Two "many"-words in Slovenian: Experimental evidence for pragmatic strengthening[1]

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Abstract: Slovenian features at least two lexical items that are potential semantic counterparts of the English *many*, namely *veliko* and *precej*, whose meaning appears close to identical Yet speakers are certain that the two items are not equivalent, although they find intuitively felt differences hard to pinpoint. We argue that *precej* and *veliko* are lexically synonymous, but their meanings are pragmatically strengthened under relevant conditions, which leads to subtle interpretative differences. Specifically, we extend Krifka's (2007) analysis of double negatives and propose that *veliko* is assigned the stereotypical interpretation of a quantity degree word, whereas *precej* is identified with the non-stereotypical one and consequently relates to moderately big amounts. To support this claim, we report the results of an experiment involving a sentence-picture verification task, which highlight the similarities and contextually-determined differences in the use of both determiners. Our results suggest that the interpretation of *precej* is not consistent with relations in the upper part of the proportional scale and is dependent on whether or not it is in direct competition with *veliko* in the appropriate contexts.

Keywords: quantity determiner, Slovenian, pragmatic strengthening, stereotypical interpretation, sentence-picture verification task

1. Introduction

The meaning of *many* has triggered a lot of attention in the literature on formal semantics. It is known to be associated with at least two general uses: a cardinal usage and a proportional usage (or rather, a number of proportional ones), although there is no general agreement on the question whether these instantiate a genuine ambiguity or the differences have a pragmatic source (cf. Westerståhl 1984, Löbner 1987, Partee 1989, Büring 1996, Herburger 1997, Cohen 2001, Krasikova 2011, Kotek, Sudo and Hackl 2015, Rett 2008, 2015, Romero 2015, Solt 2009, 2015). To illustrate this "ambiguity" consider (1) in a context in which a teacher is discussing the test results with her students:

(1) Many students made many mistakes.

The most natural interpretation is that a substantial number of the students in this class made a substantial number of mistakes. Under the standard treatment of *many* within the Generalized Quantifier Theory of Barwise and Cooper (1981), in the first *many*-NP phrase, *many* is assigned

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a proportional interpretation as in 2a), while *many* in the second *many*-NP is assigned a cardinal interpretation, as in (2b):

(2) a. $[\![many]\!]^c = \lambda A.\lambda B. \frac{|A \cap B|}{|A|} > n_c$, for some large n_c.

b. $[\![many]\!]^c = \lambda A.\lambda B. > n_c$, for some large n_c.

Babko-Malaya (1998) and Krasikova (2011) argue that Russian is a language which lexically distinguishes cardinal and proportional *many*, the former lexicalized by the adverb *mnogo* supporting only cardinal interpretations, and the latter by the adjectival *mnogie* related only to the proportional meaning of *many*. Although the most straightforward interpretation of this fact might call for support for the ambiguity theory of *many*, Krasikova argues against it, providing support for the pragmatic approach to "ambiguity". In line with current proposals she rejects the treatment of *many* as a quantificational determiner while giving it a degree-based semantics (for an extensive overview of different proposals of quantity words as degree determiners/degree modifiers/ degree quantifiers see Rett 2008, 2017 and Salt 2015). Similarly to Russian, Slovenian, another Slavic language, features more than one quantity word that roughly corresponds to English *many*. Our goal, however, is not to draw attention to a possible Slovenian-Russian parallel and thus provide cross-linguistic support for the degree theory of quantity determiners. Rather, we focus on these two different lexicalizations of *many* because Slovenian offers a different kind of insight about the general picture of cross-linguistic variation among quantity words. Unlike in Russian, both Slovenian counterparts of *many* express the same range of cardinal and proportional meanings, as we demonstrate below. Pinning down potential differences in their interpretation turns out to be quite challenging. We propose to analyze these differences in pragmatic terms and aim to show that the variations in the interpretation of the two items are naturally accounted for within the degree theory of *many*. At the same time, our larger goal is to support Rett (2015) in arguing that that meanings in the degree domain are subject to pragmatic enrichment.

2. Slovenian *m*-words: Initial probing

Slovenian features two counterparts of the English determiner *many*, namely, *precej* and *veliko*, henceforth referred to as *m-words*, following Rett (2008). Both of them can form a constituent with an NP, which is why they appear as *many* in the English translations when they modify a countable noun, as in (3a) and *much* when they appear in the context of a mass noun. They can be used predicatively as in (3b). Both words are also similar in their ability to modify a VP and a participle phrase (PartP), or a comparative operator, as illustrated in (3c-e):

(3) a. ***Na koncert je prišlo veliko/precej ljudi.***
to concert is come m-veliko/m-precej people
'Many people came to the concert.'

b. ***Obiskovaljcev je bilo veliko/precej.***
visitors is been m-veliko/m-precej
'There have been a lot of visitors.'

c. ***Veliko/precej se sprehajam.***
m-veliko/m-precej REFL walk
'I walk a lot.'

d. ***Ta film je ?veliko/precej gledan.***
this movie is m-veliko/m-precej watched
'This movie is watched a lot.'[2]

e. ***V Sloveniji je veliko/precej več moških lastnikov avtomobilov kot lastnic.***
in Slovenia is m-veliko/m-precej more male owners.M cars than owners.F
'There are much more male car owners than female car owners in Slovenia.'

A closer look reveals, however, that the two Slovenian m-words do not have the same distribution. Only *precej* but not *veliko* is cross-categorical: it can combine with APs, AdvPs and PPs as the following examples show:[3]

(4) a. ***Članek je precej/*veliko zanimiv.***
article is quite/rather interesting
'The article is quite interesting.'

b. ***Do doma je precej/*veliko daleč.***
To house is quite/rather far
'It is quite far to the house.'

c. ***Danes je temperatura precej/*veliko nad 7°C.***
today is temperature quite/rather above 7°C
'Today's temperature is much above 7°C.'

However, when combined with NPs, in many contexts *precej* in *veliko* seem interchangeable. In the discussion that follows, we will hypothesize that, in these cases, the two m-words make a similar semantic contribution but meanings of sentences with them are pragmatically strengthened under appropriate conditions. Before we proceed with the theoretical and experimental arguments supporting this hypothesis, we first demonstrate that both *precej* and *veliko* can express cardinal as well as proportional readings, and thus dismiss the possibility to attribute to them potential meaning differences along these dimensions. Following Milsark (1977) and Partee (1989) we assume that the possibility for a Det-NP phrase to combine with individual-level predicates, acceptability in existential constructions, and the possibility to construct partitive phrases can distinguish between strong (proportional) and weak (cardinal)

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[2] The use of *precej* is considerably more natural in this case. Only few passive participles are generally accepted by the speakers.

[3] Both grammar books and our consultants agree that *veliko* generally cannot modify adjectives, as stated above in the main text. One potential counter-example concerns modification of the adjective *vreden* "worth", as in i):

i) ***Asteroidi so lahko veliko vredni.***
asteroids are possibly m-veliko worth
'Asteroids are possibly worth a lot of money.'

It is not clear, however, whether i) is a genuine exception to the generalization. First, the adjective *vreden* cannot be modified by *malo* "few", the antonym of *veliko*. Second, *veliko* cannot modify any synonyms to *vreden* like *dragocen* 'precious'. One possibility therefore is that *veliko vreden* is a compound, irrespective of the separate spelling. Another alternative is that this might be a case in which *vreden* still modifies a morphologically unrealized noun like *denar* "money", cf. ii) which is semantically equivalent to i):

ii) ***Asteroidi so lahko vredni veliko denarja.***
asteroids are possibly worth m-veliko money
'Asteroids are possibly worth a lot of money.'

We leave the choice among these possibilities open at this point.

properties of *veliko* and *precej*. As seen in (5), both words can be used to form subjects of individual-level predicates like other strong determiners:

(5) ***Veliko/precej ženska je dobrega srca.***
m-veliko/m-precej women is good heart
'Many women are good-hearted.'

On the other hand, similarly to weak determiners, both items can appear in an existential construction, as in (6) to express the cardinal reading:

(6) ***Na moji knižni polici je veliko/precej knjig.***
on my book shelf is m-veliko/m-precej books
'There are many books on my bookshelf.'

Slovenian does not productively use PPs in partitive constructions. However, partitive PPs are (marginally) acceptable in some dialectal varieties. In that case, again, both *veliko* and *precej* can be used in the construction, as expected, in a context supporting a proportional meaning. This is shown in (7):

(7) ***?Precej/?veliko od študentov Slovenistike je šlo na jezikoslovno smer.***
m-precej/m-veliko of students Slovene-studies is gone.3SG. to linguistic track
'Many of the students of Slovene studies have chosen the linguistics track.'

We conclude that *precej* and *veliko* are not different lexicalizations of proportional and cardinal forms of quantity words in Slovenian. But then, how do they differ in meaning, if at all, and how do children manage to acquire that difference?

Despite the apparent striking similarity among the two m-words there are two kinds of situations where they can be distinguished by our informants. First, when presented simultaneously with (8a) and (8b), speakers report an intuition that the former is a claim about a somewhat bigger amount of people in comparison to the latter.

(8) a. ***Veliko ljudi ima sladkorno bolezen.***
m-veliko people have sugar.ADJ illness
'Many people have diabetes.'

b. ***Precej ljudi ima sladkorno bolezen.***
m-precej people have sugar.ADJ illness
'Many people have diabetes.'

The second kind of context involves cases of multiple modification. Like other modifiers, *veliko* and *precej*, too, can be further modified. Slovenian features two other modifiers: *kar* and *še*, both of which, to the best of our knowledge, have not been previously analyzed semantically. The first one is often glossed as 'quite' in English and used to describe moderate to big amounts or degrees, as in (9):[4]

[4] This particle is also associated with a plethora of other meanings, most of which are discourse related. We limit our discussion only to the use of *kar* as a (degree) modifier.

