

New experiments on indefinite crossover

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May 6, 2024

1 Introduction

It is well known that quantifiers and *wh*-words participate in crossover (Postal, 1971 i.a.); this been confirmed by recent experimental work (Ross, Chierchia, and Davidson, 2023). The pattern is less clear, however, for other types of DP such as proper names and indefinites.

1.1 Proper names and the role of context

Proper names have been claimed to show strong crossover (i.e. Condition C) but not weak crossover (Chomsky, 1976; Lasnik and Stowell, 1991; Ruys, 2004)

- (1) a. *Strong crossover*
***He**_i claimed that **Daniel**_i was an amazing chef.
- b. *Secondary strong crossover*
*The chef knew that **he**_i was disappointed by the soup **Daniel**_i made.
- c. *Weak crossover*
?The chef_j knew that **his**_i soup had disappointed **Daniel**_i.

Ross, Chierchia, and Davidson (2023) found that proper names are unacceptable in both strong and weak configurations in the same configuration as the quantifier and *wh*-word examples above; that is, when another referent for the pronoun is present and no supporting context for the cataphor is provided. However, this leaves open the question of whether this unacceptability is due to the syntactic configuration or due to pragmatic or contextual issues with interpreting the pronoun as anaphoric to the subsequent proper name.

Analysis of Ross, Chierchia, and Davidson's results for their corresponding binding sentences (where co-construal should always be possible) further suggests that different types of DP (quantifier vs. *wh*-word vs. proper name) may make coconstrual more or less salient compared to a distractor DP, which is always a definite description. The distractor DP exists so that there is always at least one salient reading for the sentence (which is not ungrammatical if the pronoun refers to something other than the target DP). Thus, leaving out the distractor may improve the ratings of a crossover/cataphora reading, at the expense of having some sentences seem like they have no meaning at all (if readers find the crossover reading ungrammatical and cannot accommodate a "someone else" that the pronoun must refer to).

Further (unpublished) experiments in June 2023 using a very similar design, except without a distractor DP, suggest that weak crossover with proper names is in fact quite acceptable when there is no second DP and when the sentence is constructed to support the backward anaphor as much as possible in terms of topic / discourse structure, as shown in Figure 1. (Strong crossover with proper names was assumed to be universally bad and was not tested in this new setting.) This supports the previously mentioned positive judgements. In fact, we also find a noticeable improvement in the ratings of quantifier weak crossover, shown in Figure 2, though they are still significantly different from the ratings for quantifier binding.

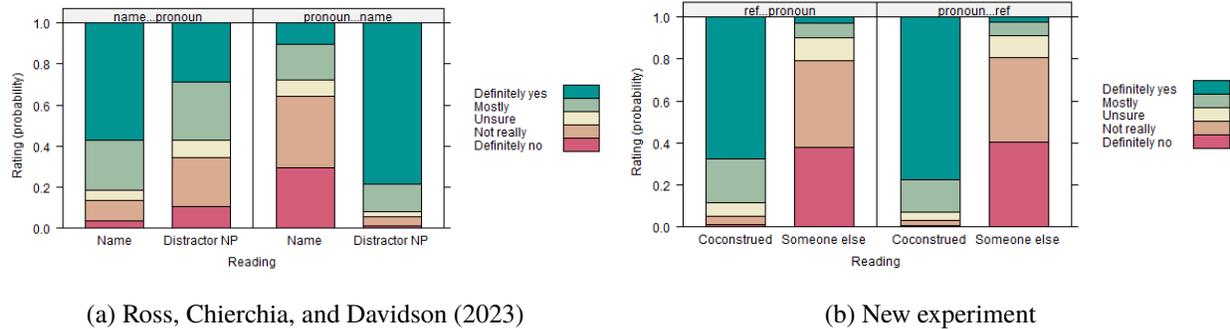


Figure 1: Proper name weak crossover (third column from left) receives low ratings with simple sentences with a distractor NP but high ratings in cataphora-supporting sentences with no distractor NP (involving negation or relative clauses).

