

Parallelism and Ellipsis in Comparatives

Katy Carlson

Morehead State University

k.carlson@moreheadstate.edu

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The Project in a Nutshell

- Comparative constructions can have a range of syntactic continuations, from ellipsis to full sentences:
 1. Julianna brought her corgi to class more often than...
 - a. her dachshund/Maria. (bare NP ellipsis)
 - b. Maria did. (VP Ellipsis)
 - c. Maria brought her poodle. (sentence)

The Project in a Nutshell

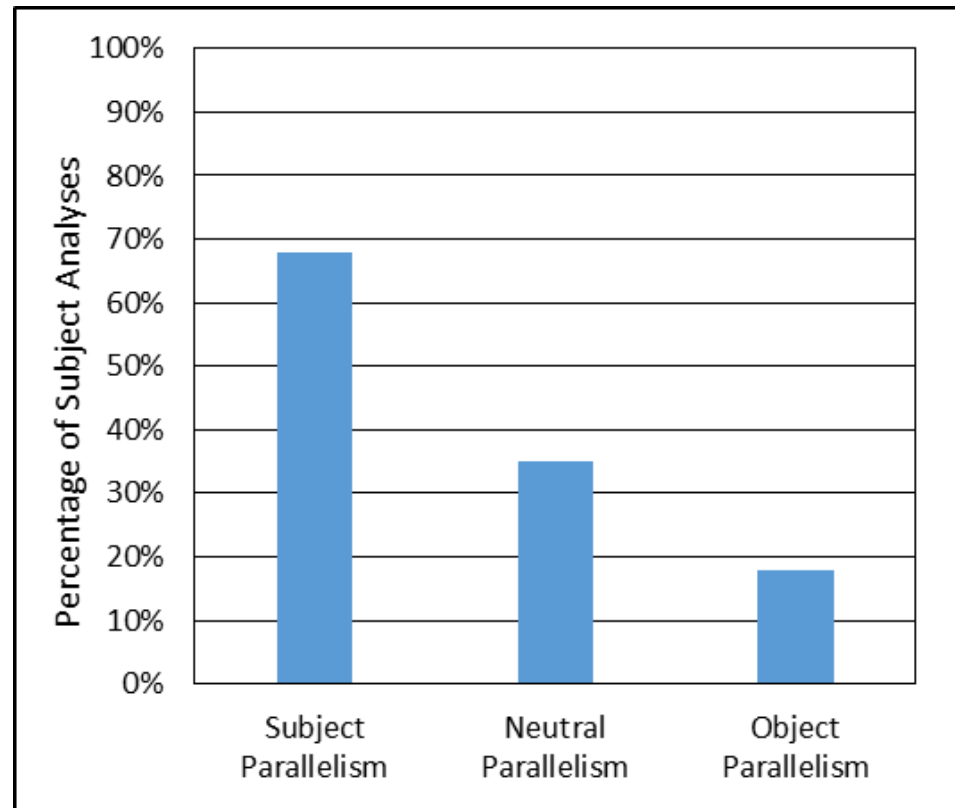
- Studying the processing of ambiguous comparative bare NP ellipsis structures, I found:
 - accent placement, parallelism affected interpretation
 - an object bias for the bare NPs
- This led to questions: did frequency explain the object bias? Also, how common were bare NP comparatives vs. other possible structures? Was parallelism used in real-world examples? Hence, a corpus study.
- Carlson (in press). Focus structure affects comparatives: Experimental and corpus work. In G. Kentner & J. Kremers (eds.), *Prosody in syntactic coding. Linguistische Arbeiten* series.

Previous Experiments: 1

- A written questionnaire tested comparative bare NP ellipsis sentences like (2).
 - Colors indicate NPs with parallel form: subject, neutral, or object parallelism.
2. a. Tasha called him more often than Sonya.
b. Tasha called Bella more often than Sonya.
c. He called Tasha more often than Sonya.
 3. a. Subject meaning: ...than Sonya called him.
b. Object meaning: ... than Tasha called Sonya.

Previous Experiments: 1

- Overall object bias: 35% subject interpretations in neutral parallelism condition.
- Significant effect of parallelism: subject parallelism raised subject analyses, object parallelism lowered them.