(9) a. ***Kar osem študentov je padlo na izpitu.***
quite/rather eight students is failed at exam
'As many as eight students failed the exam.'

b. ***Ta film je kar zanimiv.***
this movie is quite/rather interesting
'This movie is quite interesting.'

An appropriate context for (9a) is one in which there is an expectation for a very low number of failing students and eight is considered surprisingly many. (9b) is reported to entail a relatively high degree of what makes a movie interesting. The second modifier *še* is also modifying relatively big quantities but in addition, it expresses approximation from below.[5] Imagine, as an illustration, that the sentence below is uttered in a context in which the speaker, who has just come back from the shop and filled an empty fridge with apples among other things utters (10) as a comment to his partner's inquiry if there are apples for making an apple pie.

(10) ***V hladilniku je še veliko/precej jabolk.***
in fridge is still m-veliko/m-precej apples
'There are quite a lot of apples in the fridge.'

Both *kar* and *še* can separately modify both *veliko* and *precej*. It is, however, an interesting fact that *precej* and *veliko* are seen easily as referring to different proportions when they are in turn modified by *kar* and *še*. Consider, for example, (11):

(11) a. ***Kar veliko študentov je padlo na izpitu.***
quite/rather m-veliko students is fallen on exam
'Quite many students failed the exam.'

b. ***Še kar veliko študentov je padlo na izpitu.***
still quite/rather m-veliko students is fallen on exam
'Quite many students failed the exam.'

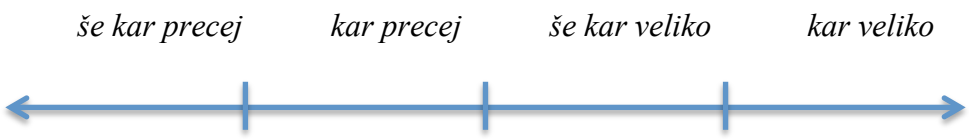
c. ***Kar precej študentov je padlo na izpitu.***
quite/rather m-precej students is fallen on exam
'Quite many students failed the exam.'

d. ***Še kar precej študentov je padlo na izpitu.***
still quite/rather m-precej students is fallen on exam
'Quite many students failed the exam.'

(11a) can be intended to refer to the greatest amount of failing students. A slightly less than that greatest amount will be intended with (11b). A relatively smaller amount of failing students will be involved in the interpretation of (11c and the least though still quite big will be the amount of failing students referred to in (11d). The respective amounts can thus be ordered down the following scale:

[5] Similarly to *kar*, *še* has more than one meaning (including a temporal meaning under which it is an NPI). Though it is conceivable that these meanings are related, given the scope of the current article, we only limit our attention to *še* as a (degree) modifier.

(12)



Given the facts reported so far, let us estimate what ingredients we need in a semantic analysis of *precej* and *veliko*. First of all, the analysis should naturally account for the co-existence of two m-words within a single language. Second, it should incorporate two requirements that are obviously in tension: i) the meaning of the two items in the pair is very similar, whereby each sentence from a minimal pair involving them would often, though not always, be appropriate in the same context, and ii) some contexts would only support one but not the other m-word because of a different amount requirement. Our plot is, therefore, the following: we will suggest a line of analysis that would fit these conflicting requirements and serve as a gateway to a further and more comprehensive theory of amount words in Slovenian. Then we will subject our analysis to a test by constructing an experimental paradigm that should reveal its consistency with speakers' general intuitions. We will further consider some theoretical alternatives that are at least partially consistent with the reported experimental results and will conclude with a discussion of the feasibility of the proposed line of analysis.

3. Slovenian m-words: a semantic framework

In a nutshell, we propose to analyze both m-words as degree modifiers which share the same semantics but differ in use because of a possible pragmatic enrichment process. Each of the meaning components will be outlined below. We believe that such a proposal can easily be couched in terms of a degree analysis that can further be straightforwardly complemented with a mechanism of pragmatic strengthening. We, therefore, continue to assume the similarity in the lexical meaning of *precej* and *veliko* and that both items are semantic counterparts of the English *many*.

More specifically, we adopt the essentials of the semantic analysis of English *many* in Solt (2015). Let us start with Solt's assumptions about the relevant structure in which *many*, and respectively *precej* and *veliko*, participate. These assumptions take into consideration the fact that, on the one hand, m-words can modify countable nouns, but, on the other, they can be further modified with degree modifiers, as in (11) (see also Section 6). Under Solt's proposal, an expression like *precej/veliko točk* 'many dots' would form a Measure Phrase (MeasP) headed by a phonologically null head which provides a dimension of measurement for its complement. In the case of countable nouns as a complement of *Meas*, the dimension will be one of quantity. The m-word is analyzed as projecting a Quantifier Phrase (QP), and, given its modifying function, will appear in the specifier position of MeasP. The specifier of QP is, in turn, filled by a modifier like *very* and its crosslinguistic counterparts, or by the null operator *POS*(itive) in the absence of overt modifiers. Further, Solt relies on standardly assumed structural-interpretative rules like Functional application and Predicate Abstraction (Heim and Kratzer 1997), also assuming the availability od Existential Closure (∃C) at the IP level, and finally, a Degree Argument Introduction rule (DAI). The latter, formulated in (13), is intended to provide countable NPs with a degree argument.

(13) If α is a branching node and {β,γ} is the set of its daughters, where $[\![\beta]\!]=\lambda x_e.P(x)$ and $[\![\gamma]\!]=\lambda x_e.\ \lambda d_d.Q(d)(x)$, then $[\![\alpha]\!]==\lambda d_d.\ \lambda x_x.Q(x)(d)\ \&P(x)$

Let us follow the syntactic and semantic derivation of an example like (14):

(14) ***Precej/veliko točk je rdečih.***
m-precej/m-veliko dots.GEN is red.GEN
'Many dots are red.'

Merging a Meas head and a NP results in a constituent whose meaning is of the type of gradable predicates, <d,et> since the meaning of *Meas* in (15) is combined with that of the NP by applying DAI.

(15) $[\![Meas]\!]=\lambda x_e.\ \lambda d_d.\text{Cardinality}(x)\geq d$

This constituent's sister QP consists of a Q head lexicalized by *many*, or, for us, by *precej/veliko*. Solt proposes to analyze it as a relation between degrees and degree sets. We follow that assumption as well:

(16) $[\![precej/veliko]\!]=\lambda d_d.\ \lambda I_{<dt>}.I(d)$

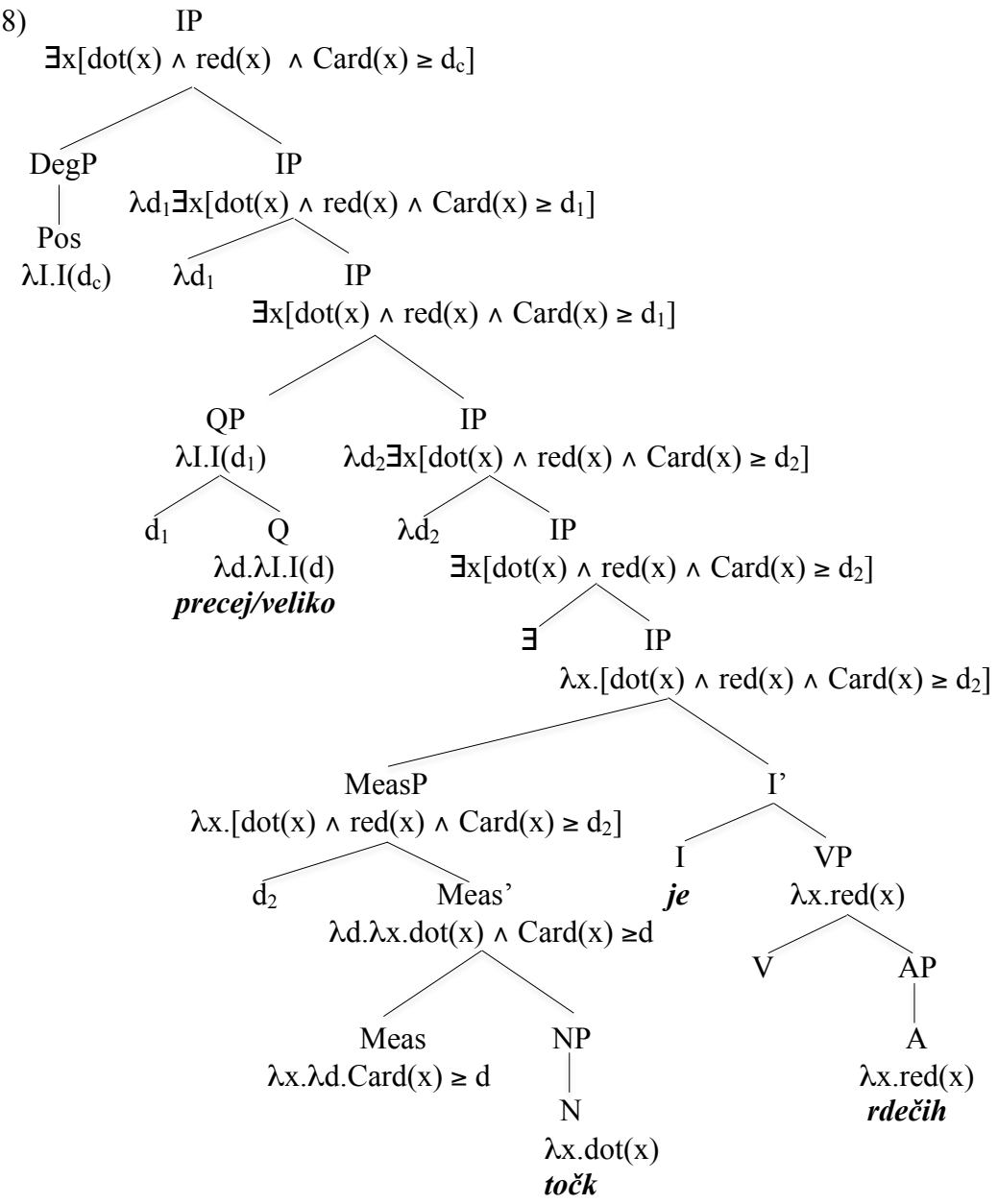
The intuition behind this meaning is that the m-word establishes a relation between i) the degree provided by DegP which (in the absence of an additional modifier) is a contextually provided standard that divides the number scale into a positive and a negative extension corresponding to cardinalities that count as involving *many* objects and cardinalities that count as involving *few* objects, respectively and ii) the set of degrees *I* that make true the proposition that there are at least d-many individuals that are both dots and red. The final lexical ingredient needed for the illustration of (14) is the meaning of *POS*. That meaning is assignment dependent because it provides the contextual standard used for the application of *precej/veliko*:[6]

