare NP tokens),

- that bare NP “definiteness” strongly interacts with clause-initiality (and weakly with clause-finality):



Corpus evidence

Šimík & Burianová (to appear) show, based on corpus evidence from Czech (315 non-predicative bare NP tokens),

- that bare NP “definiteness” strongly interacts with clause-initiality (and weakly with clause-finality):
 - 4.5-times fewer clause-initial “indefinites” than expected under the null hypothesis;
 - 1.3-times more clause-initial “definites” than expected under the NH;



Corpus evidence

Šimík & Burianová (to appear) show, based on corpus evidence from Czech (315 non-predicative bare NP tokens),

- that bare NP “definiteness” strongly interacts with clause-initiality (and weakly with clause-finality):
 - 4.5-times fewer clause-initial “indefinites” than expected under the null hypothesis;
 - 1.3-times more clause-initial “definites” than expected under the NH;
 - 1.4-times more clause-final “indefinites” than expected under the NH;
 - 1.3-times fewer clause-final “definites” than expected under the NH;



Corpus evidence

Šimík & Burianová (to appear) show, based on corpus evidence from Czech (315 non-predicative bare NP tokens),

- that bare NP “definiteness” strongly interacts with clause-initiality (and weakly with clause-finality):
 - 4.5-times fewer clause-initial “indefinites” than expected under the null hypothesis;
 - 1.3-times more clause-initial “definites” than expected under the NH;
 - 1.4-times more clause-final “indefinites” than expected under the NH;
 - 1.3-times fewer clause-final “definites” than expected under the NH;
- that bare NP “definiteness” does not interact with pre/postverbality; and



Corpus evidence

Šimík & Burianová (to appear) show, based on corpus evidence from Czech (315 non-predicative bare NP tokens),

- that bare NP “definiteness” strongly interacts with clause-initiality (and weakly with clause-finality):
 - 4.5-times fewer clause-initial “indefinites” than expected under the null hypothesis;
 - 1.3-times more clause-initial “definites” than expected under the NH;
 - 1.4-times more clause-final “indefinites” than expected under the NH;
 - 1.3-times fewer clause-final “definites” than expected under the NH;
- that bare NP “definiteness” does not interact with pre/postverbality; and
- that bare NP “definiteness” does not interact with subject- vs. objecthood.

Results of Šimík & Burianová (to appear)

| | INITIAL | | FINAL | | MEDIAL | | TOTAL |
|-------|-----------|--------|-----------|---------|-----------|--------|-------|
| DEF | 61 | (43.4) | 85 | (109.1) | 61 | (54.5) | 207 |
| INDEF | 5 | (22.6) | 81 | (56.9) | 22 | (28.5) | 108 |
| TOTAL | 66 | | 166 | | 83 | | 315 |

Table: Main results of Šimík & Burianová (to appear) (attested frequencies boldfaced+shaded; NH frequencies bracketed)

- Overall: Effect of position on definiteness confirmed ($\chi^2(2) = 38.64, p < .001, n = 315$).
- More definites / fewer indefinites in initial position than expected ($\chi^2(1) = 20.90, p < .001, n = 66$).
- More indefinites / fewer definites in final position than expected ($\chi^2(1) = 15.51, p < .001, n = 166$).
- Medial position has no effect on definiteness ($\chi^2(1) = 2.23, p = .14, n = 83$).



Additional analyses

I present a couple of (novel) analyses based on the data from Šimík & Burianová (to appear), arguing (i) against the dominant approach of Dayal (2004), and (ii) providing some indirect support for the presently entertained hypothesis.

- Proportion of definite vs. indefinite
- Interaction with grammatical number
- Sources of indefiniteness



Proportion of definites vs. indefinites

- The proportion of definites vs. indefinites in Šimík & Burianová's (to appear) is roughly $\boxed{2 : 1}$ (207 : 108).

Proportion of definites vs. indefinites

- The proportion of definites vs. indefinites in Šimík & Burianová's (to appear) is roughly $\boxed{2 : 1}$ (207 : 108).
- An auxiliary **German** corpus search (DWDS Korpus) yields $\boxed{4.5 : 1}$ (what is missing are plural indefinites; Czech results suggest there is a 2 : 1 ratio of sg : pl).

Queries:

der[lemma] / P+art (adj) (adj) N → **definite**; ein[lemma] (adj) (adj) N → **indefinite**



Proportion of definites vs. indefinites

- The proportion of definites vs. indefinites in Šimík & Burianová's (to appear) is roughly $\boxed{2 : 1}$ (207 : 108).
- An auxiliary **German** corpus search (DWDS Korpus) yields $\boxed{4.5 : 1}$ (what is missing are plural indefinites; Czech results suggest there is a 2 : 1 ratio of sg : pl).
- This means that there are **comparatively many bare NP “indefinites”**. Cf. Dayal's (2004) view that bare NPs are primarily definite in articleless languages.

Queries:

der[lemma] / P+art (adj) (adj) N → **definite**; ein[lemma] (adj) (adj) N → **indefinite**



Proportion of definites vs. indefinites

- The proportion of definites vs. indefinites in Šimík & Burianová's (to appear) is roughly $\boxed{2 : 1}$ (207 : 108).
- An auxiliary **German** corpus search (DWDS Korpus) yields $\boxed{4.5 : 1}$ (what is missing are plural indefinites; Czech results suggest there is a 2 : 1 ratio of sg : pl).
- This means that there are **comparatively many bare NP “indefinites”**. Cf. Dayal's (2004) view that bare NPs are primarily definite in articleless languages.
- This is so despite the fact that we have removed all generic and predicative bare NPs from the sample. It's likely that these would significantly increase the frequency of indefinites.

