Non-conservative construals with percentage quantifiers in Slavic

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ABSTRACT

The paper investigates non-conservative, as opposed to conservative, interpretations of sentences with percentage quantifiers corresponding to 'fifty percent' in Slavic. Based on the results of a questionnaire study in Slavic languages with (Bulgarian and Macedonian) and without definiteness marking (BCMS, Czech, Polish, Russian, Slovak, and Slovenian), we make the novel observation that word order is a main and sometimes the only means to distinguish between conservative and non-conservative readings. We argue that for the non-conservative reading to arise the percentage quantifier has to appear in a low position, VP-internally, in order to be part of the predicate and to take the VP's extension as its first argument.

KEYWORDS conservativity · non-conservativity · percentage quantifiers · word order · information structure

1 INTRODUCTION

An important semantic generalization proposed in the literature on quantifiers is often referred to as the Conservativity Hypothesis (Barwise & Cooper 1981, Keenan & Stavi 1986). As formulated in (1), it postulates that in natural language every extensional determiner denotes a conservative function of type $\langle\langle e, t\rangle, \langle\langle e, t\rangle, t\rangle\rangle$, where extensionality and conservativity are defined as in (2) and (3), respectively.

(1) *The Conservativity Hypothesis*: All extensional determiners in natural language are conservative.

(2) *Extensionality*: A determiner D is extensional if and only if for all sets R, R' and S, S', $D(R)(S) = D(R')(S')$ if in the current world $R = R'$ and $S = S'$

(3) *Conservativity*: A determiner D is conservative if and only if for all sets R and S, $D(R)(S)$ is equivalent to $D(R)(R \cap S)$

By hypothesis, for the determiners whose truth value is not sensitive to the replacement of extensionally identical arguments (extensionality), the extension of the nuclear scope (S) is relevant only insofar as it overlaps with the extension of the restrictor (R) (conservativity). In other words, (1) posits that in order to establish the truth value of a sentence involving a DP in subject position, it is sufficient to rely on the extension of the NP, whereas the extension of the VP is somewhat secondary. For instance, for evaluating the examples in (4), one only needs to check how many individuals with the property *cat* got scared of the cucumber, and it is irrelevant whether any other individuals also got scared of the cucumber.

(4) a. Every cat got scared of the cucumber.
     b. No cat got scared of the cucumber.

Though many determiners support the Conservativity Hypothesis (von Fintel & Matthew-

son 2008), recently Sauerland (2014), Ahn & Sauerland (2015a,b, 2017), and Pasternak & Sauerland (2022) demonstrated that proportional quantifiers such as *thirty percent* and *two thirds* can bring about an unexpected non-conservative interpretation.[1] To illustrate, let us consider the two sentences in (5) (adapted from Ahn & Sauerland 2017: p. 126).[2]

(5)   a.   The company hired fifty percent of the women last year.   CONSERVATIVE
      b.   The company hired fifty percent women$_F$ last year.   NON-CONSERVATIVE

While the construction in (5-a) gives rise to the standard conservative interpretation, the sentence in (5-b), in which the percentage quantifier combines directly with the NP, which in addition is focused, means something else, specifically that 50% of the people employed by the company last year are women. Since in order to evaluate whether (5-b) is true or false it is necessary to consider the extension of the VP, i.e., check all the individuals employed by the company last year, this reading is clearly non-conservative; and thus (5-b) seems to violate the Conservativity Hypothesis in (1).[3] In a cross-linguistic perspective, Ahn & Sauerland (2015b) note that the distinction between conservative and non-conservative readings always correlates with focus, and in some languages additionally with definiteness and case marking, as in the English examples in (5).

In this paper, we investigate constructions with percentage quantifiers in Slavic. Based on a broad cross-linguistic study involving Bosnian/Croatian/Montenegrin/Serbian (BCMS), Czech, Polish, Russian, Slovak, and Slovenian, as well as Bulgarian and Macedonian, we show that both conservative and non-conservative readings also exist in Slavic languages, even when the corresponding constructions are morphosyntactically indistinct, as in the Slavic languages without articles. In addition, the collected evidence indicates that the distinction between the conservative and the non-conservative interpretation can correlate not only with focus, definiteness and case marking, as previously observed, but also with different word orders, a typological fact unnoticed so far. We argue that this fact, in turn, suggests that (at least in Slavic) conservative and non-conservative construals involve different predicational structures.

The paper is structured as follows. §2 addresses Ahn & Sauerland's cross-linguistic generalizations regarding morphosyntactic and prosodic marking of non-conservative, as opposed to conservative, construals with proportional quantifiers. In §3, we examine constructions with proportional quantifiers across most major Slavic languages. After having outlined our background assumptions on word order and focus in §4, §5 presents the design of a cross-linguistic questionnaire which we used to elicit native speaker intuitions concerning the conservative/non-conservative distinction in different Slavic languages. §6 discusses the results of our query, which show a correlation between word order and the (un)availability of the non-conservative interpretation in Slavic, and we suggest that percentage quantifiers under the non-conservative reading have to appear VP-internally to form part of the predicate. Finally, §7 concludes.

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[1]Other potential counterexamples to the Conservativity Hypothesis discussed in the literature so far include, e.g., reversed proportional readings of *many* and *few* (Westerståhl 1985), *only* (de Mey 1991), Polish *sami* 'only; alone' (Zuber 2004).

[2]The subscript F marks focus.

[3]Under the accounts proposed by Ahn & Sauerland (2015a, 2017), Pasternak & Sauerland (2022), the core semantics of the percentage quantifier is always conservative. Yet, this conservative semantics coupled with additional phenomena such as focus resolution results in the the non-conservative interpretation of the entire sentence (cf. analyses of non-conservative readings of *many* by Herburger 1997 and Romero 2015). Since the main aim of this paper is to present empirical generalizations about Slavic percentage quantifiers, which have not yet been discussed in the literature, we will not address theoretical accounts at this point, but see Gehrke & Wągiel (2022, 2023) for further discussion.