(17) $[\![POS]\!]^{g_c}=\lambda I_{<dt>}.I(d_c)$

The sample derivation of (14) is now presented in (18) which also shows the relevant interface assumptions. Since QP and DegP are not interpretable in their base positions, they are assumed to undergo covert raising which creates appropriate binders for the variables in the trace positions:

[6] Here we depart from Solt (2015) who, in turn, follows von Stechow (2009). In that proposal, he assumes that the assignment function g_c assigns to each scale a neutral range between the negative and positive extensions of a gradable predicate. *POS* applies to a degree set *I* defined identically to the way we defined it in (17) but returns a true proposition in the evaluation context if all degrees from the neutral range are also contained in *I*. Our departure is motivated by considerations of consistency with the version of pragmatic strengthening that we adopt in the next section.

(18)



The truth conditions derived through this analysis are logically equivalent to the conditions that result from the treatment of *many* within a non-degree theory (cf. Barwise and Cooper 1981). This is a welcome result because the intuition about the meaning is matched. But in addition, this analysis reflects the possibility of m-words to participate in multiple degree modification constructions and to allow for decompositional processes which accounts for ambiguities in the degree domain (cf. Romero 2015 for an analysis of different proportional meanings in that manner). We also need to acknowledge that, for reasons of clarity and simplicity, we only provide an analysis of the basic cardinal reading of *precej/veliko*. To derive the proportional one, the theory must be further augmented either by positing a lexical ambiguity for *many* and its cross-linguistic counterparts, as is often suggested, or assume additional pragmatic processes that derive the relevant standard for proportional readings (cf. Krasikova 2011).

To conclude the section, we subscribe to this analysis because, as a degree analysis of m-words, it is fairly straightforwardly amenable to the kind of pragmatic extension discussed in the following section. In addition, it has the obvious advantages: i) it legitimizes the intuitive similarity in analyzing numerals and m-words, ii) it can be applied to m-words with all attested

syntactic functions. Cardinal and proportional readings follow from manipulation of the standard for comparison.

4. The pragmatic meaning of *precej* and *veliko*

4.1. Theoretical background

In tackling the empirical differences between *precej* and *veliko*, we follow the general line of reasoning suggested in Krifka's (2007) discussion of double negatives. Krifka analyzes a paradigm, previously introduced in the current semantic and pragmatics literature by Horn (1989) and his later work. That paradigm involves quadruplets like (19) each containing two pairs of antonyms:

(19) a. *happy, not happy, unhappy, not unhappy*
b. *frequent, not frequent, infrequent, not infrequent*

If both *not* and *un-* express logical negation, then each quadruplet should not only contain two pairs of antonyms but also two pairs of synonyms. The expectation is not really borne out, as reported in the literature. For example, *not unhappy* is used to refer to mild states of happiness, just as *not happy* is perceived as a milder state of unhappiness, as (20) illustrates:

(20) A: John isn't happy. Krifka (2007)
B: Well, he's not unhappy.

Krifka (2007) addresses the logical paradox of 'missing' synonyms by offering a proposal that builds on the epistemic theory of vagueness of Williamson (1994)[7]. The members of each set in (19) are vague predicates whose meaning is defined in terms of scalar oppositions between positive and negative extensions of the scale. Williamson argues that every vague predicate divides the respective scale to a positive and negative part so that there must exist a cut-off point. However, although there is no conceptual problem for speakers to divide the scale, there is a problem of identifying the cut-off point clearly. In effect, this makes the transition between the two regions unknowable: since delineation between the regions is not fixed, speakers are uncertain in recognizing the cut-off point. According to Krifka (2007), this creates a situation whereby antonym pairs like <*happy*, *unhappy*> and <*not happy*, *not unhappy*> in (19) exhaust their semantic space as contradictories, but at any time in a context there is a whole set of potential candidates for the cut-off point under consideration. The uncertainty about the cut-off point triggers pragmatic enrichment of literal interpretations in accord with Horn's (1984, 1989) R-principle and Atlas and Levinson's (1981) and Levinson's (1987, 2000) I-principle, so that literal meanings are strengthened to refer to stereotypical instances. These principles are formulated below:

(21) R-principle:
Make your contribution necessary, say no more than you must. (Horn 1984:13)

[7] Williamson's (1994) theory of epistemic vagueness has an influential competitor in theories like Fine (1975) that assume what Sapir (1944) calls *a zone of indifference* between antonym pairs of gradable predicates and therefore treat antonyms as contraries and not as contradictories.

(22) I-Principle:

i) *Speaker's Maxim: the Maxim of Minimization*

'Say as little as necessary', i.e. produce the minimal linguistic information sufficient to achieve your communicational ends (bearing the Q-principle in mind).

ii) *Recipient's Corollary: the Enrichment Rule*

Amplify the informational content of the speaker's utterance, by finding the most SPECIFIC interpretation, up to what you judge to be the speaker's m-intended point.

(Levinson 1987:402)

The interpretation of the R/I-principle that Krifka (2007) suggests in relation to the double negatives' puzzle is the following. Literal meanings of vague terms are strengthened pragmatically because speakers strive to use interpretations for which they are certain that there is no disagreement between interlocutors. If the cut-off point figures as a standard of comparison in the meaning of a vague predicate like *happy* or *not unhappy*, then pragmatic strengthening results in an R/I-implicature which leads to shortening the scalar interval perceived as the extension of the predicate covering only points/degrees that are sufficiently further from the cut-off point. In addition, a M(anner)-implicature for the formally more complex item guarantees that the items in each pair of lexical synonyms are distinguished. M-implicatures are induced as a saving strategy to avoid violation of the M-principle defined in (23):

(23) M-Principle:

i) *Speaker's Maxim:* Indicate an abnormal, non-stereotypical situation by using marked expressions that contrast with those you would use to describe the corresponding normal stereotypical situation.

ii) *Recipient's Corollary:* What is said in an abnormal way indicates an abnormal situation, or marked messages indicate marked situations.[…]

(Levinson 2000:136)

In this way, for example, *happy* is pragmatically assigned an interval on the scale of degrees of happiness that is higher than the interval assigned to its double negative counterpart *not unhappy*. In other words, the interval to which *happy* is assigned is related to a portion of the scale that guarantees a higher degree of certainty for being above the cut-off point. The availability of a 'abnormal' semantic alternative triggers an interaction between the pragmatic principles, as a result of which that alternative is linked with the complement of the interval associated with the stereotypical interpretation. Following some of Horn's original examples, Krifka naturally assumes that M-alternatives can be evaluated on the basis of differences with respect to morphological complexity. In fact, all considered synonym pairs like <*happy*, *not unhappy*> contain non-stereotypically interpreted items whose morphological makeup primes the consideration of the morphologically less complex alternative, and in that sense facilitates the derivation of the M-implicature. Note that this observation has to be taken into consideration in the extension of the proposal to the pair <*veliko*, *precej*> whose members are morphologically unrelated. However, it is important to stress, that, by definition, M-alternatives have not been related exclusively to morphological complexity in the literature. In particular, much of Horn's/Levinson's discussion pertains to pairs with different distribution regarding conversational style and/or frequency of use. An example of the latter kind is Levinson's (1987) pair <*drink*, *beverage*> where *drink* is stereotypically interpreted as alcoholic drink while *beverage* is restricted to non-alcoholic ones.

Interestingly, the illustrative list of double negative quadruplets that Krifka (2007) cites includes also the set <*many*, *not many*, *few*, *not few*>, without discussion. That inclusion, however,

cannot be considered as properly motivated if it is not coupled with a degree-based semantics, similarly to all other cases of double negative quadruplets. We believe that the intuition that Krifka (2007) conveyed in this case is nevertheless correct. We argue here that it can be substantiated by i) coupling his proposal with a degree-analyses of m-words and ii) identifying testable properties in proportional contexts of the Slovenian m-words *veliko* and *precej*, under the hypothesis that the latter has a distribution similar to the English determiner *not few* (see also below). We take the relevant Slovenian quadruplet to be the following:

(24) <*veliko* "many", *nekaj* "not many", *malo* "few", *precej/nemalo* "not few">[8]

As we argued previously, *veliko* and *precej* are lexically synonymous (we return to *nemalo* below). Similarly to the double negative cases discussed above, due to inherent vagueness, each contextual interpretation of *veliko* or *precej* would depend on whole a set of cut-off points under consideration distinguishing *veliko* from *malo* "few" extentions on the scale. So, naturally, an R/I-implicature should strengthen the lexical meaning of one kind of *many*-propositions to a stereotypical interpretation related to the higher region of the positive part of the scale. Given the judgments reported in (8), we expect *veliko* to be associated with an R/I-implicature and the interpretation involving *precej* to be enriched with an M-implicature. In contrast to the case of double negatives, *precej* is not morphologically more complex than *veliko.* However, we hypothesize that an M-implicature is nevertheless part of the pragmatic enrichment of *precej* when both *veliko* and *precej* are considered as M-alternatives. One reason is the fact that it is *veliko* that is specialized for expressing large quantities through almost exclusively selecting for NPs (see (4) and fn. 2) while *precej* which has a much wider categorical distribution and, in that sense *precej* qualifies as the "abnormal" item for constructing NPs with quantity words when considered alongside *veliko*. Another, perhaps related, fact, is that in general, *veliko* has a significantly higher frequency of occurrence in contexts where it "modifies" an NP (see below). In that sense, the pair <*veliko*, *precej*> is reminiscent of Levinson's <*drink*, *beverage*> pair noted above. Put simpler, while *veliko* normally combines with NPs, this is only one of the uses for *precej*. The use of *veliko*, therefore, matches the original description 'Be orderly' given as a submaxim of Manner in Grice (1975), which is in some general sense part of Levinson's M-Principle.