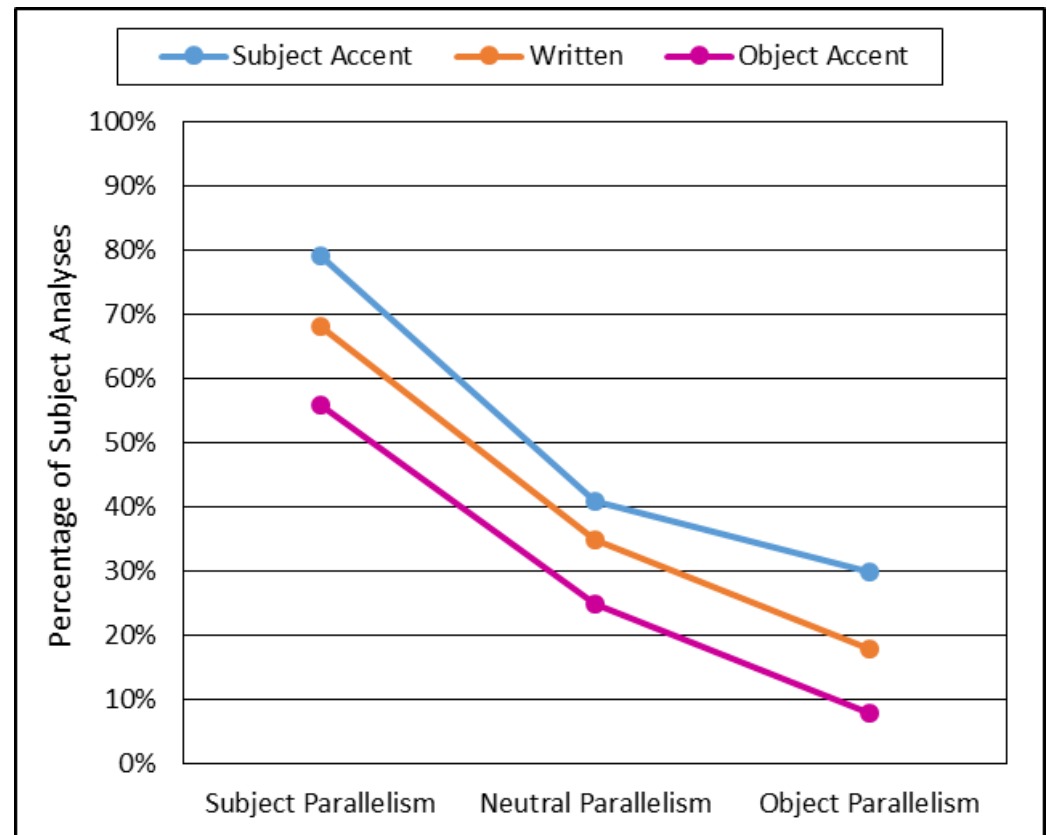


Previous Experiments: 2

- An auditory questionnaire tested comparative bare NP ellipsis sentences, as in (4).
 - Varied both parallelism and L+H* accent position.
4. a. TASHA called him more often than SONYA.
b. TASHA called Bella more often than SONYA.
c. HE called Tasha more often than SONYA.
d. Tasha called HIM more often than SONYA.
e. Tasha called BELLA more often than SONYA.
f. He called TASHA more often than SONYA.

Previous Experiments: 2

- Overall object bias still visible.
- Significant effects of accent position: subject accent raised subject analyses at each level of parallelism.
- Parallelism effect dominant.



Experiment Conclusions

- Comparative bare NP ellipsis has very mobile interpretation: from 9% to 80% subject analyses across all conditions.
- Overt focus marking aids in determining the appropriate contrasting NPs, as in other ellipsis structures.
- Parallelism in NP features has even stronger effect on interpretations. Although these are optional features, similarity helps make a pair of NPs a better contrast.

Following Questions

- is comparative bare NP ellipsis common compared to other possible structures?
- is parallelism common between contrasted NPs in comparatives?
- is the object bias related to frequency? are subject NPs more likely to appear in unambiguous forms (VP Ellipsis, full sentences) and thus less likely to be bare NPs?

Corpus Work

- Used Contemporary Corpus of American English (COCA) from Mark Davies at BYU: 520 million words including academic, fiction, magazine, news, and spoken genres, 1990-2015 (when retrieved).
- Extracted sentences containing “more Adverb than” for the 26 most frequent adverbs in that position.
- Exclusions: skipped the Adverbs *so*, *now*, and *even*, which form different constructions; removed set phrases like *more often than not*, *more often than that*; only 1 example kept from any one text or article.

Corpus Work

- Included constructions with 23 adverbs, ordered by frequency: *often, quickly, frequently, slowly, rapidly, easily, effectively, clearly, closely, efficiently, strongly, seriously, readily, deeply, accurately, heavily, aggressively, cheaply, favorably, sharply, harshly, positively, broadly*.
- Frequency of comparatives by adverb varied widely: *often* had over 900 examples, *broadly* had under 40.
- This work omits other relevant structures: *more than, less/fewer than, less Adv than; more Xs than Ys*; ones with comparative Adjs, e.g. *taller than, shorter than*.

