

Inflectional Competition and Interpretation: A Case Study on the Slovenian Dual*

Lanko Marušič
University of Nova Gorica

Rok Žaucer
University of Nova Gorica

Yasutada Sudo
University College London

Andrew Nevins
University College London

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Abstract

This paper reports on acceptability judgment experiments that aim at uncovering the underlying semantics of the Slovenian dual. The results indicate that the interpretation of a dual noun in Slovenian is similar to that of a noun phrase with a numeral ‘two’. We argue that these results are incompatible with a previous analysis proposed by Sauerland (2008), according to which the Slovenian dual is semantically compatible with singular and dual reference (‘one or two’). In light of the literature on the semantics and pragmatics of numerals, we will discuss the following three alternative theoretical possibilities. According to the Lexical Ambiguity Theory, the underlying semantics of the dual is ambiguous between lower-bounded (‘at least 2’) and bilateral (‘exactly 2’) meaning. The Scalar Strengthening Theory holds that the underlying semantics of the dual is lower-bounded but can be strengthened to a bilateral reading. The Pragmatic Weakening Theory assumes that the underlying semantics of the dual is bilateral but can be optionally weakened to a lower-bounded reading. We argue that our experimental results are most straightforwardly explained by the Pragmatic Weakening Theory, and discuss the consequences for competition between inflectional categories of number.

1 Introduction

Plural noun phrases in languages like English typically receive a plural reading, but sometimes give rise to number-neutral readings in certain grammatical contexts. For example, the plural noun phrase in (1a) receives a plural reading, while the plural noun phrase in (1b) has a number-neutral reading, making the overall sentence not equivalent to (and in fact, stronger than) the negation of the meaning of (1a).

- (1) a. The customer bought magazines.
 b. The customer didn’t buy magazines.

*[to be added]

While the current theoretical literature contains competing analyses of this observation (Sauerland 2003, Sauerland, Anderssen & Yatsushiro 2005, Sauerland 2008, Spector 2007, Farkas & de Swart 2010, Grimm 2013, Zweig 2009, Ivlieva 2013, Martí 2020b, Mayr 2015, Križ 2017, Sudo 2019), it is generally agreed that the underlying semantics of plural noun phrases cannot simply be plural (‘more than one’): If that were the case, the observed meaning of (1a) would be straightforwardly accounted for, but (1b) would mean that the customer didn’t buy multiple magazines, a weaker meaning than what is actually observed.

Against this theoretical backdrop, this paper investigates the underlying meaning of the Slovenian dual, which is an inflectional number category along with the singular and the plural. It reports on acceptability judgment experiments, whose results indicate that the interpretation of dual noun phrases in Slovenian is quite similar to the interpretation of noun phrases with the numeral *two*. We will claim that these results are incompatible with a previous analysis put forward by Sauerland (2008), according to which the Slovenian dual is semantically compatible with singular and dual reference (‘one or two’). In light of the literature on the semantics and pragmatics of numerals (see Spector 2013 for an overview), we will discuss the following three alternative theoretical possibilities. According to the Lexical Ambiguity Theory, the underlying semantics of the dual is ambiguous between lower-bounded (‘at least 2’) and bilateral (‘exactly 2’). The Scalar Strengthening Theory holds that the underlying semantics of the dual is lower-bounded, but can get strengthened to a bilateral reading. The Pragmatic Weakening Theory assumes that the underlying semantics is bilateral, but can be optionally weakened to a lower-bounded reading. We argue that our experimental results are most straightforwardly explained by the Pragmatic Weakening Theory.

The present paper proceeds as follows. Section 2 provides a brief review of the literature on the semantics and pragmatics of nominal number, including a previous analysis of the Slovenian dual due to Sauerland (2008). In Section 3 we will review the literature on numerals and discuss the three alternative analyses of the dual mentioned above. The experiments and their results are presented and discussed in Sections 4–6. We conclude in Section 7.

2 The Semantics and Pragmatics of Number and Inflectional Competition

2.1 Unmarked Plural and Inflectional Competition

Plural noun phrases are so called because they are typically used to talk about multiple entities. For instance, the bare plural in (2a) gives rise to an entailment that the customer in question bought *multiple* books about climate change, and the definite plural noun phrase in (2b) gives rise to a presupposition that the building has *multiple* exits.

- (2) a. The customer bought **books** about climate change.
- b. **The emergency exits** of the building are clearly indicated.

At the same time, plural noun phrases in languages like English are known to receive number-neutral readings in certain grammatical contexts (Sauerland 2003, Spector 2007, Farkas & de Swart 2010, among others; see however Kiparsky & Tonhauser 2012 for some potential complications). For example, the following examples have readings where the bare plural noun phrases in bold have number neutral readings.¹

¹Bare plurals in polar questions are often mentioned in this connection, but their judgments seem to be more involved than usually assumed, and for this reason we will not include polar questions here. See Pearson, Khan & Snedeker (2010), Bale, Gagnon & Khanjian (2011) for discussion.

- (3)
- a. This applicant does not have **journal papers**.
 - b. If you have **electronic devices** in your bag, take them out and put them on a tray.
 - c. This plant can survive without **leaves** for several years.
 - d. We should clean up the mess before **customers** arrive.

These examples suggest that the interpretation of a plural noun phrase is not simply always plural.

Similarly, plural definites containing bound variables give rise to inferences that would be unexpected if their semantics were inherently plural. To see this, consider (4).

- (4) Each applicant submitted **their experimental papers** as part of their application.

If the semantics of the plural definite here were plural, (4) should presuppose that every applicant had multiple experimental papers. In reality, the perceived presupposition is weaker than this, and the sentence could be felicitously uttered against a situation where only some of the applicants have multiple experimental papers. Here, the interpretation is not completely number-neutral, as the sentence would be infelicitous in a situation where every applicant has exactly one paper, but the observed presupposition is weaker than what would be expected if the plural definite were inherently semantically plural.

How to capture these observations is a point of active debate in the current literature. For example, Farkas & de Swart (2010) and Grimm (2013) postulate a number-neutral reading and a semantically plural reading for plural noun phrases, but these analyses cannot straightforwardly account for the reading of (4) (see also Martí 2020b, who follows Harbour 2014).

On the other hand, Sauerland (2003, 2008) and Sauerland et al. (2005) propose a theory that is based on *inflectional competition*. The rough idea is that a plural noun phrase is always semantically number neutral, and that when the plural meaning arises it is due to competition with the singular version of the sentence, which is assumed to have a more specific meaning that is only compatible with singular reference.² We will not discuss here the details of the way in which Sauerland and his colleagues cash out this theory, because serious empirical problems have been pointed out for it (see Spector 2007 for details). Other ways of implementing the idea of inflectional competition between the singular and the plural have been proposed that circumvent these problems (Spector 2007, Zweig 2009, Ivlieva 2013, Mayr 2015, Sudo 2019), but they all involve some additional theoretical machinery, the details of which will not be crucial in the following discussion.³ That being said, it is important to understand how a theory based on inflectional competition accounts for sentences like (4), in order to understand the logic behind our experimental design. The idea is that the presupposition of the sentence in (4) is actually number neutral (i.e. every applicant has at least one experimental paper), but it competes with the singular version of the sentence in (5), which by assumption presupposes that every applicant has exactly one paper.

- (5) Each applicant submitted **their experimental paper** as part of their application.

Subsequently, a pragmatic principle requires use of the sentence with a stronger presupposition whenever its presupposition is satisfied.⁴ Therefore, this principle prevents (4) from being felic-

²Farkas & de Swart's (2010) theory also makes use of the idea of inflectional competition, but they use it to account for the meaning of the singular, which they assume is underlyingly number neutral.

³Križ (2017) puts forward a view that does not make use of inflectional competition, but instead crucially refers to 'homogeneity'. However, it is an open question how this view can explain the reading of (4), and more importantly, how it can be extended to the Slovenian dual in order to account for our experimental results.

⁴The principle is usually called Maximize Presupposition (Heim 1991, Percus 2006) but its nature and formu-

itously used whenever (5) is felicitous, and as a consequence, it seems as if the presupposition of (4) is stronger than the number-neutral presupposition.

It is not our purpose here to contribute directly to the literature on the plural in English and other similar languages, but from this literature, a question naturally arises as to what happens in languages with more number categories. In this paper, we will focus on Slovenian, which has dual number, in addition to singular and plural. Dual nouns in this language are typically used to describe pairs of entities, but as we will explain below, the current literature lacks convincing evidence as to what part of this meaning comes from the underlying semantics, and what part arises through inflectional competition or some other additional mechanism.

2.2 The Slovenian Dual

In this subsection we will review key facts about the Slovenian dual. Slovenian marks nominal number by inflection. Both nouns and pronouns are marked for one of three number categories: singular, dual, or plural. For example, the neuter noun *mesto* ‘town’ declines as in Table 1 (see Marušič & Žaucer to appear and references therein for more comprehensive descriptions of the Slovenian number system).

	Singular	Dual	Plural
Nominative/Accusative	mesto	mesti	mesta
Dative	mestu	mestoma	mestom
Instrumental	mestom	mestoma	mesti
Locative	mestu	mestih	mestih
Genitive	mesta	mest	mest

Table 1: Inflection of *mesto* ‘town’

Determiners, adjectives and verbs obligatorily agree in number, as in (6). Any mismatch in agreement here would result in ungrammaticality.

- (6) **Ta** **dva** **stola** **sta** **polomljena**
 these.DU.M.NOM two.DU.M.NOM chair.DU.M.NOM be.3.DU.PRES broken.DU.M.NOM
 ‘These two chairs are broken.’ (Derganc 2003:168)

It is mentioned in the literature that bare dual noun phrases in Slovenian tend to receive specific/definite interpretations, unlike bare singular and plural noun phrases, which are simply underspecified in this regard (Jakopin 1966, Dvořák & Sauerland 2006, Marušič & Žaucer to appear). For instance, Jakopin (1966:99) observes that (7a) and (7b) can receive generic interpretations, while (7c) only has a specific or definite interpretation.

- (7) a. **Otrok** **se** **rad** **igra.**
 child.SG REFL glad.SG.M play.SG
 ‘A child likes to play.’
 b. **Otroci** **se** **radi** **igrajo.**
 child.PL REFL glad.PL.M play.PL
 ‘Children like to play.’

lation are actively debated in the current theoretical literature and the principle is sometimes given different names (see Spector & Sudo 2017, Marty 2017, Anvari 2019, for example).

- c. Otroka se rada igrata.
 child.DU REFL glad.DU.M play.DU
 ‘The/our two children like to play.’

To make matters more complex, Marušič & Žaucer (to appear) further point out that a non-specific indefinite interpretation of a dual noun is actually available in certain cases. For example, they observe that (8) allows for a non-specific indefinite reading of the dual noun (see also the experimental results reported in Marušič, Žaucer, Saksida, Sullivan, Skordos, Wang & Barner 2019).

- (8) A si že videl enojajčna dvojčka?
 Q AUX already seen one-egg.ADJ.ACC.DU twin.ACC.DU
 ‘Have you ever seen (two) identical twins?’ (Marušič & Žaucer to appear:(30))

It is left open here what the nature of this interpretive constraint is.

One peculiar fact about the Slovenian dual is that plural nouns are used for entities that naturally come in pairs, for example *noge* ‘feet’, as in (9) (Derganc 2003, Dvořák & Sauerland 2006, Sauerland 2008, Marušič & Žaucer to appear).⁵

- (9) **Noge** me bolijo.
 foot.PL me hurt.3.PRES
 ‘My feet hurt.’ (Derganc 2003:172)

While this is an interesting property of the Slovenian dual, we will not attempt to explain it in this paper.

Modifiers like *dva* ‘two’ and *oba* ‘both’ require the noun they modify to be in dual, even if it is a noun for naturally paired objects (Derganc 2003, Dvořák & Sauerland 2006, Martí 2020a). Thus, the noun is in dual, rather than plural, in (10), unlike in (9).

- (10) **Obe nogi** me bolita.
 both foot.DU me hurt.3.DU.PRES
 ‘Both my feet hurt’ (Derganc 2003:172)

The last thing to note is that there is a considerable degree of dialectal variation with respect to the extent of the presence of dual morphology, and some southern dialects possibly even lack dual as a nominal number altogether (Marušič, Žaucer, Plesničar, Razboršek, Sullivan & Barner 2016, Jakop 2008). However, most dialects exhibit a fair amount of dual morphology; the most widespread and influential central Slovenian dialects, to which most contemporary speakers have some exposure via the media, also exhibit a fair amount of dual morphology; and the standard variety, to which virtually all contemporary speakers have substantial exposure via the media and education, also exhibits robust dual marking (Marušič & Žaucer to appear). The experiments we report on below used the standard variety, and all crucial nouns were masculine, which is the gender that most commonly has distinct dual morphology across dialects.

⁵As Derganc (2003) and Marušič & Žaucer (to appear) observe, there are exceptions to this. For instance, the noun for ‘twins’ can appear in dual (*dvojčka*), as well as in plural (*dvojčki*), e.g. (8). Similarly for the noun for ‘parents’, *starša* (dual) vs. *starši* (plural).

2.3 Sauerland on the Slovenian Dual

Extending the competition-based analysis of singular vs. plural developed in Sauerland (2003) and Sauerland et al. (2005), Sauerland (2008) proposes that the Slovenian dual is semantically compatible with singular and dual reference, i.e. it semantically means ‘one or two’, while the singular is only compatible with singular reference, and the plural is number neutral, as in English (see also Dvořák & Sauerland 2006). In support of this claim, Sauerland (2008:75) raises the following example, which is structurally similar to the English example in (4).

- (11) Vsak študent je prinesel s seboj svoj-i knjig-i.
every student be.SG brought.MASC with self his-DL book-DL
‘Every student brought his book(s).’