In sum, we argue that each of the two discussed m-words in Slovenian is used with a strengthened pragmatic meaning. Specifically, *veliko* triggers an R/I-implicature and is related to a stereotypical interpretation, thus reserving an interval which is sufficiently higher than the potential cut-off point between *veliko* and *malo* on the proportion scale, while *precej* triggers an M-implicature and is related to a non-stereotypical interpretation which results in picking the elsehwere interval, i.e. the one which is closer to the standard. Using the schematics format adopted in Krifka's (2007) study, the computation of interpretations based on both kinds of implicatures is illustrated in Figures 1 and 2 below.

[8] Observe that while *nemalo* is a morphologically complex antonym of *malo* incorporating the negative prefix *ne-* (see below in the text for more discussion of this item), there is no lexicalized antonym of *veliko* that incorporates negation, either in Standard Slovenian or its dialectal varieties, which constitutes a gap in the paradigm. The determiner *nekaj*, which we chose for the membership in the quadruple as the closest available lexicalized candidate, is defined in the descriptive sources as "expressing an indefinite smaller number or quantity" (SSKJ, 1998) and as such, is in natural opposition to "*veliko*" which expresses large quantities. Note that this choice is not directly crucial for the present study, which, rather, focuses on the situation in the larger-quantity part of the respective proportional scale.

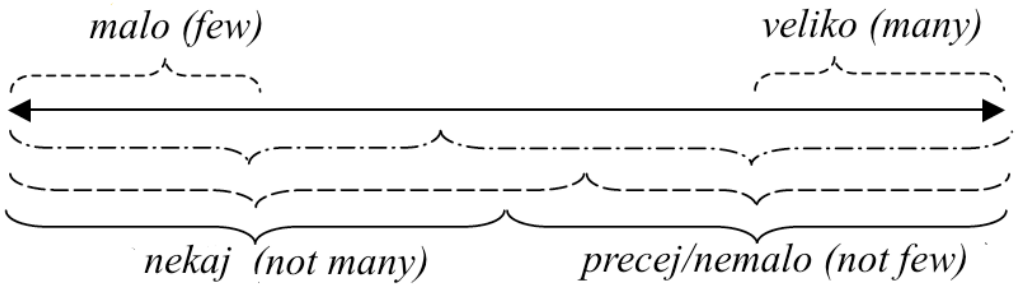


Figure 1. Generating an R/I implicature in the case of *veliko/precej*

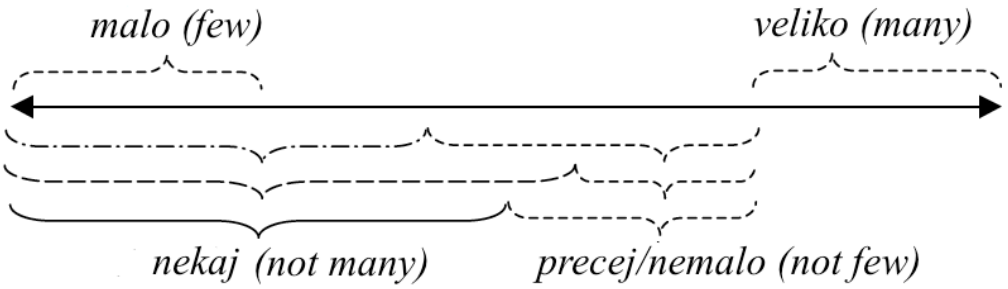


Figure 2. Generating R/I and M-implicatures in the case of *veliko/precej*

Before we turn to the discussion of the experimental study, we would like to discuss briefly the status of the quantity word *nemalo*. This quantity word is made up of two morphemes: *ne-,* which expresses negation in Slovenian, and *malo* "few". Since *malo* is an antonym of *veliko*, negating *malo* would amount to a meaning lexically synonymous to that of *veliko*. Indeed, both speakers' informal description of the meaning of *nemalo* as well as dictionaries, describe it as a quantity word referring to considerable amounts. Interestingly, the proposal we pushed forward in relation to *precej* and *veliko* makes a particular prediction concerning *nemalo*. Within Krifka's theoretical model and a degree theory of m-words, the morphologically complex *nemalo* should be associated with an M-implicature, and, consequently, with a non-stereotypical interpretation, much in the same way we suggested for *precej*. At the same time, *nemalo* can probably not be considered a typical m-word in modern day Slovenian because of its i) very low frequency,[9] ii) specialization for modifying mass nouns and extremely rare use with count nouns, and iii) absence from some of the dialects or relation to an "archaic" style. We believe any of the above three factors or a combination thereof might potentially distort an experimental evaluation of the semantic/pragmatic properties of *nemalo*, and therefore, put it aside for the present purposes.

4.2. Predictions for an experimental study

Pragmatic strengthening has so far been experimentally studied almost exclusively in relation to scalar implicatures (e.g. Noveck 2001, among numerous others). Scalar implicatures have been shown not to be obligatory (Chierchia 2013). In other words, even adults generating these implicatures do not perform at ceiling in comprehension tasks (e.g. Noveck 2001 reports 59%,

[9] Our representative count of all three m-word collocations with a following noun (either count or mass) in Gigafida, the corpus of written Slovenian texts produced between 1990 and 2011 (total approx. 1 billion words; cf. Erjavec and Berginc 2012; accessed at http://nl.ijs.si/noske/all.cgi/corp_info?corpname=gigafida on 10.11.2016), yielded the frequency of 391.5 per million for *veliko*, 48.2 per million for *precej*, and only 4.2. per million for *nemalo*. Thus the latter in the relevant usage is about 10 times less frequent than *precej*, and about 100 times less frequent than *veliko*.

Pouscoulous et al 2007 report 47%, among others). It has been suggested that the process that leads to the access of the pragmatic interpretation is, in fact, to be decomposed to a number of stages. A potential failure to produce/comprehend a scalar implicature might be due to the difficulty in accessing the alternatives that are to be evaluated at one of the stages (cf. Foppolo et al 2012, Barner et al 2011). Previous research has already asked the question whether the explicit mentioning of scale-mates facilitates access to the lexical scale and by doing so increases the rate of producing implicatures. The results of such studies are not fully consistent. For example, Doran et al (2009) provided experimental evidence that access to adjectival scales like <…*ecstatic, happy, content*…> is positively affected in view of producing Quantity-based implicatures. However, there was no such effect found with quantificational scales like <all, most, some>. More recently, van Tiel et al (2014) and Dupuy et al (2016) tackled the same question with very different results. While the first study which involved a very large paradigm in addition to quantificational sets reported that the rates of scalar implicatures do not depend on the availability of explicit alternatives but rather on the semantic distance between the scale-mates, the second one, which only used the quantificational scale <some, all>, reported a dramatic rate increase of scalar implicature production in contexts which provided explicit access to alternatives.

It is important to note, however, that a parallel between a Q-based implicature processing on the one hand and R- and M-implicatures on the other is not trivial. Furthermore, the semantic analysis that we assume for *precej* and *veliko* sets them in a different class from the quantifiers *some*, *most*, and *all* and, in fact, provides a parallel with gradable adjectives. Given Doran et al's 2009 results and those of Dupuy et al 2016, we believe that there is sufficient ground for testing the hypothesis that assigning stereotypical and non-stereotypical interpretations to m-words, i.e. producing R/I-implicatures and M-implicatures, is also based on facilitated access to alternatives that are lexically equivalent. If the derivation of R/I implicatures and M-implicatures is akin to that of the derivation of scalar implicatures, we can expect that when the items *precej* and *veliko* are not in direct competition with each other by virtue of not being explicitely offered for evaluation at the same time, their meanings should not differ dramatically (R/I-implicatures can still be generated, though). However, when both items are made salient in a single context, we expect speakers to resolve the tension between alternatives by adding an M-implicature to propositions containing *precej* so that the two items diverge with respect to coverage of the proportional scale.

This hypothesis makes clear predictions that can be tested in an experimental study. Since we argued that *precej* and *veliko* do not differ lexically, they should relate to the same/similar scalar proportions when they are not in direct competition in a particular context. In contrast, whenever *veliko* and *precej* are made salient in a single context and are thus in direct competition, we expect, in particular, that the availability of *veliko* will "push" the score on *precej* down on the proportional scale. To test this hypothesis, we carried out an experimental study that explores the role of competing alternatives in the pragmatic component of the meaning of the two varieties of *many* in Slovenian.

5. The experiment

The present experiment compares speakers' performance on *veliko* and *precej*, in the presence vs. the absence of the other alternative. In particular, we were interested in determining potential differences in the normal use of *precej* and *veliko* by manipulating the presence of the other item in the context. By the hypothesis outlined above, manipulating this presence is instrumental in

eliciting stereotypical and/or non-stereotypical interpretation of the pair of m-words. The respective differences were measured in terms of an approximate numerical range of the scalar proportions associated with each item. Put differently, we wanted to see, given a plurality of objects, how many of those objects could Slovenian speakers intuitively associate with each m-word, in the presence vs. the absence of the other alternative. Thus both the presence of the alternative and the type of m-word were the independent variables manipulated in this experiment.

