The Syntax of Relative Clause Extraposition

An Experimental Investigation of Island and C-command Effects

Pavel Koval, Ph.D.

University of Connecticut, 2023

This dissertation presents the first step in a research program investigating the syntax of relative clause (RC) extraposition. In the course of 32 large-scale formal experiments, it examines island effects and c-command effects of RC extraposition. The findings strongly suggest that RC extraposition is created via rightward syntactic movement, and the target of RC extraposition is a constituent that includes both the extraposed RC and its host. The dissertation comprises three comprehensive studies of RC extraposition. Two studies focus on island effects and investigate RC extraposition across a wide range of island structures in English and Russian. The third one focuses on how two c-command effects, NPI licensing and Condition C, interact with RC extraposition in English. Island effects constitute the standard diagnostic of syntactic movement and distinguish between movement and non-movement theories of RC extraposition. NPI licensing and Condition C together form a diagnostic of the size of the target of RC extraposition and distinguish between theories that extrapose the RC, the host DP, and their combination DP+RC. The dissertation principally resolves the so-called "locality paradox" of RC extraposition. It demonstrates that RC extraposition is simply more restrictive than successive-cyclic

Ā-movement, which allows for a less convoluted theory of syntactic locality. The results also clearly indicate that RC extraposition is a product of rightward syntactic movement, which poses a challenge to theories of linearization that ban any rightward movement on principled grounds.

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Pavel Koval

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The Syntax of Relative Clause Extraposition

An Experimental Investigation of Island and C-command Effects

Presented by

Pavel Koval, M.A., M.A.

Major Advisor

Jon Sprouse

Associate Advisor

Željko Bošković

Associate Advisor

Andrea Calabrese

Associate Advisor

Jon Gajewski

University of Connecticut

2023

To the loving memory of my grandmother, Nina von Westphalen.

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Introduction

1.1 Overview

Natural language grammar has the capacity to establish relations between syntactic units at a distance. A prototypical example of it is a *wh*-fronting question in (1), where a *wh*-word in its surface position linearly precedes its (hypothesized) base position.

(1) $[_{CP}\ [_{DP}$ Which man] did Mary recognize ~~DP~~]?

Another potential example of the same capacity is relative clause (RC) extraposition in (2), where the base position adjacent to the host NP linearly precedes the surface position of the RC.

(2) $[_{TP}$ I met $[_{NP}$ a girl] ~~RC~~ yesterday] $[_{RC}$ that auditioned for Juilliard]

Informally, this dissertation aims to remove the word "potential" from the previous sentence. More concretely, based on a systematic investigation of island effects and c-command effects[1] of RC extraposition, I argue that RC extraposition is created by syntactic movement and that what moves during RC extraposition is a constituent that contains both the RC and the host NP.

[1] Another familiar, but theoretically-distorted term for the same class of effects is *reconstruction effects*.

A common sentiment among syntacticians regarding the extraposition literature is that "[c]urrent analyses of extraposition have exhausted all options compatible with the generative theory of grammar" (Haider 1997, p. 115). Although this statement underestimates the power of human ingenuity[2], it reflects the fact that the domain of extraposition, including the subdomain of RC extraposition, has been a prolific source of new grammatical machinery (see Section 1.5 for a number of examples). Choosing which mechanisms to add to the ontology of grammatical operations is important because it carries many implications for the theory of grammar. The main theoretical goal of this dissertation is to facilitate the selection process by adjudicating between different existing theories within the domain of RC extraposition and identifying those that are empirically inadequate. The hope is that after removing all empirically unfounded theories, there will be a single theory of the mechanisms underlying RC extraposition that correctly predicts all the facts. Thus, the main research question of this dissertation can be formulated as follows: *What mechanism creates RC extraposition?*

1.2 Scope and methodology

This dissertation offers three large-scale studies of RC extraposition. Two of these studies focus on island effects and investigate RC extraposition across a range of island structures in English and Russian. The third study examines two c-command effects, NPI licensing and Condition C, during RC extraposition in English. Island effects provide a reliable diagnostic of syntactic movement and distinguish movement and non-movement theories of RC extraposition. NPI licensing and Condition C together offer a diagnostic of the size of the target of RC extraposition

[2] For instance, three main groups of theories of RC extraposition discussed below simply did not exist back in 1997.

and distinguish between theories that extrapose the RC, those that extrapose the host NP and add the RC later, and those that extrapose their combination NP+RC and delete the NP at PF.

This dissertation investigates the three groups of effects and the predictions of different theories about them. As we will see in Section 1.5, every theory of RC extraposition makes predictions about these three groups of effects, as long as it specifies the mechanism that generates RC extraposition and its target and locus. Importantly, the predictions of different theories about these three groups are different enough to be used in an across-the-board comparison (see Table 1.1). The results of this comparison contribute to our understanding of RC extraposition and, through that, inform at least three main areas of theoretical linguistic research. First, if RC extraposition is created by syntactic movement, the theory of syntactic locality needs to incorporate properties of rightward movement on par with those of leftward movement. Second, if the target of RC extraposition is a large DP that includes both the RC and its host, the linearization theory needs to develop mechanisms to account for it. Third, if, as our results suggest, RC extraposition does not involve countercyclic, prosodic, or stylistic operations proposed by some of the existing accounts, the architecture of grammar can maintain that both PF and LF interfaces only interpret the syntactic output and thus keep syntactic computations uncomplicated (Chomsky 1993).

This dissertation uses large-scale formal experiments as its main method. There are at least two reasons for this. First, a standard full factorial experimental design is well suited to isolate the effect of the predictor variable of interest from other, confounding effects. This is especially valuable when analyzing grammatical phenomena that involve multiple factors, such as RC extraposition. Second, even though the empirical domain of RC extraposition has been an area of active research for the last 70+ years, the limits of inter-speaker variation in this domain

are still poorly understood. Consider a range of ratings in (3) that different authors assigned to RC extraposition from definite subjects of unaccusative and copular verbs. Large-scale online experiments provide an adequate sample of the general population and thus serve as a reliable means to identify the areas of variation and their effect sizes.

(3) a. The man has just arrived [$_{RC}$ who is from Boston]. (Baltin 1978)

b. ?? The guy just came in [$_{RC}$ that I met at Treno's yesterday]. (Ziv and Cole 1974)

c. * The man is here [$_{RC}$ who is carrying a large package]. (Rochemont and Culicover 1990)

1.3 Limitations

This dissertation provides an in-depth investigation of island effects, NPI licensing, and Condition C during RC extraposition. Necessarily, all other properties of RC extraposition are left out in the interest of space and cohesion. It is left for future research to incorporate these other properties as new benchmarks in a more detailed comparison of the theories of RC extraposition.

This dissertation is only concerned with the properties of RC extraposition and does not attempt a systematic comparison with other kinds of extraposition or rightward movement.

The two target languages investigated in this dissertation are English and Russian. It is still logically possible that there is some language that possesses a set of properties that both withstand the detailed scrutiny of experimental syntax and point to a different set of mechanisms as underlying RC extraposition in that language. The task of exploring the limits of cross-linguistic variation in the domain of RC extraposition is thus also left for future research.

Lastly, note that the eliminative logic mentioned in Section 1.1 does not necessarily disprove theories that end up being rejected, as they often have a broader scope than just RC ex-

traposition. However, it does render these theories invalid in their current form *as theories of RC extraposition*. This raises two theoretical syntactic questions that are also beyond the scope of this dissertation. The first question is whether the rejected theories can be amended in some way to restore empirical coverage. The second question is why the proposed mechanisms of rejected theories, unless amended, must be made unavailable during RC extraposition, even though they are supposedly present in the derivations of other phenomena. Both of these questions are intriguing and thought-provoking and fall squarely outside the scope of this dissertation.

1.4 The outline of the dissertation

The remainder of the Introduction comprises a literature review of theories of RC extraposition with a special focus on predictions about island effects, NPI licensing, and Condition C violations. Chapter 2 discusses a series of experiments that test RC extraposition from a range of subject and coordination island structures in English. Chapter 3 offers a series of experiments testing both RC extraposition and *wh*-movement from adjunct, noun complement, subject, and *wh*-island structures in Russian. Chapter 4 covers a series of experiments that test NPI licensing and Condition C during RC extraposition in English. The Conclusion summarizes the results of previous chapters and discusses their implications for syntactic theory and possible next steps.

1.5 The literature review

This section discusses the major theories of RC extraposition in (roughly) chronological order along with their predictions for our three phenomena of interest. The focus in this review is on predictions for three groups of islands, two NPI licensing configurations, and two Condition C

configurations. All of these predictions are summarized at the end of the chapter in Table 1.1.

There is one property of RC extraposition that significantly limits the range of island structures that can be used with it to diagnose syntactic movement. At least since Ross (1967), it has been known that the rightward dislocation, including RC extraposition, is at least clause-bound. For our current purposes, we are going to use the generalization in (4), although there are several alternatives (see Overfelt 2015a, Ch. 5 and Dillon 2017 for details and references).[3]

(4) Right Roof Constraint (RRC; from Baltin 2017, p. 7)

An element cannot move rightward out of the [finite] clause in which it originates.

In (5) RRC blocks RC extraposition from an object DP across a finite clause boundary.[4]

(5) a. Sam said [$_{CP}$ that he bought some coffee ~~RC~~ for his co-workers [$_{RC}$ that they serve in the library]].

b. *Sam said [$_{CP}$ that he bought some coffee ~~RC~~] to his co-workers [$_{RC}$ that they serve in the library].

---

[3] The term RRC is coined by Grosu (1973), while Ross (1967) calls it the Upward Boundedness Constraint.

[4] The pair in (5) is from Overfelt (2015a), judgments are his. The more familiar minimal pairs in (i) and (ii) show PP/RC extraposition from a finite clausal subject, which conflates an RRC violation with a subject island violation.

(i) a. [$_{CP}$ That a review ~~PP~~ came out yesterday [$_{PP}$ of this article]] is catastrophic. (Ross 1967)

b. *[$_{CP}$ That a review ~~PP~~ came out yesterday] is catastrophic [$_{PP}$ of this article].

(ii) a. [$_{CP}$ That the man ~~RC~~ arrived [$_{RC}$ who was from Boston]] amazed me. (Baltin 1978)

b. *[$_{CP}$ That the man ~~RC~~ arrived] amazed me [$_{RC}$ who was from Boston].

In effect, RRC bars RC extraposition from all multiclausal sentences, including those island structures that prototypically contain a finite clause boundary, e.g. an adjunct island, a *wh*-island, or a noun complement island. If RC extraposition is impossible from one of those island structures, it can be either because RC extraposition triggers the island effect or because it is blocked by RRC. Currently, there are no reliable ways to neutralize RRC.[5] Therefore, only the following three groups of island structures can be used to determine whether RC extraposition is actually sensitive to syntactic islands: nominal subject islands, coordination islands, and non-finite versions of the three multiclausal islands (adjunt, *wh*, and noun complement).[6,7] These are the three groups of islands discussed in the literature review below.

With respect to NPI licensing and Condition C, the literature review focuses on four groups of contrasts that are shown in (6) through (9) (the judgments are suppressed). An NPI or an R-expression stays inside the RC across all of them, while the position of an NPI licensor or a coindexed pronoun varies between the host DP and the *v*P.[8] The reason for choosing these particular configurations is that different theories of RC extraposition make distinct predictions about them. Further details can be found in Chapter 4.

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[5] Overfelt (2015c) argues that parasitic gaps can be used to alleviate the RRC effect. Unfortunately, parasitic gaps also neutralize the island effect (Engdahl 1983). Other methods to defuse a finite clause boundary remain unexplored in the domain of RC extraposition, e.g. Grano and Lasnik (2018).

[6] The non-finite group also requires an independent confirmation that its islandhood is not void, see Chapter 3.

[7] Predictions about non-finite clausal subjects vary between different versions of RRC, because of that they are excluded from this selection.

[8] The position of *n't* in (7) is determined by its scope with the *for*-phrase, see Chapter 4.

(6) a. Today Emily answered every question [$_{RC}$ that Jon had ever asked in the group chat].

b. Emily answered every question ~~RC~~ today [$_{RC}$ that Jon had ever asked in the group chat].

(7) a. For most of my life, I didn't respect the players [$_{RC}$ that had ever faked a serious injury].

b. I didn't respect the players ~~RC~~, for most of my life, [$_{RC}$ that had ever faked a serious injury].

(8) a. Today Andrew met her$_i$ teammate [$_{RC}$ that befriended Jennifer$_i$].

b. Andrew met her$_i$ teammate ~~RC~~ today [$_{RC}$ that befriended Jennifer$_i$].

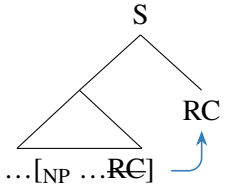
(9) a. Today Emily took him to a beach [$_{RC}$ that Eric had never been to].

b. Emily took him to a beach today [$_{RC}$ that Eric had never been to].

1.5.1 Syntactic movement of the RC (Ross 1967)

Ross (1967) develops a syntactic movement theory of RC extraposition. According to it, RC extraposition is a "last-cycled" transformation rule that applies to the RC that is base generated next to its host NP. The RC then moves to its surface position at the right edge, as shown in (10).

(10)



Ross argues that RC extraposition is sensitive to islands and provides examples in (11) where

RC extraposition from a coordination island inside a subject island is impossible.

(11) a. * [A friend of mine ~~RC~~ and a girl who was from his home town] met in Vienna [$_{RC}$ who was working in Europe].

b. * [A friend of mine who was working in Europe and a girl ~~RC~~] met in Vienna [$_{RC}$ who was from his home town].

Since RC extraposition is a movement transformation, Ross's theory predicts that it is going to be sensitive to all three groups of islands, similar to leftward movement.

Ross does not discuss explicit predictions about NPI licensing during RC extraposition. However, in a different part of Ross (1967) he adopts Klima's "rewriting" theory of NPI licensing (Klima 1964a), according to which NPIs are derived from PPIs via a "feature-changing" rule at S-structure.[9] This theory can be extended to Ross's treatment of RC extraposition. Since RC extraposition is a transformation, it necessarily precedes NPI licensing in the derivation. It follows that an NPI licensor that c-commands the base position of an extraposed RC, but does not c-command its derived position, should be able to license an NPI only in an in-situ RC, but not in an extraposed RC.

In both of our NPI licensing configurations in (6) and (7), the NPI licensor c-commands the base position of the RC, but not the derived position. Therefore, according to Ross's theory, RC extraposition should interrupt NPI licensing in both cases.

One previously studied test case for this prediction comes from an observation by Ladu-

[9] Linebarger (1980), Mahajan (1990) and Uribe-Etxebarria (1995) offer a number of arguments that NPI licensing should be postponed to LF. In this way, the "rewriting" part of Klima's theory needs to be cast aside.

saw (1979) that a universal quantifier (e.g. *every*) inside the host DP can license weak NPIs (e.g. *ever*), as in (12). According to Ross, RC extraposition should interrupt NPI licensing by *every*.

(12) *Every* student [$_{\text{RC}}$ who had *ever* read anything on phrenology] attended the lecture.

In an acceptability experiment, Overfelt (2015b) found that *every* inside an object DP can license a weak NPI *any* in both in-situ and extraposed RCs as in (13), which contradicts Ross's account.

(13) a. Last night we invited [*every* neighbor [who had *any* interest in building a park].

b. We invited [*every* neighbor] last night [who had *any* interest in building a park].

According to Ross's theory, RC extraposition can obviate a Condition C violation in the same syntactic configuration: if a coindexed pronoun in the main clause c-commands an R-expression inside an RC in the base position, but not in its derived position. As discussed in detail in Chapter 4, both Condition C configurations in (8) and (9) meet this criterion. Hence, Ross's theory predicts that there is no Condition C violation in either case.

Culicover and Rochemont (1997) discuss a similar configuration shown in (14) in which an RC is extraposed from an object of a ditransitive in a double object construction. They find the extraposed version to be acceptable (the judgments are theirs), which aligns with Ross's theory.

(14) a. *I sent her$_i$ many gifts [$_{\text{RC}}$ that Mary$_i$ didn't like] last year.

b. I sent her$_i$ many gifts ~~RC~~ last year [$_{\text{RC}}$ that Mary$_i$ didn't like].

1.5.2 Stylistic movement of the RC (Baltin 1978, 1981, 1983)

Baltin (1978, 1981, 1983) offers a "stylistic" movement theory of RC extraposition. It is centered around a new rule of Detachment shown in (15) that subsumes several types of extraposition, including RC extraposition. This rule applies in the "stylistic" component of the mapping between S-structure and PF (Chomsky and Lasnik 1977).

(15) Detachment

$$\begin{matrix} \left\{ \begin{matrix} \overline{S} \\ PP \end{matrix} \right\} - X \\ 1 \qquad 2 \end{matrix} \quad \rightarrow 2\ 1$$

Detachment is a stylistic rule and because of that it does not change LF, but it still applies to a syntactic tree, which leaves the locality constraints as the only mechanism to rule out impossible structures. For this reason, Baltin proposes a reformulation of Subjacency (Chomsky 1973) that distinguishes leftward and rightward movement:

(16) Generalized Subjacency

In the configuration A … $[_{\alpha}$ …$[_{\beta}$ … B …$_{\beta}]$ …$_{\alpha}]$ … A',

i. A' cannot relate to B where α and β are maximal projections of any major categories;

ii. A cannot be related to B where α and β are drawn from the following list of phrasal categories: (a) PP; (b) NP; (c) S or $\overline{S}$ or both, depending on a specific language.

Another essential part of Baltin's account is the theory of structural positions that are

available to an extraposed RC. Baltin claims that the choice of a position depends on the host DP. According to him, object-linked RCs can only move to the right edge of VP, while subject-linked RCs can move either to the right edge of VP or to the right edge of IP; see also Guéron (1980) and Reinhart (1980) for a number of phenomena that conform to Baltin's generalization.[10]

A subject-linked RC moves to the edge of IP and only crosses one maximal projection of a major category (DP) on its way; therefore, according to the first clause of (16), RC extraposition from subject islands should be grammatical. Baltin supports this claim by showing the minimal pair in (17) where an RC is extraposed from an unaccusative subject island.

(17) a. A man [$_{RC}$ who came from Boston] appeared.

b. A man ~~RC~~ appeared [$_{RC}$ who came from Boston].

Predictions of Baltin's theory for coordination islands depend on the internal syntax of coordination and how many maximal projections of major categories RC extraposition crosses. RC extraposition from non-finite islands is expected to be ungrammatical, since all of them include at least two major categories (NP, PP, non-finite VP, and non-finite CP, in various combinations).

Assuming after Linebarger (1980) and Mahajan (1990) that NPI licensing is checked in S-structure or at LF, the stylistic rule of Detachment, which takes place later, during the mapping of S-structure to PF, is predicted to have no effect on NPI licensing. An NPI that is licensed in the in-situ RC should remain licensed after RC extraposition. This prediction applies equally both to the host-internal (*every* in (6)) and to the host-external NPI licensors (*n't* in (7)).

[10] The Ā-movement of the host DP can further influence the number of structural positions available to the extraposed RC, but the issue is outside the scope of this project; see Hunter and Frank (2014) for a recent overview.

One known problem for Baltin's account is that RC extraposition also should not be able to feed NPI licensing, i.e. RC extraposition cannot create new NPI licensing dependencies and save an otherwise unlicensed NPI. The pair in (18) from Guéron and May (1984) (the judgments are theirs), where RC extraposition places an NPI *the slightest* in the scope of a licensor *n't*, while the host moves to the subject position, is thus unexpected under Baltin's theory.

(18) a. *M. thinks that the extraposition transformation [$_{RC}$ which has *the slightest* effect on LF] has*n't* been found yet.

b. M. thinks that the extraposition transformation ~~RC~~ has*n't* been found yet [$_{RC}$ which has *the slightest* effect on LF].

In the same vein, Baltin's theory predicts that RC extraposition should have no effect on Condition C since the stylistic rule of Detachment applies too late. Therefore, RC extraposition should not be able to obviate a Condition C violation triggered by a possessive pronoun in (8) or by an indirect object pronoun as in (9). One test case found in the literature where this prediction appears to be on the right track is shown in (19) where RC extraposition does not obviate a Condition C violation that is triggered by a subject pronoun.

(19) a. *She$_i$ invited many people [that Mary$_i$ didn't know] to the party.

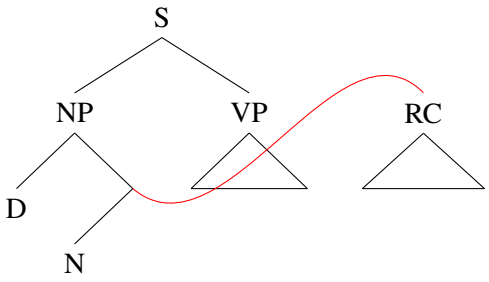
b. *She$_i$ invited many people ~~RC~~ to the party [that Mary$_i$ didn't know].

(Culicover and Rochemont 1990, p. 28)

1.5.3 PF-movement of the RC (McCawley 1982, Truckenbrodt 1995a, Göbbel 2013)

The third group of theories models RC extraposition as a phonological phenomenon. The difference between the PF-movement theory and Baltin's stylistic theory is that for Baltin the extraposed RC moves within a syntactic tree when it is mapped onto PF, whereas the PF-movement approach claims that the extraposed RC moves in the prosodic structure, and therefore restrictions on it should be definable in prosodic terms. The first proposal of this kind is found in McCawley (1982), who argues that RC extraposition is due to the host NP and the RC being able to form a "discontinuous constituent", which is exceptionally allowed to cross other nodes in violation of the No Tampering Condition (Wall 1972) thus altering the usual linearization algorithm. This is shown in (20). Note that the structural position of the RC does not change.

(20)



The clause-boundedness of RC extraposition can be formulated as a restriction on the number of large prosodic units that can separate the extraposed RC from its host. Here is a version of this restriction from Truckenbrodt (1995a), which confines RC extraposition to a single ι-phrase:

(21) a. Let XP be a prosodic category that is canonically mapped into the prosodic category π upon extraposition (where π is either a phonological phrase or the intonational phrase in the following). Then extraposition from NP will take XP as far as out of

a prosodic constituent of the same category π.

b. $(\ldots \text{XP} \ldots) \rightarrow (\ldots \text{t}_i \ldots)_\pi \, (\text{XP}_i)_\pi$ (Truckenbrodt 1995a, p. 503)

Göbbel (2013, 2020) argues that to exclude RC extraposition from some subject island structures, the PF-movement theory of RC extraposition can use a combination of *(i.)* an assumption that an extraposed RC must be a narrow focus or part of a broader presentational focus (Guéron 1980, Rochemont 1978)[11] and *(ii.)* a theory of accentual patterns of predicational and presentational sentences (Bolinger 1972, Guéron 1980, Gussenhoven 1983, Selkirk 1984, Cinque 1993, Zubizarreta 1998). The central idea is that in out-of-blue (thetic) contexts unergative verbs are inherently predicational and therefore necessarily place an accent on the VP and thus block RC extraposition from the subject, while unaccusative, transitive, and passive verbs permit a parse with a presentational accentual pattern that defocuses the verb and instead focuses the subject, thus licensing the extraposed RC by making it a part of a broader presentational focus. This way the PF-movement theory predicts that RC extraposition is impossible from unergative subject islands (except in categorical contexts, see below in Subsection 1.5.4), while unaccusative, transitive, and passive subject islands are expected to allow it. Predictions about coordination islands depend on the size of the prosodic unit associated with each conjunct. For example, RC extraposition is blocked in a coordination of clauses (i.e. intonational phrases, ι-phrases) due to (21). Assuming after Wagner (2010) that natural language strongly prefers list-like prosody for coordination and thus forms recursive prosodic structures, RC extraposition from smaller prosodic units (e.g. phonological phrases that correspond to DPs and VPs) should

[11] See also Bolinger (1992) for a more nuanced view regarding the focusing requirement and the interplay between focus and prosody, including accent.

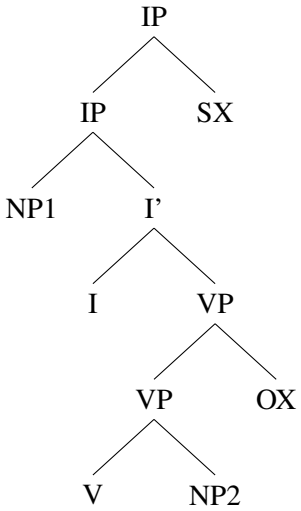
be possible. Predictions about non-finite versions of other islands depend on the details of their prosodic structures. In general, RC extraposition is expected to be allowed if there is a parse with no more than one intonational phrase separating the RC from its host.

The PF-movement theory of RC extraposition makes identical predictions about both NPI licensing and Condition C violations: RC extraposition should not be able to feed or bleed either, since both extraposed and in-situ RCs occupy the exact same position in a syntactic tree.

1.5.4 Base generation of the RC as the right adjunct (Culicover and Rochemont 1990)

Culicover and Rochemont (1990, 1997) and Rochemont and Culicover (1990) propose that RC extraposition occurs when an extraposed RC is base generated as an adjunct in the surface position. This is shown in (22). Positions available to the extraposed RC are marked SX and OX.

(22)



In line with Baltin's generalization (see Subsection 1.5.2), Rochemont and Culicover assume that there are two positions that are available for an extraposed RC depending on its host: object-linked RCs can only appear in the OX position, and subject-linked RCs can appear either in

the OX or in the SX position. An extraposed RC is blocked from all other positions using the Complement Principle shown in (23). It is based on the notion of government in (24). Together, (23) and (24) ensure that an extraposed RC and a host NP are in a c-command relationship and appear close enough in the structure to be able to govern each other.

(23) Complement principle

β is a *potential complement* of α (α, β = X^{MAX}), only if α and β are in a government relation.

(24) Government

α governs β if α c-commands β and there is no δ, δ a barrier for β, that excludes α.

Rochemont and Culicover's account does not involve syntactic movement, therefore, fundamentally, it predicts that RC extraposition should be possible across an island boundary. However, RC extraposition is blocked in several island structures for independent reasons. First, all multiclausal structures are banned due to (23), which includes non-finite versions of adjunct, noun complement, and *wh*-islands, since they contain at least one barrier. Second, building on Guéron (1980)[12] (see also Subsection 1.5.3), Rochemont and Culicover also exclude some of the subject islands by introducing a predicate/focus restriction on SX. The central idea is that RC extraposition is a focus construction, and in order for the subject to be focused, the predicate must be c(ontext)-construable. According to them, in all-new (thetic) sentences, unaccusative predicates are inherently c-construable, while unergatives cannot be c-construed without a context.

[12] See also Bolinger (1972, 1992), Guéron (1980), Rochemont and Culicover (1990), Huck and Na (1990, 1992), Maynell (2008) for a detailed discussion.

This creates the contrast between RC extraposition from unaccusative and unergative subject islands in (25). Crucially, they claim that unergative predicates can be c-construed indirectly in a wider context with the predicate repetition. This is shown in (26) (the judgments are theirs).

(25) a. A man arrived [$_{RC}$ who wasn't wearing any clothes].

b. *A man screamed [$_{RC}$ who wasn't wearing any clothes].

(26) Suddenly there was the sound of lions growling. Several women screamed. Then a man screamed [$_{RC}$ who was standing at the very edge of the crowd].

This way, RC extraposition from unergative subject islands is expected to be ungrammatical, but only in all-new sentences. This restriction does not apply to other types of verbs. Transitive verbs can focus the subject, which means that they can be c-construed directly, and therefore RC extraposition from a transitive subject is predicted to be possible. Rochemont and Culicover show an example in (27) to support this claim (the judgment is theirs). Similarly, passive subjects are expected to be grammatical, since the presentational focus is placed on the promoted object.

(27) A man just bought that restaurant [$_{RC}$ who everyone says in an entrepreneur].

Another factor that, according to Rochemont and Culicover, contributes to the reduced grammaticality of subject islands is the definiteness effect.[13] They provide the unaccusative subject island paradigm in (28) (the judgments are theirs) and, following Ziv and Cole (1974), attribute the ungrammaticality of RC extraposition in the last example in (28) to the choice of a

[13] They have to stipulate that this restriction does not apply to OX.

definite determiner.[14]

(28) a. A man [$_{RC}$ that no one knew] came into the room.

b. A man came into the room [$_{RC}$ that no one knew].

c. The man [$_{RC}$ that no one knew] came into the room.

d. *The man came into the room [$_{RC}$ that no one knew].

In Chapter 2 we examine all four types of nominal subject islands: unergative, unaccusative, transitive, and passive, with each island being tested three times, once with a definite and once with an indefinite host to control for the definiteness effect and one more time with an indefinite host with a preceding context similar to (26) to control for the predicate restriction.

Coordination islands are expected to be grammatical. In case of an object-linked RC extraposition, the RC in the OX position still governs its host. Object NPs are exempt from the definiteness effect. The focus requirement of RC extraposition is satisfied because both conjuncts can be parsed to be the presentational focus (Schepman and Rodway 2000, Wagner 2005).

Predictions about both NPI licensing and Condition C can be calculated simply using (22), since an extraposed RC is base-generated at the right edge and occupies exactly one position in the syntactic tree. NPI licensing is expected to always be interrupted by RC extraposition as long as the licensor does not c-command the right edge position of an RC. Therefore, *n't* in *every* in (6) and (7) should not be able to license an NPI inside an RC. As argued in Overfelt (2015b), covertly raising *every* via QR cannot relicense an NPI inside an extraposed RC because, as observed in Ladusaw (1979), a universal quantifier *every* can license weak NPIs inside its restrictor (RC),

[14] Note that the original sentence from Ziv and Cole (1974) shown in (3b) has a ?? instead of an *.

but not inside its scope. According to Rochemont and Culicover, an extraposed RC is born separately from its host, so it never appears in the restrictor of *every* in the first place. Therefore, if an extraposed RC is a right-edge adjunct, it should be impossible for *every* inside the host DP to license an NPI inside of it.

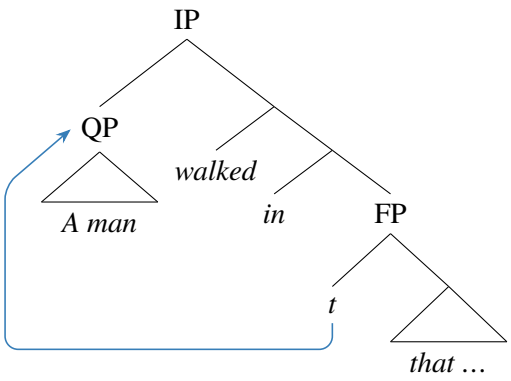
Predictions about Condition C violations are as follows: an extraposed RC in the OX position is structurally higher than an indirect object pronoun that resides inside VP, so it is expected that Condition C violation in (9) will be obviated. Similarly, a possessive pronoun inside the host DP in (8) does not c-command the extraposed RC, which predicts that the violation of Condition C should also be obviated.

1.5.5 Stranding of the RC in the base position (Kayne 1994, Wilder 1996)

Kayne (1994) argues that RC extraposition is created by stranding the RC in its base position, while the host QP moves to the left. His account of RC extraposition is identical to his treatment of floating quantifiers (Q-float), which may be more familiar to some readers. According to it, a floating quantifier stays in its base-generated position while the associated NP moves leftward.

Kayne's stranding account adheres to two critical principles: the Linear Correspondence Axiom (LCA) and the ban on right adjunction. LCA postulates that the linear order in a sentence can be deduced directly from the c-command relations in a syntactic tree. *A* linearly precedes *B* if and only if *A* (or a constituent including *A*) asymmetrically c-commands *B*. The ban on right adjunction, a theorem following from LCA, prohibits any adjuncts from appearing to the right of their complements. Thus the extraposed RC, which is linearly placed at the right edge of a sentence, appears stranded in its base position and is structurally lower than its host. A sample derivation is shown in (29).

(29)



To prevent RC stranding in intermediate positions within the same clause, Kayne suggests a case restriction in (30) that aligns with commonly held assumptions about A-movement. This restriction states that RC can be stranded by A-movement only in a non-Case position, cf. a similar constraint for Q-float. If there is no A-movement from a case position (Chomsky 2000), this restriction blocks RC stranding during Ā-movement and also barrs it from Case positions.

(30) A relative clause can be stranded by A-movement only in a non-Case position.

The clause-boundedness of RC extraposition is seen as a by-product of a ban on sideward movement. In (31) the QP and the RC start together in the matrix clause, but *is irrelevant* does not assign Case and in order to survive the derivation the QP needs to move inside the subject CP for Case, which requires it moving to a non-c-commanding position, but this is banned.

(31) * [$_{CP}$ The fact that [$_{QP}$ somebody] walked into the room] is irrelevant ~~QP~~ who I knew.

According to Kayne's theory, RC extraposition is excluded from all multiclausal island structures either because it requires sideward movement (e.g. a QP inside a left-adjoined infinitival adjunct and an RC at the right edge of the main clause) or because QP would have to

cross an island boundary (e.g. in a *wh*-island or a noun complement island). Importantly, his theory predicts that RC extraposition from all nominal subject islands should be possible, since QP simply moves to Spec;IP of the same clause stranding the RC in its base position.[15] Next, he also predicts that RC extraposition from coordination islands should be ungrammatical because the movement of QP out of the coordination phrase would have to cross an island boundary, while moving the entire coordination phrase with the host QP but without the RC is impossible.

Kayne's account predicts that NPI licensing is unaffected by RC extraposition, since the stranded RC still stays in the c-command domain of everything preceding it, including polarity operators. This means that RC-internal NPIs, such as those in (6) and (7) (repeated below), should be licensed regardless of RC extraposition, as long as there is a polarity operator that linearly precedes them.

(6) a. Today Emily answered every question [$_{RC}$ that Jon had ever asked in the group chat].

b. Emily answered every question ~~RC~~ today [$_{RC}$ that Jon had ever asked in the group chat].

(7) a. For most of my life, I didn't respect the players [$_{RC}$ that had ever faked a serious injury].

b. I didn't respect the players ~~RC~~, for most of my life, [$_{RC}$ that had ever faked a serious injury].

---

[15] A related word order issue concerning how an extraposed RC gets to follow everything else is a weak spot of Kayne's theory known at least since Borsley (1997). Fundamentally, there is nothing in Kayne's theory that prevents an avalanche leftward movement to the middle field that would strand a subject-linked extraposed RC (linearly) at the right edge of the clause. Further discussion of problems caused by this is found in Borsley (1997).

Kayne's predictions about Condition C during RC extraposition depend on the base position of the binder, since he assumes that Condition C is calculated under reconstruction. This way, in (9) the indirect object pronoun has to reconstruct to a position below the RC, thus avoiding the Condition C violation. However, in (8), the possessive pronoun reconstructs to its base position as a part of QP, from which it c-commands the RC and an R-expression inside. Therefore, we expect that in (8) RC extraposition should not obviate a Condition C violation.

(8) a. Today Andrew met her$_i$ teammate [$_{\text{RC}}$ that befriended Jennifer$_i$].

b. Andrew met her$_i$ teammate ~~RC~~ today [$_{\text{RC}}$ that befriended Jennifer$_i$].

(9) a. Today Emily took him to a beach [$_{\text{RC}}$ that Eric had never been to].

b. Emily took him to a beach today [$_{\text{RC}}$ that Eric had never been to].

Wilder (1996) offers an interesting modification to Kayne's stranding account. He argues that RC extraposition is created by leftward movement that places a copy of both the host DP and the RC in the derived position, which is followed by the scattered deletion of the respective parts of both copies at PF. The deletion process is guided by the following constraint:[16]

[16] An important theoretical issue concerning scattered deletion is how to constrain it. Without a principled account, essentially any derivation becomes possible with a rule like (32). In cases where scattered deletion appears to be the correct analysis, the pronunciation of a lower copy has some additional PF motivation; see Nunes (1995, 1999), Bošković (2001, 2005, 2015), Fanselow and Ćavar (2001, 2002), Corver and Nunes (2007), Franks (2008) a.o. It is not clear what PF factors would motivate scattered deletion during RC extraposition, thus presenting a significant theoretical problem for Wilder's account, but see Sheehan (2010) for discussion and some ideas.

(32) Chain-Internal Selective Deletion

Phonological deletion can remove part of the antecedent and the complementary part of the trace.

The crucial difference from Kayne is that, under Wilder's account, both QP and RC appear in both positions in the tree, which changes some predictions about islands and Condition C.

Similarly to Kayne's, Wilder's account bans RC extraposition from finite and non-finite multiclausal islands either via ban on sideward movement or because the leftward movement of the host crosses an island boundary. His account also predicts that RC extraposition is possible in subject islands, but for a slightly different reason than Kayne's. For Wilder, there is no island violation in all subject islands because the entire island moves from VP to Spec;IP. Finally, unlike Kayne, Wilder predicts that coordination islands should allow RC extraposition. Leftward movement *of* or *out of* one of the conjuncts is excluded because it would cause an island violation. However, moving the entire coordination island and then applying the constraint in (32) to two copies of it should create the required word order for RC extraposition without triggering the island effect. In this scenario, the left copy of the coordination phrase keeps everything but deletes the RC, while the right lower copy, according to (32), only keeps the RC at PF.

Wilder predicts that NPI licensing in (6) and (7) is unaffected by RC extraposition because, regardless of RC extraposition, there is at least one copy of the RC with an NPI inside of it that appears in the c-command domain of a polarity operator.

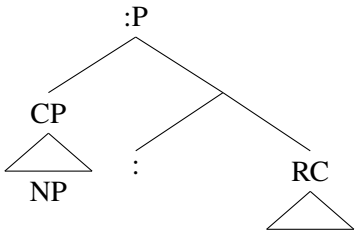
Wilder's account generates the same prediction as Kayne for possessive pronouns, but without making an additional assumption about the reconstruction for Condition C purposes. According to him, in (8) both copies of the RC are in the c-command domain of the indirect

object pronoun. This way, RC extraposition should not obviate a Condition C violation. Unlike Kayne, Wilder predicts that there is no obviation of the Condition C violation for the indirect object in (9), since the indirect pronoun c-commands both copies of the RC with an R-expression.

1.5.6 Coordination and parallel construal (Koster 2000)

Koster (2000) proposes to analyze RC extraposition as a special case of asyndetic (coordinator-less) coordination of an extraposed RC and a minimal CP that includes the host NP. He assumes that both belong to a specialized Boolean "colon phrase" :P, where ":" is a Boolean operator that indicates the set union (for restrictive relative clauses). The position of the extraposed RC at the right edge is the result of pied-piping that embeds the checking phrase (NP) inside of a larger phrase (CP). The resulting tree is shown in (33).

(33)



A central element of Koster's theory is an "indirect" checking mechanism offered for :P. In this system, the pied-piped and non-pied-piped structures (extraposed and non-extraposed RCs, respectively) are "semantically equivalent" under the mechanism of parallel construal in (34).

(34) Parallel construal equivalence

$\ldots[\ \ldots[_{\beta}\ \ldots\alpha\ ]\ [\ \omega\ \delta\ ] = \ldots[\ \ldots[\ \alpha\ [\ \omega\ \delta\ ]\ ]$, where

(i) α, β, and δ are XPs (α an antecedent, δ dependent on α)

(ii) ω is a Boolean operator (:)

(iii) β (possibly equivalent to α) is the Spec of ω

(iv) the minimal CP containing β contains δ.

The clause-boundedness of RC extraposition is ensured by the last clause of (34). Only a minimal CP can include an extraposed RC. Note that along with multiclausal structures, it also excludes non-finite versions of adjunct, noun complement, and *wh*-islands, since they all include a non-finite CP. This theory predicts that RC extraposition in both the subject islands and the coordination islands is grammatical, since it does not involve movement and both the host NP and the RC reside within the same CP.

Predictions about NPI licensing are calculated using the definition in (34). NPI licensing is expected to be uninterrupted by RC extraposition, as long as there is at least one structure in which the NPI inside the RC is in the c-command domain of an NPI licensing operator. Under equivalence in (34), if an NPI is licensed inside an extraposed or an in-situ RC, it is licensed in both. This way, an NPI is predicted to be licensed by *every* and *n't* in (6) and (7), respectively.

Predictions about Condition C follow from the fact that according to (34) the extraposed RC can be conjoined with any constituent up to CP that includes all phrases that linearly precede the RC. If at least one of these derivations converges without incurring a Condition C violation, the sentence is expected to be grammatical. Sheehan (2010) discusses these predictions in more detail and shows the following example (the judgment is hers) that is similar to one of our test cases in (9):

(35) ?John [$_{:P}$ [$_{VP}$ lent her$_1$ a book last semester] : [that Mary$_1$ had asked him for].

Sheehan assumes an antisymmetric structure where the temporal adverb *last semester* is lower than both the indirect pronoun *her* and the finite verb.[17] Under this view, all three are inside VP. The extraposed RC can be conjoined using : with the VP or a larger constituent that contains it (up to CP). It follows that the R-expression in the RC is outside of the c-command domain of a co-indexed pronoun in VP and the sentence is expected to be good. In the same way, both a possessive pronoun in (8) and an indirect object pronoun in (9) are expected to be good, since there is at least one derivation where an extraposed RC is conjoined with a VP (or vP or TP or CP), and an R-expression appears outside of the c-command domain of a co-indexed pronoun.

1.5.7 Quantifier Raising and Late Merge (Fox and Nissenbaum 1999, 2000)

Fox and Nissenbaum (1999, 2000) argue that RC extraposition is generated through a sequence of two syntactic operations — the rightward movement of the host NP via Quantifier Raising (QR) followed by the countercyclic Late Merge (LM) that merges the RC with the host NP in its derived position at the right edge.[18] This is shown in (36).

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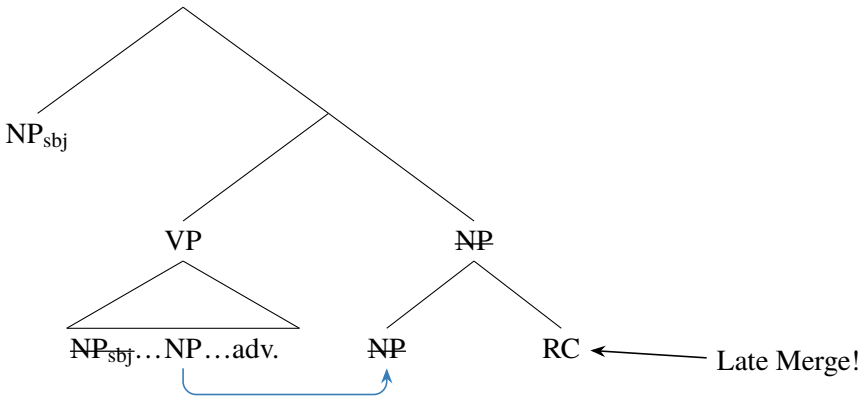
[17] Koster's account is compatible with Kayne (1994) and provides a non-movement equivalent to Kayne's stranding.

[18] See also Fox (2002, 2017a,b), Hulsey and Sauerland (2006), Takahashi and Hulsey (2009), Fox and Johnson (2016)

(36)



To explain how a covert QR can precede an overt LM, Fox and Nissenbaum adopted the assumption that all operations that target a part of a syntactic tree apply within the same syntactic component (Bobaljik 1995, Groat and O'Neil 1996, Pesetsky 1998). In this way, the syntax-phonology interface can only interpret the output of syntax and mark a part of it as covert. Fox and Pesetsky (2009) offer a possible explanation for the invisibility of QR along these lines. They argue that QR is created by rightward movement and introduce the linearization principle in (37) that strongly favors spelling out the leftmost element in a movement chain. Since, by assumption, QR is always to the right, it follows that it is covert.

(37) Principle of Chain Pronunciation

When α occupies two positions, the linearization of α will be determined by the position that would put α further to the left.

Introducing RC into the syntactic structure via LM places it in the derived position of the host NP without creating a copy in the base position, as shown in (36).[19] As discussed in

[19] The motivation behind using LM for RC extraposition in the first place is to account for a perceived contrast between

Stepanov (2001b,a) and Sportiche (2019), the original definition of LM from Lebeaux (1988) makes LM optional for adjuncts. Therefore, a theory of RC extraposition that adopts the optional version of LM actually allows RCs to be introduced in two ways. The first is shown in (36), where the RC is late merged into the surface position of the host NP at the right edge. The second is found in (38), where the RC is combined with the host NP in the base position via regular Merge and the resulting large DP moves to the right edge, possibly via Heavy NP Shift.[20,21]

---

the extraposition of relative and complement clauses with respect to Condition C in (i). Fox and Nissenbaum attribute it to the Freidin-Lebeaux effect (Freidin 1986, Lebeaux 1988) first observed in Van Riemsdijk and Williams (1981).

(i) a. $^{??/*}$ I gave him$_i$ an argument ~~CP~~ yesterday [that this sentence supports John$_i$'s theory]. (argument)

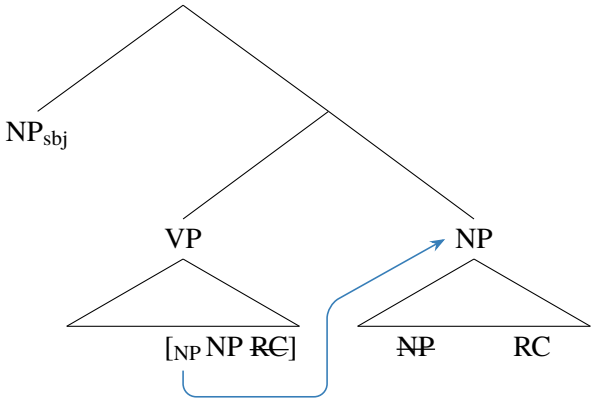
b. I gave him an argument ~~RC~~ yesterday [that supports John's theory]. (adjunct)

This dissertation does not test complement clauses, so this part of their account is left out for the sake of clarity.

[20] (38) is also the only derivation that is available for CP extraposition (complement clauses), since it cannot use Late Merge, which makes adopting some equivalent of (32) instead of (37) necessary; see also fn. 21. Another alternative for CP extraposition is if CP moves on its own in syntax or at PF; see Koval (2019) for some discussion.

[21] Note that the second, HNPS-esque derivation of RC extraposition is incompatible with the linearization principle in (37) from Fox and Pesetsky (2009) and requires something similar to the Chain-Internal Selective Deletion in (32) instead. In other words, adopting (37) is equivalent to the obligatory LM for RC extraposition. Moreover, (37) also bans CP extraposition that is generated via regular Merge and occupies two positions in a syntactic tree.

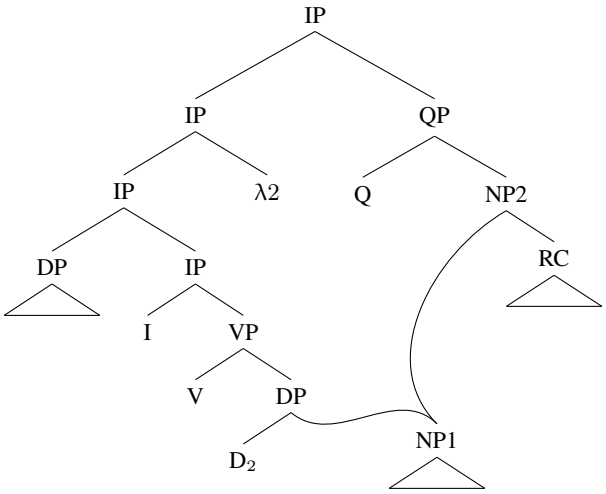
(38)



If at least one of the two derivations converges, the structure with RC extraposition is expected to be grammatical. However, if we adopt the proposal that LM is obligatory (Stepanov 2001b,a, Abe 2018, Zyman 2022), it leaves (36) the only possible derivation for RC extraposition. We are going to consider predictions of the two versions of the QR+LM theory separately, starting with the obligatory LM one, because it includes only one possible derivation for RC extraposition.[22,23]

[22] Fox and Johnson (2016) develop a multidominance variant of the obligatory LM version of Fox and Nissenbaum's account. The RC occupies a single position, while NP1 has two mothers. Allowing NP2 to also have two mothers converts their account into an equivalent of the optional LM version (modulo a linearization issue from fn. 21).

(i)



[23] The only different prediction that the optional LM version generates in comparison to the obligatory LM version

The clause boundedness of RC extraposition and predictions for most island structures can be modeled using QR locality restrictions.[24] Fox and Nissenbaum rely on the standard assumption that QR is an instance of syntactic movement (May 1978, Hornstein 1995, Kitahara 1996, Johnson and Tomioka 1997, Johnson 2000, Fox 2003, Cecchetto 2004, among others).[25] One argument in favor of this is that QR is sensitive to islands, similar to overt movement. In (39) QR is impossible from a coordination island (Ruys 1992), similar to *wh*-movement.

(39) a. A student$_{\exists}$ [likes every professor$_{\forall}$ and hates the dean]. (*$\forall > \exists$)

b. *Which professor does John [like ~~which professor~~ and hate the dean]?

One locality restriction of QR that is also reminiscent of RRC is that QR is confined to a single finite clause as shown in (40) from Johnson (2000).[26]

(40) a. I told someone$_{\exists}$ [$_{\text{CP}_{\text{FIN}}}$ you would visit everyone$_{\forall}$]. (*$\forall > \exists$)

b. Someone$_{\exists}$ wanted [$_{\text{CP}_{\text{INF}}}$ to visit everyone$_{\forall}$]. ($\forall > \exists$)

---

is that RC extraposition does not bleed NPI licensing headed by *n't* in (7).

[24] Another analytical possibility is to count on the timing of LM to exclude some of these structures, but in the current form some of these predictions are unclear, but see Zyman (2022) for a recent substantial development.

[25] Note that under this view wide scope indefinites that are not sensitive to islands cannot rely on QR to widen their scope, unlike quantifiers and distributive numerals (Ruys 1992). See Reinhart (1997), Winter (1997), Kratzer (1998) for alternative analyses for wide scope indefinites.

[26] See Wurmbrand (2018) for a discussion of QR from different types of infinitives and Fox and Pesetsky (2009, ex. 16b and fn. 2) for a potential counterexample that suggests that the violation of RRC may be quite harmless.

Finally, any theory of QR, in addition to its island sensitivity and clause-boundedness, needs to account for the fact that QR does not cross the subject of a finite clause. Johnson and Tomioka (1997) provide an example in (41) where a PPI *some* necessarily stays in its surface position in Spec;IP at LF and cannot reconstruct to its VP-internal position because that puts it in the scope of *n't*. Crucially, a quantifier *two thirds* that undergoes QR cannot outscope *some* in its surface position. Note that the corresponding interpretation in (41c) is fully coherent, yet not available.

(41) Some student or other$_{\exists}$ has*n't* answered two thirds$_{2/3}$ of the questions on the exam.

a. some > n't > **2/3**

= 'There is a student that answered two thirds of the questions on the exam.'

b. some > **2/3** > n't

= 'There's a student that left two thirds of the questions on the exam unanswered.'

c. *__2/3__ > some > n't

= 'For two thirds of the questions on the exam, there was a student who did not answer them.'

By assuming that QR is an instance of syntactic movement that operates within a single finite clause and does not cross Spec;IP, Fox and Nissenbaum's theory successfully generates the RRC effects.[27] And since QR is movement, both coordination islands and non-finite versions of adjunct, noun complement, and *wh*-islands are expected to block RC extraposition.

Predictions about subject islands are less straightforward since, in those cases, the target

[27] It also correctly generates the fact that object-linked RC extraposition does not cross the subject as indicated by the lack of the obviation of a Condition C violation in (19).

of QR is the entire island. Presumably, the subject in Spec;IP cannot undergo QR to a position above it due to some inherent property that also blocks object QR above Spec;IP in (41). Predictions about the availability of subject QR from Spec;VP depend on assumptions about the target position for QR. If QR places NP at the edge of VP as shown in (36), QR is predicted to be blocked in unergative and transitive subjects by the scope economy in (42) or by the antilocality (Abels 2003). Therefore, RC extraposition from those is expected to be impossible.

(42) Economy condition on scope shifting (Fox 2000)

OP can apply only if it affects semantic interpretation.

Assuming that unaccusative and passive subjects occupy a position lower than Spec;VP and can skip Spec;VP, both are expected to allow RC extraposition.[28]

A different set of predictions is generated by an account of QR that is offered in Fox and Pesetsky (2009), who argue that QR targets an inner specifier of TP. Assuming that movements to the inner (rightward; reserved for QR) and outer (leftward; the surface subject position) specifiers of TP occur simultaneously (Chomsky 2008), neither scope economy nor antilocality can block QR. Under this view, all subject islands are expected to permit RC extraposition.

RC extraposition is expected to interrupt NPI licensing when a licensor c-commands the base position of the host DP, but not the derived position, e.g. *n't* in (7), since the extraposed RC is Late Merged into the derived position only. At the same time, NPI licensing by host-internal licensors is expected to be uninterrupted by RC extraposition, since a polarity operator inside a silent copy of the host NP c-commands the RC in its surface position as well, e.g. *every* in (6).

[28] A similar conclusion about passive subject islands is independently reached in Nakamura (2021).

Condition C violation caused by a possessive pronoun in (8) is expected to be unaffected by RC extraposition because both extraposed and non-extraposed RCs are c-commanded by host NP. However, RC extraposition is predicted to obviate the Condition C violation in (9) that is caused by a violating pronoun that c-commands the base position of the RC with an R-expression, but not its derived position.

Turning to the optional LM version of the QR+LM theory, the predictions about all three types of island structures are the same. This is because this version still has to assume that QR is movement, regardless of whether the DP moves with or without the RC. The predictions about Condition C also remain the same, since both copies of the RC are c-commanded by parts of the host DP in (8) and there is still a copy of the RC that RC extraposition puts outside the c-command domain of an indirect object pronoun in (9). NPI licensing by *every* is also predicted to be unaffected by RC extraposition since both copies of the RC are c-commanded by it. However, introducing a second copy of the RC downstairs in the c-command domain of *n't* in (7) alters the prediction. In this case, NPI licensing should not be affected by RC extraposition.

1.5.8 Heavy NP Shift and Neglect (Sportiche 2016)

Sportiche (2016)[29] proposes to derive RC extraposition as an instance of Heavy NP Shift that moves a constituent that includes both the host NP and the RC to the right, as shown in (43).[30]

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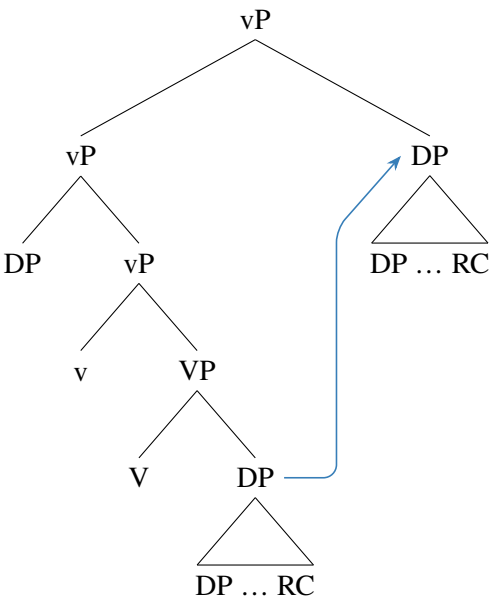
[29] See also Sportiche (2017, 2019).

[30] A very similar account is entertained by Wilder (1996) (his "R-account"), but is rejected for conceptual reasons, since rightward movement is not compatible with LCA, see Subsection 1.5.5.

(43)



According to Sportiche, the differences between HNPS and RC extraposition are created by the selective blindness principle called Neglect shown in (44). It applies to both syntax-phonology and syntax-semantics interfaces, distinguishing possible and impossible PFs and LFs.

(44) Neglect

Any material at any interface can be ignored up to crash.

Developing a theory of Neglect for movement chains, Sportiche adopts the Principle of Full Interpretation in (45) from Chomsky (1993). An important distinction that he draws between domains of (44) and (45) is that the former applies to individual links in a movement chain and the latter to entire chains, thus Neglect-ing one link in a movement chain at PF or LF does not violate FI as long as another link in the same movement chain is interpreted at the same interface.

(45) Principle of Full Interpretation (FI)

Interpret every syntactic object.

He further argues that an additional restriction is necessary at LF. It is shown in (46). It requires that arguments (but not adjuncts) remain local. As a result, within a movement chain, a copy of an argument that appears local to its predicate cannot be Neglect-ed at LF.

(46) Local Predicate Saturation

At LF, a predicate must be locally saturated by its arguments.

For the PF side of RC extraposition, Sportiche assumes without discussion that Neglect is able to successfully exclude the complementary parts of both copies of the large DP as in (47).

(47) Possible PFs

a. [DP ~~RC~~] …[~~DP~~ RC]

On the LF side, (46) rules out all LFs where the lower copy of the host DP is Neglect-ed and (45) excludes all LFs where all copies of the host DP or the RC are excluded. In addition, Sportiche claims that LFs that do not Neglect an extraposed RC also have to have a copy of the host DP next to it in order for the RC to remain an adjunct. (48) lists all remaining possible LFs.

(48) Possible LFs

a. [DP RC] …[DP RC]

b. [DP RC] …[~~DP~~ ~~RC~~]

c. [DP ~~RC~~] …[DP RC]

d. [DP RC] …[DP ~~RC~~]

According to this theory, the locality of RC extraposition is identical to that of HNPS. After Ross (1967), Sportiche assumes that HNPS is created by movement. The following triplet suggests that HNPS is impossible from a coordination island formed by two VPs.

(49) a. I saw a girl at a bus stop.

b. I saw ~~DP~~ at a bus stop [$_{DP}$ my daughter who was waiting for me].

c. *I [[$_{VP}$ saw at a bus stop ~~DP~~] and [$_{VP}$ smiled]] [$_{DP}$ my daughter who was waiting for me].

As argued in Ross (1967), Bresnan (1976), Stowell (1981), HNPS is sub-clausal and targets the edge of VP.[31] One piece of evidence supporting this view is that HNPS does not cross speaker-oriented and subject-oriented adverbials (Johnson 1985).

(50) a. *Eleanor bought ~~DP~~ apparently [$_{DP}$ brand new drapes for the whole house].

b. *Vern left ~~DP~~ angry [$_{DP}$ that store where service is so slow].

Moreover, similarly to QR, HNPS cannot target subjects of finite clauses (Johnson 1985):

(51) a. *~~DP~~ left home [$_{DP}$ my favorite grandfather from Independence]

b. *I said (that) ~~DP~~ left home [$_{DP}$ my favorite sister from Austin]

Combined with these assumptions about HNPS, Sportiche's theory predicts that RC extrapo-

[31] Overfelt (2015c) argues that HNPS can cross a clausal boundary in the presence of a parasitic gap. Unfortunately, parasitic gaps are also possible within islands, so this property cannot be used to mitigate the RRC effect in multiclausal island structures, while expecting it to observe an island effect.

sition from coordination islands triggers an island effect when crossing an island boundary. Non-finite multiclausal islands are predicted to be ungrammatical due to locality restrictions of HNPS or the island effect. Predictions about subject islands cannot rely on the island effect because, similar to QR in the previous subsection, HNPS targets the entire island structure (large DP). Instead, the predictions rely on the locality properties of HNPS from the positions occupied by the subject DP. Movement from Spec;IP is excluded due to locality properties of HNPS, and movement from Spec;VP is excluded due to antilocality (Abels 2003), assuming that HNPS targets a rightward specifier at the edge of VP. This excludes all positions for unergative and transitive subjects, so RC extraposition is not possible. Unaccusative and passive subjects, however, are predicted to allow RC extraposition because they have a copy in a VP-internal position that is far enough (one full phrase away, Bošković (2005)) from the edge of VP to allow HNPS without it causing an antilocality violation.

NPI licensing by *every* in (6) is predicted to be uninterrupted by RC extraposition since according to (48) there is at least one LF where the RC is c-commanded by its host DP. The predictions about *n't* in (7) are calculated in the same way: there is at least one LF where the RC is visible at LF in the base position that appears in the c-command domain of *n't*.

Condition C violations are calculated in the same way. In (48) there is no single LF where the RC is not c-commanded by its host, because of that RC extraposition cannot obviate a Condition C violation triggerd by a co-indexed possessive pronoun in (8). In contrast, there are several LFs in (48) where one of the copies of the RC is not c-commanded by a VP-internal indirect object pronoun in (9), so we expect RC extraposition to obviate the Condition C violation.

1.5.9 Summary

Table 1.1 shows considerable differences in the predictions of different theories of RC extraposition for three groups of island structures: subject islands (unergative, transitive, passive, and unaccusative), coordination islands (1st and 2nd conjuncts), and non-finite versions of adjunct, noun complement, and *wh*-islands, as well as for NPI licensing by *every* (6) and *n't* (7) and Condition C violations by a possessive pronoun (8) and an indirect object pronoun (9). "OK" and "*" are used to describe the expected acceptability of sentences that contain these structures. Percent signs "%" are used for predictions that depend on prosodic details that vary between languages and constructions (the quantity and quality of prosodic boundaries that separate the RC from its host). The main conclusion that we draw from this table is that testing all of these phenomena in a series of experiments should be enough to adjudicate between the major theories of RC extraposition. The next three chapters will do exactly this.

	Subject islands				Coordination	Non-finite islands			NPI licensing		Condition C	
	UE	TR	PV	UA	islands	n-comp	adjunct	wh	every	n't	poss.	IO
1.5.1 Syntactic movement	*	*	*	*	*	*	*	*	*	*	OK	OK
1.5.2 Stylistic movement	OK	OK	OK	OK	*	*	*	*	OK	OK	*	*
1.5.3 PF-movement	*	OK	OK	OK	OK	%	%	%	OK	OK	*	*
1.5.4 Right adjunction	*	OK	OK	OK	OK	*	*	*	*	*	OK	OK
1.5.5 Stranding RC (Kayne)	OK	OK	OK	OK	*	*	*	*	OK	OK	*	OK
Stranding NP (Wilder)	OK	OK	OK	OK	OK	*	*	*	OK	OK	*	*
1.5.6 Parallel construal	OK	OK	OK	OK	OK	*	*	*	OK	OK	OK	OK
1.5.7 QR + obligatory LM	*	*	OK	OK	*	*	*	*	OK	*	*	OK
QR + optional LM	*	*	OK	OK	*	*	*	*	OK	OK	*	OK
1.5.8 HNPS + Neglect	*	*	OK	OK	*	*	*	*	OK	OK	*	OK

Table 1.1: Predictions of different theories of RC extraposition about island sensitivity, NPI licensing, and Condition C

Chapter 2

Island effects in English

2.1 Overview

This chapter offers a series of fourteen large-scale formal acceptability judgment experiments testing RC extraposition from subject and coordination islands in English. The results of this study strongly suggest that RC extraposition in English is sensitive to islands. This conclusion is especially interesting because it challenges the current empirical consensus in the field, according to which RC extraposition is not sensitive to syntactic islands (see Ross 1967, Chomsky 1973, Baltin 1978, 1981, 1983, Huang 1982, Johnson 1985, Chomsky 1986, Kroch and Joshi 1987, Rochemont and Culicover 1987, 1990, Culicover and Rochemont 1990, 1997, Kayne 1994, Beermann et al. 1997, Chomsky 2008, Sheehan 2010, Webelhuth et al. 2013, Göbbel 2020, among many others). The findings in this chapter eliminate the so-called locality paradox of RC extraposition (Rochemont and Culicover 1987), which states that, compared to *wh*-movement, RC extraposition appears at the same time more and less restrictive due to its subclausal locality (RRC) and the insensitivity to syntactic islands, respectively. We argue that RC extraposition in English is not less restrictive than *wh*-movement, since both cannot cross an island boundary.

The chapter is organized as follows: Section 2.2 discusses the evidence that led to the

general consensus mentioned above and the ways in which it shapes the logic of the present study. Section 2.3 provides the necessary details about experimental design, material construction, recruitment, survey organization and presentation, and outlier detection and statistical analysis. Section 2.4 summarizes the results. Section 2.5 concludes the chapter with a brief discussion of the theoretical implications of the results and future research directions.

2.2 Background

2.2.1 What island structures were used to test RC extraposition in English?

The literature discusses RC extraposition from two kinds of island structures in English: coordination islands and nominal subject islands. Historically, the first attempt to extrapose an RC across an island boundary probably belongs to Ross (1967). According to him, RC extraposition is impossible from either conjunct in a coordination island in (52).