2 NON-CONSERVATIVE PROPORTIONAL QUANTIFICATION CROSS-LINGUISTICALLY

As we already saw in (5), English marks the distinction between the conservative and the non-conservative construal formally. While the former arises in configurations including the preposition *of* and the embedded definite DP, recall (5-a), the latter is expressed by a different construction. In (5-b), the percentage quantifier modifies a bare NP, which is stressed, and this is what Ahn & Sauerland (2015a,b, 2017) interpret as focus marking. This kind of pattern is not particular to English. Based on cross-linguistic data from eight typologically distinct languages, Ahn & Sauerland (2015b, 2017) argue that across languages the conservative/non-conservative distinction can be related to focus marking, (in)definiteness and case marking on the noun, and sometimes also to overt movement of the proportional quantifier. In Table 1, we provide an overview of the four marking strategies as realized in four types of languages.

| TYPE | LANGUAGE | FORMAL MARKING | | | |
		FOCUS MARKING	DEFINITENESS	CASE MARKING	OVERT MOVEMENT
1	Korean	✓	✓	✓	✓
2	English	✓	✓	✓	✗
3	Italian	✓	✓	✗	✗
4	Mandarin	✓	✗	✗	✗

Table 1: Marking of non-conservative (vs. conservative) construals (based on Ahn & Sauerland 2015b)

Among the languages in the sample examined by Ahn & Sauerland, only Korean employs all of the marking strategies discussed above. We dub this pattern Type 1 and it is illustrated in (6).[4] For the non-conservative interpretation to arise, the noun has to be focused and cannot be marked with the genitive, whereas the percentage quantifier has to move out of the case-marked DP.

(6)   Korean
   a.   Hyosa-ka   [yeca-(uy)   osip-phulo]-lul   ceyyonghayssta.
        company-NOM woman-GEN fifty-percent-ACC hired
        'The company hired fifty percent of the women.'   CONSERVATIVE
   b.   Hyosa-ka   yeca$_F$-lul   osip-phulo   ceyyonghayssta.
        company-NOM woman-ACC fifty-percent hired
        'The company hired fifty percent women.'   NON-CONSERVATIVE

Type 2 employs focus, definiteness and case marking but does not display overt movement. Examples include English (case marking by *of*) as well as German, Georgian, and Greek. As evidenced in (7), the conservative construal in Greek requires either genitive case marking on the definite DP or the use of a PP, whereas the non-conservative reading is expressed via case agreement coupled with indefiniteness and focus.

(7)   Greek
   a.   I   eteria   proselave 30% { ton   dopion   / apo tus
        the company hired   30%   the.GEN locals.GEN   from the.ACC

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[4]All examples in this section are adapted from Ahn & Sauerland (2015b). Note that while the authors group Korean under the languages that employ definiteness marking to differentiate between the two readings, there is in fact no overt definiteness marking (or absence thereof) in the examples they provide, see (6). At this point, it is not clear to us why they group Korean under the languages that employ definiteness but we merely render their classification in Table 1.

       dopius }.
       locals.ACC
       'The company hired 30% of the locals.'   CONSERVATIVE

   b.   I   eteria   proselave 30% dopius$_F$.
       the company hired   30% locals.ACC
       'The company hired 30% locals.'   NON-CONSERVATIVE

Italian and French illustrate Type 3 with focus and definiteness marking but lacking case distinctions and overt movement. The conservative construal in (8) involves a definite DP, whereas the use of a bare focused noun results in the non-conservative interpretation.

(8)   Italian

   a.   Gianni ha parlato a un terzo delle donne.
       Gianni has talked to a   third of.the women

       'Gianni talked to a third of the women.'   CONSERVATIVE

   b.   Gianni ha parlato a un terzo di donne$_F$.
       Gianni has talked to a   third of women

       'A third of those Gianni talked to were women.'   NON-CONSERVATIVE

Finally, in Type 4, exemplified by Mandarin, non-conservative construals are argued to be distinguished from conservative ones only by means of focus marking, see (9). Depending on whether the NP *běndì-rén* 'local person' is focused or not, we get either the non-conservative or the conservative reading, respectively.

(9)   Mandarin

   a.   Tāmen lùyòng le   5% de   běndì-rén.
       they   hire   PERF 5% LNK local-person

       'They hired 5% of the locals.'   CONSERVATIVE

   b.   Tāmen lùyòng le   5% de   běndì-rén$_F$.
       they   hire   PERF 5% LNK local-person

       '5% of the persons they hired are locals.'   NON-CONSERVATIVE

The findings reported by Ahn & Sauerland demonstrate the relevance of case and definiteness marking in distinguishing between conservative and non-conservative construals. However, the existence of Type 4, which lacks definiteness and case marking and therefore marks the distinction just by prosody, as argued by the authors, invites the question regarding further morphosyntactic means that languages can use to express non-conservative meanings. Given the well-known inter-Slavic variation concerning definiteness marking or lack thereof, a comparative study on proportional quantifiers across Slavic languages gives a unique opportunity to thoroughly test this issue.

3 SLAVIC PERCENTAGE QUANTIFIER CONSTRUCTIONS

In our study, we focus on major Slavic languages both with and without definiteness marking (DM). In particular, we investigate data from Bulgarian and Macedonian (Southeast Slavic; DM) as well as Czech, Polish, Slovak (West Slavic; no DM), Russian (East Slavic; no DM), Bosnian/Croatian/Montenegrin/Serbian (BCMS) and Slovenian (Southwest Slavic; no DM). With respect to the conservative/non-conservative distinction in constructions with percentage quantifiers, we have identified two marking patterns, which we will simply refer to as Patterns A and B.

    Similar to Type 2 in Table 1, Pattern A distinguishes formally between the conservative and the non-conservative construal by means of definiteness and case marking, expressed by the presence or absence of a preposition corresponding to 'of'. It is represented by Bulgarian and Macedonian, both of which employ suffixes on the noun to mark

definiteness, see (10)–(11).

(10) Bulgarian
    a.   petdeset procenta ženi   NON-CONSERVATIVE
          fifty   percent   women
    b.   petdeset procenta ot ženite   CONSERVATIVE
          fifty   percent   of women.DEF

(11) Macedonian
    a.   pedeset procenti ženi   NON-CONSERVATIVE
          fifty   percent   women
    b.   pedeset procenti od ženite   CONSERVATIVE
          fifty   percent   of women.DEF

Pattern B, on the other hand, shows no formal distinction of the sort observed in Pattern A or other marking types in Table 1.[5] The construction simply takes a form of the percentage quantifier assigning the genitive case to the bare NP. This pattern is found in all articleless Slavic languages, as illustrated by the examples in (12)–(17).