Corpus Work

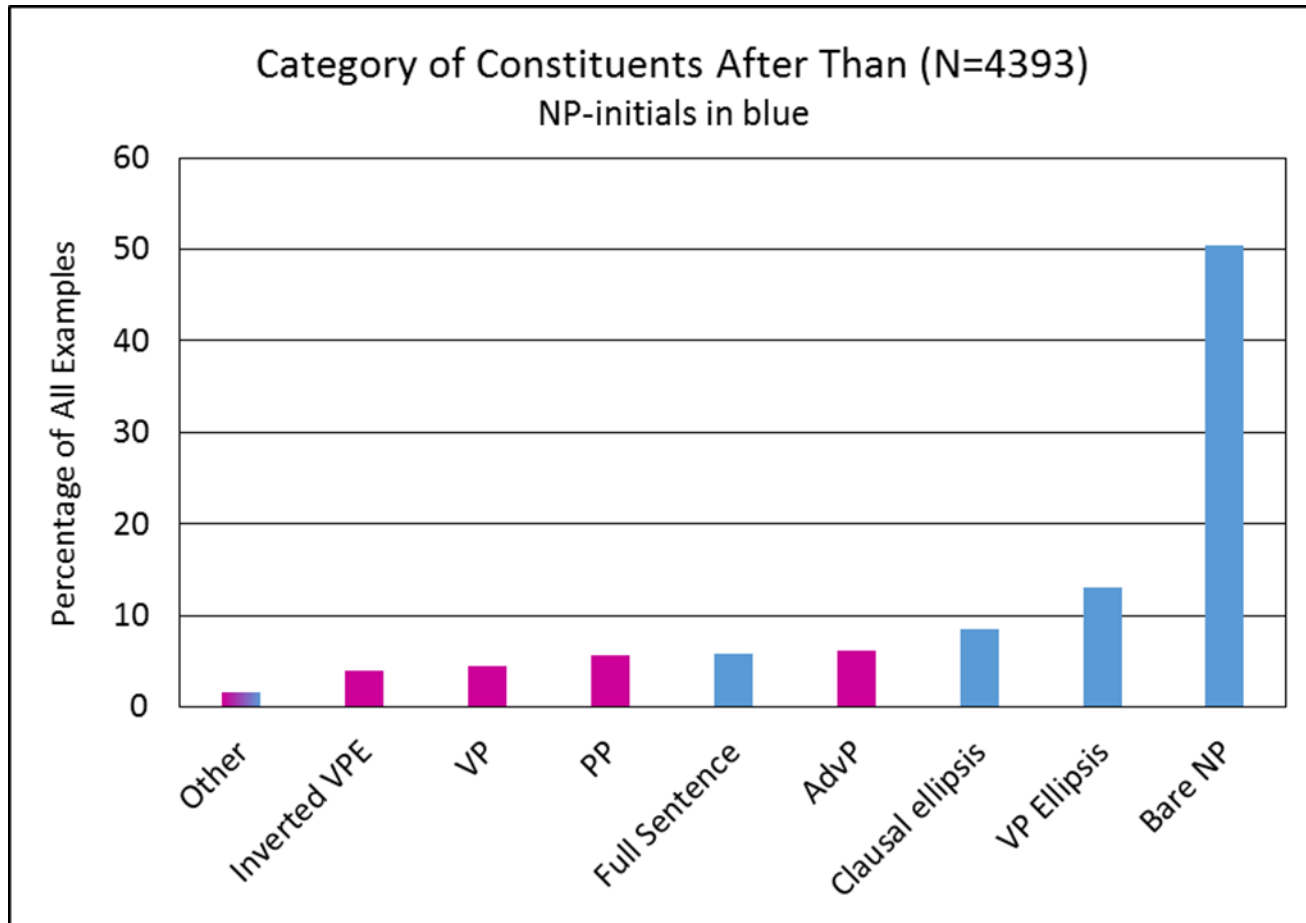
- Total set: 4423 instances, hand-coded for the syntactic category and structure of what followed *than* as well as the sentence role of NPs and features of contrasted NPs.
- Ungrammatical or unclassifiable examples were removed during this process, resulting in **4394 analyzed examples**.