(52) a. *[[$_{DP}$ A friend of mine ~~RC~~] and [$_{DP}$ a girl who was from his home town]] met in Vienna [$_{RC}$ who was working in Europe].

b. *[[$_{DP}$ A friend of mine who was working in Europe] and [$_{DP}$ a girl ~~RC~~]] met in Vienna [$_{RC}$ who was from his home town].

This observation has not become prominent in the literature. Arguably, the reason behind it is that (52) includes a combination of two island violations, since the coordinate structure appears in the subject position, yet most syntactic theories are not equipped to make predictions about stacked island structures (with the notable exception of Chomsky 1986). To the best of my knowledge, no other attempts to extrapose an RC from a coordination island are reported in the

literature, whereas nominal subject islands are discussed at length.

Multiple studies report that RC extraposition from subjects of unaccusatives is acceptable. These claims can be traced back to minimal pairs in (53) and (54) that originated in Ross (1967) and Baltin (1978, 1981) respectively.

(53) a. A gun [which I had cleaned] went off.

b. A gun ~~RC~~ went off [$_{RC}$ which I had cleaned].

(54) a. A man [who came from Boston] appeared.

b. A man ~~RC~~ appeared [$_{RC}$ who came from Boston].

There are two issues with these examples. First, extraction from subjects is known to exhibit a range of acceptability results depending on the type of predicate, with unaccusatives being the most transparent (Johnson 1985, Hiramatsu 1999, Chomsky 2008, Polinsky et al. 2013). Second, RCs headed by *wh*-complementizers are ambiguous between restrictive and non-restrictive (appositive) readings, in contrast to RCs headed by *that* which are unambiguously restrictive (Stockwell et al. 1973). Therefore, it is uncertain whether the lack of contrast in (53) and (54) is even part of the grammar of restrictive RCs in English.

Several studies also discuss transitive and passive subjects that are more opaque for extraction and, therefore, provide better testing grounds than unaccusatives. Rochemont and Culicover (1990) claim that RC extraposition from a transitive subject in (55) is acceptable. Chomsky (1973, 1986), while discussing RC extraposition from deeply embedded NPs, provides examples (56) and (57) that include RC extraposition from transitive and passive subjects, respectively.

(55) [A man ~~RC~~] just bought a restaurant [$_{RC}$ who everyone says is an entrepreneur].

(56) [One of the men ~~RC~~] will meet you at the station [$_{RC}$ who is a friend of mine].

(57) [Many books with stories ~~RC~~] were sold [$_{RC}$ that I wanted to read].

The use of a [+animate] *wh*-complementizer in (55) and (56) prevents the misattribution of the RC to the inanimate object, but it invites the same ambiguity problem with restrictive and non-restrictive readings of the RC as in (53) and (54). Another problem for (56) and also for (57) is that both sentences are ambiguous during parsing. The transitive clause in (56) contains a local ambiguity at "who". Upon reaching "who" in (56), a listener identifies two possible hosts for the RC, "one" and "men". The ambiguity is resolved at the next word, "is", via number agreement. The passive sentence in (57) is globally ambiguous, since the RC can be linked back to either "books" or "stories" (see Strunk and Snider 2013, Hemforth et al. 2015). The fact that these sentences are ambiguous is an issue because, as shown in Fanselow and Frisch (2006), the presence of a local ambiguity can increase the acceptability of a sentence. It is plausible that a global ambiguity in (57) has a comparable effect.

Rochemont and Culicover (1990) discuss RC extraposition from unergative subjects and claim that it "sounds distinctly odd" compared to unaccusatives showing the pair in (58).[32] The familiar ambiguity problem arises in (58), since both RCs are headed by a *wh*-complementizer.

(58) a. *[A man ~~RC~~] screamed [$_{RC}$ who wasn't wearing any clothes]. *unergative*

b. [A man ~~RC~~] arrived [$_{RC}$ who wasn't wearing any clothes]. *unaccusative*

[32] In the original paper the * next to the unergative subject island is omitted, but described in the text.

According to Rochemont and Culicover (1990), RC extraposition is possible from islands, including subject islands, but two other factors critically affect its acceptability: the predicate restriction and the definiteness effect. Specifically, the predicate restriction is responsible for the contrast in (58). It states that RC extraposition is only possible from a stressed (i.e. prosodically prominent) constituent and is blocked when stress is found elsewhere in the sentence.[33] After Guéron (1980), Rochemont and Culicover (1990) assume that unaccusative verbs are generally unstressed, thus putting the stress on the subject, allowing RC extraposition. In contrast, unergative verbs are inherently stressed (in out-of-blue contexts), so their subjects cannot bear stress blocking RC extraposition. Crucially, the stress pattern in unergative sentences can be changed using a preceding context that repeats the same predicate. Thus, shifting the stress from the verb to the subject is predicted to unblock RC extraposition from unergative subjects. This is shown in (59) (the judgment is theirs).

(59) <*Suddenly there was the sound of lions growling. Several women screamed.*>

Then [a man ~~RC~~] screamed [$_{RC}$ who was standing at the very edge of the crowd].

Importantly, the predicate restriction does not block RC extraposition from subjects of transitive and passive verbs, since both types of subjects can be stressed. Rochemont and Culicover (1990) show an example in (55) where RC extraposition from a transitive subject is possible (according to them). Similarly, passive subjects can also appear stressed, suggesting that RC extraposition

[33] Note that Rochemont and Culicover (1990) choose the term "focus" instead of "stress" when formulating their predicate restriction. However, as discussed in Culicover and Rochemont (1983, p. 152), their use of the term "focus" in their theory generally corresponds to "stress" elsewhere in the literature.

from them should be possible (see Francis 2010, p. 63 for a similar conclusion).

Another factor that, according to Rochemont and Culicover (1990), affects RC extraposition from subject islands is the definiteness effect. Based on the results of Ziv and Cole (1974) and Guéron (1980), Culicover and Rochemont (1990) and Rochemont and Culicover (1990) propose to attribute the unacceptability of RC extraposition from some subjects to the choice of the definite determiner for the host DP. This is shown in (60) (the judgments are theirs).[34]

(60) a. A man [who is carrying a large package] is here.

b. The man [who is carrying a large package] is here.

c. A man ~~RC~~ is here [who is carrying a large package].

d. *The man ~~RC~~ is here [who is carrying a large package].

The paradigm in (60) does not include the contrast between RC extraposition from the subject island and from a non-island position (e.g. the direct object). This way, if RC extraposition from an indefinite subject shows a reduced island effect that creates a smaller decrease in acceptability (which should be marked with a ? or perhaps a ??), it is completely lost in (60).

Furthermore, the sharp contrast between (60c) and (60d) is surprising given that the effect size of the definite island during leftward movement is very modest and unlikely to result in a full *; see Shen and Lim (2021) for *wh*-dependencies and Vincent (2021) for rc-dependencies.

Walker (2013) reports an acceptability judgment experiment that attempts to separate the definiteness effect from the subject island effect. Her experimental conditions are shown in (61). She reports no difference in acceptability between RC extraposition from the subject compared

[34] Ziv and Cole (1974), who discovered the effect, put a ?? instead of an * in their equivalent of (60d) shown in (3b).

to RC extraposition from the grammatical control within both definite and indefinite pairs.

(61) a. A girl ~~RC~~ arrived [who was hugging a doll].

b. The girl ~~RC~~ arrived [who was hugging a doll].

c. I saw a girl ~~RC~~ arrive [who was hugging a doll].

d. I saw the girl ~~RC~~ arrive [who was hugging a doll].

This study has two serious limitations. First, it only tests subjects of three unaccusative verbs (*appear, arrive, enter*), which are highly transparent compared to other types of subjects (Hiramatsu 1999, Chomsky 2008, Polinsky et al. 2013). Second, the grammatical control shown in (61) is RC extraposition from the *subject* of a non-finite verb in a small clause. The problem is that for some theories of subject islands (e.g. Lohndal 2011) non-finite subjects are expected to be on par with finite subjects of the same (transitive) predicates modulo the effect of finiteness; see Michel and Goodall (2013) who argue that at least some subject islands are sensitive to finiteness. Because of that, if the superadditive pattern indicative of an island effect showed up, it would be present in both target items and controls and would end up being subtracted out.

In summary, coordination and nominal subject island structures were used to test the island sensitivity of RC extraposition in English. There are also several grammatical and processing factors that complicate the picture. In response to this, the present study tests RC extraposition from four types of nominal subject islands (unergative, unaccusative, transitive, and passive) and from coordination islands. To control for possible confounding factors, each subject island is tested three times using indefinite host NPs with and without a preceding context to control for the predicate restriction and definite host NPs to control for the definiteness effect.

All RCs in all experimental items in all experiments are headed by *that* to exclude the ambiguity between a restrictive and a non-restrictive reading. All experimental conditions are also controlled for local and global ambiguities to avoid an associated acceptability boost.

2.2.2 Why other island structures were not used to test RC extraposition in English?

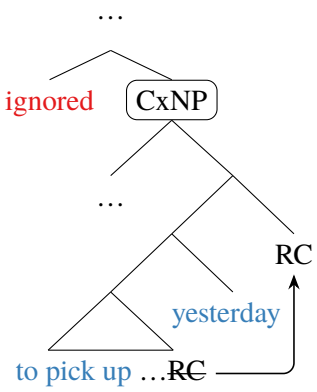
Given the amount of interest that RC extraposition in English has attracted over the years, it is surprising that many standard island structures (e.g. *wh*-island, noun complement island, and adjunct island) have not been tested. There are at least two possible reasons for this.

One complication for studies of RC extraposition (and other rightward dislocation phenomena) in languages like English comes from the Late Closure (LC) sentence processing strategy first identified by Lyn Frazier in Frazier (1978), Frazier and Fodor (1978). According to LC, the parser initially attempts to connect the new incoming lexical material to the material that has been parsed most recently. To see how this affects RC extraposition, consider the sentence in (62). It includes a noun complement island *"the request to pick up …"*. RC is extraposed across the temporal adverb *yesterday*. Thus, this sentence is ambiguous between low and high RC attachment. Note that only the latter leads to an island violation.

(62) Casey ignored the request to pick up [$_{NP}$ a book] yesterday [$_{RC}$ that she bought].

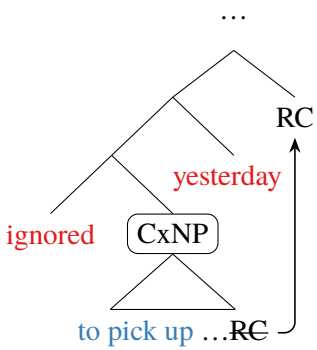
a. Low attachment of RC

RC is inside the island



b. High attachment of RC

RC crosses the island boundary



Due to LC, native speakers of English tend to first associate the adverb *yesterday* with the predicate that has been parsed most recently (*to pick up*) and not with the matrix predicate (*ignored*). This is shown in (63). Under Late Closure, the extraposed RC stays inside the Complex NP and does not cross the island boundary, while hopping across *yesterday*.

(63) …ignored the request to pick up …yesterday RC *Late Closure*

Unfortunately, there is no reliable method to suppress the LC strategy in native English speakers. The same LC-driven issue arises for all islands that linearly follow the matrix predicate and contain a verb. These include at least noun complement islands (62) and *wh*-islands (64).

(64) Emma wondered whether to bring the book ~~RC~~ yesterday [$_{RC}$ that she bought in Peru].

The issue does not arise with the subject islands, since the LC strategy leads the RC to attach to VP or IP, which are outside the subject island; see (65).

(65) [$_{DP}$ A man ~~RC~~] came into the room [$_{RC}$ that Mary recognized] as quickly as he could.

Another complication is that RC extraposition is subject to RRC that bans it from crossing a finite clause boundary. Thus, RRC constitutes a potential confounding factor for extraposition experiments using islands that contain a clause boundary. Consider the islands in (66) that all prototypically include a finite clause boundary. If RC extraposition from these island structures in (67) ends up being ungrammatical, it can be either because this structure is an island (and RC extraposition is similar to *wh*-movement in (66)) or because of an RRC violation. All judgments in (66) and (67) are suppressed.

(66) Islands with a finite clause boundary (wh-movement)

a. What did you wonder [$_{CP}$ whether Emma **bought** ~~what~~]? *wh-island*

b. What did you make the claim [$_{CP}$ that Emma **bought** ~~what~~]? *noun complement island*

c. What did you worry [$_{CP}$ because Emma **bought** ~~what~~]? *adjunct island*

(67) Islands with a finite clause boundary (RC extraposition)

a. I still wonder [$_{CP}$ whether Emma **brought** the dessert ~~RC~~] *wh-island*
sometimes [$_{RC}$ that Adam devoured]?

b. I still lament the fact [$_{CP}$ that Mary **got** the job ~~RC~~] *noun complement island*
sometimes [$_{RC}$ that Terry was applying to].

c. [$_{CP}$ Because Tony **knew** the person ~~RC~~] he waved [$_{RC}$ that *adjunct island*
Lin invited].

To remove this confound, one would need to construct non-finite versions of the *wh*-island, noun complement island, and adjunct island in (67). The problem with this solution is

that these islands are also known to be sensitive to finiteness. In English, *wh*-movement from a non-finite *wh*-island is reported to be more acceptable than from its finite counterpart (Huang 1982, Chomsky 1986, Lasnik and Saito 1990). An example is shown in (68).

(68) a. *Which man are you wondering [$_{CP}$ whether she should call ~~which man~~]?

b. ?Which man are you wondering [$_{CP}$ whether to call ~~which man~~]?

The adjunct and noun complement islands are also claimed to be sensitive to finiteness (see Szabolcsi (2006), Michel and Goodall (2013), Mueller (2019) for the adjunct island and Michel and Goodall (2013) for the noun complement island), but the contrasts may appear more subtle. See the following examples:

(69) a. *I wonder who Tony went home [$_{CP}$ after he kissed ~~who~~]?

b. ??I wonder who Tony went home [$_{CP}$ after kissing ~~who~~]?

(70) a. *What do many people believe the idea [$_{CP}$ that the squirrels buried ~~what~~ under the bushes]?

b. ??What do many people believe the idea [$_{CP}$ of the squirrels burying ~~what~~ under the bushes]?

The sensitivity of islands to finiteness creates a problem with the interpretation of results. Negative results remain unaffected: if RC extraposition is ungrammatical, it can only be caused by an island. But positive results are now compatible with two alternative explanations: if RC extraposition from an island is acceptable, it may be either because RC extraposition can escape

the island (and this fact must be incorporated into the theory of RC extraposition) or because the island is sensitive to finiteness (and this fact falls squarely beyond the scope of this project).

This chapter focuses on two groups of island structures in English that are free from both of these problems, the nominal subject and coordination islands. Chapter 3 discusses Russian, which does not adhere to LC and thus allows us to test a wider selection of island structures.

2.2.3 What does a direct comparison with PP and CP tell us about RC extraposition?

The extraposition literature contains the following potentially complicated argument supporting the island insensitivity of RC extraposition: compared to PP and CP extraposition, RC extraposition appears more acceptable while crossing an island boundary and, therefore, it cannot be a "true" island violation; see Guéron (1980, fn. 1) and Johnson (1985, pp. 107–108). An example of such a comparison adopted from Johnson (1985) is shown in (71) (the judgments are his).[35]

(71) a. *A man ~~PP~~ ate the oranges [$_{PP}$ with green eyes]. *PP extraposition*

b. *A proof ~~CP~~ implies that Gödel was lazy [$_{CP}$ that Gödel's Incompleteness Theorem is incomplete]. *CP extraposition*

c. ??[A man ~~RC~~] knows Gödel [$_{RC}$ who understands the Incompleteness Theorem]. *RC extraposition*

This argument is complicated for three reasons. First, a proper comparison of the effect sizes of island violations can only be based on differences between target sentences and gram-

[35] The examples in (71) correspond to (57b), (67d), and (71a) in Johnson (1985). Similar gradability is also found with leftward movement; Lasnik and Saito (1992) discuss the differences between extraction of DPs and PPs.

matical controls that are not shown in (71).[36] Second, even if we assume that the effect sizes of different types of extraposition are indeed different, the size of an island violation created by RC extraposition does not make it less "true", since different island effects do have different effect sizes (see Table 2 in Sprouse and Villata 2021), including a possibility that a genuine island violation can be rated above the midpoint of the scale, thus creating a subliminal island effect (Almeida 2014, Kush et al. 2018, 2019, Keshev and Meltzer-Asscher 2019, Pañeda et al. 2020). Third, assuming that RC extraposition from a transitive subject island in (71) does not create an island violation, a comparison of different types of dependencies (e.g. different types of extraposition) should only be made using a wide range of syntactic island structures, since different types of movement can be sensitive to different islands, even in the same language (see Engdahl 1980, Rizzi 1982, Müller 1995, Sprouse et al. 2016, Kush et al. 2019, among others).

It follows that a comprehensive answer to the question of the island sensitivity of RC extraposition, as a precursor to a comparison of different types of extraposition, should include a range of different island structures. It should be based on a comparison of island and non-island structures and use their differences to assess the effect size of each island effect for each combination of a dependency and an island structure prior to any generalizations or comparisons.

[36] More carefully, it should include a comparison of DD (difference-in-differences) scores (Maxwell et al. 2017) that quantify the interaction terms indicative of island effects by separating them from the structure and dependency-forming costs within a standard factorial experimental design for island effects (Sprouse 2007, Sprouse et al. 2012).

2.3 Methods

The 14 experiments reported here test two large groups of island structures: subject islands and coordination islands. The first group consists of 4 different types of subject island structures: unergative, transitive, passive, and unaccusative. Each subject island type is tested three times using indefinite host DPs with and without context and definite host DPs to control for the predicate restriction and the definiteness effect. The second group includes two types of coordination islands: the first conjunct in a VP-coordination and the second conjunct in a DP-coordination.[37]

2.3.1 Experimental design

All experiments use the standard version of a full 2×2 factorial design for island effects (Sprouse 2007). The design includes two factors, STRUCTURE and DEPENDENCY, each with two levels. STRUCTURE manipulates the structure of a sentence between an island and a non-island. DEPENDENCY manipulates the in-situ vs. ex-situ position of the RC. Crossing these factors creates four experimental conditions, as shown in the abstract template in (72).

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[37] Two mirror image types of coordination islands are excluded because of their respective problems. Testing the second conjunct in a VP-coordination is complicated because the conjunct itself already includes a landing site for an extraposed RC. The first conjunct in a DP-coordination has a potential linear distance-based confound that requires a more complicated design.

(72)	a.	… [$_{\text{Non-island}}$ … RC]	non-island	in-situ
	b.	… [$_{\text{Non-island}}$ … RC] …… RC	non-island	ex-situ
	c.	… [$_{\text{Island}}$ … RC]	island	in-situ
	d.	… [$_{\text{Island}}$ … RC] …… RC	island	ex-situ

The main benefit of the factorial design is that it isolates the island effect by subtracting the main effects of the dependency-forming and the structure-forming costs. In this design, the island effect shows up as a superadditive interaction term of two factors. The mock plots in Figure 2.1 show two possible outcomes predicted by this design. Both plots have the main effects of structure and dependency showing up, respectively, as "symmetry-preserving" horizontal and vertical shifts between pairs of conditions. The left panel shows no island effect, i.e. there is no interaction between two factors, and the lines on the plot appear parallel. The right panel shows a large interaction in addition to two main effects, i.e. the dependency with the tail inside the island structure appears to be significantly less acceptable than the sum of the costs of the two main effects, thus breaking the symmetry. Visually, it creates a familiar "alligator mouth" shape indicative of an island effect.

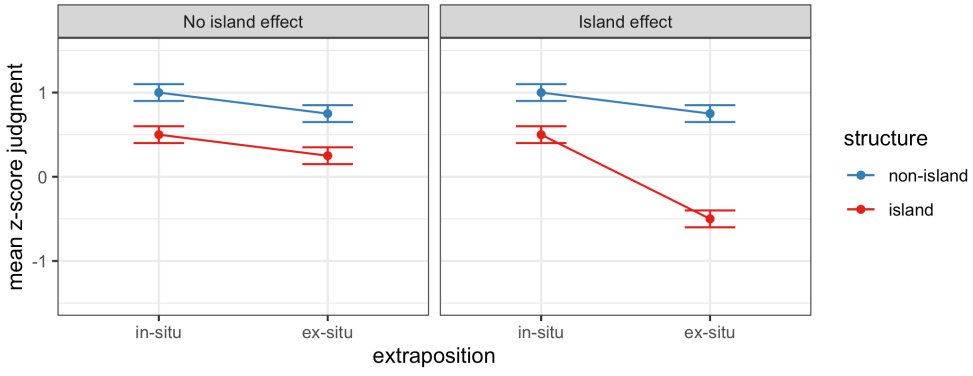

Fig. 2.1: Simple island effect (mock plots)

2.3.2 Materials

This section discusses various aspects of the material creation process for all island experiments. Each experiment includes 8 lexically matched sets of experimental items. The complete lists of items for each experiment can be found in Appendix A.

2.3.2.1 Materials for Experiments 1–12 (subject islands)

Experiments 1–3 test RC extraposition from unergative subjects. In all three experiments, the direct object of a transitive verb is used as a grammatical control. Non-island conditions contain a temporal adverb, while island conditions employ a manner adverb to mark the right edge of the matrix clause and to lengthen the distance between the gap and the extraposed RC in the ex-situ condition. End-point temporal adverbs used in transitive clauses are incompatible with the unbounded interpretation of unergatives, so instead manner adverbs are used.[38] In the non-island in-situ condition, the temporal adverb is placed at the left edge to ensure that it is linked to the matrix predicate, and thus the sentence has the same interpretation as its ex-situ counterpart. Due to LC, placing the temporal adverb at the right edge in the in-situ condition would change the interpretation and potentially affect the acceptability.

In the context experiments, the preceding context always contains two sentences. The first sentence introduces the scene, while the second sentence follows the same structure as the target sentence and repeats the predicate but not the host DP. This way, the focus in the target

[38] See Jackendoff (1972), McConnell-Ginet (1982), Ernst (1987, 2000, 2002, 2004), Moore (1989), Cinque (1999), Piñón (2007) for a discussion of the height and interpretation effects of pre- and post-verbal manner adverbs. Overall, the literature suggests that manner adverbs are adjoined to VP, and thus there is at least one position available to the extraposed RC to the right of a manner adverb at the edge of VP.

sentence is on the host DP, which is predicted to lift the predicate restriction. The adverbs "also" and "then" are added to the target sentences to ensure continuity with the preceding context.

(73) Experiment 1: Unergative subject island (indefinite)

a.	Yesterday I reassured [$_{DP}$ a colleague [$_{RC}$ that sensed my apprehension]].	non-island	in-situ
b.	I reassured [$_{DP}$ a colleague ~~RC~~] yesterday [$_{RC}$ that sensed my apprehension].	non-island	ex-situ
c.	[$_{DP}$ A colleague [that sensed my apprehension]] winked conspiratorially.	island	in-situ
d.	[$_{DP}$ A colleague ~~RC~~] winked conspiratorially [$_{RC}$ that sensed my apprehension].	island	ex-situ

(74) Experiment 2: Unergative subject island (definite)

a.	Yesterday I reassured [$_{DP}$ the colleague [$_{RC}$ that sensed my apprehension]].	non-island	in-situ
b.	I reassured [$_{DP}$ the colleague ~~RC~~] yesterday [$_{RC}$ that sensed my apprehension].	non-island	ex-situ
c.	[$_{DP}$ The colleague [that sensed my apprehension]] winked conspiratorially.	island	in-situ
d.	[$_{DP}$ The colleague ~~RC~~] winked conspiratorially [$_{RC}$ that sensed my apprehension].	island	ex-situ

(75) Experiment 3: Unergative subject island (context)

a.	People in my office have been checking up on me recently. Yesterday I reassured my boss, who was worried about my workload. Yesterday I also reassured a colleague that knew about my anxiety.	non-island	in-situ
b.	People in my office have been checking up on me recently. Yesterday I reassured my boss, who was worried about my workload. I also reassured a colleague yesterday that knew about my anxiety.	non-island	ex-situ
c.	During my presentation, I was nervous, and several people tried to show their support non-verbally. First my boss winked. Then a colleague that knew about my anxiety winked.	island	in-situ
d.	During my presentation, I was nervous, and several people tried to show their support non-verbally. First my boss winked. Then a colleague winked that knew about my anxiety.	island	ex-situ

Experiments 4–6 test RC extraposition from transitive subjects. RC extraposition from a transitive object is used as a NON-ISLAND grammatical control. Both island and non-island pairs of conditions feature the same transitive verbs that take two animate arguments, thus allowing swapping of subject and direct object while keeping the experimental items lexically identical. A proper name is used for the second argument to avoid a potential ambiguity caused by the misattribution of the extraposed RC. A temporal adverb signals the right edge of VP in both ex-situ conditions. In the context experiment, an adverb "also" is added to the target sentence and a pronoun is used instead of a proper name to ensure the continuity with the preceding context.

(76) Experiment 4: Transitive subject island (indefinite)

a.	Today Tim visited [$_{DP}$ a lawyer [$_{RC}$ that represents the social media company]].	non-island	in-situ
b.	Tim visited [$_{DP}$ a lawyer ~~RC~~] today [$_{RC}$ that represents the social media company].	non-island	ex-situ
c.	Today [$_{DP}$ a lawyer [$_{RC}$ that represents the social media company]] visited Tim.	island	in-situ
d.	[$_{DP}$ A lawyer ~~RC~~] visited Tim today [$_{RC}$ that represents the social media company].	island	ex-situ

(77) Experiment 5: Transitive subject island (definite)

a.	Today Tim visited [$_{DP}$ the lawyer [$_{RC}$ that represents the social media company]].	non-island	in-situ
b.	Tim visited [$_{DP}$ the lawyer ~~RC~~] today [$_{RC}$ that represents the social media company]	non-island	ex-situ
c.	Today [$_{DP}$ the lawyer [$_{RC}$ that represents the social media company]] visited Tim.	island	in-situ
d.	[$_{DP}$ The lawyer ~~RC~~] visited Tim today [$_{RC}$ that represents the social media company].	island	ex-situ

(78) Experiment 6: Transitive subject island (context)

a.	Tim was a victim of identity theft through a social media platform. Today Tim visited a detective in charge of the investigation. He also visited a lawyer that represents the social media company.	non-island	in-situ
b.	Tim was a victim of identity theft through a social media platform. Today Tim visited a detective in charge of the investigation. He also visited a lawyer today that represents the social media company.	non-island	ex-situ
c.	Tim was a victim of identity theft through a social media platform. Today a detective visited Tim to ask a few follow-up questions. A lawyer that represents the social media company also visited him.	island	in-situ
d.	Tim was a victim of identity theft through a social media platform. Today a detective visited Tim to ask a few follow-up questions. A lawyer also visited him today that represents the social media company.	island	ex-situ

Experiments 7–9 test RC extraposition from passive subjects. RC extraposition from a direct object is used as a grammatical control. To keep all items as lexically close as possible, the active voice counterparts of the target items are used as controls. A name of a celebrity is used as the second argument across all experimental items to avoid misattribution of the extraposed RC and to minimize the gap between active and passive sentences. In the context experiment, the adverbs "also" and "then" are added to the structure and the proper name is changed to a pronoun to ensure the continuity with the preceding context.

(79) Experiment 7: Passive subject island (indefinite)

a.	Today John Stewart visited [$_{DP}$ an activist [$_{RC}$ that helped the 9/11 first responders]].	non-island	in-situ
b.	John Stewart visited [$_{DP}$ an activist ~~RC~~] today [$_{RC}$ that helped the 9/11 first responders].	non-island	ex-situ
c.	Today [$_{DP}$ an activist [$_{RC}$ that helped the 9/11 first responders]] was visited by John Stewart.	island	in-situ
d.	[$_{DP}$ An activist ~~RC~~] was visited by John Stewart today [$_{RC}$ that helped the 9/11 first responders].	island	ex-situ

(80) Experiment 8: Passive subject island (definite)

a.	Today John Stewart visited [$_{DP}$ the activist [$_{RC}$ that helped the 9/11 first responders]].	non-island	in-situ
b.	John Stewart visited [$_{DP}$ the activist ~~RC~~] today [$_{RC}$ that helped the 9/11 first responders].	non-island	ex-situ
c.	Today [$_{DP}$ the activist [$_{RC}$ that helped the 9/11 first responders]] was visited by John Stewart.	island	in-situ
d.	[$_{DP}$ The activist ~~RC~~] was visited by John Stewart today [$_{RC}$ that helped the 9/11 first responders].	island	ex-situ

(81) Experiment 9: Passive subject island (context)

a.	The Netflix show hosted by David Letterman usually has several guests. Yesterday David Letterman interviewed a famous actor who had just won an Oscar for his recent performance. Yesterday he also interviewed a comedian that created a hit television show.	non-island	in-situ
b.	The Netflix show hosted by David Letterman usually has several guests. Yesterday David Letterman interviewed a famous actor who had just won an Oscar for his recent performance. He also interviewed a comedian yesterday that created a hit television show.	non-island	ex-situ
c.	Yesterday the Netflix show hosted by David Letterman had several guests. First, a famous actor who had just won an Oscar for his recent performance was interviewed by David Letterman. Then a comedian that created a hit television show was also interviewed by him.	island	in-situ
d.	Yesterday the Netflix show hosted by David Letterman had several guests. First, a famous actor who had just won an Oscar for his recent performance was interviewed by David Letterman. Then a comedian was also interviewed by him that created a hit television show.	island	ex-situ

Experiments 10–12 test RC extraposition from unaccusative subjects. As in all previous experiments, RC extraposition from a direct object of a transitive verb is used as a NON-ISLAND grammatical control. A pronoun appears as the second (subject) argument in non-island conditions to prevent an ambiguity caused by the misattribution of the RC. The right edge is marked with a temporal adverb in ex-situ conditions. In the context experiment, the adverbs "also" and "then" are used to maintain coherence with the previous context.

(82) Experiment 10: Unaccusative subject island (indefinite)

a.	Yesterday I trimmed [$_{DP}$ a tree [$_{RC}$ that straddles the town border]].	non-island	in-situ
b.	I trimmed [$_{DP}$ a tree ~~RC~~] yesterday [$_{RC}$ that straddles the town border].	non-island	ex-situ
c.	Yesterday [$_{DP}$ a tree [$_{RC}$ that straddles the town border]] fell.	island	in-situ
d.	[$_{DP}$ A tree ~~RC~~] fell yesterday [$_{RC}$ that straddles the town border].	island	ex-situ

(83) Experiment 11: Unaccusative subject island (definite)

a.	Yesterday I trimmed [$_{DP}$ the tree [$_{RC}$ that straddles the town border]].	non-island	in-situ
b.	I trimmed [$_{DP}$ the tree ~~RC~~] yesterday [$_{RC}$ that straddles the town border].	non-island	ex-situ
c.	Yesterday [$_{DP}$ the tree [$_{RC}$ that straddles the town border]] fell.	island	in-situ
d.	[$_{DP}$ The tree] fell yesterday [$_{RC}$ that straddles the town border].	island	ex-situ

(84) Experiment 12: Unaccusative subject island (context)

a.	As an employee of a tree service company, I have years of experience in pruning and removing trees. Yesterday I trimmed a whole row of trees along a busy street. Yesterday I also trimmed a tree that straddles the town border.	non-island	in-situ
b.	As an employee of a tree service company, I have years of experience in pruning and removing trees. Yesterday I trimmed a whole row of trees along a busy street. I also trimmed a tree yesterday that straddles the town border.	non-island	ex-situ
c.	It was a tumultuous day in our small town yesterday. First, a billboard on the side of the road fell because of a heavy gust of wind. Then a tree that straddles the town border also fell.	island	in-situ
d.	It was a tumultuous day in our small town yesterday. First, a billboard on the side of the road fell because of a heavy gust of wind. Then a tree also fell that straddles the town border.	island	ex-situ

2.3.2.2 Materials for Experiments 13–14 (coordination islands)

Experiment 13 tests RC extraposition from the first conjunct of a VP-coordination island. The extraction from the same VP, but without the second conjunct, is used as a grammatical control. The right edge of ex-situ conditions is marked with the temporal adverb. Proper names are used as all other arguments to avoid the RC misattribution ambiguity. To ensure that the extraposed RC has a landing site outside of the first conjunct, the VP-coordination is embedded under a restructuring verb. After Wurmbrand (2001), we assume that the restructuring verbs are able to take VP complements, and therefore there is at least one structure that contains a coordination of two VPs, in addition to those including coordinations of two IPs and two CPs. RRC does not limit RC extraposition here, since VPs are non-finite. In this way, an object-linked extraposed RC is expected to have a landing site at the edge of the VP outside of the coordination island.

(85) Experiment 13: VP-coordination island (first conjunct)

a.	Yesterday George wanted [$_{VP}$ to thank [$_{DP}$ a baseball coach [$_{RC}$ that works with underprivileged kids]]].	non-island	in-situ
b.	George wanted [$_{VP}$ to thank [$_{DP}$ a baseball coach ~~RC~~]] yesterday [$_{RC}$ that works with underprivileged kids].	non-island	ex-situ
c.	Yesterday George wanted [$_{VP}$ [$_{VP}$ to thank [$_{DP}$ a baseball coach [$_{RC}$ that works with underprivileged kids]]] and [$_{VP}$ to chat with Mia]].	island	in-situ
d.	George wanted [$_{VP}$ to thank [$_{DP}$ a baseball coach ~~RC~~] and [$_{VP}$ to chat with Mia] yesterday [$_{RC}$ that works with underprivileged kids].	island	ex-situ

Experiment 14 tests RC extraposition from the second conjunct of a DP-coordination island that appears in the direct object position. Similarly to the previous experiment, the same sentence without the other conjunct is used as a non-island grammatical control. A proper name is put as the matrix subject in order to avoid misattribution of the extraposed RC. To exclude parses with coordinations of two VPs or of two IPs, both of which contain a landing site for the extraposed RC inside of a conjunct, the double coordinator "both … and" is used to suggest simultaneity and invite a single event interpretation which is indicative of a structure with a single VP and two conjoined DPs.

(86) Experiment 14: DP-coordination island (second conjunct)

a.	Last Monday Jennifer met [the medical team [that saved her]].	non-island	in-situ
b.	Jennifer met [the medical team ~~RC~~] last Monday [that saved her].	non-island	ex-situ
c.	Last Monday Tim met both [[Jennifer] and [the medical team [that saved her]]].	island	in-situ
d.	Tim met [both [Jennifer] and [the medical team ~~RC~~]] last Monday [that saved her].	island	ex-situ

2.3.2.3 The linear distance effect

One potential confound when testing RC extraposition with this experimental design is the linear distance of extraposition dependency.[39] A longer extraposition dependency in the island condition can receive a lower rating than a shorter extraposition dependency in the non-island condition, thus inflating the interaction term. This effect has not been reported for English, but Konieczny (2000) shows that in German the acceptability of RC extraposition from the direct object is sensitive to the linear distance (in words) between the host DP and the RC within the same clause. Assuming for the moment that English is like German, we can estimate the size of the linear distance effect for each experiment and check that the interaction term is larger.[40,41]

In all experiments reported here, the length of the extraposition dependency is kept constant across all items from the same condition in the same experiment. The experiments include 1-word, 2-word, and 5-word increases from the control to the target condition. We assume that a 1-word increase is negligible. The linear distance between the host DP and the RC increases from the control to the target item by 2 words in transitive subject island experiments and by 5 words in passive and VP-coordination experiments. The highest estimates are 0.25 z-units for an increase of 2 words and 0.29 z-units for an increase of 5 words.

[39] This effect is commonly overlooked in experiments testing leftward movement, because there it is often subtracting from the interaction term, since the target condition has a linearly shorter dependency than the control.

[40] The estimate is based on the highest predicted values of a simple linear model fit with z-scores calculated as $10^x/20$ from values in Table IV from Konieczny (2000).

[41] Incorporating the estimate of this effect in the statistical model appears premature given its virtual status in English.

2.3.2.4 Anchor items, practice items, fillers, and catch trial items

All island experiments, except for the context experiments, use the same selection of 3 anchor items, 9 practice items, and 16 fillers. The items and their expected ratings on the 1-7 scale are adopted from Sprouse et al. (2013). The anchor items appear in the instructions together with their ratings. Participants do not rate them. Their main role is to illustrate the endpoints and the middle of the scale. The practice items are used to familiarize participants with the task and to encourage them to use the entire scale. The practice items are selected to include all 7 points of the scale, with the endpoints appearing twice. The main purpose of fillers is to distract participants from the experimental manipulation and also to further encourage the use of the entire scale. In addition, answers to filler items are used during the outlier detection step of the analysis to identify and remove uncooperative participants (see below).

The context experiments include 3 anchor items, 9 practice items, 14 fillers, and 4 catch trial items. We used the anchor items, practice items, and a subset of the fillers from the island experiments and constructed 2-sentence contexts for each of those, similar to the target items. The catch trial items are shown in (87).[42] Their main purpose is to identify and exclude participants who ignore the context preceding the underlined sentence. Each target sentence in those items includes one of the two presupposition triggers, *either* or *too*. The former is only licensed if the preceding context is negated, while the latter is only allowed after an affirmative preceding sentence. This way, the participants who pay attention to the context, are expected to give lower ratings to the sentences with unlicensed presupposition triggers.

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[42] I would like to thank Nick Huang (p.c.) for suggesting the use of presupposition triggers *either/or* in the catch trial items and for sharing the relevant items from his ongoing project.

(87) Catch trial items

a.	Mrs. Wilson hired a carpenter and his apprentice to repair her old table. The carpenter could not repair the table. The apprentice could not repair the table either.	either	licensed
b.	At dinnertime, the children were served a plate of mixed vegetables, including broccoli. The boys ate the broccoli. The girls did not eat the broccoli either.	either	unlicensed
c.	A diver and a swimmer were chatting in the locker room when an announcer called all competitors to the pool. The diver went to the pool. The swimmer went to the pool, too.	too	licensed
d.	A group of tourists gathered around their tour guide on the sidewalk, ready to board a tour bus. The tour guide did not board the bus. The tourists boarded the bus, too.	too	unlicensed

Similar to the experimental items, full sets of items discussed here can be found in Appendix A.

2.3.3 Survey construction and presentation

Each island experiment comprises four experimental conditions. Eight sets of lexically matched items are created for each experiment with the goal of collecting two observations per condition per participant. All non-context surveys consist of 33 items: 9 practice items in a fixed order at the beginning, followed by 8 experimental items and 16 fillers in a pseudorandomized order. In the context experiments, the survey includes 35 items: 9 practice items in fixed order, followed by 8 experimental items, 14 fillers, and 4 catch trial items in pseudorandomized order. Each experiment includes 4 lists in 4 counterbalanced orders used to fend off order effects.

Participants were asked to judge each sentence on a scale from 1 (very bad) to 7 (very good). Each sentence appeared on a separate screen and had its own individual scale next to it.

Each participant saw one list of one experiment and all the experimental conditions in it. In the context experiments, participants were instructed to read the preceding context first and judge the acceptability of each sentence against that context using the same 1–7 scale.

2.3.4 Participant recruitment

A total of 1120 participants participated in this study, with 80 participants assigned to each experiment.[43] According to Sprouse and Almeida (2017), Marty et al. (2020), this sample size yields 100 % statistical power for the 7-point scale task for large effect sizes that are common for island effects. Each participant saw only one list with one island and all conditions for that island. All participants were self-reported native English speakers. They received a compensation of $1.50 for their participation in the non-context experiments and $2.5 for their participation in the context experiments. The compensation amount was chosen based on the hourly rate of $15 per hour and the estimated completion time of 5–6 and 10–12 minutes per experiment, respectively.

All experiments were posted online on a survey platform Qualtrics. Participants were recruited through a crowd-sourcing platform Amazon Mechanical Turk with the assistance of a recruitment facilitation service CloudResearch.

2.3.5 Analysis

All results were transformed to z-scores prior to analysis to remove common forms of scale bias.

[43] Note that the total sample size for the context experiments was 683 participants. 363 participants were excluded because they reported no difference between licensed and unlicensed catch trial items, which indicates that these participants likely did not fully engage with the task.

2.3.5.1 Identifying uncooperative participants

Three detection methods were used to identify uncooperative participants: Tukey's inner fences, the sum of squared errors, and Iglewicz and Hoaglin's exact fit test. Together, the three methods affected 2 participants in each of 2 experiments, 1 participant in each of 2 experiments, and 0 in the rest of them. The number of remaining participants per experiment is shown in Table 2.1.

#	Experiment	Participants
1	Unergative subject island (definite)	80
2	Unergative subject island (indefinite)	80
3	Unergative subject island (context)	80
4	Transitive subject island (definite)	79
5	Transitive subject island (indefinite)	80
6	Transitive subject island (context)	80
7	Passive subject island (definite)	80
8	Passive subject island (indefinite)	78
9	Passive subject island (context)	80
10	Unaccusative subject island (definite)	78
11	Unaccusative subject island (indefinite)	80
12	Unaccusative subject island (context)	80
13	VP-coordination island (first conjunct)	79
14	DP-coordination island (second conjunct)	80

Table 2.1: Number of remaining participants in each island experiment

For each filler item, "Tukey's inner fences" were constructed (Tukey 1977).[44] If the participant's rating of a filler appeared outside the fences for that filler, that participant was marked as an outlier and removed. The fences were constructed as follows: the median was used to calculate the perfect fourths Q1 and Q3 (25th and 75th empirical percentiles, respectively). The interquartile range (IQR) was calculated as Q3−Q1. The lower and upper fences were defined as Q1−1.5∗IQR and Q3+1.5∗IQR respectively. This is illustrated in Figure 2.2.

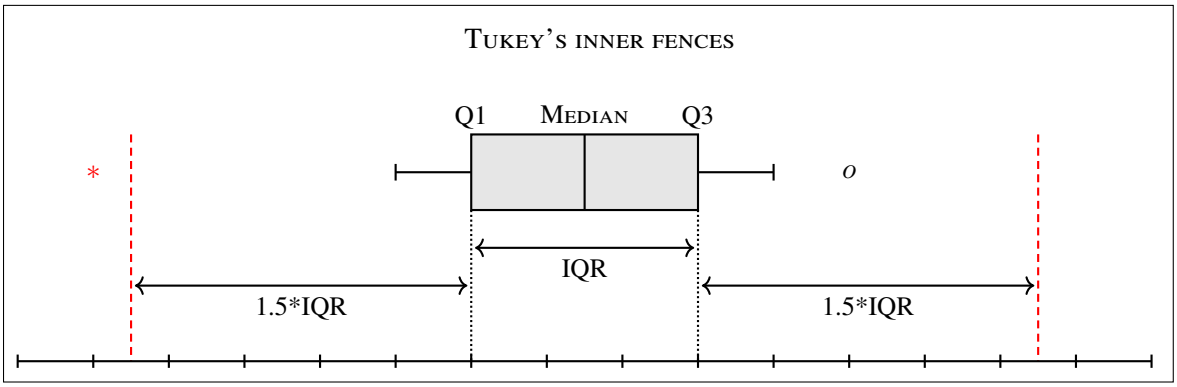


Fig. 2.2: Tukey's inner fences

Next, the sum of squared errors (SSE) across the filler items n was calculated for each participant i using the following formula:

(88)

$$\text{SSE}_i = \sum_{j=1}^{n} (y_j - \bar{y}_j)^2$$

where $\bar{y}_j$ is the mean of all ratings for the filler item j. If the SSE of a participant was more than two standard deviations s away from the mean SSE of all participants, that participant was

[44] This is also known as the Boxplot rule or the Ideal Fourths method.

removed as an outlier.

Finally, Iglewicz and Hoaglin's (1993) outlier test based on the exact fit property of robust estimators (median, in this case) was used.[45] For a participant i and a filler item j, the normalized absolute deviation of the z-scored rating $x_{i,j}$ from the median $\tilde{x}_j$ was calculated. Then we also calculated MAD, the median of absolute deviations of $x_{1...j}$ from the sample median $\tilde{x}$. If the normalized residual of a rating was above the recommended threshold of 3.5, it was marked:

(89)

$$\frac{0.6745(|x_{i,j} - \tilde{x}_j|)}{\text{MAD}} > 3.5$$

All participants with at least one marked rating were excluded.

2.3.5.2 Finding the empirical floor and ceiling

For each experiment, the empirical floor and ceiling were calculated, following Al-Aqarbeh and Sprouse (2022), Fukuda et al. (2022). The 'floor' is defined as the mean of top 1 lowest filler ratings across all participants and the 'ceiling' as the mean of top 1 highest filler ratings across all participants. Both floor and ceiling are represented as gray lines in the plots, with areas above the ceiling and below the floor grayed out. Identifying both of them for a given set of participants allows us to spot overpowering main effects that hide the interaction term indicative of an island effect. For example, an exceptionally large main effect of STRUCTURE can push the island pair close to the floor. Since there is now less space left on the scale, even the average main effect of DEPENDENCY would take up most of it, leaving very little to no space for the interaction term.

[45] This is also known as the MAD-Median rule.

In this scenario, the proximity to the floor is obscuring the island effect. Conversely, when both lines are parallel and far from the floor and ceiling, we can be sure that there is no island effect.

2.3.5.3 Significance testing

All statistical analyses were performed using R version 4.1.1 (R Core Team 2021). For each experiment, we constructed a linear mixed-effects model with STRUCTURE and DEPENDENCY as fixed effects and PARTICIPANT and ITEM as random effects (slope and intercepts) using the `lme4` package (Bates et al. 2015). For each model, two sets of statistical tests were used. We calculated the p-values with the `lmerTest` package (Kuznetsova et al. 2017), which uses the Satterthwaite approximation for degrees of freedom to derive an F test from the linear mixed-effects model. We have also derived Bayes factors of the BF_{10} type for each model with the interaction term for fixed effects using the `BayesFactor` package (Morey and Rouder 2018). For ease of exposition, the interaction term p-value and the BF_{10} value were added to each interaction plot.

BF_{10} was chosen because it shows the ratio between the likelihood of the data under the experimental hypothesis (H1) and the likelihood of data under the null hypothesis (H0), allowing the evaluation of both H1 and H0. For example, $BF_{10} = 3$ indicates that the data is 3 times more likely under a theory in which the interaction term is present (H1) than under one in which there is no interaction (H0). Including Bayes Factors, along with more familiar null hypothesis testing, allows us to evaluate the null hypothesis directly. In this way, if we observe $BF_{10} = 0.33$, we conclude that the data is 3 times more likely under the null hypothesis (that is, there is no island effect) than under the experimental hypothesis. This helps to distinguish between null results that provide strong evidence for the absence of an island effect and null results that are fundamentally inconclusive. All conventional thresholds for p-values and BF_{10}

below are adopted from Neyman and Pearson (1928a) and Jeffreys (1939) respectively. Using p-values and BF_{10} values together allows us to identify and distinguish at least the following three patterns in the results:

1. Taken together, the p-value that is less than the conventional threshold of $.05$ and the BF_{10} that is greater than the conventional threshold of 3 are indicative of an island effect;

2. the p-value greater than $.05$ and a BF_{10} less than 0.33 together are indicative of no island effect;

3. finally, the p-value greater than $.05$ together and the BF_{10} between 0.33 and 3 signal the lack of strong support for either hypothesis.

Since the experiments have extremely high statistical power, the last option can also be taken to indicate that there is no classic island effect (large or medium), but it is possible that what we see is a small effect for which we did not have enough power or, if it occurs near the floor or ceiling, that the interaction term is obscured by the main effects.

2.4 Results

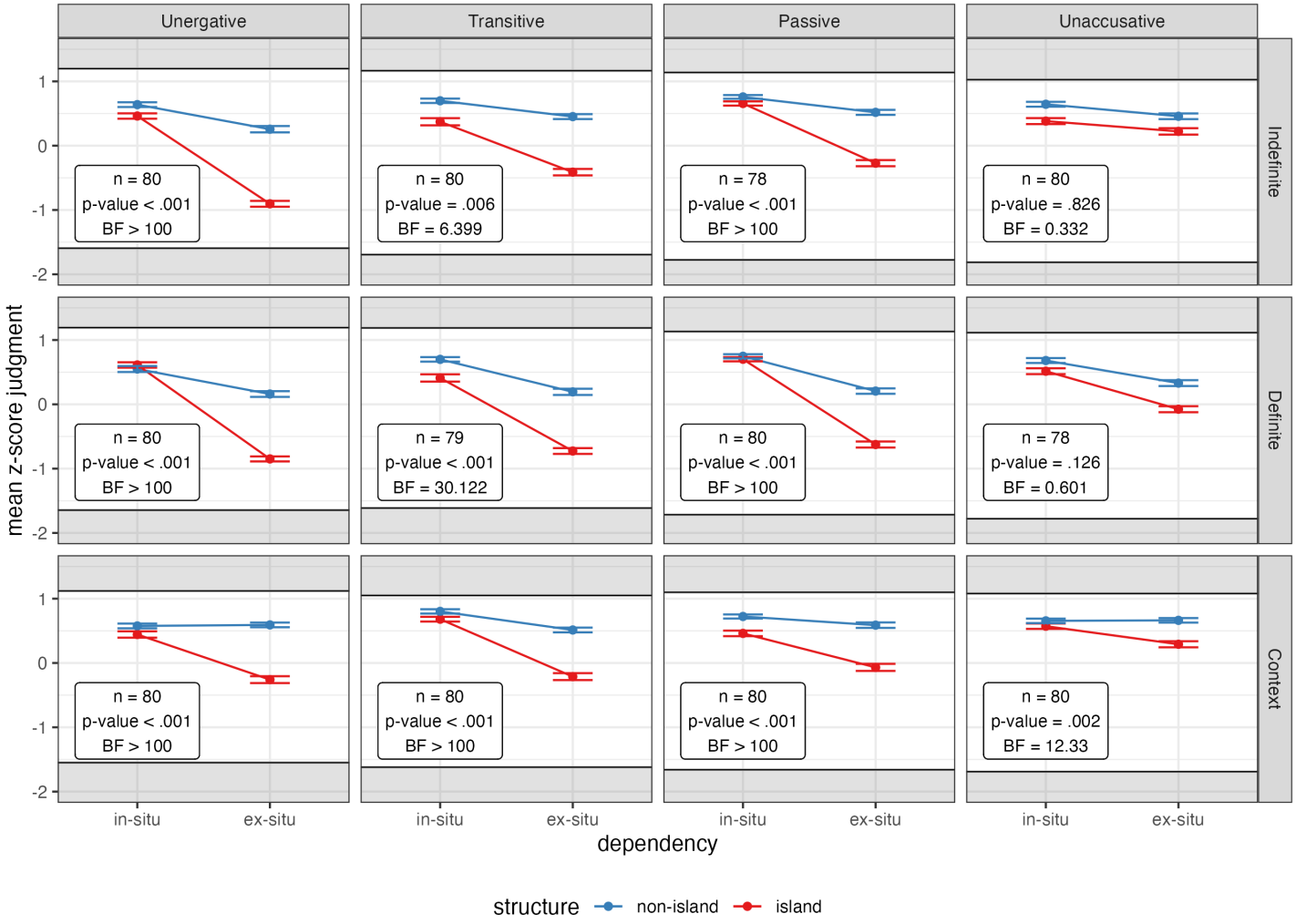


Fig. 2.3: RC extraposition from subject islands in English

The results of the subject island experiments are presented in Figure 2.3. We observe large superadditive interactions indicative of island effects in all triplets of unergative, transitive, and passive subject island experiments. The results of visual observation for those are supported by both groups of statistical tests at the significance level of $p < .05$ and $\text{BF}_{10} > 3$. No evidence

of an island effect is seen in the triplet of unaccusative subject island experiments. At the same time, BF_{10} for the definite version indicates that there is only anecdotal evidence supporting the null hypothesis that there is no interaction term and therefore no island effect, while BF_{10} for the indefinite version suggests that there is strong evidence for H0 that there is no island effect. Although the interaction term in the context version is statistically significant according to both sets of tests, its effect size ($DD = 0.23$) appears much smaller than the island effects triggered by RC extraposition ($\overline{DD} = 0.92$). Furthermore, the condition that violates the island constraint still receives an acceptability rating above 0, indicating that it is considered acceptable. These findings suggest that the observed effect is not a genuine island effect.[46]

The four experimental conditions in each experiment appear far from both the floor and the ceiling. The vectors of the main effects are oriented away from the closest limiter (ceiling, in all cases), so it seems unlikely that any of the results are subject to the ceiling and floor effects.

A visual trend in effect sizes across different types of subjects closely follows the literature on subject island permeability (Hiramatsu 1999, Chomsky 2008, Polinsky et al. 2013) with unergatives being the largest and the most opaque and unaccusatives being the smallest and the most transparent, while transitives and passives appear in the middle and lean toward the former.

The definiteness effect is observed in all pairs of definite and indefinite experiments regardless of the presence of the island effect, suggesting that the two are independent of each other. An indirect visual comparison within pairs of experiments suggests that the effect size of

[46] It is intriguing to consider what may be causing the interaction term in the unaccusative context experiment. Apart from a subliminal island effect, one possibility is that the context has a stronger impact on the control pair than on the target pair, as suggested by a comparison with the no-context version of the same experiment. Further investigation into the effect of the context is required to better understand this phenomenon.

definiteness may be small, similar to findings about the definiteness effect of *wh*-dependencies in Shen and Lim (2021) and rc-dependencies in Vincent (2021). Interestingly, the definiteness effect during RC extraposition is not restricted to subjects, since both subject and object conditions change slightly between indefinite and definite versions of each experiment.

The predicate restriction is supposed to limit RC extraposition from unergative subjects, while having no impact on RC extraposition from transitive, passive, or unaccusative subjects. Our findings reveal that it is observed across all subject island types, with unergatives being the most affected. Interestingly, it applies RC extraposition from the object conditions as well. Crucially, our results demonstrate that the predicate restriction coexists with the island effect.

Taken together, our findings suggest that RC extraposition in English is sensitive to subject islands, except for unaccusative subjects. Furthermore, the definiteness effect and the predicate restriction are shown to be independent from the island effect.

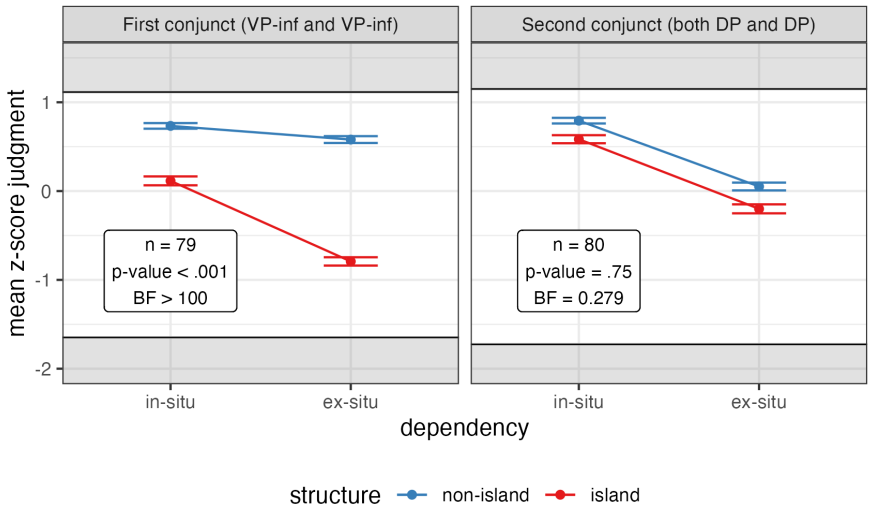


Fig. 2.4: RC extraposition from coordination islands in English

Figure 2.4 illustrates the results of both coordination island experiments. The left panel

shows that RC extraposition from the first VP-conjunct creates an alligator mouth shape indicative of a large superadditive interaction. Both p-values and BF_{10} confirm that this result is significant and provide strong support to the presence of an island effect. The right panel shows that RC extraposition from the second DP-conjunct creates a flat pattern, suggesting the absence of an island effect. Both groups of tests confirm the results of a visual observation, while BF_{10} provides strong evidence for the null hypothesis that there is no interaction term. All four conditions in both experiments appear far enough from the floor or ceiling, and therefore there is no indication that the results might have been affected by the floor or ceilinig effects.

The lack of an island effect during RC extraposition from the second DP-conjunct can be explained if the target condition is reanalyzed as a VP-coordination instead of a DP-coordination. A possible structure is shown in (90). According to this reanalysis, an extraposed RC has a landing site inside the second conjunct and does not cross an island boundary.

(90) Tim met both [$_{VP}$ ~~Tim met~~ Jennifer] and [[$_{VP}$ ~~Tim met~~ the medical team ~~RC~~ last Monday] [$_{RC}$ that saved her]].

No similar reanalysis exists for the target condition of Experiment 13. Reinterpreting the structure as a coordination of two IPs as shown in (91) still requires RC extraposition to cross an island boundary (in addition to a finite clause boundary that triggers an RRC violation).

(91) George wanted [[$_{IP}$ ~~George~~ ~~wanted~~ to thank [$_{DP}$ a baseball coach ~~RC~~]] and [$_{IP}$ ~~George~~ ~~wanted~~ to chat with Mia yesterday]] [$_{RC}$ that works with underprivileged kids].

Examining the linear distance effect in the transitive, passive, and VP-coordination ex-

periments reveals that the gap between ex-situ conditions is much greater than the estimates for 2-word and 5-word increases from Section 2.3.2.3 (0.25 and 0.29 respectively). The individual results are as follows: a 2-word increase yielded a comparison of 0.25 to 0.86 for Experiment 4 (indefinite transitive), 0.25 to 0.92 for Experiment 5 (definite transitive), a 5-word increase yielded 0.29 to 0.79 for Experiment 7 (passive indefinite), 0.29 to 0.83 for Experiment 8 (passive definite), and 0.29 to 1.37 for Experiment 13 (VP-coordination).

2.5 Discussion

The results of the experiments in this chapter are summarized in Table 2.2. The most striking observation emerging from it is that RC extraposition is sensitive to a range of islands in English.

Island structure	Island effect
Subject island	
unergative, indefinite	YES
unergative, definite	YES
unergative, context	YES
transitive, indefinite	YES
transitive, definite	YES
transitive, context	YES
passive, indefinite	YES
passive, definite	YES
passive, context	YES
unaccusative, indefinite	NO
unaccusative, definite	NO
unaccusative, context	NO
Coordination island	
VP-coordination, first conjunct	YES
DP-coordination, second conjunct	NO

Table 2.2: Summary of experimental results testing RC extraposition from islands in English

Our study shows that RC extraposition in English is affected by additional factors beyond the island effect. Specifically, we observed that the predicate restriction and the definiteness effect, as described by Culicover and Rochemont (1990), are among the factors that influence

the acceptability of RC extraposition. Importantly, our results demonstrate that these factors operate independently of the island effect and simply coexist with it. Based on these results, we can confidently conclude that RC extraposition in English is indeed sensitive to islands.

2.5.1 Implications of the study

The findings in this chapter have implications for three areas of syntactic research. First, all theories of RC extraposition should account for the sensitivity of RC extraposition to both the subject and the coordination islands in English. As follows from Table 1.1, currently, only theories that employ rightward syntactic movement can do that (i.e. Ross 1967, Fox and Nissenbaum 1999, 2000, Sportiche 2016); see below about passive and unaccusative subjects. In contrast, theories that derive RC extraposition as an instance of stylistic movement, PF movement, base generation, stranding during leftward movement, or parallel construal need to be amended. Our results provide a new challenge for this second group of theories.

Second, theories of syntactic locality may need to incorporate properties of rightward movement on a par with those of leftward movement. Historically, there has been a sheer number of alternative accounts for different rightward dislocation phenomena that do not require rightward movement in the narrow syntax. This situation has been taken to imply that syntactic locality may not need to account for the properties of rightward movement after all, as it may not be syntactic, and instead the locality theories should focus solely on leftward movement (Chomsky 1986, 2001, 2008, Rizzi 1990, Kayne 1994, a.o.). However, the findings in this chapter only support theories that postulate rightward movement in the narrow syntax, indicating a possible need to reevaluate this view. If both leftward and rightward movement take place in the narrow syntax, the locality properties of both must be derived concurrently, either from the

characteristics of moving elements or from the syntactic configurations in which movement takes place. Therefore, it becomes necessary to study the properties of rightward movement, such as its clause-boundedness and the purported lack of successive-cyclicity, and compare these to similar properties of leftward movement, especially the clause-bound subtypes such as short scrambling and object shift. The literature proffers several proposals on the locality of rightward movement (Baltin 1978, Truckenbrodt 1995b, Müller 1996), which could help guide such comparisons. Importantly, as underscored in Overfelt (2015c, 2016), establishing a clear understanding of the facts is a necessary precursor to productive research in this domain.

Third, an observed discrepancy between RC extraposition from unergative, transitive, and, most interestingly, passive subjects on the one hand and unaccusative subjects on the other may offer insight into the nature of subject islandhood. As discussed in Chapter 1, there are two main groups of theories of RC extraposition that use rightward movement in the narrow syntax. According to Ross (1967), RC extraposition is an instance of rightward subextraction from DP. Therefore, under this view, it should be compared to other types of subextraction. Although a detailed comparison of the theories of subextraction is beyond the scope of this project, Section 2.5.2 provides an illustration of how RC extraposition from subject islands can be analyzed in this way. In turn, Fox and Nissenbaum (1999, 2000) and Sportiche (2016) argue that during RC extraposition either the host DP or the entire DP+RC complex moves to the right. Thus, under this view, RC extraposition should be contrasted with other types of extraction rather than subextraction. An account of RC extraposition-as-extraction is outlined in Section 2.5.3.

2.5.2 RC extraposition from subject islands

It is generally accepted that, in English, (leftward) subextraction from subjects is not possible, with apparent counterexamples analyzed as exceptional. Chomsky (2008) discusses the variable status of PP subextraction during Ā-movement from nominal subject islands. He argues that, similar to direct objects, unaccusative and passive subjects systematically allow PP subextraction, while transitive and unergative subjects block it. This is shown in (92) for *wh*-movement.[47]

(92) a. [$_{PP}$ Of which car] did they find [the driver ~~PP~~]? *direct object*

b. [$_{PP}$ Of which car] did [the driver ~~PP~~] collapse? *unaccusative subject*

c. [$_{PP}$ Of which car] was [the driver ~~PP~~] found? *passive subject*

d. *[$_{PP}$ Of which car] did [the driver ~~PP~~] find them? *transitive subject*

e. *[$_{PP}$ Of which car] did [the driver ~~PP~~] sing? *unergative subject*

In contrast, our results indicate that direct objects and unaccusative subjects allow RC extraposition, whereas passive, transitive, and unergative subjects do not, as summarized in (93).

(93) a. Tim visited [a lawyer ~~RC~~] today [$_{RC}$ that represents the social media company]. *direct object*

b. [A tree ~~RC~~] fell yesterday [$_{RC}$ that straddles the town border]. *unaccusative subject*

c. *[An activist ~~RC~~] was visited by John Stewart today [$_{RC}$ that helped the 9/11 first responders]. *passive subject*

---

[47] The minimal quintet in (92) is due to Zyman (2021), see his (13), (15), and (19).

d. *[A lawyer ~~RC~~] visited Tim today [$_{RC}$ that represents the the social media company]. *transitive subject*

e. *[A colleague ~~RC~~] winked conspiratorially [$_{RC}$ that sensed my apprehension]. *unergative subject*

Therefore, a subextraction account must accommodate the following 3-way distinction:

1. Direct objects and unaccusative subjects allow both *wh*-movement and RC extraposition.
2. Passive subjects allow *wh*-movement, but block RC extraposition.
3. Transitive and unergative subjects block both *wh*-movement and RC extraposition.

Chomsky (2008) formulates a phase-based account of PP subextraction from subjects. Central to his theory is the idea that the difference between subjects with respect to subextraction stems from their base position. Unaccusative and passive subjects, similar to direct objects, are internal arguments initially merged into VP, while transitive and unergative subjects are external arguments merged with *v**P. Within his framework, subextraction is blocked at phase edges (e.g. Spec;*v**P) and in the topmost Spec;TP (due to inactivity condition). This leads to subextraction from external arguments being blocked in every position it occupies in a simple finite clause, while subextraction from internal arguments is able to launch from its base position inside VP.

Building on Chomsky (2008), Zyman (2021) develops an account in which every *v*P and TP is a phase and the application of Merge is guided by ordered features on lexical heads. Specifically, T bears features [D] and [wh] that are ordered as [D]>[wh], i.e. T has to probe for [D] and attract a suitable phrase before accessing [wh]. Unlike T, the interrogative *v* enters the derivation

with two unordered features, [D] and [wh] (see below). For reasons beyond the scope of this discussion, Zyman proposes the following condition for subextraction from phase edges:

(94) Phasal Antilocality (Zyman 2021, ex. 1)

For a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP.