(12) BCMS
    pedeset { posto   / procenata }   žena
    fifty   percent$_1$ percents$_2$.GEN women.GEN

(13) Czech
    padesát procent žen
    fifty   percent women.GEN

(14) Polish
    pięćdziesiąt procent kobiet
    fifty   percent women.GEN

(15) Russian
    pjaťdesjat procentov   ženščin
    fifty   percents.GEN women.GEN

(16) Slovak
    päťdesiat percent žien
    fifty   percent women.GEN

(17) Slovenian
    petdeset odstotkov žensk
    fifty   percent   women.GEN

The fact that Pattern B does not mark the non-conservative, as opposed to the conservative, interpretation in terms of distinct morphosyntax, immediately raises two questions. First, can the non-conservative meaning be expressed in Slavic languages without articles at all? And if so, what other linguistic means (if any) are employed to mark it?

A starting point for our inquiry comes from our intuition that in Polish there is the contrast in (18).

(18) Polish
    a.   **Pięćdziesiąt procent kobiet**   pracuje w firmie   Ekspol.
          fifty.NOM   percent women.GEN works   in company.LOC Ekspol
          'Fifty percent of the women work at the Ekspol company.'   C

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[5]A subset of the languages that display Pattern B, namely Czech, Polish, and Slovak, additionally have a partitive construction with a PP, similar to the Greek example with a preposition in (7-a). We also tested this construction, which gives rise to a conservative reading only, but we will not address it further here (see Gehrke & Wągiel 2023 for discussion).

b.   W firmie   Ekspol pracuje **pięćdziesiąt procent kobiet**.
     in company.LOC Ekspol works   fifty.NOM   percent women.GEN
     'Fifty percent of the employees at the Ekspol company are women.'   NC

The sentences in (18) differ in the position of the percentage quantifier phrase, which is a nominative-marked subject in this example. In (18-a), it appears preverbally, whereas in (18-b) it is in postverbal position. According to our intuitions, the difference in word order correlates with the available interpretations. While (18-a) gets the standard conservative reading (C), the meaning of (18-b) is non-conservative (NC) since in order to evaluate the truth of the sentence one needs to determine what individuals are in the set of Ekspol's employees. In other words, it is necessary to consider the extensions of both the NP and the VP.

The word order effect in (18), if real, is intriguing in that it would extend the typology in Table 1, and add yet another means to distinguish between the two readings in question, which could in principle be combined with focus (prosody) as well as with definiteness and case marking. We therefore decided to explore the role of word order in the Slavic languages discussed here. First, however, let us say a few words on the role of word order in Slavic languages and its connection to prosody and information structure.

4 WORD ORDER, PROSODY, INFORMATION STRUCTURE

Word order and prosody are two prominent means to signal information-structural differences. For example, stress is generally taken to indicate that a constituent is in focus, and – depending on how far focus projects – what is not in focus is backgrounded and therefore presupposed. Furthermore, it has been argued for English by Chomsky & Halle (1968) and after them for many other languages, including Slavic, that in the default case, sentential stress, i.e., the most prominent stress in a sentence, falls on the rightmost constituent of the clause (the nuclear stress rule). Finally, all Slavic languages are so-called 'free word order' languages, in the sense that they employ different word orders, primarily to mark information-structural differences (see Jasinskaja & Šimík to appear and references cited therein). In particular, there is a tendency in Slavic languages for topics to appear before comments, given information to appear before new information, and backgrounded elements to appear before focused ones.

At the same time, it is standardly assumed that all Slavic languages (except for Sorbian) have a canonical SVO order (including SVPP, as in (18-a)): it is the most frequent order and it is the order which allows for the widest variety of focus configurations and which is furthermore preferred in what Slioussar (2011) calls zero context (when all information is new), coupled with stress falling on the last constituent of the clause. Thus, when we take into account merely stress and word order there are two ways to solve potential clashes between canonical word order and the nuclear stress rule, whenever one or the other does not coincide with the information-structural preferences outlined above (topic before comment/background before focus/given before new). For example, if focus is on the subject but not on the verb or the object, or when the object is the topic and not part of the comment, we could change the word order and deviate from the canonical word order (arriving, for instance, at an OVS order) and maintaining the nuclear stress rule (OVŚ). Alternatively, we could keep the word order constant and deviate from the nuclear stress rule, resulting in ŚVO. The latter strategy is the only strategy we find in, e.g., English, because it has rigid word order and would need to change the syntactic structure to align sentence-final stress with such information-structural requirements (e.g., passivization, cleft constructions, existential constructions); we will come back to this in §6. The former strategy is commonly found in Slavic languages, since deviations from the canonical word order in particular contexts are actually assumed to be the unmarked options (see, e.g., discussion of Russian data in Slioussar 2011). Bailyn (2011), for instance, argues for Russian that the subject position (Spec,IP) can be filled by any

constituent, resulting in an XP V S-order, and he dubs this generalized inversion. Similar observations apply to other Slavic languages (see Jasinskaja & Šimík to appear).

In this short paper we do not have enough space to spell out a precise model of the interaction of word order and prosody to bring about one or the other information structure, or for a fully spelled out account of this interaction, which is potentially orthogonal to the account of the source of the non-conservative reading (for a more detailed discussion and a comparison between two different kinds of accounts, see Gehrke & Wągiel 2023). What we do want to do in this paper is to investigate the role of word order as one means to bring about a difference between a conservative and non-conservative construal. Word order has been overlooked in previous research by Sauerland (2014) and subsequent work, which mainly concentrated on focus. The results we arrive at are compatible with various accounts that one could spell out, and we will come back to this in §6, after having discussed the questionnaire results.

5 CROSS-LINGUISTIC QUESTIONNAIRE

In order to determine whether word order plays a role in bringing about the conservative/non-conservative distinction in Slavic, we designed an informal cross-linguistic questionnaire focusing on the position of percentage quantifiers. In particular, we were interested in whether the effect observed for Polish in (18) would be corroborated by other native speakers and attested also in further Slavic languages displaying Pattern B, i.e., the examined languages without articles: BCMS, Czech, Polish, Russian, Slovak, and Slovenian. In addition, we wanted to know what role (if any) the word order alternation would play in languages exhibiting Pattern A, i.e., in Bulgarian and Macedonian, given that these languages are also assumed to display flexibility in word order.