Queries:

der[lemma] / P+art (adj) (adj) N → **definite**; ein[lemma] (adj) (adj) N → **indefinite**



Interaction with grammatical number

- Dayal (2004) predicts bare singulars to be always definite (as opposed to bare plurals, which can be turned indefinite via Derived Kind Predication).
- The Table below shows, however, that grammatical number does not interact with definiteness at all. The frequencies of definite vs. indefinite singulars vs. plurals match the null hypothesis frequencies perfectly.

| | SINGULAR | PLURAL | TOTAL |
|-------|--------------------|------------------|-------|
| DEF | 157 (156.4) | 50 (50.6) | 207 |
| INDEF | 81 (81.6) | 27 (26.4) | 108 |
| TOTAL | 238 | 77 | 315 |

Table: “(In)Definite” singular vs. plurals



Sources of indefiniteness

I annotated all the “indefinite” bare NPs in the sample, indicating what “makes” them “indefinite”.

| Type | # | Explanation |
|--------|-----|--|
| PRES | 54 | indefinites introducing new referents, which is mostly explicitly encoded by being an internal argument of “presentational” verbs like ‘create’, ‘appear’) |
| HAVE | 11 | internal argument of (existential) ‘have’ |
| NEG | 11 | narrow scope with respect to negation, either expressed by the negative morpheme, or by a negative verb (‘doubt’), or a preposition (‘without’) |
| QUANT | 5 | being in the restrictor of an explicit or an implicit quantificational or generic operator |
| CIRCUM | 16 | part of a circumstantial description (typically a PP adverbial) |
| REST | 11 | source of indefiniteness hard to determine |
| Total | 108 | |



Sources of indefiniteness

I annotated all the “indefinite” bare NPs in the sample, indicating what “makes” them “indefinite”.

| Type | # | Explanation |
|--------|-----|--|
| PRES | 54 | indefinites introducing new referents, which is mostly explicitly encoded by being an internal argument of “presentational” verbs like ‘create’, ‘appear’) |
| HAVE | 11 | internal argument of (existential) ‘have’ |
| NEG | 11 | narrow scope with respect to negation, either expressed by the negative morpheme, or by a negative verb (‘doubt’), or a preposition (‘without’) |
| QUANT | 5 | being in the restrictor of an explicit or an implicit quantificational or generic operator |
| CIRCUM | 16 | part of a circumstantial description (typically a PP adverbial) |
| REST | 11 | source of indefiniteness hard to determine |
| Total | 108 | |

- 60.2% of indefinites have their source in presentational or existential verb semantics (PRES+HAVE)



Sources of indefiniteness

I annotated all the “indefinite” bare NPs in the sample, indicating what “makes” them “indefinite”.

| Type | # | Explanation |
|--------|-----|--|
| PRES | 54 | indefinites introducing new referents, which is mostly explicitly encoded by being an internal argument of “presentational” verbs like ‘create’, ‘appear’) |
| HAVE | 11 | internal argument of (existential) ‘have’ |
| NEG | 11 | narrow scope with respect to negation, either expressed by the negative morpheme, or by a negative verb (‘doubt’), or a preposition (‘without’) |
| QUANT | 5 | being in the restrictor of an explicit or an implicit quantificational or generic operator |
| CIRCUM | 16 | part of a circumstantial description (typically a PP adverbial) |
| REST | 11 | source of indefiniteness hard to determine |
| Total | 108 | |

- 60.2% of indefinites have their source in presentational or existential verb semantics (PRES+HAVE)
- 14.8% arise from being in scope of various operators (NEG+QUANT).

Sources of indefiniteness

I annotated all the “indefinite” bare NPs in the sample, indicating what “makes” them “indefinite”.

| Type | # | Explanation |
|--------|-----|--|
| PRES | 54 | indefinites introducing new referents, which is mostly explicitly encoded by being an internal argument of “presentational” verbs like ‘create’, ‘appear’) |
| HAVE | 11 | internal argument of (existential) ‘have’ |
| NEG | 11 | narrow scope with respect to negation, either expressed by the negative morpheme, or by a negative verb (‘doubt’), or a preposition (‘without’) |
| QUANT | 5 | being in the restrictor of an explicit or an implicit quantificational or generic operator |
| CIRCUM | 16 | part of a circumstantial description (typically a PP adverbial) |
| REST | 11 | source of indefiniteness hard to determine |
| Total | 108 | |

- 60.2% of indefinites have their source in presentational or existential verb semantics (PRES+HAVE)
- 14.8% arise from being in scope of various operators (NEG+QUANT).
- Only 25% is “unmotivated” (CIRCUM+REST).

Examples

PRES

(35) ... kdyby se objevila nepředvídaná < překážka >, ...
 if REFL appeared unforeseen obstruction
 '... if an unforeseen obstruction appeared, ...'

(36) ... vlny na sebe narážely, vytvářely < víry > a gejzíry.
 waves on each.other bumped created vortexes and torrents
 '... the waves bumped into each other, created vortexes and torrents.'

(37) Nasadil jsem provinilý < úsměv >.
 set be.AUX.1SG guilty smile
 'I started smiling guiltily.' (lit. 'I set a guilty smile [on my face].')

HAVE

(38) Kousek jsem popošel, abych měl lepší < výhled >, ... 'I moved a bit in
 bit be.AUX.1SG moved so.that.1SG had better view
 order to have a better view.'

(39) ... budeš mít naprosto individuální < péči >. '... you'll have an absolutely individual
 will.2SG have absolutely individual care
 care.'



Discussion

- The present proposal is based on the idea that (non-predicative) bare NPs are neither definite, nor indefinite. The **illusion of (in)definiteness** stems from bare NPs being interpreted relative to situations, which can either be bound by the topic situation (\approx **definiteness**) or by various operators or simply the situational existential quantifier introduced by (functional projections of) verbs (\approx **indefiniteness**).
- The presented corpus evidence argues against some common alternatives:
 - That bare NPs are by default definite (Dayal 2004): unexpectedly many “indefinite” bare NPs for that.
 - That there should be an asymmetry between singulars and plurals (Dayal 2004): no such asymmetry observed.
 - That shifting to existential readings (exist-shift) is free (except for the clause-initial position) (Geist 2010): existential (indefinite) readings are, to a large extent, due to other sources in the clause (mostly presentational verbs).
- The evidence is compatible with the present hypothesis, including the observation that clause-initial bare NPs tend **not to be indefinite**, which is here due to their situation variable being bound the topic situation (cf. Geist 2010 for an adequate alternative).



Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Idea

Common approach to “definite” bare NPs:

- (45) a. $\llbracket \text{pes 'dog.SG'} \rrbracket^{\mathcal{E}} = \iota x \text{DOG}(x)$ \rightsquigarrow **uniqueness presupposition**
 b. $\llbracket \text{psi 'dog.PL'} \rrbracket^{\mathcal{E}} = \sigma x \text{DOGS}(x)$ \rightsquigarrow **maximality presupposition**

Present approach to “definite” bare NPs (the null hypothesis):

- (46) a. $\llbracket \text{pes 'dog.SG'} \rrbracket^{\mathcal{E}} = f_{s_T}(\text{DOG})$ \rightsquigarrow **no presupposition**
 b. $\llbracket \text{psi 'dog.PL'} \rrbracket^{\mathcal{E}} = f_{s_T}(\text{DOGS})$ \rightsquigarrow **no presupposition**



Idea

Common approach to “definite” bare NPs:

- (45) a. $\llbracket \text{pes 'dog.SG'} \rrbracket^{\mathcal{E}} = \iota x \text{DOG}(x)$ \rightsquigarrow **uniqueness presupposition**
 b. $\llbracket \text{psi 'dog.PL'} \rrbracket^{\mathcal{E}} = \sigma x \text{DOGS}(x)$ \rightsquigarrow **maximality presupposition**

Present approach to “definite” bare NPs (the null hypothesis):

- (46) a. $\llbracket \text{pes 'dog.SG'} \rrbracket^{\mathcal{E}} = f_{\text{ST}}(\text{DOG})$ \rightsquigarrow **no presupposition**
 b. $\llbracket \text{psi 'dog.PL'} \rrbracket^{\mathcal{E}} = f_{\text{ST}}(\text{DOGS})$ \rightsquigarrow **no presupposition**

Basic idea:

- Test the presence of uniqueness/maximality inferences in “definite” NPs, by concentrating at contexts in which bare NPs are assumed to be definite:
 - Clause-initial bare NPs (vs. clause-final bare NPs); Geist 2010, a.o.
 - Unaccented clause-initial bare NPs (vs. accented clause-initial bare NPs); Geist 2010, a.o.
 - Singular bare NPs (vs. plural bare NPs); Dayal 2004.
- No uniqueness/maximality present \rightarrow compatible with the null hypothesis (non-definiteness).



Design

Šimík & Demian (under revision)

- Auditory stimuli
- *Covered Box* paradigm: One of two pictures uncovered → correct one?
 (variant of picture-matching task suitable for not-at-issue meaning testing; e.g. Romoli et al. 2011; Schwarz et al. 2015)
- Pictures differed in whether uniqueness/maximality is satisfied or not.
- Dependent variables: Picture choice and reaction time.
- Expectations:
 - uniqueness/maximality not satisfied → more choice of covered picture
 - **German:** uniqueness/maximality encoded by articles
 - **Russian:** uniqueness/maximality encoded by word order, prosody, or number



Design: German

German

- Factor DEFINITENESS with levels def vs. indef (within items)
- Factor PICTURE-TYPE with levels \pm unique/maximal (within items)
- 4 conditions in total
- Items balanced for: number (sg vs. pl), prosodic prominence (S prom., PRED prom)

Example of an item

- (47) Die Lokomotive musste anhalten. context
 the locomotive had.to stop
- a. Der Waggon hat sich abgekoppelt. def(sg)
 the carriage has REFL disconnected
- b. Ein Waggon hat sich abgekoppelt. indef(sg)
 a carriage has REFL disconnected
- c. Die Waggonen haben sich abgekoppelt. def(pl)
 the carriages have REFL disconnected
- d. Waggonen haben sich abgekoppelt. indef(pl)
 carriages have REFL disconnected



Design: Russian

Russian

- Factor WORD ORDER with levels s pred vs. pred s (within items)
- Factor PROSODIC PROMINENCE with levels s-prom vs. pred-prom (within items)
- Factor NUMBER with levels sg vs. pl (within items)
- Factor PICTURE TYPE with levels \pm unique/maximal (within items)
- Full crossing impossible (pred s & pred-prom not acceptable given the context)
- 6 conditions in total

Example of an item

- (48) Lokomotiv dolžen byl ostanovit'sja. context
 locomotive necessary was stop
- a. Vagon OTCEPILSJA. s PRED(sg)
 carriage disconnected
- b. VAGON otcepilsja. S pred(sg)
 carriage disconnected
- c. Otcepilsja VAGON. pred S(sg)
 disconnected carriage
- d. ... plurals

Design: Pictures

+unique/maximal

-unique/maximal

sg



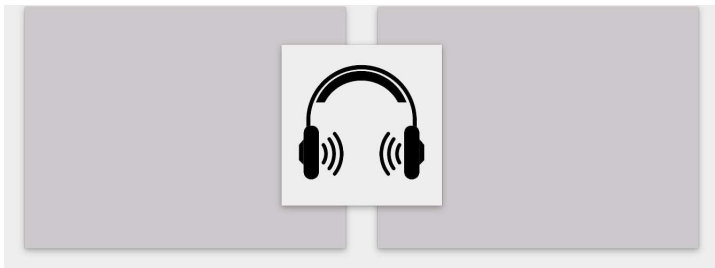
pl





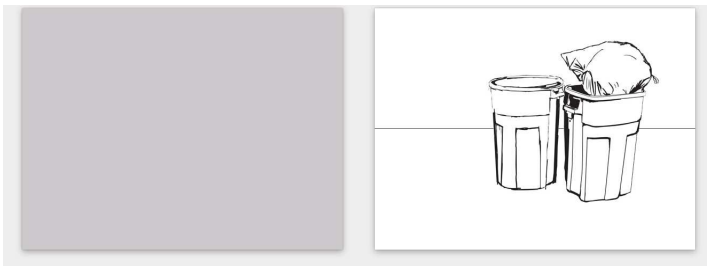
Design: Procedure

1. Participant listens to stimulus (context+target), looking at two covered pictures.



Design: Procedure

2. One of the two pictures gets disclosed and the participant is asked to say which one s/he believes to be the one capturing the meaning of the target sentence.