The rest of this subsection illustrates how, with minimal modifications, Zyman's account can generate both *wh*-movement and RC extraposition patterns in (92) and in (93), respectively.

The single modification I propose is that unaccusative *v*P in English is not a phase. Instead, I will assume that unaccusative *v* lacks the [D] feature, which excludes subject movement to Spec;*v*P. As a result, the subject of unaccusative moves from VP directly to Spec;TP.

The phasal status of the unaccusative and passive *v*s has been contentious since the phases were first introduced in Chomsky (2000, 2001).[48] Chomsky (2008) assumes that both the unaccusative and passive *v*s are not phases, in contrast to the unergative and transitive *v**s. On the contrary, Legate (1998, 2003, 2005) shows a number of interface tests of PF and LF that do not differentiate between *v*s and *v**s, suggesting that both should be unified as phases (but see Legate (2012a) for a different perspective). Finally, a growing body of work strongly suggests that a passive *v*P has a notably richer structure than an unaccusative *v*P and is much closer to a transitive *v**P (Alexiadou and Doron 2012, Legate 2012b, Bruening 2013, Richards 2013, Alexiadou et al. 2015, Legate et al. 2020, Jarrah 2023, a.o.), which is consistent with the idea that passive *v**Ps are phases, similar to transitive and unergative *v**Ps and unlike unaccusative *v*Ps.

[48] Some issues discussed in Chomsky (2001) may be hereditary, see Chomsky (1964) and Ross (1967) on cycles.

Regarding RC extraposition, I make two assumptions. First, I assume that RC extraposition is successive-cyclic and is guided by the feature [RC]. Simulateneously, it is confined to a single finite clause in line with the Right Roof Constraint (Ross 1967).[49] Second, RC extraposition can move as high as an internal specifier of TP; see Fox and Pesetsky (2009) for a similar proposal. This implies that T bears ordered features [RC]>[D]. The assumption that the RC does not extrapose above Spec;TP is supported by the fact that an R-expression inside an extraposed RC still causes a Condition C violation when coreferential with the subject; as shown in (95).

(95) a. *She$_i$ invited many people [that Mary$_i$ didn't know] to the party.

b. *She$_i$ invited many people ~~RC~~ to the party [that Mary$_i$ didn't know].

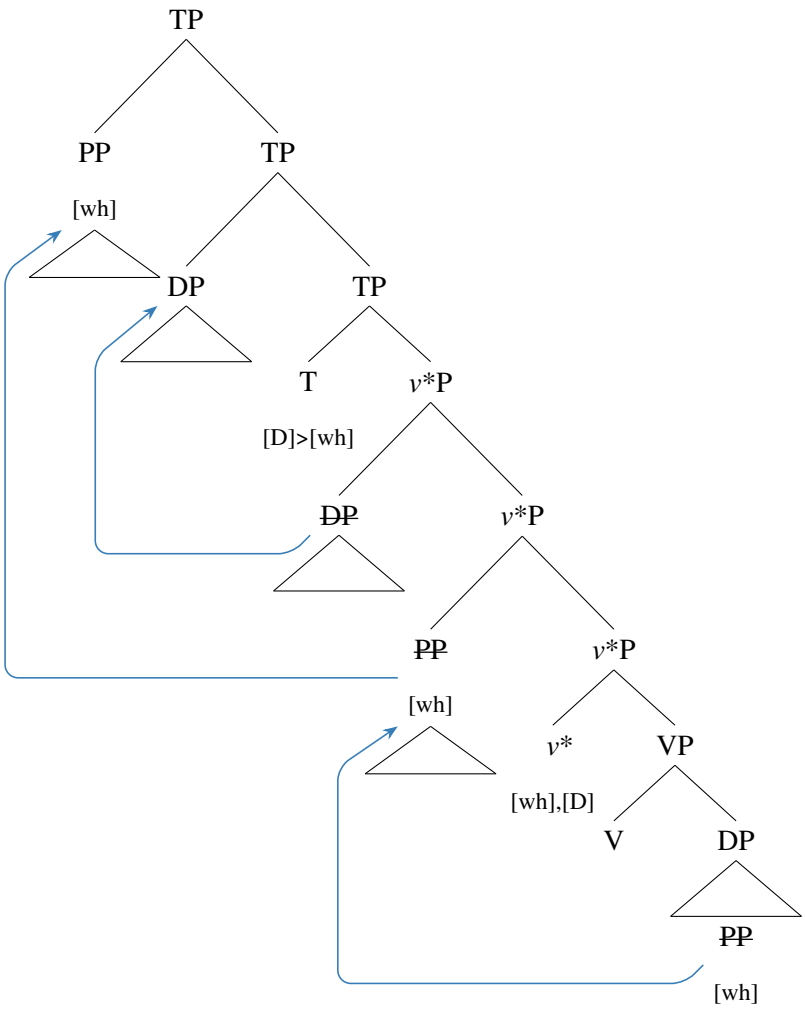
(Culicover and Rochemont 1990, p. 28)

Consider first how this account derives PP subextraction via *wh*-movement. The tree in (96) shows the derivation for *wh*-subextraction from the direct object in (92a). The [wh] feature on *v** triggers Internal Merge of the closest element in the c-command domain of *v**. As a result the *wh*PP moves to Spec;*v**P. After that the [D] feature on *v** triggers External Merge of the subject DP into Spec;*v**P. Next, T is merged and probes for the highest phrase with the [D] feature in its c-command domain. It finds the subject at the *v**P phase edge and moves it to

[49] The literature sometimes characterizes RC extraposition as not being successive-cyclic (Chomsky 1973, Akmajian 1975, Baltin 1978, 1981, 1983). This interpretation is based on two scenarios: RC extraposition is impossible across a CP boundary and across multiple bounding nodes (e.g. across PP and DP or several nested DPs). The former is ruled out by RRC, while the latter has been shown to be empirically unfounded (Strunk and Snider 2013).

Spec;TP. After that T proceeds to search for the [wh] feature and moves the *wh*PP to Spec;TP.[50]

(96) *wh*-subextraction from the direct object

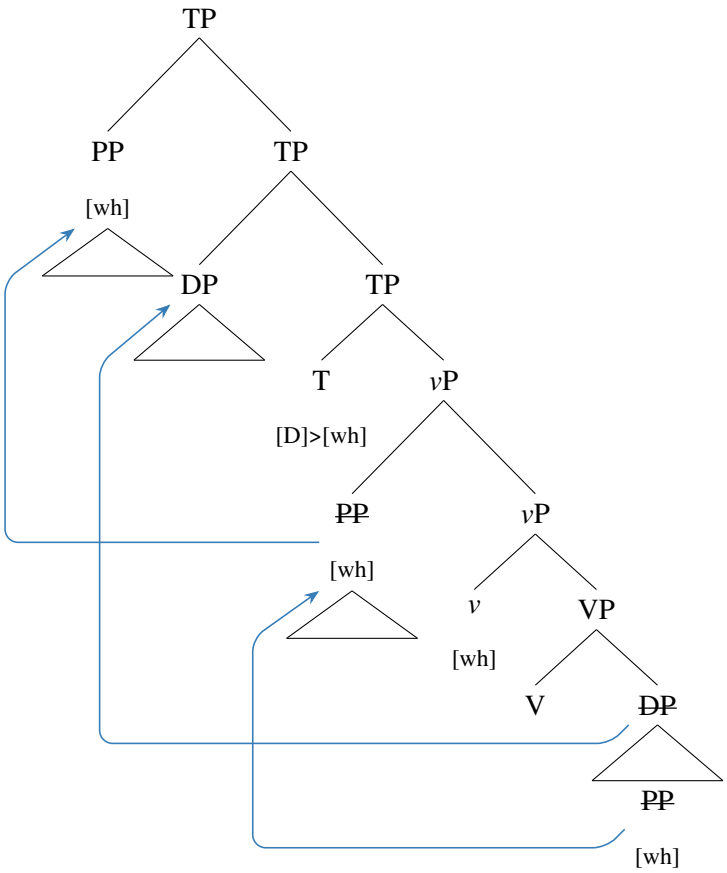


The tree in (97) illustrates the derivation of *wh*-subextraction from the unaccusative subject. The corresponding sentence is found in (92b). Recall that the unaccusative *v* is not a phase and only carries the [wh] feature. Therefore, when merged, *v* only probes its c-command domain for the [wh] feature and moves the *wh*PP to Spec;*v*P. In the next step, T is merged and

[50] The rest of the derivation continues exactly as detailed in Zyman (2021). I skip it here in the interest of space.

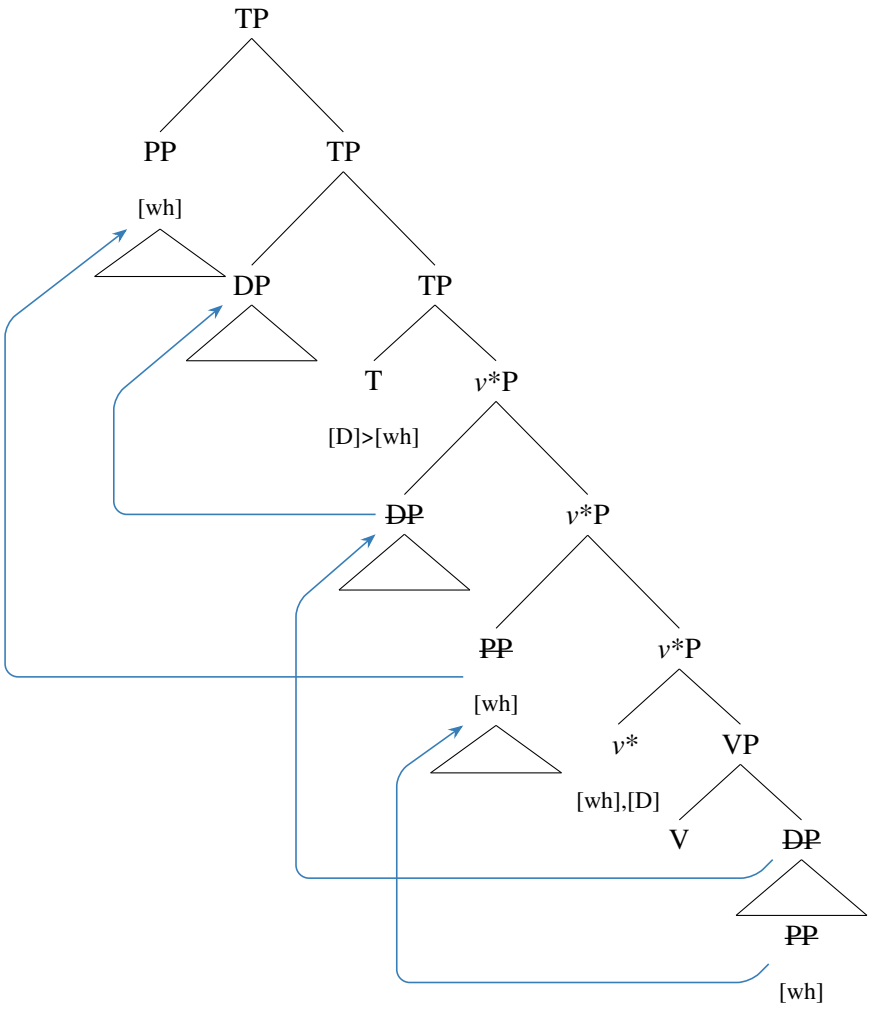
first searches for the phrase with the [D] feature in its c-command domain. It finds the internal argument of V and, since *v*P is not a phase, moves it to Spec;TP. Finally, T probes for the [wh] feature and attracts the *wh*PP into Spec;TP.

(97) *wh*-subextraction from the unaccusative subject



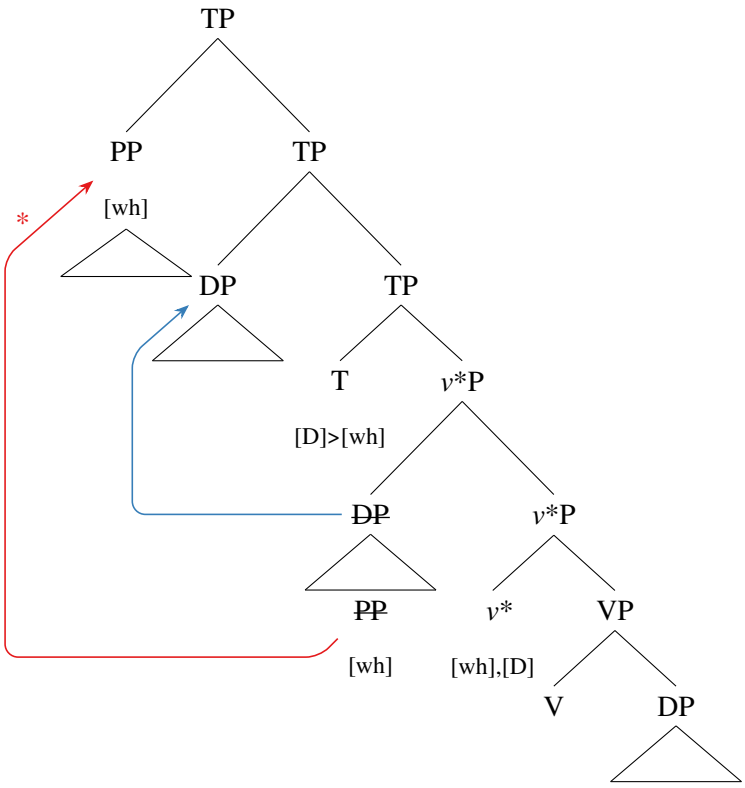
The relevant part of the derivation of the *wh*-subextraction from the passive subject in (92c) is shown in (98). The passive *v** attracts the *wh*PP and then the internal argument into Spec;*v**P. Upon its merger, T probes for the [D] feature first and moves the passive subject into Spec;TP before probing for the [wh] feature and then moving the *wh*PP into a higher Spec;TP.

(98) *wh*-subextraction from the passive subject



Turning to illicit derivations, consider first the *wh*-subextraction from the transitive subject in (92d). The tree is shown in (99). Here, T probes for the [D] feature first and attracts the subject to Spec;TP. After that, T searches its c-command domain for the [wh] feature and finds the *wh*PP inside the subject DP in Spec;*v**P, but its movement to Spec;TP is ruled out by Phasal Antilocality in (94), since Spec;*v**P is a phase edge and there is no XP between T and *v**P.

(99) *wh*-subextraction from the transitive subject

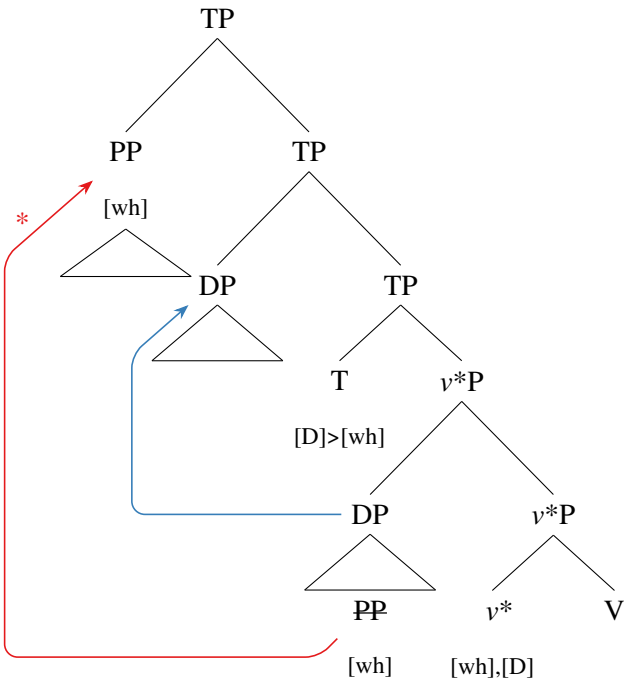


Finally, consider the tree in (100) showing the *wh*-subextraction from the unergative subject, which corresponds to the sentence in (92e). Similarly to the transitive subject, T probes for the [D] feature and attracts the subject to move to Spec;TP. In the next step, T probes for the [wh] feature, but since *v**P is a phase, (94) blocks the *wh*PP from moving to Spec;TP. As a result, the derivation does not converge.[51]

---

[51] Note that (105) shows the derivation described in fn. 14 in Zyman (2021). If T does not carry the [wh] feature, the derivation is excluded in a later step, which is not shown here; see pp. 17–18 in Zyman (2021) for an illustration.

(100) *wh*-subextraction from the unergative subject

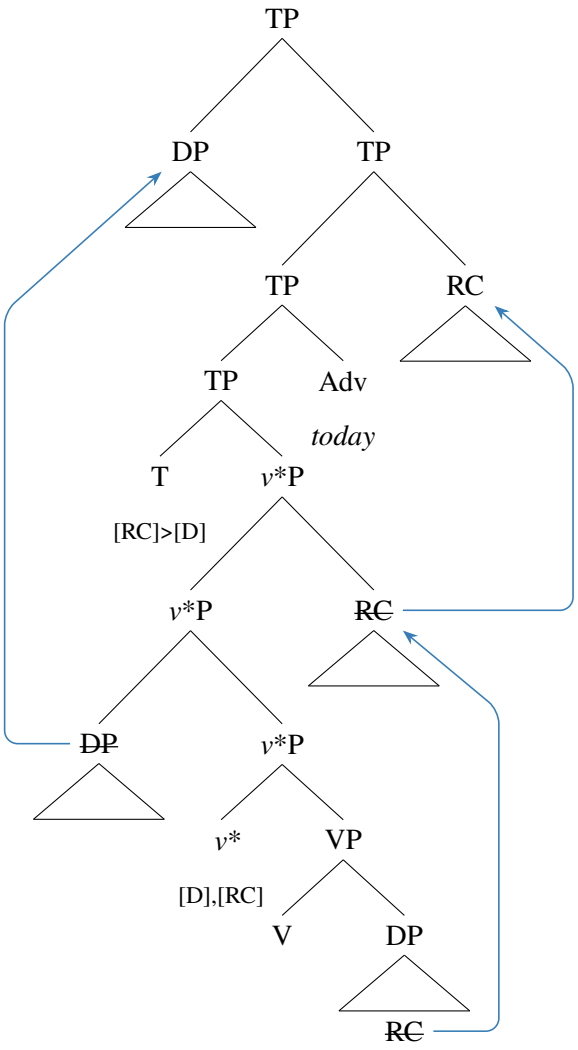


Turning to RC extraposition, consider first the derivation of it from the direct object in (101) for the sentence in (93a). The transitive *v** probes for the [D] feature and attracts the subject into Spec;*v**P. After that, it uses the [RC] feature to attract the RC to Spec;*v**P.[52] Upon merger, T probes for the [RC] feature first and extraposes the RC across a temporal adverb. After that, T finds the subject DP with the [D] feature and moves it into the outer Spec;TP.

---

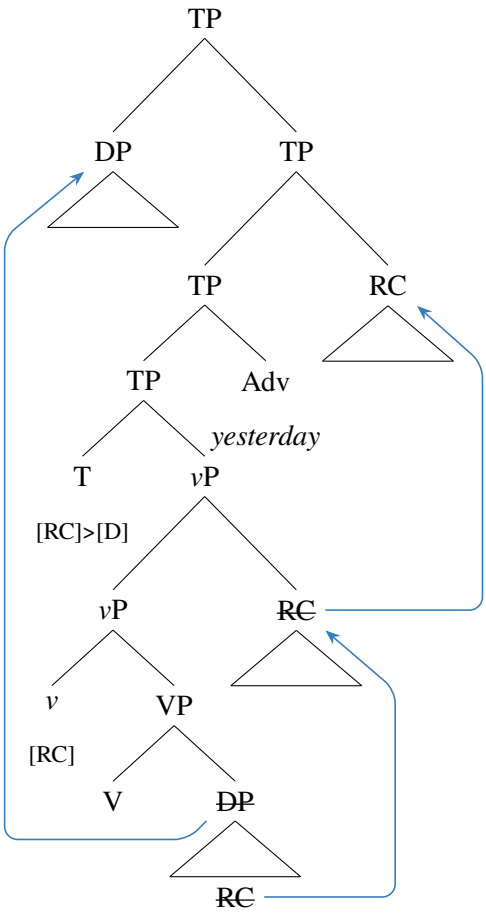
[52] After Zyman (2021, fn. 9), I assume that an explicit ordering of features on *v*/*v** in unnecessary and the operations can proceed simultaneously. The order of specifiers in (101) is the only one in which the derivation can converge.

(101) RC extraposition from the direct object



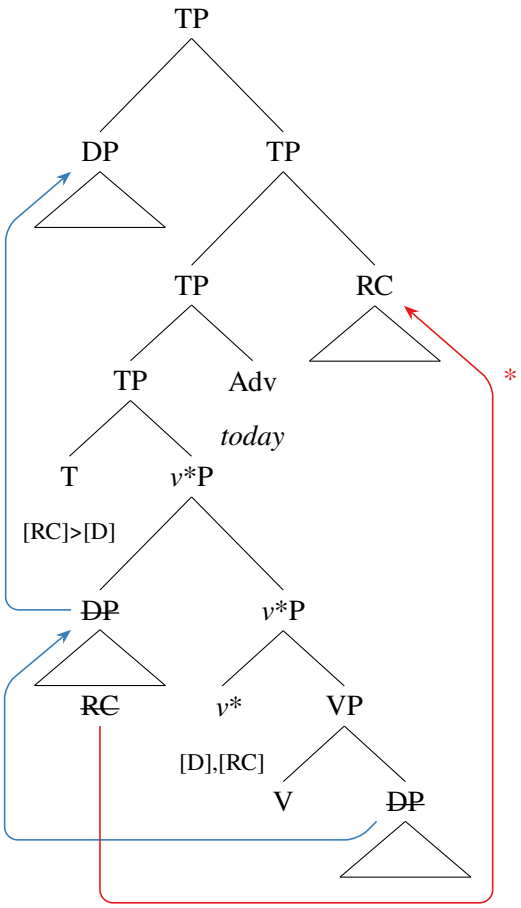
The derivation of RC extraposition from the unaccusative subject is shown in (102). The corresponding sentence is shown in (93b). The DP that includes the RC starts inside VP as a sister of V. The unaccusative *v* is not phasal and enters the derivation bearing only the [RC] feature, which causes RC extraposition to Spec;*v*P. After T is merged, it probes for the RC using the [RC] feature and then moves it to Spec;TP and across a temporal adverb. Finally, since *v*P is not a phase, T is able to attract the subject DP from its VP-internal position to move to Spec;TP.

(102) RC extraposition from the unaccusative subject



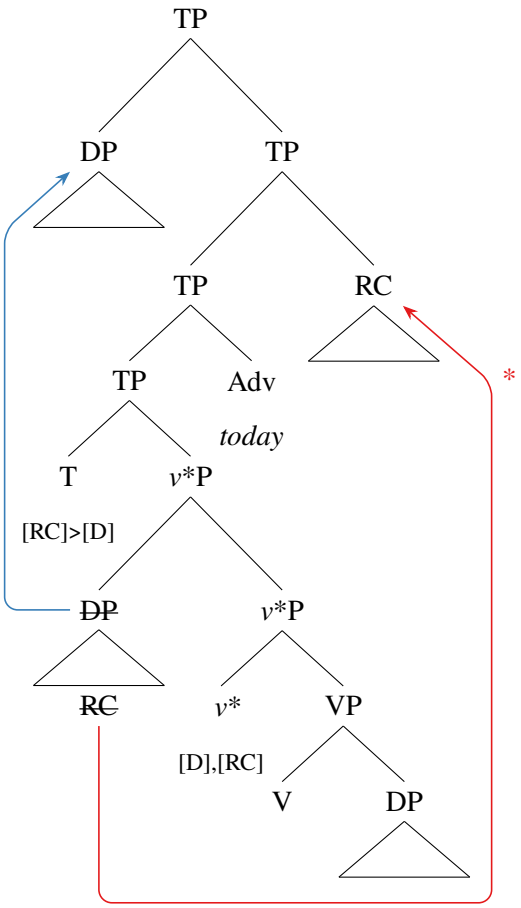
The illicit derivation of RC extraposition from the passive subject is shown in (103), which corresponds to the sentence in (93c). The passive *v** probes for the [D] feature of the subject DP, which contains an RC. It then checks both the [D] and [RC] features by attracting the DP to Spec;*v**P. T is then merged and searches its c-command domain for the [RC] feature. However, the closest RC inside the DP in Spec;*v**P is blocked by the Phasal Antilocality (94), since *v**P is a phase and T is too close to it, while the lower copy of the RC inside the VP remains invisible to the probe. As a result, the derivation cannot converge.

(103) RC extraposition from the passive subject



Next, we are going to discuss RC extraposition from the transitive subject. The tree in (104) corresponds to the sentence in (93d). The transitive *v** satisfies both [D] and [RC] features when it externally merges the subject DP into its Spec. In the next step, when T probes using the [RC] feature, the only RC in the structure is blocked by the Phasal Antilocality (94). As a result, the derivation cannot converge, which excludes RC extraposition from the transitive subject.

(104) RC extraposition from the transitive subject



Lastly, consider the derivation of RC extraposition from an unergative subject in (105). The corresponding sentence is found in (93e).[53] Here, an unergative *v** searches for the [D] and [RC] features and checks both upon the External Merger of the subject DP into Spec;*v**P. After that, T merges and probes for the [RC] feature first. However, the only available copy of the RC is prevented from moving by Phasal Antilocality in (94). As a result, the derivation cannot converge, making RC extraposition from the unergative subject ungrammatical.

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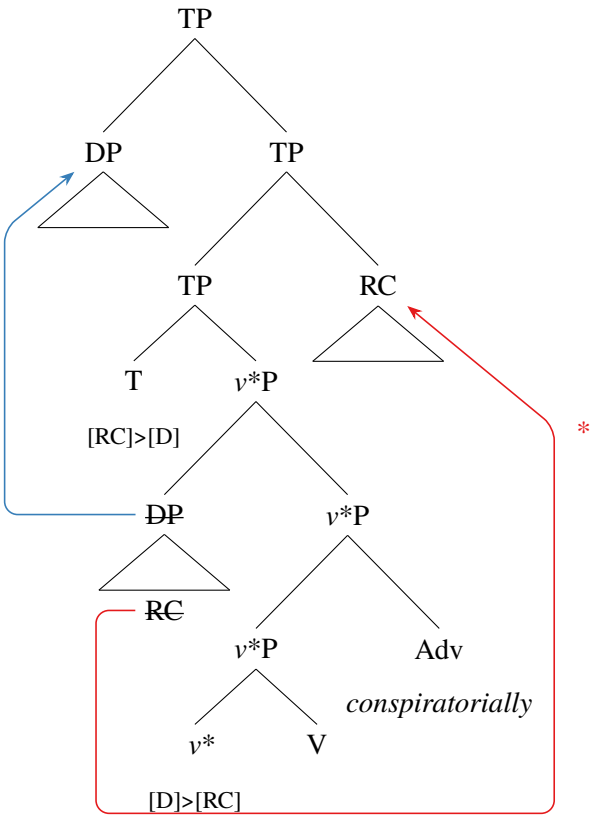
[53] Recall that in Experiments 1–3 a manner adverb was used instead of a temporal adverb with unergative verbs. We then assumed that the adverb was located at the edge of VP. Here it is shown to appear inside *v**P.

(105) RC extraposition from the unergative subject



In summary, we saw that a modified version of Zyman's (2021) account of subextraction from subject islands, which includes two new assumptions about RC extraposition, successfully generates both *wh*-movement and RC extraposition patterns in (92) and in (93) respectively.

Future research exploring this way of analyzing RC extraposition may want to investigate the predictions regarding intermediate Spec;TP positions, which, for example, license *wh*-subextraction from a (non-finite) transitive subject (the judgment is due to Chomsky 2008):

(106) [$_{PP}$ Of which car] is [$_{DP}$ the driver ~~PP~~] likely ~~DP~~ to cause a scandal?

At the same time, the account outlined above predicts that RC extraposition is impossible from non-finite subjects as well (except unaccusatives), since it targets an internal specifier of TP (i.e.

[RC]>[D]). Consider the RC extraposition counterpart of (106) (the judgment is suppressed):

(107) [$_{DP}$ A lawyer ~~RC~~] is likely ~~DP~~ to visit Tim tomorrow [$_{RC}$ that represents the social media company].

2.5.3 RC extrapostion of subject islands

The second group of syntactic rightward movement theories of RC extraposition analyzes it as an instance of DP extraction (Fox and Nissenbaum 1999, 2000, Sportiche 2016). In this case, either the host DP or the entire DP+RC complex moves to the right. Thus, RC extraposition from subjects should be compared to other instances of subject extraction.

Although an exploration of subject extraction is beyond the scope of this project, here I will provide an example of an account based on the idea that RC extraposition involves the host DP (and possibly the RC) undergoing Quantifier Raising (QR). The use of QR to derive RC extraposition is subject to the LF restriction called Scope Economy (Fox 1998, 2000).

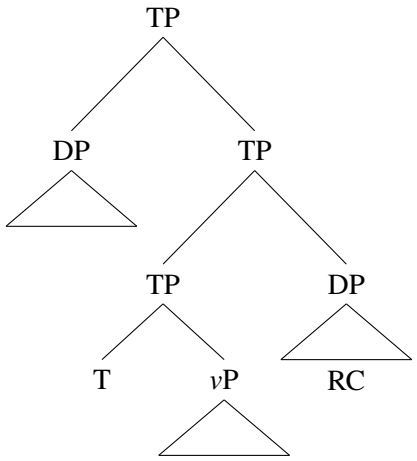
(108) Economy condition on scope shifting (Fox 2000)

OP can apply only if it affects semantic interpretation.

Assuming that RC extraposition targets an internal specifier of TP, RC extraposition and A-movement of the subject to Spec;TP would yield the same scopal relations with T and its complement. Since the latter movement is also independently necessary for Case, Scope Economy in (108) should prohibit RC extraposition from subjects, as it does not alter semantic interpretation.

(109) Scopal pattern: DP $>$ T $>$ *v*P

Tree:



This correctly rules out RC extraposition from unergative, transitive, and passive subjects; however, it also prevents RC extraposition from unaccusative subjects. An account of what separates the unaccusatives from the rest is found in Cardinaletti (2004), Rizzi (2005, 2006, 2010) and Bianchi and Chesi (2014).

Cardinaletti (2004) shows that different languages systematically distinguish between two groups of subjects (weak and strong). In English, for example, the distinction manifests itself in the ability of subjects to be separated from the verb by a parenthetical. As shown in (110), strong subjects allow it, while weak ones do not. She proposes to analyze it in terms of different subject positions in Split IP: strong subjects occupy Spec;SubjP, while weak ones occupy Spec;Agr_SP.

(110) a. John, as you know, is a nice guy.

b. *It, as you know, rained the whole day.

c. *There, as you know, was a man in the garden.

d. *One, as you know, usually buys ice cream to calm down before exams.

Building on this distinction, Rizzi (2005) argues that Spec;SubjP is a criterial position for

the logical subject of predication; see also Rizzi and Shlonsky (2007). Note that in his criterial freezing theory (Rizzi 2006, 2010), a phrase in a criterial position cannot be removed from it.

Bianchi and Chesi (2014) extend Rizzi's freezing account to reconstruction effects. The guiding idea of their proposal is that non-criterial positions are invisible at LF. Therefore, a subject in Spec;Agr$_S$P, since it is a non-criterial position, can only be interpreted in its thematic position inside *v*P, which gives rise to a thetic interpretation (i.e. mentioning a referent without predicating anything about them; see Kuroda (1972), Kuno (1972), Lambrecht (1994) for discussion). In contrast, a subject in Spec;SubjP, which is a criterial position, is present at LF. As a result, the subject is interpreted as external to the predicate, giving rise to a categorical interpretation (i.e. reporting new information on the topic of the subject); see also Rosengren (1997) for a similar account of the thetic/categorical divide from a non-cartographic perspective.

The final ingredient necessary is an assumption that, while most of the subject positions in English disfavor new information (Prince 1981, Horn 1986) and, as a result, receive a categorical interpretation, subject-accented unaccusatives are the only predicates that are compatible with a thetic interpretation (Sasse 1987, Lambrecht 1994, Zubizarreta and Nava 2011).[54]

Assuming unaccusative subjects can move to either Spec;Agr$_S$P or Spec;SubjP, while other types of subjects must move to Spec;SubjP, unaccusative subjects can end up in a non-criterial position, rendering them invisible at LF. In this case, RC extraposition to Spec;TP would not be blocked by Scope Economy, as it would create a new scopal pattern at LF and thus affect the semantic interpretation. Therefore, RC extraposition from unaccusative subjects is expected to be possible, while RC extraposition from all other types of subjects is still ruled out.

[54] For a discussion of subtypes of unaccusatives, some of which are not thetic-friendly, see Irwin (2012, 2018, 2020).

Future research may want to compare RC extraposition with other types of rightward subject extraction, which show similar patterns but appear to be sensitive to prosodic factors. Consider two types of locative inversion shown in (111) and (112). According to Culicover and Levine (2001) (all judgments are theirs), both unergative and unaccusative subjects can dislocate via Heavy Inversion, while Light Inversion is only available to unaccusative subjects.

(111) *Heavy Inversion*

a. Into the room walked [the students in the class who had heard about the social psych experiment that we were about to perpetrate]. *unaccusative subject*

b. In the room slept [the students in the class who had heard about the social psych experiment that we were about to perpetrate]. *unergative subject*

(112) *Light Inversion*

a. Into the room walked [Robin]. *unaccusative subject*

b. ∗In the room slept [Robin]. *unergative subject*

Chapter 3

Island effects in Russian

3.1 Overview

This chapter presents the results of twelve large-scale acceptability judgment experiments that compare locality domains of *wh*-movement and RC extraposition in Russian using a battery of six syntactic islands: adjunct island, noun complement island, *wh*-island, as well as unergative, transitive, and unaccusative subject islands. We find that both *wh*-movement and RC extraposition are sensitive to a number of syntactic islands in Russian. This result agrees with the main conclusion of the previous chapter that RC extraposition is sensitive to syntactic islands in English. Using island sensivity as a diagnostic for syntactic movement, the series of experiments reported here provides converging evidence from a different language and a different, yet overlapping set of island structures that the derivation of RC extrposition must involve syntactic movement. Furthermore, the sets of islands for *wh*-movement and RC extraposition in Russian are partially distinct in ways that suggest several interesting syntactic consequences.

The chapter is structured as follows: Section 3.2 provides the necessary background that determines the organization of the study. Section 3.3 outlines the experimental setup, including material construction, participant recruitment, survey composition, and statistical analysis. Sec-

tion 3.4 summarizes the experimental results. Section 3.5 concludes the chapter with a discussion of the implications and limitations of the present study, as well as future research directions.

3.2 Background

The results of experiments in Chapter 2 suggest that English only uses rightward syntactic movement to derive RC extraposition. Therefore, rightward movement must be part of the ontology of grammatical operations creating RC extraposition (and, more generally, rightward dislocation). It is logically possible that this ontology also includes other operations that are unavailable in English for some reason but can be found in other languages. The need for a cross-linguistic study of island sensitivity of RC extraposition is further emphasized by the fact that the extraposition literature contains a number of accounts that do not employ rightward movement to derive RC extraposition in different languages; see Koster (2000) and De Vries (2002) for Dutch, Truckenbrodt (1995b), Inaba (2005, 2007), Kiss (2005), Hartmann (2013), Féry (2015) for German, Tanaka and Kizu (2007), Kamada (2009), Takita (2014), Furuya (2020) for Japanese, Cardoso (2010, 2012) for European Portugese, Bianchi (2013) for Italian, Manetta (2012) for Hindi-Urdu, Manninen (2003) for Finnish, Potsdam (2022) for Malagasy, among others.[55] Although such project goes beyond the scope of this dissertation, this chapter can be considered its first step.

[55] See also Alves Castro (2015) for a rightward movement account of RC extraposition in Spanish, including similar properties to Italian and European Portuguese.

3.2.1 The benefits of testing Russian

Several island structures cannot be used to test RC extraposition in English due to the Late Closure parsing strategy (Frazier 1978, Frazier and Fodor 1978); see Section 2.2.2 for details. According to LC, the parser initially attempts to connect the new incoming lexical material to the material that has been parsed most recently. English has been shown to consistently use the LC strategy (Frazier 1978, Frazier and Rayner 1982, Cuetos and Mitchell 1988, Carreiras and Clifton 1999). However, starting with Cuetos and Mitchell (1988), multiple studies reported that different languages deviate from this strategy to various degrees and adhere to its mirror image, the Early Closure parsing strategy; see Fernández (2003) for an overview and references.[56]

Under EC, the parser attempts to "close" constituents as early as possible and, therefore, associates new lexical material with a constituent that dominates the linearly adjacent constituent. Consider two structures corresponding to a sentence with RC extraposition from a noun

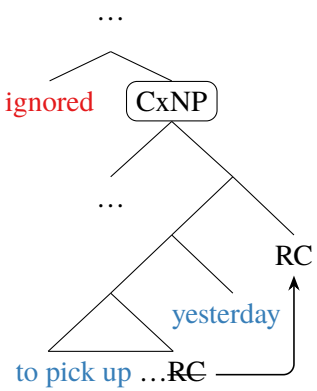
[56] The psycholinguistic literature also features a number of proposals to reduce parsing preferences to other factors, including implicit prosody (Fodor 1998, 2002), grammatical differences (Gilboy et al. 1995), the availability of a particular syntactic configuration (Grillo and Costa 2014, Grillo et al. 2015, Aguilar and Grillo 2021), context-induced effects (Altmann et al. 1998), working memory differences (Swets et al. 2007), length-based complexity heuristics (Gibson et al. 1996), and relative frequencies of different attachment sites (Mitchell et al. 1995). The emerging picture of parsing preferences in a single language is multifaceted and contains a number of underexplored interactions between different factors. Mapping these factors in Russian is a large research program that is currently underway; see Sekerina (2003), Fedorova and Yanovich (2004, 2005), Dragoy (2006, 2007), Anisimov et al. (2014, 2017), Podlesskaya (2014), Chernova and Chernigovskaya (2015), Chernova and Prokopenya (2016), Chernova et al. (2016), Latanov et al. (2016), Nikiforova et al. (2019), Puhacheuskaya (2020). For the experiments in this chapter, we assume that Russian is an all-around Early Closure language. We also use semantic incongruity to emphasize the EC reading of right-edge adverbs; see Section 3.3 for the details of individual experiments.

complement island in (113) repeated from (62). Applied to English, EC would force native speakers to choose the parse in (114) with the high attachment of RC and an island violation.

(113) Casey ignored the request to pick up [$_{NP}$ a book] yesterday [$_{RC}$ that she bought *t*].

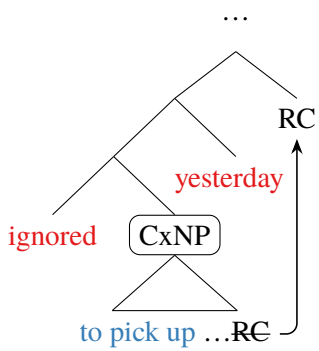
a. Low attachment of RC

RC is inside the island



b. High attachment of RC

RC crosses the island boundary



(114) …ignored the request to pick up … yesterday RC *Early Closure*

Starting with Sekerina (2003), native Russian speakers were shown to consistently use the EC strategy; see also Anisimov et al. (2017), Nikiforova et al. (2019), Puhacheuskaya (2020). For example, in (115) Russian speakers tend to first associate the temporal adverb *yesterday morning* with the matrix predicate (*noticed*) and not with the embedded predicate (*bought*).

(115) Ja zam^{j}etil, čto ona kupila novuju sumku, včera utrom.
I noticed that she bought new purse yesterday morning
'Yesterday morning I noticed that she (had) bought a new purse'

The preference for the EC strategy makes Russian the perfect candidate for the target language for

our study, since it allows us to test more island structures without complicating the experimental sentences in order to work around the confounds created by the LC strategy. In this way, the series of experiments below provides converging evidence from a different language and from a number of syntactic structures that are potentially untestable in English. This choice also has the added advantage of increasing the number of island structures and dependency types that have been investigated using large-scale acceptability judgment experiments in Russian; see Polinsky et al. (2013), Belova (2021) for formal experimental studies of several types of subject islands.

3.2.2 Testing both *wh*-movement and RC Extraposition

As discussed in Chapter 1, extraposition is subject to a locality requirement known as the Right Roof Constraint (Ross 1967), which prohibits it from crossing a finite clause boundary.

(116) *Right Roof Constraint (RRC)*

Rightward movement may move an element X to the right edge of the cyclic node ($\simeq$ CP) which most immediately contains X, but not further.

For example, in (117) the PP can move to the edge of the sentential subject CP, but it cannot cross that CP boundary to adjoin to the edge of the matrix CP.

(117) a. [[That [a review ~~PP~~] came out yesterday [$_{PP}$ of this article] $_{CP}$] is catastrophic $_{CP}$]

b. *[[That [a review ~~PP~~] came out yesterday $_{CP}$] is catastrophic [$_{PP}$ of this article] $_{CP}$]

RRC constitutes an important potential confound in RC extraposition experiments. Consider islands in (118) that all prototypically include a finite clause boundary, similar to the clausal

subject island in (117).[57] If RC extraposition from the same island structures shown in (119) ends up being ungrammatical, it can be either because this structure is an island and RC extraposition is similar to *wh*-movement in (119) or because RC extraposition there violates RRC.[58]

(118) Islands with a finite clause boundary (*wh*-movement)

a. What did you wonder [$_{CP}$ whether Emma **bought** ~~what~~]? *wh-island*

b. What did you make the claim [$_{CP}$ that Emma **bought** ~~what~~]? *noun complement island*

c. What did you worry [$_{CP}$ because Emma **bought** ~~what~~]? *adjunct island*

(119) Islands with a finite clause boundary (RC extraposition)

a. I still wonder [$_{CP}$ whether Emma **brought** the dessert ~~RC~~] *wh-island*
sometimes [$_{RC}$ that Adam devoured]?

b. I still lament the fact [$_{CP}$ that Mary **got** the job ~~RC~~] *noun complement island*
sometimes [$_{RC}$ that Terry was applying to].

c. [$_{CP}$ Because Tony **knew** the person ~~RC~~] he waved [$_{RC}$ that *adjunct island*
Lin invited].

The straightforward way to remove the RRC confound is to construct non-finite versions of the *wh*-island, noun complement island, and adjunct island.[59] No changes are needed for the

[57] Unfortunately, there is still very little information about RRC in languages other than English, so in the absence of a better alternative we assume for now that Russian faces the same problem.

[58] See Grosu (1973), Culicover and Rochemont (1990), Frazier and Clifton (1996) for alternative accounts of RRC.

[59] There are other, more exotic ways to neutralize a finite clause boundary, e.g. Grano and Lasnik (2018) and larger experimental designs to isolate the island effect from the RRC violation. We leave both for future research.

nominal subject islands, since they do not include a finite clause boundary. The problem with this solution is that some islands are also known to be sensitive to finiteness. In English *wh*-movement from a non-finite *wh*-island is reported to be more acceptable than that of its finite counterpart (Huang 1982, Chomsky 1986, Lasnik and Saito 1990). This is shown in (120).[60]

(120) a. *Which man are you wondering [whether she should call ~~which man~~] ?

b. ?Which man are you wondering [whether to call ~~which man~~] ?

Some authors claim that the adjunct island is also sensitive to finiteness (Szabolcsi 2006, Michel and Goodall 2013, Mueller 2019), but the contrast is more subtle. See the following pair:

(121) a. *I wonder who Tony went home [after he kissed ~~who~~] ?

b. ??I wonder who Tony went home [after kissing ~~who~~] ?

The finiteness sensitivity of the islands affects the interpretation of the results. Negative results remain unaffected: if RC extraposition is ungrammatical, it can only be caused by an island effect. But positive results are now compatible with two alternative explanations: if RC extraposition from a non-finite island is acceptable, it is either because RC extraposition can escape the island (and this fact must be incorporated into the theory of RC extraposition), or because the non-finite structure is no longer an island (and the test is void).

In order to make sure that the non-finite versions of islands still block extraction (i.e., they are still islands), *wh*-movement and RC extraposition are tested in parallel. In this way,

[60] There is currrently no pre-compiled list of islands that are sensitive to finiteness in Russian. We assume that Russian is similar to English in the absence of any evidence that says otherwise.

if RC extraposition can escape a non-finite island structure and *wh*-movement cannot (or vice versa), we can be sure that the non-finite structure is still an island. But if both dependencies are allowed across a non-finite island boundary, we conclude that this non-finite structure is no longer an island. An added benefit of testing both dependencies is that it provides interesting and rare data comparing two dependency types against the same structures in the same language.

3.2.3 Testing multiple island structures

Consider the pair in (122) showing *wh*-movement and RC extraposition from the unaccusative subject island. The contrast between two dependencies can receive two alternative explanations. One is that only *wh*-movement is created by syntactic movement, whereas RC extraposition is not. Another is that both RC extraposition and *wh*-movement are created by syntactic movement, but their respective syntactic environments allow RC extraposition to escape islands of this type.

(122) a. *[$_{DP}$ What] did you think that [$_{DP}$ a recipe for ~~DP~~] was sitting on the counter?

b. [$_{DP}$ A man ~~RC~~] came into the room [$_{RC}$ that Mary recognized].

Even though the second explanation would set rightward movement apart from leftward movement, which cannot escape subject islands in English, it does not need to postulate a principally different (i.e. non-movement) mechanism for RC extraposition. Studies of island effects have established that different types of movement can be sensitive to different islands in the same language (Engdahl 1980, Rizzi 1982, Müller 1995, Sprouse et al. 2016, Kush et al. 2019, a.o.). Therefore, the results of a single island type are insufficient to establish the underlying syntactic mechanism of RC extraposition, even if it differs from *wh*-movement, as that single island type

could simply be a locus of variation between two dependencies. Thus, testing multiple islands is necessary to answer the question of whether RC extraposition shows any island effects at all.

3.3 Methods

The 12 experiments in this study test the availability of RC extraposition and *wh*-movement from the set of six different island structures: adjunct island, noun complement island, wh-island, and transitive, unergative, and unaccusative nominal subject islands. These islands are often tested against leftward movement in different languages, making it easier to compare results between languages. The EC parsing strategy used in Russian permits us to test island structures that cannot be tested in English, but to make the comparison between Russian and English simpler, several types of subject islands are also included in this set.

3.3.1 Experimental design

All experiments reported here use the standard version of the full 2×2 factorial design for island effects from (Sprouse 2007). The design includes two factors, STRUCTURE and DEPENDENCY. Each factor has two levels. STRUCTURE controls the presence of an island structure in a sentence (*island* vs. *non-island*). DEPENDENCY manipulates properties of the dependency in question. *Wh*-movement experiments compare *wh*-dependencies of different lengths (*short* vs. *long* and *LBE* vs. *pied-piping*).[61] RC extraposition experiments compare the presence of the extraposition

[61] The subject island experiments use labels *"LBE"* and *"pied-piping"* instead of *"short"* and *"long"* to avoid confusion. The labels *"short"* and *"long"* are used in *wh*-experiments to signal the linear distance between the gap and the filler, which in subject-first languages, such as Russian, coincides with the structural distance in all island structures, except for subject islands, where the two are dissociated. In this way, the label *"long"* in the subject

dependency with its absence (*in-situ* vs. *ex-situ*). The templates for the four conditions of *wh*-movement and RC extraposition experiments are shown in (123) and (124), respectively.

(123)	a.	*wh* … ~~*wh*~~ … [Non-island …]	non-island	short movement
	b.	*wh* … [Non-island … ~~*wh*~~ …]	non-island	long movement
	c.	*wh* … ~~*wh*~~ … [Island …]	island	short movement
	d.	*wh* … [Island … ~~*wh*~~ …]	island	long movement
(124)	a.	… [Non-island … RC]	non-island	in-situ
	b.	… [Non-island … ~~RC~~] …… RC	non-island	ex-situ
	c.	… [Island … RC]	island	in-situ
	d.	… [Island … ~~RC~~] …… RC	island	ex-situ

The major advantage of using the factorial design is that it can separate the island effect by subtracting the main effects of the dependency-forming cost and the structure-forming cost. When the island effect is present, this design shows a superadditive interaction of two factors. Figure 3.1 displays two possible outcomes of this design. The main effects of both structure and dependency are shown as horizontal and vertical shifts of pairs of conditions. The left panel shows no island effect, as the lines on the plot are parallel. The right panel, however, shows a large interaction in addition to the two main effects, with the dependency with the tail inside the island structure being significantly less acceptable than any other experimental condition. This

island experiments would correspond to the label *"short"* in the experiments that test other islands and vice versa. This naming issue can be avoided by adopting a separate pair of unambiguous labels for subject island experiments.

creates an ”alligator mouth” shape, which is indicative of an island effect.

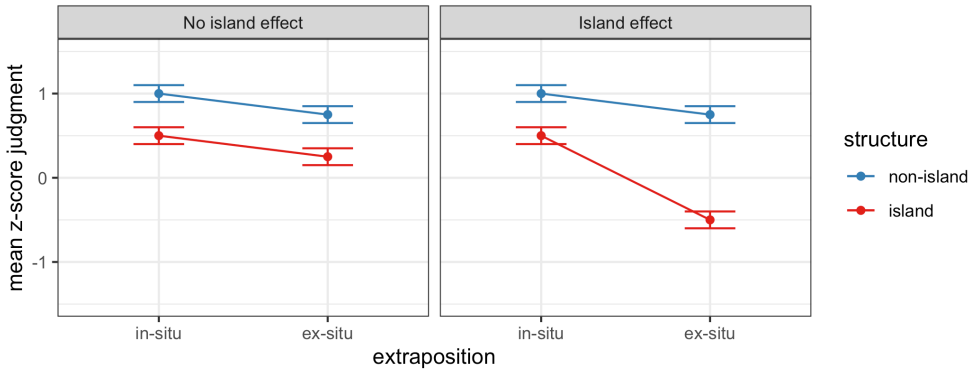


Fig. 3.1: Simple island effect (mock plots)

3.3.2 Comparisons across experiments

The main goal of these experiments is to compare *wh*-movement and RC extraposition across a group of six syntactic islands. To ensure that we are not comparing apples and oranges, all experiments that test the same dependency use the same levels of the factor DEPENDENCY, and all experiments that test the same island use the same subtype of that island. Because of this organization of the study, the exact same dependencies are tested across different syntactic islands, and, at the same time, the exact same syntactic island structures are tested with both dependencies, which together allow us to compare two types of movement directly.

3.3.3 Materials

3.3.3.1 Materials for Experiments 1 and 2 (adjunct island)

Experiments 1 and 2 test *wh*-movement and RC extraposition from the adjunct island. Both experiments use extraction from a clausal complement as a grammatical control for extraction

from an adjunct clause. Both experiments include the same levels for the factor STRUCTURE.

(125) Experiment 1: Adjunct island × *wh*-movement

a.	*wh* … ~~*wh*~~ V [argument …]	non-island	short movement
b.	*wh* … V [argument … ~~*wh*~~]	non-island	long movement
c.	*wh* … ~~*wh*~~ V [adjunct …]	island	short movement
d.	*wh* … V [adjunct … ~~*wh*~~]	island	long movement

(126) Experiment 2: Adjunct island × RC extraposition

a.	[argument … NP RC] … V	non-island	in-situ
b.	[argument … NP ~~RC~~] … V … RC	non-island	ex-situ
c.	[adjunct … NP RC] … V	island	in-situ
d.	[adjunct … NP ~~RC~~] … V … RC	island	ex-situ

Experiments 1-2 compare the extraction from an infintival complement clause (*non-island*) and an infinitival adjunct clause headed by *čtoby 'in order'* (*island*). In the *wh*-movement experiment, both clauses appear at the right edge of the matrix clause (127). In this way, the gap and the filler are separated by the rest of the matrix clause. To maintain the same distance between the gap and the filler in the RC extraposition experiment, we placed the adjunct clause on the left edge and fronted the complement clause via VP-fronting (128). In a full factorial design any differences between a clausal complement that is fronted to the left edge via movement and an

adjunct that is base-generated there (i.e. no movement) can be controlled for straightforwardly: both structures are distributed evenly across the factors (i.e. both movement and non-movement pairs of conditions use the same structure), because of that any effect of fronting is going to subtract out when isolating the island effect in the interaction term.

(127) Experiment 1: Adjunct island × *wh*-movement

a.	Kto ~~kto~~ pytalsʲa [$_{CP}$ podbodrʲitʲ Lʲenu]? who.NOM was.trying to.cheer.up Lena.ACC 'Who was trying to cheer up Lena?'	non-island	short
b.	Kogo Pʲetʲa pytalsʲa [$_{CP}$ podbodrʲitʲ ~~kogo~~]? who.ACC Petya.NOM was.trying to.cheer.up 'Who was Petya trying to cheer up?'	non-island	long
c.	Kto ~~kto~~ ulybnulsʲa [$_{CP}$ čtoby podbodrʲitʲ Lʲenu]? who.NOM smiled in.order to.cheer.up Lena.ACC 'Who smiled in order to cheer up Lena?'	island	short
d.	Kogo Pʲetʲa ulibnulsʲa [$_{CP}$ čtoby podbodrʲitʲ ~~kogo~~]? who.ACC Petya.NOM smiled in.order to.cheer.up 'Who did Petya smile in order to cheer up?'	island	long

(128) Experiment 2: Adjunct island × RC extraposition

a.	[$_{CP}$ Podbodrʲitʲ dʲevušku [$_{RC}$ kotoraja smušʲalasʲ v novoj kompanʲii]] to.cheer.up girl.ACC which was.acting.shy in new group Pʲetʲa pytalsʲa bʲezuspʲešno. Petya.NOM was.trying unsucessfully 'Petya was unsuccessfully trying to cheer up a girl who was shy in a new group'	non-island	in-situ
b.	[$_{CP}$ podbodrʲitʲ dʲevušku ~~RC~~] Pʲetʲa pytalsʲa bʲezuspʲešno to.cheer.up girl.ACC Petya.NOM was.trying unsucessfully [$_{RC}$ kotoraja smušʲalasʲ v novoj kompanʲii]]. which was.acting.shy in new group 'Petya was unsuccessfully trying to cheer up a girl who was shy in a new group'	non-island	ex-situ
c.	[$_{CP}$ Čtoby podbodrʲitʲ dʲevušku [$_{RC}$ kotoraja smušʲalasʲ v novoj in.order to.cheer.up girl.ACC which was.acting.shy in new kompanʲii]] Pʲetʲa prʲivʲetlʲivo ulybnulsʲa. company Petya.NOM in.a.friendly.way smiled 'Petya smiled cordially to cheer up a girl who was shy in a new group'	island	in-situ
d.	[$_{CP}$ Čtoby podbodrʲitʲ dʲevušku ~~RC~~] Pʲetʲa prʲivʲetlʲivo in.order to.cheer.up girl.ACC Petya.NOM in.a.friendly.way ulybnulsʲa [$_{RC}$ kotoraja smušʲalasʲ v novoj kompanʲii]. smiled which was.acting.shy in new company 'Petya smiled cordially to cheer up a girl who was shy in a new group'	island	ex-situ

3.3.3.2 Materials for Experiments 3 and 4 (noun complement island)

Both noun complement island experiments compare an infinitival clausal complement (*non-island*) and an infinitival complement of an object NP (*island*). In both experiments, both structures appear in their base position to the right of the (finite) matrix verb. In the RC extraposition experiment, displacement is diagnosed using a temporal adverb at the right edge that is linked to the matrix verb due to the Early Closure strategy.

(129) Experiment 3: Noun complement island × *wh*-movement

a.	*wh* … ~~*wh*~~ V [$_{CP_{inf}}$ …]	non-island	short movement
b.	*wh* … V [$_{CP_{inf}}$ … ~~*wh*~~]	non-island	long movement
c.	*wh* … ~~*wh*~~ V [$_{NP_{obj}}$ N [$_{CP_{inf}}$ …]]	island	short movement
d.	*wh* … V [$_{NP_{obj}}$ N [$_{CP_{inf}}$ … ~~*wh*~~]]	island	long movement

(130) Experiment 4: Noun complement island × RC extraposition

a.	… V [$_{CP_{inf}}$ … NP RC] adv.	non-island	in-situ
b.	… V [$_{CP_{inf}}$ … NP ~~RC~~] adv. RC	non-island	ex-situ
c.	… V [$_{NP_{obj}}$ N [$_{CP_{inf}}$ … NP RC]] adv.	island	in-situ
d.	… V [$_{NP_{obj}}$ N [$_{CP_{inf}}$ … NP ~~RC~~]] adv. RC	island	ex-situ

Both experiments use the same verb in the infinitival complement across all conditions. The matrix verb in the non-island pair (a-b) is lexically matched to the deverbal noun in the island pair (c-d). In the *wh*-experiment, the gap and the filler are separated by the rest of the main clause. In the extraposition experiment, a temporal adverb signals the right edge of the matrix clause (due to the Early Closure strategy) separating the extraposed RC from its host.

(131) Experiment 3: Noun complement island × *wh*-movement

a.	Kto ~~kto~~ planʲiroval [$_{CP}$ najtʲi rabotu]? who was.planning to.find job 'Who was planning to find a job?'	non-island	short
b.	Čto Marʲina planʲirovala [$_{CP}$ najtʲi ~~čto~~]? what Marina was.planning to.find 'What was Marina planing to find?'	non-island	long
c.	Kto ~~kto~~ rʲealʲizoval [$_{NP}$ plan [$_{CP}$ najtʲi rabotu]]? who implemented plan to.find job 'Who implemented a plan to find a job?'	island	short
d.	Čto Marʲina rʲealʲizovala [[$_{NP}$ plan [$_{CP}$ najtʲi ~~čto~~]]? what Marina implemented plan to.find 'What did Marina implement a plan to find?'	island	long

(132) Experiment 4: Noun complement island × RC extraposition

a.	Marʲina planʲirovala [$_{CP}$ najtʲi rabotu, [$_{RC}$ kotoraja budʲet blʲiže k domu,]] mʲesʲats nazad. Marina.NOM was.planning to.find job.ACC which will.be closer to home month ago 'A month ago Marina was planning to find a job that would be closer to home'	non-island	in-situ
b.	Marʲina planʲirovala [$_{CP}$ najti rabotu, ~~RC~~] mʲesʲats nazad, [$_{RC}$ kotoraja budʲet blʲiže k domu]. Marina.NOM was.planning to.find job.ACC month ago which will.be closer to home 'A month ago Marina was planning to find a job that would be closer to home'	non-island	ex-situ
c.	Marʲina rʲealʲizovala [$_{NP}$ plan [$_{CP}$ najtʲi rabotu, [$_{RC}$ kotoraja budʲet blʲiže k domu,]]] mʲesʲats nazad. Marina.NOM implemented plan.ACC to.find job.ACC which will.be closer to home month ago 'A month ago Marina has implemented a plan to find a job that would be closer to home'	island	in-situ
d.	Marʲina rʲealʲizovala [$_{NP}$ plan [$_{CP}$ najtʲi rabotu ~~RC~~]] mʲesʲats nazad, [$_{RC}$ kotoraja budʲet blʲiže k domu]. Marina.NOM implemented plan.ACC to.find job.ACC month ago which will.be closer to home 'A month ago Marina has implemented a plan to find a job that would be closer to home'	island	ex-situ

3.3.3.3 Materials for Experiments 5 and 6 (*wh*-island)

Experiments 5-6 use a *wh*-adjunct to create a *wh*-island structure. In the experimental pair, the *wh*-adjunct appears at the left edge of the embedded interrogative clause. In the control pair, the adjunct is removed. Across all conditions, the embedded structure is an infinitival obligatory control clause. The same levels of the factor STRUCTURE (i.e., the presence/absence of a *wh*-adjunct) are used in both *wh*-movement and RC extraposition experiments. In both experiments, the interrogative CP_{inf} remains in its base position on the right edge of the matrix clause.

(133) Experiment 5: *Wh*-island × *wh*-movement

a.	*wh* … ~~*wh*~~ V [$_{CP_{INF}}$ …]	non-island	short movement
b.	*wh* … V [$_{CP_{INF}}$ V ~~*wh*~~]	non-island	long movement
c.	*wh* … ~~*wh*~~ V [$_{CP_{INF}}$ *wh* …]	island	short movement
d.	*wh* … V [$_{CP_{INF}}$ *wh* … V ~~*wh*~~]	island	long movement

(134) Experiment 6: *Wh*-island × RC extraposition

a.	…V [$_{CP_{INF}}$ … NP RC] adv.	non-island	in-situ
b.	…V [$_{CP_{INF}}$ … NP ~~RC~~] adv. RC	non-island	ex-situ
c.	…V [$_{CP_{INF}}$ *wh* … NP RC] adv.	island	in-situ
d.	…V [$_{CP_{INF}}$ *wh* … NP ~~RC~~] adv. RC	island	ex-situ

As a result, the *wh*-dependency spans the entire matrix clause, while the filler and the gap of the RC extraposition dependency are separated by the matrix temporal adverb that is linked to the matrix predicate via the Early Closure strategy. In this way, the RC that appears to the right of the adverb necessarily marks the right edge of the matrix and not the embedded clause.

(135) Experiment 5: *Wh*-island × *wh*-movement

a.	Kto ~~kto~~ prʲedložil [$_{CP}$ pozvatʲ Romu]? who.NOM suggested to.invite Roma.ACC 'Who suggested to invite Roman?'	non-island	short
b.	Kogo Roma prʲedložil [$_{CP}$ pozvatʲ ~~kogo~~]? who.ACC Roma.NOM suggested to.invite 'Who did Roman suggest to invite?'	non-island	long
c.	Kto ~~kto~~ prʲedložil [$_{CP}$ kuda pozvatʲ Romu]? who.NOM suggested where to.invite Roma.ACC 'Who suggested where to invite Roman?'	island	short
d.	Kogo Roma prʲedložil [$_{CP}$ kuda pozvatʲ ~~kogo~~]? who.ACC Roma.NOM suggested where.to to.invite 'Who did Roman suggest where to invite?'	island	long

(136) Experiment 6: *Wh*-island × RC extraposition

a.	Roma prʲedložil [$_{CP}$ pozvatʲ sosʲeda, [$_{RC}$ kotoryj živʲët na vtorom etaže,]] včera. Roma.NOM suggested to.invite neighbor.ACC which lives on second floor yesterday 'Yesterday Roman suggested to invite a neighbor that lives on the second floor'	non-island	in-situ
b.	Roma prʲedložil [$_{CP}$ pozvatʲ sosʲeda ~~RC~~] včera, [$_{RC}$ kotoryj živʲët na vtorom etaže]. Roma.NOM suggested to.invite neighbor.ACC yesterday which lives on second floor 'Yesterday Roman suggested to invite a neighbor that lives on the second floor'	non-island	ex-situ
c.	Roma prʲedložil [$_{CP}$ kuda pozvatʲ sosʲeda, [$_{RC}$ kotoryj živʲët na vtorom etaže]] včera. Roma.NOM suggested where to.invite neighbor.ACC which lives on second floor yesterday 'Yesterday Roman suggested where to invite a neighbor that lives on the 2nd floor'	island	in-situ
d.	Roma prʲedložil [$_{CP}$ kuda pozvatʲ sosʲeda ~~RC~~] včera, [$_{RC}$ kotoryj živʲët na vtorom etaže]. Roma.NOM suggested where to.invite neighbor.ACC yesterday which lives on second floor 'Yesterday Roman suggested where to invite a neighbor that lives on the 2nd floor'	island	ex-situ

3.3.3.4 Materials for Experiments 7 and 8 (transitive subject island)

All subject island experiments use the same two levels of factor STRUCTURE, a subject NP (*island*) and an object NP (*non-island*). The same control pair (i.e. a direct object NP) is used in all subject island experiments with both transitive and intransitive verbs. It is a natural choice for transitive verbs, whereas for intransitive verbs it brings us as close to creating a minimal pair as is possible in structures where the verb only licenses one argument (but see Section 3.5.2.2 for a different option). It also facilitates a direct comparison of different types of subjects by serving as a baseline condition that is used in multiple experiments. The *wh*-movement experiment compares *wh*-movement of the entire (pied-piped) argument and the interrogative subextraction of the LBE type. The RC extraposition experiment uses the same levels for the DEPENDENCY

variable as before, an in-situ and an ex-situ RC.