Corpus Syntactic Categories

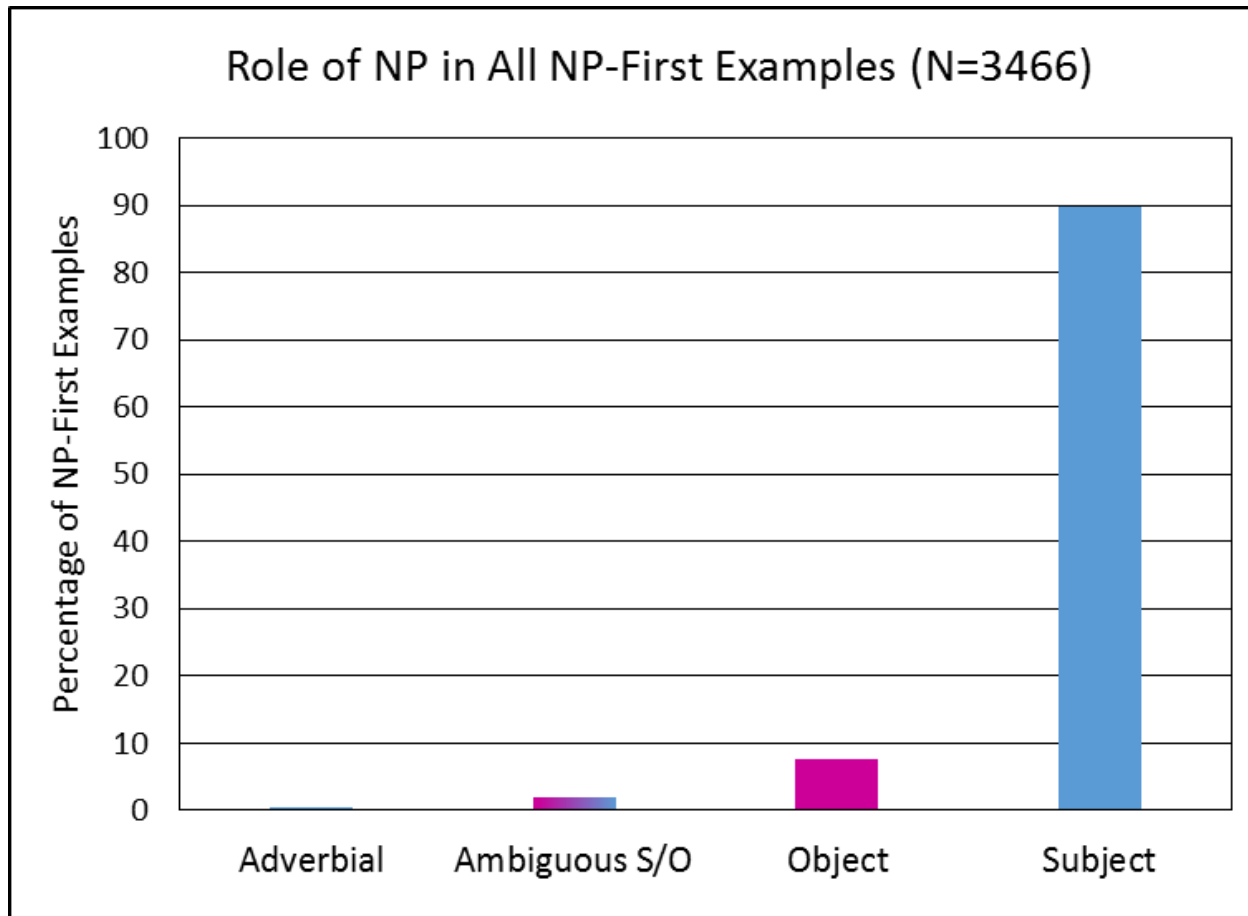
Structure	Example
Bare NP, subject	These days, even the best movies lose their flavor more quickly than matinee Mike and Ikes <lose their flavor> .
Bare NP, object	In such matters, Victorians of her class used euphemisms more often than <they used> direct language.
PP	Horrible things seem to happen to children even more often than in our own narratives.
AdvP	Companies are taking their giving efforts more seriously than ever before.
VP	Also, Russians use the word Mama more frequently than probably is healthy for grown-ups.

