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Lost in space: Pronoun choice in English locative prepositional phrases

A DISSERTATION PRESENTED
BY
SHANNON GAEL BRYANT
TO
THE DEPARTMENT OF LINGUISTICS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN THE SUBJECT OF
LINGUISTICS

HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS
AUGUST 2022

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Lost in space: Pronoun choice in English locative prepositional phrases

ABSTRACT

This thesis investigates the choice between reflexive pronouns (e.g., *herself*) and personal pronouns (e.g., *her*) in the expression of subject coreference in English locative prepositional phrases. A persistent puzzle for syntactic theories of pronoun licensing, commonly known as binding theories, it has long been observed that both pronoun forms are generally permissible, raising the question of how English users decide which form to choose. Addressing this question sheds light not only on the nature of syntactic constraints determining pronoun licensing possibilities, but also on the non-syntactic factors that conspire to push preferences in one direction or the other, in particular factors relating to the meaning of the sentences in which the pronouns are contained.

The main empirical and theoretical contributions of this thesis are as follows. First, it reports two acceptability judgment experiments that clarify the extent to which preferences between subject-oriented pronoun forms in locative prepositional phrases depends on two factors previously suggested in the literature: the type of eventuality denoted by the sentence—whether possession, perception, or location change—and the type of spatial relation denoted by the locative prepositional phrase—whether it involves direct contact between figure and ground. Findings reveal that the reflexive is most natural in the expression of location change and direct contact while the personal pronoun patterns oppositely, resulting in an overall gradient preference pattern across locative prepositional phrase constructions.

Second, it provides a critical assessment of prior binding theoretic accounts of pronoun licensing in locative prepositional phrases and asks what our theories ought to look like in order to be compatible with the refined empirical picture. Through careful consideration of the syntactic parses that are possible for the types of sentences under consideration as well as the subject-oriented pronoun forms that are permitted within those parses, it is shown that binding theories which maintain strict complementarity between English reflexives and personal pronouns in locative prepositional phrases are untenable. Further ramifications for binding theories, specifically with respect to pronoun licensing within so-called small clauses, are also discussed.

Finally, it advances understanding of what drives the effects of event type and relation type on subject-oriented pronoun choice in locative prepositional phrases. The conclusion reached in discussion of binding theories is that syntactic constraints do not play an active role in determining preferences: both pronoun forms are syntactically permitted in all possible parses of the locative prepositional phrase in the sentences under investigation. Findings from a reference resolution experiment reveal that these factors are also not rooted in functional pressures relating to the relative expectedness of subject coreference: though acceptability ratings were found to depend on expectedness as measured in this experiment, with the reflexive being most favored when subject coreference is least expected, expectedness was found not to correlate with either event type or relation type.

The outlook at the close of this thesis is that the effects of event type and relation type signal that pronoun choice in English locative prepositional phrases crucially depends on the semantics of the sentences in question. Future directions for this line of research are discussed, namely studies probing the presence of a reflexivizing function in the derivation of these sentences as well as the dependency of pronoun choice on various aspects of event structure, including event trajectory and the nature of the participants involved.

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ACKNOWLEDGEMENTS

Contrary to my typical style, I will keep these acknowledgments on the shorter side, since no amount of writing can do justice to the profound gratitude I feel for everyone who had a hand in bringing this work into being.

This project would not have been possible without the guidance of my committee members: Isabelle Charnavel, Kate Davidson, and Jesse Snedeker. My research has benefited immensely from the diversity of approaches and perspectives they brought to the table, and I am especially grateful to have had the opportunity to work with such remarkable mentors and scholars.

To Isabelle I owe my interest in the problem of English pronoun choice, sparked in her Syntax II course during my first year of graduate school. We worked closely from that point forward, collaborating on research focusing yet another puzzle for binding theory, picture noun phrases. As both an advisor and coauthor, Isabelle struck the perfect balance between offering concrete guidance and encouraging growth and creativity, all the while endlessly instilling confidence in what I do.

To Kate I owe my outlook on empirical methods in theoretical linguistics that undergirds this project and my research more generally. Her remarkably insightful comments and questions have been crucial in shaping the questions I ask and the way that I ask them. I am also deeply thankful for the constant reassurance and support Kate offered throughout the dissertation process, especially at times when the finish line seemed impossibly out of reach.

To Jesse I owe my broader interest in the intersection of language and cognition, and an ever-growing excitement in psycholinguistic methods and perspectives. Conversations with Jesse have helped stoke my fascination with event structure in particular, and her attention to detail has made me a more rigorous and thoughtful researcher.

Beyond my core committee, I would like to extend my gratitude to Gennaro Chierchia for enriching discussions early in this project that I hope to build on as I pursue this research further. Many thanks are owed as well to Ray Jackendoff for countless hours puzzling over English pronouns, including pronouns in locative prepositional phrases, which helped kick off this investigation and continue to be a source of inspiration.

I count myself as incredibly fortunate to have been a part of Harvard Linguistics, and I would like to thank everyone in the department who helped me grow as a scholar and community member over the years. I am especially thankful for the friendship and support of my fellow graduate students, including my cohort-mates Yingtong Liu, Giuseppe Ricciardi, and Zachary Rothstein-Dowden, members of the Meaning and Modality lab, and especially Julia Sturm and Josh Martin, whose encouragement (and grammaticality judgments) were key to finishing this dissertation.

I would also like to acknowledge Harvard Mind Brain Behavior, which provided funding for the experimental work presented in this thesis, and to extend a special thanks to Sara Manning, who as an undergraduate research assistant helped to build several of the surveys.

Finally, it is impossible to overstate my gratitude for the unwavering support from my parents, Bob and Michele Bryant, and from Mohamad Saleh. Without you, none of this would have been possible.

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CHAPTER 1: INTRODUCTION

In English, both reflexive pronouns such as *herself* and personal pronouns such as *her* can be used to refer back to someone or something that was mentioned earlier in the sentence containing them. We see this for instance in the sentences in (1), where both forms refer back to the sentences subject.¹

- (1) a. Michele_i congratulated herself_i.
b. Michele_i said that Bob congratulated her_i.

Considering the functional overlap, how do English users decide which pronoun to use?

This question has received ample attention in several areas of language research over the last century. Work within the generative linguistic tradition, which serves as the theoretical starting point for this dissertation, has largely focused on characterizing the syntactic conditions under which each form can be used to convey a particular meaning. Syntactic theories of pronoun licensing, which I will refer to collectively as binding theories, take as their starting point structural contexts in which only one pronoun form is grammatically viable. Canonical cases of strict complementarity between reflexives and personal pronouns are illustrated in (2), where the pronouns serve as the direct objects of the verb *congratulate*.

- (2) a. Michele_i's brother congratulated her_i/*herself_i.
b. Michele_i congratulated *her_i/herself_i.

Work on these kinds of cases, both in English and beyond, has provided an illuminating lens into the structure of human language, motivating core theoretical notions such as

¹ Here and throughout this thesis, I use subscript letters (*i,j,k*) to indicate intended coreference between terms. Such subscripts are often treated as standing in for syntactically-represented indices, which are interpreted as bound variables at the syntax-semantic interface. I make no commitment to the syntactic reality of indices; for discussion on the place of indices in syntactic theory, see Reuland (2011).

c-command, locality, and argument structure. However, there are several places where the crisp grammaticality distinctions found in sentences such as (2a-b) appear to break down. One such place is in the complement of locative prepositional phrases, or LPPs. As shown in (3), both reflexives and personal pronouns can corefer with the sentence subject when embedded within an LPP.²

(3) Michele_i set a glass next to her_i/herself_i.

When it comes to accommodating subject-oriented pronouns in LPPs, binding theories can go in one of two directions. First, they can maintain that the same syntactic constraints that force complementarity in sentences such as (2a-b), which I will refer to as binding principles,³ also force complementarity in LPPs. Appearances to the contrary must then arise from the availability of more than one syntactic parse, with at least one licensing the reflexive and at least one licensing the personal pronoun. Second, they can relax the prediction of strict complementarity, either by allowing both forms to satisfy binding principles in certain contexts, or by restricting the contexts in which binding principle apply.

However, as Chomsky (1981:148) points out, the problem isn't simply finding a way to make LPP pronouns fit within one's preferred syntactic framework; rather, "the problem is to gain some understanding of the nature of these constructions." While the priority for binding theories has largely been to account for why both forms are allowed, as has long been observed in the literature, it is not the case that both forms are always equally favored. Preferences

² I will use the terms "corefer" and "coreference" to express referential identity between expressions, whether that identity is syntactically encoded (i.e., coreference through binding) or resolved in the discourse. Cf. Reinhart (1983), who uses "coreference" to refer specifically to referential identity that is not encoded via syntactic binding.

³ For convenience, I use *binding principles* to cover formal binding principles à la Chomsky (1981), the reflexivity principles of Reinhart & Reuland (1993), and economy constraints à la Rooryck & Vanden Wyngaerd (2007/2011).

between forms vary widely from one sentence to the next, and even from one speaker to the next. For some sentences, the choice seems pretty clear. In others, not so much.

The aim of this dissertation is to bring us closer to understanding by digging into two factors that have been proposed to play a sizeable role in driving preferences between pronouns in LPPs. The first is the type of event expressed by the sentence as a whole. I focus in particular on three event types: possession, perception, and location change, exemplified in (4a-c).⁴

- (4) a. Michele_i **had** some glitter on her_i/herself_i.
- b. Michele_i **noticed** some glitter on her_i/herself_i.
- c. Michele_i **poured** some glitter on her_i/herself_i.

The second is the type of spatial relation expressed by the LPP, namely whether the relation involves direct contact between figure and ground:

- (5) a. Michele_i poured some glitter **on** her_i/herself_i.
- b. Michele_i poured some glitter **next to** her_i/herself_i.

Both factors have been observed to have an effect on pronoun preferences. Bassel (2018, 2022) argues for a distinction between sentences that express location change and sentences that don't, with the former giving rise to a greater preference for the reflexive relative to the personal pronoun, as shown in (6) (see also Lees & Klima 1963, Wilkins 1988, Hestvik 1991, Rooryck & Vanden Wyngaerd 2007|2011 for example suggesting this divide).

- (6) a. The dog_i dropped the blanket on *him_i/himself_i.
 - b. The dog_i felt the blanket on him_i/?himself_i.
- (Bassel 2018:53)

According to Kuno (1987), use of the reflexive correlates with the expression of direct physical contact between figure and ground. This relationship is captured in the minimal pair in (7) (see also Faltz 1977|1985, Quirk et al. 1985, Rooryck & Vanden Wyngaerd 2007|2011).

⁴ Note that I use “event” and “event type” to include both stative and dynamic eventualities.

- (7) a. Corporal Crump_i pinned the medal onto *him_i/himself_i.
 b. Corporal Crump_i pinned the medal beside him_i/*himself_i.
 (Wechsler 1997:15)

Some proposals have sought to account for one or other factor within binding theory proper (see Bassel 2018, 2022 on event type, Rooryck & Vanden Wyngaerd 2007|2011 on relation type). Others have suggested functional sources for these factors, deriving from conventional use of the reflexive to express coreference when coreference is least expected (see Smith 2004 on event type, Lederer 2013 on relation type). Others still have taken these factors to signal that English pronoun choice is sensitive to the meaning of the sentence containing it, in particular how the referent of the pronoun fits into the event the sentence describes.

Part of the difficulty of determining what our account of LPP pronoun choice ought to look like is a fuzziness in the empirical picture we ultimately aim to capture. A look through the literature turns up ample variation in the acceptability ascribed to LPP reflexives and personal pronouns, even for very similar sentences. We see this for instance in (8), where both sentences express a perception event without direct contact between figure and ground.

- (8) a. Max_i saw a ghost next to him_i/himself_i. (Reinhart & Reuland 1993:686)
 b. John_i saw a plane above him_i/*himself_i. (Kuno 1987:65)

What's more, while some works have discussed one or other factor, event type and relation type have not been considered side-by-side, making it unclear whether and how these factors interact.

This dissertation addresses three questions. **First**, to what do event type and relation type affect preferences between subject-oriented reflexives and personal pronouns in LPPs? **Second**, What should our binding theories look like considering what we find in LPPs? **Third**, why do event type and relation type affect pronoun preferences the way that they do?

The first question is tackled in Chapter 2, where I present results from a pair of online acceptability judgment experiments showing that both factors do indeed play a significant role,

independently of one another. Consistent with the view from Bassel (2018, 2022), reflexives are generally preferred in location change sentences while personal pronouns are generally preferred in possession and perception sentences. Consistent with the view from Kuno (1987), reflexives fare better when contact holds between figure and ground while the personal pronouns shows the opposite pattern. Importantly though, preferences are never as stark as what we see in simple transitive sentences: neither pronoun form is entirely ruled out in any event type, nor in either relation type. Rather, what we find is a cline of more or less gradient preferences between reflexives and pronouns in LPPs, with relatively strong preferences in some cases, and relatively weak preferences in others.

These results provide a refined empirical backdrop for addressing the second question. Chapter 2 continues with an overview of prior binding theoretic treatments of LPP pronoun choice. The question we are left with, taken up in Chapter 3, is whether binding principles play an active role in determining subject-oriented pronoun choice in LPPs, that is, whether the overall gradient preference pattern reported in Chapter 2 arises from strict complementarity in one or more of the parses that are possible for LPPs in the sentences under investigation. We find that while multiple parses are independently motivated for at least some sentences, every parse available permits both pronoun forms. Importantly, this is so even when the LPP is part of a small clause structure, contrary to prediction of several existing theories.

This outcome allows us to whittle down our syntactic theory space in two ways. First, it rules out approaches that predict strict complementarity between reflexives and pronouns in LPPs once and for all. Second, it prompts a departure from theories that take the clause (more precisely, the minimal phrase containing a subject) to delimit the domain in which the reflexive may find an antecedent. This leg of the investigation also clarifies the structural facts surviving approaches need to account for and bears on our theories of small clauses/clause building more generally. This outcome also bears on the third question, revealing that binding principles are not behind the observed effects of event type and relation type on LPP pronoun choice. The

conclusion reached in Chapter 3 is that our best bet in accounting for the effects of event type and relation type is to look beyond the syntax of these sentences and to consider instead the meanings they convey.

The task is then to determine what it is about meaning that is making the difference. Chapter 4 explores the hypothesis coming from the functionalist literature that pronoun choice is determined in large part by the expectedness of subject coreference within the LPP, with the reflexive being favored when subject coreference is least expected (Smith 2004, Lederer 2013). To test this hypothesis, ratings from the acceptability judgment experiments are compared with the expectedness of subject coreference, measured as the likelihood of selecting the sentence subject in a binary-choice reference resolution experiment. Results reveal that expectedness does play a significant role in the predicted way: the more expected coreference with the subject is, the worse the reflexive relative to the personal pronoun. Importantly, though, expectedness is shown not to correlate with event type or relation type. While an important piece of the puzzle all its own, the effect of expectedness on pronoun preference operates above and beyond whatever lies at the heart of event type and relation type. What exactly is at the heart of these two key effects therefore remains an open question.

Chapter 5 concludes the present study by laying out future directions in pursuit of an answer to this question. It begins by introducing the possibility that pronoun preferences may be shaped by optional inclusion of a reflexivizing function within the sentence derivation, which necessitates use of the reflexive pronoun (cf. Ahn 2015). While additional work is necessary to determine whether there is evidence for inclusion for such a function in LPP sentences, I suggest that its occurrence would in any case have to be semantically constrained. This motivates discussion of prior work exploring the semantic side of LPP pronoun choice, with particular focus on how pronoun choice relates to the structure of the event the sentence describes. The view that emerges—and the one I would like to advocate for—is that event structure plays an important role in determining which pronoun form is favored in the expression of subject

coreference. In particular, the reflexive is favored over the personal pronoun whenever its referent fills two distinct roles in the event, such that the event is construed as having a circular event trajectory (Kuno 1987, Wilkins 1988, van Hoek 1997, Lederer 2013). The gradience found in Experiments 1 and 2 might then be attributed to fuzziness surrounding the categorization of events expressed by LPP sentences: the more similar an event is to “prototypical” reflexive events expressed by simple transitive sentences, the more likely it is to be described using the reflexive pronoun.

This outlook opens up room for future projects exploring the interplay between event structure and LPP pronoun choice, asking whether and to what extent different aspects of event structure feed into the preference pattern reported here. Not only can this work bear on our theory of pronoun choice in particular, pointing towards the import of meaning in determining choices alongside syntax and general processing factors. It also provides an important window into the way we think about events in space, and the interplay between event structure on the one hand, and linguistic structure on the other.

While this dissertation focuses specifically on the effects relating to event type and relation type in shaping LPP pronoun preferences, it is important to emphasize that other factors certainly play a role, too. I have already mentioned the independent import of expectedness on pronoun preferences, investigated in Chapter 4. Other factors that have been proposed in prior work that I do not investigate here include point-of-view (Cantrall 1974, Kuno 1987, Sells 1987, a.o.) and association with focus (Reinhart & Reuland 1993). Undoubtedly, the list of relevant factors goes on from there.

Let me also emphasize a point that was only subtly indicated above, namely that LPPs are not the only places in English where complementarity between reflexives and personal pronouns breaks down. Other places include within coordinated structures (e.g. *Mary and herself*), within *like*-phrases (e.g. *physicists like herself*), within exceptive constructions (e.g. *no one but herself*), and, particularly notoriously, within picture noun phrases (e.g., *picture of herself*). These, too, I

do not investigate here (though some findings from my earlier work on picture noun phrases will be brought to bear on the discussion in Chapter 5).

Finally, in order to facilitate the deep dive needed to get a firmer handle on the specific phenomena under consideration here, I restrict my attention to English, leaving other languages for future investigation.

My intention for this dissertation is not to solve all of the outstanding mysteries surrounding pronoun choice in English, and certainly not to make any sweeping claims about pronoun choice in natural language more broadly. Rather, my hope is that by bringing us closer to understanding one small part of the bigger picture, in time, we can come to understand the other parts a little better, too.

CHAPTER 2: THE IMPACT OF EVENT TYPE AND RELATION TYPE ON LPP PRONOUN CHOICE

In English, both reflexive pronouns (*herself*) and personal pronouns (*her*) can be used to refer to someone previously mentioned in a sentence. Research in the area of binding theory has (largely) centered the role of syntax in constraining pronoun choice, appealing to structural factors like locality, c-command, and coargumenthood. But purely syntactic approaches face an interesting challenge when it comes to subject-oriented pronouns in locative prepositional phrases (LPPs). As illustrated in (9), both the reflexive and pronoun are permitted in LPPs, contrary to the complementarity predicted by classical Binding Theory (e.g., Chomsky 1981, 1986).

- (9) Michele_i set a glass next to her_i/herself_i.

In treating such examples, the main focus within binding theory has been accounting for why the grammar permits both pronoun forms. However, observations and discussion in the literature suggest that pronoun choice is not totally free in LPPs. Relative preferences have been shown to depend on the **type of event** denoted by verb phrase, namely whether or not it involves location change (Lees & Klima 1963, Wilkins 1988, Hestvik 1991, Bassel 2018, 2022). Preferences have also been shown to depend on the **type of spatial relation** expressed by the preposition, that is, whether or not direct contact holds between figure and ground (Faltz 1977|1985, Kuno 1987, van Hoek 1997, Wechsler 1997, Strahan 2006, Rooryck & Vanden Wyngaerd 2007|2011, Lederer 2013). In some cases, contrasts reported between reflexive and personal pronoun are very strong, even categorical.

These are certainly not the only factors that have been proposed to play into English pronoun choice. Because relevant examples can vary along several dimensions and are typically presented without context, it is hard to pin down effects stemming from event and relation type

in particular. What's more, reported acceptability judgments often vary widely across works, even for structurally indistinguishable sentences, making it unclear how robust these effects really are.

This chapter does two things. First, it presents a pair of acceptability judgment experiments that help clarify the extent to which event type and spatial relation type determine relative preferences between subject-oriented reflexives and personal pronouns in English LPPs. Results from these experiments confirm that both factors play a significant role independent from one another: reflexives are most natural in the expression of location change and direct physical contact, while personal pronouns show the opposite tendency. Importantly, contrasts between forms were never as stark as those observed in constructions where syntactic constraints are canonically assumed to render one of the forms ungrammatical.

Second, with these empirical findings in hand, it provides critical overview of prior binding theoretic account of LPP pronoun licensing. We will see that none of the proposals straightforwardly capture the overall preference pattern reported here, though some are more compatible with the empirical picture than others. More importantly, we will also see what different flavors of binding theory need to say in order to be compatible with the empirical picture, setting us up to ask what our binding theory ought to look like in order to account for subject-oriented pronouns in English LPPs.

The structure of this chapter is as follows. Section 2.1 digs deeper into the puzzle posed by LPP pronouns for syntactic theories of pronoun licensing (henceforth, *binding theories*), first offering a survey of ways in which such theories have accounted for non-complementarity between reflexives and personal pronouns, then introducing the effects of event type and relation type. Sections 2.2 and 2.3 report two acceptability ratings surveys that aim to clarify the impact of event and relation type on pronoun choice in LPPs. Section 2.4 returns to prior proposals, asking how they stack up against the refined empirical picture. Section 2.5 concludes.

2.1 Background

2.1.1 LPPs in syntactic binding theories

Since Lees and Klima's seminal (1963) paper, the distribution of reflexives and personal pronouns has been a prominent topic within generative linguistic research. Ample work in the domain of binding theory has argued that the choice between forms depends at least in part on the syntactic context in which the pronoun occurs. Antecedent-based theories, including theories in the tradition of Chomsky (1981|1986), have focused on the syntactic configuration of coreferring noun phrases in defining grammatical principles of pronoun choice, with particular focus on the impact of locality and c-command, as shown in (10) (Chomsky 1981, 1986, Hestvik 1991, Buring 2005, Hicks 2009, Charnavel & Sportiche 2016, Bassel 2018, 2022, Charnavel 2020a, 2020b, a.o; cf. Rooryck & Vanden Wyngaerd 2007|2011, Bader 2011).

- (10) Antecedent-based binding principles
- a. Principle A: A reflexive must corefer with a c-commanding noun phrase within its local domain.
 - b. Principle B: A personal pronoun must not corefer with a c-commanding noun phrase within its local domain.

Predicate-based theories have rather focused on coargumenthood in their formulations of binding principles, as in (11) (Pollard & Sag 1992, Reinhart & Reuland 1993, Culicover & Jackendoff 2005, Varaschin 2021, a.o.).¹

- (11) Predicate-based binding principles
- a. Principle A: A reflexive must corefer with a coargument of its selecting predicate.
 - b. Principle B: A personal pronoun must not corefer with a coargument of its selecting predicate.

¹ This paraphrase glosses over the distinction between *syntactic* coarguments and *semantic* coarguments, which is crucial to Reinhart and Reuland's (1993) formulations of Principles A and B.

Binding theories take as their starting point environments within which the grammar renders one of the two forms unavailable. As a result, syntactic binding principles do well to capture cases of strict complementarity between reflexives and personal pronouns. This is for instance what we find in simple transitive sentences in English, as in (12).

- (12) a. Michele_i's brother congratulated her_i/*herself_i.
 b. Michele_i congratulated *her_i/herself_i.

In (12a), the reflexive is correctly predicted to be unavailable under either an antecedent-based or predicate-based formulation of Principle A: it is not c-commanded by its intended antecedent, *Michele*, nor does the reflexive corefer with its coargument, *Michele's brother*. In (12b), the personal pronoun is correctly ruled out by Principle B: *Michele* is local, c-commanding, and a coargument. However, it has long been observed that this kind of complementarity breaks down within English locative prepositional phrases (henceforth, LPPs), where both the reflexive and personal pronoun can be used to refer back to the sentence subject, as shown in (9) above, repeated here in (13).

- (13) Michele_i set a glass next to her_i/herself_i.

The priority within binding theory has been to explain why the grammar permits both forms in sentences like (13). Approaches in this domain have tended to fall in one of two camps. In **camp #1** are theories which posit that complementarity in fact *does* apply in LPPs, and that the appearance to the contrary arises from the availability of more than one syntactic parse. This camp has its roots in Lees & Klima's (1963) transformational theory of reflexivization and pronominalization, according to which the personal pronoun surfaces in the expression of coreference whenever its antecedent originates in a distinct "source" clause while the reflexive surfaces otherwise. The appearance of both pronoun forms in LPPs follows from the availability of multiple derivational paths, one involving a reduced complex clausal structure, the other underlyingly simplex.

A similar account is famously pursued in Chomsky (1981), according to which local domains are delimited by the presence of a syntactic subject: a reflexive requires an antecedent within the minimal phrase containing a subject, while a personal pronoun cannot take such an antecedent. In order to capture pronoun licensing in English LPPs, Chomsky suggests that the personal pronoun is used when the LPP projects a subject of its own² such that the sentence subject is syntactically non-local. In the absence of a PP-internal subject, the sentence subject is sufficiently local to require use of the reflexive instead. This structural contrast is shown in (14a-b), where the PP-internal subject is represented as PRO.³

- (14) a. Michele_i set a glass next to *her_i/herself_i.
 b. Michele_i set a glass_k [PRO_k next to her_i/*herself_i].

More recent accounts falling in this camp, proposed in Rooryck & Vanden Wyngaerd (2007|2011) and Bassel (2018, 2022), will be introduced in Section 2.4.

Theories in **camp #2** rather assume that the reflexive and personal pronoun surface under one and the same syntactic parse in sentences like (13). The trick then is to define binding principles in such a way that complementarity is not predicted to arise in the first place. Building on suggestions in Chomsky (1986), Hestvik (1991) defines “local domain” as the smallest *complete functional category* (CFC) within which binding principles can potentially be satisfied, where CFCs are phrases containing a lexical predicate and every argument required by that predicate. Importantly, LPPs are argued to comprise CFCs even in the absence of an

² Ample debate has concerned the precise syntactic category of this kind of subject-containing constituent, commonly known as a *small clause*; see Winkler (1997) for a survey of proposals. For convenience, I will simply refer to the embedded subject posited for parses requiring the pronoun as “PP-internal.”

³ PRO is proposed as the PP-internal subject in Chomsky (1981:290) based on analogy with the covert subjects assumed for infinitive clauses in control constructions. The same licensing pattern could arise if the internal subject were rather a trace or copy remaining from optional movement of *a glass* from a PP-internal position to the matrix verb phrase as in (i) (cf. Ramchand 2008, Angelopoulos & Bassel 2019) or if *a glass* was optionally parsed as strictly internal to the PP as in (ii) (cf. Hoekstra 1988).

(i) Michele_i set a glass_k [t_k next to her_i/*herself_i].
 (ii) Michele_i set [a glass_k next to her_i/*herself_i].

internal subject. In sentences like (13), the local domain of the personal pronoun is therefore the LPP, since the LPP is the smallest CFC within which the personal pronoun can lack an antecedent. The local domain of the reflexive must instead extend to the next higher CFC, namely the CFC headed by the embedding verb, where the reflexive finds a potential antecedent, namely the sentence subject.⁴ This difference in domains is captured in (15).

- (15) a. [Michele_i set a glass next to herself_i].
 b. Michele_i set a glass [next to her_i].

Büiring (2005) similarly suggests asymmetrical local domains to account for LPP pronouns. Under Büiring's account, the difference in domains comes down to whether or not a subject is required. In line with Chomsky (1981, 1986), the local domain of the reflexive is delimited by the presence of a subject. The local domain of the personal pronoun is rather identified as its coargument domain, regardless of whether that domain contains a subject. When it comes to pronoun licensing within LPPs, Büiring's predictions converge with Hestvik's: the domain of the reflexive extends to the sentence subject (15a), while the domain of the personal pronoun is confined to the LPP (15b).