5.1 DESIGN

In our inquiry, we investigated sentences in which the percentage quantifier phrase was the subject of an intransitive verb as well as constructions with the percentage quantifier phrase serving as the object of a transitive verb. The second parameter involved word order variation, specifically the percentage quantifier phrase occurred either in preverbal or postverbal position. The final variation applied only to languages displaying Pattern A and concerned the distinction between the different morphosyntactic marking of the conservative/non-conservative alternation we already addressed.

The test items in the respective languages were constructed in such a way that they adhered to the English templates in (19)–(20), which represent the intransitive and transitive configurations, respectively.

(19)   Intransitive test items
      a.   It is interesting that [fifty percent](.NOM) (of the) women work at (the) company X.
      b.   It is interesting that at (the) company X work [fifty percent](.NOM) (of the) women.

(20)   Transitive test items
      a.   It is interesting that [(the) company Y](.NOM) employs [fifty percent](.ACC) (of the) women.
      b.   It is interesting that [fifty percent](.ACC) (of the) women employs [(the) company Y](.NOM).

As indicated by the parentheses in (19)–(20), in languages exhibiting Pattern A, i.e., distinguishing formally between the conservative and the non-conservative construal, recall (10)–(11), we manipulated the preposition corresponding to 'of' and definiteness

marking.[6] This contrast is absent from languages displaying Pattern B, i.e., showing no morphosyntactic distinction between the two interpretations, recall (12)–(17). In these languages we simply used bare nominals in nominative or accusative case; in contrast, Bulgarian and Macedonian (Pattern A-languages) lack case suffixes.[7]

For languages exhibiting Pattern A, the combination of the three parameters results in 8 test items in total: 2 transitivity variants × 2 word order variants × 2 marking variants.[8] By contrast, for languages displaying Pattern B we only had two points of variation, namely 2 transitivity variants × 2 word order variants, which results in 4 test items in total.

Given that our questionnaire was distributed in written format only, we could not control for suprasegmental features such as intonation and stress. In order to isolate a possible role of word order in distinguishing between the conservative and the non-conservative reading, without word order differences being employed to mark anything else, we aimed at examples that display the most neutral prosody and accent pattern (recall discussion in §4). For this purpose, we embedded the test items as subordinate clauses under 'It is interesting', as if someone were reporting on sheer facts that were interesting.[9] This move is further supported by the fact that while in Slavic there is a lot of word order and accent pattern variation in main clauses, this variation is substantially restricted in subordinate clauses (for Russian, see Bailyn 2011).

The test items were preceded by a scenario describing a situation strongly supporting either the conservative, see (21)–(22), or the non-conservative interpretation, as in (23)–(24). The task of our informants was to judge the adequacy of a given test item with respect to a particular scenario.[10]

(21)   Conservative intransitive scenario
       The company X is located not far from a village that is otherwise quite remote. The company employs half of the women from that village.

(22)   Conservative transitive scenario
       The two companies X and Y are not far from a village that is otherwise quite remote. Therefore, X and Y are the main employers for the village inhabitants. While most of the men from the village work at X, half of the women from the village work at Y.

(23)   Non-conservative intransitive scenario
       The company X is located not far from a village that is otherwise quite remote. A few people from the village work there. The company observes gender equality and half of their employees are women.

(24)   Non-conservative transitive scenario
       The two rivaling companies X and Y have about the same amount of employees. While most of the employees at X are men/male, half of the employees of Y are women/female.

Recall that the canonical word order in the Slavic languages under discussion is SVO; an OVS order arises quite naturally if the object is a contrastive or an aboutness topic

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[6]The noun 'company' occurred with the definite article in the Macedonian test items and without it in the Bulgarian variants because according to our translators that is what sounded most natural in the respective languages. This difference is orthogonal to our general research question.

[7]Note, however, that in all Slavic languages under discussion 'fifty percent' is inanimate and non-feminine, and thus the nominative and the accusative are formally indistinct due to case syncretism.

[8]In §5.2, we will see that for Macedonian there are two more test items for transitives with definiteness marking, depending on whether they include an additional clitic or not.

[9]Future experimental research needs to follow up with auditory stimuli to test the precise role of focus. In this paper, we do not make an empirical claim about the role of focus to bring about the non-conservative reading, as done by Ahn & Sauerland (2015a) and subsequent work; instead we concentrate only on word order, as a potentially additional means.

[10]The scenarios were provided in the tested language, except for Slovak and Slovenian, in which they were in Czech and English, respectively.

or otherwise information-structurally marked, but possibly not otherwise. In order to equally facilitate the availability of the OVS order in both the conservative and the non-conservative transitive scenario in (22) and (24), respectively, we therefore built in a contrast between company X and company Y, where X and Y stand for company names.

In the next section, we provide some examples of the test items in the examined languages.

5.2 TEST ITEMS

All test items were constructed in accordance with the templates in (19)–(20) and with the help of our consultants and translators, who were native speakers of the respective languages. As discussed above, there were 8 test items for Pattern A. This is illustrated by the Bulgarian examples in (25)–(28).

(25)   Bulgarian: Intransitive test items, bare (non-conservative)

    a.   Interesno, če **petdeset procenta ženi**   rabotjat văv firma
interesting that fifty   percent   women work   in   company
Kaloma.
Kaloma

    b.   Interesno, če văv firma   Kaloma rabotjat **petdeset procenta ženi**.
interesting that in   company Kaloma work   fifty   percent   women

'It is interesting that 50% of the workers at the Kaloma company are women.'

(26)   Bulgarian: Intransitive test items, definite (conservative)

    a.   Interesno, če **petdeset procenta ot ženite**   rabotjat văv firma
interesting that fifty   percent   of women.DEF work   in   company
Kaloma.
Kaloma

    b.   Interesno, če văv firma   Kaloma rabotjat **petdeset procenta ot**
interesting that in   company Kaloma work   fifty   percent   of
ženite.
women.DEF

'It is interesting that 50% of the women work at the Kaloma company.'

(27)   Bulgarian: Transitive test items, bare (non-conservative)

    a.   Interesno, če **petdeset procenta ženi**   e naela firma   Ketara.
interesting that fifty   percent   women is hired company Ketara

    b.   Interesno, če firma   Ketara e naela **petdeset procenta ženi**.
interesting that company Ketara is hired fifty   percent   women

'It is interesting that the Ketara company has hired 50% women.'