Corpus Syntactic Categories

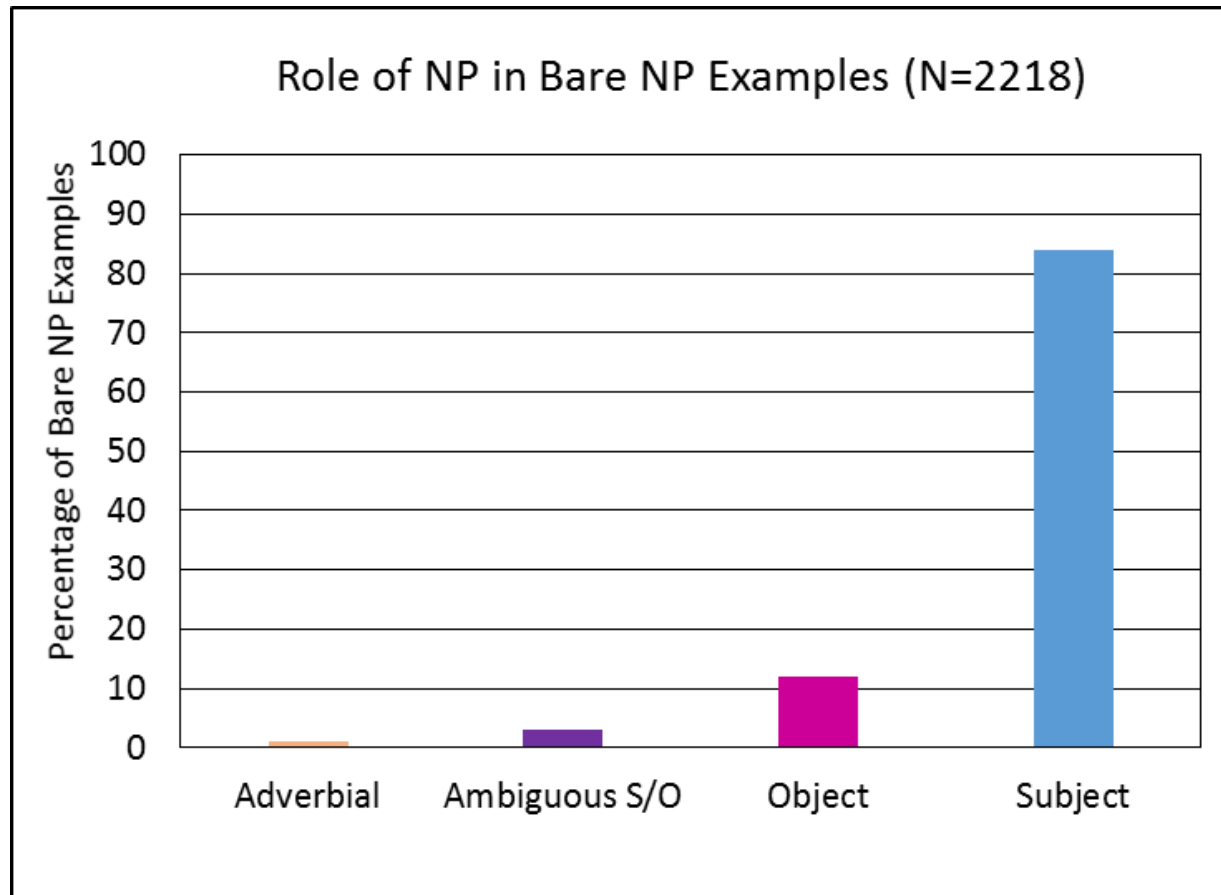
Structure	Example
VP Ellipsis	Well, a new study suggests men actually do get sick more often than women do <get-sick>. Of course, you can get eaten much more easily than you could <get-eaten> 30 years ago.
Inverted VPE	People with less power typically see the world more clearly than do their bosses <see-the-world>.
Pseudogapping	Students discussed editing in their responses far more often than they did <discuss> revision.
Clausal Ellipsis (Null Complement Anaphora)	Television changes, but it changes more slowly than we think <that-it-changes>.
Full Sentence	Most of us buy food much more often than we buy clothes.
Subordinate Clause	Edward's heart pounded more heavily than when he exercised hard.



- Most examples start with an NP after *than*.
- Very few full sentences, many ellipsis structures.
- Just over 50% of all examples are bare NP ellipsis.



- Most of the bare NPs, all of the sentences and other ellipses have that first NP as a subject.
- Objects at most 10%, if all ambiguous are included.



- Looking just at bare NP ellipsis examples, subjects still dominate at over 80%.
- Objects + ambiguous hit 15% at most.

Corpus Results So Far

Several questions definitively answered:

- Comparative bare NP ellipsis is quite common, and more frequent than any other NP-first structure.
- Full sentences, by contrast, are quite rare.
- Bare NP structures with subject role are very frequent, far outweighing objects, though both exist.
- People expressing an NP with subject role do not commonly disambiguate it.

Corpus Results So Far

- If frequency were driving processing results:
- People encountering bare NP comparatives should have (a) been happy with the bare NP structure and (b) strongly favored a subject analysis for that NP.
- They may have been quite happy with the structure.
- But they certainly did not strongly favor the subject analysis.

Subject/object Categorization

- NPs in bare NP ellipsis were categorized as having the subject/object role mostly by me.
- But the proportions of these roles are critical to the comparison of the corpus results to processing.
- In order to have more confidence in these categorizations, I carried out two norming studies.

Subject/object Norming 1

- Student researchers in the lab (3) were trained to indicate which NP in the previous clause contrasted with bare NP remnants.
- They were given a set of 556 ambiguous examples, ones in which 2-4 NPs within the earlier clause were possible contrasts with the remnant.
- The set of 556 included about 30% object contrasts; comprised 25% of total bare NP examples.
- Results: 97% of categorizations matched mine.

Subject/object Norming 2

- 41 naive subjects completed the same task on-line, choosing the contrasting NP for the remnant in lists of 64-66 items.
- A total of 456 bare NP ellipsis examples tested; 27% were object contrasts.
- Results: 94% of categorizations matched mine. For subject contrasts, 96%; object contrasts, 90%.
- Overall, then, both norming checks suggested that my categorizations of NP roles were basically accurate.