5.1. Design and materials

The experiment was designed in the form of a questionnaire study where participants had to evaluate how well a given sentence describes a respective visual context. We used a visual context representing a block of thirty round dots (approx. 1 cm in diameter), some of which were red, and the rest were blue. The dots were positioned in three rows with 10 dots in each row, on a white background. In total, there were twenty-nine such contexts presented to the participants, whereby the number of red dots varying from one to twenty-nine, with an increment of one. This covers variation ranging between approximately 3% and 97% of the total number of dots. Each block of dots was positioned in the center of the computer screen and was accompanied below by a set of four sentences. In one version of the sentence set (Version I), one of the four sentences was the target sentence as in (25):

(25) ***Precej točk je rdečih.***
m-precej dots.GEN is red.GEN
'Many dots are red.'

In the other version of the sentence set (Version II), the target sentence was as in (26):

(26) ***Veliko točk je rdečih.***
m-veliko dots.GEN is red.GEN
'Many dots are red.'

Finally, in the third version of the sentence set (Version III) both sentences were presented as possible choices. Additionally, in Versions I and II, three other sentences served as fillers. The filler sentences differed from (25)/(26) only in that, in one of them, the m-word was replaced with the determiner *polovica* "half ", in the second one with *nekaj* "a certain amount" and in the third with either *vsaj n* "at least n" or *največ n* "at most n" in equal proportions (*n* was a natural number that varied from 10 to 27). In version III, only two of these filler sentences were thus used, one alternating between *vsaj n* or *največ n*, as above, and another alternating between *polovica* and *nekaj,* in equal proportions. Overall, the participants had to evaluate 29*4=116 sentences for appropriateness to the respective graphical contexts. The stimuli items were created by a native Slovenian speaker, who is also a linguist, and re-checked by two others. A representative example of a picture-sentence stimulus set can be found in Appendix.

5.2. Participants

One hundred and four Slovenian-speaking adults from the University of Nova Gorica and University of Ljubljana communities participated in this experiment voluntarily and anonymously (mean age: 33.9; standard deviation: 11.8). Of those, sixty one participants took part in the Version I of the experiment including only the target *precej*-sentence in (25). Another group of twenty-two participants took part in Version II of the experiment including only the target *veliko*-sentence in (26). Yet another group of twenty-one participants took part in Version III, in which both targets sentences were included. The participants were assigned to groups in an arbitrary fashion. Special care was taken to ensure that each participant takes part only in one

version of the experiment. All participants were recruited via email and social networking forums. They reported normal or corrected to normal vision and no history of color-blindedness. All participants except one reported Slovenian as their native language: data from that participant were therefore disregarded for later analyses. The participants were naïve to the purpose of the study.

5.3. Procedure

Participants were presented with picture-sentence contexts in a pseudo-random order which was different for each participant. They were asked to carefully inspect the visual contexts with different amount of red dots, and indicate, by pressing the respective radio button, how appropriately each of the four sentences that come with each context, describe the latter, using a Likert scale indicating appropriateness from 1 to 5 implemented as a set of radio buttons next to the respective sentence. The scale itself with the extremes labeled "very inappropriate" and "very appropriate" was positioned right above the set of sentences in each screen, for participants' convenience. The order of presentation of different contexts was pseudo-randomized for each participant and it was ensured that no two contexts with a consecutive number of dots (e.g. 12 and 13) appeared one after another. In addition, the order of the four sentences evaluated for each such context was listed in an order pseudo-randomized for each participant. The experiment was administered via the web-based Ibex farm software (by Alex Drummond, http://spellout.net/ibexfarm/). There were no time limits on evaluating the contexts. In general, the questionnaire took about 20-25 minutes for the participants to complete.

5.4. Statistical procedures and exclusion criteria

No participant data were excluded on the basis of their performance on this questionnaire (in particular, their scores on the *polovica* "half" items). We also recoded the respective data points from the ratio of dots (1-29) per total number (30) into percentages (from approximately 3% to 97%) for better visibility and convenience.

For inferential statistical analysis, we constructed linear mixed models using the *lme4* package (Bates et al., 2014) in R (R Core Team 2014). Among other advantages, such models have an inherent capacity to reliably distinguish among between-subjects and within-subjects subdesigns as well as compensate for unequal group sizes. The score given by the participants was a dependent variable. We report estimations of χ^2 coefficients and *p*-values based on the likelihood-ratio test, whereby a model containing the fixed effect of interest is compared to a model that is identical in all respects except the fixed effect in question. Posthoc pairwise comparisons were performed using the *lsmeans* package. All comparisons are performed at the 0.95 confidence level.

For the data analysis, we assumed the mid-scale judgment of 3 points as a threshold for a positive judgment on appropriateness of the respective contexts and excluded datapoints below this threshold. The rationale for not using the set of datapoints collected over the entire set of numerical conditions comes from considerations about the nature of the m-words as markers of numerical proportions. To illustrate the point informally, consider the determiner *half*. It is clear that when an expression such as "half of the dots are red" is evaluated against a finite set of red dots within a particular range, as is the case in our study, it is only within a very narrow subrange of conditions (e.g. around 2-4 dots out of 30) that this expression will receive high scores, whereas in the vast majority of other cases, it will receive low scores (this was, in fact, the case in our study where *polovica* "half" was used as one of the filler conditions). Taking the entire set of data points into consideration in this case would lead to the misleading conclusion that speakers generally dislike this determiner, whereas in fact the scores simply reflect the natural situation that the use of this determiner is licensed within a very narrow numerical range.

Similar considerations apply in the case of the determiner *all*, as well as for all cardinal quantificational determiners. By analogy, we believe this holds also in the case of *many*, even though the particular numerical range for this determiner is hard to establish a-priori because of its vague character. Thus it would not be appropriate to compare the alleged differences in the use of different kinds of *many* across the numerical range where the use of any of these different varieties is not licensed in principle. In contrast, dividing the Likert acceptability scale in half provides at least a rough estimation of the acceptability boundary. Doing so thus extends the usual tradition of collecting speakers' evaluations in terms of binary judgments, but also adds the functionality for estimation of the size of the observed differences across different conditions, also in line with common practice in the literature (e.g. Schütze 1996, Featherston 2007, Sprouse et al. 2016).

5.5. Results

5.5.1 Full model

For the purposes of the analysis, we concentrated on the subset of collected datapoints that pertain only to *precej* and *veliko*. We first constructed a three-way linear mixed effects model entering proportion (the number of red dots), m-word type and presence/absence of alternative (that is, whether *precej* and *veliko* were presented in isolation or in the presence of each other) as fixed factors, participants as a random factor with an intercept, and given score as a dependent variable. That model revealed a significant main effect of proportion ($\chi^2(28) = 751.3$, $p < 0.0001$) and m-word type ($\chi^2(1) = 14.944$, $p = 0.0001$), but not alternative ($\chi^2(1) = 1.97$, *ns*). Furthermore, we observed a significant three-way interaction between the three factors ($\chi^2(43) = 98.771$, $p < 0.0001$).

To understand this complex interaction better, we constructed a smaller 2 x 2 model, holding proportion constant and crossing factors m-word type and alternative. This model revealed a significant interaction between these two factors ($\chi^2(1) = 5.052$, $p = 0.024$). This suggests that the choice of the relevant quantificational expression is affected by the (un)availability of both alternatives for *veliko* and *precej* in a single trial. Post-hoc pairwise comparisons on the interaction term "m-word x alternative" revealed no significant difference in the score estimations either for *precej*-sentences or *veliko*-sentences in the absence of the other alternative (β=-0.009, *SE*=0.08, $z = -0.123$, $p = 0.999$). At the same time, in the presence of the alternative, there was a significant difference in the estimated scores (β= 0.195, *SE*=0.04, $z = 4.382$, $p < 0.001$). This contrast is explored below in more detail.

5.5.2 Absence of alternative (Versions I and II)

We run two-way linear mixed models crossing proportion and m-word type, on the subset of proportions for which individual (raw) acceptability ratings on *veliko* or *precej* were at least 3 or higher. The model predicted a main effect of proportion ($\chi^2(28) = 618.05$, $p < 0.0001$), but no main effect of m-word type ($\chi^2(1) = 0.03$, *ns*). This indicates that the switch from *precej* to *veliko* does not significantly affect the acceptability score. There was, however, an interaction with the m-word type ($\chi^2(25) = 54.372$, $p = 0.0005$), indicating that the percentage of the red dots in the input affected speaker's scores on particular m-words. The mean score in the *precej* contexts was estimated at 4.39 ± 0.13 points (here and below, variation is reported as standard error). The mean score with the *veliko* contexts was estimated at 4.49 ± 0.12 points, that is, about 0.1 points higher than those with *precej*. The distribution of score estimations predicted by our model is illustrated in Figure 3.