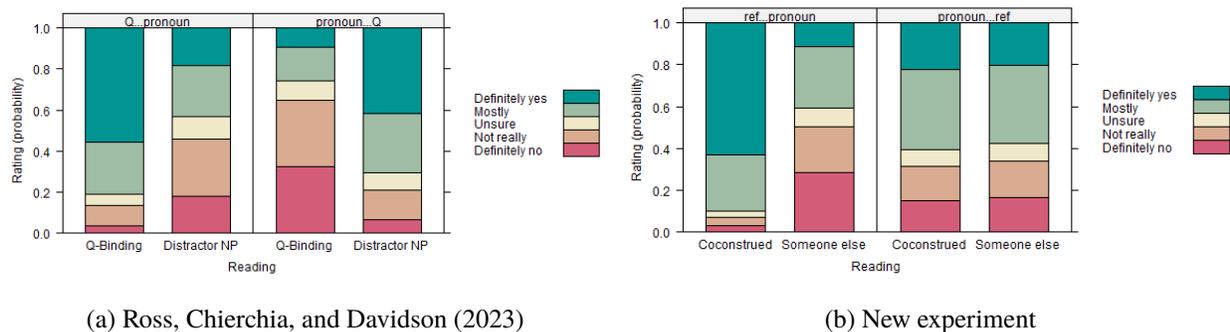


Figure 2: Quantifier weak crossover (third column from left) receives higher ratings in cataphora-supporting sentences involving negation with no distractor NP than in simple sentences with a distractor NP.

1.2 Indefinites

Further, indefinites have been argued to show crossover, in particular weak crossover (Chierchia forthcoming).

- (2) a. *Strong crossover*
 *The manager forgot that **he_i** complained that **a salesman_i** couldn't meet the target.
- b. *Secondary strong crossover*
 *The manager reported that **he_i** had trouble with **a salesman_i**'s target.
- c. *Weak crossover*
 *?No paper **he_i** wrote pleased **a student_i**.
- d. *Weak crossover*
 *?**His_i** doctor saved **a patient_i**.
- e. *Weak crossover*
 *?**Their_i** friends told **a backpacker_i** not to travel the Amazon alone, but they decided to go anyway.

However, testing this experimentally is difficult as a number of issues arise.

- As for proper names, we need to balance the availability of the second “distractor” reading (which gives us a baseline) with the fact that the distractor is distracting and may reduce the ratings of readings that should be grammatical/available. This is a particular concern for indefinites which may be less likely to get chosen for anaphora for a given pronoun than a “more salient”-seeming definite DP.
- As for proper names and quantifiers, crossover is essentially a cataphor situation since the desired referent is linearly after the pronoun. Cataphora seem to be pragmatically dispreferred, though this can be improved (at least for proper names) by other pragmatics such as focus, topic and salience (Gordon and Hendrick, 1997; Moulton et al., 2018; Gor and Syrett, 2019; Gor and Syrett to appear). Without the right information structure, an indefinite crossover sentence may seem “bad” because the choice of cataphor rather than forward anaphor (e.g. with a passive) is unjustified.
- Crossover is motivated by the target referent scoping above the pronoun. If it does not scope high, we have no reason to believe the pronoun might be able to be bound by it (or be available to choose from the existing discourse referents) at all. Indefinites can scope high, but need not, especially if a QR-style analysis of indefinites is not assumed. Thus, we need some other item with scope (e.g. negation, relative clause, or another quantifier) to be sure that in the reading we are targeting, the indefinite is scoping above that other item and thus above the pronoun.
- The previous experiments with quantifiers and *wh*-words determined that singular *they* was the best pronoun choice for these gender-unspecified referents, though *he* and *she* both also displayed crossover effects. Meanwhile for the proper names, which are obviously gendered, we used *he/she* (balanced). Which should we use for indefinites? While most indefinites (*a student, a traveller*) aren’t specified for gender, it’s more likely that the gender of the person is known to the speaker. (For *wh*-words, you wouldn’t be asking the question if you knew who it was; for quantifiers, the domain quantified over may contain people of different genders.)

Initial results from the same set of unpublished experiments (June 2023) seem to show that when negation is used to indicate scope, singular *they* is used, no distractor DP is used and the sentences’ information structure is constructed to support cataphora, then there is no significant difference between sentences where the indefinite c-commands the pronoun and a weak crossover configuration where the pronoun’s constituent c-commands the indefinite. Both are rated relatively high (over 70% of ratings are “Definitely yes” or “Mostly”), as shown in Figure 3a. This is problematic for theories like Chierchia’s which predict that indefinites are subject to crossover restrictions. Moreover, although we find a large visual difference between the acceptability of weak crossover for quantifiers vs. indefinites, this effect is not statistically significant under an ordinal regression. This is puzzling, but may simply suggest that we need to repeat the study with a much larger number of participants and probably also experiment items.