(137) Experiment 7: Transitive subject island × *wh*-movement

a.	wh_{N} adv. [$_{\text{SBJ}}$ N] V$_{\text{TR}}$ [$_{\text{OBJ}}$ ~~wh_{N}~~]	non-island	pied-piping
b.	wh_{A} adv. [$_{\text{SBJ}}$ N] V$_{\text{TR}}$ [$_{\text{OBJ}}$ ~~wh_{A}~~ N]	non-island	LBE
c.	wh_{N} adv. [$_{\text{SBJ}}$ ~~wh_{N}~~] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N]	island	pied-piping
d.	wh_{A} adv. [$_{\text{SBJ}}$ ~~wh_{A}~~ N] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N]	island	LBE

(138) Experiment 8: Transitive subject island × RC extraposition

a.	[$_{\text{SBJ}}$ N] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N RC] adv.	non-island	in-situ
b.	[$_{\text{SBJ}}$ N] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N ~~RC~~] adv. RC	non-island	ex-situ
c.	[$_{\text{SBJ}}$ N RC] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N] adv.	island	in-situ
d.	[$_{\text{SBJ}}$ N ~~RC~~] V$_{\text{TR}}$ [$_{\text{OBJ}}$ N] adv. RC	island	ex-situ

All direct object NPs are marked with the structural accusative case. All verbs in both experiments select two animate NPs. To discourage misattribution of the *wh*-word (during LBE) or the extraposed RC, the NP that is not targeted by movement only includes a proper name.

(139) Experiment 7: Transitive subject island × *wh*-movement

a.	[$_{NP}$ Kakogo sotrudnika] včera utrom Mixail poblagodaril ~~NP~~? which.ACC employee.ACC yesterday morning Michael.NOM thanked 'Which employee did Michael thank yesterday morning?'	non-island	pied-piping
b.	[$_{A}$ Kakogo] včera utrom Mixail poblagodaril [$_{NP}$ ~~A~~ sotrudnika]? which.ACC yesterday morning Michael.NOM thanked employee.ACC 'Which employee did Michael thank yesterday morning?'	non-island	LBE
c.	[$_{NP}$ Kakoj sotrudnik] včera utrom ~~NP~~ poblagodaril Mixaila? which.NOM employee.NOM yesterday morning thanked Michael.ACC 'Which employee thanked Michael yesterday morning?'	island	pied-piping
d.	[$_{A}$ Kakoj] včera utrom [$_{NP}$ ~~A~~ sotrudnik] poblagodaril Mixaila? which.NOM yesterday morning employee.NOM thanked Michael.ACC 'Which employee thanked Michael yesterday morning?'	island	LBE

(140) Experiment 8: Transitive subject island × RC extraposition

a.	Van^{j}a napugal [$_{NP}$ sobaku, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e,]] dva d^{j}n^{j}a nazad. Vanya scared dog which lives in backyard two days ago 'Vanya has scared a dog two days ago that lives in the backyard'	non-island	in-situ
b.	Van^{j}a napugal [$_{NP}$ sobaku ~~RC~~] dva d^{j}n^{j}a nazad, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e]. Vanya scared dog two days ago which lives in backyard 'Vanya has scared a dog two days ago that lives in the backyard'	non-island	ex-situ
c.	[$_{NP}$ Sobaka, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e,]] napugala Van^{j}u dva d^{j}n^{j}a nazad. dog which lives in backyard scared Vanya two days ago 'The dog that lives in the backyard has scared Vanya two days ago'	island	in-situ
d.	[$_{NP}$ Sobaka ~~RC~~] napugala Van^{j}u dva d^{j}n^{j}a nazad, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e]. dog scared Vanya two days ago which lives in backyard 'The dog that lives in the backyard has scared Vanya two days ago'	island	ex-situ

3.3.3.5 Materials for Experiments 9 and 10 (unergative subject island)

Experiments 9 and 10 compare *wh*-movement and RC extraposition from the unergative subject and the transitive direct object. We use unergative verbs that have previously been identified in the literature (Babby 1980, Schoorlemmer 2004). The levels of both STRUCTURE and DEPENDENCY are the same as in the transitive subject island experiments.

(141) Experiment 9: Unergative subject island × *wh*-movement

a.	wh_{N} adv. [$_{SBJ}$ N] V_{TR} [$_{OBJ}$ ~~wh_{N}~~]	non-island	pied-piping
b.	wh_{A} adv. [$_{SBJ}$ N] V_{TR} [$_{OBJ}$ ~~wh_{A}~~ N]	non-island	LBE
c.	wh_{N} adv. [$_{SBJ}$ ~~wh_{N}~~] V_{UE}	island	pied-piping
d.	wh_{A} adv. [$_{SBJ}$ ~~wh_{A}~~ N] V_{UE}	island	LBE

(142) Experiment 10: Unergative subject island × RC extraposition

a.	[$_{SBJ}$ N] V_{TR} [$_{OBJ}$ N RC] adv.	non-island	in-situ
b.	[$_{SBJ}$ N] V_{TR} [$_{OBJ}$ N ~~RC~~] adv. RC	non-island	ex-situ
c.	[$_{SBJ}$ N RC] V_{UE} [$_{OBJ}$ N] adv.	island	in-situ
d.	[$_{SBJ}$ N ~~RC~~] V_{UE} [$_{OBJ}$ N] adv. RC	island	ex-situ

Similarly to the transitive subject island experiments, the subject appears in the preverbal position. It is an open question in Russian syntax whether the "base" positions of unergative and unaccusative subjects are preverbal or postverbal (Babyonyshev 1997, Bailyn 2012, Polinsky

et al. 2013). To make sure that all intransitive subjects appear in the same (derived) position, a manner adverb was added between the subject and the unergative verb. In this way, the host NP during RC extraposition and the remnant NP during LBE have to move from their base position.

(143) Experiment 9: Unergative subject island × *wh*-movement

a.	[$_{NP}$ Kakogo sotrudnika] včera utrom Mixail poblagodaril ~~NP~~? which.ACC employee.ACC yesterday morning Michael.NOM thanked 'Which employee did Michael thank yesterday morning?'	non-island	pied-piping
b.	[$_{A}$ Kakogo] včera utrom Mixail poblagodaril [$_{NP}$ ~~A~~ sotrudnika]? which.ACC yesterday morning Michael.NOM thanked employee.ACC 'Which employee did Michael thank yesterday morning?'	non-island	LBE
c.	[$_{NP}$ Kakoj sotrudnik] sʲekundu nazad nʲervno ~~NP~~ morgnul? which.NOM employee.NOM second ago nervously blinked 'Which employee blinked nervously a second ago?'	island	pied-piping
d.	[$_{A}$ Kakoj] sʲekundu nazad [$_{NP}$ ~~A~~ sotrudnik] nʲervno morgnul? which.NOM second ago employee.NOM nervously blinked 'Which employee blinked nervously a second ago?'	island	LBE

(144) Experiment 10: Unergative subject island × RC extraposition

a.	Van^{j}a napugal [$_{NP}$ sobaku, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e,]] dva d^{j}n^{j}a nazad. Vanya scared dog which lives in backyard two days ago 'Vanya has scared a dog two days ago that lives in the backyard'	non-island	in-situ
b.	Van^{j}a napugal [$_{NP}$ sobaku ~~RC~~] dva d^{j}n^{j}a nazad, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e]. Vanya scared dog two days ago which lives in backyard 'has scared a dog two days ago that lives in the backyard'	non-island	ex-situ
c.	[$_{SBJ}$ Pos^{j}etit^{j}el^{j}, [$_{RC}$ kotoryj sobirals^{j}a ustroit^{j} bol^{j}šoj skandal]], n^{j}ervno morgnul. Customer which was.going to.make big scandal nervously blinked 'The customer who was going to make a big fuss nervously blinked'	island	in-situ
d.	[$_{SBJ}$ Pos^{j}etit^{j}el^{j} ~~RC~~] n^{j}ervno morgnul, [$_{RC}$ kotoryj sobirals^{j}a ustroit^{j} bol^{j}šoj skandal]. Customer nervously blinked which was.going to.make big scandal 'The customer who was going to make a big fuss nervously blinked'	island	ex-situ

3.3.3.6 Materials for Experiments 11 and 12 (unaccusative subject island)

The unaccusative subject island experiments are identical to the unergative subject island experiments, except for the verb type. An accusative direct object NP is used as a control (*non-island*). Similarly to the unergative experiments, a manner adverb was placed between the verb and the subject NP to ensure that the subject moves to a derived position.

(145) Experiment 11: Unaccusative subject island × *wh*-movement

a.	wh_{N} adv. [$_{SBJ}$ N] V_{TR} [$_{OBJ}$ ~~wh_{N}~~]	non-island	pied-piping
b.	wh_{A} adv. [$_{SBJ}$ N] V_{TR} [$_{OBJ}$ ~~wh_{A}~~ N]	non-island	LBE
c.	wh_{N} adv. [$_{SBJ}$ ~~wh_{N}~~] V_{UA}	island	pied-piping
d.	wh_{A} adv. [$_{SBJ}$ ~~wh_{A}~~ N] V_{UA}	island	LBE

(146) Experiment 12: Unaccusative subject island × RC extraposition

a.	[$_{SBJ}$ N] V_{TR} [$_{OBJ}$ N RC] adv.	non-island	in-situ
b.	[$_{SBJ}$ N] V_{TR} [$_{OBJ}$ N ~~RC~~] adv. RC	non-island	ex-situ
c.	[$_{SBJ}$ N RC] V_{UA} [$_{OBJ}$ N] adv.	island	in-situ
d.	[$_{SBJ}$ N ~~RC~~] V_{UA} [$_{OBJ}$ N] adv. RC	island	ex-situ

(147) Experiment 11: Unaccusative subject island × *wh*-movement

a.	[$_{NP}$ Kakogo sotrudnika] včera utrom Mixail poblagodaril ~~NP~~? which.ACC employee.ACC yesterday morning Michael.NOM thanked 'Which employee did Michael thank yesterday morning?'	non-island	pied-piping
b.	[$_{A}$ Kakogo] včera utrom Mixail poblagodaril [$_{NP}$ ~~A~~ sotrudnika]? which.ACC yesterday morning Michael.NOM thanked employee.ACC 'Which employee did Michael thank yesterday morning?'	non-island	LBE
c.	[$_{NP}$ Kakoj patsijent] dʲesʲatʲ minut nazad ~~NP~~ nʲepodvižno lʲežal? which patient ten minutes ago motionless was.laying.down 'Which patient ten minutes ago was laying down motionless?'	island	pied-piping
d.	[$_{A}$ Kakoj] dʲesʲatʲ minut nazad [$_{NP}$ ~~A~~ patsijent] nʲepodvižno lʲežal? which ten minutes ago patient motionless was.laying.down 'Which patient ten minutes ago was laying down motionless?'	island	LBE

(148) Experiment 12: Unaccusative subject island × RC extraposition

a.	Van^{j}a napugal [$_{NP}$ sobaku, [$_{RC}$ kotoraja živ^{j}ët vo dvor^{j}e,]] dva d^{j}n^{j}a Vanya scared dog which lives in backyard two days nazad. ago 'Vanya has scared a dog two days ago that lives in the backyard'	non-island	in-situ
b.	Van^{j}a napugal [$_{NP}$ sobaku ~~RC~~] dva d^{j}n^{j}a nazad, [$_{RC}$ kotoraja živ^{j}ët vo Vanya scared dog two days ago which lives in dvor^{j}e]. backyard 'has scared a dog two days ago that lives in the backyard'	non-island	ex-situ
c.	[$_{NP}$ B^{j}egun, [$_{RC}$ kotoryj tol^{j}ko čto prob^{j}ežal marafon,] n^{j}epodv^{j}ižno runner which just now ran marathon motionless l^{j}ežal. laid.down 'The runner who just ran a marathon was laying down motionless'	island	in-situ
d.	[$_{NP}$ B^{j}egun ~~RC~~] n^{j}epodv^{j}ižno l^{j}ežal, [$_{RC}$ kotoryj tol^{j}ko čto prob^{j}ežal runner motionless laid.down which just now ran marafon]. marathon 'The runner who just ran a marathon was laying down motionless'	island	ex-situ

3.3.3.7 Reasons for testing LBE and not NP / PP subextraction

The standard experimental design for subject islands in English uses NP subextraction and preposition stranding, as shown in (149) from Sprouse et al. (2016). Note that the stranded preposition in English signals the location of the gap unambiguously.

(149) a. What do you think that the gift prompted ~~what~~?

b. What do you think ~~what~~ prompted the rumor?

c. Who do you think [the gift from the lobbyist] prompted [the rumor about ~~who~~]?

d. Who do you think [the gift from ~~who~~] prompted [the rumor about the Senator]?

The inventory of subextraction in Russian is shown in (150). It includes the NP/PP subextraction and the Left Branch Extraction (LBE). The last option is banned in English (Ross 1967).

(150) a. Kogo Maša včera pozvonʲila [$_{NP}$ dočkʲe ~~kogo~~]?
who.GEN Masha.NOM yesterday called daughter.DAT
'Whose daughter did Masha call yesterday?' *NP subextraction*

b. Po čemu Maša včera pozvonʲila [$_{NP}$ konsulʲtantu ~~po čemu~~]?
on what.DAT Masha.NOM yesterday called consultant.DAT
'What consultant did Masha call yesterday?' *PP subextraction*

c. Čjej Maša včera pozvonʲila [$_{NP}$ ~~čjej~~ dočkʲe]?
whose.DAT Masha.NOM yesterday called daughter.DAT
'Whose daughter did Masha call yesterday?' *LBE*

Using NP subextraction is sub-optimal for at least two reasons. First, the [+animate] *wh*-word kogo 'who.GEN' is synonymous with adjectival possessive forms čjemu / čjej / čjim 'whose.M.DAT / whose.F.DAT/ whose.PL.DAT', which move to the left via LBE; compare (150a) and (150c). The way this competition is resolved varies between speakers, which can affect acceptability in a number of ways, creating a confound.[62,63] Second, the [-animate] *wh*-word

[62] Anecdotally, some native speakers that I consulted find the [+animate] NP subextraction to be substandard in general, some restrict its use to kinship terms and process nouns, some find both forms equally acceptable, some report various differences in the presuppositional content.

[63] Another potential complication for the [+animate] NP subextraction comes from morphological ambiguity. The *wh*-word kogo in Russian is ambiguous between the genitive and accusative cases, creating two parses for the unaccusative subject island sentence in (i) (the judgment is suppressed). Assuming for a moment that it is not an island for *wh*-movement in Russian, the genitive parse should be grammatical. However, the accusative parse creates a garden path effect where the *wh*-word is interpreted as the direct object of an intransitive verb *arrived*, which constitutes a θ-grid violation. In this way, the theory predicts that two parses are going to have different grammaticality statuses, but there is no reliable way to know which parse (or parses) a participant uses.

čego ‘what.GEN’ is used in colloquial Russian to mean ‘why’, creating an ambiguity in (151).[64]

(151) Čego Maša včera pozvonʲila prʲepodavatʲelʲu?
what.GEN Masha.NOM yesterday called teacher.DAT
1. ‘What teacher did Masha call yesterday?’
2. ‘Why did Masha call the teacher yesterday?’

The use of PP subextraction is also limited in several ways. First, many PPs with *wh*-words are ambiguous between clausal adjuncts and nominal arguments/adjuncts, as in (152).

(152) Dʲlʲa čego Maša kupʲila kartʲrʲidʒ?
for what.GEN Masha.NOM bought cartridge.ACC
1. What did Masha buy a cartridge for?
2. Why did Masha buy a cartridge?

Second, most PPs that do not have the clausal adjunct reading shown in (152), e.g. o ‘about’, can only be used with inanimate NPs, which seriously limits the types of subject islands that can be tested with it. Finally, the PP headed by the preposition po ‘over’, which does not have a clausal adjunct reading and which is compatible with animate NPs, is almost ambiguous (modulo a whitespace) with the *wh*-word ‘why’ in Standard Russian; compare (150b) and (153).

(153) Počemu Maša včera pozvonʲila konsulʲtantu?
why Masha.NOM yesterday called consultant.DAT
‘Why did Masha call the consultant yesterday?’

(i) Kogo včera dočka prʲijehala?
who.GEN/ACC yesterday daughter.NOM arrived
‘Whose daughter arrived yesterday?’

[64] The colloquial form is likely related to a PP with the same meaning shown in (152), either by means of P-stripping or postulating a silent P.

In contrast, LBE is free from all of these problems. It can be used with animate NPs and does not have a clausal adjunct reading. Also, similarly to preposition stranding, the agreement on the dislocated left branch unambiguously signals the location of the gap; see (150c). The two most common LBE *wh*-words are čej / čja / čjo 'whose.M.NOM / whose.F.NOM/ whose.PL.NOM' and kakoj / kakaja / kak^{j}ije 'what.kind.M.NOM / what.kind.F.NOM / what.kind.PL.NOM'.[65] To avoid the confounding effect of competition between adjectival possessive forms čej / čja / čjo and the genitive possessive form kogo, we decided to use kakoj / kakaja / kak^{j}ije for the *wh*-movement experiments with the subject islands below. We also tested PP subextraction with po 'over'. The results are discussed in Section 3.5.2.1.

3.3.4 Survey composition

Each island experiment contains 4 experimental conditions and 8 sets of lexically matched items distributed among experimental lists using a Latin square procedure. Each survey includes 30 items: 6 practice items in a fixed order at the beginning followed by 8 experimental items and 16 fillers in a pseudorandomized order. The practice items are not marked as distinct from the rest of the survey. Each experiment includes 4 lists in 4 counterbalanced orders that are used to fight the order effects. 16 filler items include 6 sentences types expected to receive ratings in the low portion of the scale, 5 sentences types expected to receive ratings in the middle portion of the scale, and 5 sentences types expected to receive ratings in the high portion of the scale.

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[65] Another potential candidate for a left branch *wh*-word is kotoryj / kotoraja / kotoroje / kotoryje 'which.M.NOM / which.F.NOM / which.N.NOM / which.PL.NOM' has a number of problems. Most importantly, it carries an additional presupposition that its modifiee is not a singleton set, which requires further support from an extended context.

3.3.5 Participants and presentation

A sample of 80 participants per experiment was recruited for a total of 960 participants across all experiments. This sample size yields 100% statistical power for large effect sizes (typical for island effects) and almost 90% for medium effect sizes (Sprouse and Almeida 2017, Marty et al. 2020). All participants were recruited using the crowdsourcing platform Yandex Toloka. All participants were self-reported native Russian speakers. All participants were compensated for their participation. Participants were asked to judge each sentence on a scale from 1 *очень плохо* (very bad) to 7 *очень хорошо* (very good). All sentences were displayed simultaneously on a single scrollable page. Each sentence had its own individual scale that appeared next to it.

3.3.6 Analysis

The steps of the analysis are identical to those described in Section 2.3.5. The outlier detection methods together affected 1 participant in each of 5 experiments and 0 in the rest of them.

3.4 Results

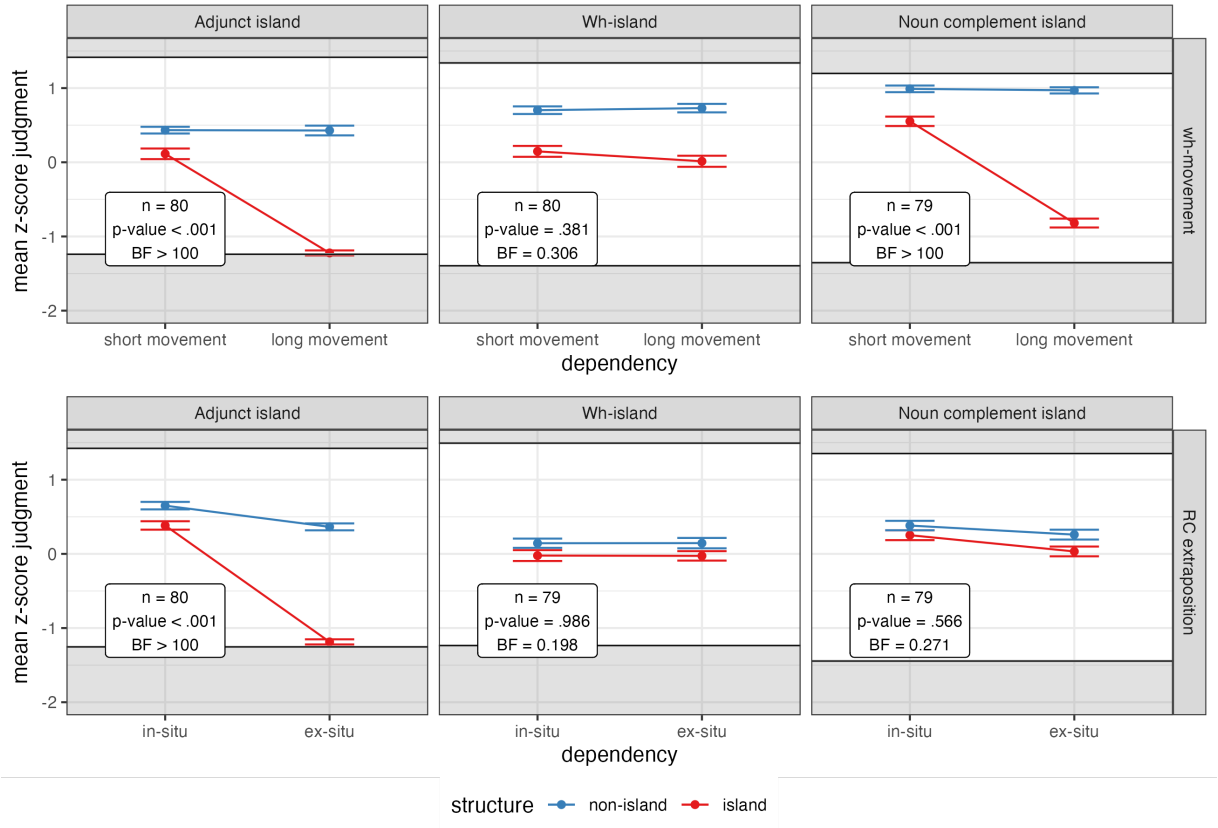

Fig. 3.2: RC extraposition and *wh*-movement from adjunct, noun complement, and *wh*-islands in Russian

The results for the adjunct, noun complement, and *wh*-islands are shown in Figure 3.2. We observe island effects for the adjunct and noun complement islands with *wh*-movement (top row) and the adjunct island with RC extraposition (bottom row). These effects are corroborated both by the "alligator mouth" patterns and by the p-values of less than .05 and Bayes Factors above 3. The *wh*-island and noun complement island structures with RC extraposition show the "flat" pattern characteristic of the absence of island effects. This absence is corroborated by the

p-value higher than .05. The BF_{10} of less than 0.33 also strongly supports the null hypothesis that there is no interaction (and no island effect). Finally, the *wh*-island with the *wh*-movement shows a similar "flat" pattern. Both statistical tests suggest that there is no island effect. The null hypothesis is supported by the BF_{10} value of 0.306, which is close to the threshold of 0.33.

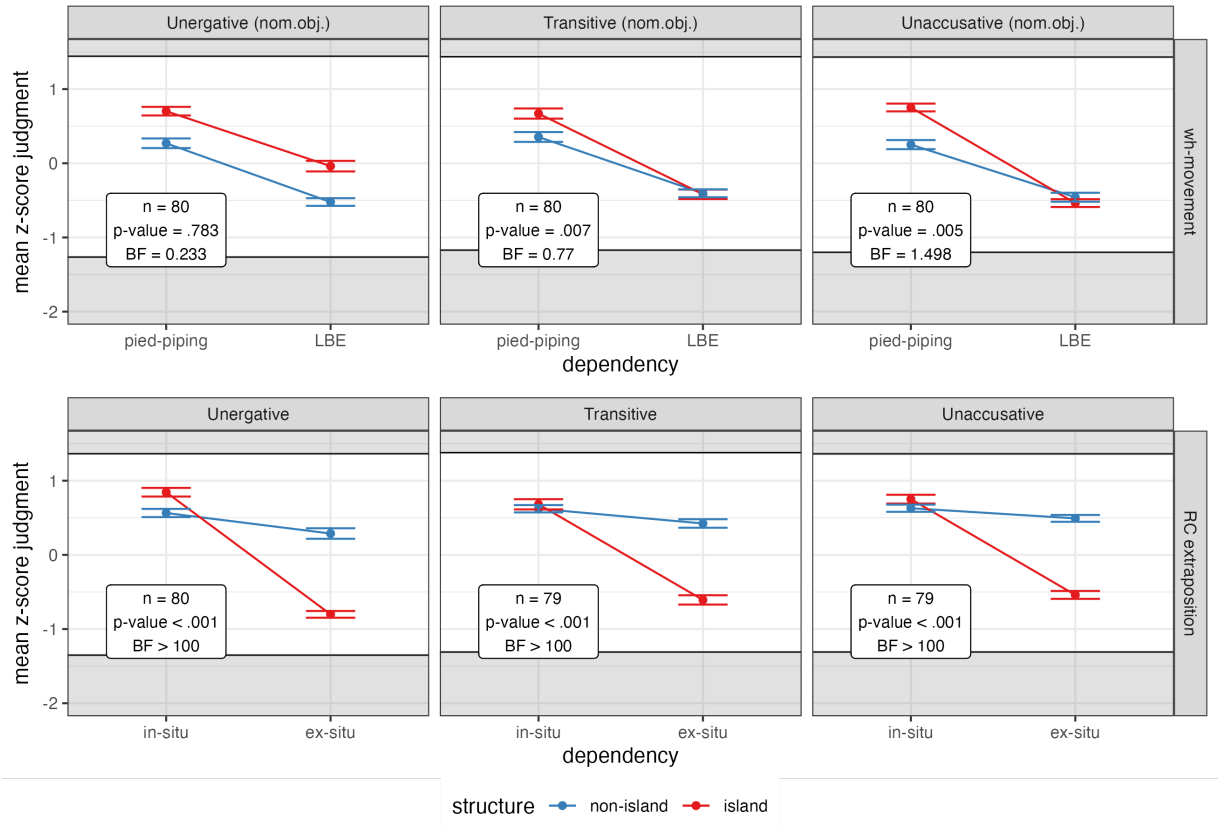

Fig. 3.3: RC extraposition and wh-movement from subject islands in Russian

The results for the subject islands are shown in Figure 3.3. In the bottom row, both the "alligator mouth" patterns and results of two statistical tests corroborate the conclusion that RC extraposition from the three subject islands causes an island effect. In the top row, *wh*-movement shows some unexpected subadditive activity that is most noticeable with the unergative and gradually reduces to transitive and unaccusative types. Neither of the shapes that we see resembles the

island pattern or the no-island pattern in Figure 3.1. As such, we cannot interpret these results. Note that even though the unaccusative type shows two parallel lines, the non-island structure (blue line) is judged as significantly worse than the island one (red line), which reverses the pattern and makes this result uninterpretable as well. We return to this issue in Section 3.5.2.

3.5 Discussion

Table 3.1 summarizes the main results. The most significant conclusion we draw from it is that RC extraposition in Russian is sensitive to several syntactic islands. Specifically, we see an island effect during RC extraposition from the adjunct island and from all three subject islands.

Island structure	Island effect	
	wh-movement	RC extraposition
Adjunct island	YES	YES
Wh-island	NO	NO
Noun complement island	YES	NO
Unergative subject island	?	YES
Transitive subject island	?	YES
Unaccusative subject island	?	YES

Table 3.1: An interim summary of experimental results testing *wh*-movement and RC extraposition from islands in Russian

As discussed in Chapter 1, the sensitivity to subject islands is predicted only by RC extraposition theories that employ rightward movement in the narrow syntax (see Table 1.1 for a

quick summary). Therefore, the experiments in this chapter provide converging evidence from another language supporting the conclusion from Chapter 2 that the derivation of RC extraposition requires rightward movement in the narrow syntax. In turn, this suggests that the rightward movement mechanism is necessary for RC extraposition in both English and Russian, while all non-movement mechanisms have to be blocked in both languages; otherwise, they would mask the movement one with respect to island effects.

One notable discrepancy between subject island results from the two languages is that the unaccusative subject island configuration induces an island effect during RC extraposition in Russian but not in English. The subextraction theory outlined in Section 2.5.2 can accommodate this contrast by positing that the unaccusative *v** is a phase in Russian, in contrast to English, and can carry both [D] and [RC] features. The derivation of RC extraposition from an unaccusative subject in Russian would look identical to RC extraposition from the passive subject in English found in (103). Interestingly, this modification only rules out RC extraposition from unaccusative subjects, whereas *wh*-movement should remain possible in Russian, mirroring Zyman's original treatment of PP-subextraction via *wh*-movement from English unaccusative subjects; see pp. 10–15 in Zyman (2021) for a detailed derivation. In turn, the extraction account from Section 2.5.3 can accommodate the Russian results if we assume that an unaccusative subject in Spec;TP in Russian remains visible at LF, which should rule out RC extraposition due to Scope Economy.

Another interesting finding of this chapter is that *wh*-movement and RC extraposition are sensitive to partially distinct sets of islands in Russian.[66] However, the picture appears incom-

[66] Both *wh*-movement and RC extraposition do not show any island effect when it comes to the non-finite *wh*-island structure. This could mean that Russian does not have *wh*-islands at all, or that the *wh*-island is sensitive to finiteness, similar to English (Huang 1982, Chomsky 1986, Lasnik and Saito 1990). As this question is not relevant to

plete, as there are still several unanswered questions. First, the possibility of extraposing an RC from a noun complement island is intriguing, since it is not expected by any of the existing accounts of RC extraposition. We may want to consider how the two groups of rightward movement theories of RC extraposition can account for this. Second, we observed an unexpected subadditive activity in control pairs while testing *wh*-movement from subject islands. This is an interesting new result. The following two subsections discuss these questions in turn.

3.5.1 Noun complement island

Our results indicate that the noun complement island in Russian blocks only *wh*-movement, but not RC extraposition. There are at least two possible ways to explain this variation.

According to the first view, the noun complement island structure is not a syntactic island in Russian. Instead, the contrast between *wh*-movement and RC extraposition is attributed to the edge and non-edge positions of the gaps of the RC and the *wh*-phrase, along the lines of the Cyclic Linearization theory (Fox and Pesetsky 2005). The edge requirement says that, in order to move outside of a Spell-Out Domain, a constituent has to appear at the edge of it to avoid creating a self-contradictory linearization. Assuming that a complex NP is a Spell-Out Domain in Russian, only the constituents that appear at its left and right edges should be extractable via leftward and rightward movement, respectively. In Experiment 3 the gap of the *wh*-phrase is in the direct object position. The material that separates it from the surface position includes the rest of the complex NP. In order for the *wh*-phrase to escape, it is missing an intermediate position at the left edge of the complex NP (and not at the left edge of its complement clause). In

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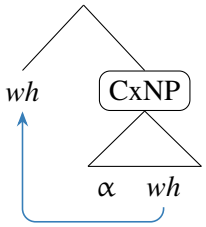
this project, we leave it for future research.

Experiment 4, the gap of the extraposed RC appears (linearly) at the right edge of the complex NP. Thus, the material that separates the surface position of the extraposed RC from the gap does not include any part of the complex NP structure. In this way, the extraction of the RC from the right-edge position should be possible, since it does not produce a conflicting linearization. The two derivations are shown in (154) and (155).

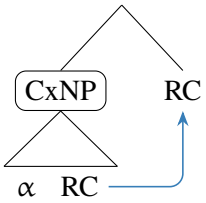
(154) Non-edge position

* $wh \prec \alpha \prec wh$



(155) Edge position

$\alpha \prec \text{RC} \prec \text{RC}$



The second account that could explain the same variation assumes that the noun complement structure is indeed an island in Russian, but there is an escape hatch. In this view, the difference between *wh*-movement and RC extraposition is due to the different intermediate positions available to one but not the other inside the noun complement island. *Wh*-movement does not have an Ā-position inside the complex NP, so it must cross CP and NP on its way to the edge of VP. In contrast, the extraposed RC, which has an intermediate position inside NP, can use it as an escape hatch.

Both accounts have several theoretical implications. The first theory would draw a new empirical parallel between leftward and rightward movement with respect to the edge effects. The second theory is interesting because it requires RC extraposition to be successive-cyclic in order to be able to use the escape hatch.

The two theories make different predictions about RC extraposition from the non-edge position inside the noun complement island structure. According to the first theory, putting the RC into a non-final position inside the complex NP should block the extraposition, since it violates the edge requirement:

(156) a. [$_{CxNP}$ …[$_{CP}$ …~~RC~~] **XP** ~~RC~~] RC

b. *[$_{CxNP}$ …[$_{CP}$ …~~RC~~ **XP**]] RC

In contrast, the escape hatch theory predicts that RC extraposition should still be possible in this configuration, since the escape hatch position inside the NP remains available, and thus an XP that follows the gap of the RC within the complex NP should not be able to block RC extraposition.

(157) a. [$_{CxNP}$ …[$_{CP}$ …~~RC~~] **XP** ~~RC~~] RC

b. [$_{CxNP}$ …[$_{CP}$ …~~RC~~ **XP**] ~~RC~~] RC

Future studies should investigate the edge effects of *wh*-movement and RC extraposition using different types of constituents (XPs) inside and outside of island and non-island structures.

3.5.2 Subject islands

The experiments testing *wh*-movement from subject islands did not yield interpretable results due to an unexpected subadditive interaction in the control pair. The results did not resemble either of the patterns expected for this experimental design. This section presents two additional attempts to answer the question of whether subjects are islands for *wh*-movement in Russian.

3.5.2.1 Using a different type of subextraction

One possible direction is to test whether subadditive activity appears in other types of subextraction. In order to do that, a standard subject island design can be used that uses two PPs. This design has previously been used for large-scale acceptability experiments with *wh*-movement in English (Sprouse 2007). A sample set of experimental conditions for English is shown in (158). In this design DEPENDENCY contrasts the movement from the subject (*short*) and object positions (*long*). The factor STRUCTURE encodes the presence of two PPs in both arguments, one of which is targeted by subextraction in the island pair.

(158)	a.	What do you think the meeting destroyed ~~what~~?	non-island	long
	b.	What do you think ~~what~~ destroyed the consensus?	non-island	short
	c.	What do you think [the meeting about the amendment] destroyed [the consensus over ~~what~~]?	island	long
	d.	What do you think [the meeting about ~~what~~] destroyed [the consensus over the proposal]?	island	short

Kush et al. (2018) note that this design faces a potential problem when used to test the extraction of larger constituents: including, for example, two RCs in the same sentence can amplify the main effect of STRUCTURE to the point where both sentences in the island pair reach the functional floor, effectively leaving no space to diagnose an island effect. Because of that, this design is not used with RC extraposition.

This design applied to *wh*-movement in Russian has its own problems; see Section 3.3.3.7. Most importantly, an unambiguous argument *wh*-PP по чему 'over what' is minimally different from the adjunct *wh*-word почему 'why'. The only difference between them is a whitespace.

This creates a problem because participants can reinterpret an ungrammatical sentence with PP subextraction as a fully grammatical sentence with a *wh*-adjunct and a typo.

This design is used in a follow-up experiment that tests *wh*-movement from the transitive subject island. A sample of experimental items is shown in (159). Similarly to Experiment 7, all direct object NPs are marked with the accusative case, and all verbs select two animate NPs.

(159) Experiment 13: Transitive subject island × *wh*-movement (PP subextraction)

a.	[$_{NP}$ Kogo] dva dn^{j}a nazad [$_{NP}$ vitse-pr^{j}ezid^{j}ent] nan^{j}al ~~NP~~? who.ACC two days ago vice.president.NOM hired 'Who did the vice-president hire two days ago?'	non-island	long
b.	[$_{NP}$ Kto] dva dn^{j}a nazad ~~NP~~ nan^{j}al [$_{NP}$ advokata]? who.NOM two days ago hired lawyer.ACC 'Who hired a lawyer two days ago?'	non-island	short
c.	[$_{PP}$ Po čemu] dva dn^{j}a nazad [$_{NP}$ vitse-pr^{j}ezid^{j}ent po finansam] over what two days ago vice.president.NOM over finances nan^{j}al [$_{NP}$ advokata ~~PP~~]? hired lawyer.ACC 'What two days ago the vice-president of finance hire the lawyer for?'	island	long
d.	[$_{PP}$ Po čemu] dva dn^{j}a nazad [$_{NP}$ vitse-pr^{j}ezid^{j}ent ~~PP~~] nan^{j}al over what two days ago vice.president.NOM hired [$_{NP}$ advokata po kr^{j}editam]? lawyer.ACC over credits 'What did two days ago the vice-president of hire the credit lawyer?'	island	short

In this experiment, the same analysis procedures described in Section 3.3 are followed. Outlier detection methods flagged 1 participant which was removed. Figure 3.4 shows the results. Visual observation and both p-values and BF_{10} values suggest that there is no island effect. However, because of the whitespace problem, the negative result cannot be interpreted to mean that there is no subject island for *wh*-movement in Russian, since it can also mean that participants, while trying to be helpful and accommodating, reinterpreted ungrammatical sentences with an island violation as adjunct *wh*-questions with a typo, an extra whitespace.

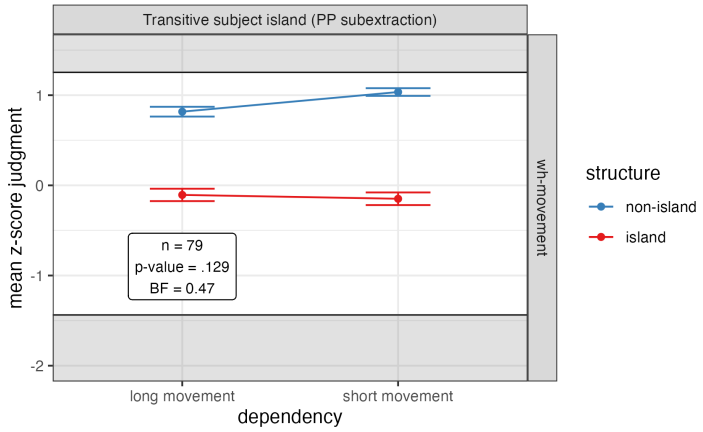


Fig. 3.4: PP subextraction from the transitive subject island in Russian

3.5.2.2 Using a different control pair

Another way to approach the same problem is to further study the subadditive activity in order to isolate and remove it. The same pattern of activity emerged across three subject island experiments during interrogative LBE from the accusative theme. It is also found in other subject island experiments using interrogative LBE (Polinsky et al. 2013, Belova 2021). Based on it, we conclude that this is not an artifact, but a systematic effect.

Here we explore the idea that this subadditive pattern is a result of case assignment.[67] We report three follow-up experiments that tested unergative, transitive, and unaccusative subjects against the nominative theme of dative-nominative experiencer verbs shown in (160) instead of the accusative theme used in Experiments 7, 9, and 11. The control pairs are repeated in (161)

[67] The three experiments reported here are part of an ongoing project exploring the effects of different θ-roles and cases on *wh*-extraction from argument NPs in Russian. It has been found that Russian has a medium-sized effect of case that is present during interrogative LBE of non-nominative arguments. Thus, a nominative theme argument that does not display this effect can be used as a better control pair to test different types of subjects.

through (163). All other properties of these experiments remain unchanged.

(160) a. Kakaja istorija na toj nʲedʲelʲe vspomnilasʲ Kolʲe?
what.NOM story.NOM on last week remembered Kolya.DAT
'What story did Kolya remember last week?' [non-island; pied-piping]

b. Kakaja na toj nʲedʲelʲe istorija vspomnilasʲ Kolʲe?
what.NOM on last week story.NOM remembered Kolya.DAT
'What story did Kolya remember last week?' [non-island; LBE]

(161) *Unergative subject*

a. [$_{NP}$ Kakoj sotrudnik] sʲekundu nazad nʲervno ~~NP~~ morgnul?
which.NOM employee.NOM second ago nervously blinked
'Which employee blinked nervously a second ago?' [island; pied-piping]

b. [$_{A}$ Kakoj] sʲekundu nazad [$_{NP}$ ~~A~~ sotrudnik] nʲervno morgnul?
which.NOM second ago employee.NOM nervously blinked
'Which employee blinked nervously a second ago?' [island; LBE]

(162) *Transitive subject*

a. [$_{NP}$ Kakoj sotrudnik] včera utrom ~~NP~~ poblagodaril
which.NOM employee.NOM yesterday morning thanked
Mixaila?
Michael.ACC
'Which employee thanked Michael yesterday morning?' [island; pied-piping]

b. [$_{A}$ Kakoj] včera utrom [$_{NP}$ ~~A~~ sotrudnik] poblagodaril
which.NOM yesterday morning employee.NOM thanked
Mixaila?
Michael.ACC
'Which employee thanked Michael yesterday morning?' [island; LBE]

(163) *Unaccusative subject*

a. [$_{NP}$ Kakoj patsijent] d^{j}es^{j}at^{j} minut nazad ~~NP~~ n^{j}epodvižno l^{j}ežal?
which patient ten minutes ago motionless was.laying.down
'Which patient 10 minutes ago was laying down motionless?' [island; pied-piping]

b. [$_{A}$ Kakoj] d^{j}es^{j}at^{j} minut nazad [$_{NP}$ ~~A~~ patsijent] n^{j}epodvižno l^{j}ežal?
which ten minutes ago patient motionless was.laying.down
'Which patient 10 minutes ago was laying down motionless?' [island; LBE]

The same analysis procedures as in Section 3.3 are followed here. The outlier detection methods did not remove any participants. The results of the three follow-up experiments are shown in Figure 3.5. In contrast to the accusative theme, the nominative theme does not show the subadditive interaction. The "alligator mouth" patterns are observed in all three experiments. However, only transitive and unergative subjects reach statistical significance according to both sets of tests, while the unaccusative subject appears to be only marginally different from the nominative theme. These results suggest that unergative and transitive subjects in Russian are islands for *wh*-movement, while unaccusative subjects are not.

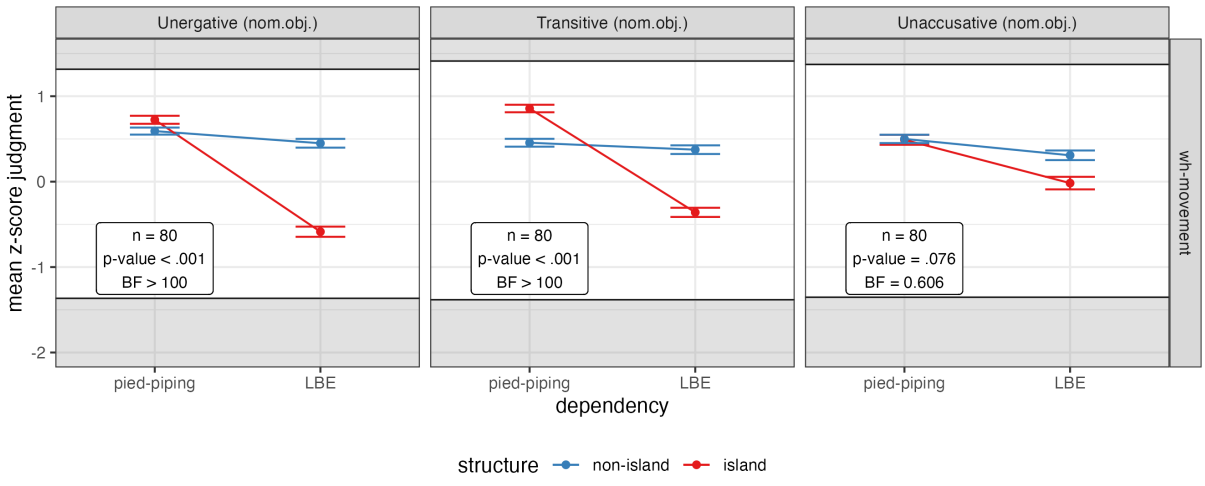


Fig. 3.5: Subject island experiments using the nominative theme as a control

3.5.3 Updating the main results based on the follow-ups

Table 3.2 shows the results of all the experiments reported in this chapter, including follow-ups.

Island structure	Island effect	
	wh-movement	RC extraposition
Adjunct island	YES	YES
Wh-island	NO	NO
Noun complement island	YES	NO
Unergative subject island	YES	YES
Transitive subject island	YES	YES
Unaccusative subject island	NO	YES

Table 3.2: Final summary of experimental results testing *wh*-movement and RC extraposition from islands in Russian

Using a different control pair eliminated the subadditive effect. We can now observe that both *wh*-movement and RC extraposition in Russian are sensitive to unergative and transitive subject islands. We also found that in Russian *wh*-movement from an unaccusative subject does not trigger an island effect, similar to English. As mentioned above, some accounts of RC extraposition correctly predict the discrepancy between *wh*-movement and RC extraposition with respect to unaccusative subjects, while others may need to stipulate it.

3.5.4 Implications of the study

The findings in this chapter provide converging evidence from a different language and a partially different set of island configurations, suggesting that RC extraposition is sensitive to a range of syntactic islands. Currently, only theories deriving RC extraposition via rightward movement in the narrow syntax can readily accommodate these results (Ross 1967, Fox and Nissenbaum 1999, Sportiche 2016). Consequently, our results constitute a new challenge for all other accounts of RC extraposition. Additionally, we observed a puzzling case of RC extraposition from a noun complement island, which requires further investigation.

Chapter 4

C-command effects in English

4.1 Overview

This chapter presents the results of four large-scale formal experiments testing NPI licensing and Condition C during RC extraposition. The main goal of the chapter is to determine the structural positions of an extraposed RC with respect to its host DP and other constituents using NPI licensing and Condition C as c-command diagnostics. The findings indicate that RC extraposition does not affect the c-command relationship of the RC with the parts of the host DP. However, RC extraposition does change the c-command relationship of the RC with constituents in the main clause that c-command its base position but not its derived position. The emerging pattern of changes suggests that the target of RC extraposition consists of both the RC and its host and that, as a result of RC extraposition, the RC occupies two different positions in a syntactic tree.

Our results support theories of RC extraposition that extrapose the host DP and the RC together. There are two theories of this kind: one relies on the Heavy NP Shift together with the interface interpretation mechanism Neglect (Sportiche 2016, 2019) and the other derives RC extraposition as an instance of Quantifier Raising paired with the optional Late Merge (Fox and Nissenbaum 1999, 2000). In contrast, our results constitute a serious challenge for the theory

that extraposes the RC on its own (Ross 1967), since it predicts no discrepancy with respect to c-command effects between the parts of the host DP and other constituents, and for the version of QR+LM theory of RC extraposition (Fox and Nissenbaum 1999, 2000) that uses the obligatory Late Merge (Stepanov 2001b, Abe 2018, Zyman 2022), since it predicts that the extraposed RC only occupies one position in a syntactic tree. Furthermore, our results reduce the logical space of possible combinations of the remaining RC extraposition theories and reconstruction patterns.

This chapter is divided into the following parts: Section 4.2 introduces the relevant theoretical background and outlines how NPI licensing and Condition C can be used as c-command diagnostics to study RC extraposition. Sections 4.3 and 4.4 discuss the experimental setups of the NPI licensing and Condition C experiments, respectively, and present the results of the experiments. Section 4.5 concludes the chapter with a discussion of the results.

4.2 The logic of the study

The previous two chapters have established through a series of experiments that RC extraposition is sensitive to a wide range of syntactic islands. Using islands as a movement diagnostic, those results suggest that the derivation of RC extraposition involves syntactic movement. Presently, only rightward movement theories of RC extraposition can account for the full range of islands.

The discussion in this chapter turns to RC extraposition from non-subject DPs, as they are not considered islands. In what follows, Condition C and NPI dependencies are compared across two different syntactic configurations. In both configurations, the tail of the dependency (i.e. an R-expression for Condition C and a weak NPI for NPI licensing) occurs inside an RC, while the head of the dependency (a coindexed pronoun and a polarity operator, respectively) occurs

either inside the host DP or in a position outside the host DP, but lower than the position of the extraposed RC. We refer to the former configuration as *DP-internal* and the latter as *DP-external*.

Descriptively, different rightward movement theories of RC extraposition can be classified according to the size of the target of rightward movement and according to the number of structural positions occupied by an extraposed RC in a syntactic tree. Both the size of the movement target and the number of positions can be determined by comparing c-command relationships of in-situ and extraposed RCs across DP-internal and DP-external configurations.

Let us start with a very intuitive movement account that was given by Ross (1967), who derives it as the rightward movement of the RC itself. As a result, an extraposed RC has to leave the c-command domains of both DP-internal and DP-external dependency heads. Ross's theory is compatible with a full range of reconstruction patterns (see below), but crucially, it predicts that RC extraposition has the same effect in both DP-internal and DP-external configurations.

In contrast, the RC extraposition theory of Sportiche (2016, 2019) moves the entire DP+RC complex to the right via Heavy NP Shift and then uses an interface mechanism called Neglect to remove the DP part at PF (but crucially not at LF, see Section 1.5.8). Thus, according to Sportiche's theory, RC extraposition should not affect the c-command relationship between the RC and the DP-internal dependency heads, since they are extraposed together and stay together at LF, but it necessarily changes the c-command relationship between the RC and the DP-external dependency heads that only c-command the base position of the DP+RC complex.

Similarly to Sportiche, both versions of the QR-based theory of Fox and Nissenbaum (1999, 2000) put the entire DP+RC complex in the derived position at the right edge. The obligatory Late Merge version moves the host DP to the right via QR and late merges the RC into it,

while the optional Late Merge version can additionally merge the RC in a regular way and move the DP+RC complex via QR (see Section 1.5.7 for details). Importantly, both versions of this theory still predict different c-command effects for DP-internal and DP-external configurations.

Turning to the number of structural positions of the extraposed RC, the rightward movement theories fall into two categories: one-position and two-position theories. The only one-position theory in the literature is the version of the RC extraposition theory of Fox and Nissenbaum (1999, 2000) that uses the obligatory Late Merge (Stepanov 2001b, Abe 2018, Zyman 2022). According to it, RC extraposition is the result of the rightward QR of the host DP followed by the Late Merge of the RC into the derived position of its host. Therefore, an extraposed RC occurs in a single position in the syntactic tree. As a result, in a DP-internal configuration, an extraposed RC should show the same c-command effects as an in-situ RC, because both RCs stay in the same structural position inside the DP+RC complex. In contrast, the c-command effects of a DP-external dependency head are predicted to be inverted by RC extraposition, since an extraposed RC never occurs in its c-command domain, while an in-situ RC never leaves it.

All other rightward movement theories maintain that an extraposed RC occupies two positions in a syntactic tree: its base position and a derived position created during RC extraposition.[68] Because of that, all of these theories are compatible with a full range of reconstruction patterns (obligatory, optional, and anti-reconstruction; see below), including the one predicted

[68] It is also sometimes assumed that RC extraposition, in contrast to *wh*-movement, is not successive-cyclic.

by the one-position theory.[69] For example, Ross (1967) does not impose any restrictions on the choice of the chain interpretation theory used for NPI licensing and Condition C purposes, which makes his theory fundamentally compatible with both theories that do and those that do not reconstruct the RC (optionally or obligatorily). As discussed above, Ross's theory crucially predicts that RC extraposition should have the same effect on c-command diagnostics in the DP-internal and DP-external configurations. In turn, both Fox and Nissenbaum (1999, 2000) and Sportiche (2016, 2019) predict a dissociation between DP-internal and DP-external configurations. The extraposed RC is predicted to show the obligatory reconstruction pattern in DP-internal configurations since it does not leave the DP+RC complex at all during RC extraposition, while the same RC in DP-external configurations can show different reconstruction patterns depending on one's assumptions about the chain interpretation. The resulting classification of the rightward movement theories of RC extraposition is summarized in Table 4.1.

[69] RC extraposition is commonly assumed to be a type of Ā-movement, which makes the anti-reconstruction option predicted by the one-position theory less probable since it is often seen as characteristic of A-movement (Chomsky 1993, Lasnik 1999); see also Boeckx (2001) for a more nuanced perspective.

	# of pos.	What moves
RC moves (Ross 1967)	2	RC
QR + LM (Fox and Nissenbaum 1999, 2000)		
+ obligatory LM (Stepanov 2001b, Abe 2018, Zyman 2022)	1	DP
+ optional LM (Lebeaux 1988)	1 or 2	DP or DP+RC
HNPS + Neglect (Sportiche 2016, 2019)	2	DP+RC

Table 4.1: Classification of rightward movement theories of RC extraposition according to the number of structural positions for the RC and the size of the moving constituent

In summary, the c-command effects can be used to determine the size of the constituent that moves during RC extraposition and the number of positions available to the extraposed RC. The rightward movement theories of RC extraposition that move the RC alone generate different predictions about the uniformity of c-command effects across DP-internal and DP-external configurations than the theories that move the entire DP+RC complex or the host DP. Importantly, neither class can generate predictions of the other, making the c-command effects a two-way diagnostic of the size of the moving constituent during RC extraposition. Furthermore, the one-position theory of RC extraposition only predicts the anti-reconstruction pattern, whereas all two-position theories can accommodate a wider range of reconstruction patterns. Therefore, with respect to the task of distinguishing one- and two-position theories, c-command effects only function as a one-way diagnostic: if we observe the anti-reconstruction pattern, this result is compatible with both one- and two-position theories, while any other observed pattern is unexpected under the one-position theory and therefore constitutes an argument against it.

The following three subsections discuss the main assumptions that allow us to use NPI licensing and Condition C as c-command diagnostics, how the results of the two c-command diagnostics (tested separately) can be combined together to identify different reconstruction patterns, and the particular predictions of each theory.

4.2.1 Main assumptions about NPI licensing and Condition C

There are two fundamental assumptions that underlie the use of Condition C and NPI licensing as c-command diagnostics here. First, both NPI licensing and Condition C require the head of the dependency (a polarity operator or a violating coindexed pronoun) to c-command the tail (a weak NPI or a coindexed R-expression); see Klima (1964b), Ladusaw (1979), Barss and Lasnik (1986) for NPI licensing and Reinhart (1976, 1981) for Condition C. In this way, any differences observed between extraposed and non-extraposed RCs with respect to both dependencies are understood as indicative of differences in c-command.[70] Second, NPI licensing of weak NPIs and Condition C do not exhibit a clause-mate restriction between the head and the tail, unlike, for example, NPI licensing of strong NPIs or Binding Theory Conditions A and B; see Ladusaw (1979), Progovac (1988, 1993), Hoeksema (2017) for NPI licensing and Reinhart (1976),

[70] It is important to clarify that the discussion of NPI licensing typically revolves around the notion of 'scope' rather than 'c-command', see e.g. Ladusaw (1979). This is because an NPI needs to appear in the scope of a Downward Entailing operator, which is only partially determined by syntactic command. In this context, the equation 'scope = c-command' may seem reductive. However, this simplification serves a methodological purpose. It allows us to begin the analysis with the most basic form of (directly) compositional semantics, which only allows for the binding of variables of individual semantic types (e.g. ⟨e⟩). By starting with a basic model of meaning and complicating it only when there is no viable syntactic alternative, we can more easily develop a more comprehensive and detailed understanding of the phenomena at hand.

Chomsky (1981) for Condition C. This assumption is crucial for testing RC extraposition since the head of the dependency can occur in the main clause while the tail always sits inside the RC.

4.2.2 How the diagnostics work

Building on the two assumptions discussed above, the structural requirements for NPI licensing and Condition C can be formulated as follows:

(164) NPI licensing

An NPI must appear inside the c-command domain of a polarity operator.

(165) Condition C

An R-expression must appear outside the c-command domain of a coindexed pronoun.

Next, these licensing requirements can be extended to apply to a movement chain where, as a result of movement, an NPI or an R-expression occupies multiple positions in a syntactic tree:[71,72]

(166) NPI licensing in a movement chain

A copy of an NPI must appear inside the c-command domain of a polarity operator.

---

[71] The presentation here is couched in terms of the copy theory of movement (Corver and Nunes 2007). Alternative movement theories (e.g. multidominance, Johnson 2020) can be plugged in instead as long as they have a chain interpretation mechanism in place that ensures that a grammatical operation affects all links of a chain. So, for example, when an NPI is licensed in one position, all its instances are licensed as well.

[72] The specifics of licensing environments of NPI and Condition C experiments are found in their respective sections.

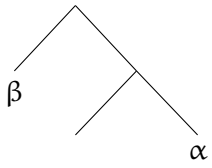
(167) Condition C in a movement chain

A copy of an R-expression must appear outside the c-command domain of a coindexed pronoun.

By combining (166) and (167), we can distinguish three scenarios depending on whether all, some, or none of the copies of the moved constituent α appear in the c-command domain of a licensor β. These scenarios are shown in (168) along with their standard reconstruction labels.

If an NPI inside α is licensed by a polarity operator in β, while an R-expression inside α that is coindexed with a pronoun β triggers a Condition C violation, then all copies of α are in the c-command domain of β. In the case where an NPI is licensed and there is no Condition C violation, only some copies of α are in the c-command domain of β. Finally, if an NPI inside α cannot be licensed by β and Condition C is not violated, no copies of α are c-commanded by β.

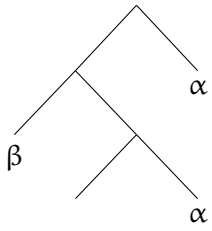
(168) a. Obligatory reconstruction



NPI licensing: licensed

Condition C: violation

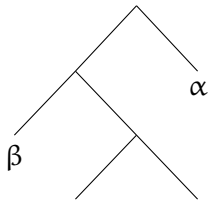
b. Optional reconstruction



NPI licensing: licensed

Condition C: no violation

c. Anti-reconstruction



NPI licensing: unlicensed

Condition C: no violation

4.2.3 Individual predictions of different theories for both c-command diagnostics

Table 4.2 shows all the possible combinations of a rightward movement theory and a reconstruction pattern, as well as all the predictions that each combination makes for NPI licensing and Condition C across the DP-internal and DP-external configurations. For Fox and Nissenbaum's and Sportiche's theories, the reconstruction pattern is reflected in the DP-external configuration, since both theories only predict the anti-reconstruction pattern for the DP-internal configuration.

Theory	NPI licensing		Condition C	
	DP-internal	DP-external	DP-internal	DP-external
Ross (1967)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	no violation	no violation
+ anti-reconstruction	unlicensed	unlicensed	no violation	no violation
Fox and Nissenbaum (1999, 2000) + Obligatory LM (Stepanov 2001b, Abe 2018, Zyman 2022)				
+ anti-reconstruction	licensed	unlicensed	violation	no violation
Fox and Nissenbaum (1999, 2000) + Optional LM (Lebeaux 1988)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	violation	no violation
+ anti-reconstruction	licensed	unlicensed	violation	no violation
Sportiche (2016, 2019)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	violation	no violation
+ anti-reconstruction	licensed	unlicensed	violation	no violation

Table 4.2: Predictions of different rightward movement theories of RC extraposition and reconstruction patterns for Condition C and NPI licensing with DP-internal and DP-external heads

4.3 Experiments 1 and 2: NPI licensing

Experiments 1 and 2 investigate the acceptability of sentences with an NPI dependency interrupted (or not) by RC extraposition. Experiment 1 tests a DP-internal configuration that includes a universal quantifier *every* inside the host DP and a weak NPI *ever* inside the RC as a head and a tail of an NPI dependency, respectively. Experiment 2 uses the matrix negation marker *n't* and the same weak NPI *ever* in a DP-external configuration.

4.3.1 Background

4.3.1.1 The scope of polarity operators

The target sentences for both experiments are shown in (169). Both the universal quantifier *every* and the matrix negation *n't* are widely recognized as polarity operators that can license NPIs; see, for example, Klima (1964a), Ladusaw (1979), Linebarger (1980), von Fintel (1999) among many others. An important prerequisite for studying the reconstruction pattern of RC extraposition is that the extraposed RC appears outside the c-command domain of these operators.

(169) a. Emily answered [$_{DP}$ every question ~~RC~~] today [$_{RC}$ that Jon had ever asked in the group chat].

b. I [didn't respect [$_{DP}$ the players ~~RC~~]], for most of my life, [$_{RC}$ that had ever faked a serious injury].

A potential concern with using quantifiers to test NPI licensing is that in English they can undergo QR, which could widen their scope far enough to include the extraposed RC. However, as shown in Ladusaw (1979), *every* only licenses NPIs in its restrictor (i.e. its first argument)

but not in its nuclear scope (the second argument). As a result, even if *every* moves to a higher position via QR, it cannot license an NPI inside an extraposed RC from its new position.

The matrix negation marker *n't* c-commands the entire VP, which includes not only the base position of an extraposed RC, but also one of the landing sites of RC extraposition at the edge of VP. To ensure that the RC leaves its base position and appears outside the scope of *n't*, Experiment 2 uses a second scope-taking element placed at the right edge of a clause that appears outside of the scope of *n't*. Thus, when an extraposed RC crosses it, it necessarily leaves the scope of *n't*. Consider the sentence in (169b). Its only interpretation is that for the majority of the speaker's (*I*) life, they have had no regard for a certain category of players. A temporal *for*-phrase with *most* appears outside of the scope of *n't* (*most* > *n't*).

We can verify that the interpretation in (169b) reflects the relative scope of *n't* and *most* and is not created from the inverse scope reading (*n't* > *most*) using the pragmatic mechanism of negative strengthening (Horn 1989). The inverse scope reading can be paraphrased as: it is not true that for the majority of the speaker's life, they respected a certain category of players. During the negative strengthening, the lack of considerable respect is reinterpreted ("strengthened") to mean the negative maximum, i.e. the lack of any respect. The resulting interpretation is as follows: it is true that for the majority of the speaker's life, they lacked any respect for a certain category of players. The key difference from the original reading (*most* > *n't*) is that the implicature created by negative strengthening is defeasible. For example, in (170) the implicature ("dislike cronuts") can be explicitly denied.

(170) I don't like cronuts, but I don't dislike them either.

However, trying to defuse the same implicature in (169b) produces a non sequitur:

(171) I didn't respect the players, for most of my life, that had ever faked a serious injury, #but I didn't lack any respect for them either.

This suggests that the only reading of (169b) is not created by negative strengthening and instead reflects the scope relations of the *for*-phrase and *n't*.

4.3.1.2 Using *ever* as a weak NPI

Overfelt (2015b) conducted the only known large-scale acceptability experiment that examines NPI licensing during RC extraposition. He tested a DP-internal configuration with *every* as the polarity operator, and instead of *ever*, he used a different weak NPI, *any*. The target sentence from his experiment is shown in (172). His results indicate that RC extraposition does not interrupt NPI licensing in a DP-internal configuration.

(172) Park rangers removed every camper ~~RC~~ yesterday [$_{RC}$ who was at any of the sites with significant flooding].

As discussed in Gajewski (2016), a potential issue with using a weak NPI *any* in an experimental setting is that it also has a free choice reading, which must be excluded independently. The free choice reading is available in the restrictor argument of *every* (Hoeksema 2017). To avoid this confounding factor, Overfelt (2015b) places some (but, inexplicably, not all) instances of *any* in his experimental items in partitive contexts following Dayal (2009), who argues that the free choice items are blocked in partitive contexts (except in the scope of a possibility modal).

In contrast, a weak NPI *ever* does not have a free choice reading, which eliminates this problem altogether. For this reason, both NPI experiments reported here use *ever* instead of *any*.

4.3.1.3 Using the existence presupposition as a disruptor for NPI licensing

Another potential issue to address is that in Experiment 2 the host of the RC is a definite plural DP; e.g., *the players* in (169b). Guerzoni and Sharvit (2007) argue that the plural definite description *the*$_{\text{PL}}$ can license NPIs in its restrictor, while the singular *the*$_{\text{SG}}$ cannot. If this is the case, using *the*$_{\text{PL}}$ creates a confound since it adds a new DP-internal NPI licenser to the structure.

Giannakidou (2002), Hoeksema (1986), and Homer (2010) challenge this claim, suggesting instead that the presence of the existence presupposition is what determines the possibility of NPI licensing by a definite description. Furthermore, Gajewski (2016) shows the experimental evidence suggesting that the grammatical number of a definite NP only has a moderate effect on NPI licensing, unlike prototypical NPI licensers. He concludes that such cases have to be separated from the core cases of NPI licensing and possibly handled by a different mechanism.