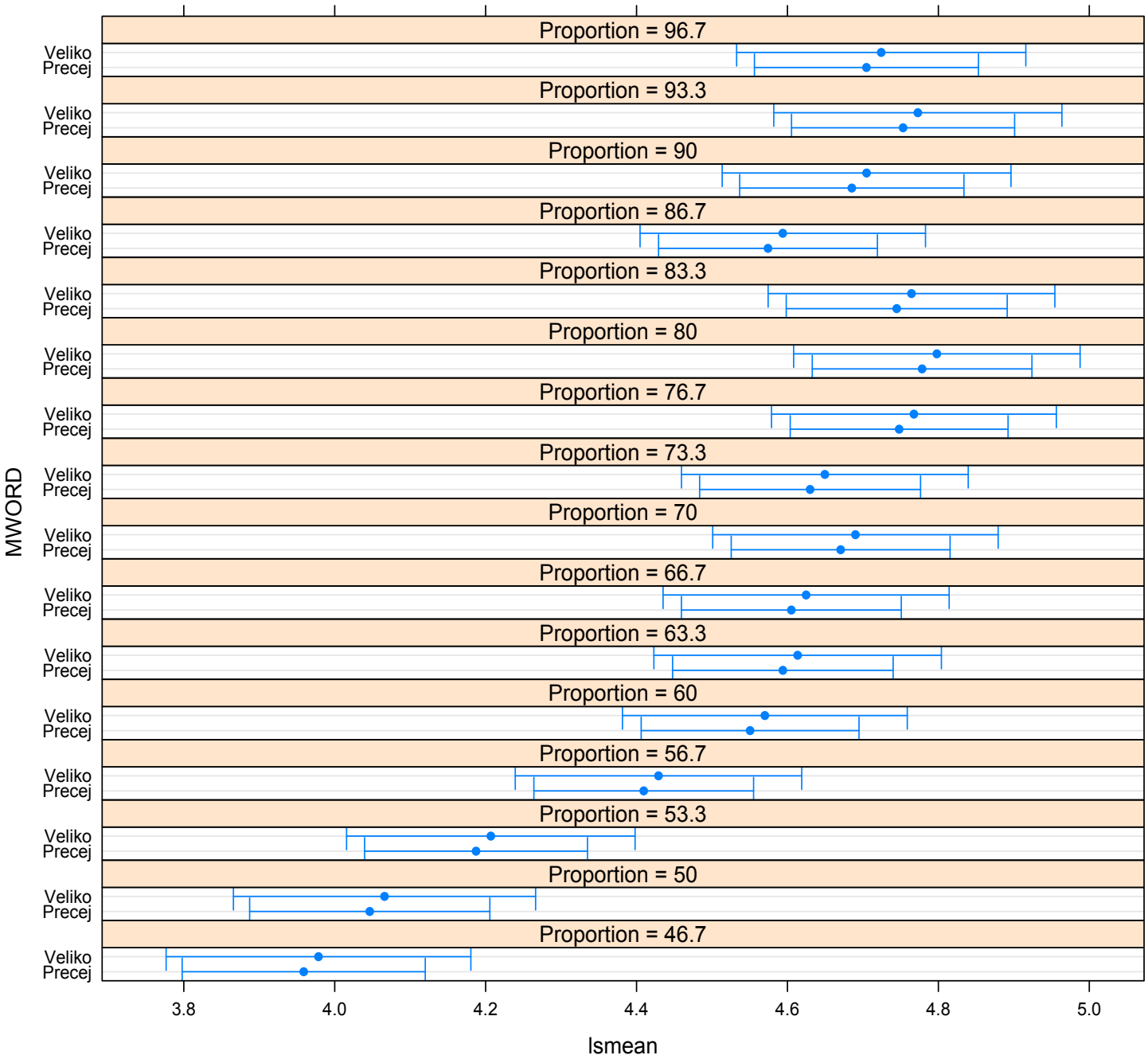


Figure 3. Pairwise comparisons as least-square means and confidence interval estimations of acceptability scores over percentages of red dots, when *veliko* and *precej* are **not** presented as alternatives. For space reasons, only the last 16 contexts are included.

Overall, these results are compatible with the idea of the lexical similarity between *precej* and *veliko*, intuitively felt by the native speakers and reported in Section 2.

5.5.3. Presence of alternative (Version III)

Similarly constructed models on the subset of datapoints when *precej* and *veliko* were presented as alternatives, crossing proportion and m-word type, revealed a main effect of both proportion ($\chi^2(28) = 199.92$, $p < 0.0001$) and m-word type ($\chi^2(1) = 20.69$, $p < 0.0001$), as well as their (marginal) interaction ($\chi^2(28) = 40.997$, $p = 0.05$). This implies that the switch between *precej*

and *veliko* in the presence of the other alternative significantly affects the acceptability score. The mean score with the *precej* contexts was estimated at 4.22 ± 0.11 points. The mean score with the *veliko* contexts was estimated at 4.45 ± 0.05 points. That is, the difference in the score between *precej* sentences and *veliko* sentences is now about 0.23 points. In addition, the same contexts described by *precej* sentences on the defined acceptability range were estimated on average to be scored approximately 0.17 points lower in Version III than in Version I. The distribution of score estimations predicted by our model is illustrated in Figure 4.

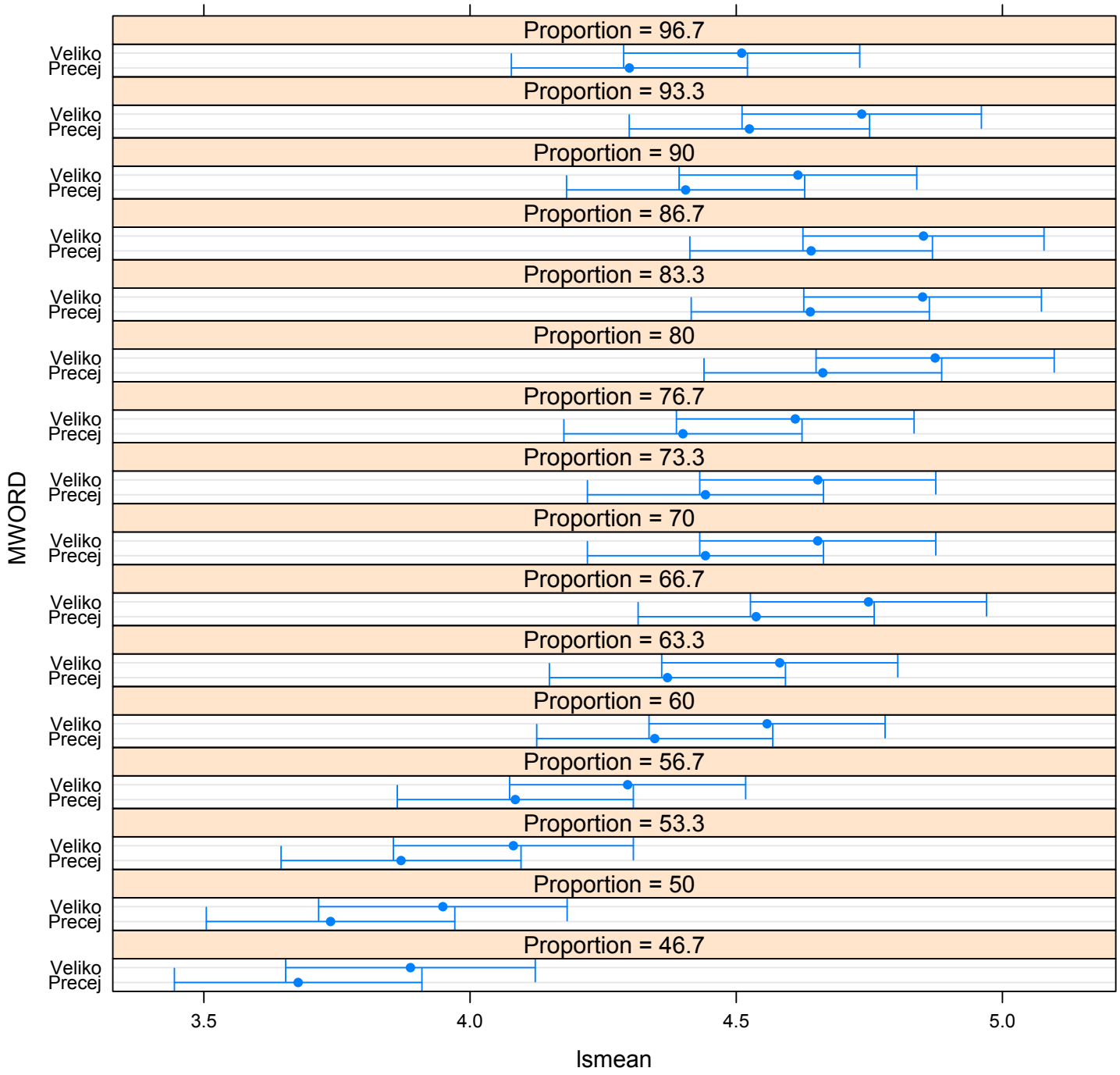


Figure 4. Pairwise comparisons as least-square mean and confidence interval estimations of acceptability scores over percentages of red dots, when *veliko* and *precej* are presented as alternatives. For space reasons, only the last 16 contexts are included.

5.6. Discussion

Versions I and II of the experiment explored our main hypothesis that the distribution of m-words *precej* and *veliko* overlaps to a large extent if speakers' choice is not influenced by the option of making both m-words relevant in the respective domain of discourse. This hypothesis rested on the observation that the two m-words have non-overlapping morphological make-up and hence the consideration of both alternatives is not automatically guaranteed. On the assumption that higher grades on the Likert scale are associated with higher degrees of certainty about the appropriateness of m-words, we should notice the importance of the fact that the acceptability scores peak in a region considerably closer to the higher than to the lower limit of the 45%-97% interval which marks acceptance. We interpret this, as well as the observation that the scores on *precej* never actually exceed those on *veliko*, as a tendency for stereotypical interpretations in both cases.

Things change, however, when both of the items containing different m-words are available for evaluation, i.e. when possible alternatives are given explicitly. Version III of the experiment addresses this issue. In Version III, participants had a chance to give their acceptability score on *precej*-sentences in the presence of a viable alternative, namely, *veliko*-sentences, and vice versa. The main result of this experiment was a significant difference in acceptability scores concerning *veliko*-sentences and *precej*-sentences. This suggests that the presence of alternative matters in evaluating the contexts for *precej* and *veliko* and assigning a non-stereotypical and stereotypical interpretations to them, respectively.

6. Theoretical consequences

In this section we discuss the interpretation of the experimental results which we would like to treat as a beginning of a future, more comprehensive theory of *precej* and its relation to *veliko*.