Design: Overall

- 24 items of the MAIN experiment
- 48 fillers (divided into subexperiments)
- The items and conditions were distributed to lists according to the Latin square design and their order was pseudo-randomized.
- 48 participants per language
- The experiment was carried out in computer pools under the supervision of an administrator.
- Participants received 5EUR/300RUB for their participation.
- Statistics: Generalized linear mixed model fit by maximum likelihood (`glmer`-function of the `lme4`-package; R Core Team 2017).

Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

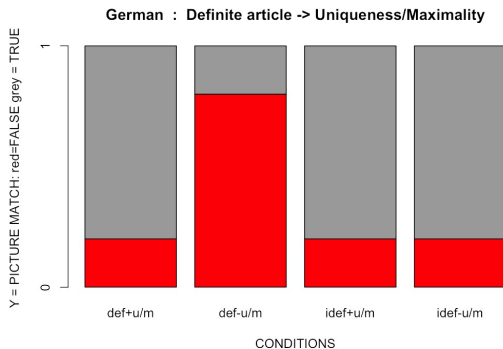
Predictions and results

Production experiment



German: Definiteness Prediction

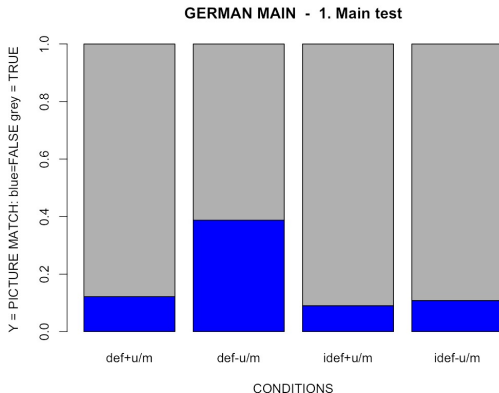
Hypothesis: definite \rightarrow +unique/maximal





German: Definiteness Results

Hypothesis: definite \rightarrow +unique/maximal **confirmed**

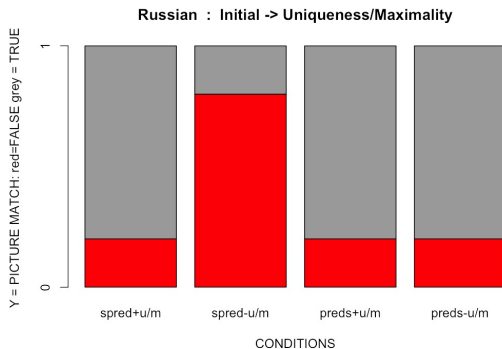


Int. DEFINITENESS*PICTURE TYPE significant ($z = 3.853, p < .001$)



Russian: Order Prediction

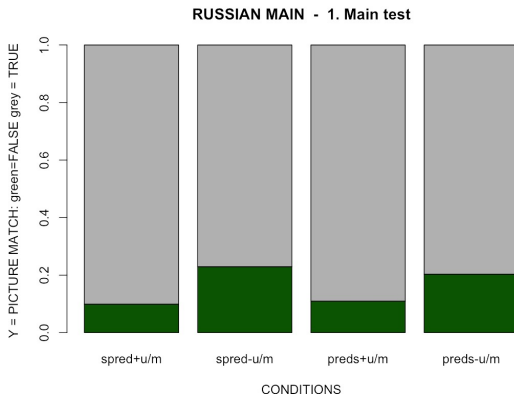
Hypothesis: initial \rightarrow +unique/maximal





Russian: Order Result

Hypothesis: initial \rightarrow +unique/maximal **not confirmed**



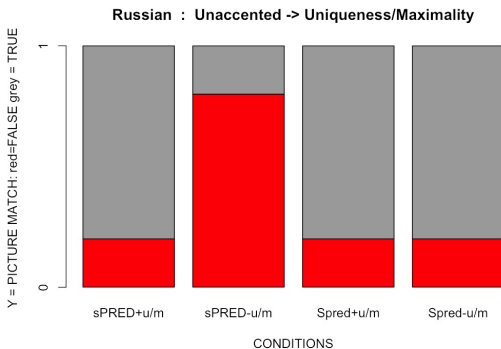
Int. ORDER*PICTURE TYPE not significant ($z = .837, p = .4$)

Effect of PICTURE TYPE significant ($z = 2.757, p = .006$)



Russian: Topic Prediction

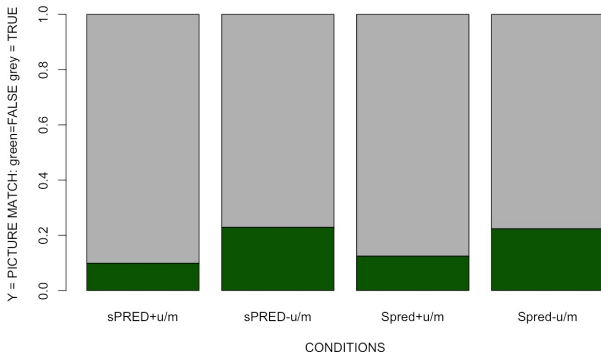
Hypothesis: unaccented \rightarrow +unique/maximal



Russian: Topic Result

Hypothesis: unaccented → +unique/maximal **not confirmed**

RUSSIAN MAIN - 3. Topic (prosody) unaccented S (sSPRED) vs. accented S (Spred)