Sauerland reports that this sentence is accepted in a context where some students brought exactly one book, while all the others brought exactly two. If the judgments were as Sauerland reports, (11) would indeed support his analysis. The reason is similar to how he accounts for (4), which we explained above. Specifically, according to Sauerland’s analysis, (11) presupposes that every student has at least one but no more than two books, but the singular version of the sentence has a stronger presupposition that every student has exactly one book, which makes (11) infelicitous whenever every student has exactly one book. Thus (11) should be accepted when at least some, and possibly all, of the students have exactly two books.⁶

However, an informal survey with several native speakers we consulted suggests that (11) is actually unacceptable in the context described above. As we will see, the results of Experiment 1 verified this. If this is the case, what is the semantics of the Slovenian dual? To gain further empirical insight into this, we designed an experiment so that it also tested the interpretation of numerals, allowing them to be directly compared against the inflectional dual. In the next section we will explain the theoretical motivation behind this design.

3 The Dual vis-à-vis Numerals

While dual is a nominal inflectional category in the Slovenian number system on a par with singular and plural, its semantic function seems similar to the numeral ‘two’. Moreover, the pronominal paradigm contains a morphological indication of the connection between dual and numerals. Specifically, the dual nominative pronouns contain what looks like the numeral ‘two’, i.e. *dva* for masculine and *dve* for feminine, as shown in Table 2.⁷ Furthermore, the acquisition study conducted by Marušič et al. (2016) suggests that acquiring a language with dual seems to accelerate the acquisition of the numeral ‘two’. Given these connections between dual and numerals, a question arises as to how similar their meanings are.

⁶One complication here is that Sauerland (2008) actually observes that the singular version of the sentence is acceptable in a context where some of the students brought exactly one book but others brought exactly two. To explain this, Sauerland suggests that the singular noun phrase may have a disjunctive representation that looks like *dve ali eno knjig-o* (‘two or one book-SG’), and argues that for this reason the judgments of the singular version of the sentence are not informative with respect to its underlying semantics. As we will see, our experimental results replicated this observation, but they also indicated that the singular is acceptable to a similar extent when some of the students brought exactly two books and the others brought exactly three books, which is unexpected under Sauerland’s concealed-disjunction analysis. We will discuss an alternative analysis later.

⁷Dual pronouns in non-nominative cases do not contain *dva/dve*, e.g. *naju* is the dual 1st pronoun in accusative, genitive and locative. See Marušič & Žaucer (to appear) for the entire paradigm. Also note that dual feminine pronouns each have two forms that are considered to be prescriptively acceptable, and both are listed here.

		Singular	Dual		Plural	
			masc.	fem.	masc.	fem.
1st	jaz		midva	medve/midve	mi	me
2nd	ti		vidva	vedve/vidve	vi	ve
3rd	ona		onadva	onedve/onidve	oni	one

Table 2: Nominative pronouns in Slovenian

Numerals have been very intensively studied in both the theoretical and experimental literature, and there are three groups of theories about their meaning (see Spector 2013 for an overview). These theories agree that numerals sometimes give rise to a lower-bounded (‘at least’) reading, and sometimes to a bilateral (‘exact’) reading, but differ as to which reading reflects the underlying semantics.

1. Lexical Ambiguity Theory (Geurts 2006): Numerals are lexically ambiguous between the lower-bounded and bilateral readings.
2. Scalar Strengthening Theory (Horn 1972): The underlying semantics is lower-bounded, and the bilateral reading is derived via scalar strengthening with respect to the next numeral, which also has a lower-bounded semantics. For instance, *two* has a lower-bounded semantics (‘at least 2’), but competes with *three* and yields a reading that *three* is false, which amounts to a bilateral reading (‘at least 2, but not 3’).
3. Pragmatic Weakening Theory (Breheny 2008): The underlying semantics is bilateral, and the lower-bounded reading is derived via pragmatic weakening.

Each of these theoretical views could be adopted for the Slovenian dual. According to the Lexical Ambiguity Theory, a dual noun is ambiguous between the lower-bounded and bilateral reading. Under the Scalar Strengthening Theory, the underlying semantics of the dual would be lower-bounded, but can be strengthened. Notice, however, that a question arises as to what could drive the strengthening mechanism. For the numeral *two*, *three* is a natural competitor, but could a numeral also be a competitor for a dual? Based on the fact that the dual is an inflectional category, one might expect its competitors to be other inflectional categories, in which case a numeral wouldn’t be a competitor. But even under this assumption, the crucial competitor that gives rise to strengthening could be the plural, if it happens to mean ‘more than two’ in Slovenian. Thirdly, the Pragmatic Weakening Theory would assign a bilateral semantics to the dual and derive the lower-bounded reading by a mechanism of pragmatic weakening.

It is also possible that dual nouns never receive a lower-bounded reading, in which case, none of the above three theoretical options are warranted. In that case, its semantics should be simply bilateral. But if numerals can receive a lower-bounded reading, while dual nouns cannot, then the difference between them should somehow be explained.

Thus, we have several alternative theoretical options besides Sauerland (2008), and it will be theoretically informative to compare the interpretive behavior of the dual and a numeral in sentences like (11), which is precisely what we aimed to do in our experiments.

4 Experiment 1

4.1 Design and Procedure

Our objective was to gather acceptability judgments of sentences like (12), which have the same structure as Sauerland’s example given in (11).

- (12) Vsak moški je opral svoj-a avtomobil-a.
Every man aux washed self’s-DL car-DL
‘Every man washed his (two) cars.’ DL

We compared sentences like this containing dual nouns (DL) with the versions of the sentences where the relevant noun is in the singular (SG), in the plural (PL), and in the dual – but occurring alongside the numeral *dva* ‘two’ (NUM).

- (13) a. Vsak moški je opral svoj avtomobil.
Every man aux washed self’s-SG car-SG
‘Every man washed his car.’ SG
b. Vsak moški je opral svoj-e avtomobil-e.
Every man aux washed self’s-PL car-PL
‘Every man washed his cars.’ PL
c. Vsak moški je opral svoj-a dv-a avtomobil-a.
Every man aux washed self’s-DL two-DL car-DL
‘Every man washed his (two) cars.’ NUM

As explained in Section 2, *dva* selects for a dual noun, so the items in the NUM condition also contained a dual noun. We opted for using *dva*, rather than some other numeral, in order to minimize the semantic difference between DL and NUM. Crucially, for all intents and purposes, a phrase like *dva avtomobila* ‘two cars’ is interpreted like its English counterpart *two cars*.

These target sentences were judged against three different types of contexts that differ as to how many relevant objects the individuals in the domain of quantification possess. For the above sentences, the three contexts are:

- [1 or 2]: Some men have exactly one car, the others have exactly two.
- [2 or 3]: Some men have exactly two cars, the others have exactly three.
- [exactly 2]: Every man has exactly two cars.

In each trial, the context was introduced in a yes/no-question following the target sentence, e.g. a Slovenian translation of ‘Can one use this sentence in a situation where some men have one car and some men have two cars?’, and answers were given by ‘yes’ or ‘no’.⁸

Each participant was randomly assigned one of the three target contexts and saw all four types of number marking, 6 items each. 24 lexicalizations were created. Each participant saw each lexicalization exactly once. There were also 24 filler items interspersed with the target items, and the order of presentation was pseudo-randomized for each participant. The experiment was conducted online using Drummond’s (2013) Ibex Farm (<http://spellout.net/ibexfarm/>). All the items are provided in the supplementary materials for this article.

⁸Some items did not include the word *natančno* ‘exactly’ (cf. the supplementary file), but this had no effects in the results.

4.2 Predictions

All theories predict that DL should be accepted in [exactly 2]. Thus, this condition acts as one baseline. According to Sauerland (2008), it should also be accepted in [1 or 2], but should be rejected in [2 or 3]. By contrast, under the view that the dual is similar to the numeral *dva* ‘two’ in allowing for a lower-bounded reading (which includes the three sub-theories mentioned in the previous section), DL is expected to be accepted in [2 or 3], but to be rejected in [1 or 2]. However, if the dual never receives a lower-bounded reading – say, unlike a numeral – then DL and NUM should differ in [2 or 3], but look similar in [exactly 2].

Note that for cases where competition with another item is involved, the results might turn out to be not so clear cut, given what is observed in many experimental studies on scalar items (e.g. Bott & Noveck 2004, van Tiel, van Miltenburg, Zevakhina & Geurts 2016; see Chemla & Singh 2014a,b, Noveck 2018 for overviews). However, it should be kept in mind that mild acceptability does not necessarily indicate the presence of competition.

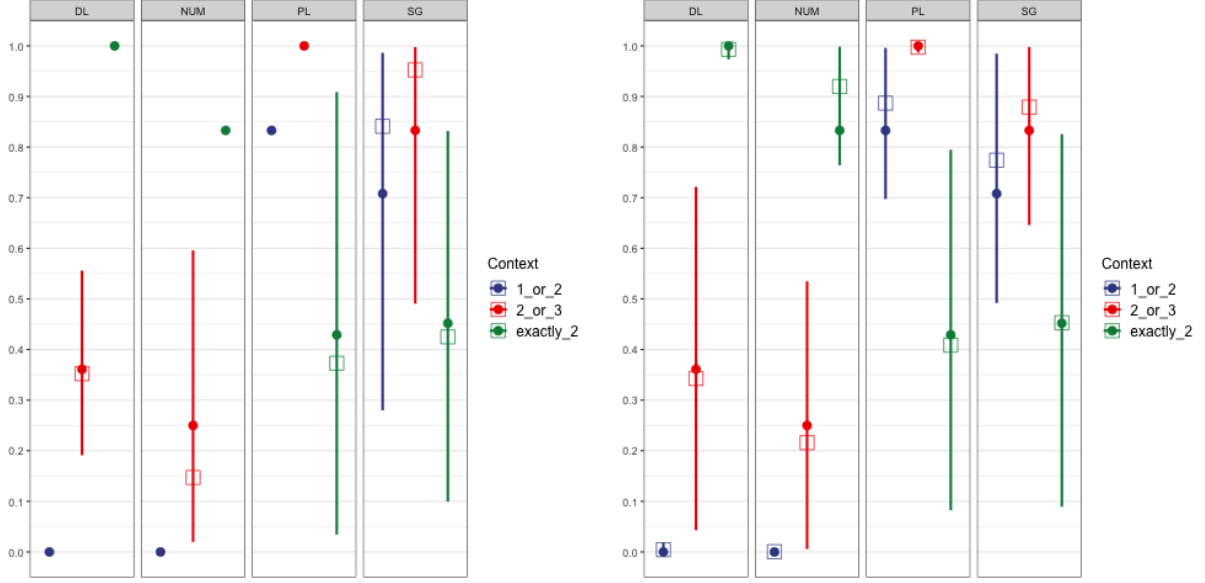
We are furthermore interested in the results with SG and PL. Sauerland (2008) predicts SG to be unacceptable in all three contexts, but remarks that it is actually accepted in [1 or 2] (see fn. 6). We would like to see whether or not that is replicated, and also whether or not SG behaves differently in [1 or 2] and [2 or 3]. The other theoretical options where the dual has a lower-bounded and/or bilateral meaning do not expect an effect of inflectional competition between SG and DL in any of the three contexts, on the assumption that the singular has bilateral (‘exactly one’) semantics and does not semantically overlap with the dual. As for PL, all theories predict some effects of competition in [2 or 3] and [exactly 2], as far as the semantics of the plural is as in English (see Marušič et al. 2016 for relevant discussion). However, it is possible that the presence of the dual in this language has some effect on the interpretation of the plural. In particular, if the plural means ‘more than two’, it should be rejected in all three contexts (modulo effects of inflectional competition), and in that case, the Scalar Strengthening Theory for the dual could rely on the plural as the crucial competitor for scalar strengthening.

4.3 Participants

30 self-reported native speakers of Slovenian participated in the experiment. We excluded 9 of them for coming from a region where duals are not often used. The following statistical analyses are based on the data from the remaining 21 participants. Among them, 8 were assigned to [1 or 2], 7 to [exactly 2], and 6 to [2 or 3].

4.4 Results

The proportion of *yes* answers in each experimental condition is as in Table 3 and visually represented by the filled dots in Figure 1. The squares and bars in Figure 1(a) are estimates of mixed effects logistic regression models fitted as described below and in Table 4, and those in Figure 1(b) are based on a Bayesian hierarchical logistic regression model with a weakly informative prior. The logistic mixed effects models were fitted using the `glmer` function of the `lme4` package (v. 1.1-23) (Douglas Bates and Martin Mächler and Ben Bolker and Steve Walker 2015) for the R statistics program (R Core Team 2020). The Bayesian model uses a weakly informative prior. The predictor variables are all dummy coded such that DL is the baseline for NUMBER, and NUM is in Experiment 3 and [exactly 2] is the baseline for CONTEXT. The



(a) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% confidence intervals predicted by the mixed effects logistic regression models, as described in the text.

(b) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% credible intervals estimated by the Bayesian hierarchical logistic regression model with a weakly informed prior.

Figure 1: The observed and estimated proportions of *yes* answers in Experiment 1 with 95% confidence/credible intervals.

NUMBER	CONTEXT	%Yes	MELR		Bayesian	
			%Yes	95% CI	%Yes	95% CI
DL	[1 or 2]	0	—	—	0.4	[< 0.0001, 1.9]
	[2 or 3]	36.1	35.2	[19.1, 55.6]	34.3	[4.3, 72.1]
	[exactly 2]	100	—	—	99.3	[97.4, > 99.9]
NUM	[1 or 2]	0	—	—	< 0.001	[< 0.0001, 0.2]
	[2 or 3]	25	14.7	[2.0, 59.6]	21.6	[0.6, 53.5]
	[exactly 2]	100	—	—	92.0	[76.4, 99.8]
PL	[1 or 2]	83.3	—	—	88.7	[69.7, 99.6]
	[2 or 3]	100	—	—	99.7	[98.7, > 99.9]
	[exactly 2]	42.9	36.3	[1.6, 95.2]	40.9	[8.2, 79.5]
SG	[1 or 2]	70.8	84.1	[28.0, 98.6]	77.4	[49.2, 98.4]
	[2 or 3]	83.3	95.2	[49.1, 99.8]	87.9	[64.6, 99.8]
	[exactly 2]	45.2	42.5	[1.0, 83.2]	45.3	[8.9, 82.6]

Table 3: The observed proportions of *yes* answers in Experiment 1, and the estimations made by the mixed effects logistic regression models (MELR) and the hierarchical Bayesian model (Bayesian). 95% CI stands for 95% confidence intervals for the former and for 95% credible intervals.