Parallelism/Contrast Analysis

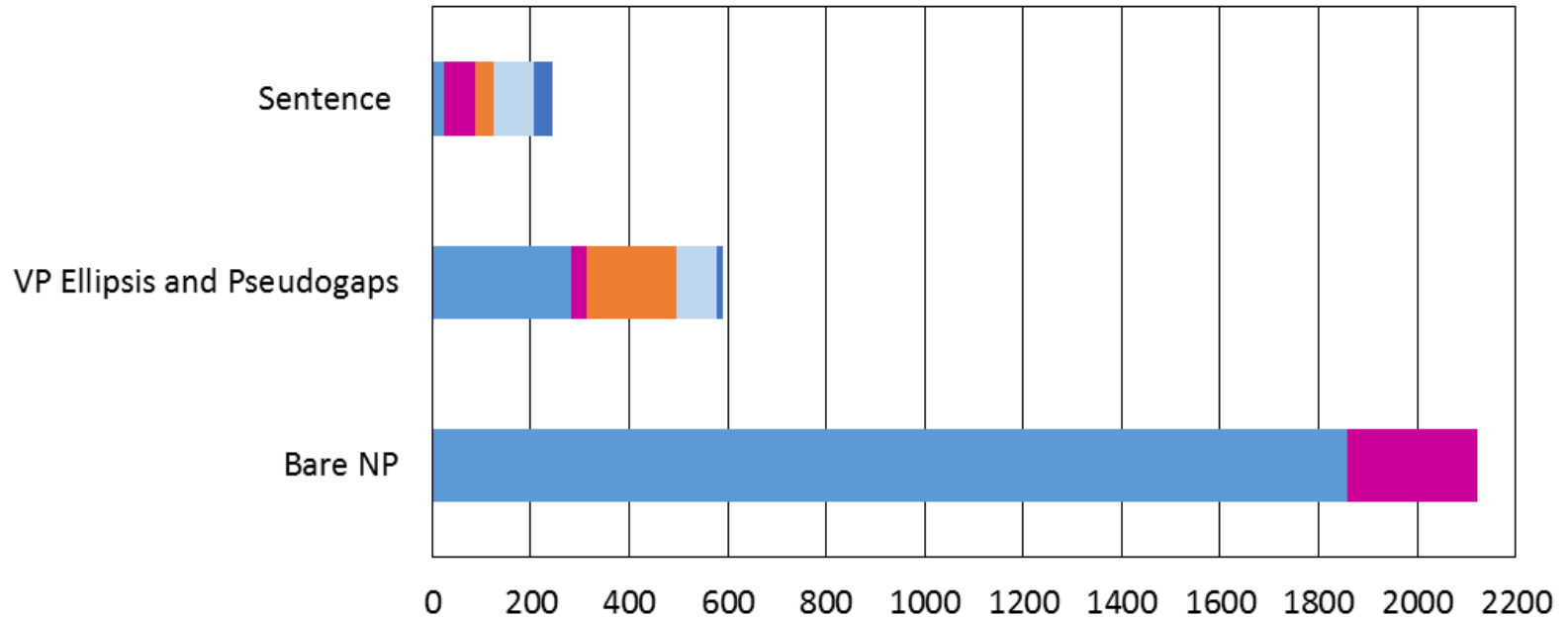
- Created a subset corpus of only NP-initial examples for which I could determine subject/object roles.
- Total NP-initial examples 3466.
- Exclusions: ambiguous subject/object examples, those with NPs functioning as adverbials, unclassifiable.
 - Also excluded items with clausal ellipsis, because the subject in those cases was not contrastive with a first-clause argument.
- Resulting subset: **2958 examples.**

Contrast Analysis

- Within this set, annotated what constituents contrasted between the first clause and post-comparative material: Subjects, Objects, Adverbs/PPs, Verbs, or several of these.

Position of Contrast in Unambiguous Examples (N=2958)