To mitigate the effect of *the*$_{\text{PL}}$, we adopt a technique described in Homer (2010, Ch. 3, Appendix A). Homer argues that *the*$_{\text{PL}}$ can license NPIs in its restrictor, but only in the absence of the existence presupposition. It follows that introducing an existence presupposition is going to disrupt the licensing relationship.[73] For this reason, Experiment 2 only uses matrix verbs that carry an existence presupposition for its direct object, e.g. *respect* in (169b).

---

[73] Note that disrupting the licensing relationship between *the*$_{\text{PL}}$ and *ever* is not going to turn *the*$_{\text{PL}}$ into an NPI anti-licenser since it is not left upward monotone.

4.3.2 Methods

4.3.2.1 Experimental design

Both NPI experiments use a full 2 × 2 factorial design. The factors are POLARITY ITEM and DEPENDENCY, each with two levels. The factor POLARITY ITEM controls the presence of a weak NPI *ever* inside the RC. DEPENDENCY manipulates the placement of the RC between an in-situ and an extraposed position. (173) shows the abstract schemas for the four experimental conditions.

(173)

a.	[*Op* … [RC …]]	no NPI	in-situ
b.	[*Op* … ~~RC~~ …] … [RC …]	no NPI	ex-situ
c.	[*Op* … [RC … NPI …]]	NPI	in-situ
d.	[*Op* … ~~RC~~ …] … [RC … NPI …]	NPI	ex-situ

The primary advantage of this design is that it isolates the NPI licensing violation from the main effects of having an NPI dependency and an RC extraposition dependency in the structure. In this design, the cost of having an unlicensed NPI in the structure feeds the interaction term.[74]

[74] More carefully, the interaction term in length-based designs like the one shown in (173) has at least two sources. The first is the cost of having an unlicensed NPI in the structure. The second is the cost of increasing the structural and linear lengths of the NPI dependency from the NPI/in-situ to the NPI/ex-situ condition. Although there are no theoretical claims that length is a factor for NPI licensing, this possibility aligns with our hypothesis that some participants strongly prefer a (structurally) local NPI dependency. No interaction term was found in either NPI experiment reported in this chapter, but if it were, a follow-up would be needed to separate the two sources.

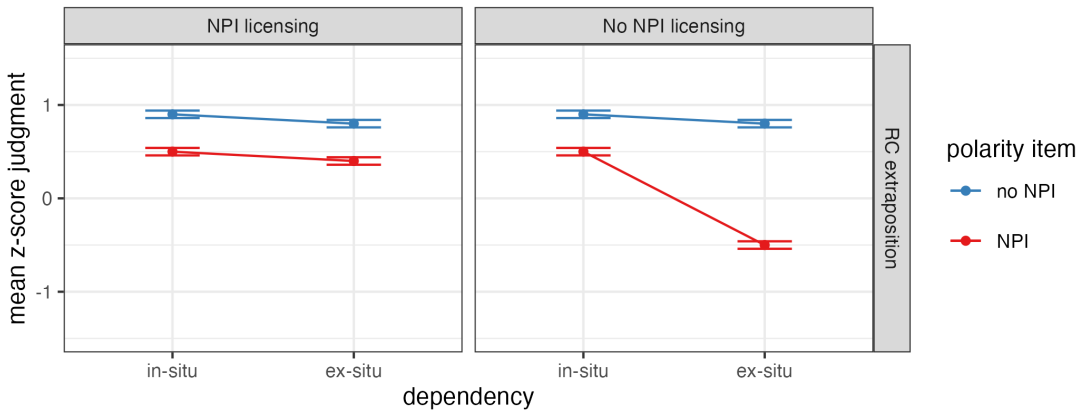


Fig. 4.1: NPI licensing (mock plots)

Figure 4.1 contains two mock plots that illustrate two outcomes predicted by this design. The left panel shows the scenario in which RC extraposition does not interact with NPI licensing. The main effects of POLARITY ITEM and DEPENDENCY appear as horizontal and vertical shifts between pairs of conditions, which necessarily preserve symmetry. There is no interaction term that would break that symmetry since RC extraposition does not interrupt the NPI dependency in the NPI/ex-situ condition. Furthermore, the absence of the interaction term suggests that, under reconstruction, the length of an NPI dependency has no effect on acceptability. Otherwise, a longer NPI dependency in the NPI/ex-situ condition would be rated lower than a short NPI dependency in the NPI/in-situ condition. The plot in the right panel is expected if RC extraposition interrupts NPI licensing. The alligator mouth shape, familiar from island experiments, is created by combining the two main effects with the interaction term that suggests that the NPI/ex-situ condition contains an unlicensed NPI (and/or the NPI dependency in that condition is longer).

4.3.2.2 Materials

Experiments 1 and 2 examine NPI licensing during RC extraposition. Both experiments test RC extraposition from the direct object and use a weak NPI *ever* across all sets of experimental items. In both experiments, the pair of target conditions includes both ingredients of an NPI dependency, the polarity operator and the NPI, whereas the pair of grammatical controls only includes the polarity operator but not the NPI.

Experiment 1 uses the universal quantifier *every* as a polarity operator to test NPI licensing during RC extraposition in a DP-internal configuration. The right edge of the matrix clause in the ex-situ conditions is marked with a temporal adverb, while in the in-situ conditions the same adverb is placed at the left edge of the matrix clause to avoid its misattribution to the in-situ RC. Past perfect is used in the RC because it sounds natural with *ever* and fits the tense and aspect of the main clause. A sample set of experimental items is shown in (174).

(174) Experiment 1: NPI licensing (*every*; DP-internal) × RC extraposition

a. Today Emily answered every question [$_{RC}$ that Jon had asked in the group chat].	no NPI	in-situ
b. Emily answered every question ~~RC~~ today [$_{RC}$ that Jon had asked in the group chat].	no NPI	ex-situ
c. Today Emily answered every question [$_{RC}$ that Jon had ever asked in the group chat].	NPI	in-situ
d. Emily answered every question ~~RC~~ today [$_{RC}$ that Jon had ever asked in the group chat].	NPI	ex-situ

Experiment 2 tests NPI licensing during RC extraposition in a DP-external configuration using the matrix negation marker *n't* as a polarity operator. The right edge of the matrix clause in ex-situ conditions is marked with a temporal *for*-phrase that outscopes the matrix negation. When an RC extraposes across the *for*-phrase, it leaves the scope of *n't*. The same *for*-phrase appears on the left edge of the matrix clause in the in-situ conditions to avoid various prosodic

and semantic complications. All matrix verbs carry the existence presupposition for the direct object, thus disrupting NPI licensing by the definite plural *the*$_{\text{PL}}$ inside the host DP. Similarly to the previous experiment, the tense and aspect specification of the RC is selected to sound natural with the NPI *ever* and to align with the tense and aspect values of the main clause. (175) shows a complete set of experimental items for this experiment.

(175) Experiment 2: NPI licensing (*n't*; DP-external) × RC extraposition

a. For most of my life, I didn't respect the players [$_{\text{RC}}$ that had faked a serious injury].	no NPI	in-situ
b. I didn't respect the players ~~RC~~, for most of my life, [$_{\text{RC}}$ that had faked a serious injury].	no NPI	ex-situ
c. For most of my life, I didn't respect the players [$_{\text{RC}}$ that had ever faked a serious injury].	NPI	in-situ
d. I didn't respect the players ~~RC~~, for most of my life, [$_{\text{RC}}$ that had ever faked a serious injury].	NPI	ex-situ

4.3.2.3 Sanity check items

Both NPI experiments include sanity check items that are organized into minimal pairs. We created 8 lexically matched pairs. Each experiment includes 4 sanity check items. A sample pair is shown in (176). The weak NPI *ever* is either licensed in the scope of a negative quantifier *no* or unlicensed in the scope of *some*. The main purpose of adding sanity check items is to ensure that participants are attending to the task and not simply ignoring NPIs (especially unlicensed). For this purpose, sanity check items use the same weak NPI *ever* as the experimental items. Furthermore, organizing sanity check items into minimal pairs allows us to gauge the effect size of an NPI licensing violation that cannot be improved by movement/reconstruction.

(176) Sanity check items

a. Nobody has ever declined a Michelin star. licensed

b. Somebody has ever declined a Michelin star. unlicensed

4.3.2.4 Anchor items, practice items, and fillers

Both NPI experiments include the same selection of 3 anchor items, 9 practice items, and 14 fillers. All sentences and their expected ratings on the 1-7 scale are adopted from Sprouse et al. (2013). Anchor items appear in the instructions along with their ratings, and participants do not rate them. The main purpose of the anchor items is to illustrate the use of the scale. Practice items are used to let participants become familiar with the task and to encourage them to use the entire scale. The practice items are chosen to include all 7 points of the scale, with the endpoints appearing twice. Lastly, fillers are used to distract participants from the experimental manipulation while giving them a chance to continue using the entire scale. In addition, responses to fillers are used to identify uncooperative participants. All items can be found in Appendix C.

4.3.2.5 Survey construction and presentation

Both NPI experiments consist of 8 sets of lexically matched experimental items, as well as 8 pairs of sanity check items. Both experimental items and sanity check items are distributed among the experimental lists using a Latin square procedure. Each participant sees two tokens for each of the four experimental conditions and two tokens of each of the two types of sanity check items. The survey comprises a total of 35 items, consisting of 9 practice items presented in a fixed order and 8 experimental items, 4 sanity check items, and 14 fillers in a pseudorandomized order. To control for order effects, the experiment employs 4 lists presented in 4 counterbalanced orders.

Participants were asked to judge each sentence on a scale from 1 (very bad) to 7 (very good). Each sentence appeared on a separate screen and had its own individual scale next to it. Each participant saw only one list per experiment and all experimental conditions in it.

4.3.2.6 Participant recruitment

A total of 360 participants participated in the NPI experiments. Initially, a sample of 240 participants was recruited, with 120 participants assigned to each experiment. Additionally, a second batch of 120 participants was recruited for Experiment 2 during post hoc analysis; see Section 4.3.4. Based on Sprouse and Almeida (2017), Marty et al. (2020), the sample size of 120 participants is projected to yield close to 100% statistical power for the 7-point scale acceptability task for medium-size effects such as NPI licensing during reconstruction. All participants were self-reported native English speakers and were compensated for their participation at an hourly rate of $15 per hour with an estimated completion time of 6 minutes.

All experiments were hosted online on a survey platform Qualitrcs. All participants were recruited through a crowd-sourcing platform Amazon Mechanical Turk by means of a recruitment facilitation service CloudResearch.

4.3.2.7 Analysis

To control for scale bias, all results were normalized by converting them to z-scores prior to analysis. All outlier detection and statistical analysis procedures are identical to those described in Section 2.3.5. The outlier detection methods together flagged for removal 1 participant in Experiment 1 and 3 participants in each of the two batches of participants in Experiment 2.

4.3.3 Results

The results of the NPI experiments are presented in Figure 4.2. In Experiment 1 shown in the left panel, we find no "alligator mouth" and therefore no sign of a superadditive interaction. The results of visual observation are corroborated by two sets of statistical tests. At the significance levels of $p < .05$ and $\text{BF}_{10} > 3$, both do not support the alternative hypothesis (that there is an interaction term). Furthermore, the Bayes Factor of $\text{BF}_{10} < 0.33$ provides strong evidence for the null hypothesis. In summary, our results strongly suggest that there is no interaction term and therefore NPI licensing by *every* is not interrupted by RC extraposition.

The right panel shows the results of Experiment 2. The shape we see does not resemble either of the patterns in Figure 4.1 predicted by this design. Because of that, we cannot interpret these results, including the statistical tests. We return to this in Section 4.3.4.

The results of the sanity check suggest that in both experiments, the participants paid close attention to the licensing environments of NPI items (Exps. 1 and 2: $p < .001$).

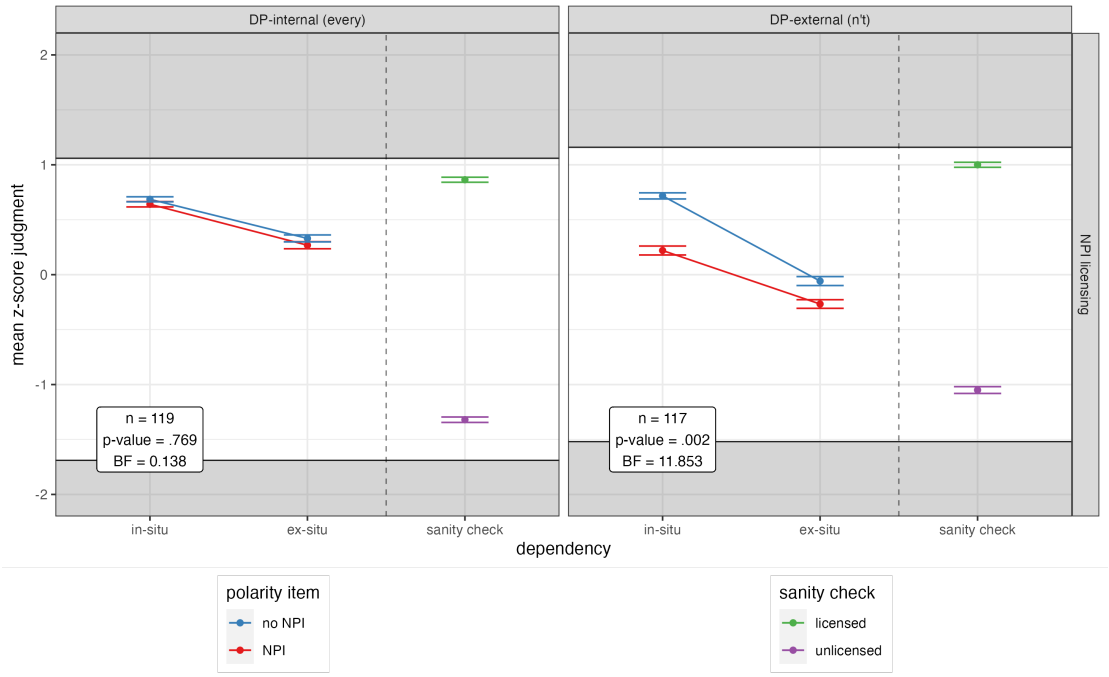


Fig. 4.2: Interaction plots for both NPI experiments (before clusterization)

4.3.4 The post-hoc analysis of Experiment 2

In the right panel of Figure 4.2 the pair of NPI conditions shows an unexpected subadditive activity. On closer inspection, the distribution of the z-scored responses for both NPI conditions appears to be bimodal. Both are shown in Figure 4.3. This is confirmed by Hartigans' dip test (Hartigan and Hartigan 1985): $D = 0.0468, p = .0295, \text{rep} = 100000$.

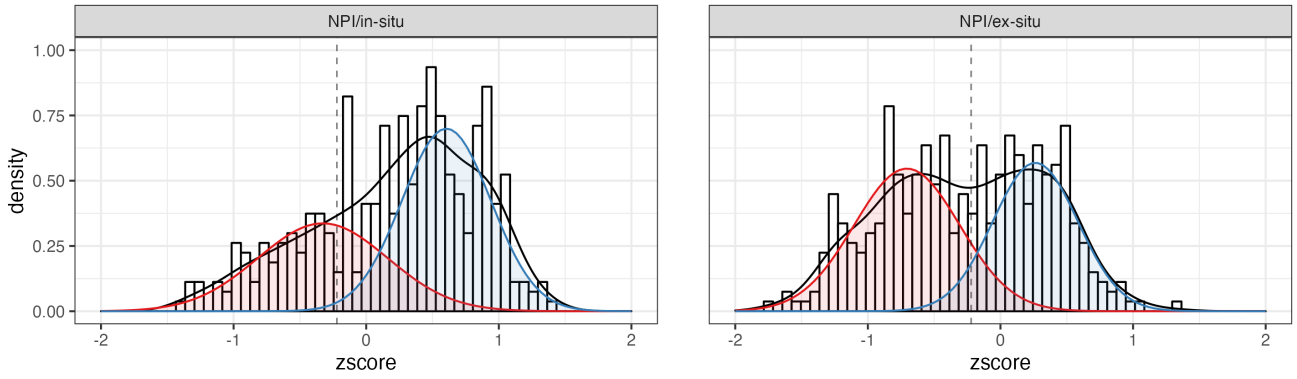


Fig. 4.3: Distributions of z-scores with overlaying mixture components and cut points

A by-item inspection did not flag any experimental items as abnormal, while a by-participant inspection showed a wider range of responses to NPI conditions as opposed to non-NPI conditions. This section explores the hypothesis that the source of bimodality is different subpopulations of participants combined in a single sample. For example, one population may allow long-distance NPI licensing, and the other may not.[75]

The experimental manipulation in Experiment 2 is based on long-distance NPI licensing (see Section 4.2.1). If a participant simply does not allow it in the first place, the experimental manipulation becomes invalid. The goal of the post-hoc analysis is to identify participants who accept long-distance NPIs as part of their grammar. To do that, cluster analysis methods are applied to the z-scored responses in the NPI/in-situ control condition.

The winning clusterization solution identified roughly half of the participants in the original sample (the first batch) as allowing long-distance NPIs. To maintain the same power as in Experiment 1, a second sample of the same size (the second batch) was collected and the same

[75] Note that the results of the sanity check suggest that NPI licensing within the same clause is unaffected and uniform.

exact processing and clustering steps were applied to it. Subsequently, the groups of participants that allowed long-distance NPIs from both batches were combined and analyzed together.

4.3.4.1 The steps of the cluster analysis

The cluster analysis reported here includes four consecutive steps: model selection, clustering, cluster validation, and grouping of participants. The analysis uses k-means clustering, a method of unsupervised learning that partitions a dataset into a prespecified number of k clusters.

The hypothesis above states that there are several subpopulations in the sample, but it does not specify the number of subpopulations.[76] In order to select the model with the optimal number of clusters, we fit multiple finite Gaussian mixture models with different parameters to the experimental data using R packages `mclust` (Scrucca et al. 2016) and `factoextra` (Kassambara and Mundt 2020). Since the data for clusterization has one dimension (z-scores), only equal-variance (E) and variable-variance (V) models are considered. The comparison includes all E and V models with the number of components G between 1 and 9. We evaluate the fit by computing the Bayesian Information Criterion (BIC) for each model.[77] The BIC is a measure

[76] One reasonable possibility is that there are only two subpopulations, those that allow long-distance NPI licensing and those that do not, but one can easily imagine various other partitions with different numbers of k clusters.

[77] We chose to use BIC at this step instead of Akaike Information Criterion (AIC) because BIC incorporates a larger penalty for the number of parameters in the model compared to AIC, which can help prevent overfitting and improve the generalizability of the selected model. Another alternative to BIC is the integrated complete-data likelihood (ICL) criterion (Biernacki et al. 2000). However, ICL is more appropriate for cluster spaces with greater separation between groups, while BIC provides a good conservative estimate of the number of components needed to approximate a density function in any cluster space.

of the goodness-of-fit of a model that takes into account both the likelihood of the data and the number of parameters in the model. Lower BIC values indicate a better fit. However, negative BIC is often used instead for visualization purposes since it places the winning model at the top.

During the clustering step, we apply the k-means clustering algorithm with the optimal number of clusters to the dataset. The algorithm minimizes the sum of squared distances between the data points and the closest cluster centroids. It is sensitive to the choice of initial centroids, which are selected randomly. Due to this, the clustering step is repeated 100000 times and the best solution is chosen based on the highest average silhouette width of a clustering solution. The package `mclust` also provides model-based uncertainty estimates, such as the average posterior probabilities of cluster membership, which can be used to assess the stability of cluster solutions and the confidence in assigning individual observations to specific clusters.

The cluster validation step uses two cluster validation methods. One is the silhouette plots, which are created using the `factoextra` package. Silhouette plots are a visual tool that shows the similarity (represented as silhouette width) between a data point and other points in the same cluster compared to other clusters. The silhouette width for a data point ranges between -1 and 1, where a high value indicates that the data point is well-matched to its own cluster, and a low value indicates that the data point is not well-matched. An average silhouette width greater than 0.6 is considered a good fit. As a second validation method, we calculate the Davies-Bouldin index (DBI; Davies and Bouldin 1979) using the `clusterSim` package (Walesiak and Dudek 2020). DBI is defined as the average similarity across pairs of clusters, where similarity is the Euclidean distance between the centroids of two clusters divided by the scatter of the data points in the same cluster relative to its centroid. DBI is symmetric and non-negative and ranges from

0 to ∞, with 0 indicating a perfect clustering solution, where each cluster is robust and far from others. A DBI value less than 0.8 is considered good, while a value > 1 suggests poor clustering.

Finally, individual responses with their assigned cluster values are linked to the participants. Based on their responses, participants are assigned to different groups. During the experiment, each participant gives two responses to an experimental condition. It follows that the number of groups of participants is calculated as the number of combinations with repetitions for the number of clusters k and the number of observations $o = 2$ using the following formula:

(177)

$$\frac{(k+o-1)!}{o!(k-1)!}$$

4.3.4.2 Clusterization results for the first batch

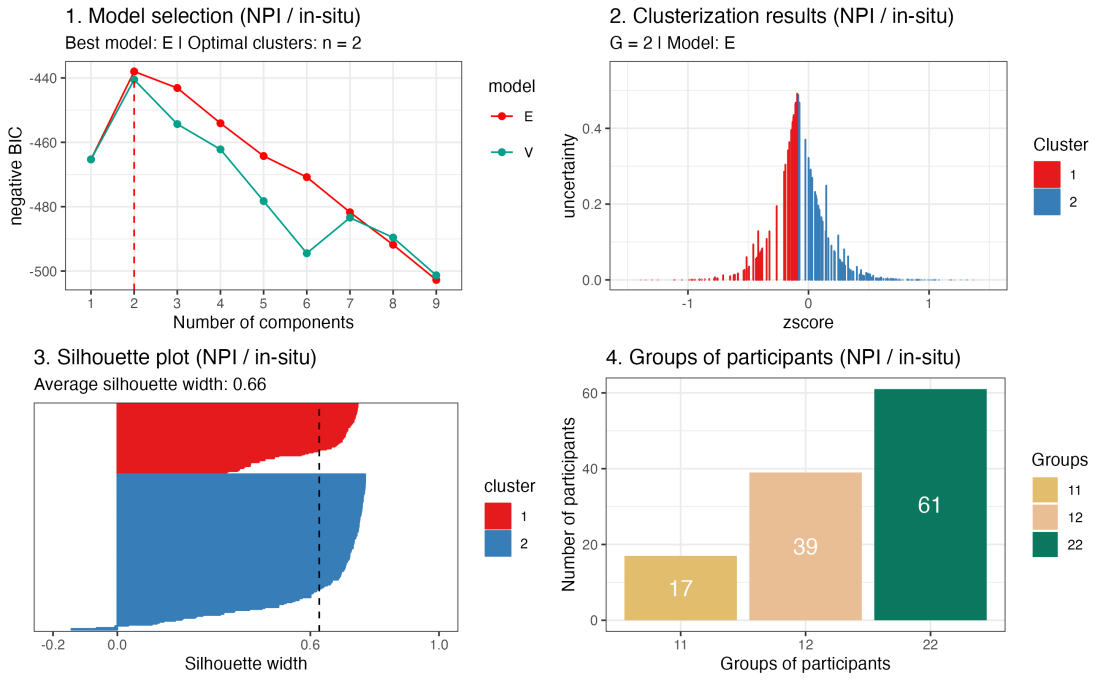


Fig. 4.4: The steps of the cluster analysis of the first batch (n=117)

Figure 4.4 shows the results of each step of the cluster analysis applied to the first batch of participants in Experiment 2. At the model selection step, the BIC value suggests that the best model for the data is an equal-variance mixture model with 2 clusters. The best clusterization solution for the model with these parameters is shown in Step 2. The amount of uncertainty in the central part indicates that the two clusters are not far from each other. The first cluster corresponds to responses that disallow and therefore penalize long-distance NPI licensing, while the second cluster contains responses consistent with long-distance NPI licensing being part of the grammar. The silhouette plot in Step 3 suggests that the clustering solution is good (the average silhouette width > 0.6). The DBI value of 0.6 supports this conclusion. However, the silhouette plot also shows some negative width values in the second cluster, suggesting that the second cluster may be inflated with misattributed items from the first cluster. In the next step, linking the cluster values of the responses back to participants splits the participants into three groups: those who gave two responses from the first cluster (11, "one-one"), two responses from the second cluster (22, "two-two"), and those who gave mixed responses (12, "one-two"). Only group 22 is kept for further analysis because for each participant, both of their responses show that their grammar allows long-distance NPI licensing, which is a necessary assumption for the experimental manipulation. Groups 11 and 12 are discarded because the participants' responses there indicate that they penalize long-distance NPI licensing in some way.[78]

[78] The spillover from cluster 2 into cluster 1 that is visible on the silhouette plot suggests that the mixed response group 12 should be treated on par with group 11 and not group 22.

4.3.4.3 Clusterization results for the second batch

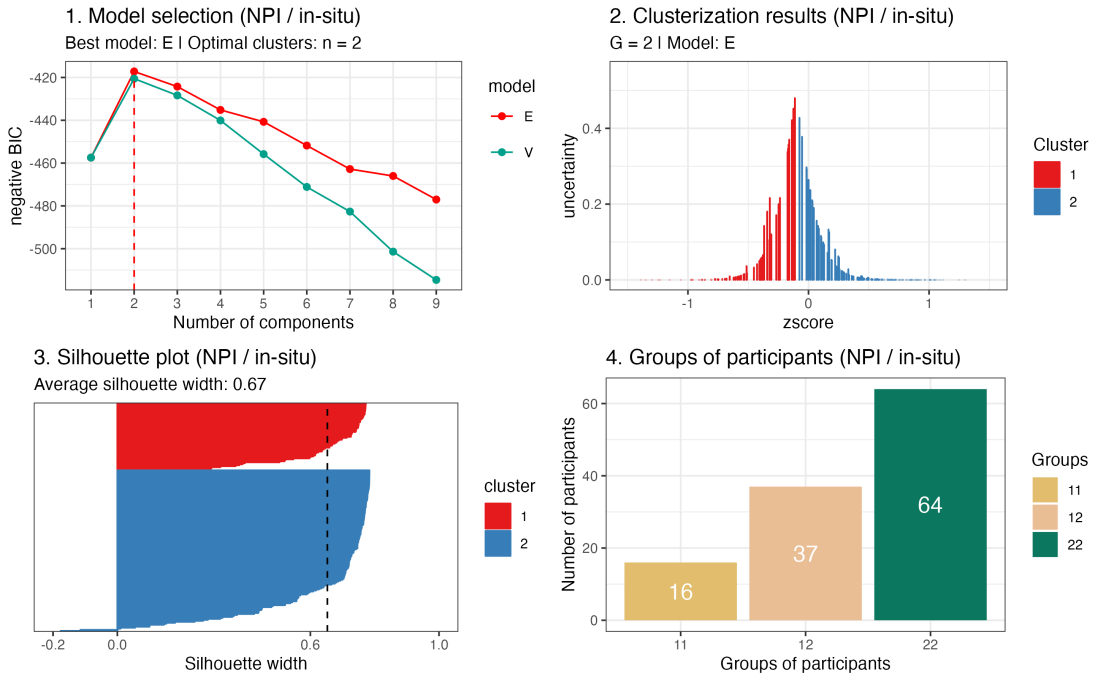


Fig. 4.5: The steps of the cluster analysis of the second batch (n=117)

The results of the cluster analysis applied to the second batch of participants in Experiment 2 are shown in Figure 4.5. The best model for the data according to the BIC value at the model selection step is a 2-cluster equal-variance Gaussian mixture model. The best clusterization solution for this model is shown in Step 2. The uncertainty in the middle indicates that the two clusters are not well separated. Similarly to the first batch, the first cluster contains responses that disallow long-distance NPI licensing, while the second cluster includes responses from individuals who have long-distance NPI licensing in their grammar. The silhouette plot in Step 3, with an average silhouette width greater than 0.6, indicates that the clustering solution is good. This conclusion is further confirmed by the DBI value of 0.6. However, the silhouette plot also reveals some negative width values in the second cluster, indicating that it may be saturated with

misattributed items from the first cluster. Linking the cluster attribution of individual responses back to the participants allows us to categorize them into the same three groups as the first batch. Similar to the first batch, only group 22 is kept for further analysis.

4.3.4.4 A new analysis of Experiment 2 keeping only participants that allow long-distance NPI licensing

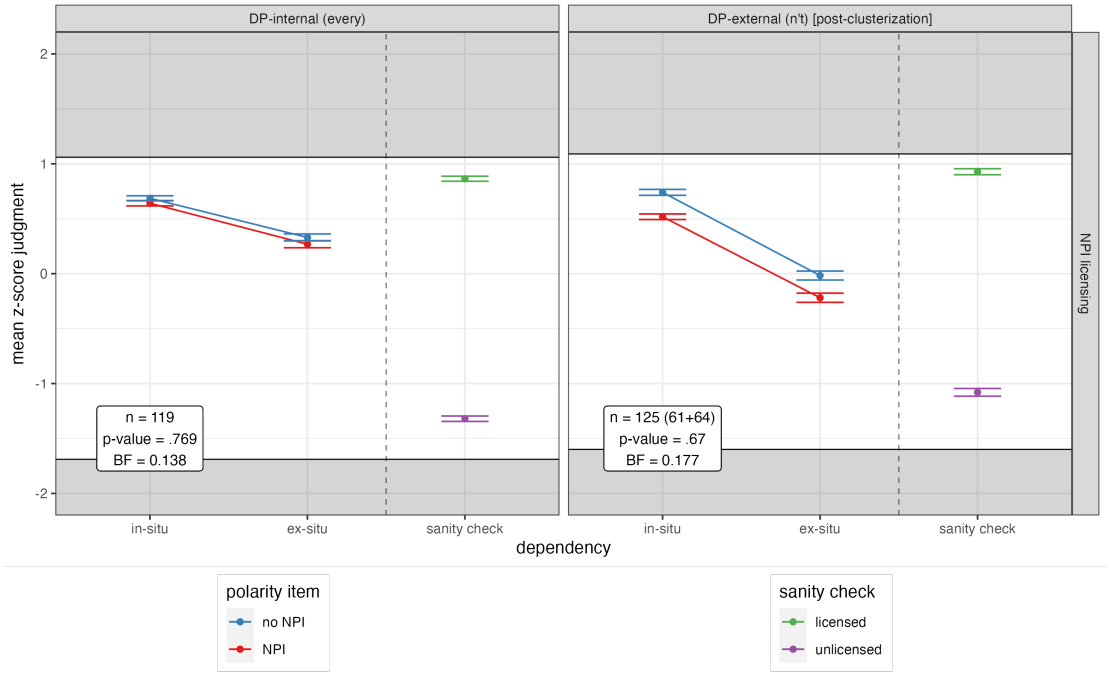


Fig. 4.6: Interaction plots for both NPI experiments (after clusterization)

Using cluster analysis, we identified two groups of participants that allow long-distance NPI licensing in Experiment 2. Both groups were combined before running the same statistical analysis again. Figure 4.6 contains the results of both NPI experiments, including the updated results of Experiment 2. Both sets of statistical tests indicate that there is no evidence of superadditive interaction in either experiment and, moreover, $\text{BF}_{10} < 0.33$ provides strong evidence for its

absence in both experiments, suggesting that NPI licensing is unaffected by RC extraposition in both the DP-internal and DP-external configurations.

4.4 Experiments 3 and 4: Condition C

Experiments 3 and 4 test whether RC extraposition can help avoid a Condition C violation in a DP-internal and a DP-external configuration, respectively. The binding dependency in Experiment 3 consists of a possessor of the host DP and a coreferential DP inside the RC. In Experiment 4, the head of the binding dependency is the theme argument of a ditransitive and the tail is a coreferential DP inside the RC adjoined to the goal argument. (178a) and (178b) show examples of target items from Experiments 3 and 4, respectively. The coreferential DPs are underlined.

(178) a. Amanda contacted his cousin ~~RC~~ yesterday [$_{RC}$ that babysat David].

b. Emily took him to a beach ~~RC~~ today [$_{RC}$ that Eric had never been to].

4.4.1 Background

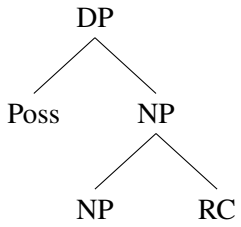
4.4.1.1 The c-command relationship between a binder and a bindee

As shown in Reinhart (1976), for Condition C to apply, the binder must c-command the bindee. Since Experiments 3 and 4 use the Condition C violation to test RC extraposition, it is necessary to ensure that the binder c-commands the in-situ RC, which contains the bindee. At the same time, it should not appear too high in the structure, so as to c-command the extraposed RC.

Experiment 3 relies on two assumptions about the relative structural positions of possessors and in-situ RCs inside DP in English. First, the possessor always appears at the DP level, as

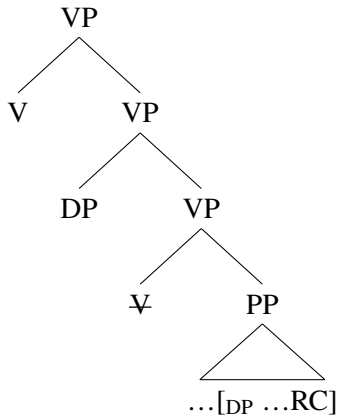
proposed by Abney (1987). Second, the in-situ position of a restrictive RC is adjoined to NP below D (Partee 1975, p. 231).[79] Therefore, a possessor located within the DP layer c-commands an in-situ restrictive RC adjoined to the NP.[80] This relationship is shown schematically in (179).

(179)



Experiment 4 relies on the asymmetry between non-subject arguments in the oblique dative structure with ditransitive verbs. After Larson (1988), we assume the following structure for the oblique dative VP where the dative theme DP asymmetrically c-commands the goal PP:[81]

(180)



[79] See also Stockwell et al. (1973) for a catalog of differences between restrictive and non-restrictive RCs in English.

[80] For example, we expect the following coindexing to be impossible:

(i) Her$_i$ assistant that accompanied Teresa$_i$ smiled reassuringly.

[81] The base position of the verb inside VP is not important to us here; see Harley and Miyagawa (2018) for an overview.

The following contrasts from Larson (1988) illustrate the asymmetry (the judgments are his):

(181) *Anaphor binding*

a. I presented/showed Mary$_i$ to herself$_i$.

b. *I presented/showed herself$_i$ to Mary$_i$.

(182) *Weak crossover*

a. Which check$_i$ did you send to its$_i$ owner?

b. *Which worker$_i$ did you send his$_i$ check to?

(183) *Superiority*

a. Which check did you send to who?

b. *Whom did you send which check to?

4.4.1.2 Using the coreference judgment task instead of the acceptability judgment task

An important methodological issue in experimental studies of binding and coreference is the choice of dependent variable for the experimental task. Theoretical syntactic literature systematically uses a procedure equivalent to the acceptability judgment task (Chomsky 1981, Lasnik 1989).[82] In this task, participants are asked to assess the acceptability of a sentence with a coreferential interpretation. In contrast, the experimental literature often employs the coreference judgment task (Gordon and Hendrick 1997, Kazanina et al. 2007). In this task, participants need to assess the availability of a coreferential interpretation of a sentence. Experiments 3 and 4 both use the coreference judgment task. The instructions used in both experiments are found in

[82] Experimental binding studies using the acceptability judgment task are rare. One example can be found in Temme and Verhoeven (2017).

(184). The purpose of this section is to clarify the reasons for choosing one task over the other.

(184) **The coreference judgment task**

Your task is to determine whether the two underlined words could refer to the same person or whether they must refer to different people. You will rate this from -3 (they must refer to different people) to 3 (they could refer to the same person).

Consider two readings of a sentence in (185). The coreferential reading is excluded because it constitutes a Condition C violation, whereas the non-coreferential reading is available.[83]

(185) a. *He$_i$ paid for Timothy$_i$. coreferential reading

b. He$_j$ paid for Timothy$_i$. non-coreferential reading

In the acceptability judgment task, participants focus only on (185a) and rate its acceptability using a scale (binary, n-point, etc.). It is important to note that (185b) is not part of that scale. The ability to focus on one interpretation while blocking out the other entirely is the metalinguistic part of this task. The skill necessary for this is usually taught (explicitly or implicitly) in introductory linguistics classes, often accompanied by the idea that the acceptability scores of different readings are independent. Thus, the acceptability of the non-coreferential reading in (185b) does not improve the rating of the coreferential reading in (185a). It seems at least precipitous to assume that all participants possess this skill. Because of that, any experiment using this task should ensure that participants demonstrate some degree of metalinguistic awareness.

[83] It is a separate question what happens with a structure with Condition C violation during Spell-Out; see Nikolaeva (2014) for some discussion.

Second, in the course of a typical 2×2 experiment, the metalinguistic task is repeated at least 35–40 times. Meanwhile, a non-coreferential interpretation similar to (185b) is available in all sentences with a Condition C violation. This creates a risk that a participant, whenever feeling tired or distracted during the experiment, may stop focusing on the coreferential reading and report the acceptability of a sentence *under any interpretation*, resulting in a false positive.

In the coreference judgment task, two readings are presented on the same scale, as described in (184).[84] This eliminates the need for participants to differentiate between the two readings and isolate one of them, removing the metalinguistic component and its associated problems and simplifying the task. This task also has limitations: it cannot be used with sentences with a Condition A violation, as the non-coreferential reading there is ungrammatical.[85]

To better understand the potential issues with the acceptability judgment task and the coreference judgment task, we conducted four pilot studies testing both tasks with and without Condition A sentences. Appendix D contains a detailed discussion of these experiments.

During the acceptability judgment task, many participants did not follow the instructions and rated the acceptability of a sentence under any interpretation suggesting that they did not have the metalinguistic awareness necessary for the task. Together with the results of the participants who followed the task, this created bimodal distributions of responses. Furthermore, among the participants who followed the task, most gave at least one deviant response, possibly because

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[84] The experimental literature offers several variations of this. Stockwell et al. (2021) give participants two distinct scales to evaluate the "naturalness" of each reading independently, while Keller and Asudeh (2001) offer a single scale for the non-coreferential reading only. It is clear that both reintroduce the metalinguistic aspect into the task.

[85] A possible solution, described in Gordon and Hendrick (1997), is to add an extra checkbox for participants to indicate that a sentence is ungrammatical, although this would make the task more complex again.

they were distracted or tired at some point during the task. Introducing Condition A sentences did not change the outcome of the acceptability judgment task results in any meaningful way.

The coreference judgment task was found to be more accurate and less prone to errors. All participants understood the task and provided consistent and uniform responses. Therefore, Experiments 3 and 4 were conducted using the coreference judgment task.

4.4.2 Methods

4.4.2.1 Experimental design

Both Condition C experiments use a full 2 × 2 factorial design. The two factors in the design are LINEAR ORDER and DEPENDENCY. The former manipulates the order of parts of a binding dependency between a Condition C-compliant "r-first" dependency where its head is an R-expression and the tail is a pronoun, and an inverse "p-first" dependency where the two are swapped, which should produce a Condition C violation. The latter controls the presence of RC extraposition. Abstract schemas for the four experimental conditions are shown in (186).

(186)

a.	[R-exp … [$_{RC}$ … pron …]]	r-first	in-situ
b.	[R-exp … ~~RC~~ …] … [$_{RC}$ … pron…]	r-first	ex-situ
c.	[pron … [$_{RC}$ … R-exp …]]	p-first	in-situ
d.	[pron … ~~RC~~ …] … [$_{RC}$ … R-exp …]]	p-first	ex-situ

The central advantage of this design is that it separates two main effects: the cost of having a legal or an illegal binding dependency and the cost of an RC extraposition dependency. In this

design, any improvement of the Condition-C-non-compliant binding dependency triggered by RC extraposition shows up as a subadditive interaction. Figure 4.7 shows the mock plots with two outcomes predicted by this design. Both plots show the main effects of LINEAR ORDER and DEPENDENCY represented by horizontal and vertical shifts between pairs of conditions. In the left panel, there is no interaction term, and the illegal binding dependency that violates Condition C is not ameliorated by RC extraposition. In contrast, the plot in the right panel shows a large subadditive interaction that indicates that in the p-first/ex-situ condition, RC extraposition puts the R-expression into a position outside of the c-command domain of the pronoun. This creates the "inverse" of the alligator mouth shape that is familiar from previous experiments.

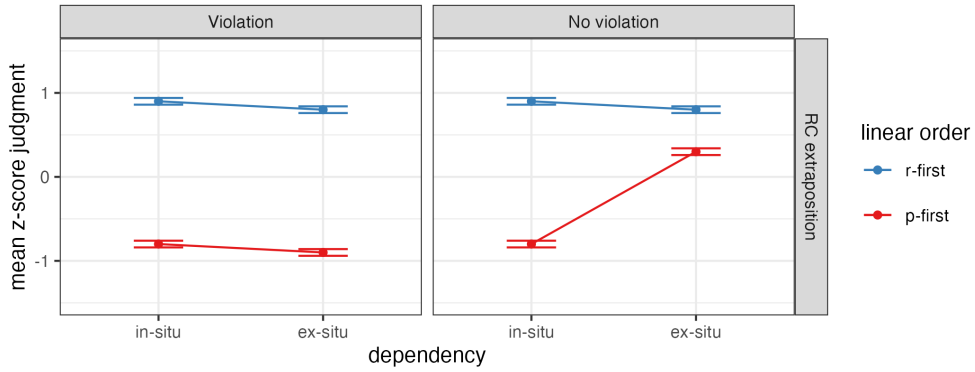

Fig. 4.7: Condition C (mock plots)

4.4.2.2 Materials

Experiments 3 and 4 investigate Condition C during RC extraposition. Experiment 3 studies RC extraposition from the direct object and Experiment 4 RC extraposition from the indirect object (goal). Both experiments employ a binding dependency that includes a pronoun and an R-expression. A Condition C violation is created by making the pronoun the head of the binding

dependency. In the pair of control conditions, the R-expression is the head of that dependency. The sets of sample conditions for the two Condition C experiments are shown in (187) and (188).

Experiment 3 uses the possessor as the head of the binding dependency to test Condition C during RC extraposition in a DP-internal configuration. A temporal adverb marks the right edge of the matrix clause in the ex-situ conditions. In the in-situ conditions, the same adverb appears at the left edge of the matrix clause to exclude its misattribution to the in-situ RC. Past perfect is used in the RC for sequence-of-tense reasons. The gender feature on pronouns and R-expressions is used to prevent other anaphoric elements from being included in the binding dependency. The head noun for the host DP is chosen to be animate and not (prototypically) unique (e.g. *aunt*, but not *father*) in order to allow for two restrictors (the possessor and the RC).

(187) Experiment 3: Condition C (*possessor*; DP-internal) × RC extraposition

a. Yesterday Amanda contacted David's cousin [$_{RC}$ that babysat him].	r-first	in-situ
b. Amanda contacted David's cousin ~~RC~~ yesterday [$_{RC}$ that babysat him].	r-first	ex-situ
c. Yesterday Amanda contacted his cousin [$_{RC}$ that babysat David].	p-first	in-situ
d. Amanda contacted his cousin ~~RC~~ yesterday [$_{RC}$ that babysat David].	p-first	ex-situ

Experiment 4 tests Condition C during RC extraposition in the DP-external configuration. The head of the binding dependency is the theme argument of a ditransitive, while the RC appears inside the goal argument. Similarly to Experiment 3, a temporal adverb marks the right edge of the matrix clause during RC extraposition. The same adverb appears at the left edge of the matrix clause in the in-situ conditions. The head of the host DP is indefinite to improve the plausibility of a sentence without context. The gender feature on the parts of a binding dependency is different from all other anaphoric elements in a sentence to avoid misattribution.

(188) Experiment 4: Condition C (*ditransitive*; DP-external) × RC extraposition

a. Today Emily took Eric to a beach [$_{RC}$ that he had never been to].	r-first	in-situ
b. Emily took Eric to a beach today [$_{RC}$ that he had never been to].	r-first	ex-situ
c. Today Emily took him to a beach [$_{RC}$ that Eric had never been to].	p-first	in-situ
d. Emily took him to a beach today [$_{RC}$ that Eric had never been to].	p-first	ex-situ

4.4.2.3 Fillers and sanity check items

Both experiments include 10 filler items that encompass a wide range of availability of the coreferential interpretation. Their primary goal is to distract participants from the experimental manipulation while encouraging them to use the entire scale. Additionally, filler responses are used for outlier detection purposes to identify sources of bias and error among participants.

Both experiments also include 3 pairs of sanity check items that test Condition B, Condition C, and Condition C under reconstruction. The checks are designed to test the experimental design and the accuracy of the collected data. Each check focuses on a specific aspect of the data. Moreover, the checks show the relative acceptability levels of their respective violations, allowing us to distinguish no-violation cases from those where the ratings indicate a violation.

The Condition B sanity check shown in (189) tests whether participants pay attention to the structural positions of the head and tail of the binding dependency (i.e. attend to c-command) and provides a reference for a binding violation independent of the one tested in the experiment (Condition C). The Condition C sanity check in (190) confirms that participants attend to the task and pay attention to the categorical status and the structural and linear positions of anaphoric elements within a binding dependency. Finally, the sanity check that tests Condition C during the obligatory reconstruction in (191) serves two main purposes. It provides a benchmark for

the combined costs of reconstruction and a Condition C violation to ensure that there is enough room for both. It also shows the relative acceptability levels of both, allowing us to distinguish between a situation in which the rating suggests a violation and one in which there is no violation.

(189) Sanity check: Condition B

a. Hannah's aunt sometimes surprised her. no violation

b. Hannah's aunt sometimes surprised her. violation

(190) Sanity check: Condition C

a. Allison added that she liked reggae. no violation

b. She added that Allison liked reggae. violation

(191) Sanity check: Reconstruction + Condition C

a. Bella said that [$_{PP}$ in front of him], the tailor saw a moth ~~PP~~. no violation

b. Bella said that [$_{PP}$ in front of the tailor], he saw a moth ~~PP~~. violation

4.4.2.4 Survey composition

Each binding experiment consists of 8 sets of lexically matched experimental items. Participants are shown 2 items per condition. The survey includes a total of 33 items, which are presented in the following order: 9 practice items in a fixed order, followed by 8 experimental items, 10 filler items, and 3 sets of sanity check items (2 items each) presented in a pseudorandomized order. An almost equal number of Condition B and Condition C sentences appears on each experimental list. Both experimental items and sanity check items are distributed among the experimental lists using a Latin square procedure. To control for order effects, 8 lists of each experiment are presented in 4 counterbalanced orders.

4.4.2.5 Participants and presentation

A total of 240 participants were recruited for both experiments, with 120 participants assigned to each of them. The same number of participants was used in the NPI experiments for a 7-point scale and a medium effect. The participants were instructed to evaluate whether the two underlined DPs can refer to the same person (3) or if they must be different people (-3). Each sentence was presented on a separate screen and had a separate scale next to it.

The experiments were hosted online on a survey platform Qualitrcs. The recruitment was carried out through a crowd-sourcing platform Amazon Mechanical Turk and a recruitment facilitation service CloudResearch. All participants were self-reported native English speakers and were compensated for their time at an hourly rate of $15 per hour with an estimated completion time of 6 minutes. Each participant saw only one list of one experiment and all the experimental conditions in that experiment.

4.4.2.6 Analysis

To eliminate scale bias, all results were standardized by converting them to z-scores prior to analysis. All data analysis steps are the same as those described in Section 2.3.5. The combined outlier detection methods removed 3 and 6 participants from Experiments 3 and 4, respectively.

4.4.3 Results

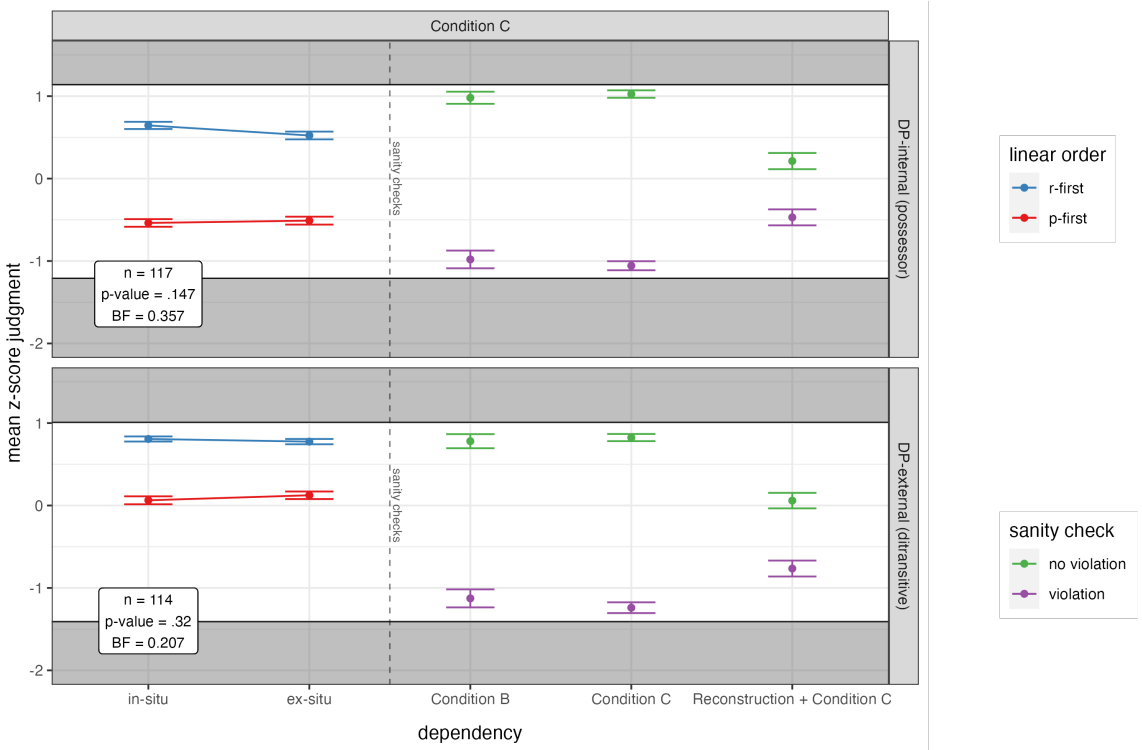

Fig. 4.8: Interaction plots for both Condition C experiments

Figure 4.8 contains the results of both Condition C experiments. In the top panel, which shows the results of Experiment 3, we observe that there is no "inverse" alligator mouth shape within the experimental conditions. Both Condition B and Condition C sanity checks confirm that the participants paid attention to the structural and linear properties of both elements in a binding dependency ($p < .001$ for both). The Reconstruction + Condition C sanity check shows that the combined costs of reconstruction and a Condition C violation had enough space and would not cause the floor effect ($p < .001$). Importantly, the size of the main effect of LINEAR ORDER is greater than the cost of a Condition C violation during reconstruction in the sanity check. It is also greater than the cost of having a grammatically correct forward vs. backward binding

dependency, as seen in the comparison of the Condition C/no violation and Reconstruction + Condition C/no violation conditions. This suggests that the main effect of the LINEAR ORDER factor in Experiment 3 is created by a Condition C violation. Paired with the lack of an "inverse" alligator mouth shape, it indicates that in a DP-internal configuration, RC extraposition does not bleed Condition C. Both sets of statistical tests agree that there is no effect of RC extraposition on the Condition C violation, since both find no evidence of the presence of a subadditive component feeding into the interaction term at significance levels $p < .05$ and $\text{BF}_{10} > 3$. Moreover, the BF_{10} value strongly supports the null hypothesis that there is no interaction ($\text{BF}_{10} < 0.33$).

The bottom panel displays the results of Experiment 4. Here we also observe no "inverse" alligator mouth shape, but the two pairs of conditions appear in the top half of the scale and closer to each other than in Experiment 3. The Condition B and Condition C sanity checks again show that the participants were aware of the structural and linear positions of the parts of a binding dependency ($p < .001$ for both). Also, the reconstruction + Condition C sanity check shows that there is enough space should Condition C occur ($p < .001$). However, the comparison of two sanity check conditions (Condition C/no violation and Reconstruction + Condition C/no violation) shows that the cost of having a grammatical forward vs. backward binding dependency is approximately equivalent to the main effect of the LINEAR ORDER factor (also both occur at the same acceptability levels), suggesting that there is no Condition C violation in the violation pair of experimental items in Experiment 4. Both sets of statistical tests further suggest that there are no factors that contribute to the interaction term.

We did not observe an acceptability level indicative of a Condition C violation in either of the p-first conditions in Experiment 4. This could be explained in two ways. The first explanation

suggests that the syntactic structure used in Experiment 4 does not involve a binding violation in the first place and thus cannot serve as a test for its obviation. This could be the case if the proposal from Larson (1988) about an asymmetric c-command relationship between two non-subject arguments in the oblique dative construction is incorrect.[86]

According to the second explanation, both p-first conditions include an obviation of a Condition C violation. This is expected if RC extraposition can occur string-vacuously as shown in (192). If this explanation is on the right track, it suggests that RC extraposition can obviate a Condition C violation in a DP-external configuration.[87]

(192) Today Emily took+T [$_{VP}$ him to a beach ~~RC~~] [$_{RC}$ that Eric had never been to].

In summary, Experiment 3 suggests that RC extraposition has no effect on a Condition C violation in a DP-internal configuration. However, the results of Experiment 4 are ambiguous. It is possible that the used syntactic configuration is not a valid test for Condition C, or it could be that RC extraposition can obviate the Condition C violation in a DP-external configuration, and, interestingly, it can apply string-vacuously. In order to distinguish between the two alternative explanations for Experiment 4, we designed a follow-up experiment discussed below that tests whether Condition C is violated in a configuration with two non-subject arguments of a ditransitive in the oblique dative construction.

[86] It is a separate question whether certain simplex Ps are "true" prepositions or case markers (and therefore should not "count" for c-command), see Bruening (2018) for some discussion and references.

[87] To test this explanation directly, one could try to block RC extraposition from happening string-vacuously by introducing another constituent (e.g. a result clause or a Heavy NP) at the right edge of the main clause. If this results in a Condition C violation, then this explanation is valid and RC extraposition can occur string-vacuously.

4.4.3.1 A follow up: Condition C violation in the oblique dative construction

The purpose of this follow-up is to test the structural assumption underlying Experiment 4. Namely, we want to determine whether there is an asymmetric c-command relationship between two non-subject arguments of a ditransitive in the oblique dative construction. If there is no structural asymmetry, the lack of a Condition C violation in Experiment 4 would indicate that this configuration is not a valid test for RC extraposition. Conversely, if we find that the theme c-commands the goal in that class of ditransitives, we can conclude that the lack of a Condition C violation in Experiment 4 was due to RC extraposition.

Experiment 5 uses Condition C to test whether the theme argument c-commands the goal argument. Similarly to the previous experiments, it uses a full 2×2 factorial design. The design includes two factors, LINEAR ORDER and C-COMMAND. The former controls the order of elements in a binding dependency. In the r-first order, the R-expression is the head of the dependency and the pronoun is its tail. In the p-first order, the two are swapped. The latter factor separates the binding pair in which one anaphoric elements c-commands the other from the accidental coreference pair in which neither coreferential element c-commands the other. Experiment 5 uses exactly the same verbs as Experiment 4. (193) contains a sample set of experimental items.

(193) Experiment 5: Condition C in ditransitives (linear order × c-command)

a. Today Emily took Eric's sister to his neighborhood park.	r-first	no c-command
b. Today Emily took Eric to his neighborhood park.	r-first	c-command
c. Today Emily took his sister to Eric's neighborhood park.	p-first	no c-command
d. Today Emily took him to Eric's neighborhood park.	p-first	c-command

In this design, the structural signature of a Condition C violation (an inverse anaphoric

dependency in the presence of c-command) is distributed between two factors. LINEAR ORDER controls the order of elements in the anaphoric dependency, while C-COMMAND distinguishes the binding pair (c-command) from the accidental coreference pair (no c-command). The Condition C violation should feed the interaction term, thus creating a familiar alligator mouth shape.

The experiment consists of 8 sets of experimental items. All other items in the survey (e.g. fillers, sanity checks, practice items, and anchor items) were the same as in Experiment 4, as were the survey organization and presentation. Task, recruitment setup, remuneration rate, and outlier detection and statistical analysis procedures were identical to Experiment 4. We recruited 120 self-reported native English speakers, of which 2 were flagged as outliers and removed.

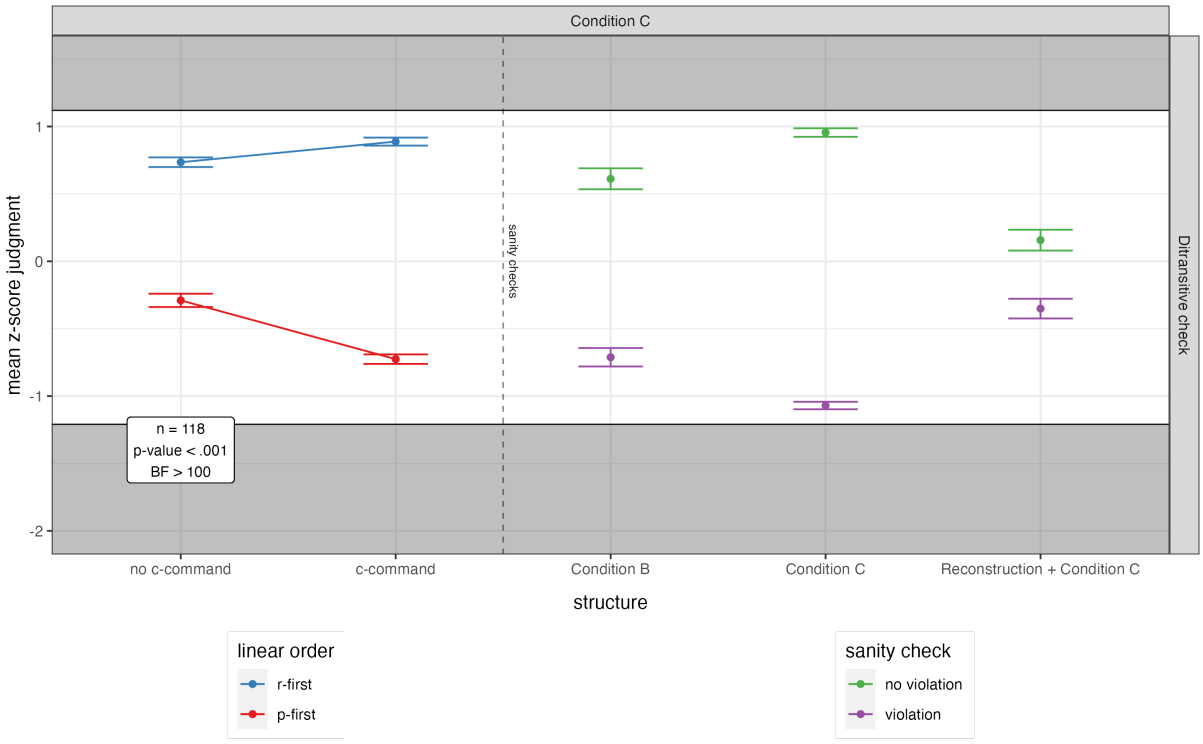

Fig. 4.9: Interaction plot for the Condition-C-in-ditransitives check

The results are shown in Figure 4.9. We observe a large dispreference for inverse anaphoric

dependencies in which an R-expression follows a coreferential pronoun across both accidental coreference (no c-command) and binding (c-command) pairs. Additionally, in the r-first order we find a minor boost in acceptability between the accidental coreference and binding conditions, which could be due to the preference for binding over coreference or it could reflect a change in the size of a DP in the structure. Finally, the binding condition in the p-first order exhibits an additional large penalty, which is indicative of a Condition C violation. The presence of a Condition C violation is corroborated by both sets of statistical analyses at the significance levels $p < .05$ and $\text{BF}_{10} > 3$. Thus, we can conclude that there is a structural asymmetry between non-subject arguments of a ditransitive in the oblique dative construction. This suggests that the same structural configuration in Experiment 4 is a valid test and should trigger a Condition C violation, which is then obviated by RC extraposition. Therefore, the results of Experiment 4 should be interpreted as indicating that RC extraposition applies string-vacuously.

4.5 Discussion

Table 4.3 summarizes the main findings of the four experiments discussed in this chapter. The results indicate that RC extraposition does not interrupt NPI licensing in either DP-internal or DP-external configurations, while Condition C is violated in the DP-internal configuration and not violated in the DP-external configuration.

#	C-command diagnostic	Syntactic configuration	Result
1	NPI licensing	DP-internal	licensed
2	NPI licensing	DP-external	licensed
3	Condition C	DP-internal	violation
4	Condition C	DP-external	no violation

Table 4.3: Summary of experimental results testing the effect of RC extraposition on NPI licensing and Condition C in English

In the DP-internal configuration, the combined results of NPI and Condition C experiments signal that RC extraposition shows obligatory reconstruction. The literature offers two explanations for this: either the RC moves to the right by itself and then reconstructs to its base position, in line with Ross (1967), or the host DP is part of the target of RC extraposition and appears in both the base and extraposed positions of the RC (Fox and Nissenbaum 1999, 2000, Sportiche 2016, 2019). In the DP-external configuration, RC extraposition shows optional reconstruction, based on the results of the corresponding experiments. These results exclude one of the two interpretations mentioned above: if the RC obligatorily reconstructs to its base position, we do not expect the Condition C violation to be obviated in either of the configurations.

RC extraposition shows different c-command effects in DP-internal and DP-external configurations. Specifically, in a DP-internal configuration, RC extraposition exhibits the obligatory reconstruction pattern, whereas in a DP-external configuration, it shows the optional reconstruction pattern. These two patterns can be reconciled if, during RC extraposition, the RC never leaves the c-command domain of its host, although it is able to leave the c-command domain of

other constituents. It follows that the target of RC extraposition consists of both the RC and the host DP. Furthermore, the optional reconstruction pattern suggests that the extraposed RC occupies two structural positions in the syntactic tree. These results are only predicted by theories of RC extraposition that posit that the RC and the host DP are extraposed together. Table 4.4 repeats the predictions of RC extraposition theories and compatible reconstruction patterns. The winning theories are color-coded. The theories that are not highlighted have some predictions that conflict with our results, indicating that these theories may need to be revised or discarded.

Theory	NPI licensing		Condition C	
	DP-internal	DP-external	DP-internal	DP-external
Ross (1967)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	no violation	no violation
+ anti-reconstruction	unlicensed	unlicensed	no violation	no violation
Fox and Nissenbaum (1999, 2000) + Obligatory LM (Stepanov 2001b, Abe 2018, Zyman 2022)				
+ anti-reconstruction	licensed	unlicensed	violation	no violation
Fox and Nissenbaum (1999, 2000) + Optional LM (Lebeaux 1988)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	violation	no violation
+ anti-reconstruction	licensed	unlicensed	violation	no violation
Sportiche (2016, 2019)				
+ obligatory reconstruction	licensed	licensed	violation	violation
+ optional reconstruction	licensed	licensed	violation	no violation
+ anti-reconstruction	licensed	unlicensed	violation	no violation

Table 4.4: The predictions of rightward movement theories of RC extraposition and reconstruction patterns compared to empirical results

Lastly, the combined results of Experiments 4 and 5 suggest that RC extraposition can apply string-vacuously, in contrast to other types of movement such as scrambling (Hoji 1985,

Sabel 2005). This finding corroborates our hypothesis in Chapter 2 that RC extraposition is regulated by the feature [RC], in line with the distinction between feature-driven and feature-less movement proposed in Saito and Fukui (1998).

Chapter 5

Conclusion

This dissertation is the first step of a research program for the syntax of RC extraposition. During the course of three series of experiments, we investigated island effects (Chapters 2 and 3) and c-command effects (Chapter 4) to determine the underlying mechanisms of RC extraposition. Our central findings suggest that RC extraposition is created by rightward syntactic movement; the extraposed RC must occupy two positions in a syntactic tree; and, seemingly, the target of RC extraposition consists of both the RC and the host DP.

The purpose of this chapter is to discuss the implications of our results for syntactic theory, point to the remaining questions, and suggest future directions for research. While our primary focus was on answering key questions about RC extraposition, such as its mechanism and structural position, there are various other topics that we did not cover. Interested readers may refer to Baltin (2017), which provides a recent overview of the extraposition literature.