Condition		β	SE	z	p
DL	Intercept	-0.609	0.425	-1.431	0.1530
NUM	Intercept	-1.758	1.095	-1.605	< 0.0001
PL	Intercept	-0.5199	1.4394	-0.361	0.7180
SG	Intercept	-0.3021	0.9698	-0.312	0.7554
	[1 or 2]	1.6659	1.3326	1.250	0.2113
	[2 or 3]	-2.9953	1.547	-1.936	0.0529

Table 4: The β -values, standard errors, z -values, and p -values of the logistic mixed effects models.

specification of the model for Experiment 1 looks like the following.

$$\begin{aligned}
\text{Answer}_i &\sim \text{Binomial}(n_i, p_i) \\
\text{logit}(p_i) &= \alpha + \alpha_{\text{Subject}[i]} + \beta_{12} * C_{12} + \beta_{23} * C_{23} \\
&\quad + (\beta_{NUM} + \beta_{NUM * C_{12}} * C_{12}) * N_{NUM} + (\beta_{NUM} + \beta_{NUM * C_{23}} * C_{23}) * N_{NUM} \\
&\quad + (\beta_{PL} + \beta_{PL * C_{12}} * C_{12}) * N_{PL} + (\beta_{PL} + \beta_{PL * C_{23}} * C_{23}) * N_{PL} \\
&\quad + (\beta_{SG} + \beta_{PL * C_{12}} * C_{12}) * N_{SG} + (\beta_{SG} + \beta_{SG * C_{23}} * C_{23}) * N_{SG} \\
\alpha_{\text{Subject}} &= \text{Normal}(0, \sigma_{\text{Subject}})
\end{aligned}$$

The prior distributions for the coefficients are all identical, being the normal distribution with $\mu = 0$ and $\sigma = 10$, while the prior distribution for σ_{Subject} is a half Cauchy distribution with $x_0 = 0$ and $\gamma = 1$. These are weakly informative priors (see McElreath 2020). The posterior distributions were estimated using three Hamilton Monte Carlo Markov Chains implemented in Stan constructed with 4000 samples each (of which 1500 were used for warm up).

The reason why two sets of statistical analyses are reported here is because the former cannot be fitted to the entire results of Experiment 1 due to (quasi-)separation caused by (near-)zero variance in some of the conditions (cf. Kimball, Shamtz, Eager & Roy 2019). We could have only reported the Bayesian model, but we decided to also report analyses based on mixed effects regression models, because they are currently more widely used, and also because what prior to use in Bayesian analyses might be a point of controversy. In the latter respect, we follow McElreath (2020) and use weakly informative prior, as specified above. Generally, we follow the advice of Cumming (2012, 2014) and Kruschke & Liddell (2018), and report point estimates and 95% confidence and 95% credible intervals (= 95% highest posterior density intervals), and do not exclusively rely on p -values (although we do not follow Cumming’s advice to report no p -values). It should be noted that one added advantage of the Bayesian model for our purposes is that multiple comparisons can be performed without worrying about Type I error (Gelman, Hill & Yajima 2012, Kruschke 2014, Gelman, Carlin, Stern, Dunson, Vehtari & Rudin 2020). For this reason, we do not perform corrections for multiple comparisons for the mixed effects logistic regression models. As we will see, the two types of analyses point to the same conclusions here, as well as in the next two sections.

Let us start with DL. Unsurprisingly, it is accepted 100% of the time in [exactly 2], but crucially, it was never accepted in [1 or 2], and moderately accepted 36.1% of the time in [2 or 3]. Due to separation, a logistic regression cannot be fitted to the entire data of DL, but a mixed

effects logistic regression with random intercepts for subjects was fitted to the data from [2 or 3].⁹ According to this model the 95% confidence interval is [19.1%, 55.6%] with an estimated proportion of *yes* answers being 35.2%. Moreover, the 95% credible intervals estimated by the Bayesian model do not overlap with each other in this condition. We therefore conclude that the judgments for the three contexts are sufficiently distinct from each other.

The results of NUM look quite similar to the results of DL. Here too, a mixed effects logistic regression model cannot be fitted to all three contexts due to separation caused by the uniform data in [1 or 2] and the small variance in [exactly 2]. Instead, a mixed effects logistic regression model with random intercepts for subjects was fitted to the data from [2 or 3].¹⁰ The 95% confidence interval for [2 or 3] is [2.0%, 59.6%] with an estimate proportion of *yes* answers being 14.7%, and the lower bound is close to 0%, reflecting the fact that three out of the six subjects answered *ne* ‘no’ to all six items in this condition. Similarly the 95% credible interval estimated by the Bayesian model is quite wide with the lower bound being at 0.6%. Thus, there is only weak evidence that [1 or 2] and [2 or 3] are different from each other in this case. On the other hand, the credible interval for [exactly 2] is very narrow and does not overlap with the other two conditions.

Let us now turn to PL. Again, due to separation, we cannot fit a logistic regression model to the entire data in this condition. A mixed effects logistic regression to the data of [exactly 2] with random intercepts for subjects resulted in a very wide confidence interval for this condition.¹¹ The 95% credible interval estimated by the Bayesian model for this condition is also wide, but does not overlap with that for [2 or 3], and only shows small overlap with [1 or 2] (about five percentage points). What is therefore notable here is that PL is perfectly accepted in [2 or 3] and its acceptability is quite high in [1 or 2] with variation. On the other hand, the acceptability in [exactly 2] is generally quite low, but large variation is observed and is not clearly rejected.

Lastly, let us look at SG. A mixed effects logistic regression model with random intercepts for subjects was fitted with [exactly 2] as the reference level.¹² The 95% confidence intervals estimated by this model for the three contexts are quite large, and overlap with each other by a large extent. So do the 95% credible intervals estimated by the Bayesian models. Therefore, there is no evidence for a difference among these three conditions. However, since these intervals do not include 0, it can be concluded that SG is not completely rejected in these conditions.

4.5 Discussion

To summarize the main findings (see also Figure 1):

- The results for DL and NUM are quite similar: They were rejected in [1 or 2], accepted in [exactly 2], and received intermediate acceptability in [2 or 3].
- PL is completely accepted in [2 or 3]. There is more variation in judgements in [1 or 2], but its acceptability is high. On the other hand, its acceptability is intermediate in [exactly 2].
- SG is mildly accepted in all three contexts.

⁹Including random intercepts for items seems to be superfluous, as indicated by an increase of 2.00 in AIC, and an increase of 3.58 in BIC.

¹⁰Including random intercepts for items results in an increased AIC (+1.84) and BIC (+3.43).

¹¹Including random intercepts for items results in overfit: +0.06 in AIC and +1.80 in BIC.

¹²As above, including random intercepts for items is superfluous, as indicated by increased AIC (+2.00) and BIC (+4.84).

The results for DL clearly speak against Sauerland’s view, according to which the dual should be accepted in [1 or 2] but not in [2 or 3], the opposite of the observed pattern. Rather, they indicate that DL is *not* compatible with singular reference. Furthermore, the mild acceptability of DL in [2 or 3] suggests that the dual can have a lower-bounded interpretation, again contrary to Sauerland’s proposal.

Of course, the fact that the acceptability of DL in [2 or 3] is not perfect calls for an explanation. Here, it is instructive to compare DL with NUM, which behaved similarly in our results. Recall the three theories of numerals discussed in Section 3: the Lexical Ambiguity Theory, the Scalar Strengthening Theory, and the Pragmatic Weakening Theory. All these theories are compatible with our results for NUM, at least with certain auxiliary assumptions. In order to account for the mild acceptability of NUM in [2 or 3], the Lexical Ambiguity Theory would need to assume that the lower-bounded reading is less readily accessible, at least in our experimental setting. The Scalar Strengthening Theory would explain this mild acceptability by assuming that the scalar strengthening is computed by default, but can be cancelled with some additional processing cost. Due to this cost it was not cancelled uniformly in our experiment, resulting in mixed acceptability. Lastly, the Pragmatic Weakening Theory would have to assume that to arrive at the lower-bounded reading, one needs to go through some extra pragmatic reasoning, which can be assumed to be costly and/or not readily available in our experimental setting.

It is not our goal here to decide which of these theoretical possibilities best explains the results of NUM. Rather, we would like to discuss below whether or not each of the three theories extended to the dual can account for the results of DL.

Firstly, the Lexical Ambiguity Theory would assign two different underlying meanings to the dual, the lower-bounded meaning (‘at least 2’) and the bilateral meaning (‘exactly 2’). This theory will be compatible with the data of DL under the assumption that the lower-bounded semantics is less readily accessible in DL, just like in NUM. However, there is a serious issue when the other conditions are taken into consideration. Recall, in particular, the results for PL, which show that the plural is accepted quite well in [1 or 2] and [2 or 3] (although the latter received more uniform judgments than the former). In particular, the high acceptability of PL in [1 or 2] suggests that the underlying semantics of the plural in Slovenian is number-neutral, just as in English (cf. Marušič et al. 2016). The results of Experiment 2, to be presented in the next section, confirm this. Furthermore, the current results also show that the plural is not perfectly accepted in [exactly 2], which is unlike in English (see the appendix for the version of the experiment run in English).

It seems reasonable to us to attribute the degraded acceptability in [exactly 2] to the presence of the dual in this language, which was uniformly accepted in [exactly 2] in our results. Thus, the results of [exactly 2] can be taken to suggest that the dual and the plural compete and the former is preferred in [exactly 2], as it has a more specific meaning. However, if that is the case and if the underlying semantics of the dual is ambiguous between the lower-bounded and bilateral interpretation, a similar competition effect should be expected in [2 or 3] as well, at least with respect to the lower-bounded interpretation. But no such competition effect was observed, and the plural was in fact uniformly accepted in [2 or 3]. For this reason, we think the Lexical Ambiguity Theory is not well supported by our data.

Secondly, let us consider the Scalar Strengthening Theory applied to the dual. By assumption, the underlying semantics of the dual will be lower-bounded (‘at least 2’), and in order to account for the mild acceptability in [2 or 3], it will have to be additionally assumed that the lower-bounded semantics is enriched by default to the bilateral reading via scalar strengthening. However, if the scalar strengthening is due to a competition with another item with a stronger underlying meaning, it is unclear how that can be done with the dual, which, unlike

a numeral, does not seem to have a natural competitor with a stronger meaning. In particular, as we remarked above, the results of PL suggest that the underlying semantics of the plural is number-neutral and weaker, rather than stronger.

To achieve scalar strengthening with the dual, we can think of two possible ways, both of which turn out to have further issues, however. One is that the relevant competitor looks like *tri N_{pl}* ‘three N_{pl}’, whose underlying semantics under the current hypothesis is lower-bounded at three (‘at least three’). That is, just as it derives the bilateral reading of *dva N_{dl}* ‘two N_{dl}’, it derives the bilateral reading of the dual noun phrase. However, this possibility is not free from issues. In particular, it is known that the space of possible competitors for scalar strengthening needs to be sufficiently constrained, and generally, it appears that phrases that are structurally more complex do not give rise to scalar strengthening (see Katzir 2007, Breheny, Klindinst, Romoli & Sudo 2018 and references therein). Obviously, *tri N_{pl}* is structurally more complex than a dual noun phrase without a numeral, and so is not expected to be a competitor for the latter. Furthermore, if such a noun phrase with a numeral competes with the dual, a similar competition should happen to the plural. In particular, if *dva N_{dl}* ‘two N_{dl}’ competes with the plural, the latter would end up being upper-bounded at one (‘exactly 1’), and should be at least only mildly accepted in [2 or 3]. However, in our results for PL, the plural was perfectly accepted in this condition, showing no such competition effects.¹³ The other way to arrive at the necessary scalar strengthening is to assume that the mechanism for scalar strengthening does not require a linguistic alternative and simply turns the lower-bounded meaning of the dual (‘at least 2’) to an upper-bounded one (‘exactly 2’) (for such a view for scalar implicatures, see van Rooij & Schulz 2004, van Rooij 2017, for example). However, this would have to somehow explain why similar strengthening would not apply to the plural, turning it from lower-bounded (‘at least 1’) to upper-bounded (‘exactly 1’).

In sum, the Scalar Strengthening Theory would be compatible with the data under the assumption that scalar strengthening is computed by default, but there is a general question about how to achieve scalar strengthening to begin with in the absence of a natural competitor to the dual with a stronger meaning. In particular, it should somehow selectively apply to the dual, but not to the plural.

Finally, the Pragmatic Weakening Theory would assign the bilateral reading (‘exactly 2’) as the underlying semantics of the dual. Assuming that this is the default reading and that weakening it to the lower-bounded reading (‘at least 2’) incurs some cost, the mild acceptability of DL in [2 or 3] will be straightforwardly explained. Note that this theory, unlike the previous one, would not overgenerate for the plural. The plural has a number-neutral semantics, which is already very weak and cannot be weakened further. Thus, the overall conclusion is that our experimental data is best explained by the Pragmatic Weakening Theory.

It should also be mentioned that the results for SG are quite surprising. On the view that singular is only compatible with singular reference, i.e. it has a bilateral (‘exactly 1’) meaning, it should be unacceptable in all three contexts that we tested. However, it is actually accepted to a significant degree in all three contexts, especially in [1 or 2]. Importantly, we do not think these unexpected results indicate a flaw in the experimental design or procedure.¹⁴ For one, NUM behaved as expected from what has been observed repeatedly for numerals across different

¹³Note that adding more alternatives would not help here. For instance, *exactly one N* is also an alternative, then that being a symmetric alternative with respect to *two Ns* with the lower-bounded reading, there would be no scalar implicature. But that means that the plural would not have a plurality inference anywhere, which is an unwelcome result. Also, if *exactly one N* is an alternative, *exactly two Ns*, *exactly three Ns*, should also be alternatives. In this case too, the plural would not have a plurality inference in any context.