Working within the Minimalist Program (Chomsky 1995, 2000, 2001), Hicks (2005, 2009) proposes domain asymmetry within a phase-based binding theory. There, the key distinction is between Logical Form (LF) phases and Phonological Form (PF) phases. The local domain of the reflexive is identified as the minimal LF phase containing it, either vP or CP. Personal pronouns, on the other hand, are said to be sensitive only to PF (Phonological Form) phases. To account for the absence of complementarity within English LPPs, Hicks suggests that LPPs comprise PF phases but not LF phases. Hence, as under Hestvik's and Büiring's proposals, the sentence

⁴ Hestvik (1991) does not acknowledge the possibility of antecedence by the direct object. As noted in Reinhart and Reuland (1993), Hestvik's proposal wrongly predicts that coreference between the direct object and LPP-internal personal pronoun should be possible. More on this in Section 2.4.2.1.

subject falls inside the local domain of the LPP-internal reflexive (15a) but outside the local domain of the LPP-internal personal pronoun (15b).

For Hestvik, Buring, and Hicks, the reason both subject-oriented reflexives and personal pronouns are available within LPPs is because both satisfy binding principles: the reflexive has an antecedent within its local domain, and the personal pronoun does not. Rather than posit mutual satisfaction of binding principles, Reinhart & Reuland (1993) instead argue for the possibility that, in some cases, binding principles simply do not apply. Pursuing a predicate-based theory of pronoun licensing, the authors propose that reflexives must corefer with a coargument only if the predicate selecting the reflexive projects a subject in the syntax (cf. Pollard & Sag 1992 for a similar approach). In the absence of a syntactic subject, reflexives are said to be exempt from Principle A: they are free to find a referent in the discourse, guided by factors including focus and point of view.⁵ The lack of complementarity with personal pronouns found in LPPs is therefore attributed to the absence of a PP-internal subject: neither pronoun form is anteceded by a coargument in sentences like (3), which is required for the personal pronoun and is acceptable for the reflexive since the structural conditions requiring coreference with a coargument do not apply.⁶

The proposals described so far share the assumption that non-complementarity between reflexives and personal pronouns in LPPs requires that the grammar be such that both forms are licensed, at least under certain syntactic parses. In contrast, Varaschin (2021) maintains that

⁵ Point of view has long been suggested to play a role in English reflexive licensing, not only in LPPs (see, e.g., Cantrall 1974, Kuno 1987, Sells 1987), but also in so-called picture noun phrases (Cantrall 1974, Kaiser et al. 2009, Charnavel & Bryant 2022 and citations therein) and embedded clauses (see Charnavel 2020a for an overview). Point of view will not be investigated in this project, though see Section 2.4.1 for examples illustrating the purported relationship between point of view and LPP pronoun choice. For experimental work exploring point of view and LPP pronouns in Australian English, see Strahan (2006).

⁶ Though LPPs are not explicitly discussed, comparable predictions arise from Pollard & Sag's (1992) predicate-based theory, according to which a reflexive must be anteceded by a syntactic coargument only if such a coargument exists. Because the only possible coargument for the complement of a preposition would be a subject, the absence of complementarity in LPPs would likewise follow from the absence of a PP-internal subject.

subject-oriented reflexives are in fact *not* grammatically licensed in LPPs, while personal pronouns are. Like Reinhart & Reuland (1993), Varaschin posits a predicate-based theory of pronoun licensing. But unlike Reinhart & Reuland, Varaschin argues that reflexives must always corefer with a coargument. But crucially, “tolerable violation” of this requirement is said to be possible if the selecting predicate is itself “anti-reflexive,” such that coreference between coarguments is semantically anomalous. Such is the case with most locative prepositions, as illustrated by the oddness of (16) (cf. Varaschin 2021:254).

(16) #Michele_i is next to herself_i.

In other words, the personal pronoun can be used for subject coreference in LPPs because the licensing condition for its use is satisfied, while the reflexive can be used because satisfaction is not possible to begin with.

2.1.2 Event type and relation type

The predominant goal within binding theory has been to account for how both forms are syntactically licensed (or, at the very least, tolerable). As such, work in this domain has generally left open the question of how the choice between forms, or the choice between structures licensing forms, is ultimately made. Importantly, contrasts reported in the literature suggest wide variation in preferences across LPPs. In some cases, preferences are shown to be quite weak, such that the choice really can go either way. But in other cases, preferences are reportedly very strong, even categorical.

Minimal pairs such as (17)-(19) suggest that preferences greatly depend on the **type of eventuality** expressed by verb phrase containing the LPP. As observed in Bassel (2018, 2022), the dividing line appears to fall between sentences describing location change (the (a) sentences below) and sentences describing some other kind of eventuality, including perception ((6b) and (18b)), or possession ((19b)) (see also Wilkins 1988, Hestvik 1991).

(17) a. The dog_i dropped the blanket on *him_i/himself_i.

- b. The dog_i felt the blanket on him_i/ ?himself_i.
 (Bassel 2018:53)
- (18) a. The men_i threw a smokescreen around themselves_i.
 b. The men_i found a smokescreen around them_i.
 (Lees & Klima 1963:18)⁷
- (19) a. The two-year-old_i rubbed chocolate all over *her_i/herself_i.
 b. The two-year-old_i had chocolate all over her_i/herself_i.
 (Rooryck & Vanden Wyngaerd 2007:66,78)

The overall pattern that emerges from these examples is that the reflexive is most acceptable in sentences expressing location change whereas the personal pronoun is most acceptable in sentences that do not express location change.

Pronoun preferences have also been shown to depend on the **type of spatial relation** expressed by the LPP itself, in particular whether the relation is one of direct physical contact, as famously discussed in Kuno (1987). The relevance of relation type to pronoun preferences is exemplified in (7)-(21) (see also Kuno 1987, van Hoek 1997, Strahan 2006; cf. Lederer 2013⁸).

- (20) a. Corporal Crump_i pinned the medal onto *him_i/himself_i.
 b. Corporal Crump_i pinned the medal beside him_i/ *himself_i.
 (Wechsler 1997:15)
- (21) a. Krag_i the robot unscrewed a panel in his abdomen and placed a sandwich inside ?him_i/himself_i.
 b. Krag_i the robot place a sandwich in front of him_i/ ?*himself_i.
 (Faltz 1977:107)

Such examples suggest that the reflexive is most acceptable when direct physical contact holds between figure and ground (e.g., between the sandwich and Krag) whereas the personal pronoun is most acceptable in the absence of direct contact.

⁷ Lees & Klima (1963) do not present the alternative pronoun form in these two sentences.

⁸ Rather than contact, Lederer (2013) appeals to the notion of *peri-personal space*, roughly the area accessible by the limbs, as being relevant to pronoun choice.

Some work has aimed to account for one or other of these effects within binding theory proper. Recalling the solution presented in Chomsky (1981), Bassel (2018, 2022) argues that the effect of event type follows from semantic restrictions on the distribution of (non-)clausal LPPs. Rooryck & Vanden Wyngaerd (2007|2011) argues that the effect of relation type comes down to evaluation of an Axial Part (AxPart) head within the LPP, which in turn determines locality. Pushing beyond syntactic binding principles, Kuno (1987) rather takes the effect of relation type as motivation for the addition of semantic restrictions to English pronoun licensing. Details of these proposals, as well as more in-depth discussion of other proposal introduced above, will be picked up in Section 2.4. But before we get there, the effects of event type and relation type call for a closer look.

While the examples above converge with respect to the general trends they suggest, they differ in the strength of the acceptability contrasts they ascribe. Consider the sentences that do not express location change: the personal pronoun is shown to be acceptable in all three, but the reflexive is presented as acceptable in (19b) but marginal in (6b):

- (22) a. The two-year-old_i had chocolate all over her_i/herself_i. (= (19b))
 b. The dog_i felt the blanket on him_i/?himself_i. (= (6b))

Notice also that across sentences expressing both location change and direct contact, the personal pronoun is marked as ungrammatical in all but (21a), where it rather appears with a single question mark:

- (23) a. The dog_i dropped the blanket on *him_i/himself_i. (= (17a))
 b. The two-year-old_i rubbed chocolate all over *her_i/herself_i. (= (19a))
 c. Corporal Crump_i pinned the medal onto *him_i/himself_i. (= (20a))
 d. Krag_i the robot unscrewed a panel in his abdomen and placed a sandwich inside
 ?him_i/himself_i. (= (21a))

What, then, should our theory of English pronoun choice predict?

Some discrepancies in acceptability marking could reflect differences in the way these markings are used across authors. For instance, some authors may use ‘*’ to indicate general dispreference while others reserve ‘*’ for sentences that are syntactically ill-formed. A case in point comes from the pair of sentences in (22) (see Büring 2005:57 for related discussion).

- (24) a. Max_i saw a ghost next to him_i/himself_i. (Reinhart & Reuland 1993:686)
 b. John_i saw a plane above him_i/*himself_i. (Kuno 1987:65)

Both sentences express an event of seeing, and both are most naturally interpreted as expressing an absence of direct contact between figure and ground. Despite the near congruence, the reflexive is unmarked in (22a) and marked with ‘*’ in (22b). But crucially, the difference in marking belies a similarity in the way these examples are discussed in their respective sources. On (22a), Reinhart & Reuland (1993:687) note that the reflexive is “much more marked” than it is in sentences like (25), where the personal pronoun is reportedly unavailable.

- (25) Lucie_i explained Max to *her_i/herself_i. (Reinhart & Reuland 1993:686)

On (22b), Kuno (1987:65) simply states that “for many speakers the following sentences are better with a [personal; SB] pronoun than with a reflexive.”

Differences in acceptability marking may also arise from factors independent of event and relation type that likewise have an effect on pronoun preferences. For example, (21a) stands out from the pack for its relative complexity and the amount of material intervening between the pronoun and its antecedent. Though length and complexity are not predicted to affect the availability of local binding, it is certainly possible that the greater memory load required to resolve the syntactic dependency, along with the added processing effort that might come along with verb phrase adjunction more generally, may push one to favor discourse coreference (and, hence, the personal pronoun) over binding in this case.⁹

⁹ The relative predictability of subject coreference might also play a part in boosting the acceptability of the personal pronoun in (21a): the action described in the first conjunct may give rise to the expectation

Even if converging conventions and intersentential differences can explain some of the variation found across examples in the literature, notice in (26)-(27) that highly conflicting acceptability markings are also found for sentences that are structurally indistinguishable.

- | | | |
|------|--|----------------------|
| (26) | a. John _i pulled the duvet over *him _i /himself _i . | (Haspelmath 2008:56) |
| | b. John _i pulled the blanket over him _i /himself _i . | (Kuno 1987:66) |
| (27) | a. Bubba _i tossed the beer can behind him _i /*himself _i . | (Wechsler 1997:15) |
| | b. The dog _i threw the bone behind him _i /himself _i . | (Bassel 2018:60) |

Part of the difficulty in interpreting such differences is that we have no access to the conditions under which these judgments were made. Most examples in the literature are presented without context, and it is not possible to reconstruct the situation or discourse the author or consultant had in mind. However, we know that context plays an important role in shaping preferences between pronouns in LPPs. For one thing, context in many cases determines whether or not direct contact holds between figure and ground: regarding (26b), Kuno (1987:66) observes that use of the reflexive calls for a context in which the blanket is touching John directly, rather than layered over a comforter. Context also matters with respect to point of view, the potential for referential ambiguity, and the predictability of subject coreference, all of which may bear on pronoun choice in English.

Finally, differences in acceptability markings may very well reflect sincere differences in judgments. It has long been acknowledged that judgments tend to vary when it comes to pronoun choice in English LPPs, especially in sentences that really do seem to allow both forms (see, e.g., Cantrall 1974:146, Chomsky 1981:290). We must therefore be particularly wary of building a theory around one or two examples.

that the sandwich introduced in the second conjunct will wind up inside Krag, such that the personal pronoun is not likely to be interpreted as referring to someone else. No such contextual hints are available for the other sentences involving direct contact, where the personal pronoun is rather marked as fully unacceptable. The role of predictability in shaping pronoun preferences in LPPs will be explored directly in Chapter 4.

A whole host of factors could feed into the relative acceptability of subject-oriented reflexives and personal pronouns in English LPPs, all of them deserving of careful investigation in their own right. What is important for this study is that, because of the potential confounds arising from things like sentence complexity and context of utterance, we cannot be sure how robust the effects of event type and relation type really are across English users, nor whether the preferences arising from these effects are categorical or gradient in nature. This problem is compounded by the fact that event type and relation type have not been considered simultaneously—prior works discussing these effects have focused on one or the other—meaning there is no way of telling from existing descriptions whether and how these factors interact.

Before we set out to account for the impact of event type and relation type on pronoun choice in English LPPs, we must first clarify the preference patterns we aim to capture. Two prior studies offer empirical evidence for one or both effects under consideration here. Strahan (2006) experimentally tested the effect of relation type (+/- contact) on LPP pronoun choice in Australian English using an online questionnaire that involved two tasks. The first task presented participants (N=65) with two video scenes and asked them to pick which scene best matched a sentence containing either a reflexive or a personal pronoun. The second task presented participants with one video scene and asked them to pick which of two sentences—one with a reflexive, the other with a personal pronoun—best described the scene. Both measures found the expected relationship between relation type and pronoun choice, with reflexives favoring and being favored in cases where the scene involved direct contact. However, this study was limited to four sentence pairs, all involving location change.¹⁰

Lederer (2013) analyzed the relative frequencies of subject-oriented reflexives and personal pronouns alongside seventeen prepositions in the British National Corpus: *next to*, *beneath*,

¹⁰ The sentences were as follows (Strahan 2006:3):

- | | | |
|-------|---|--|
| (iii) | a. Brent hid the book behind him/himself. | b. Lucien pulled the doona over him/himself. |
| | c. Cliff put the beer beside him/himself. | d. Sarah put the blanket under her/herself. |

behind, in front of, before, below, above, beyond, on top of, on, toward, around, out of, into, in, inside, and within. In Lederer’s sample, reflexives were two to four times more likely to be found in the expression of events occurring or culminating within the referent’s “peri-personal space” (roughly, the space occupied by the referent’s body) than in the expression of more remote spatial relations, consistent with the expected effect of relation type.¹¹ Reflexives were also one and a half times more likely to be found in LPPs expressing the direction of motion¹² than in nondirectional PPs, consistent with expected effect of event type. However, because corpus examples necessarily differ along several dimensions, we are not able to directly determine the extent to which either event type or relation type effect pronoun preferences independent of all other factors that could play a role, nor can we determine if event type and relation type interact.

2.2 Experiment 1: Acceptability judgment survey

The goal of this survey was to experimentally test whether and to what extent the relative acceptability of subject-oriented reflexives and personal pronouns in English LPPs depends on event type and relation type. Following examples in the literature, three types of event were considered: possession, perception, and location change. Relation type consisted of two levels: +contact and -contact.

2.2.1 Design

18 sets of 12 target sentences were created by crossing event type (*possession, perception, loc. change*), relation type (*+contact, -contact*), and pronoun (*reflexive* vs. *personal pronoun*),

¹¹ More precisely, Lederer (2013:506) defines peri-personal space as the space “the motor space around the body in which the body’s effectors (hands, arms, feet and head) freely move during action events,” following Gallese and Lakoff (2005). While the notion of peri-personal space so described does not entail direct contact, Lederer’s examples of sentences expressing events culminating in the antecedent’s peri-personal space all involve direct contact.

¹² This includes inherently directional PPs, such as those headed by *toward*, as well as PPs that are directional in the context of location change, such as *on*.

resulting in a 3x2x2 design with 12 total target conditions. One target sentence set used in this experiment is shown in **Table 1**; see Appendix A for all target sentences used in this experiment.

Table 1. Example of target sentences used in Experiment 1.

| | +contact | -contact |
|-------------|--|---|
| possession | Chloe had some glitter on her _i /herself _i . | Chloe had some glitter next to her _i /herself _i . |
| perception | Chloe noticed some glitter on her _i /herself _i . | Chloe noticed some glitter next to her _i /herself _i . |
| loc. change | Chloe poured some glitter on her _i /herself _i . | Chloe poured some glitter next to her _i /herself _i . |

All target sentences had the structure NP₁-V-NP₂-PP, where NP₁ and NP₂ were referentially congruent. Direct objects (NP₂) were always indefinite, comprising a determiner (*a*, *an*, or *some*) and head noun.¹³ Perception verbs included *see*, *notice*, and *feel*; location change verbs included *pour*, *pull*, *slide*, *throw*, *spill*, *shove*, *drag*, *wrap*, *set*, *glue*, *sprinkle*, *pin*, *push*, *gather*, *lay*, *tie*, *place*, *drape*, and *stack*. Prepositions included in this survey were *on*, *next to*, *over*, *under*, *around*, *in front of*, *on top of*, and *behind*. It should be noted that whereas event type is entirely determined by the meaning the verb, relation type is not in most cases an inherent property of the preposition. Whether or not an LPP expresses direct contact rather depends on the situation being described. Two prepositions, *over* and *around*, were used in both +contact and -contact sentences.

¹³ The relative discourse prominence of the direct object—definiteness, as well as related notions of specificity, familiarity, and topicality—could affect preferences between the reflexive and personal pronoun in a downstream LPP. Specifically, the more prominent the direct object, the better the personal pronoun relative to the reflexive. My own intuitions suggest a contrast between (iv.a) and (iv.b).

(iv) a. Michele_i spilled water on *her_i/herself_i.
b. Michele_i spilled the water on ?her_i/herself_i.

This tendency bears a striking resemblance to the effect of relative discourse prominence on differential object marking found in many of the world's languages (see, e.g., Aissen 2003, Haspelmath 2019). I leave exploration of the impact of definiteness on English pronoun choice for future work.

Following Marty et al. (2020), minimal pairs of sentences were presented side-by-side to help draw out relative preferences between pronoun forms. As shown in **Figure 1**, each sentence appeared above a slider bar with ends labeled ‘less natural’ and ‘more natural.’

Background: Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen.

Chloe had some glitter on her.

Chloe had some glitter on herself.

less natural more natural

Figure 1. Example of a target question from Experiment 1 (acceptability judgement survey). Minimal pairs were shown side-by-side with slider bars following short background contexts.

Sentence pairs were preceded by one- or two-sentence background contexts intended to aid imaginability while constraining situation and discourse factors. Each context began by introducing two people, the second of whom served as the subject of the target sentence. Stereotypically gendered names were used to ensure that personal pronouns were unambiguous in the provided context; while it is still in principle possible to interpret the personal pronoun as referring to someone not named in the context, subject coreference was encouraged by virtue of direct comparison with the reflexive, which does not permit a discourse interpretation. (Synonymy between the reflexive and personal pronoun was further enforced in the survey training, described below.)

Along with 108 target questions, this survey included 8 control questions with sentence pairs such as *Evan burned him/himself* and *Evan's sister burned him/himself*, where syntactic constraints are predicted to permit only one pronoun form, as well as 22 filler questions with sentence pairs such as *Gavin lost his keys/Gavin lost keys*, which varied in some way other than

pronoun choice. Controls provided a baseline against which ratings for target sentences could be compared; fillers provided participants with a reprieve from reflexives and personal pronouns.

2.2.2 Recruitment and Procedure

122 adult participants were recruited via Prolific Academic. Participants were prescreened for first language (English) and nationality (American) using Prolific demographic filters. At the beginning of the survey, participants were instructed that they would be asked to compare two ways of saying the same thing in a given context by rating how natural each option sounds; note that this further ensured that the personal pronoun received the same interpretation as the reflexive (i.e., that it was interpreted as coreferent with the subject of the target sentence). Participants were then shown three training trials, one in which both sentences were very natural, one in which both sentences were very unnatural, and one in which one sentence was more natural than the other.

Following training, participants were randomly assigned to one of six question lists. Question lists were created using a Latin Square design. Each list contained 18 target questions (1 per sentence set, 3 per condition) along with 4 control questions and 22 filler questions. Questions were randomly presented within lists, and sentences were randomly flipped within questions to encourage careful reading.

2.2.3 Predictions

Based on prior literature, acceptability ratings for reflexives were predicted to be higher on location change sentences than on possession or perception sentences, and to be higher on +contact sentences than in -contact sentences. The opposite was predicted for personal pronouns. We would therefore expect to find an overall preference for the reflexive on location change/+contact sentences, an overall preference for the personal pronoun on possession/-contact and perception/-contact sentences, and more variable preferences on remaining sentences.

2.2.4 Results

Prior to analysis, responses were Z-scored by participant to accommodate different uses of the slider bar. **Figure 2** shows the distribution of Z-scored ratings across target conditions, where numerically lower scores correspond to lower acceptability ratings.

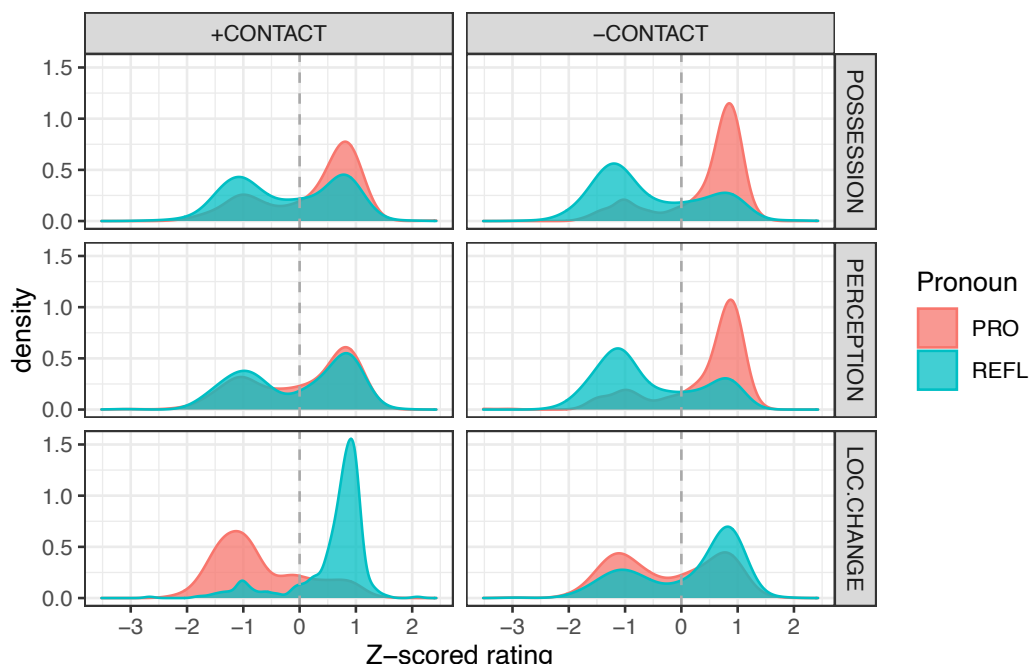


Figure 2. Distribution of Z-scored ratings from Experiment 1 for LPP target sentences across event type (possession/perception/location change), relation type (+contact/-contact), and pronoun type (reflexive/personal pronoun).

Response patterns were very similar for possession and perception conditions: personal pronouns tended to be rated as more natural than reflexives, and this preference was most pronounced when the relation type with -contact. In location change conditions, reflexives tended to be rated as more natural than pronouns, and this preference was most pronounced when the relation type was +contact. Overall, what emerges are strong preferences for the reflexive in the location change/+contact condition, strong preferences for the pronoun in the

possession/-contact and perception/-contact conditions, and more variable preferences in remaining conditions.

We conducted linear mixed-effects regression analyses in R (lme4 package, Bates et al. 2015) to test the dependence of Z-scored ratings on event type, relation type, and pronoun, with participant and item included as random effects. Preliminary statistical comparison revealed no significant differences between the possession and perception conditions ($p > 0.05$); possession and perception were therefore collapsed into a single factor level (-location change) for subsequent analysis.¹⁴ Model comparison revealed the best-fit model to include interactions between event type and pronoun ($\beta = 1.44$, $p < 0.001$) and between relation type and pronoun ($\beta = 0.79$, $p < 0.001$); inclusion of a three-way interaction did not significantly improve model fit ($p > 0.2$).

Ratings for target conditions were also compared to ratings provided on control items, where one pronoun form is ruled out by syntactic constraints. First, ratings for +location change/+contact sentences, which showed a strong preference for the reflexive, were compared to ratings for sentences such as *Evan burned him(self)*, where the reflexive is required by Principle B. We find a significant interaction between condition (+location change/+contact vs. Principle B) and pronoun ($\beta = -0.82$, $p < 0.001$). Subsetting by pronoun, we find that the reflexive received significantly lower ratings on +location change/+contact questions than on Principle B controls ($\beta = -0.35$, $p < 0.001$) while the personal pronoun received significantly higher ratings on +location change/+contact questions than on Principle B controls ($\beta = 0.47$, $p < 0.001$). Second, ratings for -location change/-contact sentences, which showed a strong preference for the personal pronoun, were compared to ratings for sentences such as *Evan's sister burned*

¹⁴ This is not to say that have and perception items behaved identically in Experiment 1. As can be seen in **Figure 2**, we find a somewhat stronger preference for the personal pronoun in the former as compared to the latter; this difference is in fact significant in Experiment 2, introduced below. What is important is that have and perception items are far more similar to one another than they are to motion items, with the former preferring the personal pronoun on the whole, the latter preferring the reflexive on the whole.

him(self), where the personal pronoun is required by Principle A. We again find a significant interaction between condition (-location change/-contact vs. Principle A) and pronoun ($\beta=-1.27$, $p<0.001$). Personal pronouns received significantly lower ratings on -location change/-contact questions than on Principle A controls ($\beta=-0.53$, $p<0.001$) while reflexives received significantly higher ratings on -location change/-contact questions than on Principle A controls ($\beta=0.74$, $p<0.001$). Differences in mean ratings for reflexives and personal pronouns across target and control conditions are captured in **Figure 3**.

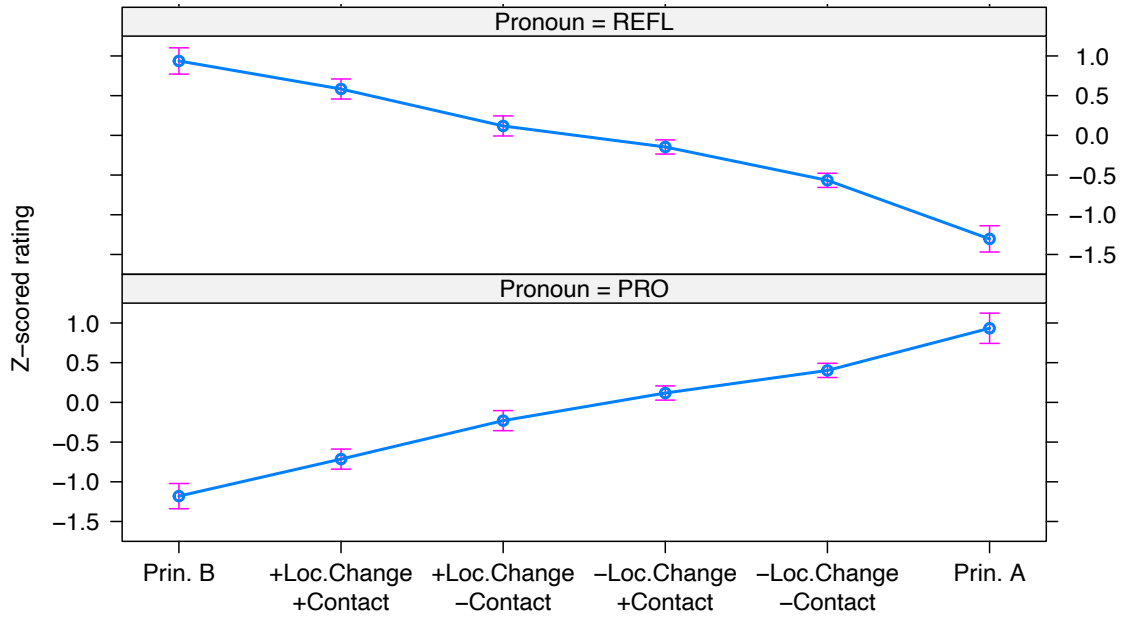


Figure 3. Mean ratings for reflexives (top) and personal pronouns (bottom) in Experiment 1 across LPP target sentences and Principle A/B control sentences.