(28)   Bulgarian: Transitive test items, definite (conservative)

    a.   Interesno, če **petdeset procenta ot ženite**   e naela firma
interesting that fifty   percent   of women.DEF is hired company
Ketara.
Ketara

    b.   Interesno, če firma   Ketara e naela **petdeset procenta ot**
interesting that company Ketara is hired fifty   percent   of
ženite.
women.DEF

'It is interesting that the Ketara company has hired 50% of the women.'

According to our Macedonian consultant and translator, in the transitive conservative

configurations Macedonian can optionally employ an additional object clitic, *gi*.[11] Since the use of the clitic is unacceptable in constructions with bare nominals, we only considered it in the definite variants. Thus, for the Macedonian variant of the questionnaire we had an additional alternation, provided in (29)–(30).

(29)   Macedonian: Transitive test items, definite without clitic (conservative)

    a.   Interesno e što **pedeset procenti od ženite**   vrabotuva
        interesting is that fifty   percent of women.DEF employs
        firmata   Ketara.
        company.DEF Ketara

    b.   Interesno e što firmata   Ketara vrabotuva **pedeset procenti od**
        interesting is that company.DEF Ketara employs   fifty   percent of
        ženite.
        women.DEF

    'It is interesting that the Ketara company employs 50% of the women.'

(30)   Macedonian: Transitive test items, definite with clitic (conservative)

    a.   Interesno e što **pedeset procenti od ženite**   **gi**   vrabotuva
        interesting is that fifty   percent of women.DEF CL.ACC.PL employs
        firmata   Ketara.
        company.DEF Ketara

    b.   Interesno e što firmata   Ketara **gi**   vrabotuva **pedeset**
        interesting is that company.DEF Ketara CL.ACC.PL employs   fifty
        procenti od ženite.
        percent   of women.DEF

    'It is interesting that the Ketara company employs 50% of the women.'

Since the morphosyntactic marking parameter does not apply in Pattern B, there were 4 test items for each of the languages exhibiting this pattern. To illustrate, in (31)–(32) and (33)–(34) we provide examples from Slovak and Russian, respectively.[12]

(31)   Slovak: Intransitive test items

    a.   Je zaujímavé, že **päťdesiat percent žien**   pracuje v
        is interesting that fifty.NOM percent women.GEN works   in
        spoločnosti   Spedex.
        company.LOC Spedex

    b.   Je zaujímavé, že   v spoločnosti   Spedex pracuje **päťdesiat percent**
        is interesting that in company.LOC Spedex works   fifty.NOM percent
        žien.
        women.GEN

(32)   Slovak: Transitive test items

    a.   Je zaujímavé, že **päťdesiat percent žien**   zamestnáva
        is interesting that fifty.ACC   percent women.GEN employs
        spoločnosť   Spedex.
        company.NOM Spedex

    b.   Je zaujímavé, že   spoločnosť   Spedex zamestnáva **päťdesiat percent**
        is interesting that company.NOM Spedex employs   fifty.ACC percent
        žien.
        women.GEN

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[11] Our Bulgarian consultant and translator did not indicate a construction with a clitic corresponding to (30) in Bulgarian. Catherine Rudin (p.c.) informed us that in some Bulgarian varieties a clitic could be used, similarly to the Macedonian data. We leave the investigation of such variants for future research.

[12] Since languages of Pattern B do not distinguish between the conservative and the non-conservative reading by definiteness marking and case, we did not provide translations for the examples, but see (19)–(20).

(33) Russian: Intransitive test items

    a. Interesno, čto **pjaťdesjat procentov   ženščin**   rabotajut v
        interesting that fifty.NOM   percent.GEN.PL women.GEN work   in
        kompanii Kaloma.
        company Kaloma

    b. Interesno, čto v kompanii Kaloma rabotajut **pjaťdesjat**
        interesting that in company Kaloma work   fifty.NOM
        procentov   ženščin.
        percent.GEN.PL women.GEN

(34) Russian: Transitive test items

    a. Interesno, čto **pjaťdesjat procentov   ženščin**   deržit na službe
        interesting that fifty.ACC   percent.GEN.PL women.GEN holds on service
        kompanija   Ketara.
        company.NOM Ketara.NOM

    b. Interesno, čto kompanija   Ketara   deržit na službe **pjaťdesjat**
        interesting that company.NOM Ketara.NOM holds on service fifty.ACC
        procentov   ženščin.
        percent.GEN.PL women.GEN

Concerning the transitive test items, it should be noted that not all of the languages we examined possess a single stative verb 'employ', which was used in the transitive test items. For instance, in Bulgarian we had to use the eventive verb 'hire' in the resultative perfect instead, whereas in Russian we had to employ a light verb construction meaning literally 'hold on service'. Though we were concerned that this factor might play a confounding role, it turned out that it did not seem to have an impact on the results.

    With the examples of test items in mind, let us now discuss the methodology adopted in the questionnaire.

5.3 METHODOLOGY

The questionnaires were distributed via e-mail among 4–7 native speakers of each of the tested languages, except for Slovak where we consulted only one speaker. Due to the rather delicate nature of the data, we decided to consult only linguists, many of which are trained semanticists. The test items were divided into two parts. First, we distributed a questionnaire comprising the non-conservative scenarios followed by two test items each. Several days later, the respondents received the second batch involving the conservative scenarios, again with one minimal pair of test items each. In addition, in the Macedonian variant of the questionnaire the transitive conservative scenario was followed by four test items because of the variation regarding the clitic, recall (29)–(30).

    The test item sentences varied only with respect to word order, as illustrated in the English template in (19)–(20) and selected examples in (25)–(34). The participants were requested to judge the acceptability of the test items with respect to the given scenario. Specifically, BCMS, Czech, Polish, Slovak, and Slovenian respondents were asked whether the particular test items are appropriate or inappropriate in the scenario provided. The Bulgarian, Macedonian, and Russian speakers were asked whether, depending on the scenario, both or all four test items are acceptable and, in case they are, whether one is considered better. The respondents were also encouraged to provide feedback such as detailed comments regarding their judgments.

    Having discussed the details of the procedure, let us now focus on our expectations and hypotheses.