¹⁴We thank Paul Marty (pers.comm.) for very helpful discussion on this point.

experimental tasks. In addition, Sauerland (2008) reports similar intuitions of the singular in Slovenian (see fn. 6). Thus, it seems to us to be likely that the number inference of the singular in Slovenian is simply not as strong as one might expect under the standard view. In order to buttress this point, we ran two more experiments, which are reported in the next two sections. Their results also provide further support to the other conclusions we drew above.

5 Experiment 2

5.1 Design and Procedure

Experiment 2 is identical to Experiment 1, except that the contexts are changed to the following three.

- [exactly 2]: Every man has exactly two cars.
- [exactly 3]: Every man has exactly three cars.
- [3 or 4]: Some men have exactly three cars, the others have exactly four.

All the items are given in the supplementary document.

5.2 Predictions

The first context, [exactly 2], is meant to replicate the results of Experiment 1. In particular, we would like to replicate the effects of the competition with DL on PL. We also expect DL and NUM to exhibit perfect acceptability in this context, as in Experiment 1.

In the other two contexts, PL should be perfectly acceptable, and DL and NUM should show intermediate acceptability, as they should be able to optionally receive lower-bounded readings.

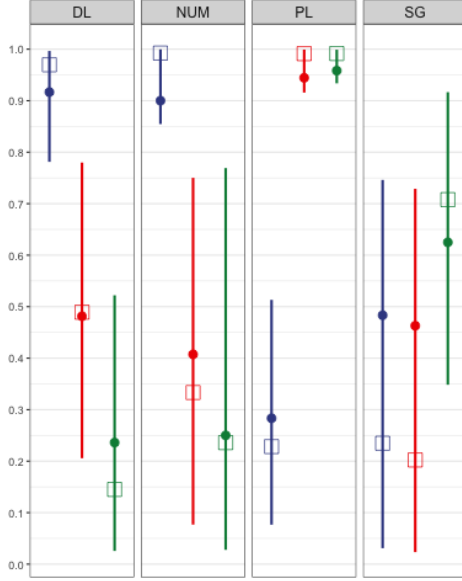
For SG, the theoretical prediction is that it should be unacceptable in all three contexts, but given the results of Experiment 1, it wouldn't be surprising to find intermediate acceptability in all three contexts.

5.3 Participants

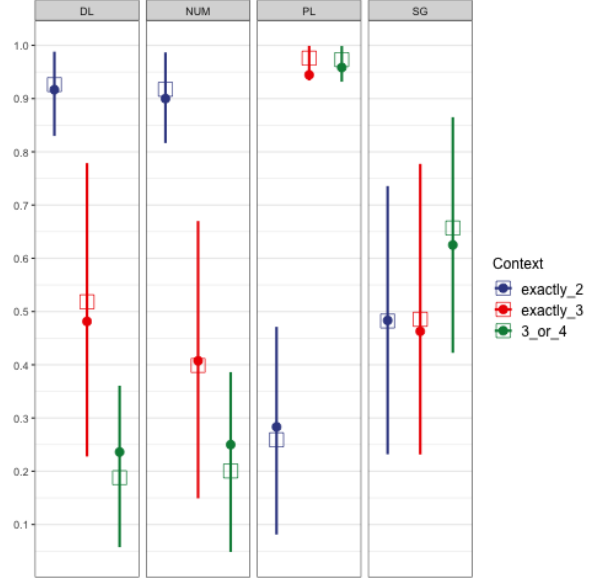
35 self-reported native speakers of Slovenian were recruited on [Prolific.ac](#) and were paid £2.50 for their participation. The entire experiment took 14m08s on average (SD = 8m53s), which makes the average hourly rate 10.61£/hour. We excluded one participant for coming from an area where duals are not often used. Three other participants were also excluded for providing correct answers to less than 75% of the filler items. The following statistical analyses are based on the results from the remaining 31 participants. Among them, 10 were assigned to [exactly 2], 9 to [exactly 3], and 12 to [3 or 4].

5.4 Results

The results are summarized in Figure 2 and Table 5. Although there is no issue of separation, we also report an analysis based on a Bayesian hierarchical model for the sake of uniformity. Also, as mentioned in the previous section, Bayesian models allow for more straightforward interpretations of multiple comparisons. The model specification is essentially the same as in the model for Experiment 1, except that the context variables are renamed. The numerical details of the mixed effects logistic regression models are given in Table 6.



(a) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% confidence intervals predicted by the mixed effects logistic regression models, as described in the text.



(b) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% credible intervals estimated by the Bayesian hierarchical logistic regression model with a weakly informed prior.

Figure 2: The observed and estimated proportions of *yes* answers in Experiment 2 with 95% confidence/credible intervals.

NUMBER	CONTEXT	%Yes	MELR		Bayesian	
			%Yes	95% CI	%Yes	95% CI
DL	[exactly 2]	91.7	96.7	[78.1, 99.7]	92.6	[83.0, 98.8]
	[exactly 3]	48.1	48.9	[20.6, 78.0]	51.8	[22.8, 77.9]
	[3 or 4]	23.6	14.5	[2.6, 52.2]	18.8	[5.7, 36.1]
NUM	[exactly 2]	90.0	99.2	[85.5, 99.9]	91.7	[81.7, 98.7]
	[exactly 3]	40.7	33.3	[7.7, 75.0]	39.9	[14.9, 67.0]
	[3 or 4]	25.0	23.6	[2.8, 76.9]	20.1	[4.8, 38.6]
PL	[exactly 2]	28.3	22.8	[7.7, 51.3]	25.9	[8.1, 47.1]
	[exactly 3]	94.4	99.1	[91.6, 99.9]	97.6	[93.4, 99.9]
	[3 or 4]	95.8	99.2	[93.4, 99.9]	97.3	[93.2, 99.9]
SG	[exactly 2]	48.3	23.5	[3.1, 74.6]	48.2	[23.2, 73.6]
	[exactly 3]	46.3	20.2	[2.3, 72.9]	48.5	[23.2, 77.7]
	[3 or 4]	62.5	70.8	[34.8, 91.7]	65.7	[42.2, 86.5]

Table 5: The observed proportions of *yes* answers in Experiment 2, and the estimations made by the mixed effects logistic regression models (MELR) and the hierarchical Bayesian model (Bayesian). 95% CI stands for 95% confidence intervals for the former and for 95% credible intervals.

Condition		β	SE	z	p
DL	Intercept	−0.04306	0.66720	0.065	0.94854
	[exactly 2]	−3.46446	1.11799	−3.099	0.0019**
	[3 or 4]	−1.77364	0.95001	−1.867	0.0619
NUM	Intercept	−0.6933	0.9147	−0.758	0.4485***
	[exactly 2]	−48814	1.5870	−3.076	0.0021**
	[3 or 4]	−1.1745	1.2132	−0.968	0.3330
PL	Intercept	−1.2180	0.6484	−1.878	0.0603
	[exactly 3]	4.7409	1.2014	3.946	< 0.0001***
	[3 or 4]	4.7681	1.0834	4.401	< 0.0001***
SG	Intercept	0.885	0.771	1.148	0.2510
	[exactly 2]	−1.182	1.153	−1.025	0.3050
	[exactly 3]	−1.372	1.204	−1.139	0.2550

Table 6: The β -values, standard errors, z -values, and p -values of the logistic mixed effects models.

Starting from DL, it is accepted almost perfectly in [exactly 2] with the observed proportion of *yes* answers being 91.7%, and shows mild acceptance in [exactly 3] and [3 or 4] with the observed proportions of *yes* answers being 48.1% and 23.6%, respectively. A mixed effects logistic regression model with random intercepts for subjects was fitted to the data with [exactly 3] as the reference level.¹⁵ The confidence/credible intervals in Figure 2 and Table 5, as well as the p -values in Table 6, indicate that [exactly 2] behaves differently from [exactly 3], while there is notevidence that [exactly 3] and [3 or 4] differ from each other.

The results of NUM are quite similar to those of DL. A mixed effects logistic regression model similar to the one above was fitted to the data.¹⁶ The confidence/credible intervals in Figure 2 and Table 5, as well as the p -values in Table 6, suggest that NUM is accepted far better in [exactly 2] than in the other two contexts, and there is no evidence that its acceptance differs in [exactly 3] and [3 or 4].

Turning to PL, it exhibits mild acceptability in [exactly 2] with *yes* answers being provided 28.3% of the time, while it is more or less perfectly accepted in the other two contexts. A mixed effects logistic regression model with random intercepts for subjects was fitted to the data, with [exactly 2] being the reference level.¹⁷ As the confidence/credible intervals in Figure 2 and Table 5 and the p -values in in Table 6 indicate, [exactly 2] is noticeably different from the other two contexts. The 95% confidence and credible intervals for this condition are relatively wide but do not overlap with 0%, which suggests that PL is mildly acceptable in this context.

Finally, SG seemed to be accepted mildly in all three contexts. We fitted a mixed effects logistic regression model with random intercepts for subjects to the data.¹⁸ Since it exhibited

¹⁵A model with random intercepts for subjects resulted in a higher AIC (+2.00) and a higher BIC (+5.23), but points to the same conclusion.

¹⁶A model with random intercepts for subjects resulted in a higher AIC (+2.01) and a higher BIC (+5.23), but points to the same conclusion.

¹⁷To avoid non-convergence, the `nAGQ` parameter of the `glmer` function was set to 0. Also, a model with random intercepts for subjects resulted in a higher AIC (+2.00) and a higher BIC (+5.23), but points to the same conclusion.

¹⁸A model with random intercepts for subjects resulted in a higher AIC (+2.00) and a higher BIC (+5.22), but points to the same conclusion. To avoid non-convergence, the `nAGQ` parameter of the `glmer` function was set to 0.

somewhat higher acceptance in [3 or 4] than in the other two contexts, we used [3 or 4] as the reference level in the statistical model. The 95% confidence/credible intervals are quite wide and overlap with each other quite a bit. Therefore, there is no evidence for any difference among these three conditions. But that the 95% credible intervals do not contain 0% suggests that SG is not completely unacceptable in any of them.

5.5 Discussion

To summarize the main findings of Experiment 2:

- The results for [exactly 2] essentially replicated the same condition in Experiment 1.
- As in Experiment 1, DL and NUM behaved similarly. Both of them are accepted in [exactly 2], but showed low acceptability in [exactly 3] and [3 or 4].
- The results of PL in [exactly 2] can be seen as showing mild acceptability, as in Experiment 1. In [exactly 3] and [3 or 4], PL is accepted.
- In all three contexts SG showed mild acceptability.

Let us start with PL. That PL is accepted almost perfectly in [exactly 3] and [3 or 4] is expected under any view. We take its mild acceptance in [exactly 2], which was also observed in Experiment 2, to be due to competition with the dual. Overall, PL behaved as expected, which is evidence that there is no significant flaw in the experiment.

We also take the results of DL and NUM to be supporting the conclusions from the previous section. As in Experiment 1, they were almost perfectly accepted in [exactly 2]. The other two conditions are somewhat difficult to interpret, but the observed proportions of *yes* answers are comparable to the results of [2 or 3] in Experiment 1. Recall that according to the Pragmatic Weakening Theory, DL and NUM can be optionally weakened to have lower-bounded readings, hence these mild to low acceptance rates in [exactly 3] and [3 or 4] are as expected.

Lastly, SG behaved unexpectedly again. Contrary to the theoretical prediction that it should be rejected in all three contexts, it was accepted to some extent in all of them. Recall that it was expected to be rejected in all three conditions of Experiment 1 as well, but was actually accepted to similar extents. We therefore think that the number inference of the singular in Slovenian is actually weak, at least in this experimental task. Before discussing possible reasons behind this, we would like to know whether or not the singular in Slovenian is special. To find out, we ran a version of Experiment 1 in English. The results of this experiment also lend further support to the claim that the dual and the plural compete with each other in [exactly 2].

6 Experiment 3

6.1 Design and Procedure

Experiment 3 is constructed from Experiment 1 by translating all the materials into English. Since English has no dual, there are three types of target sentences, SG, NUM, and PL.

- | | | |
|------|-----------------------------------|-----|
| (14) | a. Every man washed his car. | SG |
| | b. Every man washed his two cars. | NUM |
| | c. Every man washed his cars. | PL |

Thus, each participant saw 18 target sentences, instead of 24. As in Experiment 1, there are 24 filler items. All the items are in the supplementary document.

6.2 Predictions

The lack of dual in English leads to two crucial predictions. Firstly, there should be no competition between the plural and the dual, so PL should be accepted in [exactly 2] as well as in [1 or 2] and [2 or 3], unlike in Experiment 1. Secondly, unlike in the Slovenian experiments, the NUM condition does not involve a dual noun, but a plural noun instead. This is important because strictly speaking, NUM in Experiments 1 and 2 involved dual nouns, so its similarity to DL could be attributed to the nominal number, rather than to the numeral. If NUM in the present experiment behaves similarly to DL in Experiment 1, that will give further support to the claim that the meaning of the dual is similar to the meaning of the numeral *two*.

Also, as we mentioned at the end of the previous section, we would like to see if the singular in English behaves similarly to the singular in Slovenian, given its unexpected behavior in Experiments 1 and 2. If that turns out to be the case, then the singular perhaps should be given a weaker semantics than usually assumed; if the two languages differ, on the other hand, its unexpected behavior in the Slovenian experiments should be given a language specific explanation, perhaps in relation to the presence of the dual in Slovenian.