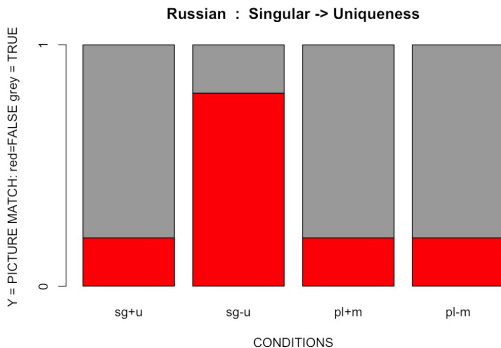
Int. PROSODY*PICTURE TYPE not significant ($z = .747, p = .5$)

Effect of PICTURE TYPE significant ($z = 3.528, p < .001$)



Russian: Number Prediction

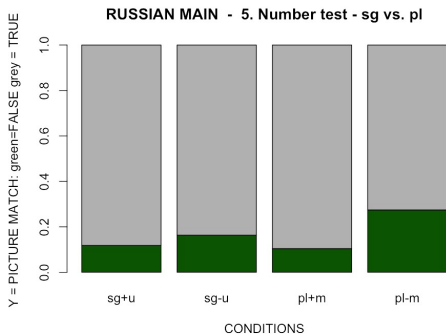
Hypothesis: Singular \rightarrow +unique





Russian: Number Result

Hypothesis: singular \rightarrow +unique **not confirmed**



Int. NUMBER*PICTURE TYPE significant ($z = 2.768, p = .006$)
but in the unpredicted direction!



Discussion

German

- Effect of definite article on uniqueness/maximality **confirmed**.

Russian (analogous pilot results on Czech)

- Effect of word order on uniqueness/maximality **not confirmed**.
- Effect of prosody (topic) on uniqueness/maximality **not confirmed**.
- Effect of number on uniqueness/maximality found, but in the opposite direction than what predicted by Dayal (2004). Singulars behave in line with the null hypothesis.



Discussion

German

- Effect of definite article on uniqueness/maximality **confirmed**.
- But the effect is very weak, compared to the one found in subexperiments (appendix), involving other types of presuppositions, but also implicatures.

Russian (analogous pilot results on Czech)

- Effect of word order on uniqueness/maximality **not confirmed**.
- Effect of prosody (topic) on uniqueness/maximality **not confirmed**.
- Effect of number on uniqueness/maximality found, but in the opposite direction than what predicted by Dayal (2004). Singulars behave in line with the null hypothesis.
- Still, very clear effects in subexperiments (appendix), completely parallel to German.

Discussion

German

- Effect of definite article on uniqueness/maximality **confirmed**.
- But the effect is very weak, compared to the one found in subexperiments (appendix), involving other types of presuppositions, but also implicatures.

Russian (analogous pilot results on Czech)

- Effect of word order on uniqueness/maximality **not confirmed**.
- Effect of prosody (topic) on uniqueness/maximality **not confirmed**.
- Effect of number on uniqueness/maximality found, but in the opposite direction than what predicted by Dayal (2004). Singulars behave in line with the null hypothesis.
- Still, very clear effects in subexperiments (appendix), completely parallel to German.

→ indirect support for a presupposition-free account

Background

The talk in a nutshell

Majority view of bare NPs

Alternative view: Bare NPs and non-definiteness

Proposal

Situation dependency of bare NPs

Accounting for different bare NP readings

Corpus evidence

Experimental evidence

Design

Predictions and results

Production experiment



Design

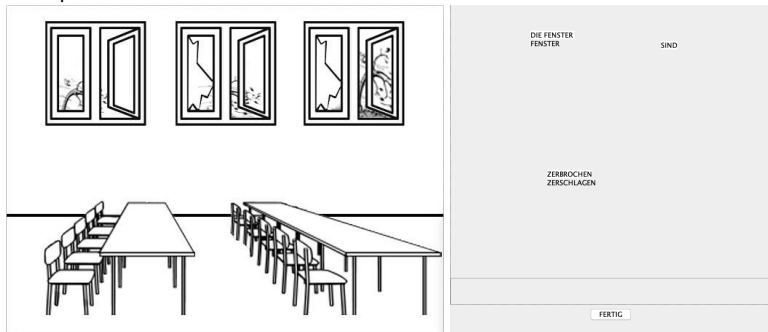
Šimík & Demian (in prep)

- Similar items as above (16+32 fillers)
- Polish (32 participants) vs. German (15 participants)
- Task: Produce a sentence that matches a picture by (i) dragging and dropping constituents and by (ii) selecting a constituent value
- Independent variable: uniqueness/maximality satisfied or not
- Dependent variables: (i) word order (Polish) and (ii) article value (German)
- Expectations:
 - **German:** uniqueness/maximality correlated with article value
 - **Polish:** uniqueness/maximality correlated with word order



Design: Visual setup

Example of an item in condition –maximal:



(49) *German*

- Fenster sind zerbrochen.
- Die Fenster sind zerbrochen.

↪ **expected (no presupposition)**

↪ **unexpected (maximality)**

(50) *Polish*

- broke windows
- windows broke

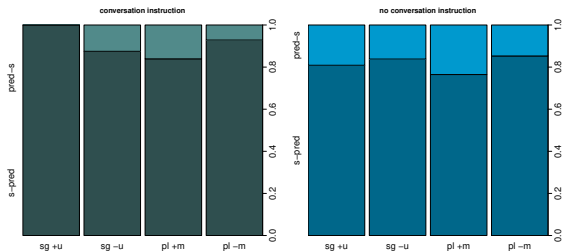
↪ **expected (no presupposition)**

↪ **unexpected (maximality by sigma-shift)**

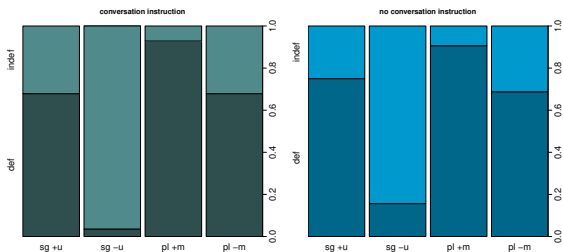


Results

Polish: S-PRED vs. PRED-S production



German: DEF vs. INDEF production





Discussion

German

- Consistent effect of uniqueness on article choice.
- Less pronounced effect of maximality on article use.
- Asymmetry in production (difference between sg and pl) vs. picture selection (no difference between sg and pl); unclear.