5.4 EXPECTATIONS AND HYPOTHESES

In the languages of Pattern A, i.e., Bulgarian and Macedonian, we expected to find definiteness marking for conservative readings and bare NPs for non-conservative readings. We did not test this since our native consultants who helped with the initial translation confirmed this expectation, and this is reflected in the fact that in the conservative scenarios we only used definiteness marking, while in the non-conservative scenarios we only used bare NPs.

As for the languages of Pattern B, which lack articles, different options are possible. First, it could be that these languages do not have the non-conservative reading for percentage quantifiers at all. Given the Polish intuitions of one of the authors we did not expect this, but it is still an option (for some speakers and/or some languages). If, on the other hand, both conservative and non-conservative readings are available, we expect an effect of word order, given the Polish intuitions of one of the authors, recall (18). Our hypotheses are spelled out in (35).

(35)　　Hypotheses
　　　　a.　NC percentage quantifiers appear postverbally.
　　　　b.　C percentage quantifiers appear preverbally.

If we find an effect of word order, this can either be categorical or a mere tendency, i.e., a preference. Given that the languages of Pattern A are also 'free word order' languages, we expect an effect of word order in these languages as well, which again could be categorical or a mere preference. Since these languages already make a morphological distinction between the two readings, one expectation could be that the difference might be less categorical than in the languages of Pattern B. However, it could even be that word order does not play a role in these languages at all. Finally, we should keep in mind the canonical word order in the Slavic languages we tested, which is SVO for transitives and SVPP for our intransitive sentences, and a possible effect on the overall judgments of the different word orders we tested.

In the following section, we discuss the results.

5.5 RESULTS

A first result for all the languages we tested (Pattern A and B) is that both conservative and non-conservative readings are available, so the lack of a morphological distinction between the two readings in the languages of Pattern B does not make the non-conservative reading generally unavailable. However, we had one BCMS speaker who apparently did not have access to the non-conservative reading, whereas the other BCMS speakers did. This is in and by itself an interesting result and the possibility of speaker variation in this respect should be explored in future research.

Our hypotheses in (35) were confirmed for all languages. Let us start with the results for the languages of Pattern B, illustrated in Table 2.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	#	✓	#
POSTVERBAL	#	✓	marked	✓

Table 2: Results for languages of Pattern B

In the Slavic languages without definiteness marking, the word order effect is categorical for the non-conservative reading, in the sense that both percentage quantifier subjects and objects have to appear postverbally in the respective scenarios, whereas the preverbal order is unacceptable. This results in a non-canonical word order for intransitives (PPVS) and a canonical word order for transitives (SVO). In this respect none of the languages

differed, although some speakers were more articulate about possible ways to rescue a preverbal percentage quantifier, for example in stating that the preverbal position is available if the percentage quantifier is interpreted as a contrastive topic. The word order effect is also categorical for intransitives in the conservative scenarios, namely the percentage quantifier has to appear preverbally, and it is a tendency for transitives in the conservative scenarios, in the sense that the postverbal order is marked. This results in a canonical word order for intransitives (SVPP) and a non-canonical word order for transitives (OVS).

Let us then move to the languages of Pattern A. For these languages as well we found a word order effect, but the two languages differ slightly. In particular, while Macedonian patterns more with the languages of Pattern B in that the judgments were mostly categorical, as witnessed in Table 3, the judgments are less categorical in Bulgarian, see Table 4.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	#	✓ with clitic (best)	#
POSTVERBAL	marked	✓	✓ without clitic	✓

Table 3: Results for Macedonian (Pattern A)

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	marked	very marked/#	#
POSTVERBAL	✓/marked	✓	✓	✓

Table 4: Results for Bulgarian (Pattern A)

In addition, there is a difference between the two languages in the case of transitives in the conservative scenarios with Bulgarian virtually disallowing the preverbal percentage quantifier in such configurations. Both languages pattern more or less with the languages of Pattern B in the non-conservative scenarios in that the percentage quantifier has to appear low in the structure. Only in Bulgarian intransitives does the preverbal position seems marginally available, even if marked.

The main difference is found in the conservative scenarios with transitives (intransitive subjects preferably appear preverbally in both languages). Given the variation of a transitive version with and without object clitic in Macedonian, both are acceptable. The most preferred option is a preverbal percentage quantifier (thus patterning with the Slavic languages without articles), with an additional object clitic in the lower position, but the postverbal object percentage quantifier without the clitic is also acceptable. In Bulgarian, in which no object clitics are used in these contexts, the postverbal position of the object percentage quantifier is the option for the conservative scenario, with the preverbal order being marked for some speakers and unacceptable for others, and this is where Bulgarian differs most strikingly from all the other Slavic languages. This results in a canonical word order (SVO) for Bulgarian, as opposed to the non-canonical OVS order in all the other Slavic languages we tested.

In the following section, we turn to the discussion of these results.

6 DISCUSSION

The results of the cross-linguistic questionnaire provide novel insights into the typology of formal marking of non-conservative, as opposed to conservative, construals with proportional quantifiers discussed in Section 2, recall especially Table 1. Our main finding is that word order plays a crucial role in distinguishing between conservative and

non-conservative readings of percentage quantifiers in the Slavic languages we tested, and this role of word order has not been discussed in previous research on percentage quantifiers.

In particular, in the Slavic languages of Pattern B (without definiteness marking) word order is the only morphosyntactic means to distinguish between the two readings: Non-conservative percentage quantifiers have to appear postverbally, no matter whether they are subjects or objects. In the Slavic languages with definiteness marking (Pattern A) the word order difference is also found, and in addition the two readings differ in definiteness and case marking, along the lines that were discussed for English in §2. In the following we will briefly sketch how this finding can be integrated into what we generally know about the role of word order in Slavic.