6.3 Participants

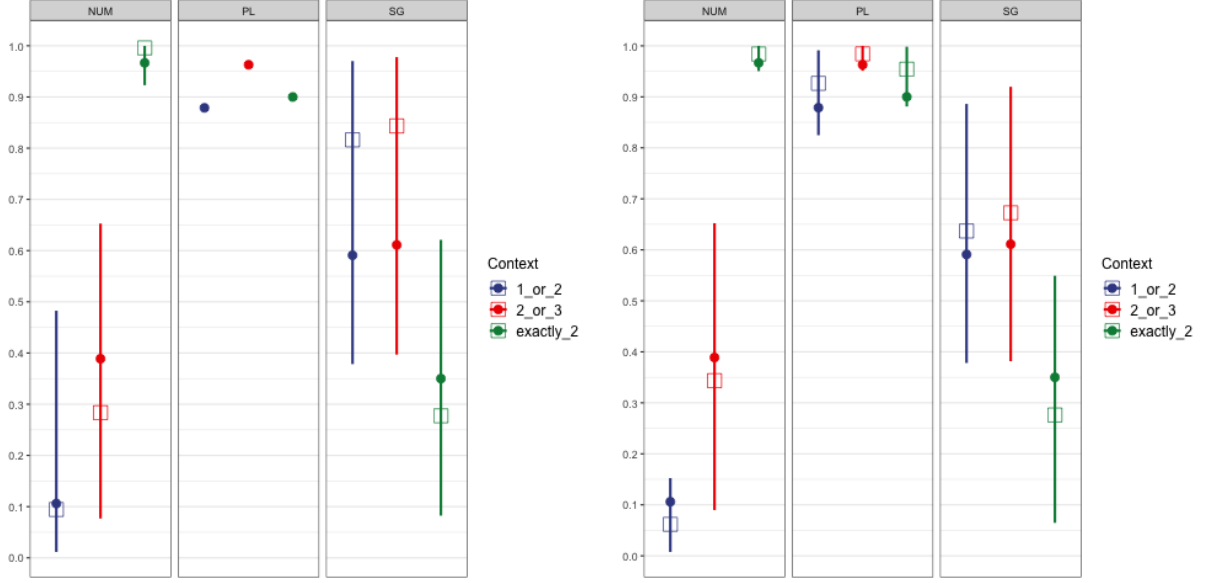
32 self-reported native speakers of English were recruited on [Prolific.ac](https://prolific.ac), and were paid £2 for their participation. The entire experiment took 9m19s on average (SD=4m3s), which makes the average hourly rate 12.88£/hour. We excluded two participants for providing correct answers to less than 75% of the filler items. The following statistical analyses are based on the results from the remaining 30 participants. Among them, 11 were assigned to [1 or 2], 9 to [2 or 3], and 10 to [exactly 2].

6.4 Results

NUMBER	CONTEXT	%Yes	MELR		Bayesian	
			%Yes	95% CI	%Yes	95% CI
NUM	[1 or 2]	10.6	9.4	[1.2, 48.3]	6.2	[0.8, 15.2]
	[2 or 3]	38.9	28.3	[7.7, 65.3]	34.3	[9.0, 65.2]
	[exactly 2]	96.7	99.6	[92.3, > 99.9]	98.4	[95.0, 99.9]
PL	[1 or 2]	87.9	—	—	92.6	[82.5, 99.1]
	[2 or 3]	96.3	—	—	98.4	[95.1, 99.9]
	[exactly 2]	90.0	—	—	95.4	[88.1, 99.8]
SG	[1 or 2]	59.1	81.6	[37.8, 97.0]	63.7	[37.8, 88.6]
	[2 or 3]	61.1	84.3	[39.7, 97.8]	67.3	[38.2, 92.0]
	[exactly 2]	35.0	27.8	[8.2, 62.1]	24.6	[6.5, 54.9]

Table 7: The observed proportions of *yes* answers in Experiment 3, and the estimations made by the mixed effects logistic regression models (MELR) and the hierarchical Bayesian model (Bayesian). 95% CI stands for 95% confidence intervals for the former and for 95% credible intervals.

The results are summarized in Figure 3 and Table 7. As in Experiment 1, the data were analyzed using mixed effects logistic regression models and a Bayesian hierarchical logistic



(a) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% confidence intervals predicted by the mixed effects logistic regression models, as described in the text.

(b) The filled dots indicate the observed proportions of *yes* answers, and the squares and the bars are the estimated proportions of *yes* answers and 95% credible intervals estimated by the Bayesian hierarchical logistic regression model with a weakly informed prior.

Figure 3: The observed and estimated proportions of *yes* answers in Experiment 3 with 95% confidence/credible intervals.

Condition		β	SE	z	p
NUM	Intercept	-0.9274	0.7953	-1.166	0.2436
	[1 or 2]	-2.2606	1.1179	-2.022	0.0432*
	[exactly 2]	5.4767	1.5267	3.587	0.0003***
SG	Intercept	-0.9577	0.7406	-1.293	0.1960
	[1 or 2]	1.4916	1.0143	1.471	0.1410
	[2 or 3]	1.6841	1.0727	1.570	0.1160

Table 8: The β -values, standard errors, z -values, and p -values of the logistic mixed effects models.

regression model with a weakly informed prior. The numerical details of the mixed effects logistic regression models are given in Table 8. The model specification for the Bayesian model is just like in Experiment 1 except that the terms for DL are all removed. The main reason for reporting both types of statistical analyses is because the PL condition shows ceiling effects, and the three levels of the fixed effect would be highly correlated, resulting in unreasonably high standard errors. We therefore did not fit a mixed effects logistic regression model to the data in this condition.

The results of NUM are quite similar to Experiment 1. A mixed effect logistic regression model with random slopes for subjects was fitted to this data with [exactly 2] being the reference

level.¹⁹ As the 95% confidence intervals in Table 7 and the p -values in Table 8 indicate, its acceptability is higher in [exactly 2] than in [2 or 3], which in turn is significantly higher than kin [1 or 2]. Although the 95% credible intervals predicted by the Bayesian model for [1 or 2] and [2 or 3] overlap by 6.2 percentage points, we take these results as suggesting that NUM is rejected in [1 or 2], mildly accepted in [2 or 3], and perfectly accepted in [exactly 2]. This is the same pattern as in Experiment 1.

Turning to PL, the observed proportions of *yes* answers are all high. As mentioned above, the high correlation among the different levels of the fixed effects prevents us from fitting a logistic regression model to the data here, but the Bayesian model shows that there is no evidence for any difference among these three conditions. Crucially, this is a marked difference from Experiment 1, where PL was only mildly accepted in [exactly 2].

Finally, SG shows intermediate acceptance in all three conditions. A mixed effect logistic regression model with random slopes for subjects was fitted to this data.²⁰ [exactly 2] was taken to be the reference level in the model, as it shows somewhat attenuated acceptance compared to the other two contexts. As the overlapping 95% confidence intervals and the high p -values in Table 8 indicate, there is no evidence that there is a difference among the three contexts. The 95% credible intervals predicted by the Bayesian model also point to the same conclusion. Therefore, the results of SG essentially replicated the results of the same condition in Experiment 1.

6.5 Discussion

The main findings of this experiment are:

- As in Slovenian, NUM is rejected in [1 or 2], accepted in [exactly 2], and shows intermediate acceptability in [2 or 3].
- Unlike in Slovenian, PL is accepted in all three contexts.
- We replicated the results of SG in English.

The similarity of the results of NUM between Experiment 1 and the present experiment provides evidence that the similarity between DL and NUM in Experiment 1 is not explained by the use of dual nouns in these conditions. Bare dual nouns in Slovenian are similar in meaning to *two Ns* in English as well.

Another important finding is that PL is accepted in all three contexts, unlike in Experiment 1. This provides further support to the idea that the lower acceptability of PL in [exactly 2] in Experiment 1 is due to competition with the dual.

Lastly, in English too, SG is neither completely acceptable nor unacceptable in these three contexts, just as in Slovenian. This strongly suggests that this unexpected behavior of the singular is independent from the presence of the dual in Slovenian. One could interpret the intermediate acceptability of SG in all the contexts of all three experiments to be evidence that the core semantics of the singular is actually number neutral across languages. Farkas & de Swart (2010) put forward a theory based on this idea. They postulate some additional mechanisms to explain why the singular is typically used for singular reference, and why the plural often receives a plural reading in languages like English. As the semantics of the singular is not of our central concern in this paper, we will leave this question open here.

¹⁹Including random intercepts for items results in an increase in AIC (+2.00) and in BIC (+5.19). Also, that model results in similar p -values to what is reported in Table 8.

²⁰Including random intercepts for items resulted in a higher AIC (+2.00) and a higher BIC (+5.19).

7 Conclusion

This paper reported on acceptability-judgment experiments whose results shed light on the underlying semantics of the Slovenian dual. As far as we know, this is the first experimental study on this topic (see Marušič et al. 2016, 2019 for acquisition studies). The discussion in the previous section resulted in a conclusion that the default reading of the dual is bilateral (‘exactly 2’) but it can optionally be weakened to a lower-bounded reading (‘at least 2’). Recall, furthermore, that the acquisition study conducted by Marušič et al. (2016) suggests that acquiring a language with dual seems to accelerate the acquisition of the numeral ‘two’; in the present paper, we have now experimentally confirmed strong parallels between the semantics of the Slovenian dual and those of the numeral ‘two’, thereby furnishing a theoretical foundation for these previous empirical findings.

It is important to note that the bilateral semantics for the dual is compatible with a claim that a whole dual noun phrase may receive, and even prefers, a lower-bounded reading (as claimed by Marušič et al. 2019, for example). This is because even if the dual noun itself has a bilateral reading, an existential quantifier can turn the meaning of the whole DP lower-bounded. Concretely, even if the dual noun *avtomobila* ‘car.DL’ has a bilateral reading and is only true of pairs of cars, an existential sentence like *John has car.DU*, will have lower-bounded truth-conditions: the sentence will be true if there is a plurality that consists of exactly two cars that John owns, which is to say, John has at least two cars. Note that in our experiments, we only tested possessive constructions, which are generally definite (but see the discussion of the results for the singular) and more revealing with respect to the underlying semantics of the dual.

Needless to say, our experimental results do not answer all questions about the semantics and pragmatics of the dual. In particular they have very little to say about the exact nature of the mechanism for pragmatic weakening, other than that it should not be available very freely, at least in experimental settings like ours. For instance, Breheny (2008), who focuses on the interpretation of numerals in English, suggests that the lower-bounded (‘at least’) interpretation comes about via background implicature or Stalnaker’s (1978) diagonalization applied to specific readings, but our experimental results are not informative with respect to the feasibility of this idea.²¹ In fact, the results are compatible with an alternative mechanism for pragmatic weakening, e.g. domain restriction. The idea is that the dual showed mild acceptance in [2 or 3] because implicit domain restriction was performed, with which the bilateral reading becomes true in [2 or 3]. For instance, for (12), repeated here, what needs to be accommodated is some natural way to map each (relevant) man to two of his cars.

- (12) Vsak moški je opral svoj-a avtomobil-a.
Every man aux washed self’s-DL car-DL
‘Every man washed his (two) cars.’

We have to leave questions about the mechanism of pragmatic weakening open for future research.

In closing, perhaps one of the conclusions of broadest interest are what the pattern of results, and indeed, the presence of a dual number category in Slovenian reveals about the plural. Recall that PL showed intermediate acceptability in [exactly 2] contexts in Slovenian, but not in English. This suggests that the presence of a dual incurs inflectional competition, and that

²¹It should however be noted that the mechanisms that Breheny (2008) suggests might not be straightforwardly applied to the sentences we tested. Background implicatures are not meant to explain this type of sentences to begin with. Furthermore, it is not immediately clear how the idea of diagonalization can be applied to sentences with quantifiers.

while the morphosemantics of the plural may be uniform across these two languages, their morphopragmatics are not.

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Inflectional Competition and Interpretation: A Case Study on the Slovenian Dual

SUPPLEMENTARY MATERIALS

Lanko Marušič
University of Nova Gorica

Rok Žaucer
University of Nova Gorica

Yasutada Sudo
University College London

Andrew Nevins
University College London

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This document provides the entire list of sentences used in our experiments. The target sentences were of four different types which differed in the grammatical number marking on the noun phrase and in the presence/absence of the numeral.

- a. Vsak moški je pospravil svoj motor.
Every man aux put-away self's-SG motorcycle-SG
'Every man put away his motorcycle.'
- b. Vsak moški je pospravil svoja motorja
Every man aux put-away self's-DL motorcycle-DL
'Every man put away his (two) motorcycles.'
- c. Vsak moški je pospravil svoja dva motorja.
Every man aux put-away self's-DL two-DL motorcycle-DL
'Every man put away his two motorcycles.'
- d. Vsak moški je pospravil svoje motorje.
Every man aux put-away self's-PL motorcycle-PL
'Every man put away his motorcycles.'

These sentences were judged against three different types of contexts that differed as to how many relevant things the individuals in the domain of quantification possessed.

In the list of sentences below, we provide only the Slovenian original and an English translation, without a word-for-word gloss. The English translations of the relevant noun phrases are marked for grammatical number in parentheses. Since Slovenian noun phrases feature noun phrase-internal concord agreement, grammatical number is also marked on other items inside the noun phrase; noun phrases that include the reflexive possessive *svoj* 'his/her-own', the numeral and an adjective thus actually have four items marked for grammatical number.

Experiments 1 and 2 used (basically) the same target sentences (followed by different sets of interpretation questions) and the same filler items. A couple of target sentences were minimally modified between Experiments 1 and 2 to make the entire list of items more uniform. Not to

complicate the single list of items with markings of differences, we provide below the two full lists of items separately.

Concretely 8 interpretational sentences (out of total 24) in the [exactly 2] condition in Experiment 1 lacked the phrase *natančno* “exactly”, which was added to all interpretational sentences in the [exactly 2] and [exactly 3] conditions in the Experiment 2. As stated in the paper “The results for [exactly 2] essentially replicated the same condition in Experiment 1”, so the presence/absence of the phrase *natančno* “exactly” most likely did not play a crucial role.

1 Experiment 1: target sentences

The three contexts in Experiment 1 were:

Sentence: Every man washed his (two) car(s).

Context 1: Can we use this sentence in a situation where some men have **one** car and some men have **two** cars?

Context 2: Can we use this sentence in a situation where some men have **two** cars and some men have **three** cars?

Context 3: Can we use this sentence in a situation where every man has **exactly two** cars?