5.1 There is no 'locality paradox' of RC extraposition

If there is one factoid that most syntacticians remember about RC extraposition, it is that RC extraposition is an odd movement type that cannot waddle out of a finite clause but can flit across an island boundary. This is often presented as the so-called locality paradox of RC extraposition.

(194) The locality paradox of RC extraposition (Rochemont and Culicover 1987)

RC extraposition is both more and less restricted than Ā-movement.

The first half of (194) is noteworthy but not exactly unique, since there is an assortment of leftward and rightward movement types that exhibit some form of clausal or subclausal locality (e.g. short scrambling, object shift, QR, or HNPS). Chapters 2 and 3 prove that the second half of (194) is false. Thus, our findings resolve the 'locality paradox' by trivializing the locality of RC extraposition. It is simply more restrictive than the prototypical successive-cyclic Ā-movement.

5.2 RC extraposition is rightward syntactic movement

The experiments in Chapters 2 and 3 demonstrate that RC extraposition is sensitive to a number of syntactic islands in English and Russian. The results suggest that only theories relying on rightward syntactic movement can account for the full range of observed islands. The conclusion that RC extraposition is created by rightward syntactic movement has important implications for the interaction between dominance and precedence, two fundamental structural relations.

Kayne (1994) offers one of the most elegant theories of linearization. Its most attractive property is that it can directly compute the precedence relations from the dominance (c-command) relations.[88] His theory famously bans rightward adjunction and, as a consequence, rightward movement. Thus, RC extraposition being an instance of rightward syntactic movement presents a challenge to LCA, suggesting that it may be too strong. The challenge is amplified by the fact that the ban on rightward adjunction follows from two assumptions that form the core

[88] At least an adequate lexicon is necessary to do the inverse and calculate dominance relations using precedence.

of Kayne's theory. The assumptions are that there is no structural difference between specifiers and adjuncts,[89] and that all languages follow the same universal Spec $\prec$ Head $\prec$ Comp order. By abandoning one of these assumptions, the resulting linearization theory would require more information than just dominance relations to calculate the precedence relations. According to it, the relationship between precedence and dominance is not univariate, contra Kayne (1994), and therefore other potential sources of linear information should be considered in addition to dominance, such as the derivational history of a constituent and the timing of Spell-Out (Fox and Pesetsky 2005) or possibly the labeling algorithm (Takita 2020).

5.3 The target of RC extraposition is DP+RC

Chapter 4 discusses three important results of the NPI and Condition C experiments. First, the two NPI experiments show that RC extraposition does not disrupt NPI licensing in either a DP-internal or a DP-external configuration. Both polarity operators can license an NPI inside an extraposed RC, indicating that a copy of the RC can be present in the base position during RC extraposition. This result suggests that an RC can be part of the target of RC extraposition.

Second, the results of the DP-internal experiments (NPI licensing and Condition C) indicate that the parts of the host DP c-command the extraposed RC in all its positions, since RC extraposition does not interrupt either dependency. It suggests that either the host DP is part of the target of RC extraposition or the extraposed RC obligatorily reconstructs to its base position.

[89] The distinction between specifiers and adjuncts often resurfaces in some form; see, for instance, Ch. 5 in Chomsky (1995). For example, Cinque (1999) offers a surfeit of new functional heads to make would-be-adjuncts into specifiers of their own projections, while Fox and Pesetsky (2009), adopting the multiple specifier hypothesis from Chomsky (1995), propose to linearize inner and outer specifiers differently.

Third, the results of the experiment examining Condition C in the DP-external configuration suggest that RC extraposition can obviate the Condition C violation in the DP-external configuration, indicating that the extraposed RC does not obligatorily reconstruct to its base position and, therefore, both the host DP and the RC are part of the target of RC extraposition.

5.4 Directions for future research

The research program for the syntax of RC extraposition consists of several follow-up projects that build on the results of this dissertation and each other. The first project aims to determine what type of movement RC extraposition involves, its launching and landing sites, and how it interacts with other types of movement and other grammatical operations. This includes exploring freezing effects, extraposition from moved elements, and extraction from an extraposed RC.

The second set of questions focuses on the locality of RC extraposition. The aim is to characterize whether RC extraposition exhibits clausal or subclausal locality and whether it is a product of grammar (Ross 1967), processing (Grosu 1973), or both (Frazier and Clifton 1996).

The third project aims to explore the interaction between linear and structural properties of RC extraposition. Its main focus is the edge effects of RC extraposition and how linear and structural properties of rightward movement interact, including the questions of whether RC extraposition can always apply string-vacuously and whether the linear position of the in-situ RC influences its ability to be extraposed, i.e. whether it is subject to the right edge effect.

In addition to these projects, a much more extensive research program would require a thorough investigation of the ontology of rightward movement operations. This investigation would explore whether all these operations are created by the same mechanism as RC extrapo-

sition or if they require postulating different mechanisms. The types of rightward movement operations to be studied include at least PP extraposition, Complement CP extraposition, Degree clause extraposition, Result clause extraposition, HNPS, Locative Inversion, Clitic Right Dislocation, and Rightward scrambling; see (195). This research program would also need to encompass a cross-linguistic dimension and investigate these questions across multiple languages.

(195) a. John read [a book ~~PP~~] last week [$_{PP}$ by Chomsky]. *PP extraposition from N*

b. Susan looked ~~PP~~ pensively [$_{PP}$ at the telegram]. *PP extraposition from V*

c. I believed the rumor ~~CP~~ sincerely [$_{CP}$ that Nina had a crush on Jason]. *Complement CP ext. from N*

d. I believe ~~CP~~ sincerely [$_{CP}$ that John is honest]. *Complement CP ext. from V*

e. John was so certain ~~CP~~ last night [$_{CP}$ that the Red Sox would win]. *Complement CP ext. from A*

f. Mary ate faster ~~CP~~ yesterday [$_{CP}$ than we had expected]. *Degree clause extraposition*

g. John was so hungry ~~CP~~ last night [$_{CP}$ that he would eat anything]. *Result clause extraposition*

h. It ~~CP~~ was a shock to me [$_{CP}$ that a cruel capitalist should be such a nice fellow]. *Clausal subject extraposition*

i. He attributed ~~DP~~ to a short circuit [$_{DP}$ the fire which destroyed most of my factory]. *Heavy NP Shift*

j. Into the room ~~DP~~ walked [$_{DP}$ my brother Jack]. *Locative Inversion*

k. L'ho già comprato, il giornale.
CL'have.1SG already bought the newspaper
'I have already bought the newspaper.' *Clitic Right Dislocation (Italian)*

l. ~~DP~~ ecey Yenghi-lul manna-ss-e [$_{DP}$ Cheli-ka]
yesterday Y.-ACC meet-PAST-DEC C.-NOM
'Cheli met Yenghi yesterday.' *Rightward scrambling (Korean)*

Finally, there are two projects that do not belong to the same research program but are building on some of its results. One project investigates RC extraposition from classifier words that require an RC:

(196) I am not used to drinking the kind of milk *([$_{RC}$ that you get in the supermarket]).

Here, the classifier word can be used to signal RC extraposition at the gap position instead of waiting for the filler. While grammatical theories of islands (Huang 1982, Chomsky 1986, Rizzi 1990, a.o.) do not anticipate any differences between RC extraposition from classifier and non-classifier DPs, processing-based accounts (Deane 1991, Pritchett 1991, Kluender and Kutas 1993, Hawkins 1999) predict that processing a gap-filler dependency where the dependency is signaled at the gap will be vastly different from a gap-filler dependency where the dependency is signaled at the filler, requiring the recollection of preceding material to identify the gap.

Another project based on the findings of the NPI experiments in Chapter 4 could investigate the locality of NPI licensing across various configurations and the distinctions in the grammar of NPI licensing between different groups (and possibly different dialects).

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Appendix A

Supplementary materials for Chapter 2

A.1 Experimental items

A.1.1 Experiment 1: Unergative subject island (indefinite)

(1) a. Yesterday I reassured a colleague that sensed my apprehension.
b. I reassured a colleague yesterday that sensed my apprehension.
c. A colleague that sensed my apprehension winked conspiratorially.
d. A colleague winked conspiratorially that sensed my apprehension.

(2) a. Yesterday I pitied a nanny that watched a very active child.
b. I pitied a nanny yesterday that watched a very active child.
c. A nanny that watched a very active child yawned loudly.
d. A nanny yawned loudly that watched a very active child.

(3) a. Yesterday I thanked a student that cleaned the blackboard.
b. I thanked a student yesterday that cleaned the blackboard.
c. A student that cleaned the blackboard sneezed violently.
d. A student sneezed violently that cleaned the blackboard.

(4) a. Yesterday I consulted a lawyer that noticed the witness's mistake.
b. I consulted a lawyer yesterday that noticed the witness's mistake.
c. A lawyer that noticed the witness's mistake smiled reassuringly.
d. A lawyer smiled reassuringly that noticed the witness's mistake.

(5) a. Today I complimented a reporter that uncovered the bribery scandal.
b. I complimented a reporter today that uncovered the bribery scandal.
c. A reporter that uncovered the bribery scandal laughed sarcastically.
d. A reporter laughed sarcastically that uncovered the bribery scandal.

(6) a. Today I comforted a detective that lost the prime suspect.
b. I comforted a detective today that lost the prime suspect.
c. A detective that lost the prime suspect sighed heavily.
d. A detective sighed heavily that lost the prime suspect.

(7) a. Today I congratulated an artist that received a large commission.
b. I congratulated an artist today that received a large commission.
c. An artist that received a large commission cried joyfully.
d. An artist cried joyfully that received a large commission.

(8) a. Today I covered for a doctor that caught the flu.
b. I covered for a doctor today that caught the flu.
c. A doctor that caught the flu coughed repeatedly.
d. A doctor coughed repeatedly that caught the flu.

A.1.2 Experiment 2: Unergative subject island (definite)

(1) a. Yesterday I reassured the colleague that sensed my apprehension.
b. I reassured the colleague yesterday that sensed my apprehension.
c. The colleague that sensed my apprehension winked conspiratorially.
d. The colleague winked conspiratorially that sensed my apprehension.

(2) a. Yesterday I pitied the nanny that watched a very active child.
b. I pitied the nanny yesterday that watched a very active child.
c. The nanny that watched a very active child yawned loudly.
d. The nanny yawned loudly that watched a very active child.

(3) a. Yesterday I thanked the student that cleaned the blackboard.
b. I thanked the student yesterday that cleaned the blackboard.
c. The student that cleaned the blackboard sneezed violently.
d. The student sneezed violently that cleaned the blackboard.

(4) a. Yesterday I consulted the lawyer that noticed the witness's mistake.
b. I consulted the lawyer yesterday that noticed the witness's mistake.
c. The lawyer that noticed the witness's mistake smiled reassuringly.
d. The lawyer smiled reassuringly that noticed the witness's mistake.

(5) a. Today I complimented the reporter that uncovered the bribery scandal.
b. I complimented the reporter today that uncovered the bribery scandal.
c. The reporter that uncovered the bribery scandal laughed sarcastically.
d. The reporter laughed sarcastically that uncovered the bribery scandal.

(6) a. Today I comforted the detective that lost the prime suspect.
b. I comforted the detective today that lost the prime suspect.
c. The detective that lost the prime suspect sighed heavily.
d. The detective sighed heavily that lost the prime suspect.

(7) a. Today I congratulated the artist that received a large commission.
b. I congratulated the artist today that received a large commission.
c. The artist that received a large commission cried joyfully.
d. The artist cried joyfully that received a large commission.

(8) a. Today I covered for the doctor that caught the flu.
b. I covered for the doctor today that caught the flu.
c. The doctor that caught the flu coughed repeatedly.
d. The doctor coughed repeatedly that caught the flu.

A.1.3 Experiment 3: Unergative subject island (context)

(1) a. People in my office have been checking up on me recently. Yesterday I reassured my boss, who was worried about my workload. Yesterday I also reassured a colleague that knew about my anxiety.
b. People in my office have been checking up on me recently. Yesterday I reassured my boss, who was worried about my workload. I also reassured a colleague yesterday that knew about my anxiety.
c. During my presentation, I was nervous, and several people tried to show their support non-verbally. First my boss winked. Then a colleague that knew about my anxiety winked.
d. During my presentation, I was nervous, and several people tried to show their support non-verbally. First my boss winked. Then a colleague winked that knew about my anxiety.

(2) a. I have a lot of sympathy for people who take care of small children. Yesterday I pitied a mother who was trying to soothe a crying baby. Yesterday I also pitied a nanny that watched a very active child.
b. I have a lot of sympathy for people who take care of small children. Yesterday I pitied a mother who was trying to soothe a crying baby. I also pitied a nanny yesterday that watched a very active child.
c. During lunch time, several adults at the playground started yawning. First a mother rocking a baby to sleep yawned. Then a nanny that watched a very active child yawned.
d. During lunch time, several adults at the playground started yawning. First a mother rocking a baby to sleep yawned. Then a nanny yawned that watched a very active child.

(3) a. I am learning to express my gratitude more openly. Yesterday I thanked someone who held a door for me. Yesterday I also thanked a student that cleaned the blackboard.
b. I am learning to express my gratitude more openly. Yesterday I thanked someone who held a door for me. I also thanked a student yesterday that cleaned the blackboard.

c. During class, several people started sneezing because of the dust. First a person in the back sneezed. Then a student that cleaned the blackboard sneezed.
d. During class, several people started sneezing because of the dust. First a person in the back sneezed. Then a student sneezed that cleaned the blackboard.

(4) a. At a trial yesterday several of us noticed that a witness made a mistake in their testimony. Yesterday I consulted a retired judge about the possible consequences for the case. Yesterday I also consulted a lawyer that noticed the witness's mistake.
b. At a trial yesterday several of us noticed that a witness made a mistake in their testimony. Yesterday I consulted a retired judge about the possible consequences for the case. I also consulted a lawyer yesterday that noticed the witness's mistake.
c. During the cross-examination, while answering a question, one of the witnesses contradicted the defense's story. First the judge smiled. Then a lawyer that noticed the witness's mistake smiled.
d. During the cross-examination, while answering a question, one of the witnesses contradicted the defense's story. First the judge smiled. Then a lawyer smiled that noticed the witness's mistake.

(5) a. I really strive to build a more positive workplace culture at our newspaper. Today I complimented an author of a recent editorial. Today I also complimented a reporter that uncovered the bribery scandal.
b. I really strive to build a more positive workplace culture at our newspaper. Today I complimented an author of a recent editorial. I also complimented a reporter today that uncovered the bribery scandal.
c. During the press conference for the local bribery scandal, the mayor opened with a joke about fake news. First the audience laughed. Then a reporter that uncovered the bribery scandal laughed.
d. During the press conference for the local bribery scandal, the mayor opened with a joke about fake news. First the audience laughed. Then a reporter laughed that uncovered the bribery scandal.

(6) a. Working at a police station can be very stressful, so I try to help as much as I can. Today I comforted a police officer who forgot about his court appearance. Today I also comforted a detective that lost the prime suspect.
b. Working at a police station can be very stressful, so I try to help as much as I can. Today I comforted a police officer who forgot about his court appearance. I also comforted a detective today that lost the prime suspect.
c. During a strategy meeting over a high profile case, the district attorney asked why the prime suspect was not in custody. First the precinct captain sighed. Then a detective that lost the prime suspect sighed.
d. During a strategy meeting over a high profile case, the district attorney asked why the prime suspect was not in custody. First the precinct captain sighed. Then a detective sighed that lost the prime suspect.

(7) a. I am always happy to celebrate the other artists in our art group. Today I congratulated a sculptor whose statue was awarded the Carnegie Prize. Today I also congratulated an artist that received a large commission.
b. I am always happy to celebrate the other artists in our art group. Today I congratulated a sculptor whose statue was awarded the Carnegie Prize. I also congratulated an artist today that received a large commission.
c. During the award ceremony, several people started crying with joy. First a sculptor who received the main prize cried. Then an artist that received a large commission cried.
d. During the award ceremony, several people started crying with joy. First a sculptor who received the main prize cried. Then an artist cried that received a large commission.

(8) a. Sometimes on my free days I end up working double shifts at the hospital. Today I covered for a physician whose flight back from a medical conference was delayed. Today I also covered for a doctor that caught the flu.
b. Sometimes on my free days I end up working double shifts at the hospital. Today I covered for a physician whose flight back from a medical conference was delayed. I also covered for a doctor today that caught the flu.
c. During an outbreak of a new respiratory virus, several people in the hospital suddenly started coughing. First a nurse who had asthma coughed. Then a doctor that caught the flu coughed.
d. During an outbreak of a new respiratory virus, several people in the hospital suddenly started coughing. First a nurse who had asthma coughed. Then a doctor coughed that caught the flu.

A.1.4 Experiment 4: Transitive subject island (indefinite)

(1) a. Today Tim visited a lawyer that represents the social media company.
b. Tim visited a lawyer today that represents the social media company.
c. Today a lawyer that represents the social media company visited Tim.
d. A lawyer visited Tim today that represents the social media company.

(2) a. Today Mary contacted a reporter that covers environmental rights.
b. Mary contacted a reporter today that covers environmental rights.
c. Today a reporter that covers environmental rights contacted Mary.
d. A reporter contacted Mary today that covers environmental rights.

(3) a. Today Nick called a doctor that treats the local veterans.
b. Nick called a doctor today that treats the local veterans.
c. Today a doctor that treats the local veterans called Nick.
d. A doctor called Nick today that treats the local veterans.

(4) a. Today Emily texted a nanny that watches the neighborhood kids.
b. Emily texted a nanny today that watches the neighborhood kids.
c. Today a nanny that watches the neighborhood kids texted Emily.
d. A nanny texted Emily today that watches the neighborhood kids.

(5) a. Yesterday Anna emailed a colleague that trains new hires.
b. Anna emailed a colleague yesterday that trains new hires.
c. Yesterday a colleague that trains new hires emailed Anna.
d. A colleague emailed Anna yesterday that trains new hires.

(6) a. Yesterday Grace approached a detective that finds lost pets.
b. Grace approached a detective yesterday that finds lost pets.
c. Yesterday a detective that finds lost pets approached Grace.
d. A detective approached Grace yesterday that finds lost pets.

(7) a. Yesterday George helped a teacher that chaperones field trips.
b. George helped a teacher yesterday that chaperones field trips.
c. Yesterday a teacher that chaperones field trips helped George.
d. A teacher helped George yesterday that chaperones field trips.

(8) a. Yesterday Matt complimented an artist that designs the cast's costumes.
b. Matt complimented an artist yesterday that designs the cast's costumes.
c. Yesterday an artist that designs the cast's costumes complimented Matt.
d. An artist complimented Matt yesterday that designs the cast's costumes.

A.1.5 Experiment 5: Transitive subject island (definite)

(1) a. Today Tim visited the lawyer that represents the social media company.
b. Tim visited the lawyer today that represents the social media company.
c. Today the lawyer that represents the social media company visited Tim.
d. The lawyer visited Tim today that represents the social media company.

(2) a. Today Mary contacted the reporter that covers environmental rights.
b. Mary contacted the reporter today that covers environmental rights.
c. Today the reporter that covers environmental rights contacted Mary.
d. The reporter contacted Mary today that covers environmental rights.

(3) a. Today Nick called the doctor that treats the local veterans.
b. Nick called the doctor today that treats the local veterans.
c. Today the doctor that treats the local veterans called Nick.
d. The doctor called Nick today that treats the local veterans.

(4) a. Today Emily texted the nanny that watches the neighborhood kids.
b. Emily texted the nanny today that watches the neighborhood kids.
c. Today the nanny that watches the neighborhood kids texted Emily.
d. The nanny texted Emily today that watches the neighborhood kids.

(5) a. Yesterday Anna emailed the colleague that trains new hires.
b. Anna emailed the colleague yesterday that trains new hires.
c. Yesterday the colleague that trains new hires emailed Anna.
d. The colleague emailed Anna yesterday that trains new hires.

(6) a. Yesterday Grace approached the detective that finds lost pets.
b. Grace approached the detective yesterday that finds lost pets.
c. Yesterday the detective that finds lost pets approached Grace.
d. The detective approached Grace yesterday that finds lost pets.

(7) a. Yesterday George helped the teacher that chaperones field trips.
b. George helped the teacher yesterday that chaperones field trips.
c. Yesterday the teacher that chaperones field trips helped George.
d. The teacher helped George yesterday that chaperones field trips.

(8) a. Yesterday Matt complimented the artist that designs the cast's costumes.
b. Matt complimented the artist yesterday that designs the cast's costumes.
c. Yesterday the artist that designs the cast's costumes complimented Matt.
d. The artist complimented Matt yesterday that designs the cast's costumes.

A.1.6 Experiment 6: Transitive subject island (context)

(1) a. Tim was a victim of identity theft through a social media platform. Today Tim visited a detective in charge of the investigation. He also visited a lawyer that represents the social media company.
b. Tim was a victim of identity theft through a social media platform. Today Tim visited a detective in charge of the investigation. He also visited a lawyer today that represents the social media company.
c. Tim was a victim of identity theft through a social media platform. Today a detective visited Tim to ask a few follow-up questions. A lawyer that represents the social media company also visited him.
d. Tim was a victim of identity theft through a social media platform. Today a detective visited Tim to ask a few follow-up questions. A lawyer also visited him today that represents the social media company.

(2) a. Mary found a puddle of pink slime in her backyard. Today Mary contacted an ecologist to inspect it. She also contacted a reporter that covers environmental rights.
b. Mary found a puddle of pink slime in her backyard. Today Mary contacted an ecol-

ogist to inspect it. She also contacted a reporter today that covers environmental rights.

c. Mary found a puddle of pink slime in her backyard. Today an ecologist contacted Mary to collect a sample. A reporter that covers environmental rights also contacted her.

d. Mary found a puddle of pink slime in her backyard. Today an ecologist contacted Mary to collect a sample. A reporter also contacted her today that covers environmental rights.

(3) a. Nick is writing an article to help young veterans navigate their new status. Today Nick called a consultant specializing in the VA system for a comment. He also called a doctor that treats the local veterans.

b. Nick is writing an article to help young veterans navigate their new status. Today Nick called a consultant specializing in the VA system for a comment. He also called a doctor today that treats the local veterans.

c. Nick is writing an article to help young veterans navigate their new status. Today a local business owner who employs mostly veterans called Nick about it. A doctor that treats the local veterans also called him.

d. Nick is writing an article to help young veterans navigate their new status. Today a local business owner who employs mostly veterans called Nick about it. A doctor also called him today that treats the local veterans.

(4) a. Emily is organizing a block party for the whole neighborhood. Today Emily texted a nurse who visits some of the older residents to invite her. She also texted a nanny that watches the neighborhood kids.

b. Emily is organizing a block party for the whole neighborhood. Today Emily texted a nurse who visits some of the older residents to invite her. She also texted a nanny today that watches the neighborhood kids.

c. Emily is organizing a block party for the whole neighborhood. Today a nurse who visits some of the older residents texted Emily about it. A nanny that watches the neighborhood kids also texted her.

d. Emily is organizing a block party for the whole neighborhood. Today a nurse who visits some of the older residents texted Emily about it. A nanny also texted her today that watches the neighborhood kids.

(5) a. Anna recently came back from a week-long corporate retreat. Yesterday Anna emailed her boss about some of her ideas. She also emailed a colleague that trains new hires.

b. Anna recently came back from a week-long corporate retreat. Yesterday Anna emailed her boss about some of her ideas. She also emailed a colleague yesterday that trains new hires.

c. Anna recently came back from a week-long corporate retreat. Yesterday a few managers who were curious emailed Anna about it. A colleague that trains new hires

also emailed her.

d. Anna recently came back from a week-long corporate retreat. Yesterday a few managers who were curious emailed Anna about it. A colleague also emailed her yesterday that trains new hires.

(6) a. Grace reported that her dog, a previous winner of the National Dog Show, was stolen. Yesterday Grace approached a police officer who took the case to ask about it. She also approached a detective that finds lost pets.

b. Grace reported that her dog, a previous winner of the National Dog Show, was stolen. Yesterday Grace approached a police officer who took the case to ask about it. She also approached a detective yesterday that finds lost pets.

c. Grace reported that her dog, a previous winner of the National Dog Show, was stolen. Yesterday a police officer who took the case approached Grace. A detective that finds lost pets also approached her.

d. Grace reported that her dog, a previous winner of the National Dog Show, was stolen. Yesterday a police officer who took the case approached Grace. A detective also approached her yesterday that finds lost pets.

(7) a. George is a new student and he is very eager to help. Yesterday George helped a coach who was putting away mats after a PE class. He also helped a teacher that chaperones field trips.

b. George is a new student and he is very eager to help. Yesterday George helped a coach who was putting away mats after a PE class. He also helped a teacher yesterday that chaperones field trips.

c. George is a new student and he is very eager to help. Yesterday a janitor helped George find the music room. A teacher that chaperones field trips also helped him.

d. George is a new student and he is very eager to help. Yesterday a janitor helped George find the music room. A teacher also helped him yesterday that chaperones field trips.

(8) a. Matt is a new assistant at the playhouse and is eager to make a good impression. Yesterday Matt complimented the prop master on the set design. He also complimented an artist that designs the cast's costumes.

b. Matt is a new assistant at the playhouse and is eager to make a good impression. Yesterday Matt complimented the prop master on the set design. He also complimented an artist yesterday that designs the cast's costumes.

c. Matt is a new assistant at the playhouse and is eager to make a good impression. Yesterday the prop master complimented Matt for his work. An artist that designs the cast's costumes also complimented him.

d. Matt is a new assistant at the playhouse and is eager to make a good impression. Yesterday the prop master complimented Matt for his work. An artist also complimented him yesterday that designs the cast's costumes.

A.1.7 Experiment 7: Passive subject island (indefinite)

(1) a. Yesterday David Letterman interviewed a comedian that created a hit television show.
b. David Letterman interviewed a comedian yesterday that created a hit television show.
c. Yesterday a comedian that created a hit television show was interviewed by David Letterman.
d. A comedian was interviewed by David Letterman yesterday that created a hit television show.

(2) a. Yesterday Annie Leibovitz photographed an actress that played the lead role.
b. Annie Leibovitz photographed an actress yesterday that played the lead role.
c. Yesterday an actress that played the lead role was photographed by Annie Leibovitz.
d. An actress was photographed by Annie Leibovitz yesterday that played the lead role.

(3) a. Yesterday Google hired a programmer that built the new language translation app.
b. Google hired a programmer yesterday that built the new language translation app.
c. Yesterday a programmer that built the new language translation app was hired by Google.
d. A programmer was hired by Google yesterday that built the new language translation app.

(4) a. Yesterday Buzzfeed contacted an influencer that promoted QAnon conspiracy theories.
b. Buzzfeed contacted an influencer yesterday that promoted QAnon conspiracy theories.
c. Yesterday an influencer that promoted QAnon conspiracy theories was contacted by Buzzfeed.
d. An influencer was contacted by Buzzfeed yesterday that promoted QAnon conspiracy theories.

(5) a. Today Jon Stewart visited an activist that helped the 9/11 first responders.
b. Jon Stewart visited an activist today that helped the 9/11 first responders.
c. Today an activist that helped the 9/11 first responders was visited by Jon Stewart.
d. An activist was visited by Jon Stewart today that helped the 9/11 first responders.

(6) a. Today President Biden criticized a senator that opposed student loan forgiveness.
b. President Biden criticized a senator today that opposed student loan forgiveness.
c. Today a senator that opposed student loan forgiveness was criticized by President Biden.
d. A senator was criticized by President Biden today that opposed student loan forgiveness.

(7) a. Today the Boston Celtics recruited a coach that won two NBA Finals.
b. The Boston Celtics recruited a coach today that won two NBA Finals.
c. Today a coach that won two NBA Finals was recruited by the Boston Celtics.
d. A coach was recruited by the Boston Celtics today that won two NBA Finals.

(8) a. Today Forbes investigated a billionaire that purchased a wildlife sanctuary.
b. Forbes investigated a billionaire today that purchased a wildlife sanctuary.
c. Today a billionaire that purchased a wildlife sanctuary was investigated by Forbes.
d. A billionaire was investigated by Forbes today that purchased a wildlife sanctuary.

A.1.8 Experiment 8: Passive subject island (definite)

(1) a. Yesterday David Letterman interviewed the comedian that created a hit television show.
b. David Letterman interviewed the comedian yesterday that created a hit television show.
c. Yesterday the comedian that created a hit television show was interviewed by David Letterman.
d. The comedian was interviewed by David Letterman yesterday that created a hit television show.

(2) a. Yesterday Annie Leibovitz photographed the actress that played the lead role.
b. Annie Leibovitz photographed the actress yesterday that played the lead role.
c. Yesterday the actress that played the lead role was photographed by Annie Leibovitz.
d. The actress was photographed by Annie Leibovitz yesterday that played the lead role.

(3) a. Yesterday Google hired the programmer that built the new language translation app.
b. Google hired the programmer yesterday that built the new language translation app.
c. Yesterday the programmer that built the new language translation app was hired by Google.
d. The programmer was hired by Google yesterday that built the new language translation app.

(4) a. Yesterday Buzzfeed contacted the influencer that promoted QAnon conspiracy theories.
b. Buzzfeed contacted the influencer yesterday that promoted QAnon conspiracy theories.
c. Yesterday the influencer that promoted QAnon conspiracy theories was contacted by Buzzfeed.
d. The influencer was contacted by Buzzfeed yesterday that promoted QAnon conspiracy theories.

(5) a. Today John Stewart visited the activist that helped the 9/11 first responders.
b. John Stewart visited the activist today that helped the 9/11 first responders.
c. Today the activist that helped the 9/11 first responders was visited by John Stewart.
d. The activist was visited by John Stewart today that helped the 9/11 first responders.

(6) a. Today President Biden criticized the senator that opposed student loan forgiveness.
b. President Biden criticized the senator today that opposed student loan forgiveness.
c. Today the senator that opposed student loan forgiveness was criticized by President Biden.
d. The senator was criticized by President Biden today that opposed student loan forgiveness.

(7) a. Today the Boston Celtics recruited the coach that won two NBA Finals.
b. The Boston Celtics recruited the coach today that won two NBA Finals.
c. Today the coach that won two NBA Finals was recruited by the Boston Celtics.
d. The coach was recruited by the Boston Celtics today that won two NBA Finals.

(8) a. Today Forbes investigated the billionaire that purchased a wildlife sanctuary.
b. Forbes investigated the billionaire today that purchased a wildlife sanctuary.
c. Today the billionaire that purchased a wildlife sanctuary was investigated by Forbes.
d. The billionaire was investigated by Forbes today that purchased a wildlife sanctuary.

A.1.9 Experiment 9: Passive subject island (context)

(1) a. The Netflix show hosted by David Letterman usually has several guests. Yesterday David Letterman interviewed a famous actor who had just won an Oscar for his recent performance. Yesterday he also interviewed a comedian that created a hit television show.
b. The Netflix show hosted by David Letterman usually has several guests. Yesterday David Letterman interviewed a famous actor who had just won an Oscar for his recent performance. He also interviewed a comedian yesterday that created a hit television show.
c. Yesterday the Netflix show hosted by David Letterman had several guests. First, a famous actor who had just won an Oscar for his recent performance was interviewed by David Letterman. Then a comedian that created a hit television show was also interviewed by him.
d. Yesterday the Netflix show hosted by David Letterman had several guests. First, a famous actor who had just won an Oscar for his recent performance was interviewed by David Letterman. Then a comedian was also interviewed by him that created a hit television show.

(2) a. Annie Leibovitz, the renowned photographer, usually has multiple shoots scheduled on the same day. Yesterday she photographed a famous director as part of the release

of a new movie. Yesterday she also photographed an actress that played the lead role.

b. Annie Leibovitz, the renowned photographer, usually has multiple shoots scheduled on the same day. Yesterday she photographed a famous director as part of the release of a new movie. She also photographed an actress yesterday that played the lead role.

c. Yesterday, Annie Leibovitz, a renowned photographer, and her assistants had a full schedule of shoots. First a famous director, who had just released a new movie, was photographed by Annie herself. Then an actress that played the lead role was also photographed by her.

d. Yesterday, Annie Leibovitz, a renowned photographer, and her assistants had a full schedule of shoots. First a famous director, who had just released a new movie, was photographed by Annie herself. Then an actress was also photographed by her that played the lead role.

(3) a. Google has been expanding its Google Translate team with a recent influx of new hires. Yesterday they hired a data scientist with years of experience in machine learning and artificial intelligence. Yesterday they also hired a programmer that built the new language translation app.

b. Google has been expanding its Google Translate team with a recent influx of new hires. Yesterday they hired a data scientist with years of experience in machine learning and artificial intelligence. They also hired a programmer yesterday that built the new language translation app.

c. Yesterday, Yale Alumni Magazine published a story about several alumni who landed jobs in the tech industry. First, a data scientist with years of experience in machine learning was hired by Google. Then a programmer that built the new language translation app was also hired by them.

d. Yesterday, Yale Alumni Magazine published a story about several alumni who landed jobs in the tech industry. First, a data scientist with years of experience in machine learning was hired by Google. Then a programmer was also hired by them that built the new language translation app.

(4) a. Buzzfeed's investigative journalism team was busy chasing two leads in their latest story. Yesterday they contacted a controversial political figure, who had been rumored to be the leader of a cult. Yesterday they also contacted an influencer that promoted QAnon conspiracy theories.

b. Buzzfeed's investigative journalism team was busy chasing two leads in their latest story. Yesterday they contacted a controversial political figure, who had been rumored to be the leader of a cult. They also contacted an influencer yesterday that promoted QAnon conspiracy theories.

c. Yesterday, Buzzfeed's investigative journalism team pursued two leads for their latest story. First, a controversial political figure who had been rumored to be the leader of a cult was contacted by the team. Then an influencer that promoted QAnon conspiracy theories was also contacted by them.

d. Yesterday, Buzzfeed's investigative journalism team pursued two leads for their latest story. First, a controversial political figure who had been rumored to be the

leader of a cult was contacted by the team. Then an influencer was also contacted by them that promoted QAnon conspiracy theories.

(5) a. Jon Stewart had two important appointments on his calendar today as a part of his advocacy work. Today he visited a group of young people who had launched a campaign for better public education. Today he also visited an activist that helped the 9/11 first responders.

b. Jon Stewart had two important appointments on his calendar today as a part of his advocacy work. Today he visited a group of young people who had launched a campaign for better public education. He also visited an activist today that helped the 9/11 first responders.

c. Today, as part of his advocacy work, Jon Stewart had two important appointments on his calendar. First, a group of young people who had launched a campaign for better public education was visited by him. Then an activist that helped the 9/11 first responders was also visited by him.

d. Today, as part of his advocacy work, Jon Stewart had two important appointments on his calendar. First, a group of young people who had launched a campaign for better public education was visited by him. Then an activist was also visited by him that helped the 9/11 first responders.

(6) a. During his speech today, President Biden addressed several issues related to the economy and societal pressures. Today he criticized a wealthy CEO who was caught avoiding taxes by using offshore accounts. Today he also criticized a senator that opposed student loan forgiveness.

b. During his speech today, President Biden addressed several issues related to the economy and societal pressures. Today he criticized a wealthy CEO who was caught avoiding taxes by using offshore accounts. He also criticized a senator today that opposed student loan forgiveness.

c. During his speech today, President Biden addressed several issues related to the economy and societal pressures. First, a wealthy CEO who was caught avoiding taxes by using offshore accounts was criticized by the President. Then a senator that opposed student loan forgiveness was also criticized by him.

d. During his speech today, President Biden addressed several issues related to the economy and societal pressures. First, a wealthy CEO who was caught avoiding taxes by using offshore accounts was criticized by the President. Then a senator was also criticized by him that opposed student loan forgiveness.

(7) a. The Boston Celtics made headlines today as they announced the two most recent additions to their team. Today they recruited a promising young player who had recently caught the attention of scouts. Today they also recruited a coach that won two NBA Finals.

b. The Boston Celtics made headlines today as they announced the two most recent additions to their team. Today they recruited a promising young player who had

recently caught the attention of scouts. They also recruited a coach today that won two NBA Finals.

c. Today, the Boston Celtics made headlines as they announced two new additions to their team. First, a promising young player who had recently caught the attention of scouts was recruited by the team management. Then a coach that won two NBA Finals was also recruited by them.

d. Today, the Boston Celtics made headlines as they announced two new additions to their team. First, a promising young player who had recently caught the attention of scouts was recruited by the team management. Then a coach was also recruited by them that won two NBA Finals.

(8) a. For the past week, Forbes has been publishing two investigative reports daily that uncover controversial activities of high-profile individuals. Today they investigated a tech mogul who had been accused of insider trading. Today they also investigated a billionaire that purchased a wildlife sanctuary.

b. For the past week, Forbes has been publishing two investigative reports daily that uncover controversial activities of high-profile individuals. Today they investigated a tech mogul who had been accused of insider trading. They also investigated a billionaire today that purchased a wildlife sanctuary.

c. Today, Forbes continued its week-long series of investigative reports, revealing controversial activities of high-profile individuals. First, a tech mogul who had been accused of insider trading was investigated by their team. Then a billionaire that purchased a wildlife sanctuary was also investigated by them.

d. Today, Forbes continued its week-long series of investigative reports, revealing controversial activities of high-profile individuals. First, a tech mogul who had been accused of insider trading was investigated by their team. Then a billionaire was also investigated by them that purchased a wildlife sanctuary.

A.1.10 Experiment 10: Unaccusative subject island (indefinite)

(1) a. Yesterday I bought a permit that allows overnight parking.
b. I bought a permit yesterday that allows overnight parking.
c. Yesterday a permit that allows overnight parking expired.
d. A permit expired yesterday that allows overnight parking.

(2) a. Yesterday I inspected a train that transports heavy duty tractors.
b. I inspected a train yesterday that transports heavy duty tractors.
c. Yesterday a train that transports heavy duty tractors arrived.
d. A train arrived yesterday that transports heavy duty tractors.

(3) a. Yesterday I trimmed a tree that straddles the town border.
b. I trimmed a tree yesterday that straddles the town border.
c. Yesterday a tree that straddles the town border fell.
d. A tree fell yesterday that straddles the town border.

(4) a. Yesterday I climbed a volcano that overlooks the resort.
b. I climbed a volcano yesterday that overlooks the resort.
c. Yesterday a volcano that overlooks the resort erupted.
d. A volcano erupted yesterday that overlooks the resort.

(5) a. Today I ran a marathon that circles Lake Tahoe.
b. I ran a marathon today that circles Lake Tahoe.
c. Today a marathon that circles Lake Tahoe occurred.
d. A marathon occurred today that circles Lake Tahoe.

(6) a. Today I photographed a comet that crosses Venus's orbit.
b. I photographed a comet today that crosses Venus's orbit.
c. Today a comet that crosses Venus's orbit reappeared.
d. A comet reappeared today that crosses Venus's orbit.

(7) a. Today I charged a battery that runs the water pump.
b. I charged a battery today that runs the water pump.
c. Today a battery that runs the water pump died.
d. A battery died today that runs the water pump.

(8) a. Today I flew a plane that carries the new stealth technology.
b. I flew a plane today that carries the new stealth technology.
c. Today a plane that carries the new stealth technology vanished.
d. A plane vanished today that carries the new stealth technology.

A.1.11 Experiment 11: Unaccusative subject island (definite)

(1) a. Yesterday I bought the permit that allows overnight parking.
b. I bought the permit yesterday that allows overnight parking.
c. Yesterday the permit that allows overnight parking expired.
d. The permit expired yesterday that allows overnight parking.

(2) a. Yesterday I inspected the train that transports heavy duty tractors.
b. I inspected the train yesterday that transports heavy duty tractors.
c. Yesterday the train that transports heavy duty tractors arrived.
d. The train arrived yesterday that transports heavy duty tractors.

(3) a. Yesterday I trimmed the tree that straddles the town border.
b. I trimmed the tree yesterday that straddles the town border.
c. Yesterday the tree that straddles the town border fell.
d. The tree fell yesterday that straddles the town border.

(4) a. Yesterday I climbed the volcano that overlooks the resort.
b. I climbed the volcano yesterday that overlooks the resort.
c. Yesterday the volcano that overlooks the resort erupted.
d. The volcano erupted yesterday that overlooks the resort.

(5) a. Today I ran the marathon that circles Lake Tahoe.
b. I ran the marathon today that circles Lake Tahoe.
c. Today the marathon that circles Lake Tahoe occurred.
d. The marathon occurred today that circles Lake Tahoe.

(6) a. Today I photographed the comet that crosses Venus's orbit.
b. I photographed the comet today that crosses Venus's orbit.
c. Today the comet that crosses Venus's orbit reappeared.
d. The comet reappeared today that crosses Venus's orbit.

(7) a. Today I charged the battery that runs the water pump.
b. I charged the battery today that runs the water pump.
c. Today the battery that runs the water pump died.
d. The battery died today that runs the water pump.

(8) a. Today I flew the plane that carries the new stealth technology.
b. I flew the plane today that carries the new stealth technology.
c. Today the plane that carries the new stealth technology vanished.
d. The plane vanished today that carries the new stealth technology.

A.1.12 Experiment 12: Unaccusative subject island (context)

(1) a. As I was packing my bags for the camping trip, I couldn't contain my feeling of excitement. I bought everything I needed yesterday, including the tent and the sleeping bag. Yesterday I also bought a permit that allows overnight parking.
b. As I was packing my bags for the camping trip, I couldn't contain my feeling of excitement. I bought everything I needed yesterday, including the tent and the sleeping bag. I also bought a permit yesterday that allows overnight parking.
c. Yesterday it seemed like all of my documents were expiring at the same time. First, my passport expired, which I would need to renew before my upcoming international trip. Then a permit that allows overnight parking also expired.
d. Yesterday it seemed like all of my documents were expiring at the same time. First, my passport expired, which I would need to renew before my upcoming international trip. Then a permit also expired that allows overnight parking.

(2) a. As the chief engineer of a railway company, I have a very busy schedule. Yesterday I inspected three construction sites of new railway stations. Yesterday I also inspected a train that transports heavy duty tractors.

b. As the chief engineer of a railway company, I have a very busy schedule. Yesterday I inspected three construction sites of new railway stations. I also inspected a train yesterday that transports heavy duty tractors.
c. It was a busy day at the industrial park yesterday. First, a convoy of trucks arrived, carrying a shipment of raw materials to be processed. Then a train that transports heavy duty tractors also arrived.
d. It was a busy day at the industrial park yesterday. First, a convoy of trucks arrived, carrying a shipment of raw materials to be processed. Then a train also arrived that transports heavy duty tractors.

(3) a. As an employee of a tree service company, I have years of experience in pruning and removing trees. Yesterday I trimmed a whole row of trees along a busy street. Yesterday I also trimmed a tree that straddles the town border.
b. As an employee of a tree service company, I have years of experience in pruning and removing trees. Yesterday I trimmed a whole row of trees along a busy street. I also trimmed a tree yesterday that straddles the town border.
c. It was a tumultuous day in our small town yesterday. First, a billboard on the side of the road fell because of a heavy gust of wind. Then a tree that straddles the town border also fell.
d. It was a tumultuous day in our small town yesterday. First, a billboard on the side of the road fell because of a heavy gust of wind. Then a tree also fell that straddles the town border.

(4) a. I woke up sore and exhausted this morning after my hiking trip, but it was worth it. Yesterday I climbed a waterfall on the far end of the island. Yesterday I also climbed a volcano that overlooks the resort.
b. I woke up sore and exhausted this morning after my hiking trip, but it was worth it. Yesterday I climbed a waterfall on the far end of the island. I also climbed a volcano yesterday that overlooks the resort.
c. Yesterday was a chaotic day at the resort. First, a nearby geyser erupted, spewing boiling hot water and steam high into the air. Then a volcano that overlooks the resort also erupted.
d. Yesterday was a chaotic day at the resort. First, a nearby geyser erupted, spewing boiling hot water and steam high into the air. Then a volcano also erupted that overlooks the resort.

(5) a. Over the years, I've made it a personal goal to participate in as many running events in a single day as I can. Today I ran a half-marathon around the Carson Canyon. Today I also ran a marathon that circles Lake Tahoe.
b. Over the years, I've made it a personal goal to participate in as many running events in a single day as I can. Today I ran a half-marathon around the Carson Canyon. I also ran a marathon today that circles Lake Tahoe.
c. It had been a bustling day around Lake Tahoe. First, a gas leak occurred in a res-

idential area, causing an evacuation of the neighboring houses. Then a marathon that circles Lake Tahoe also occurred.

d. It had been a bustling day around Lake Tahoe. First, a gas leak occurred in a residential area, causing an evacuation of the neighboring houses. Then a marathon also occurred that circles Lake Tahoe.

(6) a. As an astronomer, I often travel to remote locations in search of rare astronomical events. Today I photographed the transit of Venus, where the planet passed between the Earth and the Sun, visible to the naked eye. Today I also photographed a comet that crosses Venus's orbit.

b. As an astronomer, I often travel to remote locations in search of rare astronomical events. Today I photographed the transit of Venus, where the planet passed between the Earth and the Sun, visible to the naked eye. I also photographed a comet today that crosses Venus's orbit.

c. August was a good month for astronomy enthusiasts. First, the Perseid meteor shower reappeared in the night sky. Then a comet that crosses Venus's orbit also reappeared.

d. August was a good month for astronomy enthusiasts. First, the Perseid meteor shower reappeared in the night sky. Then a comet also reappeared that crosses Venus's orbit.

(7) a. Living off the grid in a remote area, I rely on solar panels to power my home's essential systems. It was sunny today and I charged a capacitor that stores excess electricity from the panels. Today I also charged a battery that runs the water pump.

b. Living off the grid in a remote area, I rely on solar panels to power my home's essential systems. It was sunny today and I charged a capacitor that stores excess electricity from the panels. I also charged a battery today that runs the water pump.

c. It was a truly rough day at the farm. First, the AC unit in the farmhouse died, leaving everyone sweating and struggling to stay cool. Then a battery that runs the water pump also died.

d. It was a truly rough day at the farm. First, the AC unit in the farmhouse died, leaving everyone sweating and struggling to stay cool. Then a battery also died that runs the water pump.

(8) a. As a test pilot for a major aerospace company, I get to fly many different types of aircraft on a daily basis. Today I flew a vintage biplane, taking in the breathtaking views of the countryside from an open cockpit. Today I also flew a plane that carries the new stealth technology.

b. As a test pilot for a major aerospace company, I get to fly many different types of aircraft on a daily basis. Today I flew a vintage biplane, taking in the breathtaking views of the countryside from an open cockpit. I also flew a plane today that carries the new stealth technology.

c. The military base was abuzz with activity all day. First, a container of top-secret

documents delivered by the Secret Service vanished. Then a plane that carries the new stealth technology also vanished.

d. The military base was abuzz with activity all day. First, a container of top-secret documents delivered by the Secret Service vanished. Then a plane also vanished that carries the new stealth technology.

A.1.13 Experiment 13: VP-coordination island (first conjunct)

(1) a. Today Tim wanted to email a casting agent that works for Vogue.
b. Tim wanted to email a casting agent today that works for Vogue.
c. Today Tim wanted to email a casting agent that works for Vogue and to kayak with Jennifer.
d. Tim wanted to email a casting agent and to kayak with Jennifer today that works for Vogue.

(2) a. Today Mary managed to contact a science columnist that writes for the Financial Times.
b. Mary managed to contact a science columnist today that writes for the Financial Times.
c. Today Mary managed to contact a science columnist that writes for the Financial Times and to speak with Jim.
d. Mary managed to contact a science columnist and to speak with Jim today that writes for the Financial Times.

(3) a. Today Nick planned to call a property manager that specializes in vacation rentals.
b. Nick planned to call a property manager today that specializes in vacation rentals.
c. Today Nick planned to call a property manager that specializes in vacation rentals and to hike with Sophia.
d. Nick planned to call a property manager and to hike with Sophia today that specializes in vacation rentals.

(4) a. Today Emily tried to meet a car salesman that focuses on pickup trucks.
b. Emily tried to meet a car salesman today that focuses on pickup trucks.
c. Today Emily tried to meet a car salesman that focuses on pickup trucks and to walk with Liam.
d. Emily tried to meet a car salesman and to walk with Liam today that focuses on pickup trucks.

(5) a. Yesterday George wanted to thank a baseball coach that works with underprivileged kids.
b. George wanted to thank a baseball coach yesterday that works with underprivileged kids.
c. Yesterday George wanted to thank a baseball coach that works with underprivileged

kids and to chat with Mia.

d. George wanted to thank a baseball coach and to chat with Mia yesterday that works with underprivileged kids.

(6) a. Yesterday Grace managed to help a visiting nurse that assists with dementia screenings.

b. Grace managed to help a visiting nurse yesterday that assists with dementia screenings.

c. Yesterday Grace managed to help a visiting nurse that assists with dementia screenings and to flirt with Oliver.

d. Grace managed to help a visiting nurse and to flirt with Oliver yesterday that assists with dementia screenings.

(7) a. Yesterday Matt planned to interview a local baker that bikes to work.

b. Matt planned to interview a local baker yesterday that bikes to work.

c. Yesterday Matt planned to interview a local baker that bikes to work and to meet with Charlotte.

d. Matt planned to interview a local baker and to meet with Charlotte yesterday that bikes to work.

(8) a. Yesterday Anna tried to text a fellow photographer that collaborates with a printing company.

b. Anna tried to text a fellow photographer yesterday that collaborates with a printing company.

c. Yesterday Anna tried to text a fellow photographer that collaborates with a printing company and to go out with Bill.

d. Anna tried to text a fellow photographer and to go out with Bill yesterday that collaborates with a printing company.

A.1.14 Experiment 14: DP-coordination island (second conjunct)

(1) a. Yesterday Jennifer met the medical team that saved her.

b. Jennifer met the medical team yesterday that saved her.

c. Yesterday Tim met both Jennifer and the medical team that saved her.

d. Tim met both Jennifer and the medical team yesterday that saved her.

(2) a. Yesterday Jim paid the construction crew that assisted him.

b. Jim paid the construction crew yesterday that assisted him.

c. Yesterday Mary paid both Jim and the construction crew that assisted him.

d. Mary paid both Jim and the construction crew yesterday that assisted him.

(3) a. Yesterday Sophia congratulated the campaign staff that supported her.

b. Sophia congratulated the campaign staff yesterday that supported her.

c. Yesterday Nick congratulated both Sophia and the campaign staff that supported her.
d. Nick congratulated both Sophia and the campaign staff yesterday that supported her.

(4) a. Yesterday Liam joined the recruiting firm that contacted him.
b. Liam joined the recruiting firm yesterday that contacted him.
c. Yesterday Emily joined both Liam and the recruiting firm that contacted him.
d. Emily joined both Liam and the recruiting firm yesterday that contacted him.

(5) a. Today Mia emailed the professional association that endorsed her.
b. Mia emailed the professional association today that endorsed her.
c. Today George emailed both Mia and the professional association that endorsed her.
d. George emailed both Mia and the professional association today that endorsed her.

(6) a. Today Oliver called the volunteer group that rescued him.
b. Oliver called the volunteer group today that rescued him.
c. Today Grace called both Oliver and the volunteer group that rescued him.
d. Grace called both Oliver and the volunteer group today that rescued him.

(7) a. Today Charlotte interviewed the rock band that influenced her.
b. Charlotte interviewed the rock band today that influenced her.
c. Today Matt interviewed both Charlotte and the rock band that influenced her.
d. Matt interviewed both Charlotte and the rock band today that influenced her.

(8) a. Today Bill contacted the corporate board that fired him.
b. Bill contacted the corporate board today that fired him.
c. Today Anna contacted both Bill and the corporate board that fired him.
d. Anna contacted both Bill and the corporate board today that fired him.

A.2 Anchor items

(1) The was insulted waitress frequently.

(2) Tanya danced with as handsome a boy as her father.

(3) This is a pen.

A.2.1 Anchor items (context)

(1) At a restaurant customers often complained about the food. Every time the dish was sent back to the kitchen, the cook would blame it on the waitress. The was insulted waitress frequently.

(2) As a food writer, I get to try some unique cuisines almost on a daily basis. But when I am hungry, I always go to the same restaurant. The chefs in this restaurant almost all are French.

(3) Do you know the difference between a pen and a pencil? What you are holding is a pencil. This is a pen.

A.3 Practice items

(1) She was the winner.

(2) Promise to wash, Neal did the car.

(3) The brother and sister that were playing all the time had to be sent to bed.

(4) The children were cared for by the adults and the teenagers.

(5) Ben is hopeful for everyone you do to attend.

(6) All the men seem to have all eaten supper.

(7) They consider a teacher of Chris geeky.

(8) It seems to me that Robert can't be trusted.

(9) There might mice seem to be in the cupboard.

A.3.1 Practice items (context)

(1) My daughter Mikaela loves science. Last year she spent weeks working on a massive project for the science fair at her school. She was the winner.

(2) Neal took his dad's car to a dirt track without asking. He returned it undamaged, but it was beyond dirty. Promise to wash, Neal did the car.

(3) I am babysitting for my neighbors who have four kids, two boys and two girls. When it was time to go to bed, I suggested it several times, but some of them didn't want to go. The brother and sister that were playing all the time had to be sent to bed.

(4) During a massive power outage all the villagers stayed in the town hall because it still

had power. Adults, children, and teenagers were put into one giant room together. The children were cared for by the adults and the teenagers.

(5) The Global Play Day is an event promoting the importance of unstructured play in schools. Ben is the primary advocate for it in our school. Ben is hopeful for everyone you do to attend.

(6) Mary works at an all-male homeless shelter where she gives out meals. Today she wasn't sure if the men had supper, so she checked with the cook. All the men seem to have all eaten supper.

(7) Chris told us about a teacher who plays D&D and makes scientific jokes non-stop. Some of Chris's classmates make fun of the teacher. They consider a teacher of Chris geeky.

(8) My neighbor Robert told me that he works at NASA. I checked their website, but I couldn't find a single mention of him. It seems to me that Robert can't be trusted.

(9) We keep some of our grains in an old cupboard downstairs. Last night we heard mice squeaking from under it. There might mice seem to be in the cupboard.

A.4 Filler items

(1) Mike prefers tennis because Jon baseball.

(2) Jenny cleaned her sister the table.

(3) There had all hung over the fireplace the portraits by Picasso.

(4) Lily will dance who the king chooses.

(5) The specimen thawed to study it more closely.

(6) With that announcement were many citizens denied the opportunity to protest.

(7) There is likely a river to run down the mountain.

(8) Richard may have been hiding, but Blake may have done so too.

(9) The ball perfectly rolled down the hill.

(10) Lloyd Webber musicals are easy to condemn without even watching.

(11) There are firemen injured.

(12) Someone better sing the national anthem.

(13) Laura is more excited than nervous.

(14) I hate eating sushi.

A.4.1 Filler items (context)

(1) Mike and Jon are identical twins, but try to be different, at least in the sports they play. Most of the time this rivalry looks very childish. Mike prefers tennis because Jon baseball.

(2) Jenny's little sister is very messy. Their mom asked Jenny to help her sister clean up after she was done playing. Jenny cleaned her sister the table.

(3) My uncle and his wife own several nice prints of paintings by Picasso. Unfortunately, they didn't know that heat could damage them. There had all hung over the fireplace the portraits by Picasso.

(4) It is a tradition that the king chooses the first dance partner for his daughter at the ball. This year his daughter Lily is attending her first ball. Lily will dance who the king chooses.

(5) Biologists sometimes study frozen specimens. After the initial inspection, the specimen is left at a room temperature for 4-5 minutes. The specimen thawed to study it more closely.

(6) The government expected a backlash from the public because of the lockdown. Public health experts decried any protests as dangerous gatherings in a pandemic. With that announcement were many citizens denied the opportunity to protest.

(7) Looking at the map, we see that on the other side of the mountain there is a group of small lakes. However, we don't find any rivers that can fill those lakes. There is likely a river to run down the mountain.

(8) The Fed has implemented a series of aggressive measures to slash price increases in recent months. Now the economy is heading towards a recession. The stock market

dropped its largest drop in three years today.

(9) We were playing catch on the top of the hill. Suddenly my sister threw a perfect curveball that I couldn't catch. The ball perfectly rolled down the hill.

(10) Greg and Lana both made the French onion soup following my recipe. The secret to this recipe is to use a lot of onions. Greg put more onions than Lana did in the soup.

(11) I am hosting a party this weekend. I want to be sure to have enough food for everyone. Therefore, I confirmed who would attend the party.

(12) Vince was the class clown last year. Casey would always laugh at the things Vince wore to school. And Joe chuckled about the things Vince said in class.

(13) Laura and Kate are folding parachutes before their first jump. Kate is very nervous and doesn't say a word. Laura is more excited than nervous.

(14) I love going out to eat with my friends because they are foodies. But this time they took me to a sushi restaurant. I hate eating sushi.

A.5 Catch trial items

(1) a. Mrs. Wilson hired a carpenter and his apprentice to repair her old table. The carpenter could not repair the table. The apprentice could not repair the table either.
b. At dinnertime, the children were served a plate of mixed vegetables, including broccoli. The boys ate the broccoli. The girls did not eat the broccoli either.
c. A diver and a swimmer were chatting in the locker room when an announcer called all competitors to the pool. The diver went to the pool. The swimmer went to the pool, too.
d. A group of tourists gathered around their tour guide on the sidewalk, ready to board a tour bus. The tour guide did not board the bus. The tourists boarded the bus, too.