Polish

- S-PRED used in 86% overall.
- No effect of uniqueness or maximality on word order.
- Results compatible with a presupposition-free account of bare NPs.

Thank you!

Thanks to my co-authors Christoph Demian (experiments) and Markéta Burianová (corpus) and to experiment organizers or administrators: Fabienne Salfner (Berlin) and Maria Nagornaya (Moscow). Materials from this talk were also presented at FASL 26 (Urbana-Champaign, IL), research seminars in the Slavic Department in Berlin, an SFB colloquium at the University of Cologne, an SFB colloquium at the University of Tübingen, a colloquium at the Charles University in Prague, in a guest lecture series at the University of Stuttgart, at a workshop in Barcelona (Pompeu Fabra) at the occasion of Veronika King's PhD defence, at the 4th Expert meeting of the Time in translation project in Utrecht, and at the Colloquium Semantics and Pragmatics Exchange in Düsseldorf. For discussion, comments, and stimulating questions I'm grateful to Ana Aguilar-Guevara, Petr Biskup, Ellen Brandner, Jan Chromý, Jakub Dotlačil, Hana Filip, Berit Gehrke, Ljudmila Geist, Stephanie Harves, Daniel Hole, Tania Ionin, Katja Jasinskaja, Veronika King, Bert Le Bruyn, Denisa Lenertová, Roland Meyer, Florian Schwarz, Natalia Slioussar, Petra Schumacher, Henriëtte de Swart, Luka Szucsich, and Barbara Tomaszewicz.

Funding: German Research Foundation (Project *Definiteness in articleless Slavic languages*).

References I

- Austin, John L. 1961. Truth. In James Opie Urmson & Geoffrey James Warnock (eds.), *Philosophical papers*, 117–133. Oxford: Oxford University Press.
- Bade, Nadine & Florian Schwarz. 2018. Antipresuppositions are weak and slow: Evidence from eye-tracking data. Presented at the 42nd Annual Penn Linguistics Conference (PLC 42), University of Pennsylvania, March 2018.
- Bunčić, Daniel. 2014. Definitheit als 'verborgene Kategorie' im Russischen? In Hagen Pitsch (ed.), *Linguistische Beiträge zur Slavistik: XXI. JungslavistInnen-Treffen in Göttingen, September 2012*, 75–96. München: Sagner. <http://kups.ub.uni-koeln.de/id/eprint/7495>.
- Běličová, Helena & Ludmila Uhlířová. 1996. *Slovanská věta*. Praha: Euroslavica.
- Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6(4). 339–405. <https://doi.org/10.1023/A:1008324218506>.
- Coppock, Elizabeth & David Beaver. 2015. Definiteness and determinacy. *Linguistics and Philosophy* 38(5). 377–435. <https://doi.org/10.1007/s10988-015-9178-8>.
- Dayal, Veneeta. 2004. Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy* 27(4). 393–450. <https://doi.org/10.1023/B:LING.0000024420.80324.67>.
- Dayal, Veneeta. 2011. Bare noun phrases. In Klaus von Stechow, Claudia Maienborn & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*, vol. 2, 1088–1109. Berlin: de Gruyter. <https://doi.org/10.1515/9783110255072.1088>.
- Elbourne, Paul D. 2013. *Definite descriptions*. Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199660193.001.0001>.
- von Fintel, Kai & Sabine Fox & Sabine Iatridou. 2014. Definiteness as maximal informativeness. In Luka Crnić & Uli Sauerland (eds.), *The art and craft of semantics: A festschrift for Irene Heim*, vol. 1, 165–174. Cambridge, MA: MITWPL. <https://semanticsarchive.net/Archive/jZiNmM4N/FintelFoxIatridou.pdf>.
- Frege, Gottlob. 1892. Über Sinn und Bedeutung. *Zeitschrift für Philosophie und philosophische Kritik* 100. 25–50.
- Geist, Ljudmila. 2010. Bare singular NPs in argument positions: Restrictions on indefiniteness. *International Review of Pragmatics* 2(2). 191–227. <https://doi.org/10.1163/187731010X528340>.
- Hawkins, John A. 1981. *Definiteness and indefiniteness: A study in reference and grammaticality prediction*. London: Croom Helm.
- Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. Amherst, MA: University of Massachusetts dissertation. <https://scholarworks.umass.edu/dissertations/AAI8229562>.