1.1 Singular

- (1) Vsak zbiralec umetnin je prodal svoj kipec.
‘Every art collector sold his statuette(.SG).’
 - a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj zbiralcev umetnin po en kipec, nekaj zbiralcev umetnin pa po dva kipca?
‘Can we use this sentence in a situation where some art collectors have one statuette and some art collectors have two statuettes?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj zbiralcev umetnin po dva kipca, nekaj zbiralcev umetnin pa po tri kipce?
‘Can we use this sentence in a situation where some art collectors have two statuettes and some art collectors have three statuettes?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak zbiralec umetnin dva kipca?
‘Can we use this sentence in a situation where every art collector has two statuettes?’
- (2) Vsak znanstvenik je predstavil svoj model vesolja.
‘Every scientist presented his model(.SG) of the universe.’
 - a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj znanstvenikov en model vesolja, nekaj znanstvenikov pa po dva modela vesolja?
‘Can we use this sentence in a situation where some scientists have one model of the universe and some scientists have two models of the universe?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj znanstvenikov po dva modela vesolja, nekaj znanstvenikov pa po tri modele vesolja?
‘Can we use this sentence in a situation where some scientists have two models of the universe and some scientists have three models of the universe?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak znanstvenik natančno dva modela vesolja?
 'Can we use this sentence in a situation where every scientist has exactly two models of the universe?'
- (3) Vsaka stečajna upraviteljica je prinesla svoj elaborat.
 'Every bankruptcy manager brought her report(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stečajnih upraviteljic po en elaborat, nekaj stečajnih upraviteljic pa po dva elaborata?
 'Can we use this sentence in a situation where some bankruptcy managers have one report and some bankruptcy managers have two reports?'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stečajnih upraviteljic dva elaborata, nekaj stečajnih upraviteljic pa po tri elaborate?
 'Can we use this sentence in a situation where some bankruptcy managers have two reports and some bankruptcy managers have three reports?'
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka stečajna upraviteljica natančno dva elaborata?
 'Can we use this sentence in a situation where every bankruptcy manager has exactly two reports?'
- (4) Vsak lokostrelec je pregledal svoj lok.
 'Every archer inspected his bow(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj lokostrelcev po en lok, nekaj lokostrelcev pa po dva loka?
 'Can we use this sentence in a situation where some archers have one bow and some archers have two bows?'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj lokostrelcev po dva loka, nekaj lokostrelcev pa po tri loke?
 'Can we use this sentence in a situation where some archers have two bows and some archers have three bows?'
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak lokostrelec dva loka?
 'Can we use this sentence in a situation where every archer has two bows?'
- (5) Vsaka učiteljica je pohvalila svojega učenca.
 'Every teacher praised her pupil(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj učiteljic enega učenca, nekaj učiteljic pa po dva učenca?
 'Can we use this sentence in a situation where some teachers have one pupil and some teachers have two pupils?'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj učiteljic po dva učenca, nekaj učiteljic pa po tri učence?
 'Can we use this sentence in a situation where some teachers have two pupils and some teachers have three pupils?'
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka učiteljica natančno dva učenca?
 'Can we use this sentence in a situation where every teacher has exactly two pupils?'
- (6) Vsak jamar je zakrpal svoj kombinezon.
 'Every caver patched his suit(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj jamarjev po en kombine-

zon, nekaj jamarjev pa po dva kombinezona?

‘Can we use this sentence in a situation where some cavers have one suit and some cavers have two suits?’

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj jamarjev dva kombinezona, nekaj jamarjev pa po tri kombinezone?

‘Can we use this sentence in a situation where some cavers have two suits and some cavers have three suits?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak jamar natančno dva kombinezona?

‘Can we use this sentence in a situation where every caver has exactly two suits?’

1.2 Bare dual

- (7) Vsak moški je opral svoja avtomobila.

‘Every man washed his cars(.DU).’

- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj moških po en avtomobil, nekaj moških pa po dva avtomobila?

‘Can we use this sentence in a situation where some men have one car and some men have two cars?’

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj moških po dva avtomobila, nekaj moških pa po tri avtomobile?

‘Can we use this sentence in a situation where some men have two cars and some men have three cars?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak moški dva avtomobila?

‘Can we use this sentence in a situation where every man has two cars?’

- (8) Vsak otrok je prinesel svoja plišasta medvedka.

‘Every child brought his teddybears(.DU).’

- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj otrok enega plišastega medvedka, nekaj otrok pa po dva plišasta medvedka?

‘Can we use this sentence in a situation where some children have one teddybear and some children have two teddybears?’

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj otrok po dva plišasta medvedka, nekaj otrok pa po tri plišaste medvedke?

‘Can we use this sentence in a situation where some children have two teddybears and some children have three teddybears?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak otrok natančno dva plišasta medvedka?

‘Can we use this sentence in a situation where every child has exactly two teddybears?’

- (9) Vsaka ženska je prodala svoja diamantna prstana.

‘Every woman sold her diamond rings(.DU).’

- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žensk po en diamantni prstan, nekaj žensk pa po dva diamantna prstana?

‘Can we use this sentence in a situation where some women have one diamond ring and some women have two diamond rings?’

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žensk dva diamantna prstana, nekaj žensk pa po tri diamantne prstane?

- ‘Can we use this sentence in a situation where some women have two diamond rings and some women have three diamond rings?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka ženska natančno dva diamantna prstana?
‘Can we use this sentence in a situation where every woman has exactly two diamond rings?’
- (10) Vsak slikar je pospravil svoja čopiča v lonček.
‘Every painter put his brushes(.DU) in a cup.’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj slikarjev po en čopič, nekaj slikarjev pa po dva čopiča?
‘Can we use this sentence in a situation where some painters have one brush and some painters have two brushes?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj slikarjev po dva čopiča, nekaj slikarjev pa po tri čopiče?
‘Can we use this sentence in a situation where some painters have two brushes and some painters have three brushes?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak slikar dva čopiča?
‘Can we use this sentence in a situation where every painter has two brushes?’
- (11) Vsak žongler je izpustil svoja keglja.
‘Every juggler dropped his pins(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žonglerjev en keglj, nekaj žonglerjev pa po dva keglja?
‘Can we use this sentence in a situation where some jugglers have one pin and some jugglers have two pins?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žonglerjev po dva keglja, nekaj žonglerjev pa po tri keglje?
‘Can we use this sentence in a situation where some jugglers have two pins and some jugglers have three pins?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak žongler natančno dva keglja?
‘Can we use this sentence in a situation where every juggler has exactly two pins?’
- (12) Vsak član žirije je imenoval svoja kandidata.
‘Every committee member nominated his candidates(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj članov žirije po enega kandidata, nekaj članov žirije pa po dva kandidata?
‘Can we use this sentence in a situation where some committee members have one candidate and some committee members have two candidates?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj članov žirije dva kandidata, nekaj članov žirije pa po tri kandidate?
‘Can we use this sentence in a situation where some committee members have two candidates and some committee members have three candidates?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak član žirije natančno dva kandidata?
‘Can we use this sentence in a situation where every committee member has exactly two candidates?’

1.3 Numeral + dual

- (13) Vsak plezalec je pregledal svoja dva varovalna kompleta.
'Every climber inspected his two self-belay lanyards(.DU).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj plezalcev po en varovalni komplet, nekaj plezalcev pa po dva varovalna kompleta?
'Can we use this sentence in a situation where some climbers have one self-belay lanyard and some climbers have two self-belay lanyard?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj plezalcev po dva varovalna kompleta, nekaj plezalcev pa po tri varovalne komplete?
'Can we use this sentence in a situation where some climbers have two self-belay lanyards and some climbers have three self-belay lanyards?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak plezalec dva varovalna kompleta?
'Can we use this sentence in a situation where every climber has two self-belay lanyards?'
- (14) Vsak direktor je kupil darilo za svoja dva tajnika.
'Every director bought a present for his two secretaries(.DU).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj direktorjev enega tajnika, nekaj direktorjev pa po dva tajnika?
'Can we use this sentence in a situation where some directors have one secretary and some directors have two secretaries?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj direktorjev po dva tajnika, nekaj direktorjev pa po tri tajnike?
'Can we use this sentence in a situation where some directors have two secretaries and some directors have three secretaries?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak direktor natančno dva tajnika?
'Can we use this sentence in a situation where every director has exactly two secretaries?'
- (15) Vsak kuhar je nabrusil svoja dva noža.
'Every cook sharpened his two knives(.DU).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kuharjev po en nož, nekaj kuharjev pa po dva noža?
'Can we use this sentence in a situation where some cooks have one knife and some cooks have two knives?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kuharjev dva noža, nekaj kuharjev pa po tri nože?
'Can we use this sentence in a situation where some cooks have two knives and some cooks have three knives?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kuhar natančno dva noža?
'Can we use this sentence in a situation where every cook has exactly two knives?'
- (16) Vsaka študentka je pravočasno prišla na svoja dva izpita.
'Every student came to her two exams(.DU) on time.'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj študentk po en izpit, nekaj študentk pa po dva izpita?
'Can we use this sentence in a situation where some students have one exam and

- some students have two exams?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj študentk po dva izpita, nekaj študentk pa po tri izpite?
‘Can we use this sentence in a situation where some students have two exams and some students have three exams?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka študentka dva izpita?
‘Can we use this sentence in a situation where every student has two exams?’
- (17) Vsak stanovalec je upravniku stavbe predal svoja dva ključa.
‘Every tenant left his two keys(.DU) with the superintendent.’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stanovalcev en ključ, nekaj stanovalcev pa po dva ključa?
‘Can we use this sentence in a situation where some tenants have one key and some tenants have two keys?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stanovalcev po dva ključa, nekaj stanovalcev pa po tri ključe?
‘Can we use this sentence in a situation where some tenants have two keys and some tenants have three keys?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak stanovalec natančno dva ključa?
‘Can we use this sentence in a situation where every tenant has exactly two keys?’
- (18) Vsak glasbenik je prodal svoja dva inštrumenta.
‘Every musician sold his two instruments(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj glasbenikov po en inštrument, nekaj glasbenikov pa po dva inštrumenta?
‘Can we use this sentence in a situation where some musicians have one instrument and some musicians have two instruments?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj glasbenikov dva inštrumenta, nekaj glasbenikov pa po tri inštrumente?
‘Can we use this sentence in a situation where some musicians have two instruments and some musicians have three instruments?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak glasbenik natančno dva inštrumenta?
‘Can we use this sentence in a situation where every musician has exactly two instruments?’

1.4 Plural

- (19) Vsak pivopivec je razbil svoje spominske kozarce.
‘Every beer-drinker broke his souvenir mugs(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pivopivcev po en spominski kozarec, nekaj pivopivcev pa po dva spominska kozarca?
‘Can we use this sentence in a situation where some beer-drinkers have one souvenir mug and some beer-drinkers have two souvenir mugs?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pivopivcev po dva spominska kozarca, nekaj pivopivcev pa po tri spominske kozarce?
‘Can we use this sentence in a situation where some beer-drinkers have two souvenir mugs and some beer-drinkers have three souvenir mugs?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak pivopivec dva spominska kozarca?
‘Can we use this sentence in a situation where every beer-drinker has two souvenir mugs?’
- (20) Vsak kmet je registriral svoje traktorje.
‘Every farmer registered his tractors(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kmetov en traktor, nekaj kmetov pa po dva traktorja?
‘Can we use this sentence in a situation where some farmers have one tractor and some farmers have two tractors?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kmetov po dva traktorja, nekaj kmetov pa po tri traktorje?
‘Can we use this sentence in a situation where some farmers have two tractors and some farmers have three tractors?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kmet natančno dva traktorja?
‘Can we use this sentence in a situation where every farmer has exactly two tractors?’
- (21) Vsaka kokoš je skrila svoje piščančke.
‘Every hen hid her chickens(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kokoši po enega piščančka, nekaj kokoši pa po dva piščančka?
‘Can we use this sentence in a situation where some hens have one chicken and some hens have two chickens?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kokoši dva piščančka, nekaj kokoši pa po tri piščančke?
‘Can we use this sentence in a situation where some hens have two chickens and some hens have three chickens?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka kokoš natančno dva piščančka?
‘Can we use this sentence in a situation where every hen has exactly two chickens?’
- (22) Vsak kirurg je pospravil svoje skalpele.
‘Every surgeon put away his scalpels(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kirurgov po en skalpel, nekaj kirurgov pa po dva skalpela?
‘Can we use this sentence in a situation where some surgeons have one scalpel and some surgeons have two scalpels?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kirurgov po dva skalpela, nekaj kirurgov pa po tri skalpele?
‘Can we use this sentence in a situation where some surgeons have two scalpels and some surgeons have three scalpels?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kirurg dva skalpela?
‘Can we use this sentence in a situation where every surgeon has two scalpels?’
- (23) Vsak računalničar je posodobil svoje računalnike.
‘Every technician updated his computers(.PL).’

- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj računalničarjev en računalnik, nekaj računalničarjev pa po dva računalnika?
'Can we use this sentence in a situation where some technicians have one computer and some technicians have two computers?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj računalničarjev po dva računalnika, nekaj računalničarjev pa po tri računalnike?
'Can we use this sentence in a situation where some technicians have two computers and some technicians have three computers?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak računalničar natančno dva računalnika?
'Can we use this sentence in a situation where every technician has exactly two computers?'
- (24) Vsaka pisateljica je v intervjuju predstavila svoje nove romane.
'In the interview every writer presented her new novels(.PL).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pisateljic po en nov roman, nekaj pisateljic pa po dva nova romana?
'Can we use this sentence in a situation where some writers have one new novel and some writers have two new novels?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pisateljic dva nova romana, nekaj pisateljic pa po tri nove romane?
'Can we use this sentence in a situation where some writers have two new novels and some writers have three new novels?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka pisateljica natančno dva nova romana?
'Can we use this sentence in a situation where every writer has exactly two new novels?'

2 Experiment 2: target sentences

The three contexts in Experiment 2 were:

Sentence: Every man washed his (two) car(s).

Context 1: Can we use this sentence in a situation where every man has **exactly two** cars?

Context 2: Can we use this sentence in a situation where every man has **exactly three** cars?

Context 3: Can we use this sentence in a situation where some men have **three** car and some men have **four** cars?

2.1 Singular

- (25) Vsak zbiralec umetnin je prodal svoj kipec.
'Every art collector sold his statuette(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak zbiralec umetnin natančno dva kipca?
'Can we use this sentence in a situation where every art collector has exactly two statuettes?'