2.2.5 Discussion

While judgments varied across participants, the trends that emerge from Experiment 1 align with our starting predictions. We find that preferences between subject-oriented reflexives and personal pronouns in LPPs are sensitive to both event type and spatial relation type: reflexives are most natural in the expression of location change events and direct contact, and pronouns

show the opposite pattern. Crucially, even for sentences in which one form was overwhelmingly favored over other, contrasts between reflexives and personal pronouns in LPPs were not as stark as the contrasts observed on simple transitive control sentences, where binding principles are predicted to render one form ungrammatical.

Though participants had the option of rating both forms as equally natural, and this possibility was illustrated in two of the three training questions, the side-by-side setup may have pushed participants to consistently rate one form higher than the other. Indeed, it will be noticed in **Figure 2** that responses tended to cluster around one standard deviation from the mean even in conditions for which neither form was strongly favored overall. The bimodality observed for both pronoun forms in the more variable conditions reflects a split in which form was preferred across participants as well as across particular items.

One pressing question that remains from this experiment is whether the spatial relation manipulation really tapped into an effect of physical contact on pronoun choice. As noted in Section 2.2.1, relation type is not always fixed by the semantics of the preposition. In many cases, whether or not contact is conveyed depends on the situation the sentence describes. However, only two of the eight prepositions—*around* and *over*—were tested in both +contact and -contact conditions. It is therefore possible that the effect of relation type reflects something about the particular prepositions used and not the nature of the spatial relation they express. Looking at responses for items with *around* and *over*, we find a significant interaction between relation type and pronoun for the former ($\beta = -0.86$, $p < 0.001$) but not for the latter ($\beta = -0.09$, $p > 0.5$), where we rather observe a preference for the reflexive regardless of relation type. Hence, it is also possible that the intended manipulation may have worked on some questions but not others. Both possibilities are addressed in Experiment 2, which directly probed contact inferences for the sentences tested in Experiment 1.

Before turning to Experiment 2, a brief word on methodology. The use of slider bars in Experiment 1 was motivated by the desire to pick up on gradient differences in pronoun

preferences across event type and relation type. However, the size of the effects turned up in Experiment 1 along with the largely bimodal response pattern suggest that these same results would be found using a binary response method. To test this possibility, one question block from Experiment 1 was included in a smaller exploratory survey that asked participants to judge for each sentence whether or not it was something they would say. Sentences were again presented side-by-side, and training again demonstrated the possibility of endorsing both sentences.

As captured in **Figure 4**, responses from 54 participants recruited on Prolific (each of whom saw one question per condition) turned up preference patterns that were nearly identical to those found for the corresponding sentences in Experiment 1. This outcome is in line with work suggesting that large effects can be detected in acceptability tasks regardless of scale granularity (e.g., Marty et al. 2020), and offers assurance that Experiment 1 results were not a byproduct of the particular response method used.

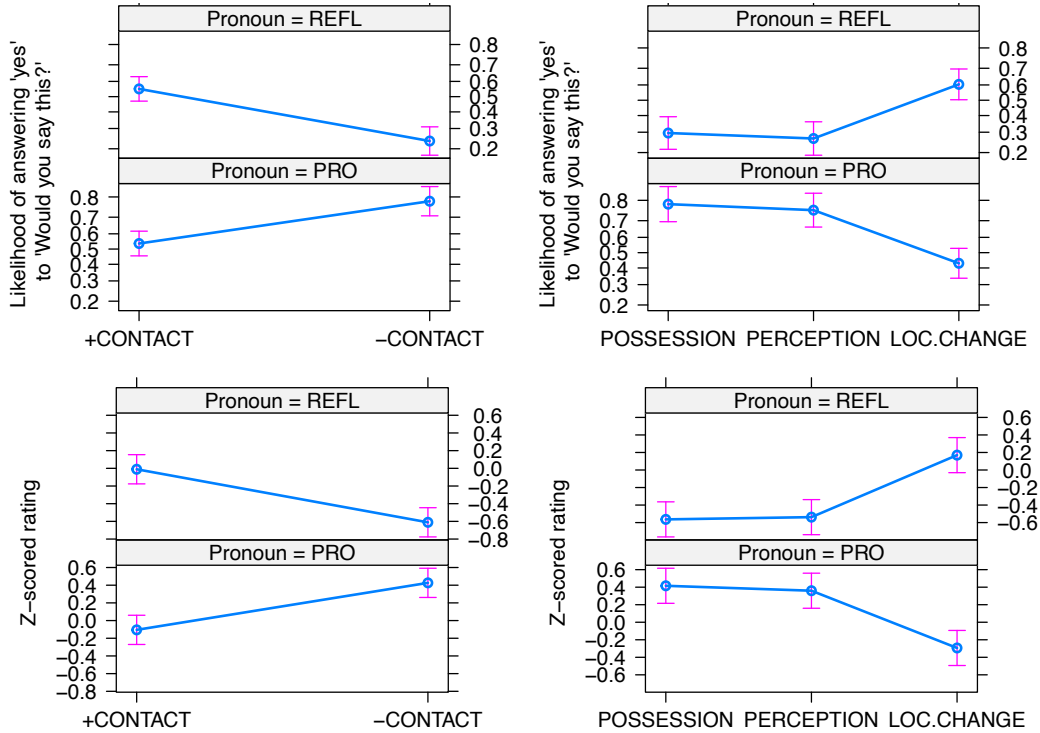


Figure 4. Interactions between relation type and pronoun (left) and event type and pronoun (right) from responses on the binary response survey (top) and the corresponding questions in Experiment 1 (bottom).

2.3 Experiment 2: Acceptability judgment survey

The goal of Experiment 2 was two-fold. First, it aimed to validate the relation type manipulation from Experiment 1 by directly probing participants' inferences about whether or not direct contact holds between figure and ground. Second, it aimed to replicate Experiment 1 results with a smaller sample population.

2.3.1 Design

Survey questions were adapted from Experiment 1. No changes were made to target sentences; personal pronouns were added in parentheses to background contexts to ensure correct gender association without relying on stereotypes. Alongside the side-by-side rating procedure used in Experiment 1, each question in this experiment also contained a contact inference prompt, which was presented directly below the minimal sentence pair as shown in **Figure 5**.

Background: Richard (he) and Chloe (she) made a mess decorating Valentine's Day cards in their kitchen.

Chloe had some glitter on her.

Chloe had some glitter on herself.

less natural more natural

Was the glitter touching Chloe?

Yes No

Figure 5. Example of a target question from Experiment 2. Each question included side-by-side rating and a yes/no question probing contact inferences.

On target questions, participants were asked whether the object or substance named by the direct object was touching the referent of the pronoun. Contact inference questions were also included on control and filler questions, the latter of which were minimally revised from Experiment 1 to accommodate the additional task. Six filler questions were also pre-designated as catch trials.

2.3.2 Recruitment and Procedure

34 adult participants were recruited via Prolific Academic, prescreened for first language (English), fluent language (English), and nationality (American) using Prolific demographic filters. As in Experiment 1, each participant saw 18 target questions (3 per condition) as well as 4 control questions and 22 filler questions. Questions were randomly presented, and sentences were randomly flipped within questions.

2.3.3 Results

Prior to analysis, responses from two participants were excluded due to failure on catch trials, and responses from one participant were excluded due to survey error.

Looking first at responses to the contact inference question, **Figure 6** shows the percentage of ‘yes’ responses across the six target conditions. Over 97.8% of questions in +contact conditions received ‘yes’ responses while 77.4% of questions in -contact conditions received ‘no’ responses, consistent with interpretations intended for these stimuli. Note that -contact questions with the preposition *over* received a ‘yes’ response about 53% of the time while -contact questions with *around* received a ‘yes’ response about 21% of the time; for all remaining questions in -contact conditions, a ‘yes’ response was given only 15% of the time.

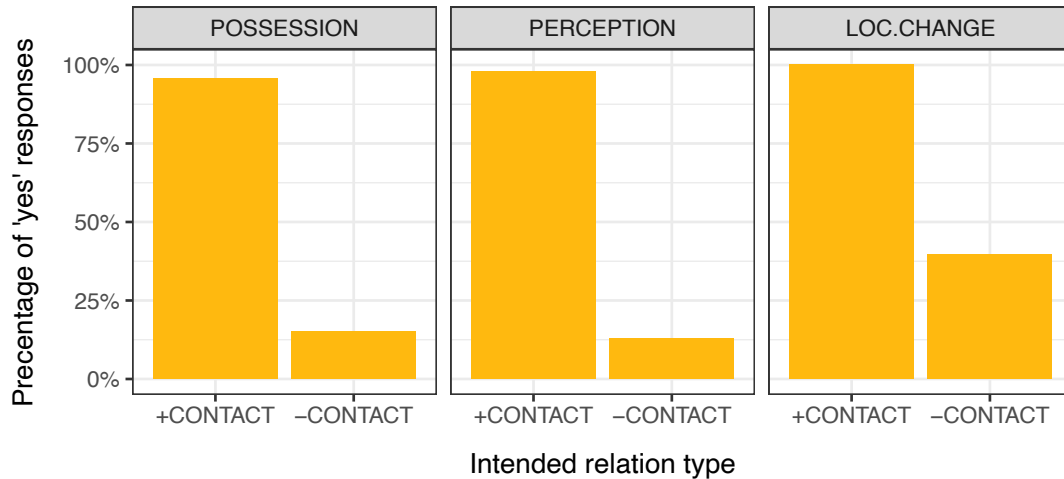


Figure 6. Percentage of 'yes' responses to the question 'Are they touching?' in Experiment 2 across event type and relation type.

Turning now to acceptability ratings, responses were again Z-scored by participant to accommodate different uses of the slider bar. As shown in **Figure 7**, Experiment 2 ratings revealed the same overall preference pattern as was found in Experiment 1: the reflexive was most natural in +location change/+contact conditions, and the personal pronoun patterned oppositely. These effects were confirmed using a linear mixed-effects regression analysis, which showed significant interactions between event type and pronoun ($\beta=1.84$, $p<0.001$) and between relation type and pronoun ($\beta=0.90$, $p<0.001$).

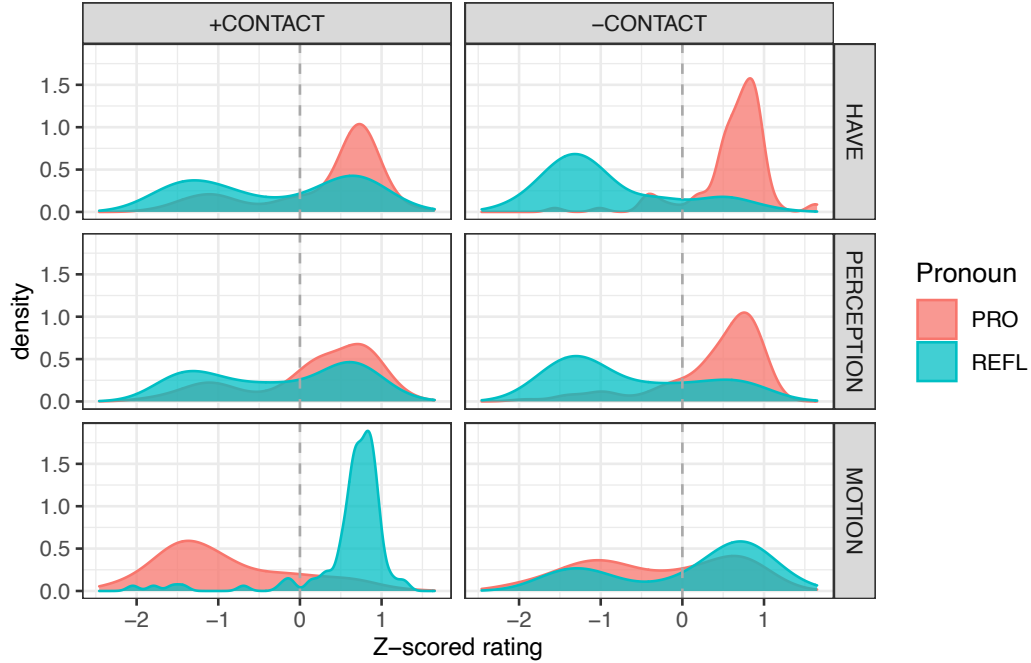


Figure 7. Distribution of Z-scores ratings from Experiment 2 for LPP target sentences across event type (possession/perception/location change), relation type (+contact/-contact), and pronoun type (reflexive/personal pronoun).

2.3.4 Discussion

The acceptability rating responses from Experiment 2 converge with those of Experiment 1, offering additional evidence for the impacts of event type and relation type on LPP pronoun preferences. Importantly, responses to the contact inference questions can give us confidence that the effect of relation type really does stem from the nature of the spatial relation expressed by the LPP—namely, whether it expresses direct contact between figure and ground—rather than peculiarities of particular prepositions. Finally, comparison of the rate of ‘yes’ responses on questions with *around* and *over* offer a possible explanation for why these two prepositions pulled apart in Experiment 1 (as well as in Experiment 2): sentences with *around* were by and large interpreted as intended, but sentences with *over* very often gave rise to inferences of direct contact on questions categorized as -contact. Future studies may aim to better control for contact by using picture or video stimuli (cf. Strahan 2006).

2.4 A closer look at prior accounts of LPP pronoun licensing

In line with contrasts reported in prior literature, results from Experiments 1 and 2 showed that relative preferences between subject-oriented reflexives and personal pronouns in English LPPs crucially depend on the type of eventuality denoted by the verb phrase and the type of spatial relation denoted by the LPP. With respect to event type, we find that reflexives are best when the sentence expresses location change while personal pronouns are best in the expression of other kinds of eventualities. With respect to relation type, reflexives are best when direct contact hold between figure and ground while personal pronouns are best in the absence of direct contact. This pattern is summarized in **Table 2-A**.

Table 2-A. Relative preferences between subject-oriented reflexives and personal pronouns in English LPPs, based on acceptability ratings from Experiments 1 and 2.¹⁵

| | +contact | -contact |
|-------------|---|---|
| possession | Chloe _i had some glitter on ✓her _i /??herself _i . | Chloe _i had some glitter next to ✓✓her _i /??herself _i . |
| perception | Chloe _i noticed some glitter on ✓her _i /??herself _i . | Chloe _i noticed some glitter next to ✓✓her _i /??herself _i . |
| loc. change | Chloe _i poured some glitter on ??her _i /✓✓herself _i . | Chloe _i poured some glitter next to ?her _i /✓herself _i . |

Importantly, even in conditions in which one pronoun form was generally favored over the other, the contrasts turned up in LPPs differed significantly from the contrasts found on sentences for which one form is ruled out by binding principles. The outcome is thus a cline of more or less gradient preferences across LPP constructions.

What lurks behind this preference pattern? Do the effects of event type and relation type on pronoun choice in English LPPs fall out of binding principles, or are they rooted in factors

¹⁵ ‘✓✓’ marks strongly favored forms, ‘✓’ marks weakly favored forms, ‘?’ marks weakly disfavored forms, and ‘??’ marks strongly disfavored forms.

independent of binding theory? This section returns to prior binding theoretic accounts of LPP pronoun licensing, asking to what extent they are able to capture the data reported above.

Section 2.4.1 covers proposals that maintain the view that pronoun choice in LPPs is governed by binding principles, such that reflexives and personal pronouns surface under distinct syntactic parses (**camp #1** from Section 2.1.1). As we will see, theories in this camp all face two empirical challenges: independently motivating the multiple parses needed to license both pronoun form, and explaining the differences in preferences across event and relation types in terms of selection between parses.

Section 2.4.2 covers proposals that maintain that binding principles permit both forms under identical parses, such that preferences between forms arise from other forces outside of binding theory proper (**camp #2**). For those theories, the issue of motivating multiple parses is avoided. Nevertheless, we will see that several of these theories face an uphill battle in accounting for certain aspects of the preference pattern presented here.

2.4.1 Camp #1: Covert complementarity in LPPs

This section discusses proposals that maintain strict complementarity between reflexives and personal pronouns in LPPs, attributing appearance to the contrary to the availability of multiple parses. Throughout this section, it is important to bear in mind the finding that neither the reflexive nor personal pronoun was fully ungrammatical in any condition: both forms were permitted in all three event types tested here, and in both +contact and -contact spatial relations. Any theory falling in this camp would therefore have to motivate multiple parses for every condition tested. Differences across conditions would then have to come down to differences in the inventory of parses that are available for a given sentence, or in the likelihood of selecting one parse over the other.

The section begins by taking a closer look at what the foundational works of Lees and Klima (1963) and Chomsky (1981) have to say about LPPs. Despite the difference in the frameworks

assumed in these work, the shortcomings are the same: motivation for covert syntactic distinctions is ultimately insufficient, and the effects of event type and relation type remain unaccounted for. From there we will turn to more recent proposals in the covert complementarity camp that aim to improve on both counts. First comes Bassel (2018, 2022), which claims to capture the effect of event type by motivating a syntactic distinction between LPPs expressing paths and LPPs expressing places. Next comes Rooryck & Vanden Wyngaerd (2007|2011), which claims to capture the effect of relation type through valuation of AxPart, a PP-internal head that mediates interpretation of the spatial relation expressed by the preposition. Though these proposals improve on the structural accounts offered in Lees and Klima and Chomsky, we will see that the issue of independent motivation persists for both, and one of the key effects investigated here is left unaccounted for. Finally, following discussion of Rooryck & Vanden Wyngaerd, I will introduce the treatment of Bader (2011), which appeals to differences in meaning as the source of non-complementarity rather than differences in syntactic structure. This approach will be shown to be untenable in light of examples in which interpretive differences between reflexives and personal pronouns are implausible.

2.4.1.1 Lees & Klima (1963): Reduced clause analysis

The starting point for the study of pronoun licensing within the generative tradition, Lees & Klima (1963) proposes formal rules for English reflexives and personal pronouns that depend entirely on the syntactic locality: the personal pronoun surfaces just in case it originates in a distinct source clause from its antecedent, while the reflexive must be used otherwise. While the authors maintain that the strict complementarity predicted by this approach applies in LPPs, they observe that which form is required depends on the type of eventuality expressed by the sentence in which the LPP occurs, illustrating with the minimal pairs in (28) and (29).

- (28) a. The men_i threw a smokescreen around themselves_i.
 b. The men_i found a smokescreen around them_i. (= (18))

- (29) a. John_i smeared the oil on himself_i.
 b. John_i ignored the oil on him_i.
 (Lees & Klima 1963:20)

To account for such contrasts, Lees & Klima argue that the surface similarity between the (a) and (b) sentences belies distinct derivational pathways. In sentences requiring the personal pronoun, the LPP is said to originate in a clause of its own, which is then reduced through a series of transformations. For instance, the sentence in (28b) is said to have an underlying grammatical structure consistent with any of the complex sentences in (30). (29b) is assumed to derive from the relative clause structure shown in (31).

- (30) a. The men_i found a smokescreen to be around them_i
 b. The men_i found a smokescreen which was around them_i.
 c. The men_i found a smokescreen and it was around them_i.
 (Lees & Klima 1963:19)
- (31) John_i ignored the oil which was on John_i.
 (Lees & Klima 1963:21)

While this proposal provides a way of subsuming LPP pronoun licensing under a more general syntactic licensing mechanism, Lees & Klima's appeal to covert derivational complexity ultimately suffers from a lack of independent motivation. The availability of a biclausal paraphrase may be taken as evidence that a complex derivation is at least plausible. However, Lees & Klima acknowledge that this reasoning runs afoul for the sentence in (32a), which is compatible with an interpretation that is likewise expressible with a relative clause as in (32b), but which nevertheless permits the reflexive.

- (32) a. John_i has many books about himself_i.
 b. John_i has many books which are about John_i.
 (Lees & Klima 1963:23-4)

A similar problem arises from some sentences investigated in the present study. For example, on both Experiment 1 and Experiment 2, the reflexive received higher ratings on average than the

personal pronoun in the sentence in (33a).¹⁶ However, this sentence is also compatible with biclausal paraphrases, as shown in (33b-c).

- (33) a. Logan_i felt some flour on ?him_i/himself_i.
b. Logan_i felt some flour to be on him_i.
c. Logan_i felt some flour which was on him_i.

The opposite problem arises for sentences expressing possession, such as the sentence in (34), which was found to favor the personal pronoun on the whole but which does not allow a biclausal paraphrase without inducing a different sense of the verb *have* (i.e., ownership rather than incidental proximity¹⁷).

- (34) a. Logan_i had some flour on him_i/?himself_i.
b. *Logan_i had some flour to be on him_i.
c. *Logan_i had some flour which was on him_i.
d. *Logan_i had some flour and it was on him_i.

In the same vein, note that location changes sentences were also found to be compatible with the personal pronoun (though the reflexive was preferred on the whole) despite incompatibility with a biclausal paraphrase, as shown in (35).

- (35) a. Logan_i sprinkled some flour in front of ?him_i/himself_i.
b. *Logan_i sprinkled some flour to be in front of him_i.
c. *Logan_i sprinkled some flour which was in front of him_i.
d. *Logan_i sprinkled some flour and it was in front of him_i.

¹⁶ I use '?' in (33a) to signal that the personal pronoun was dispreferred relative to the reflexive for this particular sentence on the surveys reported above. This does not mean that the personal pronoun is dispreferred by all English users in this sentence. This preference pattern is also not characteristic of all sentences belonging to this condition, namely perception/+contact, for which we rather found an overall preference for the personal pronoun. What is important is that the reflexive is certainly a grammatically viable option for the sentence in (33a), at least for most of the participants surveyed.

¹⁷ This difference in meaning is more evident with inanimate subjects, which are incompatible with the ownership sense of *have*:

- (v) a. The counter had some flour on it.
b. *The counter had some flour which was on it.
c. *The counter had some flour and the flour was on it.

Even if we grant that multiple derivational pathways are possible for English LPPs, we still run into a problem capturing the effects of event type and relation type on preferences between pronoun forms. Discussion in Lees & Klima suggests that LPPs paired with location change verbs do not involve biclausal derivations, while LPPs paired with perception verbs do. However, in light of the results reported here, we would have to conclude that sentences expressing location change and perception, as well as sentences expressing possession with *have*, are all compatible with both monoclausal and biclausal derivations. Given this optionality, the contrast between location change sentences on the one hand and perception and possession sentences on the other lack a straightforward explanation. Even more mysterious is the impact of relation type on pronoun preferences: while it is natural to entertain differences in complexity across verbal complements, it is not obvious why this complexity should at all depend on physical contact.

2.4.1.2 Chomsky (1981): PP-internal subject projection

Transformational approaches to pronoun licensing have long since fallen out of fashion within the generative tradition. However, the challenges faced by Lees & Klima's (1963) proposal are inherited by all subsequent theories that assume strict complementarity between reflexives and personal pronouns, including Chomsky's (1981) classical Binding Theory.

In place of transformational rules, Chomsky (1981) proposes binding principles that constrain the distribution of reflexives and personal pronouns by restricting the syntactic relations they may hold with their antecedents. Reflexives are claimed to require a c-commanding antecedent within the smallest phrase containing a syntactic subject; personal pronouns disallows such an antecedent. As such, the syntactic configurations that permit reflexives are predicted to disallow personal pronouns under the same interpretation, and vice

versa.¹⁸ Acknowledging the challenge posed by LPPs for binding theory, Chomsky echoes Lees & Klima to suggest that the apparent absence of complementarity within English LPPs is illusory, and that the two forms are in fact licensed under distinct syntactic parses. These parses were shown in (14), repeated here in (36).

- (36) a. Michele_i set a glass next to *her_i/herself_i. (= (14a))
 b. Michele_i set a glass_k [PRO_k next to her_i/*herself_i]. (= (14b))

But like Lees and Klima's earlier account, Chomsky's treatment of LPPs runs into the problem of independent motivation. In fact, Chomsky (1981:148, note 109) questions whether there are sufficient grounds for assuming covert structural distinctions aside from pronoun licensing. As he puts it: "The problem is not one of finding a descriptive device within the present framework, but of motivating it—that is, the problem is to gain some understanding of the nature of these constructions. In some cases, a clausal structure, involving some kind of predication in the sense of Williams (1980), seems quite plausible [...] In others, the device seems quite artificial."

For Chomsky, the plausibility of a clausal parse is tied to whether the LPP can reasonably be said to be predicated of the object. For example, the parse in (36b) is said to be plausible for the sentence in (37a) since the LPP is naturally understood as expressing the location of the snake, thus entailing the sentence in (38).

- (37) John_i saw a snake near him_i.
 (Chomsky 1981: 290)
 (38) There was a snake near John.

¹⁸ Noting that complementarity appears not to arise in the possessor position of noun phrases, Chomsky (1981) amends Principle A such that the domain of the reflexive is delimited by a subject distinct from it (see also Huang 1983). This detail not predicted to affect pronoun licensing in complement position, including LPP complements, and so will be overlooked for simplicity of exposition.

Echoing this intuition, Kiparsky (2002) codifies the correlation between predication and personal pronoun use in English LPP in the generalization shown in (39), illustrating with the example in (40).¹⁹

- (39) A pronominal [here: *personal pronoun*; SB] is possible if and only if the PP can be predicated of the object.

(Kiparsky 2002:42)

- (40) a. John_i aimed the gun at *him_i/himself_i.
→ *The gun is at him now.
b. John_i brought the gun with him_i/*himself_i.
→ *The gun is with him now.
(Kiparsky 2002:42-3)

The main problem for this take, identified in Chomsky (1981:290), is that the personal pronoun can appear in sentences for which a predication relation cannot be said to hold between the LPP and direct object (cf. Kuno 1987:282-3, note 30; Rooryck & Vanden Wyngaerd 2007:76-7 on this point):

- (41) John_i drew the book towards him_i.
(Chomsky 1981: 290 [3])

- (42) *The book is towards John.

If predication is taken as a necessary condition for a clausal parse, under the assumption that a clausal parse is required to license subject-oriented personal pronouns in LPPs, the acceptability of the personal pronoun in (41) cannot be explained. Even more troublesome are sentences such as (43), where there is no direct object to begin with.

- (43) John_i looked around him_i.
(Kiparsky 2002:43)

¹⁹ Rather than positing syntactic distinctions, Kiparsky (2002) proposes that the reflexive and personal pronoun surface under distinct semantic parses. The details of Kiparsky's proposal will not be discussed here as the account runs into the same empirical difficulties as the syntactic approach suggested in Chomsky (1981).

The predication diagnostic thus appears to wrongly rule out some contexts in which a personal pronoun is available. Turning back to sentences included present study, we find that this diagnostic also fails to shed light on the contexts in which it is rather the reflexive that is preferred. All of the sentences tested are compatible with the kind of entailment relation shown in (40b), including those that strongly favored the reflexive, such as the sentence in (44).

- (44) Chloe poured some glitter on her/herself.
 → The glitter is on Chloe now.

In a sense this outcome is desirable: recall that across LPP constructions, even those that were found to favor the reflexive, preferences between pronoun forms were significantly less stark than what was found for sentences in which Condition B is predicted to render the personal pronoun ungrammatical. We might therefore conclude that while predication does not entail a clausal parse, it does signal that a clausal parse is possible, correctly predicting that the personal pronoun is permissible, even if not preferred, in all of the sentences investigated here. However, we are left without an explanation for why a clausal parse should be preferred in some cases while it is dispreferred in others and, hence, for the effects of event type and relation type.²⁰

2.4.1.3 Bassel (2018, 2022): Path vs. Place LPPs

Bassel (2018, 2022) suggests a new way of understanding the covert syntactic contrast suggested in Chomsky (1981) that is grounded in the semantic contribution of the LPP. Drawing on examples from both English and Hebrew, Bassel argues that the structural distinction shown

²⁰ An additional snag for Chomsky (1981), observed in Bouchard (1982:84-5), is that LPPs strongly favor the personal pronoun appear to allow the reciprocal *each other* (judgments from Bouchard):

- (vi) a. *They saw snakes near themselves.
 b. They saw snakes near them.
 c. They saw snakes near each other.