References II

- Heim, Irene. 2011. Definiteness and indefiniteness. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*, vol. 2, 996–1025. Berlin: de Gruyter.
<https://doi.org/10.1515/9783110255072.996>.
- Herburger, Elena. 2000. *What counts: Focus and quantification*. Cambridge, MA: MIT Press.
- Keshet, Ezra. 2010. Situation economy. *Natural Language Semantics* 18(4). 385–434. <https://doi.org/10.1007/s11050-010-9059-1>.
- Kratzer, Angelika. 1998. Scope or pseudoscope? Are there wide-scope indefinites? In Susan Rothstein (ed.), *Events and grammar*, 163–196. Dordrecht: Kluwer.
- Kratzer, Angelika. 2014. Situations in natural language semantics. In Edward N. Zalta (ed.), *The Stanford encyclopedia of philosophy*. Stanford, CA: Metaphysics Research Lab, Stanford University. <http://plato.stanford.edu/entries/situations-semantics/>.
- Krifka, Manfred. 2003. Bare NPs: Kind-referring, indefinites, both, or neither? In Robert B. Young & Yuping Zhou (eds.), *SALT 13: Proceedings from the 13th Conference on Semantics and Linguistic Theory*, 180–203. Ithaca, NY: CLC Publications.
<http://elanguage.net/journals/index.php/salt/issue/view/296>.
- Landman, Fred. 2004. *Indefiniteness and the type of sets*. Oxford: Blackwell.
- Link, Godehard. 1983. The logical analysis of plural and mass terms: A lattice theoretical approach. In Rainer Bäuerle, Christoph Schwarze & Arnim von Stechow (eds.), *Meaning, use, and interpretation of language*, 302–323. Berlin: de Gruyter.
<https://doi.org/10.1515/9783110852820.302>.
- Musan, Renate. 1997. *On the temporal interpretation of noun phrases*. Garland.
- Nishigauchi, Taisuke. 1990. *Quantification in the theory of grammar*. Kluwer: Dordrecht.
- Percus, Orin. 2000. Constraints on some other variables in syntax. *Natural Language Semantics* 8(3). 173–229.
<https://doi.org/10.1023/A:1011298526791>.
- R Core Team. 2017. A language and environment for statistical computing. Vienna: R Foundation for Statistical Computing.
<https://www.r-project.org>.
- Reinhart, Tanya. 1997. Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy* 20. 335–397.
- Romoli, Jacopo, Yasutada Sudo & Jesse Snedeker. 2011. An experimental investigation of presupposition projection in conditional sentences. In Neil Ashton, Anca Chereches & David Lutz (eds.), *SALT 21: Proceedings from the 21st Conference on Semantics and Linguistic Theory*, 592–608. <https://doi.org/10.3765/salt.v21i0.2588>.
- Sauerland, Uli. 2008. Implicated presuppositions. In Anita Steube (ed.), *The discourse potential of underspecified structures*, 581–600. Berlin: de Gruyter. <https://doi.org/10.1515/9783110209303.4.581>.



References III

- Schein, Barry. 2019. Nip & tuck for definite description. *Linguistics and Philosophy* 42(2). 177–206.
<https://doi.org/10.1007/s10988-018-9241-3>.
- Schwarz, Florian. 2012. Situation pronouns in determiner phrases. *Natural Language Semantics* 20(4). 431–475.
<https://doi.org/10.1007/s11050-012-9086-1>.
- Schwarz, Florian, Jacopo Romoli & Cory Bill. 2015. Scalar implicatures processing: Slowly accepting the truth (literally). In Eva Csipak & Hedde Zeijlstra (eds.), *Proceedings of Sinn und Bedeutung 19*, 553–570. University of Göttingen.
- Šimík, Radek. 2019. Inherent vs. accidental uniqueness in bare and demonstrative nominals. Manuscript, Humboldt-Universität zu Berlin.
<https://ling.auf.net/lingbuzz/004606>.
- Šimík, Radek & Markéta Burianová. to appear. Definiteness of bare NPs as a function of clausal position: A corpus study of Czech. In Tania Ionin & Jonathan Eric MacDonald (eds.), *Formal Approaches to Slavic Linguistics (FASL) 26: The Urbana-Champaign Meeting 2017*, Ann Arbor, MI: Michigan Slavic Publications.
- Šimík, Radek & Christoph Demian. under revision. Definiteness, uniqueness, and maximality in languages with and without articles. Manuscript, Humboldt-Universität zu Berlin.
- Strawson, Peter F. 1950. On referring. *Mind* 59(235). 320–344. <http://www.jstor.org/stable/2251176>.
- Winter, Yoad. 1997. Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy* 20. 399–467.

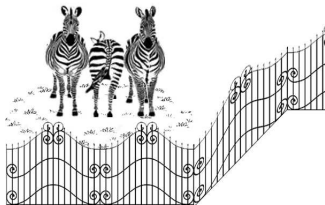
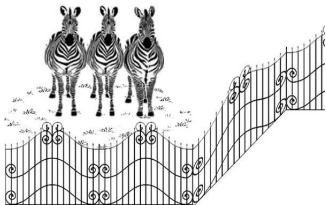
Subexperiments

The fillers were composed of a number of subexperiments:

| EXP. | ITEMS | PURPOSE |
|------|-------|---|
| SCAL | 8 | Scalar implicatures (some-phrase + all-picture) |
| BOTH | 6 | Determiner presupposition, similar manipulation to MAIN |
| EXH | 16 | Pragmatic exhaustivity effects |
| ALSO | 4 | Particle additive presupposition (contradiction) |
| ONLY | 4 | Particle exhaustive assertion (contradiction) |
| ... | | |

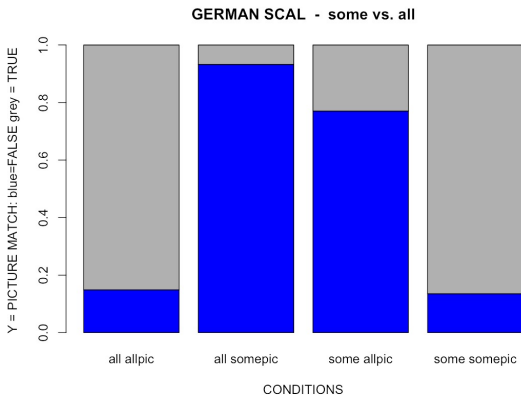
SCAL subexperiment: Item

- (51) Am Ende meines Zoobesuches lief ich noch am Gehege der Zebras vorbei.
'At the end of my zoo visit, I went around the zebra enclosure.'
- a. **Alle** blickten in meine Richtung.
all looked in my direction
 - b. **Einige** blickten in meine Richtung.
some looked in my direction



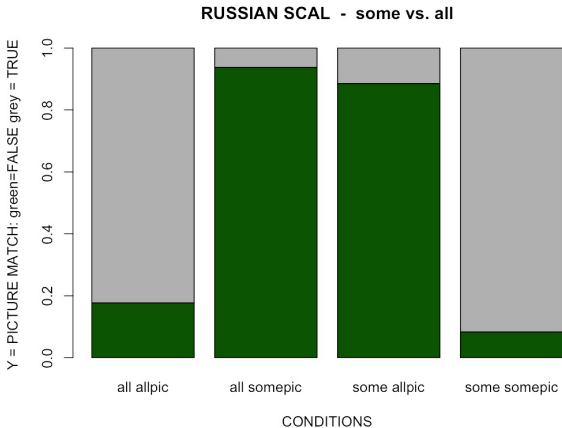
SCAL subexperiment: German Result

Very clear effect of scalar implicature.