Appendix B

Supplementary materials for Chapter 3

B.1 Experimental items

B.1.1 Experiment 1: Adjunct island; *wh*-movement

(1) a. Кто планировал спокойно пообсуждать с Машей Петю?
who planned calmly to.gossip.about with Masha Petya
b. Кого Петя планировал спокойно пообсуждать с Машей?
whom Petya planned calmly to.gossip.about with Masha
c. Кто ушёл, чтобы Маше спокойно пообсуждать Петю?
who left in.order Masha.DAT calmly to.gossip.about Petya
d. Кого Петя ушёл, чтобы Маше спокойно пообсуждать?
whom Petya left in.order Masha.DAT calmly to.gossip.about

(2) a. Кто надеялся получше рассмотреть Марину без Коли?
who hoped better to.look.over Marina without Kolya
b. Кого Марина надеялась получше рассмотреть без Коли?
whom Marina hoped better to.look.over without Kolya
c. Кто сел, чтобы Коле получше рассмотреть Марину?
who sat.down in.order Kolya.DAT better to.look.over Marina
d. Кого Марина села, чтобы Коле получше рассмотреть?
whom Marina sat.down in.order Kolya.DAT better to.look.over

(3) a. Кто намеревался без помех послушать с Леной Рому?
who intended without interruptions to.listen with Lena Roma
b. Кого Рома намеревался без помех послушать с Леной?
whom Roma intended without interruptions to.listen with Lena
c. Кто замолчал, чтобы Лене без помех послушать Рому?
who fell.silent in.order Lena.DAT without interruptions to.listen Roma
d. Кого Рома замолчал, чтобы Лене без помех послушать?
whom Roma fell.silent in.order Lena.DAT without interruptions to.listen

(4) a. Кто решил наконец отпустить Валю к Косте?
who decided finally to.let.go Valya to Kostya

b. Кого Валя решила наконец отпустить к Косте?
whom Valya decided finally to.let.go to Kostya
c. Кто вернулся, чтобы Косте наконец отпустить Валю?
who returned in.order Kostya.DAT finally to.let.go Valya
d. Кого Валя вернулась, чтобы Косте наконец отпустить?
whom Valya returned in.order Kostya.DAT finally to.let.go

(5) a. Кто вызвался всё-таки отвезти к Кириллу Марину?
who volunteered even.so to.drive to Kirill Marina
b. Кого Марина вызвалась всё-таки отвезти к Кириллу?
whom Marina volunteered even.so to.drive to Kirill
c. Кто не поехал, чтобы Кириллу отвезти Марину?
who NEG went in.order Kirill.DAT to.drive Marina
d. Кого Марина не поехала, чтобы Кириллу отвезти?
whom Marina NEG went in.order Kirill.DAT to.drive

(6) a. Кто не подумал наконец посадить рядом с Наташей Васю?
who NEG thought finally to.seat nearby with Natasha Vasya
b. Кого Вася не подумал наконец посадить рядом с Наташей?
whom Vasya NEG thought finally to.seat nearby with Natasha
c. Кто пересел, чтобы Наташе наконец посадить рядом Васю?
who moved in.order Natasha.DAT finally to.seat nearby Vasya
d. Кого Вася пересел, чтобы Наташе наконец посадить рядом?
whom Vasya moved in.order Natasha.DAT finally to.seat nearby

(7) a. Кто стеснялся ещё раз позвать к Феде Люсю?
who felt.shy another time to.invite to Fedya Lusya
b. Кого Люся стеснялась ещё раз позвать к Феде?
whom Lusya felt.shy another time to.invite to Fedya
c. Кто убрался, чтобы Феде ещё раз позвать Люсю?
who tidied.up in.order Fedya.DAT another time to.invite.over Lusya
d. Кого Люся убралась, чтобы Феде ещё раз позвать?
whom Lusya tidied.up in.order Fedya.DAT another time to.invite.over

(8) a. Кто сумел хоть чуть-чуть развеселить кроме Вити Лизу?
who managed even little.bit to.cheer.up apart.from Vitya Lisa
b. Кого Лиза сумела хоть чуть-чуть развеселить кроме Вити?
whom Lisa managed even little.bit to.cheer.up apart.from Vitya
c. Кто подыграл, чтобы Вите хоть чуть-чуть развеселить Лизу?
who played.along in.order Vitya.DAT even little.bit to.cheer.up Lisa
d. Кого Лиза подыграла, чтобы Вите хоть чуть-чуть развеселить?
whom Lisa played.along in.order Vitya.DAT even little.bit to.cheer.up

B.1.2 Experiment 2: Adjunct island; RC extraposition

(1) a. Спокойно пообсуждать с Машей девушку, которая живёт в
calmly gossip.about with Masha girl which lives in
соседней квартире, Петя планировал.
next.door apartment Petya was.planning

b. Спокойно пообсуждать с Машей девушку Петя планировал,
calmly gossip.about with Masha girl Petya was.planning
которая живёт в соседней квартире.
which lives in next.door apartment

c. Чтобы Маше спокойно пообсуждать девушку, которая живёт
in.order Masha.DAT calmly to.gossip.about young.woman which lives
в соседней квартире, Петя ушёл.
in next.door apartment Petya left

d. Чтобы Маше спокойно пообсуждать девушку, Петя ушёл,
in.order Masha.DAT calmly to.gossip.about young.woman Petya left
которая живёт в соседней квартире.
which lives in next.door apartment

(2) a. Получше рассмотреть без Коли мужчину, который начал говорить
better to.look.over without Kolya man which started saying
тост, Марина надеялась.
toast Marina hoped

b. Получше рассмотреть без Коли мужчину Марина надеялась,
better to.look.over without Kolya man Marina hoped
который начал говорить тост.
which started saying toast

c. Чтобы Коле получше рассмотреть мужчину, который начал
in.order Kolya.DAT better to.look.over man which started
говорить тост, Марина села.
saying toast Marina sat.down

d. Чтобы Коле получше рассмотреть мужчину, Марина села,
in.order Kolya.DAT better to.look.over man Marina sat.down
который начал говорить тост.
which started saying toast

(3) a. Без помех послушать с Леной певицу, которая ему очень
without interruptions to.listen with Lena singer which he very
нравилась, Рома намеревался.
liked Roma intended

b. Без помех послушать с Леной певицу Рома намеревался,
without interruptions to.listen with Lena singer Roma intended

которая ему очень нравилась.
which he very liked

c. Чтобы Лене без помех послушать певицу, которая ей очень
in.order Lena without interruptions to.listen singer which she very
нравилась, Рома замолчал.
liked Roma fell.silent

d. Чтобы Лене без помех послушать певицу, Рома замолчал,
in.order Lena without interruptions to.listen singer Roma fell.silent
которая ей очень нравилась.
which she very liked

(4) a. Отпустить к Косте водителя, который давно спал в кресле,
to.let.go to Kostya driver which for.a.long.time slept in armchair
Валя решила.
Valya decided

b. Отпустить к Косте водителя Валя решила, который давно
to.let.go to Kostya driver Valya decided which for.a.long.time
спал в кресле.
slept in armchair

c. Чтобы Косте наконец отпустить водителя, который давно
in.order Kostya finally to.let.go driver which for.a.long.time
спал в кресле, Валя вернулась.
slept in armchair Valya returned

d. Чтобы Косте наконец отпустить водителя, Валя вернулась, который
in.order Kostya finally to.let.go driver Valya returned which
давно спал в кресле.
for.a.long.time slept in armchair

(5) a. Отвезти к Кириллу родственника, который никогда не был в
to.drive to Kirill relative which never NEG was in
горах, Марина вызвалась.
mountains Marina volunteered

b. Отвезти к Кириллу родственника Марина вызвалась, который
to.drive to Kirill relative Marina volunteered which
никогда не был в горах.
never NEG was in mountains

c. Чтобы Кириллу отвезти родственника, который никогда не был
in.order Kirill.DAT to.drive relative Marina which never NEG
в горах, Марина не поехала.
were in mountains NEG went

d. Чтобы Кириллу отвезти родственника, Марина не поехала,
in.order Kirill.DAT to.drive relative Marina NEG went

который никогда не был в горах.
which never NEG were in mountains

(6) a. Посадить рядом с Наташей племянницу, которая приехала из
to.seat nearby with Natasha niece which came from
другого города, Вася не подумал.
another town Vasya NEG thought

b. Посадить рядом с Наташей племянницу Вася не подумал,
to.seat nearby with Natasha niece Vasya NEG thought
которая приехала из другого города.
which came from another town

c. Чтобы Наташе посадить рядом племянницу, которая приехала
in.order Natasha.DAT to.seat nearby niece which came
из другого города, Вася пересел.
from another town Vasya moved

d. Чтобы Наташе посадить рядом племянницу, Вася пересел,
in.order Natasha.DAT to.seat nearby niece Vasya moved
которая приехала из другого города.
which came from another town

(7) a. Ещё раз позвать к Вите приятеля, который её всегда смешил,
once more to.invite.over to Vitya fellow which her always made.laugh
Люся стеснялась.
Lusya felt.shy

b. Ещё раз позвать к Вите приятеля Люся стеснялась, который её
once more to.invite.over to Vitya fellow Lusya felt.shy which her
всегда смешил.
always made.laugh

c. Чтобы Феде ещё раз позвать приятеля, который её всегда
in.order Fedya.DAT once more to.invite.over fellow which her always
смешил, Люся убралась.
made.laugh Lusya tidied.up

d. Чтобы Феде ещё раз позвать приятеля, Люся убралась,
in.order Fedya.DAT once more to.invite.over fellow Lusya tidied.up
который её всегда смешил.
which her always made.laugh

(8) a. Хоть чуть-чуть развеселить коллегу, который весь день ходил
even little.bit to.cheer.up colleague which all day walked
чернее тучи, Лиза сумела.
darker.than storm.cloud Lisa managed

b. Хоть чуть-чуть развеселить коллегу Лиза сумела, который весь день
even little.bit to.cheer.up colleague Lisa managed which all day
ходил чернее тучи.
walked darker.than storm.cloud

c. Чтобы Вите хоть чуть-чуть развеселить коллегу, который ходил
in.order Vitya.DAT even little.bit to.cheer.up colleague which walked
чернее тучи, Лиза подыграла.
darker.than storm.cloud Lisa played.along

d. Чтобы Вите хоть чуть-чуть развеселить коллегу, Лиза
in.order Vitya.DAT even little.bit to.cheer.up colleague Lisa
подыграла, который ходил чернее тучи.
played.along which walked darker.than storm.cloud

B.1.3 Experiment 3: Noun complement island; *wh*-movement

(1) a. Кто предложил продать джип?
who proposed to.sell jeep

b. Что Костя предложил продать?
what Kostya proposed to.sell

c. Кто обдумывал предложение продать джип?
who considered proposal to.sell jeep

d. Что Костя обдумывал предложение продать?
what Kostya considered proposal to.sell

(2) a. Кто планировал найти работу?
who planned to.find job

b. Что Марина планировала найти?
what Marina planned to.find

c. Кто озвучил план найти работу?
who announced plan to.find job

d. Что Марина озвучила план найти?
what Marina announced plan to.find

(3) a. Кто советовал арендовать лодку?
who advised to.rent boat

b. Что Кирилл советовал арендовать?
what Kirill advised to.rent

c. Кто вспомнил совет арендовать лодку?
who remembered advice to.rent boat

d. Что Кирилл вспомнил совет арендовать?
what Kirill remembered advice to.rent

(4) a. Кто попытался починить дверь?
who attempted to.fix door
b. Что Таня попыталась починить?
what Tanya attempted to.fix
c. Кто провалил попытку починить дверь?
who failed attempt to.fix door
d. Что Таня провалила попытку починить?
what Tanya failed attempt to.fix

(5) a. Кто решил купить мотоцикл?
who decided to.buy motorcycle
b. Что Серёжа решил купить?
what Seryozha decided to.buy
c. Кто поддержал решение купить мотоцикл?
who supported decision to.buy motorcycle
d. Что Серёжа поддержал решение купить?
what Seryozha supported decision to.buy

(6) a. Кто задумал построить дом?
who planned to.build house
b. Что Валя задумала построить?
what Valya planned to.build
c. Кто пересказал задумку построить дом?
who retold plan to.build house
d. Что Валя пересказала задумку построить?
what Valya retold plan to.build

(7) a. Кто намеревался снять фильм?
who intended to.shoot film
b. Что Алексей намеревался снять?
what Alexey intended to.shoot
c. Кто подтвердил намерение снять фильм?
who confirmed intention to.shoot film
d. Что Алексей подтвердил намерение снять?
what Alexey confirmed intention to.shoot

(8) a. Кто запретил есть баранину?
who banned to.eat lamb
b. Что Валерия запретила есть?
what Valeriya banned to.eat
c. Кто проигнорировал запрет есть баранину?
who ignored ban to.eat lamb

d. Что Валерия проигнорировала запрет есть?
what Valeriya ignored ban to.eat

B.1.4 Experiment 4: Noun complement island; RC extraposition

(1) a. Костя предложил продать машину, которая осталась от дедушки,
Kostya proposed to.sell car which was.left from grandpa
два дня назад.
two days ago

b. Костя предложил продать машину два дня назад, которая осталась
Kostya proposed to.sell car two days ago which was.left
от дедушки.
from grandpa

c. Костя выдвинул предложение продать машину, которая осталась
Kostya put.forth proposal to.sell car which was.left
от дедушки, два дня назад.
from grandpa two days ago

d. Костя выдвинул предложение продать машину два дня назад,
Kostya put.forth proposal to.sell car two days ago
которая осталась от дедушки.
which was.left from grandpa

(2) a. Марина планировала найти работу, которая будет ближе к дому,
Marina planned to.find job which will.be closer to home
месяц назад.
month ago

b. Марина планировала найти работу месяц назад, которая будет
Marina planned to.find job month ago which will.be
ближе к дому.
closer to home

c. Марина озвучила план найти работу, которая будет ближе к дому,
Marina announced plan to.find job which will.be closer to home
месяц назад.
month ago

d. Марина озвучила план найти работу месяц назад, которая будет
Marina announced plan to.find job month ago which will.be
ближе к дому.
closer to home

(3) a. Кирилл посоветовал арендовать лодку, которая имеет защиту от
Kirill advised to.rent boat which has protection from
солнца, пять минут назад.
sun five minutes ago

b. Кирилл посоветовал арендовать лодку пять минут назад, которая
Kirill advised to.rent boat five minutes ago which
имеет защиту от солнца.
has protection from sun

c. Кирилл вспомнил совет арендовать лодку, которая имеет защиту
Kirill remembered advice to.rent boat which has protection
от солнца, пять минут назад.
from sun five minutes ago

d. Кирилл вспомнил совет арендовать лодку пять минут назад,
Kirill remembered advice to.rent boat five minutes ago
которая имеет защиту от солнца.
which has protection from sun

(4) a. Таня попыталась починить холодильник, который стоит в офисе,
Tanya attempted to.fix fridge which put in office
две недели назад.
two weeks ago

b. Таня попыталась починить холодильник две недели назад, который
Tanya attempted to.fix fridge two weeks ago which
стоит в офисе.
put in office

c. Таня совершила попытку починить холодильник, который стоит в
Tanya made attempt to.fix fridge which put in
офисе, две недели назад.
office two weeks ago

d. Таня совершила попытку починить холодильник две недели назад,
Tanya made attempt to.fix fridge two weeks ago
который стоит в офисе.
which put in office

(5) a. Серёжа решил купить мотоцикл, о котором мечтал с детства,
Seryozha decided to.buy motorbike of which dreamed since childhood
сегодня утром.
today morning

b. Серёжа решил купить мотоцикл сегодня утром, о котором мечтал
Seryozha decided to.buy motorbike today morning of which dreamed
с детства.
since childhood

c. Серёжа принял решение купить мотоцикл, о котором мечтал с
Seryozha made decision to.buy motorbike of which dreamed since
детства, сегодня утром.
childhood today morning

d. Серёжа принял решение купить мотоцикл сегодня утром, о
Seryozha made decision to.buy motorbike today morning of
котором мечтал с детства.
which dreamed since childhood

(6) a. Валя мечтала починить дом, который принадлежал покойной
Valya dreamed to.fix house which belonged.to deceased
бабушке, семь месяцев назад.
grandma seven months ago

b. Валя мечтала починить дом семь месяцев назад, который
Valya dreamed to.fix house seven months ago which
принадлежал покойной бабушке.
belonged.to deceased grandma

c. Валя лелеяла мечту починить дом, который принадлежал покойной
Valya cherished dream to.fix house which belonged.to deceased
бабушке, семь месяцев назад.
grandma seven months ago

d. Валя лелеяла мечту починить дом семь месяцев назад, который
Valya cherished dream to.fix house seven months ago which
принадлежал покойной бабушке.
belonged.to deceased grandma

(7) a. Алексей намеревался снять фильм, который рассказывает о
Alexey intended to.shoot film which tell about
джунглях Колумбии, месяц назад.
jungles of.Columbia month ago

b. Алексей намеревался снять фильм месяц назад, который
Alexey intended to.shoot film month ago which
рассказывает о джунглях Колумбии.
tell about jungles of.Columbia

c. Алексей подтвердил намерение снять фильм, который
Alexey confirmed intention to.shoot film which
рассказывает о джунглях Коломбии, месяц назад.
tell about jungles of.Columbia month ago

d. Алексей подтвердил намерение снять фильм месяц назад, который
Alexey confirmed intention to.shoot film month ago which
рассказывает о джунглях Колумбии.
tell about jungles of.Columbia

(8) a. Валерия запретила есть овощи, которые не были вымыты с
Valerya banned to.eat vegetables which not were washed with

содой, вчера вечером.
soda yesterday evening

b. Валерия запретила есть овощи вчера вечером, которые не были
Valerya banned to.eat vegetables yesterday evening which not were
вымыты с содой.
washed with soda

c. Валерия проигнорировала запрет есть овощи, которые не были
Valerya ignored ban to.eat vegetables which not were
вымыты с содой, вчера вечером.
washed with soda yesterday evening

d. Валерия проигнорировала запрет есть овощи вчера вечером,
Valerya ignored ban to.eat vegetables yesterday evening
которые не были вымыты с содой.
which not were washed with soda

B.1.5 Experiment 5: *Wh*-island; *wh*-movement

(1) a. Кто решил пригласить Петю?
who decided to.invite Petya

b. Кого Петя решил пригласить?
whom Petya decided to.invite

c. Кто решил куда пригласить Петю?
who decided to.where to.invite Petya

d. Кого Петя решил куда пригласить?
whom Petya decided to.where to.invite

(2) a. Кто грозился бросить Васю?
who threatened to.drop Vasya

b. Кого Вася грозился бросить?
whom Vasya threatened to.abandon

c. Кто грозился где бросить Васю?
who threatened where to.abandon Vasya

d. Кого Вася грозился где бросить?
whom Vasya threatened where to.abandon

(3) a. Кто готовился увидеть Колю?
who was.preparing to.see Kolya

b. Кого Коля готовился увидеть?
whom Kolya was.preparing to.see

c. Кто готовился где увидеть Колю?
who was.preparing where to.see Kolya

d. Кого Коля готовился где увидеть?
whom Kolya was.preparing where to.see

(4) a. Кто загадывал встретить Мишу?
who wished to.meet Misha
b. Кого Миша загадывал встретить?
whom Misha wished to.meet
c. Кто загадывал где встретить Мишу?
who wished where to.meet Misha
d. Кого Миша загадывал где встретить?
whom Misha wished where to.meet

(5) a. Кто предполагал отвезти Машу?
who supposed to.bring Masha
b. Кого Маша предполагала отвезти?
who Masha supposed to.bring
c. Кто предполагал куда отвезти Машу?
who supposed to.where to.bring Masha
d. Кого Маша предполагала куда отвезти?
who Masha supposed to.where to.bring

(6) a. Кто планировал отправить Лену?
who planned to.send Lena
b. Кого Лена планировала отправить?
whom Lena planned to.send
c. Кто планировал куда отправить Лену?
who planned to.where to.send Lena
d. Кого Лена планировала куда отправить?
whom Lena planned to.where to.send

(7) a. Кто отказывался пускать Марину?
who refused to.let.in Marina
b. Кого Марина отказывалась пускать?
whom Marina refused to.let.in
c. Кто отказывался куда пускать Марину?
who refused where to.let.in Marina
d. Кого Марина отказывалась куда пускать?
whom Marina refused to.where to.let.in

(8) a. Кто остерегался повстречать Варю?
who bewared to.encounter Varya
b. Кого Варя остерегалась повстречать?
who Varya bewared to.encounter
c. Кто остерегался где повстречать Варю?
who bewared where to.encounter Varya

d. Кого Варя остерегалась где повстречать?
who Varya beware.PST where to.encounter

B.1.6 Experiment 6: *Wh*-island; RC extraposition

(1) a. Петя решил пригласить девушку, которая живёт в соседней
Petya decided to.invite young.woman which lives in next.door
квартире, вчера.
apartment yesterday

b. Петя решил пригласить девушку вчера, которая живёт в
Petya decided to.invite young.woman yesterday which lives in
соседней квартире.
next.door apartment

c. Петя решил куда пригласить девушку, которая живёт в соседней
Petya decided where to.invite young.woman which lives in next.door
квартире, вчера?
apartment yesterday

d. Петя решил куда пригласить девушку вчера, которая живёт в
Petya decided where to.invite young.woman yesterday which lives in
соседней квартире?
next.door apartment

(2) a. Вася грозился бросить мальчика, который издевается над
Vasya threatened to.abandon boy which mistreats over
животными, вчера.
animals yesterday

b. Вася грозился бросить мальчика вчера, который издевается над
Vasya threatened to.abandon boy yesterday which mistreats over
животными.
animals

c. Вася грозился где бросить мальчика, который издевается над
Vasya threatened where to.abandon boy which mistreats over
животными, вчера.
animals yesterday

d. Вася грозился где бросить мальчика вчера, который издевается
Vasya threatened where to.abandon boy yesterday which mistreats
над животными?
over animals

(3) a. Коля готовился увидеть родственницу, которая едет из
Kolya was.preparing to.see relative which is.coming from
другого города, вчера.
another town yesterday

b. Коля готовился увидеть родственницу вчера, которая едет
Kolya was.preparing to.see relative yesterday which is.coming
из другого города.
from another town

c. Коля готовился где увидеть родственницу, которая едет из
Kolya was.preparing where to.see relative which is.coming from
другого города, вчера.
another town yesterday

d. Коля готовился где увидеть родственницу вчера, которая
Kolya was.preparing where to.see relative yesterday which
едет из другого города?
is.coming from another town

(4) a. Миша загадывал встретить друга, который скоро вернётся из
Misha was.making.a.wish to.meet friend which soon will.return from
экспедиции, вчера.
expedition yesterday.

b. Миша загадывал встретить друга вчера, который скоро
Misha was.making.a.wish to.meet friend yesterday which soon
вернётся из экспедиции.
will.return from expedition

c. Миша загадывал где встретить друга, который скоро
Misha was.making.a.wish where to.meet friend which soon
вернётся из экспедиции, вчера.
will.return from expedition yesterday

d. Миша загадывал где встретить друга вчера, который скоро
Misha was.making.a.wish where to.meet friend yesterday which soon
вернётся из экспедиции?
will.return from expedition

(5) a. Маша предполагала отвезти подарок, который ждут её друзья,
Masha planned to.bring present which are.waiting her friends
вчера.
yesterday

b. Маша предполагала отвезти подарок вчера, который ждут её
Masha planned to.bring present yesterday which are.waiting her
друзья.
friends

c. Маша предполагала куда отвезти подарок, который ждут
Masha planned to.where to.bring present which are.waiting.for
её друзья, вчера.
her friends yesterday

d. Маша предполагала куда отвезти подарок вчера, который
Masha planned to.where to.bring present yesterday which
ждут её друзья?
are.waiting.for her friends

(6) a. Лена планировала отправить мальчика, который принесёт ей
Lena planned to.send boy which will.bring her
бейсболку, вчера.
baseball.cap yesterday

b. Лена планировала отправить мальчика вчера, который принесёт
Lena planned to.send boy yesterday which will.bring
ей бейсболку.
her baseball.cap

c. Лена планировала куда отправить мальчика, который принесёт ей
Lena planned where to.send boy.DAT which will.bring her
бейсболку, вчера.
baseball.cap yesterday

d. Лена планировала куда отправить мальчика вчера, который
Lena planned where to.send boy yesterday which
принесёт ей бейсболку?
will.bring her baseball.cap

(7) a. Марина отказывалась позвать племянника, которого давно не
Marina was.refusing to.invite nephew which for.long.time NEG
видела, секунду назад.
saw second ago

b. Марина отказывалась позвать племянника секунду назад, которого
Marina was.refusing to.invite nephew second ago which
давно не видела.
for.long.time NEG saw

c. Марина отказывалась куда позвать племянника, которого
Marina was.refusing where to.invite nephew which
давно не видела, секунду назад.
for.long.time NEG saw second ago

d. Марина отказалась куда позвать племянника секунду назад,
Marina was.refusing where to.invite nephew second ago
которого давно не видела?
which for.long.time NEG saw

(8) a. Варя остерегалась пробовать еду, которая ей не нравилась в
Varya bewared to.try food which her NEG like in

детстве, вчера.
childhood yesterday

b. Варя остерегалась пробовать еду вчера, которая ей не нравилась
Varya bewared to.try food yesterday which her NEG like
в детстве.
in childhood

c. Варя остерегалась где пробовать еду, которая ей не нравилась в
Varya bewared where to.try food which her NEG like in
детстве, вчера.
childhood yesterday

d. Варя остерегалась где пробовать еду вчера, которая ей не
Varya bewared where to.try food yesterday which her NEG
нравилась в детстве?
like in childhood

B.1.7 Experiment 7: Transitive subject island; wh-movement

(1) a. Какого сотрудника вчера утром Михаил благодарил?
what employee yesterday morning Michael thanked

b. Какого вчера утром Михаил благодарил сотрудника?
what yesterday morning Michael thanked employee

c. Какой сотрудник вчера утром благодарил Михаила?
what employee yesterday morning thanked Michael

d. Какой вчера утром сотрудник благодарил Михаила?
what yesterday morning employee thanked Michael

(2) a. Какого менеджера месяц назад Валентина наняла?
what manager month ago Valentina hired

b. Какого месяц назад Валентина наняла менеджера?
what month ago Valentina hired manager

c. Какой менеджер месяц назад нанял Валентину?
what manager month ago hired Valentina

d. Какой месяц назад менеджер нанял Валентину?
what month ago manager hired Valentina

(3) a. Какого режиссёра два дня назад Виктор поблагодарил?
what film.director two days ago Victor thanked

b. Какого два дня назад Виктор поблагодарил режиссёра?
what two days ago Victor thanked film.director

c. Какой режиссёр два дня назад поблагодарил Виктора?
what director two days ago thanked Victor

d. Какой два дня назад режиссёр поблагодарил Виктора?
what two days ago director thanked Victor

(4) a. Какого артиста час назад Евгения поприветствовала?
what artist hour ago Eugenia greeted
b. Какого час назад Евгения поприветствовала артиста?
what hour ago Eugenia greeted artist
c. Какой артист час назад поприветствовал Евгению?
what artist hour ago greeted Eugenia
d. Какой час назад артист поприветствовал Евгению?
what hour ago artist greeted Eugenia

(5) a. Какого студента пять минут назад Леонид заметил?
what student five minutes ago Leonid noticed
b. Какого пять минут назад Леонид заметил студента?
what five minutes ago student Leonid noticed
c. Какой студент пять минут назад заметил Леонида?
what student five minutes ago noticed Leonid
d. Какой пять минут назад студент заметил Леонида?
what five minutes ago student noticed Leonid

(6) a. Какого постового десять минут назад Алёна остановила?
what traffic.policeman ten minutes ago Alyona stopped
b. Какого десять минут назад Алёна остановила постового?
what ten minutes ago Alyona stopped traffic.policeman
c. Какой постовой десять минут назад остановил Алёну?
what traffic.policeman ten minutes ago stopped Alyona
d. Какой десять минут назад постовой остановил Алёну?
what ten minutes ago traffic.policeman stopped Alyona

(7) a. Какого депутата три дня назад Марина переубедила?
what delegate three days ago Marina made.reconsider
b. Какого три дня назад Марина переубедила депутата?
what three days ago Marina made.reconsider delegate
c. Какой депутат три дня назад переубедил Марину?
what delegate three days ago made.reconsider Marina
d. Какой три дня назад депутат переубедил Марину?
what three days ago delegate made.reconsider Marina

(8) a. Какого актёра две минуты назад Константин узнал?
what actor two minutes ago Constantine recognized
b. Какого две минуты назад Константин узнал актёра?
what two minutes ago Constantine recognized actor
c. Какой актёр две минуты назад узнал Константина?
what two minutes ago actor recognized Constantine

d. Какой две минуты назад актёр узнал Константина?
what two minutes ago actor recognized Constantine

B.1.8 Experiment 8: Transitive subject island; RC extraposition

(1) a. Ваня напугал собаку, которая живёт во дворе, два дня назад.
Vanya scared dog which lives in yard two days ago

b. Ваня напугал собаку два дня назад, которая живёт во дворе.
Vanya scared dog two days ago which lives in yard

c. Собака, которая живёт во дворе, напугала Ваню два дня назад.
dog which lives in yard scared Vanya two days ago

d. Собака напугала Ваню два дня назад, которая живёт во дворе.
dog scared Vanya two days ago which lives in yard

(2) a. Марина видела мужчину, который живёт на втором этаже, вчера вечером.
Marina saw man which lives on second floor yesterday evening

b. Марина видела мужчину вчера вечером, который живёт на втором этаже.
Marina saw man yesterday evening which lives on second floor

c. Мужчина, который живёт на втором этаже, видел Марину вчера вечером.
man which lives on second floor saw Marina yesterday evening

d. Мужчина видел Марину вчера вечером, который живёт на втором этаже.
man saw Marina yesterday evening which lives on second floor

(3) a. Марк влюбился в девушку, которая работает в новом офисе, вчера.
Mark fell.in.love in young.woman which works in new office yesterday

b. Марк влюбился в девушку вчера, которая работает в новом офисе.
Mark fell.in.love in young.woman yesterday which works in new office

c. Девушка, которая работает в соседнем офисе, влюбилась в Марка вчера.
young.woman which works in next.door office fell.in.love in Mark yesterday

d. Девушка влюбилась в Марка вчера, которая работает в
young.woman fell.in.love in Mark yesterday which works in
соседнем офисе.
next.door office

(4) a. Лена позвонила учёному, который получил Нобелевскую премию,
Lena called scientist which received Nobel prize
вчера утром.
yesterday morning

b. Лена позвонила учёному вчера утром, который получил
Lena called scientist yesterday morning which received
Нобелевскую премию.
Nobel prize

c. Учёный, который получил Нобелевскую премию, позвонил Лене
scientist which received Nobel prize called Lena
вчера утром.
yesterday morning

d. Учёный позвонил Лене вчера утром, который получил
scientist called Lena yesterday morning which received
Нобелевскую премию.
Nobel prize

(5) a. Карина разозлила щенка, который играл с мячиком, сегодня
Karina angried puppy which played with ball today
днём.
afternoon

b. Карина разозлила щенка сегодня днём, который играл с
Karina angried puppy today afternoon which played with
мячиком.
ball

c. Щенок, который играл с мячиком, разозлил Карину сегодня
puppy which played with ball angried Karina today
днём.
afternoon

d. Щенок разозлил Карину сегодня днём, который играл с
puppy angried Karina today afternoon which played with
мячиком.
ball

(6) a. Лена подмигнула музыканту, который очень стеснялся людей,
Lena winked at.musician which usually was.shy around.people

секунду назад.
second ago

b. Лена подмигнула музыканту секунду назад, который обычно
Lena winked at.musician second ago which usually
стесняется людей.
was.shy around.people

c. Музыкант, который обычно стесняется людей, подмигнул
musician which usually was.shy around.people winked
Лене секунду назад.
at.Lena second ago

d. Музыкант подмигнул Лене секунду назад, который обычно
musician winked at.Lena second ago which usually
стеснется людей.
was.shy around.people

(7) a. Кирилл помахал официантке, которая работала в соседнем кафе,
Kirill waved at.waitress which worked in next.door café
минуту назад.
minute ago

b. Кирилл помахал официантке минуту назад, которая работала в
Kirill waved at.waitress minute ago which worked in
соседнем кафе.
next.door café

c. Официантка, которая работала в соседнем кафе, помахал Кириллу
waitress which worked in next.door café waved at.Kirill
минуту назад.
minute ago

d. Официантка помахала Кириллу минуту назад, которая работала в
waitress waved at.Kirill minute ago which worked in
соседнем кафе.
next.door café

(8) a. Маша отпустила грабителя, который недавно вышел из тюрьмы, час
Masha let.go burglar which recently got.out of prison hour
назад.
ago

b. Маша отпустила грабителя час назад, который недавно вышел из
Masha let.go burglar hour ago which recently got.out of
тюрьмы.
prison

c. Грабитель, который недавно вышел из тюрьмы, отпустил Машу час
burglar which recently got.out of prison let.go Masha hour

назад.
ago

d. Грабитель отпустил Машу час назад, который недавно вышел из
burglar let.go Masha hour ago which recently got.out of
тюрьмы.
prison

B.1.9 Experiment 9: Unergative subject island; wh-movement

(1) a. Какого сотрудника вчера утром Михаил благодарил?
what.ACC employee.ACC yesterday morning Michael thanked

b. Какой сотрудник секунду назад нервно моргнул?
what.NOM employee.NOM second ago nervously blinked

c. Какого вчера утром Михаил благодарил сотрудника?
what.ACC yesterday morning Michael thanked employee.ACC

d. Какой секунду назад сотрудник нервно моргнул?
what.NOM second ago employee.NOM nervously blinked

(2) a. Какого менеджера месяц назад Валентина наняла?
what.ACC manager.ACC month ago Valentina hired

b. Какой менеджер пять минут назад сладко зевнул?
what.NOM manager.NOM five minutes ago sweetly yawned

c. Какого месяц назад Валентина наняла менеджера?
what.ACC month ago Valentina hired manager.ACC

d. Какой пять минут назад менеджер сладко зевнул?
what.NOM five minutes ago manager.NOM sweetly yawned

(3) a. Какого режиссёра два дня назад Виктор поблагодарил?
what.ACC film.director.ACC two days ago Victor.NOM thanked

b. Какой мальчик минуту назад беззаботно играл?
what.NOM boy.NOM minute ago carelessly played

c. Какого два дня назад Виктор поблагодарил режиссёра?
what.ACC two days ago Victor.NOM thanked film.director.ACC

d. Какой минуту назад мальчик беззаботно играл?
what.NOM minute ago boy.NOM carelessly played

(4) a. Какого артиста час назад Евгения поприветствовала?
what.ACC artist.ACC hour ago Eugenia greeted

b. Какой артист полчаса назад быстро убежал?
what.NOM artist.NOM half.hour ago quickly ran.off

c. Какого час назад Евгения поприветствовала артиста?
what.ACC hour ago Eugenia greeted artist.ACC

d. Какой полчаса назад артист быстро убежал?
what.NOM half.hour ago artist.NOM quickly ran.off

(5) a. Какого студента пять минут назад Леонид заметил?
what.ACC student.ACC five minutes ago Leonid noticed
b. Какой студент пять минут назад спокойно спал?
what.NOM student.NOM five minutes ago peacefully slept
c. Какого пять минут назад Леонид заметил студента?
what.ACC five minutes ago Leonid noticed student.ACC
d. Какой пять минут назад студент спокойно спал?
what.NOM five minutes ago student.NOM peacefully slept

(6) a. Какого постового десять минут назад Алёна
what.ACC traffic.policeman.ACC ten minutes ago Alyona.NOM
остановила?
stopped
b. Какой подросток десять минут назад сильно шумел?
what.NOM adolescent.NOM ten minutes ago forcefully made.noise
c. Какого десять минут назад Алёна остановила
what.ACC ten minutes ago Alyona.NOM stopped
постового?
traffic.policeman.ACC
d. Какой десять минут назад подросток сильно шумел?
what.NOM ten minutes ago adolescent.NOM forcefully made.noise

(7) a. Какого депутата три дня назад Марина переубедила?
what.ACC delegate.ACC three days ago Marina.NOM made.reconsider
b. Какой турист час назад громко пел?
what.NOM tourist.NOM hour ago loudly sang
c. Какого три дня назад Марина переубедила депутата?
what.ACC three days ago Marina.NOM made.reconsider delegate.ACC
d. Какой час назад турист громко пел?
what.NOM hour ago tourist.NOM loudly sang

(8) a. Какого актёра две минуты назад Константин узнал?
what.ACC actor.ACC two minutes ago Constantine.NOM recognized
b. Какой актёр две минуты назад громко рассмеялся?
what.NOM actor.NOM two minutes ago loudly laughed
c. Какого две минуты назад Константин узнал актёра?
what.ACC two minutes ago Constantine.NOM recognized actor.ACC
d. Какой две минуты назад актёр громко рассмеялся?
what.NOM two minutes ago actor.NOM loudly laughed

B.1.10 Experiment 10: Unergative subject island; RC extraposition

(1) a. Ваня напугал собаку, которая живёт во дворе, два дня назад.
Vanya scared dog which lives in yard two days ago

b. Ваня напугал собаку два дня назад, которая живёт во дворе.
Vanya scared dog two days ago which lives in yard

c. Посетитель, который собирался устроить большой скандал, нервно моргнул.
Visitor which was.going to.make big scandal nervously blinked

d. Посетитель нервно моргнул, который собирался устроить большой скандал.
Visitor nervously blinked which was.going to.make big scandal

(2) a. Марина видела мужчину, который живёт на втором этаже, вчера вечером.
Marina saw man which lives on second floor yesterday evening

b. Марина видела мужчину вчера вечером, который живёт на втором этаже.
Marina saw man yesterday evening which lives on second floor

c. Зритель, который ни разу не улыбнулся, сладко зевнул.
Viewer which not one.time not smiled sweetly yawned

d. Зритель сладко зевнул, который ни разу не улыбнулся.
Viewer sweetly yawned which not one.time not smiled

(3) a. Марк влюбился в девушку, которая работает в новом офисе, вчера.
Mark fell.in.love in young.woman which works in new office yesterday

b. Марк влюбился в девушку вчера, которая работает в новом офисе.
Mark fell.in.love in young.woman yesterday which works in new office

c. Ребёнок, который принёс большой надувной мяч, беззаботно играл.
child which brought big inflatable ball carefree played

d. Ребёнок беззаботно играл, который принёс большой надувной мяч.
child carefree played which brought big inflatable ball

(4) a. Лена позвонила учёному, который получил Нобелевскую премию,
Lena called scientist which received Nobel prize

вчера утром.
yesterday morning

b. Лена позвонила учёному вчера утром, который получил
Lena called scientist yesterday morning which received
Нобелевскую премию.
Nobel prize

c. Вор, который недавно вышел из тюрьмы, быстро убежал.
thief which recently came.out from prison quickly ran.away

d. Вор быстро убежал, который недавно вышел из тюрьмы.
thief quickly ran.away which recently came.out from prison

(5) a. Карина разозлила щенка, который играл с мячиком, сегодня
Karina angried puppy which played with ball today
днём.
afternoon

b. Карина разозлила щенка сегодня днём, который играл с
Karina angried puppy today afternoon which played with
мячиком.
ball

c. Няня, которая целый день гуляла с детьми, спокойно спала.
nanny which whole day walked with children peacefully slept

d. Няня спокойно спала, которая целый день гуляла с детьми.
nanny peacefully slept which whole day walked with children

(6) a. Лена подмигнула музыканту, который очень стеснялся людей,
Lena winked at.musician which usually was.shy around.people
секунду назад.
second ago

b. Лена подмигнула музыканту секунду назад, который обычно
Lena winked at.musician second ago which usually
стесняется людей.
was.shy around.people

c. Щенок, который обычно тихо сидел под кроватью, сильно
puppy which usually quietly sat under bed forcefully
шумел.
made.noise

d. Щенок сильно шумел, который обычно тихо сидел под
puppy forcefully made.noise which usually quietly sat under
кроватью.
bed

(7) a. Кирилл помахал официантке, которая работала в соседнем кафе,
Kirill waved at.waitress which worked in next.door café
минуту назад.
minute ago

b. Кирилл помахал официантке минуту назад, которая работала в
Kirill waved at.waitress minute ago which worked in
соседнем кафе.
next.door café

c. Музыкант, который работал в соседнем кафе, громко пел.
musician which worked in next.door café loudly sang

d. Музыкант громко пел, который работал в соседнем кафе.
musician loudly sang which worked in next.door café

(8) a. Маша отпустила грабителя, который недавно вышел из тюрьмы, час
Masha let.go burglar which recently got.out of prison hour
назад.
ago

b. Маша отпустила грабителя час назад, который недавно вышел из
Masha let.go burglar hour ago which recently got.out of
тюрьмы.
prison

c. Девочка, которая до этого притворялась испуганной, громко
girl which before that pretended scared loudly
рассмеялась.
laughed

d. Девочка громко рассмеялась, которая до этого притворялась
girl loudly laughed which before that pretended
испуганной.
scared

B.1.11 Experiment 11: Unaccusative subject island; wh-movement

(1) a. Какого сотрудника вчера утром Михаил благодарил?
what.ACC employee.ACC yesterday morning Michael thanked

b. Какой индекс полчаса назад быстро рос?
what.NOM index.NOM half.hour ago quickly grew

c. Какого вчера утром Михаил благодарил сотрудника?
what.ACC yesterday morning Michael thanked employee.ACC

d. Какой полчаса назад индекс быстро рос?
what.NOM half.hour ago index.NOM quickly grew

(2) a. Какого менеджера месяц назад Валентина наняла?
what.ACC manager.ACC month ago Valentina hired

b. Какой знак минуту назад надёжно стоял?
what.NOM sign.NOM minute ago securely stood
c. Какого месяц назад Валентина наняла менеджера?
what.ACC month ago Valentina hired manager.ACC
d. Какой минуту назад знак надёжно стоял?
what.NOM minute ago sign.NOM securely stood

(3) a. Какого режиссёра два дня назад Виктор поблагодарил?
what.ACC film.director.ACC two days ago Victor.NOM thanked
b. Какой вихор секунду назад упрямо торчал?
what.NOM cowlick.NOM second ago stubbornly stood.out
c. Какого два дня назад Виктор поблагодарил режиссёра?
what.ACC two days ago Victor.NOM thanked film.director.ACC
d. Какой секунду назад вихор упрямо торчал?
what.NOM second ago cowlick.NOM stubbornly stood.out

(4) a. Какого артиста час назад Евгения поприветствовала?
what.ACC artist.ACC hour ago Eugenia greeted
b. Какой курьер две минуты назад спокойно сидел?
what.NOM courier.NOM two minutes ago calmly sat
c. Какого час назад Евгения поприветствовала артиста?
what.ACC hour ago Eugenia greeted artist.ACC
d. Какой две минуты назад курьер спокойно сидел?
what.NOM two minutes ago courier.NOM calmly sat

(5) a. Какого студента пять минут назад Леонид заметил?
what.ACC student.ACC five minutes ago Leonid noticed
b. Какой пациент десять минут назад неподвижно лежал?
what.NOM patient.NOM ten minutes ago motionless laid.down
c. Какого пять минут назад Леонид заметил студента?
what.ACC five minutes ago Leonid noticed student.ACC
d. Какой десять минут назад пациент неподвижно лежал?
what.NOM ten minutes ago patient.NOM motionless laid.down

(6) a. Какого постового десять минут назад Алёна
what.ACC traffic.policeman.ACC ten minutes ago Alyona.NOM
остановила?
stopped
b. Какой подросток десять минут назад внезапно исчез?
what.NOM adolescent.NOM ten minutes ago suddenly vanished
c. Какого десять минут назад Алёна остановила
what.ACC ten minutes ago Alyona.NOM stopped

постового?
traffic.policeman.ACC

d. Какой десять минут назад подросток внезапно исчез?
what.NOM ten minutes ago adolescent.NOM suddenly vanished

(7) a. Какого депутата три дня назад Марина переубедила?
what.ACC delegate.ACC three days ago Marina.NOM made.reconsider

b. Какой поезд час назад наконец появился?
what.NOM train.NOM hour ago finally emerged

c. Какого три дня назад Марина переубедила депутата?
what.ACC three days ago Marina.NOM made.reconsider delegate.ACC

d. Какой час назад поезд наконец появился?
what.NOM hour ago train.NOM finally emerged

(8) a. Какого актёра две минуты назад Константин узнал?
what.ACC actor.ACC two minutes ago Constantine.NOM recognized

b. Какой экран пять минут назад мягко светился?
what.NOM screen.NOM five minutes ago softly glowed

c. Какого две минуты назад Константин узнал актёра?
what.ACC two minutes ago actor.ACC Constantine.NOM recognized

d. Какой пять минут назад экран мягко светился?
what.NOM five minutes ago screen.NOM softly glowed

B.1.12 Experiment 12: Unaccusative subject island; RC extraposition

(1) a. Ваня напугал собаку, которая живёт во дворе, два дня назад.
Vanya scared dog which lives in yard two days ago

b. Ваня напугал собаку два дня назад, которая живёт во дворе.
Vanya scared dog two days ago which lives in yard

c. Цветок, который недавно подарил папа, быстро рос.
flower which recently gifted father quickly grew

d. Цветок быстро рос, который недавно подарил папа.
flower quickly grew which recently gifted father

(2) a. Марина видела мужчину, который живёт на втором этаже, вчера вечером.
Marina saw man which lives on second floor yesterday evening

b. Марина видела мужчину вчера вечером, который живёт на втором этаже.
Marina saw man yesterday evening which lives on second floor

c. Забор, который поставил ещё дедушка, надёжно стоял.
fence which put.up even grandpa securely stood
d. Забор надёжно стоял, который поставил ещё дедушка.
fence securely stood which put.up even grandpa

(3) a. Марк влюбился в девушку, которая работает в новом офисе,
Mark fell.in.love in young.woman which works in new office
вчера.
yesterday
b. Марк влюбился в девушку вчера, которая работает в новом
Mark fell.in.love in young.woman yesterday which works in new
офисе.
office
c. Вихор, который придавал Пете невыспавшийся вид, упрямо
cowlick which make.appear Petya sleep.deprived look stubbornly
торчал.
stuck.out
d. Вихор упрямо торчал, который придавал Пете невыспавшийся
cowlick stubbornly stuck.out which make.appear Petya sleep.deprived
вид.
look

(4) a. Лена позвонила учёному, который получил Нобелевскую премию,
Lena called scientist which received Nobel prize
вчера утром.
yesterday morning
b. Лена позвонила учёному вчера утром, который получил
Lena called scientist yesterday morning which received
Нобелевскую премию.
Nobel prize
c. Девочка, которая раньше бегала по комнате, спокойно
girl which earlier was.running around room quietly
сидела.
sat
d. Девочка спокойно сидела, которая раньше бегала по комнате.
girl quietly sat which earlier was.running around room

(5) a. Карина разозлила щенка, который играл с мячиком, сегодня
Karina angried puppy which played with ball today
днём.
afternoon

b. Карина разозлила щенка сегодня днём, который играл с
Karina angried puppy today afternoon which played with
мячиком.
ball

c. Бегун, который только что пробежал марафон, неподвижно лежал.
runner which just now ran marathon motionless laid.down

d. Бегун неподвижно лежал, который только что пробежал марафон.
runner motionless laid.down which just now ran marathon

(6) a. Лена подмигнула музыканту, который очень стеснялся людей,
Lena winked at.musician which usually was.shy around.people
секунду назад.
second ago

b. Лена подмигнула музыканту секунду назад, который обычно
Lena winked at.musician second ago which usually
стесняется людей.
was.shy around.people

c. Фокусник, который собрал кошельки всех зрителей, внезапно
magician which collected wallets all spectators suddenly
исчез.
disappeared

d. Фокусник внезапно исчез, который собрал кошельки всех
magician suddenly disappeared which collected wallets all
зрителей.
spectators

(7) a. Кирилл помахал официантке, которая работала в соседнем кафе,
Kirill waved at.waitress which worked in next.door café
минуту назад.
minute ago

b. Кирилл помахал официантке минуту назад, которая работала в
Kirill waved at.waitress minute ago which worked in
соседнем кафе.
next.door café

c. Поезд, который опоздал на три часа, наконец появился.
train which was.late for three hours finally appeared

d. Поезд наконец появился, который опоздал на три часа.
train finally appeared which was.late for three hours

(8) a. Маша отпустила грабителя, который недавно вышел из тюрьмы, час
Masha let.go burglar which recently got.out of prison hour

назад.
ago

b. Маша отпустила грабителя час назад, который недавно вышел из
Masha let.go burglar hour ago which recently got.out of
тюрьмы.
prison

c. Цветок, который рос на болоте, мягко светился.
flower which was.growing on swamp gently glowed

d. Цветок мягко светился, который рос на болоте.
flower gently glowed which was.growing on swamp

B.1.13 Experiment 13: Transitive subject island (PP subextraction); wh-movement

(1) a. Кого сегодня утром директор уволил?
who today morning director fired

b. Кто сегодня утром уволил специалиста?
who today morning fired specialist

c. По чему сегодня утром директор по развитию уволил
over what today morning director over development fired
специалиста?
specialist

d. По чему сегодня утром директор уволил специалиста по
over what today morning director fired specialist over
налогам?
taxes

(2) a. Кого два дня назад вице-президент нанял?
who two days ago vice.president hired

b. Кто два дня назад нанял адвоката?
who two days ago hired lawyer

c. По чему два дня назад вице-президент по финансам нанял
over what two days ago vice.president over finances hired
адвоката?
lawyer

d. По чему два дня назад вице-президент нанял адвоката по
over what two days ago vice.president hired lawyer over
кредитам?
credits

(3) a. Кого тренер поблагодарил?
who trainer thanked

b. Кто поблагодарил партнёра?
who thanked partner

c. По чему пять минут назад тренер по баскетболу поблагодарил
over what five minutes ago trainer over basketball thanked
партнёра?
partner

d. По чему пять минут назад тренер поблагодарил партнёра по
over what five minutes ago trainer thanked partner over
боксу?
boxing

(4) a. Кого менеджер поприветствовал?
who manager greeted

b. Кто поприветствовал консультанта?
who greeted consultant

c. По чему вчера утром менеджер по персоналу поприветствовал
over what yesterday morning manager over personnel greeted
консультанта?
consultant

d. По чему вчера утром менеджер поприветствовал консультанта
over what yesterday morning manager greeted consultant
по инвестициям?
over investments

(5) a. Кого дежурный заметил?
who on.duty.person noticed

b. Кто заметил заместителя?
who noticed deputy

c. По чему позавчера ночью дежурный по отряду заметил
over what the.day.before.yesterday night attendant over unit noticed
заместителя?
deputy

d. По чему позавчера ночью дежурный заметил заместителя
over what the.day.before.yesterday nigh attendant noticed deputy
по снабжению?
over provision

(6) a. Кого коллега остановил?
who colleague stopped

b. Кто остановил соседа?
who stopped neighbor

c. По чему час назад коллега по офису остановил соседа по этажу?
over what hour ago colleague over office stopped neighbor over floor

d. По чему час назад коллега остановил соседа по этажу?
over what hour ago colleague stopped neighbor over floor

(7) a. Кого педагог переубедил?
who teacher convinced.otherwise

b. Кто переубедил эксперта?
who convinced.otherwise expert

c. По чему на прошлой неделе педагог по математике
over what on last week teacher over mathematics
переубедил эксперта?
convinced.otherwise expert

d. По чему на прошлой неделе педагог переубедил эксперта по
over what on last week teacher convinced.otherwise expert over
кризисам
crises

(8) a. Кого репетитор узнал?
who tutor recognized

b. Кто узнал мастера?
who recognized master

c. По чему секунду назад репетитор по английскому узнал
over what second ago tutor over English recognized
мастера?
master

d. По чему секунду назад репетитор узнал мастера по сборке
over what second ago tutor recognized master over assembly
мебели?
of.furniture

B.2 Anchor items

A.7. Вася любит Машу.
Vasya.NOM love.PRES.3SG Masha.ACC

A.4. Вася уточнил у Маши, она куда хотела пойти.
Vasya checked at Masha she where wanted to.go

A.1. Мне любят Машу.
1SG.DAT love.PRES.3PL Masha.ACC

B.3 Practice items

P.1B. Некому некогда принимать посетителей.
nobody.DAT no.time to.admit visitors

P.1G. Наташа не хотела читать книг.
Natasha.NOM NEG wanted to.read books.GEN

P.1M. Мальчик ел шесть конфет.
boy.NOM was.eating six.ACC candies.GEN

P.2G. Александра знает, почему Соня купила платье.
Alexandra.NOM knows why Sonya.NOM bought dress.ACC

P.2M. Маша меня спросила, я кого вчера видел.
Masha.NOM 1SG.ACC asked 1SG.NOM who.ACC yesterday saw

P.2B. Я тошнился от запаха крепкого табака.
1SG.NOM was.vomiting.PRES.REFL from smell.GEN strong.GEN tobacco.GEN

B.4 Fillers

F.1.1. Александра бегает и занимается йогой.
Alexandra runs and does yoga

F.3.1. Машину здесь появляется.
car. here appears

F.3.5. Кто ты видел когда подъезжал?
who you saw when arrived

F.2.6. Цветы ли и кто дарил Лене?
flowers LI and who gifted Lena

F.1.6. Во время взрыва ему сильно изувечило ногу.
in time of.explosion he.DAT strongly maimed leg

F.2.7 Где когда вы выступаете?
where when you perform

F.3.4. Кого и за что Петя его избил?
who and for what Petya him beat.up

F.3.9. Террористы отпустили тридцать четырёх заложника.
terrorists.NOM released thirty.ACC four.GEN hostage.SG.GEN

F.2.9. На собрании не присутствовало всех сотрудников.
in meeting NEG present allGEN employees.GEN

F.1.10. Ваня хочет, чтобы все любили себя.
Vanya wants that everyone loves self

F.1.4. Рабочие наполнили яму водой.
workers filled.up hole water

F.3.11 Они читали мои жалобы друг на друга.
they read my complains each on other

F.1.7. Иван купил что-то, но я не знаю что.
Ivan bought something but I NEG know what

F.2.4. Кому ты хочешь, чтобы Маша представила его новых соседей?
who.DAT you want that Masha.NOM introduced his.ACC new.ACC neighbors.ACC

F.2.1. Директора уничтожили слухи о себе.
director.ACC destroyed rumors.NOM about self

F.3.2. Маша играет на флейте лучше Саши играет.
Masha.NOM plays on flute better Sasha.NOM plays

Appendix C

Supplementary materials for Chapter 4

C.1 Experiments 1 and 2: NPI licensing

C.1.1 Experimental items

C.1.1.1 Experiment 1: NPI licensing (*every*; DP-internal)

(1) a. Today Mary watched every video that Pete had posted on his Youtube channel.
b. Mary watched every video today that Pete had posted on his Youtube channel.
c. Today Mary watched every video that Pete had ever posted on his Youtube channel.
d. Mary watched every video today that Pete had ever posted on his Youtube channel.

(2) a. Today Emily answered every question that Jon had asked in the group chat.
b. Emily answered every question today that Jon had asked in the group chat.
c. Today Emily answered every question that Jon had ever asked in the group chat.
d. Emily answered every question today that Jon had ever asked in the group chat.

(3) a. Yesterday Grace sold every gadget that Todd had put in the attic.
b. Grace sold every gadget yesterday that Todd had put in the attic.
c. Yesterday Grace sold every gadget that Todd had ever put in the attic.
d. Grace sold every gadget yesterday that Todd had ever put in the attic.

(4) a. Yesterday Anna catalogued every recipe that Martin had shared on his blog.
b. Anna catalogued every recipe yesterday that Martin had shared on his blog.
c. Yesterday Anna catalogued every recipe that Martin had ever shared on his blog.
d. Anna catalogued every recipe yesterday that Martin had ever shared on his blog.

(5) a. Today Tim ordered every book that Kate had recommended in her workshops.
b. Tim ordered every book today that Kate had recommended in her workshops.
c. Today Tim ordered every book that Kate had ever recommended in her workshops.
d. Tim ordered every book today that Kate had ever recommended in her workshops.

(6) a. Today Nick contacted every player that Samantha had coached in the WNBA.
b. Nick contacted every player today that Samantha had coached in the WNBA.
c. Today Nick contacted every player that Samantha had ever coached in the WNBA.

d. Nick contacted every player today that Samantha had ever coached in the WNBA.

(7) a. Yesterday George polished every trophy that Olivia had won at national championships.
b. George polished every trophy yesterday that Olivia had won at national championships.
c. Yesterday George polished every trophy that Olivia had ever won at national championships.
d. George polished every trophy yesterday that Olivia had ever won at national championships.

(8) a. Yesterday Matt re-read every postcard that Tina had sent from her trips.
b. Matt re-read every postcard yesterday that Tina had sent from her trips.
c. Yesterday Matt re-read every postcard that Tina had ever sent from her trips.
d. Matt re-read every postcard yesterday that Tina had ever sent from her trips.

C.1.1.2 Experiment 2: NPI licensing (*n't*; DP-external)

(1) a. For most of my coaching career, I didn't understand the athletes that had used anabolic steroids.
b. I didn't understand the athletes, for most of my coaching career, that had used anabolic steroids.
c. For most of my coaching career, I didn't understand the athletes that had ever used anabolic steroids.
d. I didn't understand the athletes, for most of my coaching career, that had ever used anabolic steroids.

(2) a. For most of my academic career, I didn't forgive the students that had submitted plagiarized work.
b. I didn't forgive the students, for most of my academic career, that had submitted plagiarized work.
c. For most of my academic career, I didn't forgive the students that had ever submitted plagiarized work.
d. I didn't forgive the students, for most of my academic career, that had ever submitted plagiarized work.

(3) a. For most of my life, I didn't respect the players that had faked a serious injury.
b. I didn't respect the players, for most of my life, that had faked a serious injury.
c. For most of my life, I didn't respect the players that had ever faked a serious injury.
d. I didn't respect the players, for most of my life, that had ever faked a serious injury.

(4) a. For most of my life, I didn't appreciate the researchers that had harmed small animals.

b. I didn't appreciate the researchers, for most of my life, that had harmed small animals.
c. For most of my life, I didn't appreciate the researchers that had ever harmed small animals.
d. I didn't appreciate the researchers, for most of my life, that had ever harmed small animals.

(5) a. For most of my sales career, I didn't reprimand the employees that had lost a security pass.
b. I didn't reprimand the employees, for most of my sales career, that had lost a security pass.
c. For most of my sales career, I didn't reprimand the employees that had ever lost a security pass.
d. I didn't reprimand the employees, for most of my sales career, that had ever lost a security pass.

(6) a. For most of my medical career, I didn't blame the nurses that had criticized hostile patients.
b. I didn't blame the nurses, for most of my medical career, that had criticized hostile patients.
c. For most of my medical career, I didn't blame the nurses that had ever criticized hostile patients.
d. I didn't blame the nurses, for most of my medical career, that had ever criticized hostile patients.

(7) a. For most of my life, I didn't support the candidates that had taken corporate money.
b. I didn't support the candidates, for most of my life, that had taken corporate money.
c. For most of my life, I didn't support the candidates that had ever taken corporate money.
d. I didn't support the candidates, for most of my life, that had ever taken corporate money.

(8) a. For most of my life, I didn't trust the dietitians that had recommended a keto diet.
b. I didn't trust the dietitians, for most of my life, that had recommended a keto diet.
c. For most of my life, I didn't trust the dietitians that had ever recommended a keto diet.
d. I didn't trust the dietitians, for most of my life, that had ever recommended a keto diet.

C.1.2 Anchor items

(1) The was insulted waitress frequently.

(2) Tanya danced with as handsome a boy as her father.

(3) This is a pen.

C.1.3 Practice items

(1) She was the winner.

(2) Promise to wash, Neal did the car.

(3) The brother and sister that were playing all the time had to be sent to bed.

(4) The children were cared for by the adults and the teenagers.

(5) Ben is hopeful for everyone you do to attend.

(6) All the men seem to have all eaten supper.

(7) They consider a teacher of Chris geeky.

(8) It seems to me that Robert can't be trusted.

(9) There might mice seem to be in the cupboard.

C.1.4 Fillers

(1) Mike prefers tennis because Jon baseball.

(2) Jenny cleaned her sister the table.

(3) There had all hung over the fireplace the portraits by Picasso.

(4) Lily will dance who the king chooses.

(5) The specimen thawed to study it more closely.

(6) With that announcement were many citizens denied the opportunity to protest.

(7) There is likely a river to run down the mountain.

(8) Richard may have been hiding, but Blake may have done so too.

(9) The ball perfectly rolled down the hill.

(10) Lloyd Webber musicals are easy to condemn without even watching.

(11) There are firemen injured.

(12) Someone better sing the national anthem.

(13) Laura is more excited than nervous.

(14) I hate eating sushi.

C.1.5 Sanity check items

(1) a. Nobody has ever found a complete skeleton of a megalodon.
b. Somebody has ever found a complete skeleton of a megalodon.

(2) a. Nobody has ever questioned Jennifer's work ethic.
b. Somebody has ever questioned Jennifer's work ethic.

(3) a. Nobody has ever mapped the entire ocean floor.
b. Somebody has ever mapped the entire ocean floor.

(4) a. Nobody has ever proven this theorem.
b. Somebody has ever proven this theorem.

(5) a. Nobody has ever accomplished this feat before.
b. Somebody has ever accomplished this feat before.

(6) a. Nobody has ever climbed an underwater mountain.
b. Somebody has ever climbed an underwater mountain.

(7) a. Nobody has ever walked on the dark side of the Moon.
b. Somebody has ever walked on the dark side of the Moon.

(8) a. Nobody has ever declined a Michelin star.
b. Somebody has ever declined a Michelin star.

C.2 Experiments 3–5: Condition C

C.2.1 Experimental items

C.2.1.1 Experiment 3: Condition C (possessor; DP-internal)

(1) a. Today Emily confronted Eric's neighbor that annoyed him.
b. Emily confronted Eric's neighbor today that annoyed him.
c. Today Emily confronted his neighbor that annoyed Eric.
d. Emily confronted his neighbor today that annoyed Eric.

(2) a. Today Jessica called Jason's colleague that trained him.
b. Jessica called Jason's colleague today that trained him.
c. Today Jessica called his colleague that trained Jason.
d. Jessica called his colleague today that trained Jason.

(3) a. Yesterday Lauren texted Adam's friend that supported him.
b. Lauren texted Adam's friend yesterday that supported him.
c. Yesterday Lauren texted his friend that supported Adam.
d. Lauren texted his friend yesterday that supported Adam.

(4) a. Yesterday Amanda contacted David's cousin that babysat him.
b. Amanda contacted David's cousin yesterday that babysat him.
c. Yesterday Amanda contacted his cousin that babysat David.
d. Amanda contacted his cousin yesterday that babysat David.

(5) a. Today Andrew met Jennifer's teammate that befriended her.
b. Andrew met Jennifer's teammate today that befriended her.
c. Today Andrew met her teammate that befriended Jennifer.
d. Andrew met her teammate today that befriended Jennifer.

(6) a. Today Ryan complimented Anna's employee that assisted her.
b. Ryan complimented Anna's employee today that assisted her.
c. Today Ryan complimented her employee that assisted Anna.
d. Ryan complimented her employee today that assisted Anna.

(7) a. Yesterday Justin replaced Nicole's nurse that upset her.
b. Justin replaced Nicole's nurse yesterday that upset her.
c. Yesterday Justin replaced her nurse that upset Nicole.
d. Justin replaced her nurse yesterday that upset Nicole.

(8) a. Yesterday Kyle thanked Grace's fan that helped her.
b. Kyle thanked Grace's fan yesterday that helped her.

c. Yesterday Kyle thanked her fan that helped Grace.
d. Kyle thanked her fan yesterday that helped Grace.

C.2.1.2 Experiment 4: Condition C (ditransitive; DP-external)

(1) a. Today Emily took Eric to a beach that he had never been to.
b. Emily took Eric to a beach today that he had never been to.
c. Today Emily took him to a beach that Eric had never been to.
d. Emily took him to a beach today that Eric had never been to.

(2) a. Today Jessica brought Jason to a town that he had never heard of.
b. Jessica brought Jason to a town today that he had never heard of.
c. Today Jessica brought him to a town that Jason had never heard of.
d. Jessica brought him to a town today that Jason had never heard of.

(3) a. Today Lauren sent Adam to a shop that he had completely forgotten about.
b. Lauren sent Adam to a shop today that he had completely forgotten about.
c. Today Lauren sent him to a shop that Adam had completely forgotten about.
d. Lauren sent him to a shop today that Adam had completely forgotten about.

(4) a. Today Amanda introduced David to a game that he had never played.
b. Amanda introduced David to a game today that he had never played.
c. Today Amanda introduced him to a game that David had never played.
d. Amanda introduced him to a game today that David had never played.

(5) a. Yesterday Andrew drove Jennifer to a park that she had just discovered.
b. Andrew drove Jennifer to a park yesterday that she had just discovered.
c. Yesterday Andrew drove her to a park that Jennifer had just discovered.
d. Andrew drove her to a park yesterday that Jennifer had just discovered.

(6) a. Yesterday Ryan walked Anna to a class that she had recently enrolled in.
b. Ryan walked Anna to a class yesterday that she had recently enrolled in.
c. Yesterday Ryan walked her to a class that Anna had recently enrolled in.
d. Ryan walked her to a class yesterday that Anna had recently enrolled in.

(7) a. Yesterday Justin invited Nicole to a coffee shop that she had never tried.
b. Justin invited Nicole to a coffee shop yesterday that she had never tried.
c. Yesterday Justin invited her to a coffee shop that Nicole had never tried.
d. Justin invited her to a coffee shop yesterday that Nicole had never tried.

(8) a. Yesterday Kyle accompanied Grace to a protest that she had recently learned about.
b. Kyle accompanied Grace to a protest yesterday that she had recently learned about.

c. Yesterday Kyle accompanied her to a protest that Grace had recently learned about.
d. Kyle accompanied her to a protest yesterday that Grace had recently learned about.

C.2.1.3 Experiment 5: Condition C (ditransitive check)

(9) a. Today Emily took Eric's sister to his neighborhood park.
b. Today Emily took his sister to Eric's neighborhood park.
c. Today Emily took Eric to his neighborhood park.
d. Today Emily took him to Eric's neighborhood park.

(10) a. Today Jessica brought Jason's daughter to his former high school.
b. Today Jessica brought his daughter to Jason's former high school.
c. Today Jessica brought Jason to his former high school.
d. Today Jessica brought him to Jason's former high school.

(11) a. Today Lauren sent Adam's niece to his local farmer's market.
b. Today Lauren sent his niece to Adam's local farmer's market.
c. Today Lauren sent Adam to his local farmer's market.
d. Today Lauren sent him to Adam's local farmer's market.

(12) a. Today Amanda introduced David's mother to his new neighborhood.
b. Today Amanda introduced his mother to David's new neighborhood.
c. Today Amanda introduced David to his new neighborhood.
d. Today Amanda introduced him to David's new neighborhood.

(13) a. Yesterday Andrew drove Jennifer's brother to her rock climbing gym.
b. Yesterday Andrew drove her brother to Jennifer's rock climbing gym.
c. Yesterday Andrew drove Jennifer to her rock climbing gym.
d. Yesterday Andrew drove her to Jennifer's rock climbing gym.

(14) a. Yesterday Ryan walked Anna's uncle to her book signing event.
b. Yesterday Ryan walked her uncle to Anna's book signing event.
c. Yesterday Ryan walked Anna to her book signing event.
d. Yesterday Ryan walked her to Anna's book signing event.

(15) a. Yesterday Justin invited Nicole's grandfather to her favorite restaurant.
b. Yesterday Justin invited her grandfather to Nicole's favorite restaurant.
c. Yesterday Justin invited Nicole to her favorite restaurant.
d. Yesterday Justin invited her to Nicole's favorite restaurant.

(16) a. Yesterday Kyle accompanied Grace's father to her art studio.
b. Yesterday Kyle accompanied her father to Grace's art studio.

c. Yesterday Kyle accompanied Grace to her art studio.
d. Yesterday Kyle accompanied her to Grace's art studio.

C.2.2 Anchor items

(17) She said that Julie enjoys reading.

(18) Steven knows that Paige loves him.

C.2.3 Practice items

(1) Francesca showed Bill to his new desk.

(2) Richard cheered him up.

(3) Kaya promised Noah and Natalie that she would be invited.

(4) If he does well on the exam, Josh will pass.

(5) Kristen bought her a new set of chairs.

(6) Her brother visited Lisa at college.

(7) I saw him in Jacob's office.

(8) John's roommates met him at the restaurant.

(9) She misunderstood Abigail.

C.2.4 Fillers

(1) She took a nice picture of Courtney.

(2) Brian continued letting him down.

(3) James asked her about Claire's parents.

(4) Who did he say likes kayaking?

(5) Which friend that Chloe invited to her birthday party did she like best?

(6) Monica introduced Sean to his new trainer.

(7) Margaret still decided to invite her mom and her new partner for Christmas.

(8) While Luke was working in the backyard, he spotted two hedgehogs.

(9) Her father was impressed by Erin.

(10) In Mason's kitchen he keeps fresh herbs.

C.2.5 Sanity check items

C.2.5.1 Condition B

(1) a. Allison's mother always prioritized her.
b. Allison's mother always prioritized her.

(2) a. Hannah's aunt sometimes surprised her.
b. Hannah's aunt sometimes surprised her.

(3) a. Bella's sister eventually forgave her.
b. Bella's sister eventually forgave her.

(4) a. Rachel's daughter generally respected her.
b. Rachel's daughter generally respected her.

(5) a. Kevin's uncle often embarrassed him.
b. Kevin's uncle often embarrassed him.

(6) a. Jonathan's brother frequently corrected him.
b. Jonathan's brother frequently corrected him.

(7) a. Patrick's son rarely doubted him.
b. Patrick's son rarely doubted him.

(8) a. Troy's father immediately nominated him.
b. Troy's father immediately nominated him.

C.2.5.2 Condition C

(1) a. Allison added that she liked reggae.
b. She added that Allison liked reggae.

(2) a. Hannah wrote that she got a new job.
b. She wrote that Hannah got a new job.

(3) a. Bella mentioned that she studied cosmology.
b. She mentioned that Bella studied cosmology.

(4) a. Rachel insisted that she owned a turntable.
b. She insisted that Rachel owned a turntable.

(5) a. Kevin complained that he missed the train.
b. He complained that Kevin missed the train.

(6) a. Jonathan said that he brought pizza.
b. He said that Jonathan brought pizza.

(7) a. Patrick confessed that he stole a book.
b. He confessed that Patrick stole a book.

(8) a. Troy responded that he enjoyed architecture.
b. He responded that Troy enjoyed architecture.

C.2.5.3 Condition C + Reconstruction

(1) a. Allison said that near the fisherman, he saw a whale.
b. Allison said that near him, the fisherman saw a whale.

(2) a. Hannah said that behind the hunter, he heard a bear.
b. Hannah said that behind him, the hunter heard a bear.

(3) a. Bella said that in front of the tailor, he saw a moth.
b. Bella said that in front of him, the tailor saw a moth.

(4) a. Rachel said that ahead of the paperboy, he heard a dog.
b. Rachel said that ahead of him, the paperboy heard a dog.