6.1   WORD ORDER AND FOCUS

Recall from §4 that the canonical word order for all the Slavic languages we tested is SVO (in the transitive case) and SVPP (in the intransitive case), but that all Slavic languages are 'free word order' languages that can deviate from the canonical order for various reasons. Thus, in cases where we find such deviations we have to search for the reason. The word order in the non-conservative scenarios is also SVO with objects, but it is PPVS with non-conservative subjects, which deviates from the canonical order. The preferred sentence-initial order for conservative subjects, on the other hand, complies with the canonical order, whereas conservative objects appear preverbally, resulting in OVS order in all of the languages, except for Bulgarian, thus also deviating from the canonical word order.[13]

Let us start with the latter case. We believe that the preference for an OVS order with conservative objects in all Slavic languages except for Bulgarian was facilitated by our scenario which set up a contrast between two companies. So in that context the OVS order is preferred for information-structural reasons: The company in subject position appears sentence-finally and is contrastively focused, and the object appears sentence-initially, as a contrastive topic. It has been claimed for many Slavic languages (see discussion in Jasinskaja & Šimík to appear) that the OVS order is quite common and can involve short A-scrambling (due to either movement, e.g., generalized inversion according to Bailyn 2011, or base-generation), as opposed to the rather marked OVS order, e.g., in German, which most likely involves longer A'-movement. It could then be that Bulgarian patterns with German in this respect in lacking the A-scrambling option, but this is something that needs to be explored in future research. What is important to keep in mind, then, is that there is a clear contrast in all the other languages between the OVS order for conservative object percentage quantifiers and the SVO order for non-conservative ones. In our opinion, the fact that in the corresponding non-conservative scenario the quantifiers in object position still have to appear low is then quite telling: the requirement for percentages to appear low under the non-conservative reading overrides the information-structural preference to have the contrastively focused element appear sentence-finally.

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[13] As we already mentioned, there are ways to overwrite these (in the case of non-conservative construals rather strong) preferences. For instance, if the non-conservative quantifier functions as a contrastive topic, it can appear sentence-initially, as one of our consultants provided the following example:

(i)   Czech
       Je zajímavé, že 50%   žen   zaměstnává společnost Spedex$_F$, a   nikoliv
       is interesting that 50%.ACC women.GEN employs   company.NOM Spedex and not
       Bustrans.
       Bustrans
       'It is interesting that it is the company Spedex that employs 50% women and not Bustrans.'

   We view such cases as information-structurally more marked and set them aside in this paper, but see Gehrke & Wągiel (2023) for further discussion.

The rather categorical postverbal order for non-conservative percentage quantifiers, and thus the deviation from the canonical order with non-conservative subjects, which appear postverbally, can be interpreted in at least two different ways: the quantifier has to appear sentence-finally, or it has to appear VP-internally. A requirement for the quantifier to be sentence-final would fit the claim in Ahn & Sauerland (2015a,b, 2017) and Pasternak & Sauerland (2022) that under the non-conservative reading focus has to be on (part of) the quantifier phrase. The account they spell out for the non-conservative reading attributes the decisive role for bringing about this reading to this allegedly marked focus structure (see the references for the details of the account). Recall from §4 that focus is commonly marked by stress and that according to the nuclear stress rule sentence stress (in the default case) falls on the rightmost constituent in the clause. If focus is a requirement for the non-conservative reading to arise, then, Slavic, as 'free word order' languages, can place the focused element in the sentence-final position, complying with the nuclear stress rule, which in the case of subjects deviates from the canonical order.

A potentially different way to interpret the word order effect, which does not rely on a marked focus structure and thus does not follow Pasternak & Sauerland (2022) and previous work, is to interpret it as a need for the non-conservative percentage quantifier to appear low in the structure, more precisely VP-internally, to form part of the predicate. Intuitively, under the non-conservative reading the quantifier seems to take the predicate denoted by the VP as its first argument, and a VP-internal position could be a means to achieve this. Sentential stress would still fall within the percentage quantifier phrase, but this is then merely the default/unmarked stress pattern. While we will not spell out a full theoretical account along these lines, we believe there are reasons to pursue this path, rather than assuming that non-conservative readings always involve a marked focus structure, as Sauerland and colleagues do.[14] In the following, we will mention two types of indication that the VP-internal requirement for the non-conservative reading to arise might be on the right track.

6.2 THE SUBJECT-OBJECT ASYMMETRY

Ahn & Sauerland (2015b, 2017) observe that English lacks non-conservative readings with subjects, as illustrated in (36) (examples adapted from Ahn & Sauerland 2015b).

(36)   a.   #Twenty percent women$_F$ came.
         b.   #Thirty percent women$_F$ were hired last year.

Ahn & Sauerland (2017) dub this the subject-object asymmetry, and claim it to be present only in some languages, e.g., English and Mandarin, but not in others, e.g., Greek and German, see (37). However, their approach cannot account for this asymmetry.[15]

(37)   German
         Bei der Firma   Expol arbeiten fünfzig Prozent   Frauen$_F$.
         at   the company Expol work   fifty   percent.NOM women.NOM
         'Fifty percent of the workers at Expol are women.'

Based on the results of our questionnaire, we can now add the Slavic languages we tested to the group of languages that do not display a subject-object asymmetry, and we can hypothesize that the contrast between English, on the one hand, and Slavic and German, on the other, is tied to a difference in word order. In particular, English has rigid word

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[14]See Gehrke & Wągiel (2023) for discussion and arguments against the focus-based account of Pasternak & Sauerland (2022) and for a fully spelled out alternative account, under which non-conservative percentages semantically incorporate into the predicate. See also the example in (i) in footnote 13, in which focus is not within the NP that the quantifier combines with, but a non-conservative reading is nevertheless available.

[15]Note that also in German the neutral word order for the non-conservative reading in (37) is PPVS (see Gehrke & Wągiel 2022, 2023), even though Ahn & Sauerland use the (more marked) SVPP order in all their German examples.

order and lacks postverbal subjects altogether, whereas the word order in Slavic and German is more flexible. If, then, the percentage quantifier on the non-conservative reading has to appear VP-internally, this can only happen with objects in English, which regularly appear VP-internally (postverbally). In order for common subject NPs/DPs to appear postverbally, the syntactic structure has to be changed. For transitives, for example, one could revert to a passive structure, where the thematic subject can appear postverbally, in an optional *by*-phrase (a syntactic adjunct); see (38).

(38)   a.   #Fifty percent women chose the second option.
           b.   The second option was chosen by fifty percent women.

For non-conservative intransitive 'subjects', in turn, one can change the syntactic structure from the unacceptable SVPP structure in (39-a) to an existential construction, as in (39-b).

(39)   a.   #Fifty percent students work here.
           b.   There are fifty percent students working here.