SCAL subexperiment: Russian Result

Very clear effect of scalar implicature.



BOTH subexperiment: Item

Determiner-induced presupposition contradiction ('both' vs. 'two')

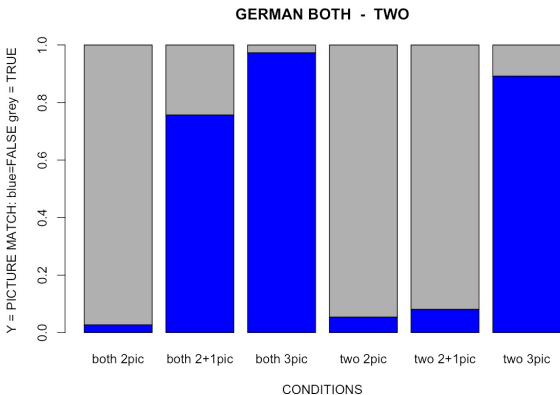
(52) Das Weibchen flog zu ihrem Nachwuchs zurück.
'The female bird flew back to its offspring.'

- a. **Beide Jungvögel** waren im Nest.
both chicks were in the nest
- b. **Zwei Jungvögel** waren im Nest.
two chicks were in the nest



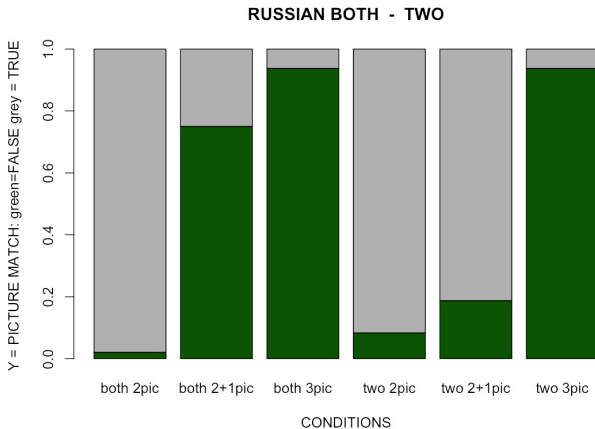
BOTH subexperiment: German Result

Very clear effect of scalar implicature.



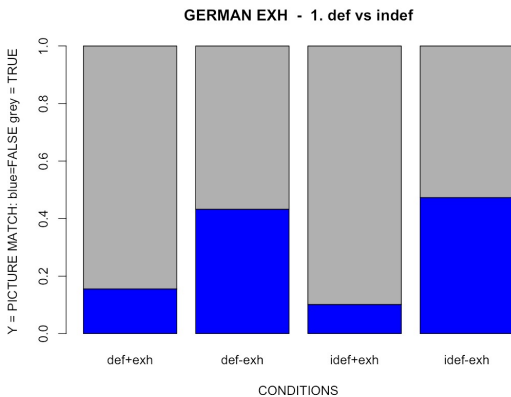
BOTH subexperiment: Russian Result

Very clear effect of scalar implicature.



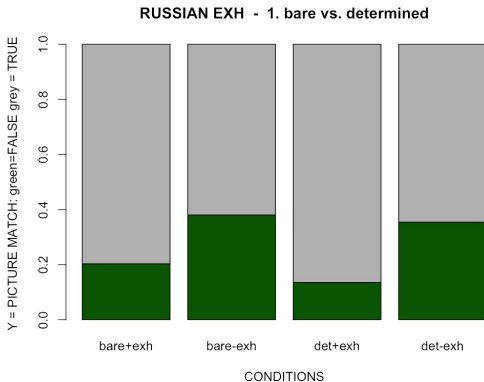
EXH subexperiment: results German

A visible main effect of PICTURE TYPE ($z = 8.670, p < .001$).



EXH subexperiment: results Russian

A visible main effect of PICTURE TYPE ($z = 6.710, p < .001$).



Discussion: Summary of results

German

- Effect of definite article on uniqueness/maximality **confirmed** (MAIN).
- Still, the effect was smaller than the one of other presupposition triggers (BOTH, ALSO).
- Scalar implicature very clearly drawn (SCAL).
- Exhaustive interpretation visible with both definites and indefinites (EXH).

Russian

- Effect of word order on uniqueness/maximality **not confirmed** (MAIN).
- Effect of prosody (topic) on uniqueness/maximality **not confirmed** (MAIN).
- Effect of number on uniqueness/maximality found, but in the opposite direction than what predicted by Dayal (2004). Singulars behave in line with the null hypothesis (Heim 2011) (MAIN).
- Very clear effect of presupposition triggers (BOTH, ALSO).
- Scalar implicature very clearly drawn (SCAL).
- Exhaustive interpretation visible with both definites and indefinites (EXH).

Discussion: Effect sizes (informal)

German

Presuppositions \approx Scalar implicatures

>

Uniqueness/Maximality \approx Pragmatic Exhaustivity

→ Are uniqueness and maximality overrated?

Russian

Presuppositions \approx Scalar implicatures

>

Maximality \approx Pragmatic Exhaustivity

>

Uniqueness

Discussion: Speculations

- We've got very similar pilot results for Czech as we got here for Russian → **no accident**.
- There's a sense in which bare plurals (as opposed to singulars) behave as definite, although completely independently of position or prosody. Effect size is comparable to the effect of pragmatic exhaustivity (but: the same in German!).
- This might suggest that plural *morphology* is having an unexpected semantic effect, comparable to the one of definite articles. **Why?**
- Possible view of the results: Presuppositions are only lexically/morphologically triggered, never by word order or prosody.
- **Open questions:**
 - What accounts for our intuition that bare NPs are definite in initial position? It is **not** uniqueness/maximality. . .
 - Is there any role of the asymmetry between comprehension (experiment) vs. production (corpus)?