Chomsky (1981) takes reflexives and reciprocals to be subject to the same licensing constraint, namely Principle A. Hence, even if we say that preference for the personal pronoun follows from preference for a small clause parse, we are left without an explanation as to why the reciprocal is not similarly degraded.

in (14) and (36), repeated once more in (45), corresponds to a distinction in interpretation. LPPs that lack an internal subject (45a) are argued to denote *paths*, which may be understood as properties of events that involve spatial trajectory. LPPs that include internal subjects (45b) rather denote *places*, taken to be properties of individuals (cf. Botwinik-Rotem 2003, which draws a similar distinction²¹).

- (45) a. PATH LPP: Michele_i set a glass next to *her_i/herself_i. (= (14a), (36a))
 b. PLACE LPP: Michele_i set a glass_k [PRO_k next to her_i/*herself_i]. (= (14b), (36b))

Motivation for the path-place distinction comes in part from the observation that strictly path-denoting LPPs—directional LPPs, e.g., those headed by *to* and *toward*—differ from strictly place-denoting LPPs with regard to whether arrival at the expressed endpoint is entailed in location change sentences. Path LPPs are shown not to entail arrival at the endpoint, such that sentences containing path LPPs are compatible with continuations canceling arrival, as in (46a). In contrast, place LPPs do entail the endpoint, such that cancelation gives rise to contradiction, as shown in (46b).

- (46) a. I threw the book to Mary (but aimed it badly and it didn't get there).
 b. I threw the book next to Mary (#but aimed it badly and it didn't get there).
 (Bassel 2022:27)

Bassel also cites evidence from Bruening (2018) that, when paired with a path PP, depictive predicates strictly target the process of location change rather than the end state. When paired with place LPPs, the depictive must apply at the end state. This difference is illustrated in (47) with the depictive *wet*.

- (47) a. Albert walked to the flat wet but got there dry.
 b. Albert walked in the flat wet #but got there dry.

²¹ Botwinik-Rotem (2003) treats path PPs as properties of eventualities (type <vt>) and place PPs as properties of entities (type <et>).

(Bassel 2022:26, adapted from Bruening 2018)

Though it makes use of the same underlying syntactic distinction, Bassel's treatment significantly improves on Chomsky (1981) in that it directly predicts pronoun preferences to depend on the type of event expressed by the sentence. Because the availability of the subjectless parse relies on the availability of a path interpretation, and because paths are limited to events that involve location change, reflexives are expected to be more natural in sentences expressing location change than in sentences expressing perception or possession, in line with the findings presented here.²² But while the path/place distinction can capture this side of the overall preference pattern, some questions remain in accounting for the fuller empirical picture.

The first question concerns the availability of reflexives in place LPPs. Because of their incompatibility with path LPPs, this analysis would predict the reflexive to be ungrammatical in sentences that do not express location change (cf. (45b)). However, survey results confirm that reflexives are available (albeit dispreferred) in the expression of perception and possession.

Acknowledging that English pulls apart from Hebrew in this respect, Bassel suggests that optional use of the reflexive in place-denoting LPPs follows from the fact that English reflexives have a "logophoric" function: in the absence of a suitable antecedent within their local domain, they may be discursively licensed if the clause containing them expresses the point of view of their antecedent (see fn. 5; cf. Charnavel 2020a, 2020b²³). Appeal to logophoric reflexive licensing falls in line with prior work claiming a correlation between point of view and pronoun

²² Perception events can be expressed using LPPs that appear to be path-denoting: *I glanced towards the door; I peeked over the fence at my neighbor's dog; I saw the dog through a hole in the fence*. Indeed, Gisborne (2010:122) argues that one of the senses of the English verb *see* has the semantics of a verb of motion, with the LPP expressing a directional meaning. However, it is crucial for this account that LPPs occurring in the kinds of perception sentences considered in the present work, with a place-compatible LPP following a perceptual target, cannot be interpreted as expressing a path.

²³ Under Charnavel's (2020a, 2020b) logophoric A-binder hypothesis, logophoric reflexives are also syntactically licensed by virtue of local binding by a covert pronoun corresponding to the individual whose first personal perspective is expressed in the phrase containing the reflexive. The theoretical treatment assumed for logophoric reflexives will not bear on the discussion that follows.

choice in English LPPs (cf. fn. 5). Cantrall (1974:148-9) for instance exemplifies this relationship with the minimal pair in (48).

- (48) a. They_i placed their guns, as they looked at it, in front of themselves_i/*them_i.
b. They_i placed their guns, as I looked at it, in front of *themselves_i/them_i.

At the same time, perspectival effects do not preclude local binding of the reflexive by the sentence subject; indeed, the proposals of Rooryck & Vanden Wyngaerd (2007|2011) and Kuno (1987), introduced below, both treat perspectival effects while maintaining local binding.

As evidence that the sentence subject truly is syntactically non-local, Bassel applies the animacy-based diagnostic for logophoric reflexives proposed in Charnavel & Sportiche (2016) and Charnavel (2020a, 2020b). In those works, it is demonstrated that animacy—more specifically, possession of a mental state—is a necessary condition for logophoric reflexive licensing. Therefore, if subject-oriented reflexives in place LPPs are necessarily logophoric rather than locally bound, we would expect inanimate reflexives to be unavailable. Bassel suggests that this prediction is borne out in examples such as (49), where the reflexive is marked as ungrammatical.

- (49) The sprinkler_i detected water around it_i/*itself_i.
(Bassel 2018:57)

An animacy contrast is also reported in Cantrall's (1974) example in (50), where the inanimate reflexive is also marked as ungrammatical.

- (50) a. The hunter_i had a clear path in front of him_i/himself_i.
b. The fire_i had a clear path in front of it_i/*itself_i.
(Cantrall 1974:48)

However, it is unclear that the stark contrast between animate and inanimate reflexives in place LPPs reliably obtains. Both the reflexive and personal pronoun versions of the sentences in (49)-(50) were included in a preliminary online acceptability survey testing examples from prior

literature.²⁴ Ratings were higher for the personal pronoun than for the reflexive for the sentence in (49) (69.4/100 vs. 52.9/100).²⁵ However, the same is true for comparable examples in the current study with animate subjects, such as the sentence in (51) (73.45/100 vs. 46.8/100, Experiment 1).²⁶

(51) Michael_i noticed some newspapers around him_i/??himself_i.

As for the minimal pair in (50), survey results suggest that the personal pronoun is no better relative to the reflexive in (50b), where the antecedent is inanimate (83.6/100 vs. 67.9/100), than it is in (50a), where the antecedent is animate (99.5/100 vs. 84.8/100).²⁷

Evidence from animacy thus suggests that local binding by the sentence subject is possible after all and, hence, that place does not necessarily comprise a domain for antecedent-based Principle A.²⁸ This conclusion should not be taken to mean that animacy has no effect on LPP pronoun preferences. Additional work is necessary to determine precisely how animacy does (or

²⁴ 25 minimal pairs from the literature were included in a preliminary survey conducted at the onset of this study. Each participant saw either all reflexive sentences or all personal pronoun sentences. Sentences were presented one at a time in random order; contexts were not included since they were not provided in the source literature. 40 adult participants were recruited through Prolific, resulting in 21 judgments for personal pronoun sentences and 19 judgments for reflexive sentences. I give mean ratings in the text and note statistical comparisons in footnotes.

²⁵ A linear regression analysis showed no significant difference between forms ($p=0.188$).

²⁶ A linear mixed effects analysis with subject as random effects showed a marginal difference between forms ($p=0.0214$).

²⁷ A linear regression analysis showed main effects of animacy ($p<0.05$) and pronoun form ($p<0.05$) on ratings for these sentences, but no interaction between animacy and pronoun form ($p=0.95$).

²⁸ The view that local binding is precluded in LPPs in perception sentences is also challenged in Hicks (2005, 2009). Adopting diagnostics from Lebeaux (1991), Hicks argues that local binding is possible for subject-oriented reflexives in LPPs based on three purported differences with logophoric reflexives: unlike logophoric reflexives, LPP reflexives are shown to disallow split antecedents (vii.a), to require overt c-command by their antecedent (vii.b), and to only permit sloppy readings under ellipses (vii.c). However, see Charnavel (2020) for critical discussion of these tests.

(vii) a. *John showed Mary a snake near themselves.
 b. *John's mother found a snake near himself.
 c. *John found a snake near himself, and Bill did too.
 ✓ sloppy reading: Bill found a snake near Bill
 x strict reading: Bill found a snake near John
 (Hicks 2005:123)

does not) bear on the acceptability of reflexives and personal pronouns in the types of sentences under investigation here. My contention is that, whatever differences there may be, they do not appear to be the product of binding principles.

Though not a direct argument against the assumption of non-locality, it should be noted that Bassel's treatment predicts logophoric licensing to occur in the presence of a PP-internal syntactic subject, with which the reflexive is coarguments. However, it has long been observed that logophoric interpretations are not generally available for English reflexives that are coarguments with a syntactic subject; this is one of the primary motivators for predicate-based theories of binding (e.g., Pollard & Sag 1992, Reinhart & Reuland 1993; see Charnavel & Bryant 2022 for discussion). In fact, it is on the basis of the contrast with embedded verb phrases that Reinhart and Reuland (1993) argue that LPPs *do not* project syntactic subjects:

- (52) a. Max_i rolled the carpet over him_i/himself_i.
 b. Lucie_i heard Max praise her_i/*herself_i.
 (Reinhart & Reuland 1993:688)

If we assign a small clause status to both sentence in (52)—that is, if the LPP in (52a) contains a subject just like the embedded VP in (52b)—then this contrast is not immediately explained.²⁹

²⁹ One solution for this issue comes from Varaschin (2021), to be introduced in Section 2.4.2.3: namely, logophoric licensing is possible in (52a) but not (52b) because only in the former is the predicate *anti-reflexive*. Note, however, that Varaschin suggests that *over* is not anti-reflexive. As such, the reflexive in (52a) is wrongly predicted to be blocked.

Another solution is to move away from the view that subjects necessarily delimit reflexive binding domains in English. For example, Clark and Jäger (2000) suggests that there is something special about verbs in constraining English reflexives. Similarly, Reinhart and Reuland (1993:690, fn. 31) and Reuland (2011) suggest that a predicate-based Principle A may apply specifically to reflexives selected by predicates denoting (properties of) events; fitting with the latter view, Bassel (2018) argues that the locative preposition in place PPs rather denotes a property of individuals. Finally, theories such as Hicks (2005, 2009) and Bader (2011) posit the phase (in particular, the LF phase) to be the domain relevant for reflexive binding. While small clauses are often regarded as phases (see Citko 2014), one might argue that LPPs never comprise LF phases, even when an internal subject is projected.

Importantly, any explanation for the English facts would have to be restricted to English, or more specifically not extended to Hebrew, where subject-oriented reflexives are reportedly disallowed from place LPPs, regardless of animacy.

The second question concerns whether the path/place distinction can really buy us the event type contrast reported here. Bassel’s (2018, 2022) proposal predicts that only the reflexive can be used to corefer with the sentence subject in path LPPs (cf. (45a)). Because the prepositions included in the present study can all appear in non-location change sentences, it is possible to appeal to variable parsing to account for optionality of the personal pronoun: the reflexive surfaces under a path interpretation, while the personal pronoun (preferably, if not obligatorily) surfaces under a place interpretation. Indeed, Bassel argues that certain prepositions are lexically ambiguous between path and place. Importantly, we would have to assume that the path interpretation is available across location change sentences, if not preferred, in order to account for the overall preference for the reflexive found there. Otherwise, we would not predict a difference between location change sentences and perception and possession sentences.

The problem with this assumption is that 20 of the 36 location change sentence pairs included in the present study involve verbs that are generally incompatible with prepositional phrases that are taken to unambiguously denote paths, e.g., directional PPs headed by *from* and *toward*,³⁰ for instance verbs *set*, *lay*, and *drape*. I take this to follow from the fact that such verbs obligatorily occur a place PP expressing the endpoint of motion. Evidence for this comes from the observation that, contrary events expressed with directional PPs as in (46a), repeated in (53a), sentences containing these verbs entail arrival at the location expressed by the LPP, thus patterning with sentences containing LPPs rather analyzed as expressing a place, such as (46b), repeated in (53b). This is illustrated in (54), where proper names are used rather than a pronoun to increase the plausibility of path interruption.

³⁰ In fact, *set* can occur with *toward*, as in *Set the speaker toward the back of the room*. There, though, it seems to have a meaning like “close to”; indeed, we can say *Set the speaker somewhere toward the back of the room*, where the endpoint is explicit (though indefinite). Note, too, that we can use *toward* in stative constructions, such as *Chloe stood toward the back of the room*. *Toward* thus appears to be compatible with place as well as path interpretations (contrary to Ramchand 2008 and Bassel 2018, 2022).

- (53) a. I threw the book to Mary (but aimed it badly and it didn't get there). (=46a))
 b. I threw the book next to Mary (#but ... it didn't get there). (=46b))
- (54) a. Noah set a ladybug on Abigail (#but it flew away before it touched her).
 b. Michael laid some newspapers over Naomi (#but she rolled away before they were over her).
 c. Jason draped a shawl over Amelia (#but she ducked away before it was over her).

Because they are incompatible with path LPPs, we would predict sentences with verbs such as *set*, *lay*, and *drape* to pattern with their perception and possession counterparts, where we do not find a strong preference between forms. However, these sentences behaved no differently than sentences with verbs that can appear with unambiguously path-denoting LPPs, such as *slide*, *pull*, and *throw*: for instance, the reflexive was found to be strongly preferred over the personal pronoun in the sentences in (55).

- (55) a. Noah_i set a ladybug on ??him_i/himself_i.
 b. Michael_i laid some newspapers over ??him_i/himself_i.
 c. Jason_i draped a shawl over ??him_i/himself_i.

In fact, splitting location change sentences according to the path compatibility of their verbs, we find that sentences with verbs that do not permit path PPs turned up a somewhat greater preference for the reflexive than did sentences with verbs that do permit path PPs ($B = -0.18771$, $p = 0.0385$). To account for this, we would have to assume not only that the path reading is available with these verbs after all, but also that the path reading is more prevalent than the place reading, contrary to the binding-independent selectional restrictions.

Looking beyond the sentences investigated here, note that when it comes to directional PPs, Bassel's treatment faces the same problem identified in Chomsky (1981) for examples like (41), which permit the personal pronoun despite assumed incompatibility with a clausal parse. Bassel acknowledges that subject-oriented personal pronouns are permitted in directional PPs, e.g., PPs headed by *toward* and *from*, which are there taken to unambiguously denote paths of motion rather than places. Citing examples from Lederer (2013), given in (56), it is suggested

that permissibility of the personal pronoun in path LPPs depends on special cases of deictic matching between verb and preposition: while the personal pronoun is preferred when the directionality of the preposition matches the directionality inherent to the verb, the reflexive is preferred when directionality does not match.³¹

- (56) a. John_i pulled the book toward him_i.
 b. John_i pushed the book away from him_i.
 c. John_i pulled the book away from himself/??him_i.
 d. John_i pushed the book toward himself/??him_i.
 (Lederer 2013:517-8)

If this is the case, we would expect the personal pronoun to be unacceptable whenever the Path LPP pairs with a verb that is not directionally specified. Bassel (2018) suggests that this prediction holds, providing the example in (57) with the *roll*.

- (57) Max_i rolled the carpet toward *him_i/himself_i.
 (Bassel 2018:8)

If it were the case that permissibility of the personal pronoun was restricted to cases of deictic matching, we might dismiss examples like (56a-b) as comprising exceptional constructions outside the purview of binding principles. However, survey results suggest that both forms are largely acceptable, with the personal pronoun in fact receiving slightly higher ratings overall (89.6/100 vs. 82.4/100).³² So while there may be a correlation between

³¹ According to Lederer (2013), the pattern in (56) follows from the fact that the reflexive is used in LPPs to signal that the direction of motion is contrary to expectation. In Chapter 4, I will present experimental findings that lend support to Lederer's explanation.

³² Bassel (2022:16) provides a different example illustrating binding possibilities with *toward* in English: *Corporal Crump turned the medal toward %?him/himself*. In fn. 4 therein, the acceptability markings provided for this example are noted to reflect "judgments of five native English speakers, ranging between rejection and dispreference of the coreferential reading of the pronoun." This sentence did not make it into the survey of existing examples (that survey having been run in Spring 2021), but the acceptability marking and judgment description appear consistent with the weaker reflexive preference reported for -contact location change sentences above. Lederer (2013:513) shows the following corpus example: *He stopped and turned her toward him and tried to kiss her on the mouth*.

directionality and reflexive use in English, it seems unlikely that the personal pronoun is syntactically ruled out.³³

As a final note, while the path/place distinction is argued to explain the effect of event type on pronoun preferences, it does not predict an effect of relation type. (Interestingly, Bassel (2022) observes that contact does not have an effect on LPP pronoun licensing in Hebrew.)

This is not to say that there is no empirical validity to the path/place distinction posited in Bassel (2018, 2022). This distinction seems particularly well-suited for understanding Hebrew pronoun choice, based on Bassel's examples. It also gives us a handle on other English LPP phenomena, including arrival entailments (53) and interpretation of depictives (47), as well as co-occurrence with other locative information. However, the path/place distinction—at least, the strict mapping of this distinction onto the syntactic structures in (36)—does not appear to fully explain the English pronoun preference pattern reported here.



2.4.1.4 Rooryck & Vanden Wyngaerd (2007|2011): Axial features in LPPs

Rooryck & Vanden Wyngaerd (2007|2011) also propose that subject-oriented reflexives and personal pronouns surface in LPPs under distinct syntactic parses. There, the key difference comes down not to projection of a PP-internal subject, but to evaluation of a PP-internal AxPart head, which is said to contain a set of features corresponding to the spatial regions or dimensions relevant to the preposition (e.g., the left-right dimension for *next to*, cf. Svenonius 2006).

In sentences expressing perception or location change, AxPart may value its features in one of two ways: it may either enter into an Agree relation with the complement of the preposition, or it may be bound by syntactic representation of the speaker located in the clausal periphery.

³³ This follows if we assume *to* PPs are path-denoting. Ramchand (2008) does not, taking them to instead correspond to result states, equivalent to Bassel's derived endpoint, a place PP. But even PPs that cannot express a result state are compatible with the personal pronoun, as in *Mary looked around her for her car keys*.

The former route requires the reflexive, which is able to supply the necessary features by virtue of the semantic association of *-self* with the physical form of the pronoun’s referent. The reflexive, in turn, may take the sentence subject as a local antecedent.³⁴ The latter route rather requires the personal pronoun because representation of the speaker within the PP creates a barrier for binding. These two parses are shown in (58).

- (58) a. [_{CP} Ø_{Speaker} [Michele_i set a glass [next to [_{AxPart} {left-right} [herself_i{left-right}/*her_i]]]]]
- 
- b. [_{CP} Ø_{Speaker} [Michele_i set a glass [next to [_{AxPart} {left-right} [*herself_i/her_i]]]]]
- 
- (cf. Rooryck & Vanden Wyngaerd 2011:248)

Motivation for these two derivations comes in part from purported interpretive differences between LPPs containing reflexives and personal pronouns. Following prior work, Rooryck & Vanden Wyngaerd claim that the reflexive is associated with an “object-centered” interpretation of the spatial relation, whereas the personal pronoun gives rise to an “observer-centered” interpretation (see Poutsma 1916, Cantrall 1974, Kuno 1987, van Hoek 1997). Along with examples from prior works (including Cantrall’s example in (48) above) the authors illustrate the relationship between pronoun choice and point of view with the image in **Figure 8** coupled with the pair of descriptions given in (59).

³⁴ The 2011 version of Rooryck & Vanden Wyngaerd’s proposal assumes that the LPP adjoins to vP, where the reflexive enters into an Agree relation with the sentence subject. In fact, constituency tests suggest that the LPP merges low in location change sentences: for instance, it cannot be excluded from *do so* substitution, as shown in (vii). (cf. Winkler 1997 and citations therein)

(viii) *Chloe poured glitter on herself, and Richard did so on his card.
 Though a potential snag for an Agree-based approach to binding generally, this aspect of Rooryck & Vanden Wyngaerd (2011) is not central to the account of LPP structure discussed here.



Figure 8. *Eleonora of Toledo and Giovanni de' Medici* c.1544, by Agnolo Bronzino (1503-1572), Uffizi Gallery. Rooryck & Vanden Wyngaerd (2011:260-1) argue that use of a reflexive in expressing Giovanni's location relative to Eleonora forces adoption of Eleonora's perspective (59a) while the personal pronoun is compatible with the viewpoint of an observer (59b).

- (59) a. Eleonora_i has positioned Giovanni to the right/*left of herself_i.
 b. Eleonora_i has positioned Giovanni to the right/?left of her_i.
 (Rooryck & Vanden 2011:261)


The reflexive is shown to require interpretation of the LPP from Eleonora's perspective, so that only *to the right* can be used to convey where Giovanni is seated. The personal pronoun, on the other hand, is compatible with both Eleonora's perspective and the perspective of someone viewing the portrait, such that *to the left* can be used as well.

Rooryck & Vanden Wyngaerd propose that the structural distinction in (58) can also explain the relationship between pronoun choice and physical contact. The preposition *around* is said not to give rise to perspectival differences: contrasting with relations like *left/right*, whether a rope can be said to be *around* John is taken to be wholly independent of vantage point (according to Rooryck & Vanden Wyngaerd (2011:257), because *around* involves all dimensions of its complement). Nevertheless, the sentences in (60) are reported to display a difference with respect to whether direct contact is inferred: while direct contact is shown to be required when the reflexive is used, it is rather optional when the personal pronoun is used.

- (60) a. When he_i woke up, John_i found a rope around himself_i.
 He had been tied up/*It described a neat circle 4 meters in diameter.
- b. When he_i woke up, John_i found a rope around him_i.
 He had been tied up/It described a neat circle 4 meters in diameter.
- (Rooryck & Vanden Wyngaerd 2011:257)

The authors propose that the contact effect, just like the perspectival effect, is rooted in evaluation of AxPart: the axial features supplied by *-self* in (60a) give rise to a “physical contact” reading, whereas the speaker’s perspective in (60b) allows a “more abstract interpretation of what counts as an appropriate location” (2011:258).

However, the effect of relation type cannot come down to the features themselves, given Rooryck & Vanden Wyngaerd’s treatment of possession sentences. Observing that perspectival shifts are not available, the authors conclude that AxPart cannot be bound by the speaker in the expression of possession. Instead, the personal pronoun is argued to surface in the parse shown in (61), where AxPart is instead bound by the sentence subject:³⁵

- (61) [CP Ø_{Sp} [Michele_{i{left-right}} had a glass [next to [AxPart {left-right} Michele[*herself_i/her_i]]]]]
- 
- (cf. Rooryck & Vanden Wyngaerd 2011:278)

Crucially, axial features supplied by subject are taken to be *identical* to the features supplied by the reflexive, considering both refer to the same entity. Indeed, when it comes to *have* sentences, the authors note that “[t]he only possible candidate for providing an object-centered interpretation is the main clause subject.” (2011:278). Hence, we would expect the structure with personal pronoun in (61) to give rise to the same interpretation as the structure with the

³⁵ The parse in (61), with binding of AxPart by the sentence subject, is not shown to be possible for sentences expressing perception or location change, though the reason for this restriction is not addressed. Though not shown in the schema, the authors assume a small clause parse for possession, with the apparent direct object (e.g., *the glass*) comprising the small clause subject. Nevertheless, the reflexive is not taken to be ruled out by domain opacity in this parse, but rather because the reflexive would trigger an Agree relation with AxPart, which would then rule out binding of AxPart by the sentence subject. The absence of opacity follows under Rooryck & Vanden Wyngaerd’s phase-based theory just in case small clauses are not taken to comprise phases; see Citko (2014: Chapter 5) for discussion relevant to the phasal status of small clauses.

reflexive in (58a), including with respect to whether or not contact is inferred. Nevertheless, we find an effect of relation type for *have* sentences that is commensurate with that found for perception and location change.

Observing that the contact effect arises for *have* sentences, Rooryck & Vanden Wyngaerd (2011:280) state: “In these cases as well, it seems that an Agree relation between AxPart and the spatial dimensions or features provided by the *self*-form triggers the ‘close proximity’ reading, whereas binding of AxPart from outside allows for a more abstract locative interpretation.” This could be understood as shifting the explanation away from the axial features and onto the mechanism of feature valuation, binding vs. Agree. But it won’t do to claim that the syntactic derivation with Agree enforces direct contact between figure and ground, considering that a contact inference is not assumed to arise when Agree is established with a non-reflexive object (e.g., *the car* in examples in Rooryck & Vanden Wyngaerd 2011:§7.3.1). Note as well that, contrary to the ‘*’ marking in (60a), the reflexive is not claimed to always entail direct contact—nor should it be, considering the finding that the reflexive is generally preferred over the personal pronoun in the expression of location change even when contact does not hold between figure and ground (e.g., *Chloe poured some glitter next to herself*). Ultimately, the account of relation type provided in Rooryck and Vanden Wyngaerd (2007|2011) appears to boil down to a general correlation between the expression of direct contact and use of the reflexive form.

So why bother baking interpretive differences into the syntax? In order to account for places where complementarity does arise between pronoun forms, Rooryck & Vanden Wyngaerd appeal not to binding principles *per se*, but to an economy principle that requires use of the reflexive whenever it is available. Hence, for the personal pronoun to ever surface within LPPs, it must be in a parse that disallows the reflexive. Recall that evaluation of AxPart via Speaker binding is assumed to render the LPP opaque, blocking binding of the LPP complement by the sentence subject. In support of this stance, Rooryck and Vanden Wyngaerd (2011:233) observe

that the personal pronoun cannot always be bound by a quantifier subject (62a), in contrast with the reflexive (62b) and plural pronoun in (62c).

- (62) a. *Nobody_i/ *?Everyone_i/ ?Every boy_i saw a snake near him_i.
 b. Nobody_i/ Everyone_i/ Every boy_i saw a snake near himself_i.
 c. Nobody_i/ Everyone_i/ Every boy_i saw a snake near them_i.

The authors acknowledge in their endnote 2 that the judgments of (62a) are subject to individual speaker variation. Nevertheless, if binding of the personal pronoun is syntactically blocked, we would predict personal pronoun binding to at least be somewhat degraded relative to reflexive binding across LPPs. However, four native English speakers (myself included) find binding perfectly natural in (63a) and strongly preferred over a third person reference reading in (63b).

- (63) a. Every single camper_i reported having seen a snake near her_i while she collected firewood.
 b. Every princess_i felt a pea under her_i.

While the contrasts reported in (62) may be real, they do not seem to derive from constraints hardwired in the syntax.³⁶ As a result, the syntactic mechanism proposed in Rooryck & Vanden Wyngaerd is without independent motivation, and their method for maintaining strict complementarity cannot be maintained.

While Rooryck & Vanden Wyngaerd focus specifically on subject-oriented reflexives and personal pronouns (as does the present study), it is worth noting that the opacity claim also has ramifications for antecedence by the direct object. In particular, binding of AxPart by the Speaker

³⁶ Rooryck & Vanden Wyngaerd (2007|2011) acknowledges another potential challenge to the opacity claim, namely the availability of sloppy readings under ellipses, as in (viii), which is often assumed to require binding.