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak zbiralec umetnin natančno tri kipce?
'Can we use this sentence in a situation where every art collector has exactly three statuettes?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj zbiralcev umetnin po tri kipce, nekaj zbiralcev umetnin pa po štiri kipce?
'Can we use this sentence in a situation where some art collectors have three statuettes and some art collectors have four statuettes?'
- (26) Vsak znanstvenik je predstavil svoj model vesolja.
'Every scientist presented his model(.SG) of the universe.'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak znanstvenik natančno dva modela vesolja?
'Can we use this sentence in a situation where every scientist has exactly two models of the universe?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak znanstvenik natančno tri modele vesolja?
'Can we use this sentence in a situation where every scientist has exactly three models of the universe?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj znanstvenikov po tri modele vesolja, nekaj znanstvenikov pa po štiri modele vesolja?
'Can we use this sentence in a situation where some scientists have three models of the universe and some scientists have four models of the universe?'
- (27) Vsaka stečajna upraviteljica je prinesla svoj elaborat.
'Every bankruptcy manager brought her report(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka stečajna upraviteljica natančno dva elaborata?
'Can we use this sentence in a situation where every bankruptcy manager has exactly two reports?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka stečajna upraviteljica natančno tri elaborate?
'Can we use this sentence in a situation where every bankruptcy manager has exactly three reports?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stečajnih upraviteljic po tri elaborate, nekaj stečajnih upraviteljic pa po štiri elaborate?
'Can we use this sentence in a situation where some bankruptcy managers have three reports and some bankruptcy managers have four reports?'
- (28) Vsak lokostrelec je pregledal svoj lok.
'Every archer inspected his bow(.SG).'
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak lokostrelec natančno dva loka?
'Can we use this sentence in a situation where every archer has exactly two bows?'
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak lokostrelec natančno tri loke?
'Can we use this sentence in a situation where every archer has three bows?'
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj lokostrelcev po tri loke, nekaj lokostrelcev pa po štiri loke?

‘Can we use this sentence in a situation where some archers have three bows and some archers have four bows?’

(29) Vsaka učiteljica je pohvalila svojega učenca.

‘Every teacher praised her pupil(.SG).’

a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka učiteljica natančno dva učenca?

‘Can we use this sentence in a situation where every teacher has exactly two pupils?’

b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka učiteljica natančno tri učence?

‘Can we use this sentence in a situation where every teacher has exactly three pupils?’

c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj učiteljic po tri učence, nekaj učiteljic pa po štiri učence?

‘Can we use this sentence in a situation where some teachers have three pupils and some teachers have four pupils?’

(30) Vsak jamar je zakrpal svoj kombinezon.

‘Every caver patched his suit(.SG).’

a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak jamar natančno dva kombinezona?

‘Can we use this sentence in a situation where every caver has exactly two suits?’

b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak jamar natančno tri kombinezone?

‘Can we use this sentence in a situation where every caver has exactly three suits?’

c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj jamarjev po tri kombinezone, nekaj jamarjev pa po štiri kombinezone?

‘Can we use this sentence in a situation where some cavers have three suits and some cavers have four suits?’

2.2 Bare dual

(31) Vsak moški je opral svoja avtomobila.

‘Every man washed his cars(.DU).’

a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak moški natančno dva avtomobila?

‘Can we use this sentence in a situation where every man has exactly two cars?’

b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak moški natančno tri avtomobile?

‘Can we use this sentence in a situation where every man has exactly three cars?’

c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj moških po tri avtomobile, nekaj moških pa po štiri avtomobile?

‘Can we use this sentence in a situation where some men have three cars and some men have four cars?’

(32) Vsak otrok je prinesel svoja plišasta medvedka.

‘Every child brought his teddybears(.DU).’

a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak otrok natančno dva plišasta medvedka?

- ‘Can we use this sentence in a situation where every child has exactly two teddy-bears?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak otrok natančno tri plišaste medvedke?
‘Can we use this sentence in a situation where every child has exactly three teddybears?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj otrok po tri plišaste medvedke, nekaj otrok pa po štiri plišaste medvedke?
‘Can we use this sentence in a situation where some children have three teddybears and some children have four teddybears?’
- (33) Vsaka ženska je prodala svoja diamantna prstana.
‘Every woman sold her diamond rings(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka ženska natančno dva diamantna prstana?
‘Can we use this sentence in a situation where every woman has exactly two diamond rings?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka ženska natančno tri diamantne prstane?
‘Can we use this sentence in a situation where every woman has exactly three diamond rings?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žensk po tri diamantne prstane, nekaj žensk pa po štiri diamantne prstane?
‘Can we use this sentence in a situation where some women have three diamond rings and some women have four diamond rings?’
- (34) Vsak slikar je pospravil svoja čopiča v lonček.
‘Every painter put his brushes(.DU) in a cup.’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak slikar natančno dva čopiča?
‘Can we use this sentence in a situation where every painter has exactly two brushes?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak slikar natančno tri čopiče?
‘Can we use this sentence in a situation where every painter has exactly three brushes?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj slikarjev po tri čopiče, nekaj slikarjev pa po štiri čopiče?
‘Can we use this sentence in a situation where some painters have three brushes and some painters have four brushes?’
- (35) Vsak žongler je izpustil svoja keglja.
‘Every juggler dropped his pins(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak žongler natančno dva keglja?
‘Can we use this sentence in a situation where every juggler has exactly two pins?’
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak žongler natančno tri keglje?
‘Can we use this sentence in a situation where every juggler has exactly three pins?’
- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj žonglerjev po tri keglje, nekaj žonglerjev pa po štiri keglje?

‘Can we use this sentence in a situation where some jugglers have three pins and some jugglers have four pins?’

- (36) Vsak član žirije je imenoval svoja kandidata.
‘Every committee member nominated his candidates(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak član žirije natančno dva kandidata?
‘Can we use this sentence in a situation where every committee member has exactly two candidates?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak član žirije natančno tri kandidate?
‘Can we use this sentence in a situation where every committee member has exactly three candidates?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj članov žirije po tri kandidate, nekaj članov žirije pa po štiri kandidate?
‘Can we use this sentence in a situation where some committee members have three candidates and some committee members have four candidates?’

2.3 Numeral + dual

- (37) Vsak plezalec je pregledal svoja dva varovalna kompleta.
‘Every climber inspected his two self-belay lanyards(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak plezalec natančno dva varovalna kompleta?
‘Can we use this sentence in a situation where every climber has exactly two self-belay lanyards?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak plezalec natančno tri varovalne komplete?
‘Can we use this sentence in a situation where every climber has exactly three self-belay lanyards?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj plezalcev po tri varovalne komplete, nekaj plezalcev pa po štiri varovalne komplete?
‘Can we use this sentence in a situation where some climbers have three self-belay lanyards and some climbers have four self-belay lanyards?’
- (38) Vsak direktor je kupil darilo za svoja dva tajnika.
‘Every director bought a present for his two secretaries(.DU).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak direktor natančno dva tajnika?
‘Can we use this sentence in a situation where every director has exactly two secretaries?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak direktor natančno tri tajnike?
‘Can we use this sentence in a situation where every director has exactly three secretaries?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj direktorjev po tri tajnike, nekaj direktorjev pa po štiri tajnike?
‘Can we use this sentence in a situation where some directors have three secretaries and some directors have four secretaries?’

- (39) Vsak kuhar je nabrusil svoja dva noža.
 'Every cook sharpened his two knives(.DU).'
- Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kuhar natančno dva noža?
 'Can we use this sentence in a situation where every cook has exactly two knives?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kuhar natančno tri nože?
 'Can we use this sentence in a situation where every cook has exactly three knives?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kuharjev po tri nože, nekaj kuharjev pa po štiri nože?
 'Can we use this sentence in a situation where some cooks have three knives and some cooks have four knives?'
- (40) Vsaka študentka je pravočasno prišla na svoja dva izpita.
 'Every student came to her two exams(.DU) on time.'
- Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka študentka natančno dva izpita?
 'Can we use this sentence in a situation where every student has exactly two exams?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka študentka natančno tri izpite?
 'Can we use this sentence in a situation where every student has exactly three exams?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj študentk po tri izpite, nekaj študentk pa po štiri izpite?
 'Can we use this sentence in a situation where some students have three exams and some students have four exams?'
- (41) Vsak stanovalec je upravniku stavbe predal svoja dva ključa.
 'Every tenant left his two keys(.DU) with the superintendent.'
- Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak stanovalec natančno dva ključa?
 'Can we use this sentence in a situation where every tenant has exactly two keys?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak stanovalec natančno tri ključe?
 'Can we use this sentence in a situation where every tenant has exactly three keys?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj stanovalcev po tri ključe, nekaj stanovalcev pa po štiri ključe?
 'Can we use this sentence in a situation where some tenants have three keys and some tenants have four keys?'
- (42) Vsak glasbenik je prodal svoja dva inštrumenta.
 'Every musician sold his two instruments(.DU).'
- Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak glasbenik natančno dva inštrumenta?
 'Can we use this sentence in a situation where every musician has exactly two instruments?'
 - Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak glasbenik natančno tri inštrumente?
 'Can we use this sentence in a situation where every musician has exactly three

instruments?’

- c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj glasbenikov po tri inštrumente, nekaj glasbenikov pa po štiri inštrumente?
‘Can we use this sentence in a situation where some musicians have three instruments and some musicians have four instruments?’

2.4 Plural

- (43) Vsak pivopivec je razbil svoje spominske kozarce.
‘Every beer-drinker broke his souvenir mugs(.PL).’
 - a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak pivopivec natančno dva spominska kozarca?
‘Can we use this sentence in a situation where every beer-drinker has exactly two souvenir mugs?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak pivopivec natančno tri spominske kozarce?
‘Can we use this sentence in a situation where every beer-drinker has exactly three souvenir mugs?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pivopivcev po tri spominske kozarce, nekaj pivopivcev pa po štiri spominske kozarce?
‘Can we use this sentence in a situation where some beer-drinkers have three souvenir mugs and some beer-drinkers have four souvenir mugs?’
- (44) Vsak kmet je registriral svoje traktorje.
‘Every farmer registered his tractors(.PL).’
 - a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kmet natančno dva traktorja?
‘Can we use this sentence in a situation where every farmer has exactly two tractors?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kmet natančno tri traktorje?
‘Can we use this sentence in a situation where every farmer has exactly three tractors?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kmetov po tri traktorje, nekaj kmetov pa po štiri traktorje?
‘Can we use this sentence in a situation where some farmers have three tractors and some farmers have four tractors?’
- (45) Vsaka kokoš je skrila svoje piščančke.
‘Every hen hid her chickens(.PL).’
 - a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka kokoš natančno dva piščančka?
‘Can we use this sentence in a situation where every hen has exactly two chickens?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka kokoš natančno tri piščančke?
‘Can we use this sentence in a situation where every hen has exactly three chickens?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kokoši po tri piščančke, nekaj kokoši pa po štiri piščančke?

‘Can we use this sentence in a situation where some hens have three chickens and some hens have four chickens?’

- (46) Vsak kirurg je pospravil svoje skalpele.
‘Every surgeon put away his scalpels(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kirurg natančno dva skalpela?
‘Can we use this sentence in a situation where every surgeon has exactly two scalpels?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kirurg natančno tri skalpele?
‘Can we use this sentence in a situation where every surgeon has exactly three scalpels?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj kirurgov po tri skalpele, nekaj kirurgov pa po štiri skalpele?
‘Can we use this sentence in a situation where some surgeons have three scalpels and some surgeons have four scalpels?’
- (47) Vsak računalničar je posodobil svoje računalnike.
‘Every technician updated his computers(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak računalničar natančno dva računalnika?
‘Can we use this sentence in a situation where every technician has exactly two computers?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak računalničar natančno tri računalnike?
‘Can we use this sentence in a situation where every technician has exactly three computers?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj računalničarjev po tri računalnike, nekaj računalničarjev pa po štiri računalnike?
‘Can we use this sentence in a situation where some technicians have three computers and some technicians have four computers?’
- (48) Vsaka pisateljica je v intervjuju predstavila svoje nove romane.
‘In the interview every writer presented her new novels(.PL).’
- a. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka pisateljica natančno dva nova romana?
‘Can we use this sentence in a situation where every writer has exactly two new novels?’
 - b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka pisateljica natančno tri nove romane?
‘Can we use this sentence in a situation where every writer has exactly three new novels?’
 - c. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj pisateljic po tri nove romane, nekaj pisateljic pa po štiri nove romane?
‘Can we use this sentence in a situation where some writers have three new novels and some writers have four new novels?’

3 Filler sentences

- (49) a. Vsaka mravlja je dvigovala svoje dolge noge v ritmu.
'Every ant was lifting her long legs in rhythm.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj mravelj za polovico krajše noge od drugih?
'Can we use this sentence in a situation where some ants have legs that are half the length of the legs of the rest of the ants?'
- (50) a. Vsak javor je odvrget svoje rdeče liste.
'Every maple dropped its red leaves.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj javorov rdeče liste, nekaj pa rumenkaste?
'Can we use this sentence in a situation where some maple trees have red leaves and some maple trees have yellow leaves?'
- (51) a. Vsak dijak je hvalil svojo petkotno mizo.
'Every pupil praised his pentagonal table.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj dijakov petkotne mize, nekaj dijakov pa šestkotne?
'Can we use this sentence in a situation where some pupils have pentagonal tables and some pupils hexagonal tables?'
- (52) a. Vsakemu oslu pašejo njegova velika ušesa.
'Every donkey looks good with his big ears.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj oslov za polovico manjša ušesa od drugih?
'Can we use this sentence in a situation where some donkeys have ears that are half the size of the ears of the rest of the donkeys?'
- (53) a. Vsak vaščan je obnovil svoja rdeča polkna.
'Every villager renovated his red window shutters.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj vaščanov rdeča polkna, nekaj pa oranžna?
'Can we use this sentence in a situation where some villagers have red shutters and some villagers have orange shutters?'
- (54) a. Vsak pes je potecal svojo okroglo dekico.
'Every dog trampled all over his round blanket.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj psov okrogle dekice, nekaj psov pa štirikotne?
'Can we use this sentence in a situation where some dogs have round blankets and some dogs have square blankets?'
- (55) a. Vsak fant je uničil svojo majhno žogo.
'Every boy destroyed his small ball.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj fantov majhne rokometne žoge, nekaj fantov pa dvakrat večje košarkaške žoge?
'Can we use this sentence in a situation where some boys have small handball balls and some boys have big basketball balls?'
- (56) a. Vsak maratonec je oblekel svoje rumene tekaške hlače.
'Every marathoner put on his yellow running pants.'

- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj maratoncev rumene hlače, nekaj pa rdeče hlače?
'Can we use this sentence in a situation where some marathoners have yellow running pants and some marathoners have red running pants?'
- (57) a. Vsak mizar je nabrusil svojo edino krožno žago.
'Every carpenter sharpened his only circular saw.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj mizarjev tudi po pet krožnih žag?
'Can we use this sentence in a situation where some carpenters even have up to five circular saws?'
- (58) a. Vsak študent je opravil svoj edini jesenski izpit.
'Every student passed his only fall-period exam.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj študentov po tri jesenske izpite, nekaj pa po štiri?
'Can we use this sentence in a situation where some students have three exams in the fall and some students have four exams in the fall?'
- (59) a. Vsak tehnik je upravljal s svojim edinim velikim robotom.
'Every technician operated his only big robot.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj tehnikov tudi po deset robotov?
'Can we use this sentence in a situation where some technicians even have up to ten robots?'
- (60) a. Vsaka sraka je popravila svoje edino gnezdo.
'Every magpie fixed its only nest.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj srak po tri ali celo štiri gnezda?
'Can we use this sentence in a situation where some magpies have three or even four nests?'
- (61) a. Vsak kipar je hvalil svoje tri kamnite kipe.
'Every sculptor praised his three stone sculptures.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak kipar natančno dva kamnita kipa?
'Can we use this sentence in a situation where every sculptor has exactly two stone sculptures?'
- (62) a. Vsaka mačka je pojedla hrano iz svojih treh skledic.
'Every cat finished the food from its three cups.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka mačka natančno dve skodelici za hrano?
'Can we use this sentence in a situation where every cat has exactly two food-cups?'
- (63) a. Vsak učitelj se je hvalil s svojimi tremi zelenimi haljami.
'Every teacher bragged about his three green robes.'
- b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak učitelj natančno dve zeleni halji?
'Can we use this sentence in a situation where every teacher has exactly two green robes?'

- (64) a. Vsak smučar je bil ponosen na svoje tri smučarske čelade.
'Every skier was proud of his three ski helmets.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak smučar natančno dve smučarski čeladi?
'Can we use this sentence in a situation where every skier has exactly two ski helmets?'
- (65) a. Vsak tekač je popil vodo iz svojih plastičnih stekleničk.
'Every runner drank the water from his plastic bottles.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak tekač natančno tri plastične stekleničke?
'Can we use this sentence in a situation where every runner has exactly three plastic bottles?'
- (66) a. Vsak gozdar je nabrusil svoje sekire.
'Every logger sharpened his axes.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj gozdarjev po tri sekire, nekaj pa po štiri?
'Can we use this sentence in a situation where some loggers have three axes and some loggers have four axes?'
- (67) a. Vsaka opica se je igrala s svojimi lesenimi igračami.
'Every monkey played with its wooden toys.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima nekaj opic po tri lesene igrače, nekaj opic pa po štiri?
'Can we use this sentence in a situation where some monkeys have three wooden toys and some monkeys have four wooden toys?'
- (68) a. Vsak zidar je lepo skrbel za svoje ruske lopate.
'Every bricklayer took good care of his Russian shovels.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak zidar natančno tri ruske lopate?
'Can we use this sentence in a situation where every bricklayer has exactly three Russian shovels?'
- (69) a. Vsaka punca je oblekla svoje rdeče krilo.
'Every girl put on her red skirt.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka punca natančno eno rdeče krilo?
'Can we use this sentence in a situation where every girl has exactly one red skirt?'
- (70) a. Vsaka mačka se je igrala s svojim klobčičem volne.
'Every cat played with its wool yarn ball.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka mačka natančno en klobčič volne?
'Can we use this sentence in a situation where every cat has exactly one wool yarn ball?'
- (71) a. Vsaka krava se je pasla pod svojim najljubšim drevesom.
'Every cow grazed under its favorite tree.'
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsaka krava natančno eno najljubše drevo?
'Can we use this sentence in a situation where every cow has exactly one favorite

tree?’

- (72) a. Vsak otrok je imel popacano svojo rumeno jopico.
‘Every child had stains on his yellow jacket.’
b. Ali lahko uporabimo ta stavek v situaciji, kjer ima vsak otrok natančno eno rumeno jopico?
‘Can we use this sentence in a situation where every child has exactly one yellow jacket?’

4 Experiment 3

4.1 Target sentences

- (73) Every art collector sold their statue.
- a. Can you use this sentence in a situation where some art collectors have one statue each and other art collectors have two statues each?
b. Can you use this sentence in a situation where some art collectors have two statues each and other art collectors have three statues each?
c. Can you use this sentence in a situation where each art collector has exactly two statues?
- (74) Every scientist presented their own model of the universe.
- a. Can you use this sentence in a situation where some scientists have one model of the universe each and other scientists have two models of the universe each?
b. Can you use this sentence in a situation where some scientists have two models of the universe each and other scientists have three models of the universe each?
c. Can you use this sentence in a situation where each scientist has exactly two models of the universe?
- (75) Every bankruptcy trustee brought their study.
- a. Can you use this sentence in a situation where some bankruptcy trustees have one study each and other bankruptcy trustees have two studies each?
b. Can you use this sentence in a situation where some bankruptcy trustees have two studies each and other bankruptcy trustees have three studies each?
c. Can you use this sentence in a situation where each bankruptcy trustee has exactly two studies?
- (76) Every climber inspected their two safety kits.
- a. Can you use this sentence in a situation where some climbers have one safety kit each and other climbers have two safety kits each?
b. Can you use this sentence in a situation where some climbers have two safety kits each and other climbers have three safety kits each?
c. Can you use this sentence in a situation where each climber has exactly two protective kits?
- (77) Every director bought a gift for their two secretaries.
- a. Can you use this sentence in a situation where some directors have one secretary each and other directors have two secretaries each?
b. Can you use this sentence in a situation where some directors have two secretaries each and other directors have three secretaries each?

- c. Can you use this sentence in a situation where each director has exactly two secretaries?
- (78) Every chef sharpened their two knives.
- a. Can you use this sentence in a situation where some chefs have one knife each and other chefs have two knives each?
 - b. Can you use this sentence in a situation where some chefs have two knives each and other chefs have three knives each?
 - c. Can you use this sentence in a situation where each chef has exactly two knives?
- (79) Every beer drinker broke their commemorative mugs.
- a. Can you use this sentence in a situation where some beer drinkers have one commemorative mug each and other beer drinkers have two commemorative mugs each?
 - b. Can you use this sentence in a situation where some beer drinkers have two commemorative mugs each and other beer drinkers have three commemorative mugs each?
 - c. Can you use this sentence in a situation where each beer drinker has exactly two commemorative mugs?
- (80) Every farmer registered their tractors.
- a. Can you use this sentence in a situation where some farmers have one tractor each and other farmers have two tractors each?
 - b. Can you use this sentence in a situation where some farmers have two tractors each and other farmers have three tractors each?
 - c. Can you use this sentence in a situation where each farmer has exactly two tractors?
- (81) Every hen hid its chick.
- a. Can you use this sentence in a situation where some chickens have one chick each and other chickens have two chicks each?
 - b. Can you use this phrase in a situation where some hens have two chicks each and other hens have three chicks each?
 - c. Can you use this sentence in a situation where each hen has exactly two chicks?
- (82) Every archer inspected their bow.
- a. Can you use this sentence in a situation where some archers have one bow each and other archers have two bows each?
 - b. Can you use this sentence in a situation where some archers have two bows each and other archers have three bows each?
 - c. Can you use this sentence in a situation where each archer has exactly two bows?
- (83) Every teacher praised their student.
- a. Can you use this sentence in a situation where some teachers have one student each and other teachers have two students each?
 - b. Can you use this sentence in a situation where some teachers have two students each and other teachers have three students each?
 - c. Can you use this sentence in a situation where each teacher has exactly two students?
- (84) Every caver patched their jumpsuit.

- a. Can you use this sentence in a situation where some cavers have one jumpsuit each and other cavers have two jumpsuits each?
 - b. Can you use this sentence in a situation where some cavers have two jumpsuits each and other cavers have three jumpsuits each?
 - c. Can you use this sentence in a situation where each caver has exactly two jumpsuits?
- (85) Each student came to their two exams on time.
- a. Can you use this sentence in a situation where some students have one exam each and other students have two exams each?
 - b. Can you use this sentence in a situation where some students have two exams each and other students have three exams each?
 - c. Can you use this sentence in a situation where each student has exactly two exams?
- (86) Every resident handed over their two keys to the building manager.
- a. Can you use this sentence in a situation where some residents have one key each and other residents have two keys each?
 - b. Can you use this sentence in a situation where some residents have two keys each and other residents have three keys each?
 - c. Can you use this sentence in a situation where each resident has exactly two keys?
- (87) Every musician sold their two instruments.
- a. Can you use this sentence in a situation where some musicians have one instrument each and other musicians have two instruments each?
 - b. Can you use this sentence in a situation where some musicians have two instruments each and other musicians have three instruments each?
 - c. Can you use this sentence in a situation where each musician has exactly two instruments?
- (88) Every surgeon put away their scalpels.
- a. Can you use this phrase in a situation where some surgeons have one scalpel each and other surgeons have two scalpels each?
 - b. Can you use this sentence in a situation where some surgeons have two scalpels each and other surgeons have three scalpels each?
 - c. Can you use this sentence in a situation where each surgeon has exactly two scalpels?
- (89) Every computer scientist updated their computers.
- a. Can you use this sentence in a situation where some computer scientists have one computer each and other computer scientists have two computers each?
 - b. Can you use this sentence in a situation where some computer scientists have two computers each and other computer scientists have three computers each?
 - c. Can you use this sentence in a situation where each computer scientist has exactly two computers?
- (90) Every writer presented their new novels in an interview.
- a. Can you use this sentence in a situation where some writers have one new novel each and other writers have two new novels each?
 - b. Can you use this sentence in a situation where some writers have two new novels each and other writers have three new novels each?
 - c. Can you use this sentence in a situation where each writer has exactly two new

novels?

4.2 Filler Sentences

- (91) a. Every ant lifted its long legs in rhythm.
b. Can you use this phrase in a situation where some ants have half their legs shorter than the others?
- (92) a. Every maple shed its red leaves.
b. Can you use this sentence in a situation where some maples have red leaves and others have yellow leaves?
- (93) a. Every student praised their standing desk.
b. Can you use this sentence in a situation where some students have one standing desk each and other students have one normal desk each?
- (94) a. Every donkey has big ears.
b. Can you use this sentence in a situation where some donkeys have one of their ears smaller than the other one?
- (95) a. Every villager has restored their red shutters.
b. Can you use this sentence in a situation where some villagers have red shutters and other villagers have orange shutters?
- (96) a. Every dog poked its round blanket.
b. Can you use this sentence in a situation where some dogs have round blankets and other dogs have square blankets?
- (97) a. Every guy ruined his small handball.
b. Can you use this sentence in a situation where some guys have small handballs and other guys have basketballs?
- (98) a. Every marathon runner wore their yellow running pants.
b. Can you use this sentence in a situation where some marathon runners have yellow pants and other marathon runners have red pants?
- (99) a. Every carpenter sharpened their only circular saw.
b. Can you use this sentence in a situation where some carpenters have five circular saws each?
- (100) a. Every student passed their only fall exam.
b. Can you use this sentence in a situation where some students have three fall exams each and other students have four fall exams each?
- (101) a. Every technician operated their only large robot.
b. Can you use this sentence in a situation where some technicians have ten robots each?
- (102) a. Every magpie repaired its only nest.
b. Can you use this sentence in a situation where some magpies have three or four nests each?
- (103) a. Every sculptor praised their three stone statues.
b. Can you use this sentence in a situation where each sculptor has exactly two stone statues?
- (104) a. Every cat ate food from its three bowls.

- b. Can you use this sentence in a situation where each cat has exactly two bowls of food?
- (105)
 - a. Every teacher boasted of their three green robes.
 - b. Can you use this sentence in a situation where each teacher has exactly two green robes?
- (106)
 - a. Every skier was proud of their three ski helmets.
 - b. Can you use this phrase in a situation where each skier has exactly two ski helmets?
- (107)
 - a. Every runner drank water from their plastic bottles.
 - b. Can you use this sentence in a situation where each runner has exactly three plastic bottles?
- (108)
 - a. Every forester sharpened their axes.
 - b. Can you use this sentence in a situation where some foresters have three axes each and other foresters have four axes each?
- (109)
 - a. Every monkey was playing with their wooden toys.
 - b. Can you use this sentence in a situation where some monkeys have three wooden toys each and other monkeys have four wooden toys each?
- (110)
 - a. Every bricklayer took good care of their Russian shovels.
 - b. Can you use this sentence in a situation where each bricklayer has exactly three Russian shovels?
- (111)
 - a. Every girl wore her red skirt.
 - b. Can you use this sentence in a situation where each girl has exactly one red skirt?
- (112)
 - a. Every cat was playing with its own wool ball.
 - b. Can you use this sentence in a situation where each cat has exactly one wool ball?
- (113)
 - a. Every cow was grazing under its favorite tree.
 - b. Can you use this phrase in a situation where each cow has exactly one favorite tree?
- (114)
 - a. Every child stained their yellow jacket.
 - b. Can you use this phrase in a situation where each child has exactly one yellow jacket?