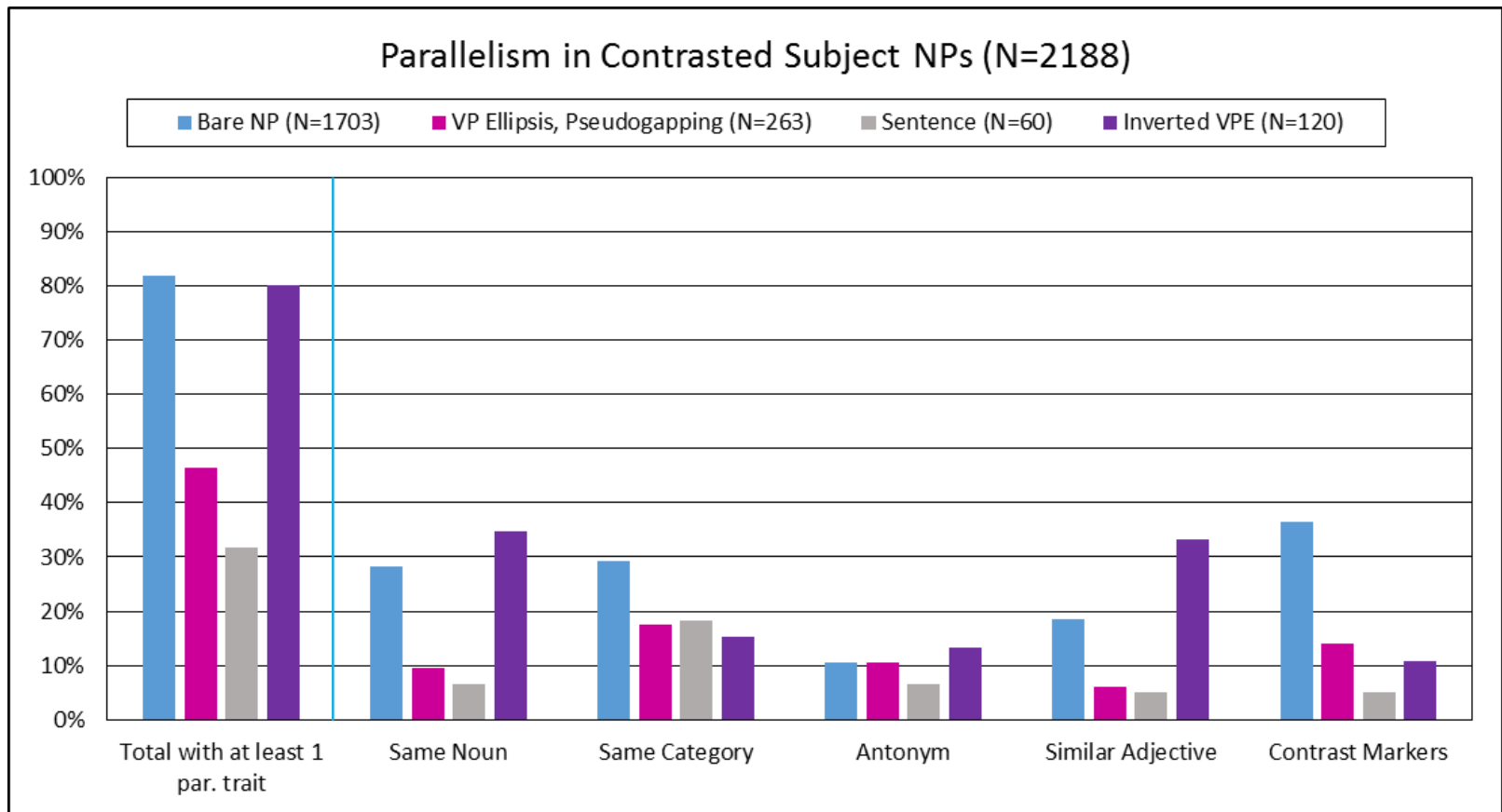
■ Subject contrast ■ Object contrast ■ PP/Adverb contrast ■ Verb contrast ■ Multiple contrast



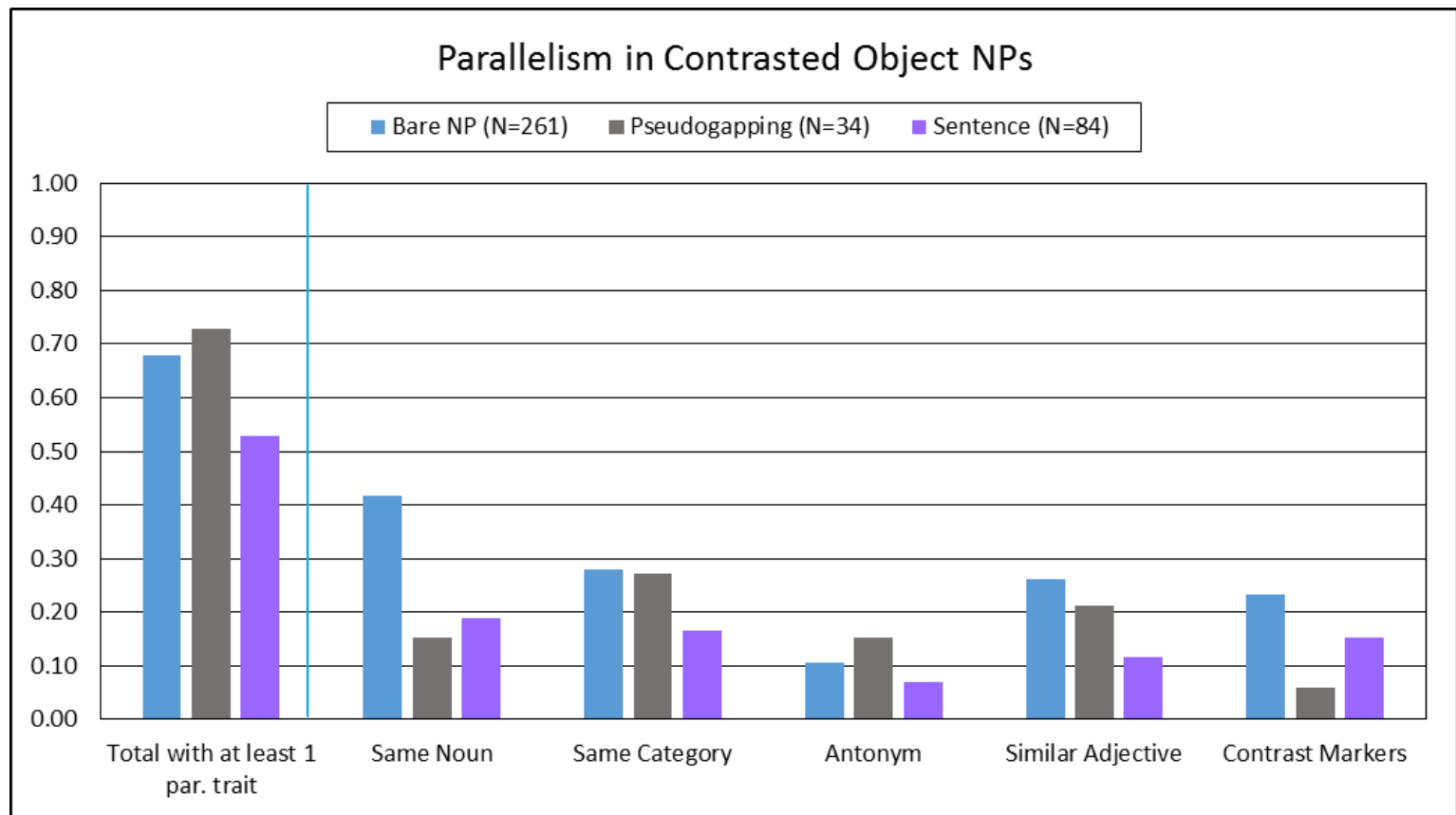
- Full sentences used for a range of possible contrasts, including multiple elements and verbs.
- VPE usually had subject or adverbials contrasting.