(ix) Tony saw a snake near him, and Bill did, too. ✓ sloppy reading: Bill saw a snake near Bill (Rooryck & Vanden Wyngaerd 2011:250)

However, the authors challenge this assumption, with reference to discussion in Fiengo and May (1994), Tomioka (1999), and Sauerland (2007).

ought to render the LPP complement inaccessible to any noun phrase that is external to the LPP, direct object included. We would therefore predict coreference between the direct object and LPP personal pronoun to be possible. However, as shown in (64), this prediction is not borne out, adding another strike against the opacity claim.

- (64) Max rolled the carpet_i over *it_i/itself_i.
(Reinhart & Reuland 1993:689)

Finally, note that Rooryck & Vanden Wyngaerd's proposal is puzzling for the timing assumptions it requires. Binding of AxPart by the Speaker, located in the clausal periphery, is said to block binding of the LPP complement by the sentence subject, assumed in the (2011) theory to merge in Spec,vP before raising to Spec,TP. Hence, the former binding relation must be established prior to the latter binding relation, though the latter could in principle be established within the first phase of the derivation.

Even if Rooryck & Vanden Wyngaerd's AxPart proposal could give us a handle on the effect of relation type on LPP pronoun preference, it does not predict the even stronger effect of event type, or at least a difference between sentences expressing perception and location change, both of which are compatible with the pair of parses in (58). To get the contrast reported here, we would have to say that observer-centered readings are generally preferred in former while object-centered readings are generally preferred in latter. I can think of no principled reason for this.

2.4.1.5 Bader (2011): Non-complementarity from differences in meaning

Similar to Rooryck & Vanden Wyngaerd (2007|2011), Bader (2011) pursues a phase-based theory of binding, according to which interpretive dependencies are syntactically realized as featural dependencies, mediated through Agree. It is argued that reflexives must enter an Agree relation with their antecedent in order to be interpretable; under the commonly held assumption that Agree is blocked by phasal boundaries, it thus follows that reflexives require a

c-commanding antecedent within the smallest phase containing them. Following the conventional view in the Minimalist program (see Citko 2014:§5.2), Bader (2011) maintains that LPPs do not comprise phases, such that a reflexive LPP complement is free to enter an Agree relation with the sentence subject.

In contrast with reflexives, personal pronouns are said to enter the derivation with all the features they need to be interpretable, such that no locality restrictions apply. However, like in Rooryck & Vanden Wyngaerd, use of the personal pronoun is taken to be subject to an economy principle requiring use of the reflexive whenever possible (see also Reuland's 2001 Rule BV). Crucially, economy considerations apply only when the reflexive and personal pronoun give rise to the same interpretation. Otherwise, the choice between forms depends on the message one intends to convey.

Rather than appeal to covert syntactic contrasts to account for non-complementarity in LPPs, Bader proposes that the availability of both forms follows from a reliable difference in interpretation. Referring to the work of Cantrall (1974) and Kuno (1987), Bader suggests that the reflexive is used to express an object-centered perspective and direct contact, while the personal pronoun is used to express an observer-centered perspective and absence of contact.

The problem with this explanation was anticipated in discussion of Rooryck & Vanden Wyngaerd (2007/2011). Specifically, neither pronoun form is reliably associated with a particular perspective or relation type. With respect to relation type, the results reported here confirm that the reflexive and personal pronoun can both be used regardless of whether contact holds. In fact, the reflexive was found to be preferred in the expression of non-contact in location change sentences, while the personal pronoun was preferred in the expression of contact in perception and possession sentences. Hence, reflexives and personal pronouns cannot be said to map to a difference in interpretation with respect to the type of relation they convey. As for perspective, recall that Rooryck & Vanden Wyngaerd demonstrate that pronoun choice does not correspond to perspectival shifts in possession sentences: no matter the form used, an

object-oriented interpretation necessarily obtains. Nevertheless, the personal pronoun was not only available in possession sentences, but was overwhelmingly preferred over the reflexive.

In short, the claim that reflexives and personal pronouns necessarily give rise to different interpretations cannot be maintained. As such, Bader's workaround for LPPs is untenable. Either the economy principle must be abandoned, or a covert structural contrast must be assumed to account for non-complementarity in LPPs.

2.4.2 Camp #2: Beyond binding principles

This section circles back to accounts that maintain that pronoun choice in LPPs falls outside the scope of binding theory. Theories of this sort are well poised to account for preference pattern reported here insofar as both forms are predicted to be available to some extent or other under one and the same parse: the challenge of motivating multiple parses to capture the overall gradience is avoided. The question is then what drives the choice between pronoun forms in LPPs, if not binding principles.

Under the theories put forth in Buring (2005) and Hicks (2009), the choice between forms is truly open, as far as the grammar is concerned: both the reflexive and personal pronoun are syntactically licensed, satisfying their respective binding constraints. As a result, relative preferences across constructions are not predicted one way or the other. Both theories are thus on the whole compatible with the data presented here, though we are left to find an explanation for the effects of event type and relation type elsewhere.³⁷

Other theories falling in this camp do predict preferences between forms that warrant further discussion. We will first return to Hestvik (1991), which proposes that pronoun choice

³⁷ Though they avoid the pitfalls of wrong predictions, the asymmetrical binding principles provided in Buring and Hicks may leave one wondering why the grammar would take such a shape. This point is discussed in Rooryck & Vanden Wyngaerd (2007|2011) with respect to Buring's proposal, and in Bader (2011) with respect to Hicks' proposal. As the concerns expressed therein apply to the theories generally and not the treatment of LPPs in particular, I will not dwell on them here.

may depend on whether the LPP comprises an adjunct, for reasons independent of binding. As we will see, the argument/adjunct distinction leads to several wrong predictions. Hestvik's proposal is also shown to come up short in accounting for pronoun licensing when the antecedent is the direct object rather than sentence subject.

Following discussion of Hestvik, we will turn to the predicate-based theories introduced above, Reinhart & Reuland (1993) and Varaschin (2021), as well as the hybrid proposal of Bader (2011). The former two run into trouble by assuming relative markedness of the reflexive in LPPs, thus failing to predict contexts in which the reflexive is in fact preferred over the personal pronoun; this problem is particularly pronounced for Varaschin's proposal due to its dependence on the notion of anti-reflexivity.

I will close this section by introducing one final theory, Kuno (1987), which complements syntactic constraints on pronoun use with a formal semantic constraint dictating choice between forms. Of the lot, Kuno's theory comes closest to capturing the empirical facts. But, in the end, the semantic constraint appears to be too strong in light of the gradience turned up in this study.

2.4.2.1 Hestvik (1991): Argument vs. adjunct LPPs

Building on updates to classical Binding Theory suggested in Chomsky (1986), Hestvik (1991) pursues the idea that both subject-oriented reflexives and personal pronouns are permitted in LPPs under one and the same parse. Recall from Section 2.1.1 that Hestvik (1991) defines "local domain" as the smallest complete functional category (CFC) within which the binding principles can potentially be satisfied. Under the assumption that subjectless LPPs comprise CFCs, in the absence of a PP-internal subject, the local domain of the reflexive must extend to include the entire sentence—where it finds its first potential binder—while the local domain of the personal pronoun is confined to the LPP.

This is taken to be true regardless of the particular syntactic/semantic contribution of the LPP. However, Hestvik acknowledges that differences arise across LPPs depending on the

embedding verb, for instance illustrating with the pair of sentences in (65), which first appeared in Wilkins (1988).

- (65) a. Ben_i put the blanket over ?him_i/himself_i.
b. Ben_i saw a snake near him_i/*himself_i.
(Hestvik 1991:467)

Rather than pinning the reported unacceptability of the reflexive in (65b) on violation of Principle A, Hestvik suggests that pronoun preferences may be subject to structural factors independent of binding principles, namely the distinction between *arguments* and *adjuncts*. Following Grimshaw (1990), Hestvik distinguishes between arguments and adjuncts according to their optionality within the sentence. In (65a), the LPP is an argument of the verb: its exclusion renders the sentence ungrammatical, as shown in (66a). In (65b), the LPP rather comprises an adjunct: it can be left out of the sentence without affecting grammaticality or significantly altering interpretation, as in (66b).

- (66) a. *Ben put the blanket.
b. *Ben saw a snake.

According to Hestvik, reflexives are degraded within adjunct LPPs not for lack of a suitable antecedent—the sentence subject is assumed to be sufficiently local in (65b), just as it is in (65a)—but because obligatory movement out of the adjunct phrase resulting in violation of the Empty Category Principle (cf. Chomsky 1986b).

While the argument/adjunct distinction does well in predicting some of the contrasts reported in the literature, in particular the difference between perception and location change sentences confirmed in the present study, this line of explanation falls short of capturing the full empirical picture.

The first problem is that, contrary to prediction, subject-oriented reflexives were found to be strongly preferred over personal pronouns in some adjunct LPPs, particularly in sentences expressing location change and direct contact between figure and ground. For example, no

difference in relative preferences was found between (67a), where the LPP counts as an adjunct according to the excludability criterion, and (67b), where the LPP is an argument.³⁸

- (67) a. Maya_i spilled some paint on ??her_i/herself_i.
- b. Chloe_i poured some glitter on ??her_i/herself_i.

This finding converges with Strahan (2006), which reports no difference in endorsement of the reflexive in argument and adjunct LPPs in location change sentences. Buring (2005) and Lederer (2013) similarly observe that reflexives are readily found in adjunct LPPs in actual text, offering examples such as those in (68) and (69).

- (68) a. He_i supplied the end of the cord near himself_i with a conductor in the shape of an iron key.
- b. The seductress_i must be careful not to cast this spell near herself_i.
- (Buring 2005:57)
- (69) a. As he_i looked at them walk away, something hard in him_i revolted and he_i cried inside himself_i.
- b. Jack_i could see hard frost gleaming on the windows and he_i could feel the bleak coldness of the beds inside himself_i.
- (Lederer 2013:499)

The second problem is that reflexives were found to be strongly dispreferred in some argument LPPs, namely those occurring in the expression of possession and non-contact, as in (70a).

- (70) a. Esther_i had some bird seed around her_i/??herself_i.
- b. Esther had some bird seed.

Though *have* can be used without an LPP, as in (70b), this sense of *have* is distinct, expressing ownership rather than proximity (cf. fn. 17). Because the LPP is an argument in (70a), Hestvik's

³⁸ Survey results actually do show a significant difference between sentences with verbs that do not require an LPP and verbs that do, with a greater reflexive preference in the latter ($B = -0.35911$, $p < 0.001$). However, the reflexive was reliably preferred over the personal pronoun regardless.

account would predict the reflexive to be fully acceptable, thus leaving the dispreference displayed by participants unexplained.

Importantly, Hestvik's proposal runs into trouble even if the assumption about adjuncts is abandoned. Looking beyond subject-oriented pronouns, Reinhart & Reuland (1993:687, fn. 3) point out that Hestvik's (1991) proposal fails when it comes to LPP pronouns anteceded by the direct object. Because the binding domain of the personal pronoun is taken to be confined to the LPP, it should be free to corefer with any nominal outside of the LPP. Because the direct object is taken not to comprise the subject of the LPP, it must be external to the LPP and, hence, ought to be a potential antecedent for the personal pronoun. However, LPP personal pronouns cannot corefer with the direct object, as shown in (71).³⁹

- (71) Max_i rolled the carpet over *it_i/itself_i.
(Reinhart & Reuland 1993:689)

2.4.2.2 Reinhart & Reuland (1993): Exemption

Examples such as (71) above play a central role in motivating Reinhart & Reuland's (1993) predicate-based theory of pronoun licensing. Principles A and B are recast as constraints on reflexivity, that is, on the expression of referential identity between coarguments: a reflexive may serve as an argument of a syntactic predicate (i.e., a predicate that projects a subject in the syntax) if and only if it corefers with a coargument, while a personal pronoun may serve as an argument of a predicate (syntactic or otherwise) if and only if it does not corefer with a coargument. Importantly, reflexives that are not selected by syntactic predicates are taken to be exempt from Principle A, leaving them free to find an antecedent in the discourse.

³⁹ Acknowledging this issue, Büring (2005:§11.4.3) proposes supplementing the syntactic Principle B with an independent semantic Principle B, according to which personal pronouns cannot be antecedent by semantic coarguments. This treatment echoes that put forth in Reinhart & Reuland (1993), which defines Principle B over semantic coarguments.

To account for the absence of complementarity between subject-oriented reflexives and personal pronouns in English LPPs, the authors conclude that locative prepositions do not comprise syntactic predicates: while the direct object is a semantic argument of the locative relation, it is, syntactically speaking, a constituent of the verb phrase. The personal pronoun is thus available because the sentence subject is not a coargument, while the reflexive is available because the conditions requiring coreference with a coargument are not met.

Reinhart & Reuland thus treat subject-oriented LPP reflexives as “logophoric” rather than locally bound, their distribution dependent on discourse factors such as focus and point-of-view.⁴⁰ As noted already in the discussion of Bassel (2018, 2022), appeal to logophoric licensing in the standard sense—that is, licensing via antecedence by a mental perspective holder—is undermined by the observation that subject-oriented LPP reflexives need not be animate. However, in the broader definition of “logophoric” assumed in Reinhart & Reuland (see fn. 17 therein), it is possible to maintain that the inanimate reflexives may also be exempt from predicate-based Principle A.

Be that as it may, an assumption that subject-oriented reflexives are logophoric (in whatever sense) in all LPPs runs into trouble when it comes to accounting for the preference reported here. Though not explicitly indicated in their examples, Reinhart & Reuland mention that subject-oriented LPP reflexives are marked relative to reflexives that are bound by a coargument. This markedness could follow both from competition with the personal pronoun in LPPs and from the discourse requirements constraining their use. We would therefore predict personal pronouns to be more acceptable on the whole than reflexives in LPPs, or at the very

⁴⁰ In an updated take on Reinhart & Reuland’s (1993) proposal, Reuland (2011:92) notes that an exempt reflexive can still be bound, and in some cases must be bound, if conditions for discourse licensing are not met. This move may be necessary to account for inanimate reflexives in LPPs (cf. discussion surrounding (49)-(50)), though this is not clear since discourse licensing is not assumed to require perspective-taking in Reinhart and Reuland (1993) (cf. Charnavel & Sportiche 2016, Charnavel 2020a, which argues that animacy is necessary to license exemption). But note that if binding is possible, it seems that the prediction would still be that the reflexive is relatively marked due to competition with the simpler personal pronoun—a point to which I turn below.

least no worse: along with being morphologically simpler than reflexives, personal pronouns are not subject to discourse requirements and, hence, are available invariant of context. This prediction holds up for perception and possession sentences, where the personal pronoun was generally preferred over the reflexive. However, it is surprising under this view to find that the reflexive is in fact *preferred* over the personal pronoun in the expression of location change—overwhelmingly so when direct contact holds.

To capture the effect of event type on pronoun preferences, we might stipulate that the sentence subject makes for a better perspectival center or focus in location change sentences than in perception and possession sentences. But this seems counterintuitive, considering (i) the point of perception sentences is to express the sensory experience of the subject, such that the perspective of the subject is central to the message, and (ii) possession sentences with *have* seem to have a focusing effect, centering the ground in the locative relation over the otherwise more prominent figure.

Though discussion of the conditions on exempt reflexive use are limited in Reinhart & Reuland (1993), the authors do mention that there may be reasons beyond perspective and focus to prefer the reflexive over the personal pronoun even when the latter is grammatically licensed. In their footnote 17, they refer to Ariel's (1990) accessibility hypothesis, according to which the reflexive is used to signal that the intended referent is the most accessible of the discourse candidates, where accessibility is defined in terms of topicality. If accessibility is the answer, the problem is then explaining why the sentence subject is more accessible (i.e., more topic-like) in location change sentences than in perception and possession sentences.⁴¹

⁴¹ In fact, Ariel's (1990) accessibility-based proposal is potentially at odds with the findings reported in Chapter 4, namely that reflexive use correlates inversely with the expectedness of subject coreference. Arnold (1998, 2010) argues that expectedness is closely related to accessibility. From Arnold (2010:192): "Accessible entities are those that are relatively likely to be mentioned in the current utterance—i.e., those with relatively high *expectancy*."

Alongside their predicate-based binding principles, Reinhart & Reuland (1993) posit a condition on syntactic chains, which comprise coindexed nominal expressions in sufficiently local c-command relations: details aside, if two DPs form a chain, coreference between those DPs can only be expressed using the reflexive. Importantly, Reinhart & Reuland (1993:702, fn. 45) note that a sentence subject and LPP complement could form a chain if the preposition incorporates into the verb. If such incorporation is possible, the personal pronoun is predicted to be ungrammatical at least some of the time. Optional incorporation/chain formation in location change sentences could therefore account for why the reflexive was preferred on the whole. However, we would need to explain why chain formation is not equally possible in perception and possession sentences. Hence, rather than resolving the puzzle posed by LPP pronoun choice, appeal to chain formation raises further questions, namely, what are the conditions under which chain formation can occur, and is there any independent evidence for its occurrence?

2.4.2.3 Varaschin (2021): Anti-reflexivity

Much like Reinhart & Reuland (1993), Varaschin (2021) opts for a predicate-based approach to binding theory, according to which a reflexive must be bound by a coargument, while a personal pronoun must not be. The key difference between the approaches is that for Varaschin, Principle A does apply for LPP reflexives, such that, as far as the grammar is concerned, LPP reflexives are licensed only if they corefer with the direct object. However, coreference with the sentence subject, while technically ungrammatical, is argued to be tolerable because of the anti-reflexivity of most locative prepositions, which renders coreference between coarguments semantically anomalous.

Because subject-oriented reflexives are not grammatically licensed in LPPs, they are predicted to be more marked than subject-oriented personal pronouns, just like under Reinhart & Reuland's theory. As a result, Varaschin faces the same problem in accounting for the relative

preference for the reflexive found in location change sentences—maybe even more so since Varaschin assumes that reflexive use is specifically linked to accessibility (see fn. 41). But the findings reported here are even trickier for Varaschin’s proposal because tolerable ungrammaticality—and, hence, the availability of subject coreference—crucially depends on the anti-reflexivity of the preposition. As Varaschin notes, not all locative prepositions are anti-reflexives: coreference between figure and ground is for instance observed in the sentences in (72).

- (72) a. Bobby rolled the carpet_i over itself_i.
 b. Julie_i stepped on herself_i.
 (Varaschin 2021:254, fn. 10)

Since antecedence by a coargument is possible for reflexives selected by *over* and *on*, Varaschin’s proposal would predict antecedence by the sentence subject to be intolerably ungrammatical. We would therefore expect the subject-oriented reflexives to be significantly degraded relative to personal pronouns in the complement of these prepositions. In fact, inspection of the data from Experiment 1 reveals that the reflexive was significantly preferred over the personal pronoun for sentences with *over* ($p < 0.005$) and *on* ($p < 0.004$).^{42,43}

An addition problem for the anti-reflexivity view comes from the fact that the same sort of tolerable ungrammaticality does not appear to be possible for reflexives selected by verbs that ought to be anti-reflexive by the same folk reasoning that renders locative prepositions anti-reflexive. For example, the reflexive in (73) is not free to corefer with the subject of the matrix

⁴² P-values were computed using linear mixed effects analyses with pronoun as a fixed effect and subject, item, and event type as random intercepts.

⁴³ Examples similar to (72) are discussed in Rooryck & Vanden Wyngaerd (2007:§3.2.2), which suggests that the acceptability of such sentences depends on the ability to distinguish between the part of the referent picked out by the antecedent and the part picked out by the reflexive. Indeed, figure-ground coreference is generally unacceptable in stative constructions the absence of additional specification of the nature of the relation: *#The carpet is over itself*. While this observation raises interesting questions about the interpretation of reflexive spatial relations, it does not resolve the problem faced by Varaschin (2021).

sentence despite the fact that the embedded verb, *pass*, ought to be anti-reflexive by virtue of the fact that one cannot pass oneself (judgments are my own).

(73) *Bob_i saw Michele pass himself_i in the hallway.

There is therefore good reason to doubt the Varaschin's anti-reflexivity story. Abandoning this aspect of the proposal requires either dropping the assumption that all locative prepositions project subject functions, or finding an alternative explanation as to why the presence of a subject function does not preclude the reflexive from finding an antecedent elsewhere.

2.4.2.4 Kuno (1987): Semantic constraint on reflexives

The empirical observations of Kuno (1987) figure prominently in several of the works described above; the relationship between pronoun choice and contact in particular is central to the proposals of Rooryck & Vanden Wyngaerd (2007|2011) and Bader (2011). However, all of these works elected to forgo the kind of formal treatment of English pronoun licensing put forth in Kuno, which pairs syntactic constraints with constraints stated over the semantics.

Drawing on a wide range of examples from English, LPP examples included, Kuno (1987) argues that purely syntactic binding theories, including Chomsky's binding theory, are unable to capture the complete picture. In place of the Chomskian Principles A and B, Kuno proposes the syntactic rule in (74).

(74) *Reflexive rule*: A [+reflexive] NP must be coindexed with a clause-mate NP that k-commands it. A [-reflexive] NP must be marked for disjoint reference with a clause-mate NP that precedes and k-commands it.⁴⁴
(Kuno 1987:68)

⁴⁴ The notion of "k-command," adapted from Lasnik's (1976) notion of "kommand," is defined as follows: "A k-commands B if and only if the first S(entence) or NP node that dominates A also dominates B" (Kuno 1987:36).

Importantly, nonnominative personal pronouns (e.g., *him*, *her*) are taken to be ambiguous between [+reflexive] and [-reflexive] in English. The personal pronoun in (75a), coindexed with the sentence subject, is treated as [+reflexive], just like the reflexive pronoun in (75b).

- (75) a. John_i put the blanket under him_i [+reflexive].
b. John_i put the blanket under himself_i [+reflexive].
(cf. Kuno 1987:68)

According to Kuno, the difference between the two sentences in (75) comes down to whether contact holds between John and the blanket: (75a) is said to require direct contact, for instance in a scenario in which John is attempting to hide the blanket with his body, while (75b) is neutral in this respect. To capture the effect of relation type on pronoun choice, Kuno supplements with syntactic rule in (74) with the semantic constraint in (76).⁴⁵

- (76) *Semantic constraint on reflexives*: A [+reflexive] NP that ends with *-self/selves* can be used in English if and only if its referent is the direct recipient or target of the actions or mental states represented by the sentence.
(Kuno 1987:68)

While the language of the constraint does not explicitly preclude use of the personal pronoun when conditions for the reflexive are met, Kuno argues that it is ultimately this constraint that rules out the personal pronoun in simple transitive sentences like (77): though the reflexive rule would permit a [+reflexive] personal pronoun here, because the direct object is necessarily interpreted as the target of the killing, the reflexive pronoun must be used instead.

- (77) *John_i killed him_i [+reflexive].

⁴⁵ A similar semantic parameter is proposed in Van Hoek (1997), formulated in the framework of Cognitive Grammar. I will introduce this proposal in Chapter 5.

The predictions that fall out from this proposal are thus quite strict: use of the reflexive should require that its referent can be construed as target or recipient in some sense, while use of the personal pronoun should block such an interpretation.

By design, Kuno's proposal predicts an effect of relation type on pronoun preferences in LPPs: an individual is most naturally conceived of as the recipient or target of an action if the action culminates at their body and, therefore, the reflexive is most natural when the LPP expresses direct contact. However, that the strict correlation between contact and reflexive use reported in Kuno appears to be too strong in light of the acceptability rating results from Experiments 1 and 2: the reflexive was on the whole preferred for location change sentences even when contact was inferred not to hold. Additional evidence that the reflexive does not necessarily require a direct contact interpretation comes from a follow-up contact inference survey, which included 10 location change/-contact sentence pairs from Experiments 1 and 2. Sentences were shown one at a time along with a yes/no question of the form *Was the X touching Y?* where *X* corresponded to the direct object of the target sentence and *Y* corresponded to the sentence subject and LPP complement. Between-subject responses from 60 online participants revealed that while sentences containing the reflexive were significantly more likely to give rise to an inference of contact than sentences containing the personal pronoun ($p < 0.005$), non-contact interpretations were more frequent regardless of pronoun form, in line with the interpretation originally intended for these sentences.

Note as well that the examples and discussion presented in Kuno motivating the semantic constraint in (76) all involve location change. Examples involving LPPs in the expression of perception and possession are uniformly shown to require the personal pronoun:

- (78) a. John_i heard strange noises behind him_i/*himself_i.
 b. John_i saw a plane above him_i/*himself_i. (=(24b))
 c. John_i has many friends around him_i/*himself_i.
 (Kuno 1987:65)

Importantly, the sentences in (77) are most naturally interpreted as not involving direct contact between figure and ground. However, Experiments 1 and 2 revealed an effect of relation type in perception and possession sentences that is commensurate with the one found in location change sentences. This is so even though in neither perception nor possession sentences does the referent of the LPP straightforwardly qualify as a direct target or recipient of an action or attitude, even when contact obtains. Hence, while Kuno's meaning-based approach to LPP pronoun choice may be on the right track, more needs to be said about how the basic intuition captured in (76) can be extended to cover the full range of data reported here.

2.5 Conclusion

This chapter did two things. First, it reported the results from two acceptability judgment surveys that help to clarify the relative acceptability of subject-oriented reflexives and personal pronouns in English LPPs, and especially the impact of event type and relation type on preferences between forms. With respect to event type, we find that reflexives are best when the sentence expresses location change while personal pronouns are best in the expression of other kinds of eventualities. With respect to relation type, reflexives are best when direct contact holds between figure and ground while personal pronouns are best in the absence of direct contact. Importantly, regardless of event and relation type, preferences between forms were never as stark as what we observe in sentences in which one pronoun form is uncontroversially assumed to be ruled out by syntactic binding principles. In other words, neither form was fully ungrammatical across the kinds of sentences tested here, even when one form was strongly preferred over the other.

Second, this chapter provided an overview of prior binding theoretic accounts of LPP pronoun licensing, asking how these accounts stack up to the preference pattern reported here. Proposals falling in camp #1 (Lees & Klima 1963, Chomsky 1981, Rooryck & Vanden Wyngaerd 2007|2011, Bader 2011, Bassel 2018, 2022) maintain that binding principles enforce strict

complementarity between reflexives and personal pronouns applies even within LPPs; appearances to the contrary belie covert syntactic distinctions. Generally, theories in this camp were shown to face two challenges: (i) motivating the multiple parses that are needed to license both pronoun forms across LPPs, and (ii) explaining preferences between forms in terms of these parses. Proposals in camp #2 (Kuno 1987, Hestvik 1991, Reinhart & Reuland 1993, Büring 2005, Hicks 2009, Varaschin 2021) rather maintain that binding principles do not play an active role in LPP pronoun choice. While these proposals avoid the issue of motivating multiple parses, we saw that some of them are nevertheless incompatible with the empirical picture presented here. Furthermore, with the exception of Kuno (1987), none of the camp #2 proposals provide an explanation for the effects of event type or relation type revealed in Experiments 1 and 2.

In the end, two key questions regarding binding theory remain to be answered. The first is what our binding theory ought to look like in order to account for subject-oriented pronoun licensing in English LPPs. The second is whether binding principles can be brought to bear on the effects of event type and relation type on LPP pronoun preferences, or whether these effects arise from some other corner of the language faculty. Both questions will be picked up in Chapter 3, which digs deeper into the syntax of the LPP sentences investigated here.

CHAPTER 3: BINDING THEORY AND LPP PRONOUN CHOICE

The previous chapter reported new data bearing on the use of reflexives (*herself*) and personal pronouns (*her*) in the expression of subject coreference within English locative prepositional phrases (LPPs). Consistent with the standard view within generative linguistics, we saw that preferences between pronoun forms in LPPs were never as stark as those observed for sentences in which binding principles¹ reliably render one form ungrammatical. Importantly though, we also saw that preferences greatly depend on the type of event expressed by the sentence—whether it involved contingent possession, perception, or location change—as well as the type of spatial relation expressed by LPP—whether or not it involved direct contact between figure and ground. Reflexives were most natural in the expression of location change and direct contact, while personal pronouns showed the opposite tendency. The overall preference pattern is summarized in **Table 2-B**.