Meanwhile, using relative clauses to indicate scope did show a significant difference between crossover and non-crossover sentences, as shown in Figure 3b, but this is confounded by the fact that the indefinite is assumed to scope out of the relative clause in the crossover sentences. That is, we only provided reading paraphrases in which the indefinite scoped high. Both the coconstrued and “someone else” readings of the crossover sentences received middling ratings. While this could be explained by the fact that indefinite crossover is genuinely moderately bad when involving relative clauses - we found that with no distractor NP, the “someone else” ratings were approximately inversely proportional to the coconstrued readings, so if those are middling then the “someone else” reading should also be middling - this could also be explained by participants having difficulty accepting any reading in which the indefinite scopes out of the relative clause, irrespective

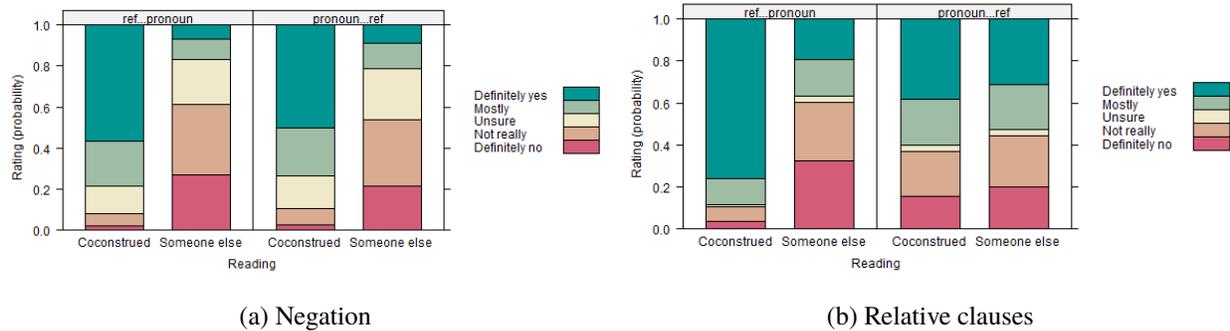


Figure 3: Indefinite weak crossover (third column from left) receives high ratings in cataphora-supporting sentences involving negation with no distractor NP, but low ratings in such sentences involving relative clauses.

of whether it contains crossover. We either need to set relative clauses aside and focus on negation as a scope marker, or perhaps test independently of crossover how easy participants find it to scope an indefinite out of a relative clause. (The same two-meaning design could be used.) Moreover, relative clauses lack the comparison to quantifiers, since quantifiers can never scope out of relative clauses.

2 Next steps for indefinite crossover

1. Focus on negation at this stage
2. Write more sentences to reduce the effect of particular information structure choices
3. Run each sentence with he/she (balanced half-half, not both for each sentence) as well as with singular *they* in case singular *they* is degraded for indefinites for some participants
4. Get a large number of participants to reduce confidence intervals and improve the likelihood of statistical significance if the effect is there
5. Test the same sentences, as well as ones which don't have a supporting context, with specific indefinites: one possibility is that whatever the information structure – or the negation – is doing to support cataphora (which we don't fully understand) is also causing the indefinite to behave less like a true existential and more like a specific indefinite. Specific indefinites may perhaps behave more like definites and proper names in terms of their familiarity and DR-introduction properties. If the information structure / context is affecting the interpretation of indefinites in this way, we might see indefinite and specific indefinites behaving similarly in these “nice” contexts but differently in the plain contexts used in the quantifier experiment.
6. Test sentences with indefinites (and specific indefinites?) without negation; perhaps the sheer fact that the indefinite scopes over negation causes it to get interpreted as a specific indefinite, which has a different semantics which permits crossover (just like proper names)
7. Use quantifiers, proper names, specific indefinites and plain indefinites, and maybe also definite descriptions, so that we can quantify the effect of information structure and lack of second overt discourse referent on each, and to allow us to measure relative degrees of “badness”. (Information structure seems to ameliorate even quantifiers, which are supposed to be “bad” even in weak crossover configurations.)

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