(5) a. Kevin said that beside the maid, she noticed a mouse.
b. Kevin said that beside her, the maid noticed a mouse.

(6) a. Jonathan said that above the waitress, she spotted a spider.
b. Jonathan said that above her, the waitress spotted a spider.

(7) a. Patrick said that below the schoolgirl, she noticed a caterpillar.
b. Patrick said that below her, the schoolgirl noticed a caterpillar.

(8) a. Troy said that close to the nun, she spotted a snake.
b. Troy said that close to her, the nun spotted a snake.

Appendix D

A preliminary comparison of acceptability and coreference judgment tasks across binding phenomena in English

D.1 Introduction

This study aims to compare two binding tasks, the acceptability judgment task and the coreference judgment task, in their ability to detect violations of Conditions A, B, and C in English. Given the extensive use of both tasks in linguistic research, a comparative study is both warranted and holds the promise of providing valuable new insights. Through a series of four experiments, this study offers a comprehensive analysis of the validity, performance, and statistical power of the two tasks. Our findings endorse several recommendations that can be used to plan new studies and assess the results of existing ones. It also contributes to the discussion about using the traditional linguistic methodology in large-scale formal experiments with naive participants.

Previous research on experimental syntax methodology (Sprouse and Almeida 2012a, Sprouse et al. 2013, Sprouse and Almeida 2017, Linzen and Oseki 2018, Marty et al. 2020) has focused mainly on the tasks that are used to compare grammatical and ungrammatical sentences. As a result, binding phenomena, despite their ubiquity in syntactic argumentation, were not included in these studies, since they often compare different readings of a grammatical sentence. For instance, BT Conditions control the coreferential interpretation by either enforcing it (Condition A) or blocking it (Conditions B and C) in a given syntactic configuration. Binding experiments, therefore, require a task that can assess the status of the coreferential interpretation.

Theoretical syntactic literature describes a two-step algorithm that is implemented in the acceptability judgment task (Chomsky 1981, Lasnik 1989).[90] Following this algorithm, a participant when given a sentence in (1), must first separate the coreferential reading in (1a) from the non-coreferential reading in (1b) and then assess the acceptability of (1a) in isolation. It is crucial that while Condition C renders the coreferential reading in (1a) as unacceptable, the non-coreferential reading in (1b) remains fully acceptable. Thus, the first, *metalinguistic* step of the algorithm during which the two readings are separated is an indispensable part of the task.

(1) He paid for Timothy.

a. *He$_i$ paid for Timothy$_i$. — coreferential reading

b. He$_j$ paid for Timothy$_i$. — non-coreferential reading

[90] Note that large-scale experimental binding studies using the acceptability judgment task are rare. One example is found in Temme and Verhoeven (2017).

In contrast, the experimental literature commonly employs a version of the coreference judgment task (Gordon and Hendrick 1997, Kazanina et al. 2007). In this task, participants see a sentence with two NPs marked in some way, and then indicate, using a scale, whether these NPs can be the same person or they must be different people. The modal statements "can be the same person" and "must be different people" describe the relationship between coreferential and non-coreferential readings. The former suggests that both readings are possible, while the latter indicates that the coreferential reading is not available, as in (1). It is important to note that by placing these statements at opposite ends of the same scale, we can infer the status of the coreferential interpretation without asking participants to engage in metalinguistic reasoning.[91]

Both the acceptability judgment task and the coreference judgment task come with their respective unique sets of analytic challenges and limitations. As noted above, the acceptability judgment task requires participants to use metalinguistic reasoning, specifically, the ability to concentrate on one reading while blocking the others. The skill necessary for this is usually taught (explicitly or implicitly) in introductory linguistics classes, but it may pose a challenge for populations that are not familiar with thinking about language in those terms. This skill is often accompanied by the idea that the acceptability ratings of different readings are independent. For instance, the rating of the non-coreferential reading in (1b) does not improve (nor does it impair) the rating of the coreferential reading in (1a) and vice versa.[92] Given that in a typical 2×2 experiment, the metalinguistic step is repeated at least 35–40 times and a non-coreferential interpretation similar to (1b) is available in all sentences, there is a risk that participants, if tired or distracted at any point during the experiment, may stop focusing on the coreferential reading and report the acceptability of a sentence under any interpretation, leading to a false positive.

On the flip side, the coreference judgment task is not suitable for most sentences involving Condition A violations such as (2), since the non-coreferential reading in it is ungrammatical.[93] The non-coreferential reading must be available, otherwise the modal statements appear undefined, irrespective of the status of the coreferential reading, which can potentially confuse some participants. One possible workaround for this issue is to use Condition A configurations that include a local antecedent that can license a reflexive in the non-coreferential reading as in (3).[94]

(2) Adam sometimes surprised himself.

a. Adam$_i$ sometimes surprised himself$_i$. coreferential reading

[91] The experimental literature offers several variations of this. Stockwell et al. (2021) give participants two distinct scales to evaluate the "naturalness" of each reading independently, while Keller and Asudeh (2001) offer a single scale for the non-coreferential reading only. It is clear that both reintroduce the metalinguistic aspect into the task.

[92] Kaiser and Runner (2023) suggest two remedies for the metalinguistic problem: creating a setting (primarily, in an offline experiment) where a participant and an experimenter can discuss practice items and related clarification questions and introducing 'catch trials' designed to detect that a participant is not following the instructions.

[93] One possible solution is described in Gordon and Hendrick (1997). They suggest adding an extra checkbox for participants to indicate that a sentence is ungrammatical, although this would make the task more complex again.

[94] Note that sentences like (3) contain another important confound since "uncle" counts as a possible intervener for "Adam" under the coreferential reading.

b. *Adam$_j$ sometimes surprised himself$_i$. non-coreferential reading

(3) Adam's uncle sometimes surprised himself.

a. Adam$_i$'s uncle sometimes surprised himself$_i$. coreferential reading
b. Adam$_j$'s uncle sometimes surprised himself$_i$. non-coreferential reading

The acceptability judgment task and the coreference judgment task are essential tools for investigating binding phenomena. As pointed out in the previous discussion, each of the tasks has its unique challenges, and, as a result, may interact differently with various binding phenomena. This suggests that an informed decision on which task to use may require a deeper understanding of the potential implications and ramifications of either option. However, we currently lack a needed systematic comparison of these two tasks across binding phenomena. The purpose of this preliminary report is to provide researchers with some guidance in selecting the task best suited to their research question, thus promoting robust and reliable results.

In the following sections, we analyze four distinct experiments, each a version of Experiment 3 from Chapter 4. Every experiment uses one of the two tasks (the acceptability judgment task and the coreference judgment task) and one of the two sets of BT Conditions (ABC and BC). Our comparison of the tasks is centered around filler items and pairwise sanity checks testing violations of Condition A, Condition B, Condition C, and Condition C under reconstruction.

In this investigation of the acceptability and coreference judgment tasks, we begin with an informal visual comparison of responses to different filler items, which cover a broad range of acceptability levels and binding configurations. This should give us an intuitive understanding of how the two tasks manage the binding phenomena at different points on their respective scales. Next, we estimate the effect sizes of 4 binding phenomena at the center of this study: Condition A, Condition B, Condition C, and Condition C + Reconstruction. We examine how the effect size of each binding phenomenon varies with the chosen task in two ways: through z-unit mean differences, where the data is normalized to a standard normal distribution ($\mu = 0, \sigma = 1$), and via Cohen's d, which measures the effect size independent of the scale, standardized by the population's standard deviation. During the next step, we conduct a Receiver Operating Characteristic (ROC) performance analysis on the same 4 phenomena. The ROC curve, a graphical representation of the performance of a binary classification system, is used to evaluate task performance by examining the relative trade-offs between the true positive rate and the false positive rate across all possible classification thresholds. Lastly, we carry out a series of resampling power simulations using the same 4 binding phenomena. The simulation-based power analysis yields estimates of the sample sizes required for each of the phenomena and for each task, given a chosen risk level of Type II errors (β), errors in which a false null hypothesis is not rejected. By further comparing the statistical detection rates of both tasks across binding phenomena of different magnitudes, we obtain a measure of each task's statistical power, thus allowing us to assess the sensitivity of the two tasks. Together, these methods offer a comprehensive and actionable comparison of the acceptability and coreference judgment tasks across several sentence types, which will prove useful to any experimental syntactician interested in binding experiments.

The remainder of this appendix is structured as follows: Section D.2 provides the relevant

statistical background and outlines the essential details about the statistical tests used in the study. Sections D.3 and D.4 discuss the experimental methodology used in the four experiments and present the results, respectively. Section D.5 summarizes the experimental findings and places them in the relevant methodological context.

D.2 Background

D.2.1 Visual comparison

We begin with a visual comparison of the filler items. This helps us to understand how different binding phenomena at different levels of acceptability are represented on the scales of the two tasks. We pay particular attention to the shape and median of response distributions. A unimodal distribution, which has a single prominent peak (mode), suggests a generally consistent response pattern. A bimodal or multimodal distribution, featuring multiple peaks, may suggest that different groups of participants interpret or respond to the task differently. Finally, a flat distribution, with a particularly wide spread of data points, may suggest uncertainty or confusion among participants when following the task. We also calculate the median of responses, which provides a robust measure of central tendency that is less affected by outliers.[95] Regardless of the shape or skewness of the distribution, the median indicates the point below and above which half of the observations fall, allowing us to compare distributions in a manner relatively unaffected by extreme responses.

We use density functions and histograms to visualize the response distributions. Density functions show the concentration of responses across the standardized scale and histograms show the frequency of particular responses. Alongside the visual tools, we use Hartigans' dip test (Hartigan and Hartigan 1985), a non-parametric test of unimodality that calculates the maximum discrepancy between the observed distribution and the best-fitted unimodal distribution. This test provides a measure of how much the data deviates from a unimodal distribution, which in our case translates into the likelihood of different response modes among participants. The dip statistic D is defined as follows:

$$(4) \qquad D = \max_x \left\{ \max \left[\hat{F}_n(x) - GCM(x), LCM(x) - \hat{F}_n(x) \right] \right\},$$

where $\hat{F}_n(x)$ is the empirical cumulative distribution function and $GCM(x)$ and $LCM(x)$ are the greatest convex minorant and the least concave majorant of $\hat{F}_n(x)$, respectively.[96] Once

[95] As a reminder, median is the exact middle point in an ordered data set that is calculated using the following formula:

$$(i) \qquad \text{med}(X) = \frac{1}{2}(x_{\lceil \frac{n}{2} \rceil} + x_{\lfloor \frac{n}{2} \rfloor + 1}),$$

where x_i refers to the i-th value in the vector X with n data points sorted in ascending order, $\lceil n/2 \rceil$ is the smallest integer that is greater than or equal to $n/2$, and $\lfloor n/2 \rfloor$ is the largest integer that is less than or equal to $n/2$.

[96] See Wasserman (2006) and Shorack and Wellner (2013) for the definitions and discussion of various applications.

calculated, D is then compared to the critical value obtained through r samples from a simulated unimodal distribution to calculate the p-value of the empirical distribution being unimodal.

Visual comparison is a simple yet powerful tool that provides an initial intuitive grasp of how the tasks perform under different binding conditions and across their respective response scales. It is an important exploratory tool that highlights unusual patterns, trends, and potential outliers, which may suggest areas for further investigation. However, it provides an overview rather than precise quantification and should be complemented by more detailed analyses.

D.2.2 Comparison of effect sizes

The discussion in this and the following two sections centers on the comparison of the two binding tasks against four sets of minimal pairs, each representing a violation of Condition A, Condition B, Condition C, or Condition C under reconstruction. Here, we focus on comparing the effect sizes emerging from these binding phenomena in response to the two tasks.

The relationship between the task and the effect size across various phenomena is very nuanced and extends beyond the scope of this project (see Pashler and Wagenmakers 2012, Button et al. 2013, Maxwell et al. 2017). Nevertheless, the results of such a comparison can still be useful when designing experiments. For instance, if we know that using one task for testing some phenomenon results in a larger (observed) effect size than using the other task, the former can be used for studying subadditive effects, while the latter is more appropriate for studies expecting additive or superadditive effects, since it leaves adequate room on the scale for those manipulations. In this way, this comparison can be instrumental in choosing a suitable task.

We use two measures of effect size: mean difference (in z-scores) and Cohen's d. Both statistics quantify the magnitude of differences between groups, but do so in slightly different ways and serve complementary purposes. Z-scores are a measure of how many standard deviations a data point deviates from the mean of the distribution. In our context, the formula for z-scores is as follows:

$$z_{ij} = \frac{x_{ij} - \mu_j}{\sigma_j}, \tag{5}$$

where x_{ij} is the i-th data point from participant j, and μ_j and σ_j are the mean and standard deviation of j's responses, respectively. Z-scoring standardizes the values of a distribution to have a mean of 0 and a standard deviation of 1. Applied within participants, it removes individual biases while using the scale. We then calculate the difference of mean z-scores for different conditions between participants. Juxtaposing those values from different tasks allows us to compare effect sizes measured on different scales since it eliminates any impacts from the scales themselves.

We also calculate Cohen's d, a measure of the effect size that quantifies the standardized difference between two means, regardless of the scale of measurement. It can be computed using the following formula:

$$d = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{\dfrac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}}, \tag{6}$$

where $\overline{x}_1$ and $\overline{x}_2$ are the means, s_1 and s_2 are the standard deviations, and n_1 and n_2 are the sample sizes of the two conditions. Cohen's d measures the differences between the means of two groups, normalized by the pooled standard deviation, which averages the standard deviations of both groups. This allows comparisons that are also unaffected by the scale of the data.

Using both z-score mean differences and Cohen's d together gives us a more robust and informative comparison of effect sizes across tasks and binding phenomena than relying on just one. Typically, the two measures align very closely since they both quantify scale-free differences between the means of two groups of responses. However, sometimes z-scores and Cohen's d may disagree on the effect size due to differences in how they handle variance in the data.

Z-scoring relies on the standard deviation to standardize individual data points, and so the presence of individual outliers can directly affect the resulting z-scores. For example, if a data set has an overall small standard deviation and also a couple of extreme outlier responses, this can lead to larger z-scores for any given deviation from the mean, which, when averaged, would show up as a smaller mean difference of z-scores and thus underestimate the 'true' effect size. In the same situation, the value for Cohen's d would be larger since it is only sensitive to the relative variability within each group (by using pooled standard deviation). However, an important aspect to keep in mind when interpreting Cohen's d is that when variability within groups is low, even a modest difference in group means can result in a large value of Cohen's d. This does not necessarily mean that the 'true' effect size is large.

In the inverse situation, when the within-group variance is large, z-scores that do not explicitly account for the group-level variance can overestimate the effect size, while Cohen's d, which incorporates this type of variance, would be noticeably smaller. Therefore, if we find that z-scores and Cohen's d are notably different for a certain binding phenomenon and a certain task, the directionality of this discrepancy may tell us something about the group-level variance in the data and, therefore, indirectly, about the task that was used to produce it.

In summary, by using both z-scores and Cohen's d in a comparison of effect sizes across the two tasks, we can better understand the impact of the task on the data, which can help navigate the selection of the task when planning new experiments.

D.2.3 ROC curve performance analysis

When considering a task for a new experiment, a researcher may want to know how well participants can differentiate between conditions when following the instructions of that task. To answer this, we need to shift our focus from a regression problem to its logical inverse, a classification problem. A regression problem is looking to predict a continuous output (e.g. z-scores) from input examples based on their features. The output space of a regression problem is often infinite. A typical experiment constitutes a regression problem since it tests whether some feature (i.e. an experimental factor) is a good enough regressor for predicting the output. An example of this is shown in (7a). In a classification problem, the goal is to predict a discrete label or category for an input example using a continuous output. The output space for a classification problem is typically finite (and often quite small). This is shown in (7b).

(7) a. `zscore ~ structure + (1|participant) + (1|item)` regression
b. `structure ~ zscore + (1|participant) + (1|item)` classification

It should be clear that solving both problems for the same phenomenon at the same time is impossible.[97] If instead we pick a few well-established phenomena (e.g. Conditions A, B, and C and Condition C under reconstruction), we can directly compare participants' performance as they classified experimental items according to the instructions of one or another task. In essence, when a group of participants follows a specific task, they generate a classification of the stimuli. This classification is then compared to the ideal classification encoded in the experimental design, and the match/mismatch between them provides a measure of the task performance.

The Receiver Operating Characteristic (ROC) analysis methodology is widely used in medicine and machine learning to evaluate classifier performance (Hanley and McNeil 1982, Swets 1988, Bradley 1997, Fawcett 2006). ROC analysis of a classification starts by creating a confusion matrix (also known as the *contingency table*) as shown in Table D.1. In our case, the "predicted" classes correspond to the results of the classification under consideration, while "actual" classes contain the ideal classification, i.e. sentences that do not include a binding violation are considered "actual positives" and ones that do include one become "actual negatives".

	Actual positive	Actual negative
Predicted positive	True positive	False positive
Predicted negative	False negative	True negative

Table D.1: A confusion matrix for a binary classification problem

In the next step, the true positive and false positive rates are calculated as follows:

(8) a. $$\text{True positive rate} = \frac{\text{True positive}}{\text{Actual positive}} \quad \text{(TPR)}$$

b. $$\text{False positive rate} = \frac{\text{False positive}}{\text{Actual negative}} \quad \text{(FPR)}$$

Following the computation of TPR and FPR, an important step in the ROC analysis is to define and vary a threshold for the classifier. This threshold represents the cut-off point at which a classifier distinguishes between two classes. TPR and FPR are then calculated for each threshold value. The ROC curve, which plots TPR against FPR for various threshold values, provides a visual representation of the performance of the classifier as its discrimination threshold is varied.

Finally, the area under the ROC curve (AUC-ROC), which measures the classifier performance across all possible thresholds, can be calculated using the following formula:

(9)
$$\text{AUC-ROC} = \int_0^1 \text{TPR}(\text{FPR}^{-1}(x))\,\mathrm{d}x$$

[97] In some cases, it may be necessary to optimize both solutions concurrently; see Ruder (2017) for an overview.

Figure D.1 shows an ROC curve for a perfect classifier with the AUC-ROC value of 1. This classifier is able to identify all true positives and avoid all false positives at the same time.

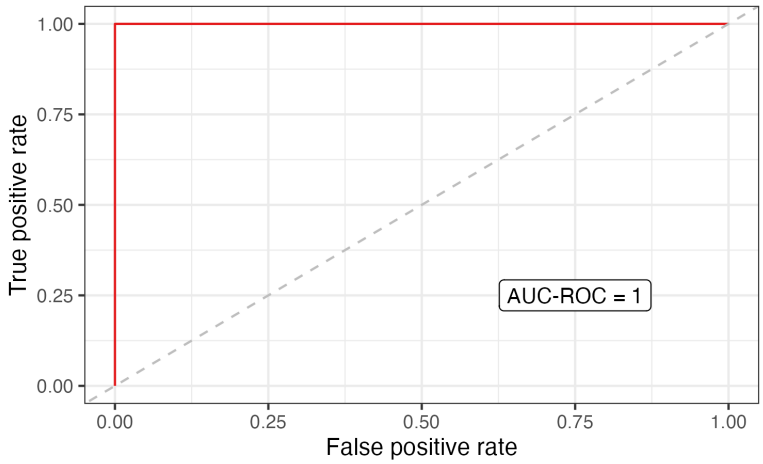

Fig. D.1: A sample ROC curve of a perfect classifier

ROC analysis provides a clear and systematic approach to evaluating task performance. By comparing the ROC curves of different tasks, we can identify the one that offers better differentiation between conditions, leading to more accurate results in future experiments.

D.2.4 Power analysis

When planning an experiment, it is important to think carefully about the number of participants to recruit. The size of the sample can affect the overall cost of the study. More importantly, it is directly related to the likelihood of missing a true effect if one exists. Thus, oversampling can lead to unnecessary spending, while undersampling runs the risk of missing a valuable theoretical result. Ideally, when getting a null result, we want to feel confident that it is a genuine null effect rather than a consequence of an inadequate sample size. The choice of task for an experiment can influence the required sample size since different tasks can vary in their sensitivity, leading to different effect sizes for the same phenomenon.

The statistical framework of Neyman-Pearson hypothesis testing (NPHT) (Neyman and Pearson 1928a,b, 1933) provides a formal structure to address the undersampling problem (see Sprouse and Almeida (2012b, 2017) for a detailed discussion of this problem in different statistical frameworks). NPHT sees hypothesis testing as the process of making a decision between the null hypothesis (H0) and the alternative hypothesis (H1). Depending on the true state of the world, NPHT distinguishes two types of errors: Type I and Type II. Type I error, or a false positive, is the incorrect rejection of a true null hypothesis.[98] Type II error, or a false negative,

[98] Note that the ROC curve performance analysis discussed in the previous subsection does not provide a separate estimate of Type I error, but instead it analyzes a measure related to it. An ROC curve plots TPR (true positive rate) against FPR (false positive rate) over a range of decision thresholds. FPR can be interpreted as the probability of a false positive, or a Type I error. An ROC curve illustrates the balance between TPR and FPR, which includes

occurs when we fail to reject a false null hypothesis. This is summarized in Table D.2.

The state of the world	Test result	Outcome
H0 is true	Keep H0	True negative
H0 is true	Reject H0	Type I error (false positive)
H1 is true	Keep H0	Type II error (false negative)
H1 is true	Reject H0	True positive

Table D.2: Type I and Type II errors in Neyman-Pearson hypothesis testing

NPHT sheds light on the relationship between undersampling and Type II error. Type II error arises when H1 is true of the world, but we (incorrectly) choose to keep H0. This can occur when the sample size of the experiment is insufficient to detect the effect. Therefore, increasing the sample size will reduce the chance of a Type II error. This naturally leads to the notion of statistical power, the probability of a test rejecting H0 when H1 is true of the world (Cohen 1988). Statistical power and Type II error are inversely related: a test with high statistical power has a lower probability of committing a Type II error.

Statistical power depends on the sample size, but also on the effect size and the significance level. The effect size measures the strength of a phenomenon, which can vary depending on the task (see Section D.2.2 above). The significance level (α) is the probability of rejecting H0 when it is true, i.e. a Type I error. As a rule of thumb, a larger effect size, a larger sample size, and a higher significance level increase the power. However, one must be cautious applying this rule to an experimental design, as increasing the significance level can also raise the risk of Type I error. The relationship between all three is summarized in Figure D.2.

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the consideration of Type I errors in a broader evaluation of participants' performance when following the task.

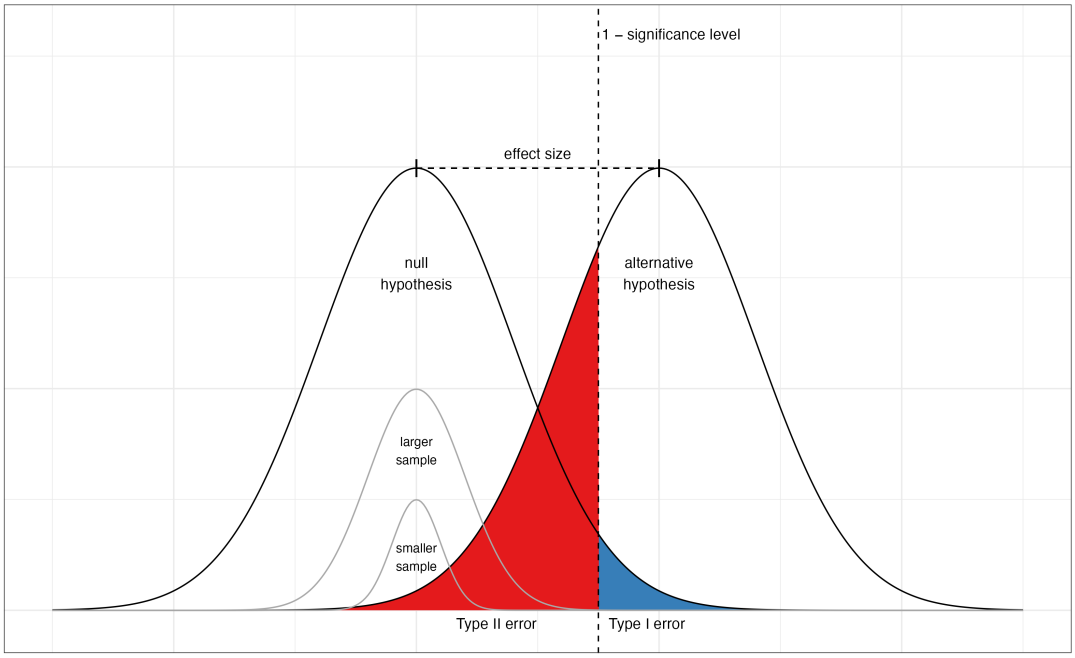

Fig. D.2: An illustration of a relationship between possible outcomes of the test statistic and Type I and Type II errors, the effect size, the sample size, and the significance level

Power analysis provides a robust way to estimate an experiment's statistical power given the effect size, sample size, and significance level. One approach to estimating statistical power is through power simulations. This involves running the same statistical test (e.g. a linear mixed-effects model) multiple times for different random subsamples drawn from the same experimental sample. A typical resampling power simulation includes the following steps:

1. Specify a model with the significance level and the effect size of interest.
2. From the full experimental sample, draw a random subsample of size n using resampling with replacement.
3. Fit the model to the new subsample and test the null hypothesis at the specified significance level.
4. Repeat steps 2 and 3 r times, each time with a different subsample of the same size.
5. Estimate the power for the sample size n as the proportion of times the null hypothesis is rejected for the samples of that size.
6. Repeat steps 2–5 for all sample sizes of interest.

For the purpose ot task comparison, power simulations help us navigate the likelihood of correctly rejecting H0 (i.e. statistical power) across a range of sample sizes and identify the minimum sample size necessary to achieve a desired level of power, given a certain effect size

and significance level. Both types of information are valuable when reviewing existing work and designing new experiments. Thus, comparing power simulations from several basic binding phenomena gives us a more nuanced understanding of the two tasks.

In the power simulations discussed below, we focus on four binding phenomena, three of which have very large effect sizes, namely, Conditions A, B, and C). These phenomena, although fundamental for binding, do not represent the full spectrum of the potential effects of interest. In fact, it is likely that most binding phenomena have smaller effect sizes than those three. Thus, using only the power estimates for large effect sizes when choosing the sample size for a new experiment may lead to undersampling (again) when studying phenomena with medium or small effect sizes. To mitigate this, we adopt a practical significance approach that uses the concept of Smallest Effect Size of Interest (SESOI); see Kumle et al. (2021) for a discussion and related references. SESOI is defined as the smallest effect that would be considered theoretically interesting in the context of a research question. For the purposes of this preliminary report, we set SESOI at 80% for all estimates (β for the linear mixed effects models) during power simulations for Conditions A, B, and C. By setting the SESOI limit this low, we can be sure that our power simulations, if used for planing new experiments, give a more conservative effect size estimate that would be adequate for most medium and large effects.

D.3 Methods

The four experiments reported here test two different binding tasks: the acceptability judgment task and the coreference judgment task. Each task is evaluated against a range of binding configurations. From the four experiments, two (one for each task) test structures that either satisfy or violate Conditions A, B, and C. The other two experiments only use Conditions B and C.

Exp. #	Task type	BT Conditions
1	acceptability	ABC
2	acceptability	BC
3	coreference	ABC
4	coreference	BC

Table D.3: Classification of experiments based on the task and BT Conditions tested

D.3.1 The tasks

The exact task instructions used in the corresponding pairs of experiments are as follows:

(10) **The acceptability judgment task**
Your task is to imagine that the speaker intended the two underlined words to refer to the same person, and then judge whether this is a grammatical sentence of English. You will rate the sentence on a scale from 1 (Ungrammatical) to 7 (Grammatical).

(11) **The coreference judgment task**

Your task is to determine whether the two underlined words could refer to the same person or whether they must refer to different people. You will rate this from -3 (they must refer to different people) to 3 (they could refer to the same person).

D.3.2 Materials

All four experiments in this study contain the same experimental items described in Experiment 3 from Chapter 4. For the purpose of the task comparison, the experimental items, as well as practice items and anchor items, are excluded from further analysis. Our primary focus here is on the filler items and the sanity check items, which, formally, constitute 2×1 experiments. Full lists of all items are found in Appendices C and E.

D.3.2.1 Fillers

Sets of examples shown in (12) through (14) contain the filler items used in all four experiments, organized by BT Condition. The labels of the fillers reflect their target BT conditions and their expected ratings on a 1–7 scale, e.g. "A2" is a Condition A sentence with an expected rating of 2. To the right, it shows the source of the corresponding sentence type.

We used 8 fillers in the ABC experiments and 10 fillers in the BC experiments. To replace 3 Condition A fillers from the ABC experiments, 1 filler for Condition B (B5) and 2 fillers for Condition C (C2 and C5) were used in the BC experiments. 2 additional fillers (B7 and C3) were included in the BC experiments in place of 2 Condition A sanity check items.

(12) Condition A

A2. Chloe invited Claire to challenge herself. (Reinhart and Reuland 1993)
A5. Margaret expects stories about herself to be flattering. (Chomsky 1981)
A7. Natalie found herself in an awkward situation. (Chomsky 1981)

(13) Condition B

B1. Brian continued letting him down. (Heim 1983)
B3. Who did he say likes kayaking? (May 1985)
B5. In Mason's kitchen he keeps fresh herbs. (Gordon and Hendrick 1997)
B6. Monica introduced Sean to his new trainer. (Gordon and Hendrick 1997)
B7. Margaret still decided to invite her mom and her new partner for Christmas. (Safir 1999)

(14) Condition C

C1. She took a nice picture of Courtney. (Fiengo and May 1994)
C2. James asked her about Claire's parents. (Gordon and Hendrick 1997)
C3. Her father was impressed by Erin. (Gordon and Hendrick 1997)
C5. Which friend that Chloe invited to her birthday party did she like best? (Van Riemsdijk and Williams 1981, Sportiche 1997)
C7. While Luke was working in the backyard, he spotted two hedgehogs. (Reinhart 1976)

D.3.2.2 Sanity check items

In Chapter 4, three out of the four binding phenomena discussed here were introduced as sanity checks for Condition C experiments. For both clarity and continuity, we keep the term 'sanity check items' for them (and extend it to include the fourth). However, it is important to note that for the purpose of this task comparison, these phenomena transition from serving a supplementary role to being the primary focus of our interest. The ABC experiments include all four sanity checks, while the BC experiments use only three sanity checks excluding Condition A.

All four sanity checks are testing minimal pairs. In other words, they all use a 2×1 experimental design: the control condition satisfies the corresponding BT Condition, while the experimental condition violates it. In this design, all structural changes contributing to the violation feed into the same fixed effect. This includes increasing the length of the binding dependency, changing the structural position of the head of the binding dependency, swapping two NPs between the positions of the head and the tail of a binding dependency, and keeping a potential intervener in the structure. Because of that, in all four sanity checks, we use the same two levels of the factor dubbed STRUCTURE: 'no violation' and 'violation'.

An example of a minimal pair from the Condition A sanity check is shown in (15). These sentences contrast a binding dependency that consists of a reflexive in the object position and a local subject NP (the no-violation condition) and a binding dependency including a reflexive and a possessor of a local subject (the violation condition). In the latter case, the lack of c-command between the coreferential possessor and reflexive constitutes a Condition A violation, which may also be combined with an effect from having an intervener in the structure. If participants ignore the coreferential interpretation, the sentence in the violation condition should be fully acceptable since there is a potential local antecedent. Across all items, both the subject and the possessor are matched in gender to make sure that both NPs can serve as a potential antecedent for the reflexive. This guarantees that, in the acceptability judgment task, participants who neglect the metalinguistic step are going to report the violation condition as fully acceptable, while, in the coreference judgment task, it ensures that the sentence with the non-coreferential reading is grammatical and thus does not undermine the modal statement "can be the same person".

(15) Sanity check: Condition A

a. Bella's sister eventually forgave herself. — no violation
b. Bella's sister eventually forgave herself. — violation

Shown in (16) is a sample minimal pair from the Condition B sanity check. This pair contrasts two binding dependencies. In the no-violation condition, the tail of the dependency is a pronominal in the object position and the head is a referential NP in the position of the possessor of a local subject. In the violation condition, the referential NP heading the binding dependency is in the subject position and, as a result, the pronominal is c-commanded by a coreferential NP within its local domain, which causes a Condition B violation. Similar to the Condition A sanity check, the possessor and the subject NPs are matched in gender. This allows the sanity check to focus on the structural component of the Condition B violation.

(16) Sanity check: Condition B

a. Hannah's aunt sometimes surprised her. no violation
b. Hannah's aunt sometimes surprised her. violation

(17) shows a sample minimal pair from the Condition C sanity check. Within this pair, we compare two binding dependencies that are mirror images of each other. In the no-violation condition, an R-expression is the head of the dependency and a pronominal is the tail, while both occur in the subject position of the matrix and embedded clause, respectively. In the violation condition, the two NPs are swapped. Since an R-expression is c-commanded by a coreferential pronoun, we expect to find a Condition C violation. In this design, both the dependency reversal and the Condition C violation costs feed into the fixed effect of STRUCTURE.

(17) Sanity check: Condition C

a. Allison added that she liked reggae. no violation
b. She added that Allison liked reggae. violation

Finally, (18) contains the minimal pair of condtions from the Condition C + Reconstruction sanity check. Similar to the Condition C sanity check, two binding dependencies in (18) are mirror images of each other. In the no-violation condition, the head of the binding dependency is an R-expression, while a pronoun inside the fronted PP is the tail. In the violation condition, the two are swapped. After Reinhart (1976), Bruening and Al Khalaf (2019), we expect a fronted PP to obligatorily reconstruct to its base position, causing a Condition C violation for the R-expression-first dependency.

(18) Sanity check: Condition C + Reconstruction

a. Rachel said that [PP ahead of him], the paperboy heard a dog ~~PP~~. no violation
b. Rachel said that [PP ahead of the paperboy], he heard a dog ~~PP~~. violation

In this design, both conditions in (18) share the costs associated with fronting a PP to the edge of IP and then reconstructing it back to the base position. Those costs are expected to push both conditions closer to the lower end of the scale, reducing the room left for the Condition C violation. Furthermore, the linear order effect that we observed in Experiment 5 in Chapter 4 also reduces the space on the scale for identifying Condition C, since it pushes the pronoun-first no-violation condition down and closer to the violation condition. As a result, in this configuration, we expect the effect size of a Condition C violation during reconstruction to be small.

D.3.3 Anchor items and practice items

Both ABC and BC experiments use 2 anchor items and 9 practice items. Sets of items for different types of experiments are shown in (19) and (20) along with the label indicating the associated BT Condition and an expected rating on the 1–7 scale, similar to the filler items.

(19) ABC experiments

a. Anchor items
C1. She said that Julie enjoys reading.

A7. Paige promised herself to walk to work.

b. Practice items
   C1. He misunderstood Richard.
   B2. Kristen bought her a new set of chairs.
   C3. I saw him in Jacob's office.
   A4. She likes her family, but herself, Claire simply adores.
   C5. Her brother visited Lisa at college.
   B6. If he does well on the exam, Josh will pass.
   A7. Francesca introduced herself.
   A1. Abigail's cousin respects herself.
   B7. John's roommates met him at the restaurant.

(20) BC experiments

a. Anchor items
   C1. She said that Julie enjoys reading.
   B7. Steven knows that Paige loves him.

b. Practice items
   B1. Richard cheered him up.
   B2. Kristen bought her a new set of chairs.
   C3. I saw him in Jacob's office.
   B4. Kaya promised Noah and Natalie that she would be invited.
   C5. Her brother visited Lisa at college.
   B6. If he does well on the exam, Josh will pass.
   C7. Francesca showed Bill to his new desk.
   C1. She misunderstood Abigail.
   B7. John's roommates met him at the restaurant.

D.3.4 Survey composition

The surveys in both ABC and BC experiments comprise a total of 33 items. In ABC experiments, they are organized as follows: 9 practice items in fixed order are followed by a pseudorandomized sequence of 8 experimental items, 8 fillers, and 8 sanity check items, with 2 items per sanity check. For BC experiments, the item distribution slightly differs: after 9 practice items in a fixed order, the pseudorandomized sequence includes 8 experimental items, 10 fillers, and 6 sanity check items (2 items per sanity check). A Latin square procedure is used to distribute both experimental items and sanity check items among the experimental lists. To further control for order effects, 4 counterbalanced orders are imposed on the 8 lists of each experiment.

D.3.5 Participants and presentation

We recruited a total of 280 participants for the 4 experiments, with each experiment assigned a subset of 70 participants. All participants were compensated for their time at an hourly rate of $15 per hour with an estimated completion time of 6 minutes. Each participant saw only one list of one experiment and all the experimental conditions in that experiment. Each sentence was

presented on a separate screen and had a separate scale next to it. Participants were also asked to complete a two-question language proficiency questionnaire. Based on the results of the questionnaire, a total of 3 participants per experiment were excluded either because US English was not their first language or because they grew up in a non-monolingual household. Importantly, their responses did not affect their compensation, thus eliminating the incentive for lying. The remaining 67 participants per experiment were self-reported native speakers of US English.

All experiments were conducted online using the Qualtrics survey platform. Participant recruitment was organized through Amazon Mechanical Turk, a crowd-sourcing platform, and CloudResearch, a recruitment facilitation service intended for academic research.

D.3.6 Analysis

All statistical analyses in this study were performed using R version 4.2.3 (R Core Team 2023). Several specialized R packages were used for different parts of the analysis. All plots were created using the `ggplot2` package (Wickham 2016). To identify non-unimodal distributions we applied Hartigans' dip test from the `diptest` package (Maechler 2021) with 100,000 iterations. While determining the effect sizes, we also incorporated information about the p-values. For each task and each sanity check, we constructed a linear mixed-effects model with STRUCTURE as a fixed effect and PARTICIPANT and ITEM as random effects (slope and intercepts) using the `lme4` package (Bates et al. 2015). Associated p-values were derived with the `lmerTest` package (Kuznetsova et al. 2017), leveraging the Satterthwaite approximation for degrees of freedom. ROC curve analysis was carried out using the `pROC` package (Robin et al. 2011). To ensure an accurate comparison across model classes, the classifier scores were standardized to z-scores. Lastly, power simulations for linear mixed-effects models were conducted using the `lme4` (Bates et al. 2015) and `mixedpower` (Kumle et al. 2021) packages. This includes 3000 simulations per sample size, spanning a range between 5 and 100 participants. For each simulation, a linear mixed-effects model was fitted to a newly resampled dataset with the critical value $z = 2$ for the test statistic. The smallest effect size of interest (SESOI) was set at 80% of β for each component.

D.4 Results

D.4.1 Visual comparison of fillers across the two tasks

Figure D.3 shows the histograms, density functions, and medians of the z-scored responses for all fillers in the four experiments. To complement this, Table D.4 provides the p-values and D statistics (shown in parentheses) from applying Hartigans' dip test to each filler in each experiment. The fillers for Conditions A, B, and C are listed in (12), (13), and (14), respectively.

		Acceptability judgment task		Coreference judgment task	
BT Condition	Label	ABC	BC	ABC	BC
Condition A	A2	.013(0.07)	NA	.686(0.038)	NA
	A5	.976(0.029)	NA	.885(0.033)	NA
	A7	.972(0.029)	NA	.681(0.039)	NA
Condition B	B1	.005(0.074)	<.001(0.09)	.382(0.046)	.661(0.039)
	B3	.212(0.051)	.094(0.057)	.82(0.035)	.99(0.027)
	B5	NA	.867(0.034)	NA	.996(0.023)
	B6	.849(0.034)	.993(0.025)	.161(0.053)	.93(0.032)
	B7	NA	.412(0.045)	NA	.006(0.074)
Conditon C	C1	.002(0.079)	.001(0.085)	.76(0.037)	.84(0.035)
	C2	NA	.062(0.06)	NA	.383(0.045)
	C3	NA	.004(0.076)	NA	.81(0.036)
	C5	NA	.903(0.033)	NA	.904(0.033)
	C7	.984(0.028)	.792(0.036)	.885(0.033)	.988(0.028)

Table D.4: The results of Hartigans' dip test for all fillers across all experiments

In Condition A, both acceptability and coreference judgment tasks yield similar median values across all items, except for A2, where acceptability produces a slightly higher value. Visual inspection suggests that A2 in the acceptability judgment task has a bimodal distribution, which is corroborated by the results of the dip test (p = .013). In contrast, all Condition A items in the coreference judgment task, along with A5 and A7 in the acceptability judgment task, appear to be unimodal, with p-values ranging from .681 to .976.

In Condition B, the fillers B3, B5, and B6 have similar median values in both tasks, while B1 gets a higher rating in the acceptability judgment task and B7 scores lower in the coreference judgment task, compared to their expected ratings. Visual inspection reveals that B5 and B6 have unimodal distributions in both tasks (p = .867 and .996 for B5 and .849/.993 and .161/.93 for B6 for both tasks). In contrast, B1 and B3 in the acceptability judgment task deviate from the unimodality (p = .005/<.001 for B1 and .212/.094 for B3), unlike in the coreference judgment task (p = .382/.661 for B1 and .82/.92 for B3). In the coreference judgment task, B7 is clearly not unimodal (p = .006), but it is difficult to determine whether it is bimodal or flat (or both). The source of this effect is also unclear and further investigation may be necessary.

In Condition C, we observe the most significant difference between the two tasks. In the coreference judgment task, the median values align closely with the expected ratings across the scale. However, in the acceptability judgment task, the medians of all items except C7 are grouped around 0. The distributions of C1–C3 appear to be bimodal, which is supported by the results of the dip test, suggesting that these distributions are not unimodal (p = .002/.001 for C1, .062 for C2, .004 for C3). The C5 distribution appears to be flat, and the dip test confirms that this distribution is indeed closer to being unimodal (p = .903). This flat distribution may be due to the participants' disagreement about the acceptability rating of weak crossover during *wh*-movement. In contrast, the same items in the coreference judgment task consistently show unimodal distributions, with the lowest p-value being .383 for C2.

Comparing ABC and BC experiments, the acceptability judgment task shows similar re-

sults with the exception of C1, which has a non-unimodal distribution (p = .001 and .002) but a median closer to 0 in the BC experiment. Coreference tasks remain consistent throughout the two experiments, except for B6, which appears much less unimodal in the ABC than in the BC experiment (p = .161 and .93 respectively).

In summary, the acceptability judgment task consistently shows greater variability in filler distributions compared to the coreference judgment task, which produces unimodal distributions across the entire scale and across different binding Conditions. Notably, in the acceptability judgment task, non-unimodal distributions are frequently found in the items with expected ratings in the lower portion of the scale, suggesting that some participants may be ignoring the metalinguistic part of the task and, instead of assessing the acceptability of a sentence under a coreferential interpretation, are simply reporting the general acceptability of a sentence.

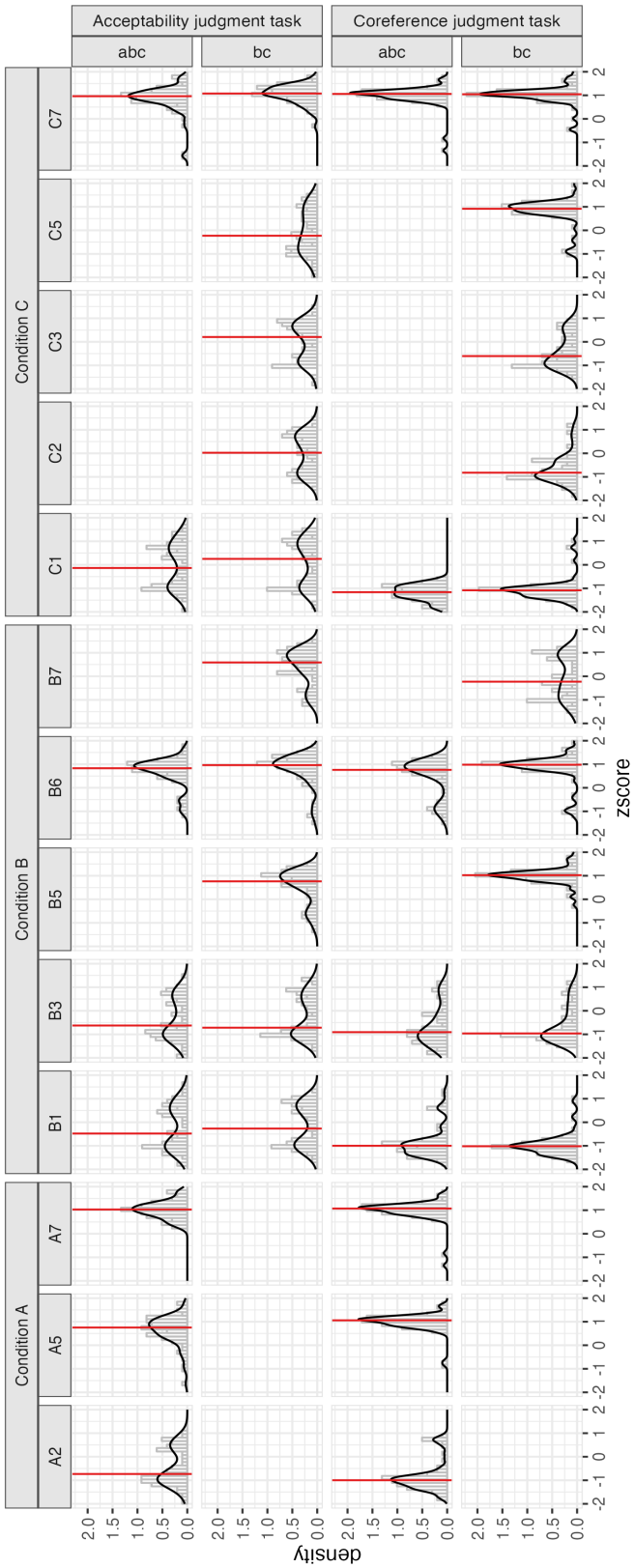

Fig. D.3: Fillers across different experiments

D.4.2 The effect sizes of different binding phenomena across the two tasks

Figure D.4 shows the mean differences in z-scores between conditions for each of the four sanity checks across the two tasks. The plots also include the numerical value of the mean difference, as well as Cohen's d, the number of participants, and the p-value for the fixed effect of STRUCTURE derived from the linear mixed-effects model.

We consolidated the data from the pairs of ABC and BC experiments that use the same task for three sanity checks: Condition B, Condition C, and Condition C + Reconstruction. Condition A is tested only in ABC experiments. The consolidation is justified by the similarity between the ABC and BC experiments, which have surveys of the same length with the same lists and orders and use mostly the same items. The only difference is that ABC experiments include Condition A items (3 fillers and 2 sanity check items), while BC experiments do not include Condition A items, but include 2 Condition B and 3 Condition C fillers instead.

No methods were used to identify uncooperative participants, so small fluctuations in variance are to be expected, including within-group variance. Because of that, when comparing effect size estimates, we ignore any discrepancies smaller than 0.2 (i.e. one small effect size).

In Condition A, the acceptability judgment task uncovers a statistically significant effect ($p < .001$, n = 67; at the significance level of $p < .05$) with a mean difference of 0.62 and an identical Cohen's d of 0.62, both indicating a medium effect size. In the coreference judgment task, the effect is also statistically significant ($p < .001$, n = 67) with a mean difference of 0.95 and Cohen's d of 0.89, suggesting a large effect. The matching values of effect size estimates for each task suggest that the participants' responses were consistent irrespective of the task.

In Condition B, we find a statistically significant effect in the acceptability judgment task ($p < .001$, n = 134) with a mean difference of 0.57 and Cohen's d of 0.56, which both suggest a medium effect size. The coreference judgment task produces a very large effect size (mean diff. = 1.29, Cohen's d = 1.22), which is also significant ($p < .001$, n = 134). Both effect size estimates align closely in both tasks, suggesting similar within-group variance in both tasks.

In Condition C, the acceptability judgment task revealed a large and significant effect ($p <$ .001, n = 134, mean diff. = 1.18, Cohen's d = 1.3). The coreference judgment task also identifies a significant effect ($p < .001$, n = 134) with a massive effect size (mean diff. = 1.93, Cohen's d = 3.46). In the coreference judgment task, we observe a much higher value of Cohen's d compared to the mean difference, which indicates a very small within-group variance, suggesting a high level of agreement among participants using this task.

In Condition C + Reconstruction, both effect sizes are much smaller than in the other sanity checks. The acceptability judgment task produces a small, non-significant effect (p = .096, n = 134, mean diff. = 0.17, Cohen's d = 0.17), while the coreference judgment task identifies a small, but significant effect (p = .004; n = 134, mean diff. = 0.29, Cohen's d = 0.26). Comparison of effect size estimates for each task indicates a similar amount of within-group variance.

Our results show that the coreference judgment task produces larger effect sizes across all sanity checks than the acceptability judgment task. Both tasks found significant effects in Conditions A, B, and C. In Condition C + Reconstruction, only the coreference judgment task uncovered a small, yet significant effect. The coreference judgment task also yields a much smaller within-group variance for Condition C, suggesting that it fits this task particularly well.

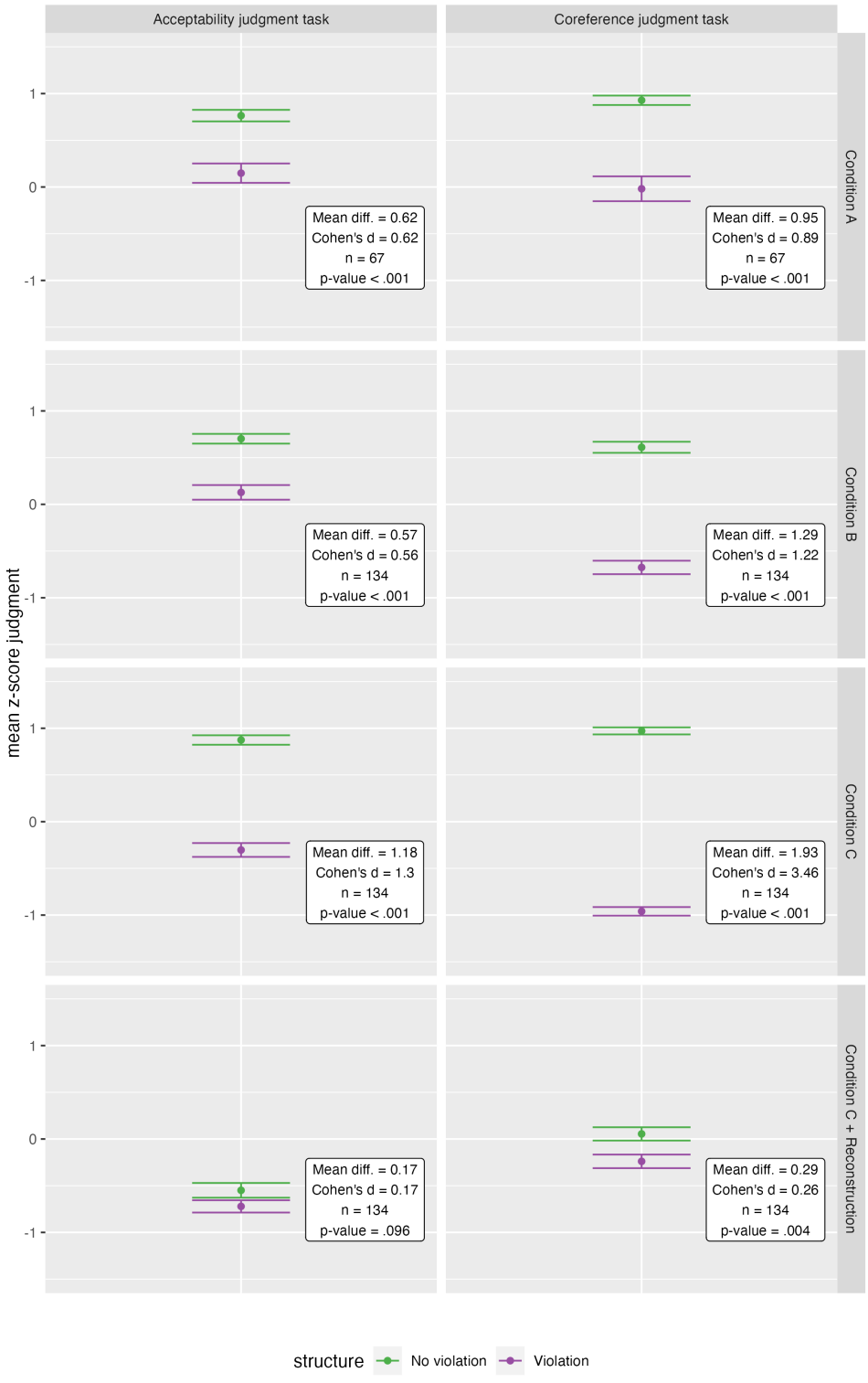

Fig. D.4: Effect sizes for the two tasks across several binding phenomena

D.4.3 The results of the ROC curve performance analysis for the two tasks

Figure D.5 shows the ROC curves for each sanity check and the corresponding AUC-ROC values for the two binding tasks. As a reminder, the closer the AUC-ROC value is to 1, the better the participants following the task instructions distinguish between the two classes of items, while an AUC-ROC value of 0.5 indicates that they have the same discriminative ability as a coin toss.

Across all conditions, the coreference judgment task consistently demonstrates superior discriminative ability compared to the acceptability judgment task. It shows slightly better performance in Condition A (AUC-ROC = 0.741 vs. 0.719), a substantial improvement in Condition B (AUC-ROC = 0.869 vs. 0.683), and near-perfect discrimination in Condition C (AUC-ROC = 0.982 vs. 0.86). Although both tasks receive lower AUC-ROC values in Condition C + Reconstruction, the coreference judgment task still outperforms the acceptability judgment task (AUC-ROC = 0.603 vs. 0.553).

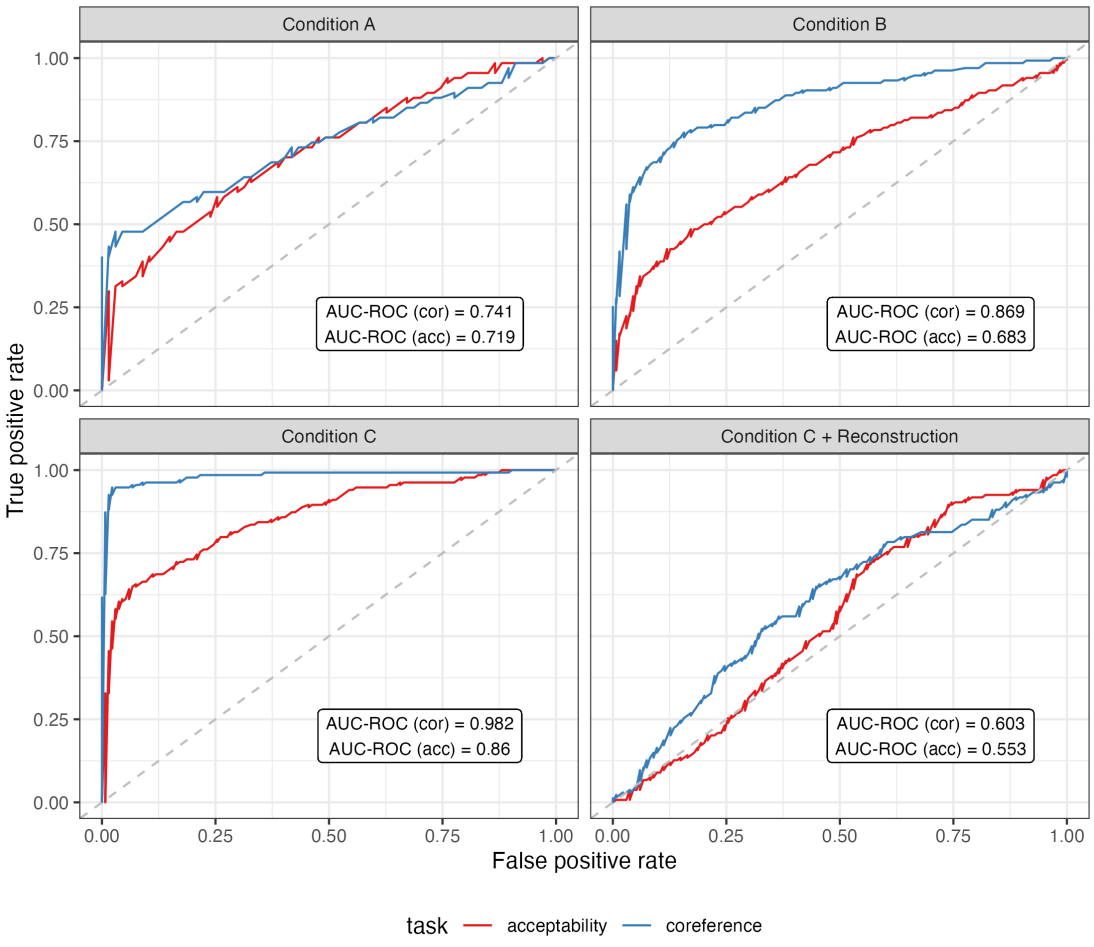

Fig. D.5: ROC curves for the two tasks across several binding phenomena

D.4.4 The results of the power simulations for the two tasks

Figure D.6 shows the results of the power simulations for the two tasks. We conducted 3000 simulations for each sample size across a wide range of sample sizes, from 5 to 100 participants, using a linear mixed-effects model with a critical value of $z = 2$. For Conditions A, B, and C, the smallest effect size of interest (SESOI) was set to 80% of the beta coefficients (β) for the fixed effect and the intercept. For Condition C + Reconstruction, unadjusted values of β were used. The simulations for each task under each condition were conducted separately.

In terms of the sample required to reach a recommended minimal threshold of 80% statistical power, all the sanity checks demonstrate the same trend for the two tasks. For Condition A, the acceptability judgment task requires 31 participants, while the coreference judgment task requires only 19. In Condition B, the acceptability judgment task needs 45 participants, compared to only 8 for the coreference judgment task. Condition C shows the lowest participant requirements, with 10 needed for the acceptability judgment task and just 5 for the coreference judgment task. For Condition C + Reconstruction, neither task achieved 80% power within the tested range of 5 to 100 participants, though the power of the acceptability judgment task increases more slowly than that of the coreference judgment task. Overall, the coreference judgment task consistently requires fewer participants to reach 80% power in the binding configurations tested.

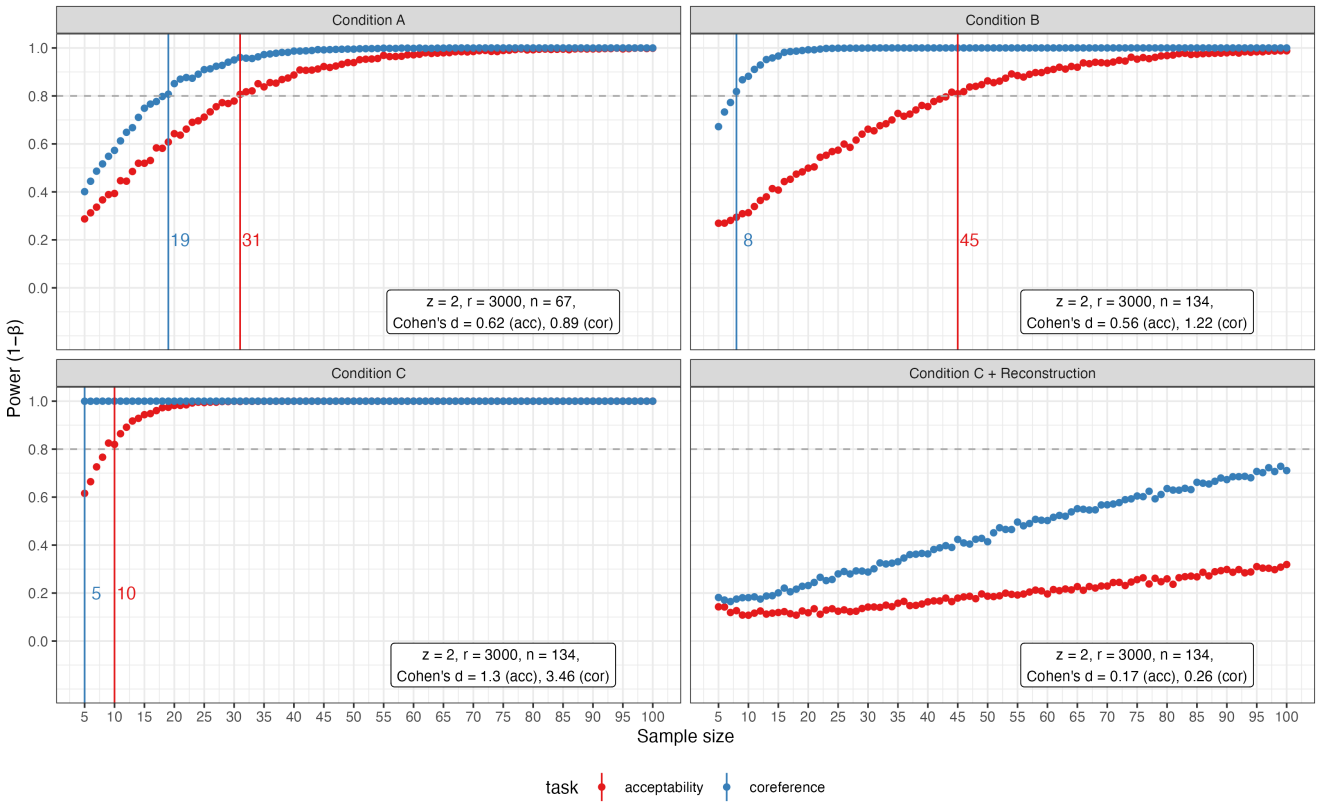

Fig. D.6: Power simulations for the two tasks across several binding phenomena

D.5 Discussion

In this study, we compared two binding tasks, the coreference judgment task and the acceptability judgment task, using several statistical techniques. Our results indicate that the coreference judgment task is superior in all respects. We saw that the coreference judgment task produced far fewer non-unimodal distributions for fillers, indicating that participants were able to follow the task instructions easily and get similar results each time. It also yielded larger effect sizes across all four binding phenomena that were tested using minimal pairs. Additionally, we discovered that the within-group variance for Condition C was particularly low when using this task, suggesting that the task is especially well-suited for studying Condition C and its subtypes. Furthermore, the task showed better performance across the same four binding phenomena and required a smaller sample size in each case.

In contrast, using the acceptability judgment task presents a number of serious challenges. We observed multiple non-unimodal distributions, especially among fillers with expected ratings in the lower part of the scale. One possible interpretation for this is that participants did not fully engage with the metalinguistic part of the task and instead reported the general acceptability of a sentence. Potential remedies for this situation include: incorporating a protocol to identify uncooperative participants, extending the training period to ensure that all participants understand all components of the task, and introducing the functionality for participants to contact the experimenter with clarification questions in real time. Finally, we found that the acceptability judgment task task produced smaller effect sizes and also needed larger sample sizes, but both of these trends might change if more participants followed the task instructions.

The overarching conclusion of our study is that the coreference judgment task offers more advantages for experiments that test binding phenomena. This is surprising, since the expected ratings for the fillers and the four phenomena tested with minimal pairs were all taken from the linguistic literature and were presumably generated by professional linguists using the same procedure as the acceptability judgment task. However, when naive participants are presented with the same task, it appears to be more difficult and therefore produces poorer results compared to the coreference judgment task. Nevertheless, the acceptability judgment task may still be necessary for research questions that explore possible interactions between binding phenomena and other grammatical phenomena that can only be assessed using acceptability, but not coreference. In all other cases, the coreference judgment task is the better option.

Appendix E

Supplementary materials for Appendix D

E.1 Sanity check items for Condition A

(1) a. Allison's mother always prioritized herself.
b. Allison's mother always prioritized herself.

(2) a. Hannah's aunt sometimes surprised herself.
b. Hannah's aunt sometimes surprised herself.

(3) a. Bella's sister eventually forgave herself.
b. Bella's sister eventually forgave herself.

(4) a. Rachel's daughter generally respected herself.
b. Rachel's daughter generally respected herself.

(5) a. Kevin's uncle often embarrassed himself.
b. Kevin's uncle often embarrassed himself.

(6) a. Jonathan's brother frequently corrected himself.
b. Jonathan's brother frequently corrected himself.

(7) a. Patrick's son rarely doubted himself.
b. Patrick's son rarely doubted himself.

(8) a. Troy's father immediately nominated himself.
b. Troy's father immediately nominated himself.