If it were merely about the requirement for the non-conservative percentage quantifier to bear focus for the non-conservative reading to arise, as claimed by Sauerland and colleagues, we would expect the SVPP/SVO orders to be fine once we deviate from the nuclear stress rule (which is in principle possible) and put focus on the subject to bring about this reading. However, they are not. If the non-conservative effect stems from the VP-internal position requirement, on the other hand, it follows naturally that there are no non-conservative true subjects in English, precisely because they cannot appear VP-internally.

In the following section, we discuss a second type of indication that the VP-internal position plays a crucial role, this time with data from Russian. The type of data discussed will tie back in with the English existential structure in (39-b).

6.3 PERSPECTIVE STRUCTURE

A similar meaningful difference between SVPP and PPVS orders that we observed for non-conservative percentage quantifiers in subject position of intransitive verbs can be found in Russian with what Partee & Borschev (2004) call regular declaratives and existential sentences, respectively. Partee & Borschev introduce the notion of perspective structure and assume that in existential sentences the perspectival center is a location (LOC), while in regular declaratives, the perspectival center is the entity denoted by the syntactic subject (THING), cf. (40).

(40)   a.   At LOC is THING   EXISTENTIAL
           b.   THING is at LOC   REGULAR DECLARATIVE

The concept of perspective structure and differences in perspectival centers allows them to explain why sometimes genitive of negation in Russian can appear on subjects but other times it cannot.[16] Take for instance (41) (after Partee & Borschev 2004). When an existential sentence is negated, as in (41-a), THING bears genitive case, rather than nominative, and it is stated that THING does not exist at LOC (here: there is no doctor in town). In contrast, when a regular declarative is negated, as in (41-b), THING stays in nominative case, and it is merely asserted that THING is not at LOC (here: the doctor is not in town).

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[16]It is commonly assumed that genitive of negation with objects is licensed when the object is in the scope of negation; with subjects it is not clear, at first sight, that they are in the scope of negation (for discussion, see Partee & Borschev 2004), though under the account we spell out in Gehrke & Wągiel (2022, 2023), in which we analyse structures with non-conservative subjects essentially as existential constructions, they would be.

(41) Russian

    a.   V gorode {byl   doktor   / ne bylo   doktora}.
          in town   was.MASC doctor.NOM   not was.NEU doctor.GEN
          'There was {a / no} doctor in town.'   EXISTENTIAL

    b.   Doktor   (ne) byl   v gorode.
          doctor.NOM not was.MASC in town
          'The doctor was (not) in town.'   REGULAR DECLARATIVE

Partee & Borschev argue that genitive of negation on subjects is possible not only with the verb *byt'* 'to be', as in (41-a), but also with other verbs that retain their lexical semantics but might involve some semantic bleaching to be closer to 'be'.

More generally, existential constructions can be contrasted with, e.g., predicational copular constructions (of the type NP is PP) (see discussion in McNally 2016). An existential construction describes the existence or location of an entity, and the NP (what McNally calls the pivot) is usually in a different position than it is in a predicational copular construction. Existentials involve copulas or dedicated existential predicates, e.g., Spanish *hay*, and we follow McNally and others before her in assuming that in existentials the location/*there* is the logical subject and the pivot is the logical predicate. Thus, similar to our non-conservative examples (in particular the intransitive ones), the relevant NP we are interested in appears inside the predicate (in existentials it is the predicate), and this ties in neatly with the idea that non-conservative percentage quantifiers have to appear VP-internally.

An indication that the parallel to existential constructions for intransitives is on the right track is a preliminary corpus search we did for German, Polish, and Czech. For example, in our German corpus search all non-conservative intransitive subjects appear low and with sentence-initial PPs. The kinds of verbs that appear with non-conservative percentage quantifiers in the corpus examples we looked at might also indicate that they are similar to 'be': half of the intransitive verbs are existential verbs ('be' and *es gibt* '(lit.) it gives' ∼ 'there is/are'); the other ones are 'live (in a city)', 'teach (in a school)', 'work (in a factory)', which are all typical ways of BEing (existing) at those locations. Transitive non-conservative subjects appear low and only with verbs like 'belong to' (∼ HAVE). Transitive non-conservative objects involve 'have' in more than half of the cases, and 'buy' (∼ purchase to HAVE), 'invite' (to HAVE), 'place' (∼ to BE at LOC) in others. The Slavic corpus data yielded similar results: non-conservative percentage quantifiers appear low. In Polish, the relevant verbs are 'be', 'have', 'have a seat (in parliament)', 'study (in a field)', 'take part in a debate'. In Czech, they are 'be', 'have', 'participate', 'have a seat (in parliament)', 'run (for office)'. Given the close connection between 'be' and 'have' (e.g., existentials being expressed by verbs of having in a number of languages, or possession being expressed by verbs of being), all of these verbs are of the type that makes them closer to 'be', as outlined by Partee & Borschev, and we assume that this is what facilitates the non-conservative construal as well.[17]

7 CONCLUSION

In this paper, we contributed to the typology concerning formal mvsejarking of non-conservative, as opposed to conservative, interpretations of sentences involving proportional quantificational expressions. In particular, we investigated non-conservative construals with percentage quantifiers corresponding to 'fifty percent' in Slavic. Based on the results of a questionnaire study in Slavic languages with (Bulgarian and Macedonian) and without definiteness marking (BCMS, Czech, Polish, Russian, Slovak, and Slovenian), we concluded that word order is a main and sometimes the only morphosyntactic means to distinguish between conservative and non-conservative readings. In particular,

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[17] See Gehrke & Wągiel (2022, 2023) for an account that builds on this empirical observation.

for the non-conservative reading to arise the percentage quantifier has to appear in a low position, VP-internally, and we suggested that it has to be part of the predicate in order to take the VP's extension as its first argument, thus preserving the Conservativity Hypothesis. Our findings indicate that the conservative/non-conservative distinction can stem from word order factors that have not been assumed in the literature so far.

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ABBREVIATIONS

ACC	accusative	LNK	linker
BCMS	Bosnian/Croatian/Montenegrin/Serbian	LOC	locative
		MASC	masculine
C	conservative	NC	non-conservative
CL	clitic	NEU	neuter
DEF	definite	NOM	nominative
DM	definiteness marking	PERF	perfect
F	focus	PL	plural
GEN	genitive		

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