Table 2-B. Relative preferences between subject-oriented reflexives and personal pronouns in English LPPs, based on acceptability ratings from Experiments 1 and 2.²

| | +contact | -contact |
|-------------|--|--|
| possession | Chloe had some glitter on ✓her _i /??herself _i . | Chloe had some glitter next to ✓✓her _i /??herself _i . |
| perception | Chloe noticed some glitter on ✓her _i /??herself _i . | Chloe noticed some glitter next to ✓✓her _i /??herself _i . |
| loc. change | Chloe poured some glitter on ??her _i /✓✓herself _i . | Chloe poured some glitter next to ?her _i /✓herself _i . |

¹ As in the previous chapter, I use “binding principles” to refer to formal syntactic constraints on reflexive and pronoun licensing and “binding theory” to refer to any generative theory of pronoun licensing that centers syntactic constraints. I extend the latter label to theories that aim to subsume binding under more general principles of syntax, for instance Bader (2011) and Rooryck & Vanden Wyngaerd (2011).

² ‘✓✓’ marks strongly favored forms, ‘✓’ marks weakly favored forms, ‘?’ marks weakly disfavored forms, and ‘??’ marks strongly disfavored forms.

This chapter addresses two related questions that were left open at the end of Chapter 2. First, it asks whether and to what extent this preference pattern falls out from syntactic constraints on pronoun licensing (i.e., binding principles, broadly construed). Second, it asks what our binding theory ought to look like in order to capture the subject-oriented pronoun licensing in English LPPs.

Prior syntactic treatments of LPP pronouns have fallen into one of two camps on this question. In **camp #1** are proposals that maintain that binding principles play an active role in determining pronoun choice in LPPs by imposing strict complementarity between forms. According to this camp, the apparent absence of complementarity comes about in one of two ways: either the forms are licensed under different syntactic parses (e.g., Lees & Klima 1963, Chomsky 1981, Rooryck & Vanden Wyngaerd 2007|2011, Bassel 2018, 2022) or the pronoun forms reliably give rise to different interpretations under the same parse (e.g., Bader 2011). In the previous chapter, I argued that the latter perspective cannot be maintained. Therefore, to account for the pattern above, we would therefore have to say that the sentences investigated here are compatible with at least two parses: one licensing the reflexive, the other licensing the personal pronoun. The challenge is to independently motivate a plurality of parses, and to explain the effects of event and relation type in terms of selection between parses.

Proposals in **camp #2** instead take the stance that the choice between subject-oriented³ pronouns in LPPs falls beyond the purview of binding principles, either because of mutual satisfaction (e.g., Kuno 1987, Hestvik 1991, Buring 2005, Hicks 2009), exemption (Reinhart & Reuland 1993), or tolerable violation (Varaschin 2021). For these proposals, there is no need to posit covert syntactic distinctions to account for the apparent absence of complementarity, nor

³ Here and throughout this chapter, I will use “subject-oriented” to describe pronouns that corefer with the matrix sentence subject. This will be so even in cases where the LPP, or an embedded clause containing the LPP, projects a subject of its own.

the effects of event and relation type: what you see is what you get, syntactically speaking. The forces at work in LPPs rather arise in some other corner of the language faculty.

Of course, it is also possible that the proper treatment of English LPP pronouns falls somewhere in between these two poles. In particular, we may find that binding principles impose strict complementarity under certain parses, but not others. Differences in overall preferences across conditions might then follow from differences in the availability of parses that require one form or the other.

In order to figure out where along this spectrum an account of LPP pronoun choice ought to fall, we will take a closer look at the syntactic parses that are plausible for the kinds of sentences we're interested in, asking whether there is evidence of any of these parses forcing complementarity between subject-oriented reflexives and personal pronouns. Along the way, we will also ask how the outcomes stack up with the predictions made by existing binding theories. Addressing this second question will also allow us to narrow the syntactic theory space, showing what kinds of theories are possible in light of the data, and what structural assumptions must be maintained in order to make them work.

The latter task is somewhat complicated by the proliferation of proposals over the years, each with their own particular formulations of the binding principles, which give rise to different predictions about what structural factors ought to matter to binding possibilities. To keep things simple, I will restrict my attention to the theories introduced in prior chapter, and will treat the predictions arising from these theories in relatively broad strokes, noting that the generalizations that follow largely hold for comparable approaches.

Section 3.1 kicks things off with an overview of the binding theories at hand and lays out the predictions for LPPs in particular. I will leave aside the proposals these theories actually make for LPPs, which were treated in the previous chapter. The aim here is to figure out what sorts of structures are expected to give rise to complementarity (under some theories, at least) so that we know what to be on the lookout for.

With this framing in place, we will turn to the sentences considered in this study, beginning with perception sentences in Section 3.2, then possession sentences in Section 3.3, and finally location change sentences in Section 3.4, with a sketchy comparison offered in Section 3.5. In each section, we will consider parses that have been proposed in prior literature, focusing specifically on the internal structure of the LPP and where it merges in the clause, and we will seek ways to tease these parses apart. In this way, this chapter will double as the start of a comparative study for the syntax of these perception, possession, and location change sentences. Importantly, though, the goal is not to provide definitive syntactic analyses—doing so would take us much too far afield. Rather, our concern is whether there is any evidence that the parses available for LPPs in these sentences play an active part in constraining pronoun choice. While we do find differences in the LPP parses that are independently motivated across event types, as well as evidence of differences in the lexical specifications across verbs, when it comes to pronoun licensing, in the end we are left without any evidence that binding principles distinguish between these structures. I will conclude that both the reflexive and personal pronoun are always possible candidates for expressing coreference with the sentences subject, as far as the LPP is concerned.

Before we dive in, a quick note on data. Acceptability markings given for original sentences presented in this chapter reflect my own judgments and, in most cases, the judgments of four to six other English speaker. (I hope to have been clear throughout when judgments are solely my own.) Speakers provided judgments on sentences using a five-point Likert scale; sentences were presented in a text document all at once and without contexts. Details regarding the ratings provided will be provided for examples for which judgments were substantially varied across speakers.

3.1 Predictions from binding theories

As noted at the onset of the prior chapter, there are two general approaches to binding theory within the generative linguistic tradition, cross-cutting the LPP “camps” described above: antecedent-based approaches and predicate-based approaches. This section lays out the general predictions for pronoun licensing that arise under these two approaches, then extends those predictions to subject-oriented pronouns in LPPs in particular.

3.1.1 Antecedent-based theories

Antecedent-based theories center the syntactic configuration of coreferring noun phrases in their formulations of binding principles. Following the seminal proposal of Chomsky (1981), two syntactic factors have reliably featured in antecedent-based binding principles: **c-command**⁴ and **locality**. Examples of binding principles incorporating these factors are given in (10).

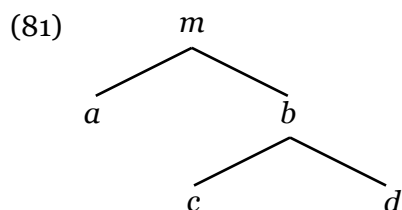
- (79) Antecedent-based binding principles
- a. Principle A: A reflexive must corefer with a c-commanding noun phrase within its local domain.
 - b. Principle B: A personal pronoun must not corefer with a c-commanding noun phrase within its local domain.

What exactly do I mean by c-command and locality? The notion of c-command, introduced in Reinhart (1979|1983), refers to the hierarchical relationship between syntactic constituents. A formal definition is provided in (80).

- (80) Definition of c-command
- A constituent *a* c-commands a constituent *b* if and only if:
- *a* does not contain *b*
 - neither *a* nor *b* dominates the other, that is, it is impossible to draw a path from one to the other without moving upward through the syntax tree
 - every syntactic node that dominates *a* likewise dominates *b*

⁴ There are alternatives to c-command in the binding literature, including k-command, which is adopted in the theory of Kuno (1987); see Kuno for an overview of these alternatives. Since c-command is the notion assumed in all other theories reviewed here, I will stick with that.

To see this definition in action, consider the tree structure in (81):



In this tree, *a* c-commands *b*: it does not contain *b*, nor does it dominate *b*, but the sole syntactic node dominating *a*—namely, *m*—also dominates *b*. Notice that *a* also c-commands *c* and *d*. On the other hand, *c* and *d* do not c-command *a* because they are dominated by a node, *b*, that does not dominate *a*.

It is important to note that both reflexives and personal pronouns are compatible with c-commanding antecedents, that is, both may be *bound*. As captured in (82a), bound readings are not available for personal pronouns in exactly those configurations in which a reflexive can be used. On the flip side, reflexives are generally blocked from those places that permit bound personal pronouns (though see fn. 5), as shown in (82).

- (82) a. Every undergraduate_i loves *them_i/themselves_i.
 b. No undergraduate_i expects their teacher to fail them_i/*themselves_i.

Contrasts like the one in (82) serve to motivate the second factor found across antecedent-based binding principles, namely, locality.

The relevance of locality to antecedent-based binding principles is straightforward: binding relations that are sufficiently local can only be expressed with the reflexive (due to Principle B), while binding relations that span a greater syntactic distance instead require the personal pronoun (due to Principle A).⁵ Less straightforward is the definition of locality relevant to

⁵ In fact, the picture is a bit more complicated than this in light of the observation that English reflexives need not always be overtly bound within their local domain, providing certain syntactic, semantic and discursive restrictions are met. Reflexives that appear to violate Principle A, often referred to as *logophoric reflexives*, have received much attention in the binding literature (see Charnavel 2020a for a

binding principles. Unlike c-command, no single definition of locality persists across binding theories, even when considering only the subset considered in the present work. A full review of these variations would take us too far afield. Let us instead zoom in on one factor that has been most prevalent across proposals, namely, the presence of a *syntactic subject*.⁶

The earliest definition of locality, tracing back at least to the transformational theory of Lees & Klima (1963), centers about the clause, which we may define as a syntactic constituent containing both a subject and a predicate. This basic idea is maintained (with some theoretical refinements) in the Binding Theory of Chomsky (1981) as well as in Bassel (2018, 2022), both of which identify the local domain of reflexives and personal pronouns as the minimal phrase containing a subject.⁷ Notice that these theories, which I will henceforth refer to as *classical binding theories (CBTs)*, assume (more or less) symmetrical locality definitions for Principles A and B. As such, reflexives and personal pronouns are predicted to be in complementary distribution, with at least one form always ruled out by binding principles (in complement position, at least).

The assumption of strict complementarity is abandoned in other antecedent-based theories, which I will refer to as *neoclassical binding theories (NBTs)*. While maintaining the centrality of the subject in delimiting the local domain for Principle A, NBTs drop the requirement for a

comprehensive overview). Logophoricity will be introduced into the picture in Section 3.2.3; see also Section 2.4.1.3 for additional discussion relating to logophoricity and LPP pronoun licensing.

⁶ What exactly it means to be a “syntactic subject” depends in part on the syntactic framework. Within the Minimalist program, we might define “syntactic subject” as a phrase denoting an individual (whether an entity, event, place, or time) that merges in the specifier of a maximal syntactic projection and/or in the phase edge. Within the frameworks of HSPG, LFG, and Simpler Syntax, the notion of “subject” rather corresponds to the foremost syntactic argument/grammatical function associated with a predicate.

⁷ More precisely, Chomsky (1986) proposes that the domain of the reflexive is delimited by a subject distinct from it, whereas the subject need not be distinct in the case of personal pronouns. The asymmetric specification for distinct subjects was intended to account for the absence of complementarity between anaphors and personal pronouns in the specifier of DP, as in *John took a picture of his/his own mother*. This detail does not affect predictions for pronouns in complement position, including in the complement of LPPs, where the nearest subject will also be the nearest distinct subject, and can therefore be overlooked.

subject from the definition of local domain relevant to Principle B. For example, Büring (2005) proposes that the local domain of the reflexive is the smallest phrase containing a subject whereas the local domain of the personal pronoun is its coargument domain, which need not contain a subject. Hestvik (1991) proposes that local domains for reflexives and personal pronouns both are the smallest complete functional category (CFC, another name for coargument domain) in which binding principle can be satisfied. For the reflexive, this will always be the minimal CFC that projects a subject, since that subject will always provide a potential c-commanding antecedent; for the personal pronoun, it will be whatever CFC contains it, whether it contains a subject or not. Under NBTs, then, there are certain contexts in which both pronoun forms are predicted to be possible, namely in the complement position of predicates that do not project subjects in the syntax.

Recent antecedent-based theories within the minimalist framework has moved from the notion of subject entirely, building instead on the notions of phase (e.g., Lee-Schoenfeld 2004, Despić 2015) or spellout domain (Charnavel & Sportiche 2016) in defining local domains. Phase-based binding theories come in different flavors when it comes to accounting for LPP pronouns. Rooryck & Vanden Wyngaerd (2007|2011) and Bader (2011) maintain strict complementarity between reflexives and personal pronouns within the phase, similar to CBTs. Hicks (2009) rather proposes asymmetry between reflexive and personal pronoun domains, allowing overlap in certain configurations, thus patterning more with NBTs. Despite their differences, all phase-based proposals lead us to the same underlying question: what exactly constitutes a phase? This question is notoriously tricky, and addressing it in any amount of detail goes beyond the scope of the present study.⁸ However, phasal status has very often been associated with subject projection (Bowers 2002, Harves 2002, Matushansky 2000, Den Dikken 2006, Tanaka &

⁸ I refer the interested reader to Citko (2014) for a comprehensive overview of evidence for and against the phasal status of a number of phrasal categories cross-linguistically. See also Svenonius (2004) on phase boundaries and the related issue of spellout.

Yokogoshi 2010, a.o.; see Citko 2014:§5.1 for discussion; cf. Rooryck & Vanden Wyngaerd 2007|2011⁹). Hence, as a purely descriptive starting point, we might again take the subject as being core to the notion of locality for Principle A at the very least, if not also for Principle B.

Generalizing across antecedent-based theories, the predictions are as follows. For CBTs and NBTs both, a reflexive is predicted to require a c-commanding antecedent in the smallest phrase containing a subject. If the reflexive is the object of a predicate, the prediction is then that the reflexive must corefer with the subject of that predicate, if it has one, and if there are no other arguments of that predicate by which it is c-commanded. This is shown schematically in (83), where ‘Y’ corresponds to the predicate that takes the reflexive as its object.

- (83) a. $[_{XP} DP_i \dots [_{YP} DP_j [Y \text{ herself}_{*i/j}]]]$
 b. $[_{XP} DP_i \dots [_{YP} [Y \text{ herself}_i]]]$

For CBTs, the personal pronoun is predicted to be blocked whenever conditions for reflexive use are met, as shown in (84).

- (84) a. $[_{XP} DP_i \dots [_{YP} DP_j [Y \text{ her}_{i/*j}]]]$
 b. $[_{XP} DP_i \dots [_{YP} [Y \text{ her}_{*i}]]]$

For NBTs, the personal pronoun predicted to be possible in the same contexts in which the reflexive can be used just in case it is the object of a predicate that does not itself project a subject, as in (85b). Like under CBTs, the personal pronoun is also predicted to be possible in contexts that block use of the reflexive, as in (85a).

- (85) a. $[_{XP} DP_i \dots [_{YP} DP_j [Y \text{ her}_{i/*j}]]]$
 b. $[_{XP} DP_i \dots [_{YP} [Y \text{ her}_i]]]$

⁹ Though the phasal status of small clauses is not explicitly addressed in their treatment of possession sentences, Rooryck & Vanden Wyngaerd (2007|2011) show local binding of the reflexive to be possible across the subject of a small clause complement, suggesting that the authors do not take subject projection as a sufficient condition for phasehood.

3.1.2 Predicate-based theories

Whereas antecedent-based theories aim to account for licensing across the board, *predicate-based theories* (henceforth, *PBTs*) have focused on expression of coreference between **coarguments**, that is, nominals selected by one and the same lexical predicate. Binding principles characteristic of predicate-based theories are given in (86).

(86) Predicate-based binding principles

- a. Principle A: A reflexive must corefer with a coargument of its selecting predicate.
- b. Principle B: A personal pronoun must not corefer with a coargument of its selecting predicate.

Like definitions of locality, definitions of coargumenthood have varied somewhat across theories. Reinhart & Reuland (1993) differentiate between syntactic arguments and semantic arguments: the former are arguments selected by a syntactic predicate, that is, a predicate that projects a subject in the syntax, whereas the latter are arguments selected by any predicate, regardless of subject projection. This distinction is incorporated into Reinhart & Reuland's renditions of Principles A and B: while a reflexive must corefer by a *syntactic* coargument, a personal pronoun must not corefer with a *semantic* coargument. Importantly, reflexives that lack a syntactic coargument are said to be exempt from Principle A, leaving them free to find an antecedent in the discourse.

Varaschin (2021) builds on the framework of Simpler Syntax (Culicover & Jackendoff 2005). The notion of coargument relevant there is the one associated with grammatical functions rather than syntactic constituents *per se* (cf. Bresnan 1982 and later work in the LFG framework). However, the predictions remain roughly the same: a reflexive that is assigned a grammatical function must share its referent with a higher grammatical function of the same predicate, while a personal pronoun is barred from doing so. When there is no higher grammatical function with which the reflexive can corefer (or when satisfaction of Principle A is

blocked for independent reasons¹⁰), the reflexive is again free to find an antecedent in the discourse.

Notice that the notions of c-command and locality do not enter into the binding principles posited by PBTs.¹¹ However, predictions for pronouns that serve as the object of a predicate largely parallel the predictions arising from NBTs. A reflexive must be anteceded by the subject of that predicate if there is one (and in the absence of any other coarguments), while the personal pronoun cannot be anteceded by the subject of that predicate, as shown in (87a) and (88a). If the predicate does not project a subject, both forms are available to refer to a higher subject, as shown in (87b) and (88b).¹²

- (87) a. $[_{XP} DP_i \dots [_{YP} DP_j [Y \text{ herself}_{i/j}]]]$ (=83a))
 b. $[_{XP} DP_i \dots [_{YP} [Y \text{ herself}_i]]]$ (=83b))
 (88) a. $[_{XP} DP_i \dots [_{YP} DP_j [Y \text{ her}_{i/*j}]]]$ (=85a))
 b. $[_{XP} DP_i \dots [_{YP} [Y \text{ her}_i]]]$ (=85b))

3.1.3 Applying binding theory predictions to LPPs

With the background in place, we can turn our attention back to the LPP sentences under focus in the present study. In these sentences, exemplified in (89), the subject-oriented pronoun is selected as the complement of the locative preposition, which is itself a predicate.

¹⁰ Recall from Section 2.4.2.3 that Varaschin (2021) proposes that Principle A cannot be satisfied if the selecting predicate is anti-reflexive, such that coreference between grammatical functions is semantically anomalous. However, I showed there that the notion of anti-reflexivity does not make the correct predictions for LPP reflexives, nor for reflexives selected by anti-reflexive verbs.

¹¹ Both notions are however relevant to Reinhart & Reuland's (1993) condition on syntactic A-chains. Along with ensuring that reflexives do not c-command their antecedents, the chain condition also blocks personal pronouns from being locally bound, much like antecedent-based Principle B. I will not go into details about the chain condition here since, as noted in Section 2.4.2.2, the conditions under which chain formation is relevant for personal pronouns in LPPs are not specified, though it is assumed that chain formation is in any case not obligatory.

¹² For Reinhart & Reuland (1993), the structure in (87b) is permissible only if discourse conditions on exempt reflexive use are met, including association with focus and antecedence by a perspectival center. See Pollard & Sag (1992) for a treatment of English reflexive licensing that is very similar to the treatment put forth in Reinhart & Reuland; I do not discuss the former work here because it does not treat the kinds of LPP sentences under focus in the present study.

(89) Noah_i saw a ladybug on him_i/himself_i.

What we want to know is if the syntactic structure of sentences of this shape is ever such that one or other pronoun form is blocked by binding principles. In light of the binding theories reviewed above, two initial questions arise for our LPP sentences: (i) does the sentence subject c-command the LPP (and, hence, the pronominal LPP complement), and (ii) does the LPP project a subject of its own?

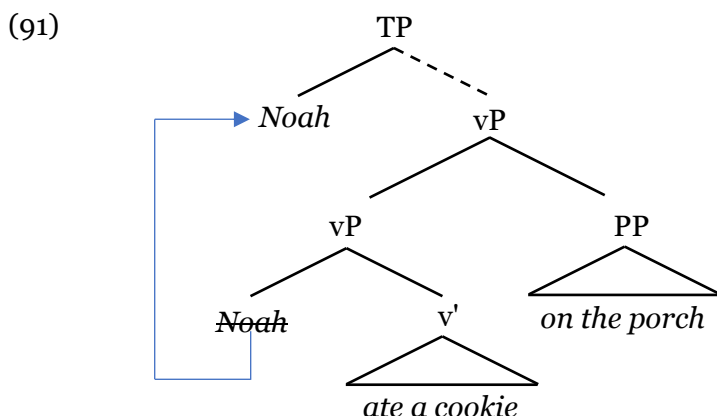
The question of c-command ultimately comes down to where in the clause the LPP attaches in the clause. There are a few possibilities for how the LPP could enter the derivation in a sentence like (89), depending on its interpretation: it can merge as an adjunct in the postverbal DP, or it can merge as a complement or adjunct in the main clause.¹³ For the first two possibilities, DP-internal adjunct and main clause complement, c-command is necessarily satisfied, as the sentence subject c-commands the postverbal DP and any material in the complement of the verb in its base position (see Section 3.2.1 below for trees illustrating this point). Under the third possibility, adjunction occurs along the main clausal spine. It is generally taken for granted that the sentence subject c-commands LPP adjuncts at some point in the derivation, regardless of where exactly they merge in the syntax. Consider the adjunct LPP in (90), which expresses the location of the event described by the sentence.

(90) Noah ate a cookie on the porch.

Such LPPs are commonly assumed to adjoin to vP, as shown in the simplified tree in (91) (Barbiers 1995, Gehrke 2008, Roorcyk & Vanden Wyngaerd 2011, Bassel 2018, 2022, a.o.; cf. Hestvik 1991 for comparable assumptions in a pre-vP framework; cf. Bowers 1993, 2001 which

¹³ As is standard, I use “complement” to refer to a phrase that is sister to a syntactic head and “adjunct” to refer to a phrase that is not sister to a head. Whether the latter merge as sisters to phrases (XP) or bar level (X') is not directly relevant.

rather proposes adjunction to bar levels). While the LPP c-commands the subject in its base position, this relationship is reversed upon movement of the latter to Spec,TP.



In fact, there is good reason to think that the LPPs we are interested in here always attach even lower in the syntax, beneath the base position of the subject in Spec,vP. Compare the sentence in (90) with the sentences in (92).

(92) Noah saw a ladybug on the ceiling.

In (90), the LPP is most naturally understood as expressing the location of the entire event, including the location of Noah. In (92), on the other hand, the LPP *on the ceiling* is most naturally understood as expressing the location of the ladybug alone: we aren't likely to conclude that Noah was also on the ceiling when the ladybug was spotted. This restriction is even more apparent for the sentence in (89), which exemplifies the sort of sentence investigated here: under no reading can we take (89) to describe a scenario in which Noah is located on himself.

The examples in (93)-(94) suggest that this difference in semantic scope corresponds to a difference in syntactic scope.¹⁴

(93) a. Noah ate a cookie on the porch after dinner.

¹⁴ Acceptability markings in these examples reflect my own judgments. A sense of contrast between (93b) vs. (94b) was also shared by three other English speakers who was consulted about these examples. Two commented that (94b) makes it sound like Noah was on the ceiling.

- b. On the porch, Noah ate a cookie after dinner.
- (94) a. Noah saw a ladybug on the ceiling after dinner.
- b. ??On the ceiling, Noah saw a ladybug after dinner.

As the (a) sentences show, both the event-oriented LPP *on the porch* and the object-oriented LPP *on the ceiling* can precede a temporal modifier, *after dinner*. Event-oriented LPPs can also be preposed when a temporal modifier is present as in (93b). In contrast, preposing in (94c) is considerably more marked for the LPP in (94b). This asymmetry would follow if the LPPs we care about are necessarily more proximal to the direct object than event-oriented LPPs.

Further evidence of a scope asymmetry comes from ellipses. In (95) we see that event-oriented LPPs can survive *do so* substitution. While *do so* substitution is a little less natural for eventualities that don't involve actions, comparison between (96a) and (96b) show that stranding of the LPP under ellipses is considerably worse when the LPP is incompatible with an event-oriented reading.¹⁵

- (95) Noah ate a cookie on the porch, and Sue did so in the garden.
- (96) a. Noah saw a ladybug on the porch, and Sue did so in the garden.
- b. ??Noah saw a ladybug on the ceiling, and Sue did so in the flowerpot.

I conclude from these examples that the LPPs in our main crop of sentences merge lower in the clause than event-oriented LPPs, whether they are main clause adjuncts or not. As a result, the sentence subject must c-command object-oriented LPPs even in its base position. This means that the subject-oriented pronoun choice is never determined by the lack of c-command. This brings us then to the second question, whether the LPP projects a subject of its own. Another way of putting it: does the LPP ever comprise a small clause?

¹⁵ Ahn (2015:116) observes this with LPPs expressing object trajectory in location change sentences:

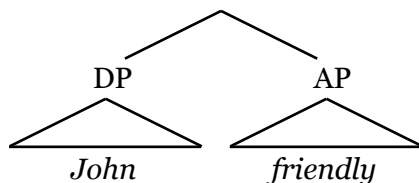
- (i) a. Wile E. Coyote shot a rocket across the canyon.
- b. He did so (*across the canyon).

A comparable contrast is reported in Winkler (1997) for subject- and object-oriented AP adjuncts:

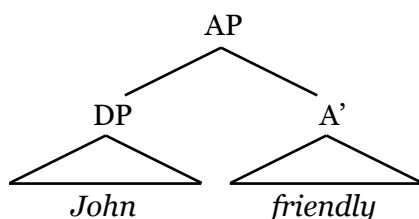
- (i) a. Torry left the party angry, but Rick did so happy.
- b. ?Julie drank the tequila cold, but Jem did so warm.

Syntactically speaking, a small clause is a constituent consisting minimally of a subject and predicate while lacking tense and agreement. There have been a number of proposals regarding the internal structure and syntactic category of small clauses, in particular whether they are exocentric (97a), projections of a lexical category (97b), or projections of a functional category (97c) (see Citko 2011 for an overview).

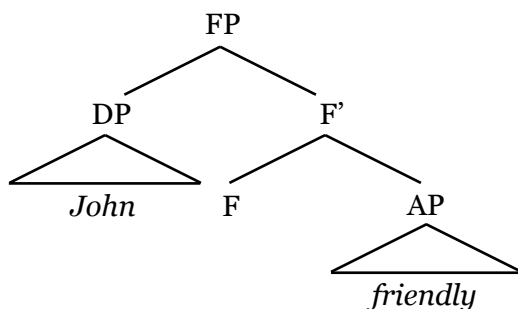
(97) a.



b.



c.



At this point we can remain non-committal about which sort of structure would be most appropriate for LPP small clauses, though we will return to this question as it becomes relevant below. As a start, I will assume a lexically headed structure as in (97b).