We take the results reported in this study to corroborate our proposal that the meaning of the Slovenian m-words *precej* and *veliko* are pragmatically strengthened in the availability of appropriate contextual conditions. When both alternatives are made relevant, *precej* is associated with lower numerical bounds that, by hypothesis, correspond to non-stereotypical instances of large amounts, while *veliko* is associated with higher numerical bounds that correspond to stereotypical interpretations due to an R/I-implicature. Our results, therefore, support the view that R/I-implicatures and M-implicatures are similar to scalar implicatures in that they are not an obligatory phenomenon (cf. Chierchia 2013). Furthermore, overt presence of a semantic alternative shows an effect on the processing of implicatures and thus supports the proposal of Foppolo et al (2012) and Barner et al (2011) that implicature processing is decomposable to a series of stages, one of which is the recognition of possible alternatives. We resorted to Krifka's (2007) assumption that stereotypical interpretation in degree predicates results from epistemic vagueness, i.e. inability for speakers to perceive the cut-off point between a negative and a positive extension in the scale introduced by vague predicates. The predictions of that assumption were fulfilled with the significant difference observed in the perception of *precej* and *veliko* in Version III of the experiment.

At the same time, we would like to stress that interpreting our results as evidence for pragmatic strengthening along the lines we suggested is only reasonable if i) there is evidence that both *veliko* and *precej* are degree-based; ii) it is sufficiently uncontroversial that both m-words have the same semantics, and iii) there is independent evidence of pragmatic enrichment in the degree

domain. Below we put each of these foundational assumptions to somewhat closer scrutiny also considering relevant alternatives.[10]

Let us pay closer attention first to point i) and look for alternatives to our analysis that do not depend on this assumption.

It is in principle possible that one, if not both, of the Slovenian m-words do not involve degrees at all. In that case, different semantic analyses of m-words may be appropriate for different cross-linguistic variants. It might well be the case that languages like Slovenian allow for apparent synonymity in this domain because of more than one kind of lexical realization of number modification. If this is the case, then at least one of the two m-words could be analyzed as a relation between sets along the lines of the standard generalized quantifier theory. If this turns out to be correct, then our proposal will be affected. As an anonymous reviewer points out, in that case the parallel to the pragmatic strengthening process within the quadruple of negated antonyms becomes irrelevant because the analysis will no longer depend on scale partitioning. However, pragmatic enrichment due to an interplay between the *R* and *M* principle will still be a veritable process given that i) the degree and non-degree based meaning of the m-words lead to equivalent interpretations at the propositional level (i.e. there is still grounds for pragmatic tension) and ii) the existence of pairs like {food, beverage} that we discussed in Section 4.1. Importantly, all results from our Experiment are consistent with this theoretical alternative.

Let is now consider some arguments for the alternative analysis whereby not both m-words at issue are degree based. As we saw in (16), degree modifiers have a degree variable that could be bound not only by the *POS* operator but also by the comparative and superlative operator (Romero 2015). Interestingly, *veliko* but not *precej* can be used in equative, comparative and superlative forms, as the examples in (27a-c) demonstrate in turn:[11]

(27) a. ***Na koncert je prišlo tako veliko/*precej ljudi kot včeraj.***
to concert is come that m-veliko/m-precej people as yesterday
'There came as many people to the concert as yesterday.'

b. ***Na koncert je prišlo več/*bolj precej ljudi kot včeraj.***
to concert is come more-veliko /more-precej people as yesterday
'There came more people to the concert than yesterday.'

c. ***Na koncert je prišlo največ/*najprecej ljudi včeraj.***
to concert is come most-veliko /most-precej people yesterday
'The most people came to the concert yesterday.'

Second, only *veliko* has a lexical form that can be used in the excess construction:

(28) ***Janez je kupil preveč svinčnikov za pisarno.***
Janez is bought too-many-veliko pencils for office
'Janez has bought too many pencils for the office.'

[10] We are indebted to an anonymous reviewer for suggesting the *non-unified analysis* and the *different standard analysis* which we consider below.
[11] We follow Toporišič (1976/2004:409) in the claim that *več* is related to *veliko* as its irregular comparative form.

The three comparison morphemes, as well as the excess morpheme *pre-* 'too' are predicted to be able to head a modifying DegP. The same possibility is reserved for degree adverbs like *very*. However, some Slovenian degree adverbs can modify *veliko* but not *precej*, as the data in (29) shows:

(29) a. ***Tako veliko/*precej študentov je prišlo, da smo morali prinesti več stolov.***
so m-veliko/m-precej students is come that are.1 had-to bring more chairs
'So many students came and we had to bring more chairs.'

b. ***Zelo veliko/*precej študentov je prišlo.***
very m-veliko/m-precej students is come
'Very many students came.'

The contrasts in (29a) and (29b) are puzzling. Both modifiers *tako* and *zelo* are expected to form a constituent with each m-word given our syntactic assumptions. There is also no semantic type incompatibility in any of the cases. In the absence of overt modifiers, the standard value d_c is set by the assignment function g_c. Informally speaking, intensifiers like *very* and *so* should just move the cut-off point between the positive and negative extension of *tako/zelo precej/veliko* 'so/very many' higher. These facts suggest a possibility that while *veliko* deserves a degree-based analysis similarly to gradable predicates, *precej* might not be degree-based at all. Such dual analysis is easily implementable, given that both kinds of analysis have been independently proposed for m-words in English and other languages. This move, however, is problematic for Slovenian. While it is clear that *veliko* needs a degree-based analysis, there are reasons to believe that *precej*, too, deserves a degree-based analysis, and, consequently, a unified analysis of both m-words is empirically and conceptually superior to a non-unified one. To that end, we will offer some additional arguments for a degree-based and against a non-degree-based analysis of *precej*.

We start with the last observation regarding degree modification by the excess morpheme *pre-* or *zelo* and *tako*. Kennedy and McNally (2005), among others, argue that intensifiers involve degree modification in the higher part of the scale. Under our proposal, an expression like **zelo precej* would compete with *veliko* in targeting the same interval on the numerosity scale, since the upper region of the scale beyond the cut-off point is reserved for *veliko* in Slovenian. One can thus reasonably expect that modification of *precej* by an intensifier like *zelo* will be problematic (see also McNabb 2012 for a related experimental study concerning intensifier *very*). Choosing between the two options would again be a case for the application of the M-Principle. Since **zelo precej* is morphologically more complex, it is blocked by the availability of *veliko*. The same explanation carries over for the unavailability of **tako precej* and **pre-precej*. But then, are there any degree modifiers that can fill the postulated DegP within the MeasP which *precej* heads? As we saw in (11), similarly to *veliko*, *precej* can be modified by the adverb *kar*. Furthermore, *precej* can participate in multiple degree modification construction as evidenced by that example. Two points are important in this relation. On the one hand, (30) suggests that *kar* is itself a degree modifier because it can only modify gradable predicates.

(30) a. ***Triglav je kar visok.***
Triglav is quite/rather high
'Mount Triglav is quite high.'

b. ***Miza je kar lesena.***
table is quite/rather wooden
'*The table is quite wooden.'

Second, the distribution of *kar precej* and *veliko* is not regulated by the M-Principle, which is why *zelo* and *tako* are banned from modifying *precej* but *kar* is not. Consider (31) in this relation.

(31) a. ***Ta film je kar zanimiv, no, pravzaprav zelo zanimiv.***
this movie is quite/rather interesting well in-fact very interesting
'This movie is quite interesting, well, in fact, very interesting.'

b. ****Ta film je zelo zanimiv, no, pravzaprav kar zanimiv.***
this movie is very interesting, well, in fact, quite/rather interesting
'*This movie is very interesting, well, in fact, quite interesting.'

One can infer from the contrast in (31) that the standard degree of comparison imposed by the use of *kar* 'quite/rather' is apparently lower than that of *zelo* 'very'. If this is the case, then the use of *kar* as a degree modifier of any of the two m-words triggers a more fine-grained partitioning of the relevant scale along the lines of (32) (cf. also (12)):

(32)

The m-words *veliko/precej* and degree modifiers of the class of *POS/kar/zelo* are ontologically similar since the latter are degree quantifiers and the former turn into degree quantifiers once their internal degree position is saturated. Thus a parallel process of scale partitioning between pairs in the two classes of lexical items is naturally expected.[12] But, what is more important, there is suggestive evidence that *precej* can be modified by degree adverbs. Therefore, it too, has to be analyzed in terms of degrees.

Consider now arguments against the non-degree based alternative analysis of *precej*. First, let us point out that in its use with adjectives and adverbs, *precej* can only combine with gradable but not with non-gradable ones, as seen in (33):

(33) a. ***Te smuči so precej hitre/mokre.***
these skis are precej fast/wet
'These skis are quite fast/wet.'

b. ****Te smuči so precej slovenske/moške.***
these skis are precej Slovenian/for-men

[12] It is beyond the focus of this paper to address the question of whether the class of degree quantifiers is subject to the same kind of pragmatic strengthening by the R- and M-Principle which results in assigning to *zelo* and *tako* a stereotypical interpretation and a non-stereotypical interpretation to *kar* and potentially *še* or alternatively the two kinds of modifiers involve two different degree standards. Though this has to be further substantiated, we believe that the first option is more viable given that *precej* (whose meaning is in the focus of this paper) can also function as a degree quantifier, as the data in (4) above and in (i) illustrates. To the extent that our proposal is on the right track, members of the same natural class as *precej* would be expected to share at least some of its formal properties.
i) a. ***Na koncert je prišlo precej veliko ljudi.*** b. ****Na koncert je prišlo veliko precej ljudi.***
to concert is come quite many people to concert is come very many people
'Quite many people came to the concert.' 'Very many people came to the concert.'

'*These skis are quite Slovenian/for men.'

This contrast is naturally explained under the hypothesis that *precej* can also be used as a degree quantifier.