Parallelism Analysis

- Annotated a set of semantic and featural similarities between first-clause and post-comparative subjects and objects, when possible.
- Parallelism types: the same noun; noun within the same category (like countries, companies); antonyms; similar adjectives on a similar scale; and various paired or unpaired contrast markers (*these/those, some/others, else, rest, peers/competitors, etc.*).
- These types were partly determined by examination of the corpus examples.



- Contrasting subjects often had parallel traits, especially in bare NP ellipsis and inverted VP Ellipsis.
- The bare NPs are ambiguous, but inverted VPE is not.



- Contrasting objects also had parallel traits, especially in pseudogapping and bare NPs, but less than subjects.
- Bare NP objects often had the same noun head.

Corpus Results

- Overall, ellipsis is very common in the corpus, especially bare NPs with subject role/contrast.
- Complete sentences are uncommon, and are used most when the verb needs to contrast.
- Even though subject NPs could be unambiguous (in sentences, VP Ellipsis, or pseudogapping), they are by far more frequent as bare NPs.
- Contrasting subject NPs quite often have parallel traits in semantics or form; contrasting objects also do but slightly less often.

Corpus Conclusions

- Comparative constructions exist to contrast material between clauses.
- Any material that is repeated after the comparative but not contrasted will need to be deaccented.
- Deaccented structures compete with the readily available ellipsis options, and clearly ellipsis usually wins: most of the corpus is bare NPs.
- Parallelism appears to be a general, common property of NPs in comparative constructions, not found more in situations of most ambiguity.

The Basic Conundrum

- The processing results show that comparative bare NP ellipsis has a strong object bias; the corpus results find this structure much less often than subject bare NPs.
- If we assume (following Lechner 2008) that a full clause follows the comparative even in bare object NPs, then there is no structural reason to favor object analyses.
- What is left to explain the processing results? I suggest that default focus would do it.

A Solution

- A range of other ellipsis structures are, like comparatives, sensitive to focus and object-biased.
 - e.g., sluicing, Carlson, Dickey, Frazier, & Clifton 2009; gapping, Carlson 2001; replacives, Carlson, Frazier, & Clifton 2009; *let-alone* ellipsis, Harris & Carlson 2015.
- English tends to place focus on the last argument in the clause, not on subjects (Selkirk 1984, Cinque 1995).
- Listeners may expect focus on the object in most sentences, and assume it even with focus-marking elsewhere (cf. Carlson, Dickey et al. 2009).

A Solution

- An object bias is not expected in the corpus, though, because these are produced examples.
- The people speaking or writing know where the focus is, and so have no need to assume its presence in a default location.
- They do produce a range of similar features on contrasted NPs which aids in showing where the focus is. NP parallelism, an oddly effective but optional feature, is part of the normal strategy in production.

Final Takeaway

- Both the processing and corpus results in this project support an important role for focus structure and parallelism in shaping comparatives.

Acknowledgments

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