Small clauses have been proposed for a wide range of English constructions, including sentences expressing perception, contingent possession, and location change—exactly the sorts of sentences we’re interested in. However, small clause analyses are not the only ones on the

market for the types of sentences under consideration. In fact, the very existence of small clauses is not without controversy. Alternatives to small clause analyses include predication analyses (e.g., Williams 1980, 1983, Napoli 1989) and complex predicate analyses (e.g., Farrell 2005, Hale and Keyser 1993, Larson 1988, 1989, 1990, Neeleman 1994, Snyder 2001), both of which decouple predication and syntactic constituency/subjecthood as illustrated in (98b-c).¹⁶

- | | | |
|------|--|------------------------------------|
| (98) | a. We found [_{SC} John friendly] | <i>Small clause structure</i> |
| | b. We found [_{NP} John] [_{AP} friendly]. | <i>Predication structure</i> |
| | c. We [found friendly] John. | <i>Complex predicate structure</i> |
| | (Hoekstra 1992:126) | |

Whether or not the LPP comprises a small clause is crucial to the predictions made by binding theories. With respect to Principle A, for CBTs and NBTs, projection of a subject within the LPP would render the sentence subject external to the binding domain of a reflexive LPP complement. For PBTs, PP-internal subject projection would render the preposition a syntactic predicate, such that a reflexive complement is required to corefer with a coargument. Across the board, a small clause parse is thus predicted to preclude coreference between a reflexive LPP complement and the sentence subject if the PP-internal subject is not itself coreferent with the sentence subject. If the LPP is not a small clause, all three kinds of theories predict coreference between the sentence subject and reflexive LPP complement to be possible.

As for Principle B, CBTs maintain strict complementarity between reflexives and personal pronouns within LPPs. Therefore, whenever the LPP does not project an internal subject, coreference between the sentence subject and personal pronoun is predicted to be ruled out. NBTs rather restrict the local domain of the personal pronoun to its coargument domain; this will be the LPP, whether the LPP projects a subject or not. As such, the sentence subject is predicted to always be a suitable antecedent. Similarly, PBTs maintain that personal pronouns

¹⁶ See Hoekstra (2004) for a detailed overview and comparison of these approaches.

are disallowed from expressing coreference with a coargument. Under assumption that the sentence subject is not an argument of the preposition,¹⁷ coreference with the sentence subject is predicted to always be permitted. Finally, all three kinds of theories predict coreference between the sentence subject and personal pronoun LPP complement to be possible whenever the LPP projects a subject that is not itself coreferent with the sentence subject.

Table 3-A summarizes which pronoun forms are predicted to be licensed in the expression of subject coreference under CBTs, NBTs, and PBTs when the LPP is and is not a small clause.

Table 3-A. Predictions across binding theories for subject-oriented pronoun licensing when the LPP is and is not a small clause.

| | Not a Small Clause [_{VP} DP _i ... [_{PP} P pronoun _i]] | Small Clause [_{VP} DP _i ... [_{PP} DP _j [P pronoun _i]]] |
|---------------|---|---|
| CBT (camp #1) | ✓Reflexive *Personal Pronoun | *Reflexive ✓Personal Pronoun |
| NBT (camp #2) | ✓Reflexive ✓Personal Pronoun | *Reflexive ✓Personal Pronoun |
| PBT (camp #2) | ✓Reflexive ✓Personal Pronoun | *Reflexive ✓Personal Pronoun |

It is important to note that this table captures only what forms the syntax will allow, not what form will ultimately be preferred. Some PBTs maintain that reflexives which are not anteceded by a coargument are available only when particular discourse conditions are met, such as antecedence by a perspectival center (cf. fn. 12). Even theories that do not impose specific restrictions on the reflexive in non-complementary contexts may nevertheless predict it to be

¹⁷ Though the sentence subject is certainly not selected as an argument by the preposition, it could nevertheless count as a coargument of the preposition's complement in the case of complex predicate formation (cf. (98c)) which effectively combines the argument structures of the verb and incorporated predicate. Relatedly, Reinhart & Reuland (1993: fn. 45) mention the possibility of chain formation resulting from incorporation of the preposition into the verb. Technical details aside, the prediction would be that the subject-oriented personal pronoun is unavailable. For now, to keep things simple, I stick with the assumption that the sentence subject is not an argument of the preposition and, hence, not coarguments with the LPP complement.

more marked than in contexts where it is the only grammatical option, simply by virtue of having to compete with a morphophonologically simpler pronoun form. But markedness from discourse requirements or competition is crucially different from the categorical preferences we would expect to find if the reflexive were syntactically ungrammatical. In that case, preferences should be absolute, irrelevant of contextual factors, just as we find in clear-cut cases of coreference between subject and object in simple transitive sentences.

With these predictions in place, we can proceed to investigating the interplay between binding theory and pronoun choice in our LPP sentences. We will go event type by event type, looking first at perception sentences in Section 3.2, then possession sentences in Section 3.3, and finally location change sentences in Section 3.4. Each section will proceed in three steps. First, we will discuss the syntactic parses that may be possible for sentences expressing the event type in question, with particular focus paid to analyses from prior research. Second, we will consider several diagnostics that allow us to determine which parses are independently motivated, crucially, to discriminate between them. Third, using these same diagnostics, we will test whether and how subject-oriented pronoun licensing possibilities differ across possible parses, keeping an eye out for evidence of strict complementarity. The effect of relation type will take a back seat for the time being—we will come back to it in Section 3.6, after we have our parses and pronoun licensing facts on the table.

The primary goal of this exercise is to determine whether there is any independent evidence of binding principles playing an active role in LPP pronoun choice and, if so, whether binding principles can account for the preference pattern revealed in Experiments 1 and 2. With these results in hand, we can also ask how the pronoun licensing facts do or do not fit with the binding predictions summarized above. This in turn will allow us to narrow down the theoretical landscape, showing what assumptions must be made to render our binding theories compatible with what we find in LPPs.

3.2 Perception sentences

We begin our journey with perception sentences, exemplified in (99).

- (99) Noah_i saw a ladybug on him_i/himself_i.

Experiments 1 and 2 revealed an overall preference for the personal pronoun in perception sentences. Importantly, though, reflexives were not altogether ruled out in. Many survey participants even preferred the reflexive in some perception sentences that involved direct contact, (99) including. The aim of this section is to investigate whether the preference pattern found for perception sentences could be due at least in part to the effects of Principles A and B.

Under CBTs and other theories in camp #1, the answer to this question is necessarily yes. The availability of both pronoun forms is predicted to arise from the availability of at least two parses for perception sentence LPPs, one licensing the reflexive, the other licensing the personal pronoun. Importantly, since the personal pronoun was preferred on the whole, we would further predict that the parse(s) permitting the personal pronoun are more often accessed than the parse(s) permitting the reflexive.

For PBTs, NBTs, and other theories in camp #2, it is not necessary for binding principles to play an active role in shaping pronoun preferences: only one parse is needed to license both forms, so long as the LPP is not a small clause. It is also conceivable under these theories that more than one parse is possible, with at least one (though not all) of those parses requiring the personal pronoun. Indeed, the availability of such a parse would be consistent with the overall preference for the personal pronoun. However, no parse is predicted to require the reflexive.

What we will do in this section is first ask whether there is independent motivation for positing multiple possible parses for perception sentence LPPs. If so, we will use the characteristics that distinguish between parses to pull the parses apart, in order to determine which pronoun form(s) any given parse allows. With the results of this inquiry in hand, we will

circle back to assessing the general theories space, asking what kinds of theories remain on the table, and what additional assumptions must be made to make those theories work.

3.2.1 Possible parses for perception sentence LPPs

This section will introduce three potential parses for LPPs in perception sentences such as (99): the LPP may be an adjunct within the matrix verb phrase (henceforth, *VP-adjunct*), an adjunct within the direct object (*DP-adjunct*), or a small clause complement of the matrix verb phrase (*SC complement*). These three parses are represented schematically in (100a-c), respectively.

- (100) a. Noah_i saw [_{DP} a ladybug]_k [_{PP} (PRO_k) on him_i(self)]
 b. Noah_i saw [_{DP} a ladybug (PRO_k) on him_i(self)]
 c. Noah_i saw [_{PP} a ladybug on him_i(self)].

The VP-adjunct parse is the most frequently assumed parse for perception sentence LPPs in the binding literature. It is explicitly adopted in Reinhart & Reuland (1993), Buring (2005), Rooryck & Vanden Wyngaerd (2007|2011), Bassel (2018, 2021), and Varaschin (2021), and it is compatible with the treatments provided in Chomsky (1981), Hicks (2009), and Bader (2011).¹⁸ Under this parse, the LPP can be understood as specifying where the object of the perception event—e.g., the ladybug in (99)—was located as it was perceived. In this sense, the LPP is functionally akin to a depictive, that is, a predicative adjunct expressing a property that holds of an event participant throughout the time course of the event expressed by the clause to which it adjoins.

Characteristic of the debates surrounding the structure of depictives generally (see Winkler 1997 for an overview), there is disagreement in the binding literature on the internal structure of VP-adjunct LPPs. Chomsky (1981) and Bassel (2018, 2022) treat such LPPs as small clauses

¹⁸ Hestvik (1991:467) also notes a VP-adjunct parse, but flags the event-oriented reading there assumed to go with it as is “somewhat unnatural” for LPPs containing subject-oriented pronouns.

with a structure along the lines of (101), where the LPP contains a phonetically null PRO subject, which is in turn controlled by the postverbal noun phrase (henceforth, DP2).^{19,20}

(101) Noah_i saw [_{DP} a ladybug]_k [_{PP} PRO_k on him_i(self)].

The idea that predicative adjuncts generally project internal subjects is likewise championed in, for instance, Stowell (1983), Chomsky (1981, 1986), and Hornstein & Lightfoot (1987), Bowers (1993, 2001). The primary motivation for this treatment comes from the Extended Projection Principle (EPP), according to which predication relations must be expressed at every level of representation, syntax included.

However, the assumption that all predicates project subjects in the syntax is not universally shared; an alternative flat predication approach to predicative adjuncts is pursued in for instance in Williams (1980, 1983), Rothstein (1985), Culicover & Wilkins (1984, 1986), Carrier & Randall (1992), and Winkler (1997). Indeed, the other binding proposals cited above do not assume adjunct LPPs project internal subjects, providing instead parses like the one (102).

(102) Noah_i saw [_{DP} a ladybug]_k [_{PP} on him_i(self)].

Unfortunately, due to the phonetically null nature of the internal subject posited for adjunct LPPs, it may not be possible to detect it independent of binding facts.²¹ It is therefore an open

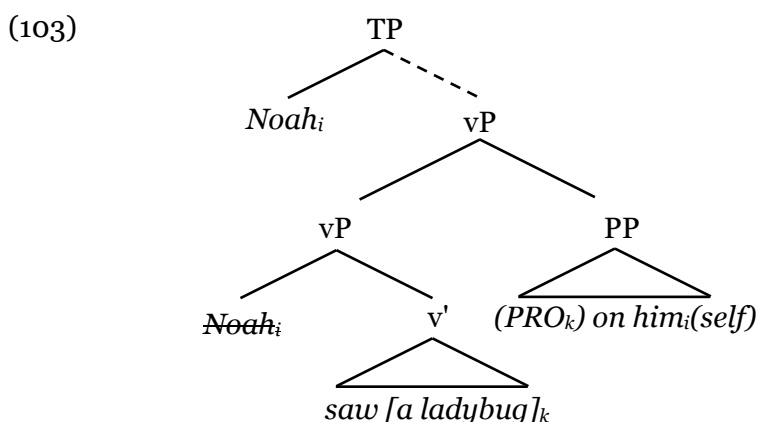
¹⁹ A couple of terminological notes. First, I will use the term “postverbal noun phrase” or the shorthand “DP2” in order to remain neutral about the syntactic status of the noun phrase, in particular whether it is a direct object of the verb, the subject of an embedded small clause, or potentially both. Second, as flagged above, I will label all potential small clauses according to the category of their governing head (e.g. “PP” in (101)) for the time being, saying more about this choice down the line.

²⁰ Recall from the previous that the reflexive is predicted to be unavailable when the LPP comprises a small clause, including in Chomsky (1981) and Bassel (2018, 2022). I do not show acceptability markings here since what I aim to capture is simply the proposed structure, and not theoretical predictions for the grammaticality of the structure. This holds as well for the other parses and trees included in this section.

²¹ Control into purposive clause has been used to test for null subjects (e.g., Landau 2013), as in *the sinking of the ship to collect insurance money*. Purposive clauses are not great with perception sentences with LPPs: **?Chloe saw Abby (yesterday) in the pool to cool down*. Compare that to: *Chloe saw Abby (yesterday) drinking water to cool down*. But the difference could come down to a need for a dynamic predicate, denoting an action or activity, rather than the presence or absence of a subject within the LPP.

question at this point whether we ought to expect subject-oriented reflexives to be available under the VP-adjunct parse. I will show PRO in parentheses (100a) to capture both perspectives on the internal structure of VP-adjunct LPPs.

Though not central to the issue of pronoun licensing, there is also a question of where exactly the LPP ought to adjoin in the VP-adjunct parse. Recall from the previous section that Rooryck & Vanden Wyngaerd (2007|2011) and Bassel (2018, 2022) suggest that the LPP adjoins to vP, on par with event-oriented adverbial adjuncts.



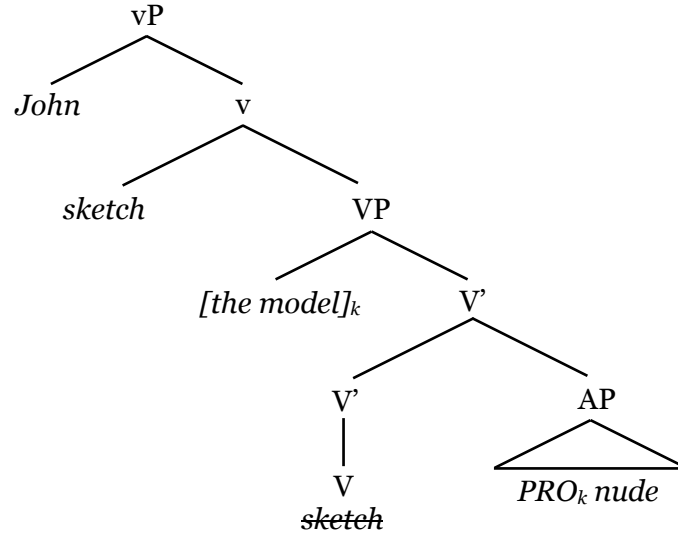
However, I concluded above that this kind of LPP ought to merge lower in the syntax. As an alternative, we might appeal to Bowers' (1993, 2001) analysis of object-oriented depictives. Under Bowers' account, the sentence in (104), which contains the object-oriented depictive *nude*, corresponds to the structure shown in (105).²²

- (104) John sketched the model nude.
(cf. Bowers 2001:326)

²² Compare to the tree in Bowers (2001:327). While I use the labels vP and AP here, Bowers labels both as PrP. Bowers assumes that depictives project a PRO subject. Notice in (105) that Bowers proposes that adjuncts join to bar levels rather than maximal projections, and that that DP2 merges in a specifier position. Nothing in the present investigation hinges on either structural assumption.

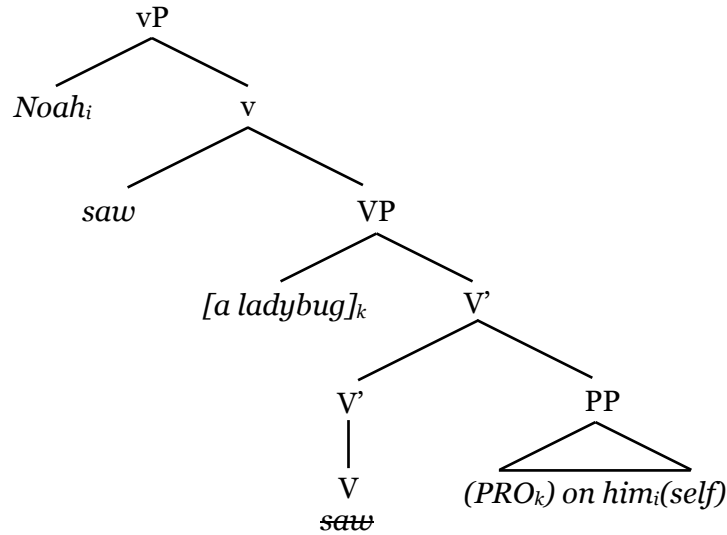
With regard to the latter assumption, note that Ramchand (2008) also argues that direct objects expressing undergoers merge in specifier position; this stance is maintained in Bassel's (2018, 2022) treatment of location change sentences. However, Ramchand proposes that "incremental themes," including the objects of creation verbs like *sketch*, rather merge as complements, analogous with path-denoting expressions.

(105)



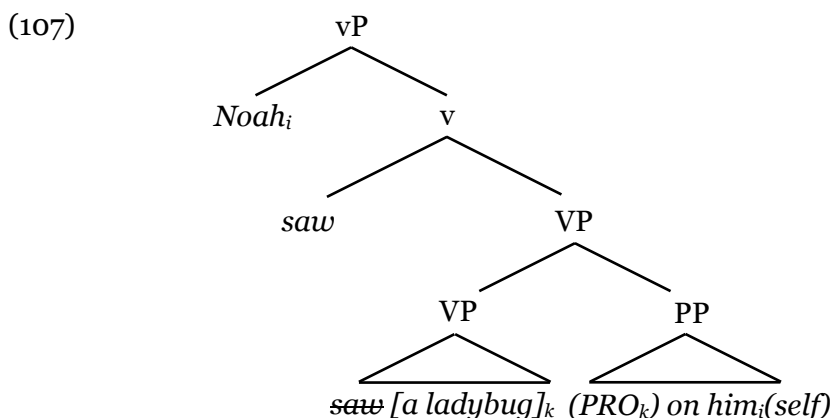
By analogy, we might entertain the tree in (106) for the VP-adjunct parse in (101)/(102).²³

(106)



²³ It will be noticed in (106) that DP2 (*a ladybug*) has the look of a subject, insofar as it is merged in specifier position, which would in turn render VP a small clause all its own. In theories that maintain a split between VP and vP, the former is often regarded as non-maximal (e.g., Chomsky 2008, Bruening 2014), such that its specifier is not a syntactic subject in the relevant sense (a semantic subject though it may be; cf. Reinhart & Reuland 1993 on this distinction); see Bassel (2022:23, fn. 8) on this point. On the other hand, Ramchand (2008, 2018) *does* take this kind of structure to comprise a small clause in the standard sense, but crucially allows multiple small clauses to be dominated by single phase head. We will return to this point in Section 3.2.4.

We might also have the LPP adjoining to VP, as shown in (107) (with DP2 in the specifier or complement of the lower verb—however one prefers) (cf. Baker 2002 on high vs. low prepositional adjuncts).



Though the most popular parse in the books, the VP-adjunct parse is not the only one that has been entertained for LPPs in perception sentences. Hestvik (1991) suggests a DP-adjunct parse, with the LPP merging as an adjunct within DP2. Under this parse, the LPP helps to pick out the referent of DP2, for instance by clarifying which ladybug was seen in the case of (99).²⁴ Hestvik, who assumes that LPPs do not project subjects, presents a structure as in (108), with the tree shown in (109) (cf. Hestvik 1991:567).

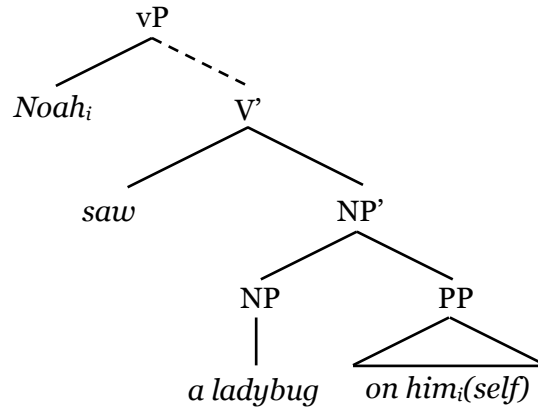
(108) Noah saw [_{NP}' a ladybug [_{PP} on him_i(self)]].

²⁴ Faltz (1985:102) argues against DP-adjunct analysis for LPPs in perception sentences on the basis that the LPP can be stranded in heavy-NP shift, in contrast with LPPs that are unambiguously internal to the nominal:

- (i) a. John saw near him a snake with green stripes and purple polka dots
 b. *While in New York, John coveted in Chicago a girl he had met the week before.

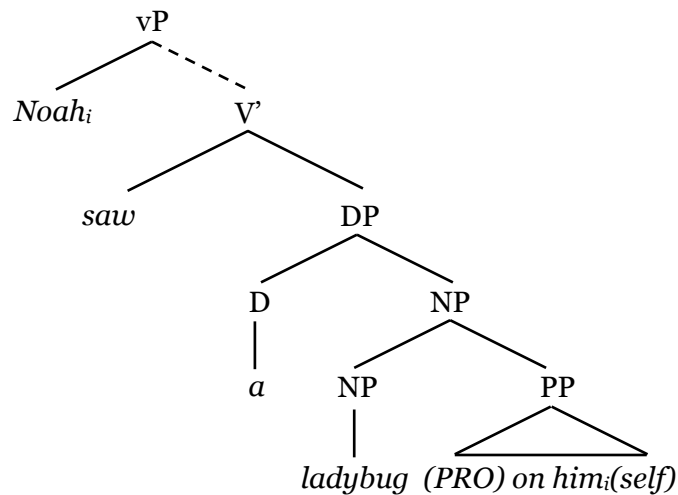
However, this shows only that a DP-adjunct parse is not the only parse possible for perception sentences with LPPs, not that this parse is never possible.

(109)



Hestvik suggests that while the PP does not itself delimit the local domain of the reflexive the nominal (here labeled NP') does, under assumption that the NP *a ladybug* can serve as a potential binder (cf. Johnson 1987, which also makes this claim). But this view of nominal structure is a little outdated: under contemporary assumptions, we would rather assume a tree structure closer to the one in (110) below. In this structure, the lower NP is not in specifier position and, thus, is not a subject of the higher NP. The indefinite DP containing the LPP therefore lacks an internal subject in the relevant sense. (Note that even if the PP adjoins to DP rather than NP, thus functioning as a non-restrictive rather than restrictive modifier, the DP *a ladybug* would still not be a subject.)

(110)



I have again shown PRO in parentheses within the LPP to indicate its potential inclusion. The presence of a PRO subject would follow from the same theoretical motivation for its inclusion in VP adjuncts, namely the EPP, and is in line with the popular treatment of DP adjunct LPPs as “reduced relative clauses” (e.g. Lees & Klima 1963, Ross 1967, among many others since). As with VP adjuncts, I consider it an open question whether DP adjunct LPPs are clausal, hence, whether subject-oriented reflexives are predicted to be possible.²⁵

Under both a VP adjunct parse and DP adjunct parse, the direct object of the perception verb is DP2, and what is perceived (the percept) is the entity denoted by DP2, in our example a ladybug. But perception verbs are also compatible with another kind of direct object, namely direct objects denoting states or events. We see this for instance in (111), where the perception verb *see* embeds a bare verbal predicate.

(111) Chloe saw [_{VP} Abby sneeze].

Reflected in the bracketing in (111), such sentences are typically treated as involving a small clause complement,²⁶ with DP2 serving not as the direct object of the matrix verb, but as the subject of the embedded verb (Barwise 1981, Barwise and Perry 1983, Higginbotham 1983, Vlach 1983, Mittwoch 1990, van der Does 1991, Guasti 1993, Reinhart & Reuland 1993, Felser 1998, Gisborne 2010, a.o.). In other words, the percept in (111) is not Abby, strictly speaking, but an event in which Abby sneezed. As evidence of this idea, Hoekstra (1988) observes that standard entailments do not necessarily apply between the sentence subject and DP2 when a

²⁵ Under phase-based theories of binding, there is an additional question of whether the DP itself comprises a phase. While it is often assumed that some DPs are phases, the status of indefinite DP is less clear. I follow Charnavel & Sportiche (2016) in assuming that indefinite DPs are not necessarily phases in English, based on the fact that they permit *en*-extraction in French, which is strictly phase-bound. Further evidence comes from scope ambiguity, as in *Someone bought a picture of everyone*, where the *everyone* can take either narrow or wide scope with respect to *someone*.

²⁶ For some scholars, only predication structures with lexical heads of category A, N, and P are considered small clauses. Nothing important hinges on this difference in terminology; what matters is whether the phrase contains a subject.

verbal predicate is involved. For instance, (112) can be uttered if what was heard was the pig rather than the butcher (see Kirsner & Thompson 1976, Gee 1977 for further examples purported to show this sort of thing).

- (112) I heard the butcher slaughter a pig
(Hoekstra 1988:117-8)

It should be noted that the clausal status of verbal predicates in sentences like (111) is not without contention. For example, Clark & Jäger (2000) argue for a flat predication analysis on the grounds that standard entailments *do* sometimes hold. In particular, the sentence in (113a) is said to require direct visual perception of Oswald; it cannot be uttered if John was rather standing along the parade route. On the other hand, it isn't necessary for John to have seen Kennedy. This is contrasted with (113b), where the opposite entailments are claimed to hold: John must have seen Kennedy for (113b) to be true, but he need not have seen Oswald. This is unexpected under a small clause analysis, they claim, where both sentences in (113) describe one and the same event.

- (113) a. John saw Oswald shoot Kennedy
b. John saw Kennedy get shot by Oswald
(Clark & Jäger 2000:24)

That being said, there are many ways in which verbal predicates of perception sentences do appear to be clausal.²⁷ For instance, as acknowledged in Clark & Jäger, verbal predicates are compatible with pleonastic subjects such as *it*, as in (114), as well as with subjects derived through passivization and raising, as in (115a-b) (see also Hoekstra 1988).

- (114) Chloe saw it snow in Miami.
(115) a. Chloe saw Abby get arrested.

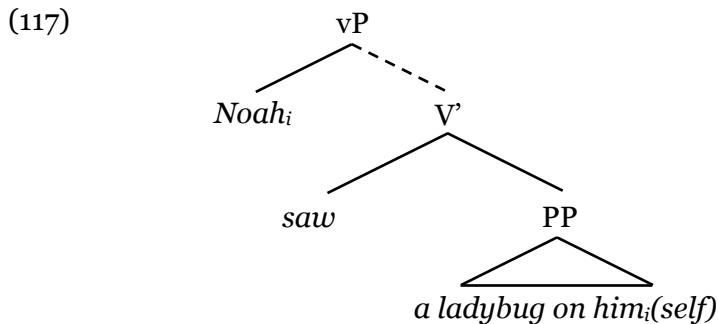
²⁷ See Appendix II on small clause complementation diagnostics, which includes illustration, comparison across purported small clause complements, clarifications and caveats, and citations.

b. Chloe saw Abby appear to levitate.

We will see a few other characteristics suggestive of small clause status below. While the matter may not be settled, it is certainly safe to say that if small clause structure is to be found anywhere in perception sentence, it is in event-denoting direct objects. I will adopt a small clause analysis of sentences such as (111) here, leaving the interesting entailment patterns observed in Clark & Jäger as puzzle for another time.

Analogizing from perception sentences with verbal predicates, we might entertain a comparable SC complement parse for perception sentences with LPPs. This is shown in (116), with corresponding tree in (117).

(116) Noah_i saw [_{PP} a ladybug on him_i(self)].



In this case, the percept is not a ladybug, but a state of affairs in which a ladybug is on Noah.

In short, there are three potential parses for perception sentences containing LPPs: VP-adjunct, DP-adjunct, and SC complement, shown once more in (118a-c), respectively.

(118) a. Noah_i saw [_{DP} a ladybug]_k [_{PP} (PRO_k) on him_i(self)]

b. Noah_i saw [_{DP} a ladybug (PRO_k) on him_i(self)]

c. Noah_i saw [_{PP} a ladybug on him_i(self)].

Interestingly, these three parses seem to correspond quite nicely to the three clausal paraphrases suggested in Lees & Klima (1963) for sentences with *find*:

(119) a. The men found a smokescreen around them.

b. The men found a smokescreen to be around them.