Next, consider the use of *precej* on a par with *veliko* as modifiers of the comparative operator. As argued by Solt (2015), non-degree theories of m-words as quantifiers of type <et, <et,t>> (cf. Barwise and Cooper 1981), or as predicates of type <e,t> (cf. Milsark 1977, Klein 1981, a.o.) or predicate modifiers of type <et,et> (cf. Hoeksema 1983, Landman 2004, a.o.) cannot be applied to constructions in which the m-words appear within comparative constructions. Slovenian allows both *precej* and *veliko* in this position, as in (3e) or (34) below:

(34) a. ***Na tekmovanje iz matematike se je prijavilo veliko/precej več kot 200 otrok.***
at competition from math REFL is signed m-veliko/m-precej more than 200 children
'Many more than 200 children signed in for the math competition.'

b. ***Opravili smo veliko/precej manj testiranj kot smo načrtovali.***
completed are.1 m-veliko/m-precej less tests than are.1 planned
'We completed many fewer tests than we planned.'

Within both types of non-degree approaches it is difficult to see which is the set of individuals to which the m-word can apply. One can argue that such a set can be found in the positive comparative in (34a), namely, the set of children in excess of the 200. But this stretch of the analysis is insufficient in the case of (34b) because, there, the set of tests that were not performed does not exist, hence, the m-word cannot apply to it. On the other hand, as evidenced in Solt (2015), assigning the degree semantics in (16) to *many* allows for a compositional interpretation of comparative constructions with an m-word in a modifying position without auxiliary assumptions. All else equal, the availability of data like (34) is an argument for a degree analysis of both Slovenian m-words. This conclusion is of crutial importance in the case of *precej*, since *veliko* has already been shown to require a degree analysis.

Before we conclude the discussion of the theoretical alternative that *precej* and *veliko* are given a non-unified semantic analysis but their interaction is still subject to pragmatic strengthening, we would offer some considerations that potentially shed light on the fact that *precej* cannot be modified by comparison morphology. We speculate that this is so because its current synchronic shape is itself a frozen comparative form that is potentially decomposable. This hypothesis might find support if the historical trajectory of *precej* is followed more closely. Etymological sources connect *precej* to a temporal morpheme expressing precedence (Snoj 2003). Previously, Gergel (2011) argued for a semantic reanalysis of the historical predecessor of the modern English intensifier *rather* from the temporal domain to the degree domain which involved the use of comparative morphology (cf. *rath+er*). It is possible that a similar process has affected the derivation and meaning of *precej*. If this turns out to be the case, then, naturally no further modification by the equative, superlative or the analytical comparative would be conceivable. Admittedly, this possibility needs further empirical substantiation, which we leave for future research. Until then, the contrast within the paradigm of comparison morphology between *veliko* and *precej* will remain somewhat of a puzzle.

We now turn to the foundational assumption for our proposed account noted in point ii) above, namely, that *precej* and *veliko* are semantically equivalent. A theoretical alternative that does

not depend on this assumption is that both *precej* and *velik*o are semantically degree-based, but they make reference to different standards of comparison. Observe, immediately, that this alternative hypothesis is consistent with the results from Version III.

Under this proposal, *precej* and *veliko* form a lexical scale, possibly as part of a larger scale in which quantificational determiners like *nekaj* 'some', *večina* 'most', *vsak* 'every' participate. Though to the best of our knowledge there are no other cross-linguistic reports of similar relations between differently valued m-words, there are many similar lexical pairs across languages in the domain of vague predicates like *warm-hot* or *pretty-beautiful*, *cool-cold* and so on. If this kind of description is appropriate for the two Slovenian m-words, the propositions containing the stronger of the two terms, *veliko* (i.e. the one involving a higher standard) would asymmetrically entail minimally different ones with the weaker one, *precej*. The contrast in acceptability between examples like (35a) and (35b) might be seen as support for this hypothesis, since (35a) could be viewed as a cancellation of a scalar implicature triggered by *precej* (cf. (8a) and (8b)):

(35) a. ***Precej ljudi ima sladkorno bolezen, no, pravzaprav ima veliko ljudi***
m-precej people has sugar.ADJ illness well in-fact has m-veliko people
sladkorno bolezen.
sugar.ADJ illness
'Many people have diabetes, well, in fact, quite a lot of people have diabetes.'

b. #***Veliko ljudi ima sladkorno bolezen, no, pravzaprav ima precej ljudi***
m-veliko people has sugar.ADJ illness well in-fact has m-precej people
sladkorno bolezen.
sugar.ADJ illness
'Many people have diabetes, well, in fact, quite a lot of people have diabetes.'

However, as noted above, informal descriptions of the meanings of the two words view them as possibly synonymous items and this intuition is supported by the results of Versions I and II of our experiment. There are also conceptual difficulties with the scalar alternative hypothesis. Scalar alternatives must share similar morpho-syntactic properties. Among these are the same kind of brevity and level of lexicalization (Horn 1989, Levinson 1983, etc.). Certainly, by these two criteria, *precej* and *veliko* make a potential Horn set. However, as we saw in Section 2, they do not have the same kind of subcategorization, which is not typical for scalar alternatives which normally belong to the same morphological and syntactic classes.[13] But if this reasoning is used as an argument against the scalar alternative analysis of *veliko* and *precej*, one can ask whether the objection may carry over to the analysis we defend. However, it is not uncommon to find other pairs of lexical items that are semantically equivalent but not necessarily equivalent with respect to subcategorization. One example is the pair of verbs *ask* and *wonder* that are semantically synonymous but differing in that *ask* may subcategorize for a proposition or an NP (cf. *I asked the time*), whereas *wonder* subcategorizes only for a proposition (cf. **I wondered the time*).

[13] To use this kind of argument presupposes a common type of analysis of *precej* in constructions where it is used as an m-word and in other contexts where it modifies degree predicates of type <d,et> belonging to different morphological categories. Although this is an interesting question to investigate, we leave its substantiation for future research. We believe that a possible analysis could use Solt's (2015) proposal that *many* is in complementary distribution with *Pos* when used as a degree modifier. For our purposes, this would imply that in sentences like *Članek je precej zanimiv* 'The article is quite interesting', *precej* will be interpreted as a degree quantifier of type <dt,t>.

A further potential alternative explanation for our suggested interpretation of *precej* and *veliko,* which might be seen as a variant of the preceding alternative, focuses on the notion of imprecision. Following work on hedges understood as means that affect the speaker's commitment to the truth of what is asserted (cf. Lakoff 1972, 1987, Fraser 1975, Brown and Levinson 1987, etc.) one can possibly argue that *precej* itself is a hedge. To flesh out this idea, we might follow, in particular, Anderson's (2013) proposal about the interpretation of the English hedges *sorta* and *kinda*, and suggest that *precej* is associated with numerical boundaries which approximate but do not exceed the contextually set standard, similarly to an imprecision hedge, whereas the respective boundaries of *veliko* must exceed that standard. In fact, such a proposal reflects the intuition and judgments reported in Section 2 (e.g. (3)) that both of these m-words relate to a relatively large quantity and are often used interchangeably, while at the same time it is possible to use sentences like (35) which presuppose that *precej* is associated with lower numerical bounds in proportional contexts.

However, such a proposal, too, falls short of explaining the results we obtained in Versions I and II of our experiment. These results show that in the absence of a relevant alternative, *precej* and *veliko* are associated with numerical bounds that do not differ significantly. We interpret this fact as evidence against this alternative proposal, and, at the same time, as support for our original proposal that both m-words are lexically synonymous. In such contexts, pragmatic strengthening has not affected interpretation to a degree that would distinguish between the two alternatives.

In relation to our foundational assumption in point iii) suggesting a possibility for pragmatic strengthening in the degree domain, we would like to point out that this proposal is not unique and its plausibility finds independent support by arguments for the application of pragmatic principles in deriving meanings in the degree domain. A most notable example comes from Rett (2015) and the suggested semantics of evaluativity. Under this proposal the interpretation of various degree constructions which trigger evaluative inferences is argued to be subjected to pragmatic strengthening by adding either an uninformativity-based Quantity implicature as in (36a) or an atypicality-based Manner implicature as in (36b):

(36) a. John is tall. ⟼ John's height is relatively considerable.
b. Bill is as short as Sam. ⟼ Sam is short.

Finally, we believe that our proposal regarding the interpretation of the two m-words that have (at least) partially overlapping distribution within the same language solves a learnability problem. Given that actual numerical bounds are not part of the learned lexical meaning of these words under any of the existing semantic theories, differentiating among potential synonyms and observing the regularities in use in cases where both alternatives are either lexically present or contextually made relevant finds an explanation within a theory of pragmatic strengthening. Native speaker's competence in discriminating *veliko* and *precej* is predicted to depend only on knowledge of pragmatic principles.

6. Conclusion

We argued that out of the two m-words with seemingly similar meaning, *veliko* is assigned the stereotypical interpretation of a quantity degree word that relates to relatively large amounts, whereas *precej* is identified with the non-stereotypical one reserved for moderately large

amounts. Thus we hope to have shown that the similarity in their overall meaning is only apparent, and a more fine-grained analysis of their pragmatic distinctions is supported by speakers' intuitions. We see the contribution of this work as both theoretical and experimental. Our theoretical contribution consists in streamlining the semantics of *veliko* and *precej* as degree words and clearly delineating the semantic and pragmatic components of their meaning. Our experimental results support the neo-Gricean approach to pragmatic strengthening in the domain of degree-based predicates, and especially its Horn's/Krifka's interpretation, as well as our specific hypothesis about the distribution of the two Slovenian counterparts of *many*. Our results further support the semantic view on *many* as a degree-based determiner and raise a question as to whether other vague determiners could receive a similar analytic treatment. This is a question for future research.

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Appendix. An example of a stimulus screen