→ SC complement

- c. The men found a smokescreen which was around them. → *DP-adjunct*
 d. The men found a smokescreen and it was around them. → *VP-adjunct*
 (Lees & Klima 1963:18-19)

It may not be the case that all three parses are equally likely to be accessed in a given context. For example, a DP-adjunct parse is most plausible for the sentence in (99), *Noah saw a ladybug on him(self)*, in a context where we have established there to be insects in several locations, such that the sentence can be thought of as answering a like question *Which insect did Noah see?*²⁸ It is also possible that there are not in fact three distinct parses available for LPPs in perception sentences. My goal is not to provide a definitive analysis of the syntactic structure of perception sentences, nor the circumstances under which any particular parse is likely to be accessed. Rather, what matters to the present study is, for any parse that is possible for LPPs in perception sentences, what are the pronoun licensing possibilities under that parse. To answer this question, we need to be able to tease the available parses apart.

3.2.2 Structural tests for perception sentence parses

The first thing to check is if we can find structural characteristics that can distinguish the three parses we have put on the table for perception sentences with LPPs. Let's start by considering sentences such as (120), where DP2 is a proper name.

(120) Chloe saw Abby next to the slide.

The DP-adjunct parse is ruled out for this kind of sentence since proper names are not generally compatible with locative modifier.²⁹ Indeed, we see in (121a) that the LPP cannot undergo passivization along with DP2. It must be left behind after the verb, as in (121b).

²⁸ The context provided for a very similar sentence in Experiments 1 and 2, different only for use of *notice* in place of *see*, states that Noah (along with another individual, Abigail) were “surrounded by all sorts of summer bugs.” See Appendix A for stimuli used in Experiments 1 and 2.

²⁹ Note that this is true specifically for restrictive locative modifiers. When they can be used, they occur in conjunction with the definite determiner: *I saw the Abby on the swing set, but Chloe saw the Abby next*

- (121) a. *Abby next to the slide was seen by local children.
b. Abby was seen next to the slide by local children.

That leaves two potential parses for (120): a VP-adjunct parse and an SC complement parse.³⁰

In the VP-adjunct parse, DP2 and the LPP do not comprise a syntactic constituent. We would therefore expect the LPP to be separable from DP2 by intervening material, for instance adverbials anchored to the matrix clause. In (122) we see that intervention is possible with both manner adverbials (*clear as day*) and temporal adverbials (*yesterday*).³¹

- (122) a. Chloe saw Abby clear as day next to the slide.
b. Chloe saw Abby yesterday next to the slide.

Just to be sure that we aren't tapping into an event modifier reading of the LPP, note that the same intervention facts hold for the similar pair in (123), for which the most natural reading is one in which Chloe was not on the seesaw with Sue.³²

- (123) a. Chloe saw Sue clear as day on the seesaw.
b. Chloe saw Sue yesterday on the seesaw.

Notice in (124) that adverbial intervention is also possible with participial predicates, which are argued in Gisborne (2010) to be compatible with a depictive (that is, VP-adjunct) parse (and which certainly cannot be interpreted as a matrix event modifier).

to the slide. Proper names are however compatible with non-restrictive locative modifiers. I will not consider this possibility further here since our focus will ultimately be on sentences containing indefinite direct objects, which are compatible with restrictive locative modifiers.

³⁰ See Appendix B for an overview of structural diagnostics for small clause complementation.

³¹ For sentences that are either middle of the road acceptability-wise, or for which acceptability judgments seem to vary across people, I include judgments collected from consultants in arrays adjacent or under the sentences, where each cell corresponds to a particular consultant. I do this in lieu of markers such as '?' and '%' in order to present a more precise picture.

³² The acceptability of (122b) and (123b) may appear to run against the claim above that these sorts of locatives necessarily merge closer to the direct object and, hence, lower in the structure than event-oriented adverbials, including temporal adverbials. I suspect that phonological and/or prosodic weight is playing a role here, with inversion benefiting from the lightness of *yesterday* relative to *on the seesaw* and *next to the slide*.

- (124) a. Chloe saw Abby clear as day sneezing in the kitchen.
 b. Chloe saw Abby yesterday sneezing in the kitchen.

In contrast, this kind of intervention is much more marked in perception sentences with bare verbal predicates, as in (125), for which a VP-adjunct parse is not possible. This is especially so for temporal adverbials, which consistently elicited middling judgments.

- (125) a. Chloe saw Abby yesterday sneeze in the kitchen.
 b. Chloe saw Abby clear as day sneeze in the kitchen.

| | | | | | |
|---|---|---|---|---|---|
| 3 | 3 | 3 | 3 | 2 | |
| 5 | 3 | 4 | 5 | 3 | 1 |

An incompatibility with intervening adverbs is consistent with the observation going back to Stowell (1981) that SC complements do not allow matrix clause material to intervene between subject and predicate. Hence, the permissibility of intervention in (122)-(123) is consistent with the availability of a VP-adjunct parse for LPPs in perception sentences.

To check whether an SC complement parse is also possible, we can compare LPP sentences with bare verb sentences on diagnostics targeting small clause complementation. First, (126)-(127) show that DP2 + LPP strings pattern with DP2 + bare verb strings in allowing coordination and right-node-raising, two classic tests for syntactic constituency (though see Appx. II for caveats on these measures).³³

- (126) a. Chloe saw [Abby sneeze] and [Sue laugh].
 b. Chloe saw [Sue on the seesaw] and [Abby next to the slide].

³³ The acceptability of (127b) reflects the judgments of six speakers, myself included. A seventh noted that the sentence improves if the bracketed string is heavier, as in *Chloe heard, but didn't see, Sue laugh at her*. Interestingly, these judgments run counter to the claim presented in Clark & Jager (2000:22) that bare V perception sentences do not permit RNR:

(i) *?We could hear, but we couldn't see, [Raquel Welch take a bath].

In fact, the sentence in (i) is taken as evidence against analyzing bare V predicates in perception sentences as comprising small clauses. However, the markedness reported for (i) might stem from inclusion of the modal *could*. Gisborne (2010) notes that under an episodic ability reading, *can* and *could* pick out particular points in time. Since taking a bath necessarily has duration, it impossible to be able to see a complete bath-taking event at a single point in time. Indeed, I find the sentence in (ii) to be quite awkward even without RNR.

(ii) ??At that moment, I could see Raquel Welch take a bath.

Things are different if the modal is interpreted as expressing permission. Under that reading, (i) is just fine for me. So, too, is the permissive paraphrase in (iii).

(iii) We were allowed to hear, but we weren't allowed to see, Raquel Welch take a bath.

- (127) a. Chloe heard, but didn't see, [Sue laugh].
 b. Chloe heard, but didn't see, [Sue on the seesaw].

Let me point out as well that (127b) is compatible with a scenario in which what was heard was the squeaking of the seesaw, rather than Sue directly. This is in line with Hoekstra's observation that standard entailments between the perception verb and DP2 do not always hold when small clause complementation is involved (cf. (112)).

In (128) we see that perception complements with LPPs also pattern with perception complements with bare verbal predicates in allowing proform substitution with *that*.

- (128) a. Chloe saw [Abby sneeze in the kitchen]. Sue saw that, too.
 b. Chloe saw [Abby next to the slide]. Sue saw that, too.

Importantly, the proform *that* can only be interpreted as picking out the entire content of the bracketed strings, that is, the event of Abby sneezing in the kitchen in (128a) and the event of Abby being next to the slide in (128b). Substitution targeting DP2 would rather call for a personal pronoun such as *her*, as shown in (129).

- (129) Chloe saw Abby. Sue saw her/#that, too.

In a similar vein, both kinds of predicates are generally compatible with pseudoclefting, shown in (130), though here we do find a bit more variability in acceptance across speakers.³⁴

- (130) a. What Chloe saw was [Abby sneeze in the kitchen].
 b. What Chloe saw was [Abby next to the slide].

| | | | | | |
|---|---|---|---|---|---|
| 4 | 4 | 5 | 5 | 5 | 1 |
| 4 | 5 | 5 | 5 | 4 | |

³⁴ As shown in the array, one person rejected (130a) outright. Clark & Jager (2000:20) also show pseudoclefting to be unacceptable in the example in (iv).

(iv) *What we saw was [Raquel Welch take a bath].

It is difficult to say what we ought to make of such variability. Might it be the byproduct of different grammars at play? Or might it be the case that some people correct to the universally acceptable V-*ing* version of this sentence in (130a), shown in (v) below? We won't be able to settle the matter with so few judgments at our disposal, but it is certainly worth future investigation.

(v) What Chloe saw was Abby sneezing in the kitchen.

As with proform substitution with *that*, we can use animacy as a guide to the nature of the constituent being targeted here. Because *what* presupposes inanimacy, pseudoclefting with *what* is inappropriate when the target constituent is an animate DP, as shown in (131).

- (131) #What Chloe saw was Abby.

Observe as well that pseudoclefting appears to be more marked on the whole in (132), where only a VP-adjunct parse is available for the secondary predicate (*raw*).

- (132) a. Chloe ate a steak raw.
b. What Chloe ate was a steak raw.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 1 | 4 | 4 | | |
|---|---|---|---|--|--|

Finally, like bare verbal predicates, LPPs in perception sentences are compatible with quantifier float, which is frequently taken as a diagnostic of movement of a subject out of a lower position in the syntax.³⁵

- (133) a. Chloe saw her siblings [all pack their lunches before school].
b. Chloe saw her siblings [all next to the slide].

Here again we find a divergence with VP-adjuncts, for which Bowers (1993:603, fn. 24) observes that quantifier float is “not very good,” illustrating with the sentences in (134). (I share Bowers’ intuition.)

- (134) a. ?He fed the steaks to the lion both raw.
b. ?John put the patients in bed all drunk.
(Bowers 1993:630, fn. 24)

We might therefore take the similarities with bare verbal predicates as characteristics of an SC complementation parse.

³⁵ See Sportiche (1988) on quantifier float in matrix clauses, and Hoekstra (1992, 2004), Bowers (1993, 2001), Starke (1995), Yokogoshi (2007), and Tanaka and Yokogoshi (2010) on quantifier float in purported small clauses. As noted in Citko (2011: fn. 10), quantifier float in SC complements is compatible with DP2 moving from a position within the clausal complement to VP (Bowers 1993, 2001) or with moving within the complement (Svenonius 1994, 1996, Basilico 2003).

With two parses accounted for, let us turn our attention to perception sentences with indefinite DP2 in order to bring the DP-adjunct parse back on the table. As in the SC complement parse, the LPP forms a constituent with the postverbal nominal in the DP-adjunct parse. The crucial difference is that in the latter parse, the LPP is a constituent of the DP. We would therefore predict it to be able to undergo movement operations targeting DP2. Indeed, in contrast with what we saw in (121a) with a proper name DP2, we find that passivization of DP2 with the LPP is possible when the DP is indefinite—and, therefore, compatible with internal locative modifiers—as shown in (135).

(135) A bear next to the slide was seen by local children.

Using passivization to isolate the DP-adjunct parse, we can check how this parse compares to the SC complement parse when it comes to quantifier float. For me, the sentence in (136a) is totally bad, in contrast with the sentence in (136b).³⁶

- (136) a. *The two bears both next to the slide were seen by local children.
 b. Local children saw the two bears both next to the slide.

Because the LPP is a constituent of DP2 under the DP-adjunct parse, we would expect this parse to pass all of the general tests for constituency that were shown above for the SC complement parse, namely coordination, right-node-raising, pseudoclefting, and proform substitution. For the first three tests, outcomes are indistinguishable, meaning that these tests cannot be used to distinguish the SC complement parse from the DP-adjunct parse. There is a difference when it comes to substitution, namely that we would anticipate a personal pronoun to be used in place of *that* when the target string is DP2, as shown in (137).

³⁶ The sentence (136a) is good with sufficient pauses around *both next to the slide* (conventionally rendered in writing with commas). In that case, the string serves as an appositive rather than DP-internal modifier. Such a pause may also improve things for the sentence in (121a), where the LPP follows a passivized proper. Importantly, the sentence in (136b), with quantifier float in the absence of passivization, is perfectly acceptable without any significant prosodic break.

(137) Chloe saw a couple of bears next to the slide. Sue saw them, too.

Notice in (138), however, that substitution targeting DP2 is also possible when a DP-adjunct parse is not available.³⁷

(138) Chloe saw Abby next to the slide. Sue saw her, too.

In this case, the pronoun can only target the DP2 *Abby* and not the string *Abby* + LPP. Hence, while we can use substitution with *that* to pick out SC complements, we can't use substitution with a personal pronoun to pick out the DP-adjunct parse.

Though the DP-adjunct parse patterns with the SC complement parse on general constituency measures, it is crucially different in that the postverbal nominal is not a subject of the LPP. As such, we would not expect the DP-adjunct parse to respect the phrasal integrity condition observed for subjects and predicates of SC complements. In (139) we see that adverbial intervention is possible even with predicates that can only be interpreted as DP modifiers.³⁸

- (139) a. Chloe met a woman yesterday from Chicago.
b. Chloe met a woman yesterday living in Chicago.

As a result, adverbial intervention can be used to pick out the adjunct parses from the SC complement parse, but it cannot be used to distinguish between the adjunct parses.

We have now seen the LPPs in perception sentences exhibit syntactic behavior that is consistent with all three potential parses introduced in Section 3.2.1. By extension, we have also

³⁷ This substitution may require a VP-adjunct parse. For me, it is a bit stilted for perception sentences with a bare verbal predicate: *Chloe saw Abby sneeze in the kitchen; ?Sue saw her, too*. But it's perfect with a participial predicates: *Chloe saw Abby sneezing in the kitchen; Sue saw her, too*. Importantly, participles are also compatible with adverbial intervention consistent with Gisborne's (2010) claim that participles are compatible with SC complement and depictive (VP-adjunct) parses: *Chloe saw Abby yesterday sneezing in the kitchen*.

³⁸ I use the verb *met* here since these sentences are not as amenable to object-oriented VP-adjuncts. For instance, *Sandy met Fran drunk* is most naturally interpreted as meaning that Sandy was drunk at the time of meeting; it is difficult for me to get a reading in which Fran is the one who is drunk.

seen ways in which these three parses, if indeed distinct,³⁹ might be distinguished from one another. The SC complement parse pulls apart from the adjunct parses in allowing proform substitution with *that* and quantifier float. The adjunct parses pull apart from the SC complement parse by adverbial intervention. Finally, the DP-adjunct parse is distinguished from the VP-adjunct parse by passivization. With these structural contrasts in hand, we can ask how subject-oriented pronoun choice looks when each parse is enforced.

3.2.3 Pronoun licensing across perception sentence parses

This section will ask whether we find evidence of binding principles playing an active role in licensing subject-oriented pronouns in perception sentence LPPs, that is, if we find evidence of strict complementarity between subject-oriented reflexives and personal pronouns in any of the three parses identified for LPPs in perception sentences. In light of the results, we can also ask whether the pronoun licensing possibilities we find across these parses are consistent with what we would predict under the binding theories covered in Section 3.1. For convenience, I repeat the table summarizing those predictions here.

Table 3-B. Predictions across binding theories for subject-oriented pronoun licensing when the LPP is and is not a small clause.

| | Not a Small Clause [_{VP} DP _i ... [_{PP} P pronoun _i]] | Small Clause [_{VP} DP _i ... [_{PP} DP _j [P pronoun _i]]] |
|---------------|---|---|
| CBT (camp #1) | ✓Reflexive *Personal Pronoun | *Reflexive ✓Personal Pronoun |
| NBT (camp #2) | ✓Reflexive ✓Personal Pronoun | *Reflexive ✓Personal Pronoun |
| PBT (camp #2) | ✓Reflexive ✓Personal Pronoun | *Reflexive ✓Personal Pronoun |

³⁹ It is possible that characteristics associated with distinct parses in fact pick out a single parse. In particular, in light of the discussion of SC complement structure in Section 3.2.4, I will float the idea that SC complement parse and VP-adjunct parse may in fact be one and the same. In any event, even if there are not in fact three distinct parses, in aiming to target three parses, we can hope to have exhausted all of the parses that are potentially available for perception sentence LPPs.

CBTs, and camp #1 theories generally, predict binding principles to impose strict complementarity between reflexives and personal pronouns under a given interpretation in all syntactic contexts. PBTs and CBTs, and camp #2 theories generally, predict non-complementarity when the LPP is not a small clause.

Before we dive in, I must first address an important point that I set aside while laying out the basic binding predictions captured in **Table 3-B**. All three kinds of theories shown in the table share the prediction that subject-oriented reflexives should be ruled out by Principle A when the LPP comprises a small clause. For CBTs and NBTs, this prediction follows from the hypothesis that subjects delimit the local domain of the reflexive. However, ample work has demonstrated that English reflexives may in some circumstances take an antecedent outside of the smallest clause containing them (descriptively speaking, at least; cf. fn. 41) (Cantrall 1974, Kuno 1987, Zribi-Hertz 1989, Pollard & Sag 1992, a.o.; see Charnavel 2020a for an overview of the literature). Such reflexives, commonly referred to as *logophoric reflexives*, have been shown to depend on discourse factors to be licensed, most notably point of view. More specifically, logophoric reflexives can be used only if the domain containing them expresses the first-personal perspective of their antecedent (Cantrall 1974, Kuno 1987, Keenan 1988, Zribi-Hertz 1989, a.o.).^{40,41}

⁴⁰ Other factors have been suggested to play a role in facilitating logophoric licensing, including focus, accessibility, expectation (Reinhart & Reuland 1993, Bassel 2022, and citations therein). However, Charnavel & Sportiche (2016) and Charnavel (2020) argue that perspective, in particular mental perspective, is in any case a necessary condition for logophoric licensing.

⁴¹ Logophoric reflexives have been variously treated in the theoretical literature. Charnavel (2020) argues that logophoric reflexives are just like any other reflexive in requiring a c-commanding antecedent within their local domain (in accordance with antecedent-based Principle A): the only difference is that their antecedent is a null pronoun expressing the perspectival center associated with that domain. Other proposals have treated logophoric reflexives as bound by a logophoric operator located in the clausal periphery (Koopman & Sportiche 1989, Kinyalolo 1993, Jayaseelan 1998, Speas & Tenny 2003, Adesola 2006, Anand 2006, a.o). Others still abandon the role of binding altogether, instead leaving logophoric licensing entirely to the discourse (Bouchard 1984, Kuno 1987, Zribi-Hertz 1989, Pollard & Sag 1992, Reinhart & Reuland 1993, Drummond et. al 2011, Rooryck & Vanden Wyngaerd 2011, Varaschin 2021, a.o.). While important to the larger theory of reflexive licensing, nothing in the present investigation will hinge on the precise treatment of logophoricity.

Importantly, some work has shown logophoric licensing to be generally unavailable for English reflexives with syntactic coarguments (Pollard & Sag 1992, Reinhart & Reuland 1993). Indeed, this is the main impetus behind PBTs, which hypothesize that reflexives must be anteceded by a syntactic coargument when there is one. This alone would rule out logophoric licensing in small clause LPPs if we take the subject of the small clause to be coarguments with the LPP complement; in fact, it is for this reason in particular that Reinhart & Reuland (1993) rule against a small clause analysis of English LPPs. On the other hand, Charnavel & Bryant (2022) propose that it is not coargumenthood *per se* that blocks logophoric licensing in English, but competition with a weak pronominal form (cf. Charnavel & Sportiche 2016, Charnavel 2020a, Charnavel 2020b on competition in French). This leaves open the possibility that the conditions for competition simply do not apply in LPPs and, hence, that logophoric reflexive licensing is possible even in the presence of a PP-internal subject. In Section 3.2.4, I will also suggest another analysis of the internal structure of LPP small clauses that would potentially avoid the coargument issue altogether. Hence, while the baseline predictions are as shown in **Table 3-B**, with small clause structure precluding subject-oriented reflexives, we should not throw out the possibility of logophoric licensing altogether.

In order to determine whether logophoric licensing is necessary to license the subject-oriented reflexive in a given parse, we can make use of the animacy diagnostic proposed in Charnavel & Sportiche (2016). According to the authors, logophoric licensing is only available for reflexives whose antecedents have a mental state, since possession of a mental state is necessary to qualify as a perspectival center under (almost⁴²) all definitions of logophoricity. The key prediction to arise from this stance is that the antecedent of the logophoric reflexive must be animate, since only animate entities can be said to have mental states. In other words, if

⁴² Sells (1987:456) proposes that spatial perspective (deixis) may also feed logophoric licensing. However, Charnavel (2020a, 2020b) demonstrates that pure deictic perspective is not sufficient for to allow apparent exemption from (antecedent-based) Principle A; mental perspective is needed, too.

logophoricity is required to license a subject-oriented reflexive within an LPP, we would predict inanimate reflexives to be ruled out.

With that, let's take a look at the pronoun licensing possibilities in our perception sentences. In this section I will consistently include acceptability judgment arrays next to examples so that we can track whether and how preferences depend on the available parse(s). As our baselines, we will compare to the judgments provided for the sentences in (140), where the pronoun has an animate antecedent, and in (141)-(142), where the pronoun has an inanimate antecedent. (I report each individuals' preferences throughout this section to facilitate comparison across examples.)

| | | | | | | | |
|-------|---|---|---|---|---|---|--|
| (140) | a. Noah _i saw a ladybug on him _i . | 5 | 3 | 3 | 4 | 4 | |
| | b. Noah _i saw a ladybug on himself _i . | 2 | 5 | 5 | 5 | 5 | |
| (141) | a. The doorbell camera _i captured a ladybug on it _i . | 3 | 3 | 4 | 3 | | |
| | b. The doorbell camera _i captured a ladybug on itself _i . | 4 | 5 | 5 | 5 | | |
| (142) | a. The porch sensor _i detected a ladybug on it _i . | | 3 | 3 | 5 | 5 | |
| | b. The porch sensor _i detected a ladybug on itself _i . | | 5 | 5 | 3 | 4 | |

For the sentence pair in (140) four of the five people consulted displayed a preference for the reflexive, though ratings were quite close for two of those people.⁴³ This is consistent with the weak reflexive preference found for *Noah noticed a ladybug on him(self)* in Experiments 1 and 2. Importantly, we also find an overall preference for the reflexive in (141), and split opinions on (142). This outcome alone would suggest that logophoricity is not always needed to license subject-oriented reflexives in perception sentence LPPs, meaning that the sentence subject is

⁴³ It will be noticed that the preferences displayed by consultant #1 (leftmost box in the arrays) changes the most across examples in this section: sometimes the reflexive is preferred, sometimes the personal pronoun. These flips were not reliably predicted by animacy, nor by parse. Rather, they depend most on the day on which the judgment was elicited. This should come as no surprise, given how gradient preferences for these kinds of sentences tend to be, and especially considering the fact that these sentences were provided to consultants without contexts. What will matter for our purposes are not individual ratings, but whether the ratings taken together point to strict complementarity.

local to the LPP complement. However, we may yet find that logophoric licensing is required in at least one of the parses on the table, blocking use of the inanimate reflexive.

Though the sentence pairs above all permit the reflexive, and even favor the reflexive for some speakers at least, it is important to bear in mind that perception sentences on the whole were found to favor the personal pronoun. I focus on these sentences as they give us the best chance of determining whether that overall preference stems from requirement for the personal pronoun in one or more of the parses that are in principle available for perception sentence LPPs. That is, what we are looking for is evidence that at least one parse blocks use of the reflexive entirely.

The most likely candidate for strict complementarity is the SC complement parse. Of the three parses on the table for perception sentences with LPPs, only in this parse does the LPP comprise a small clause by definition, with DP2 serving as the subject of the small clause rather than the object of the perception verb. Under all three of the theory types captured in **Table 3-B**, we would predict reflexive to be unavailable for the expression of subject coreference whenever the SC complement parse is enforced (or at least to require logophoric licensing). In terms of acceptability ratings, this should translate to low ratings for the reflexive relative to the personal pronoun, especially when the antecedent is inanimate. Indeed, the reflexive was uniformly rated quite low in sentences such as (143), where only an SC complement parse is possible.

(143) *John_i heard Mary criticize himself_i in the hallway.

| | | | | | |
|---|---|---|---|---|---|
| 2 | 1 | 1 | 3 | 1 | 1 |
|---|---|---|---|---|---|

To draw out an SC complement parse for our LPP sentences, we can apply the two tests that were shown above to be characteristic of this parse: proform substitution with *that* and quantifier float. The former is shown for the animate sentence pair in (144).

(144) a. Noah_i saw a ladybug on him_i. Mary saw that, too.

| | | | | | |
|---|---|---|---|---|--|
| 5 | 3 | 3 | 4 | 4 | |
|---|---|---|---|---|--|

b. Noah_i saw a ladybug on himself_i. Mary saw that, too.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 5 | 5 | 5 | 4 | |
|---|---|---|---|---|--|

As we can see, proform substitution did not induce a strong change in preferences: three of the four people who preferred the reflexive in (140) continued to do so here. Though I have suggested that a personal pronoun such as *it* would be more appropriate for substitution targeting DP2, we might be concerned that *that* is picking up on DP2 in (144), rather than an event of a ladybug being on Noah. To control for this, we can consider sentences in which DP2 is not compatible with *that*, for instance a sentence with a plural DP2. As shown in (145), pluralization did not lead to any reversals in preference in the direction of the personal pronoun. In fact, the one consultant who favored the personal pronoun for (140) rather favored the reflexive in this case (but see fn. 43).

- (145) a. Noah_i saw a couple of ladybugs on him_i. Mary saw that, too.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 3 | 3 | 3 | 4 | |
|---|---|---|---|---|--|

 b. Noah_i saw a couple of ladybugs on himself_i. Mary saw that, too.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 5 | 5 | 5 | 4 | |
|---|---|---|---|---|--|

Application of *that* substitution to sentences with an inanimate subject and pronoun are shown in (146). A plural DP2 has again been used in order to ensure the intended interpretation of *that*. As with the animate examples, *that* substitution was found not to affect which form was preferred, with the reflexive again coming out on top.

- (146) a. The doorbell camera_i captured a couple of ladybugs on it_i. The roof camera captured that, too.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 4 | 3 | 3 | | |
|---|---|---|---|--|--|

 b. The doorbell camera_i captured a couple of ladybugs on itself_i. The roof camera captured that, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

In order to test the effects of quantifier float, we need to consider sentences with a definite DP2, as in (147). The preposition *next to*, which does not usually give rise to a contact inference, was used in place of an obligatory contact preposition such as *on* to make the sentences more plausible. We found in Experiments 1 and 2 that the personal pronoun was generally preferred over the reflexive in non-contact perception sentences. Nevertheless, two out of five people consulted for this pair preferred the reflexive over the personal pronoun.

(147) a. Noah_i saw his siblings next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 5 | 5 | 3 | 5 | |
|---|---|---|---|---|--|

b. Noah_i saw his siblings next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 4 | 3 | 5 | 4 | |
|---|---|---|---|---|--|

For the two people who preferred the reflexive in (147), preferences did not change when the quantifier *all* was included after DP2, as shown in (148). Interestingly, one of the people who preferred the personal pronoun in (147) actually favored the reflexive in (148). For the remaining two people consulted on these examples, the reflexive was no more degraded in (148) than it was in (147).

(148) a. Noah_i saw his siblings all next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 5 | 3 | 5 | |
|---|---|---|---|---|--|

b. Noah_i saw his siblings all next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 4 | 3 | 5 | 4 | |
|---|---|---|---|---|--|

As for quantifier float with inanimates, judgments varied widely for the pair of sentences in (149), covering the full range of the five-point scale.

(149) a. *Two ladybugs flew onto the porch ...* The doorbell camera_i captured the ladybugs both on it_i.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 2 | 3 | 3 | | |
|---|---|---|---|--|--|

b. *Two ladybugs flew onto the porch ...* The doorbell camera_i captured the ladybugs both on itself_i.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 4 | 5 | | |
|---|---|---|---|--|--|

Two of the people consulted on this example were rather unhappy with both reflexive and personal pronoun versions of the sentence in (149). I will not speculate on the reason for these low ratings here, though it certainly raises questions about the conditions permitting quantifier float. The other two consultants again displayed a preference for the reflexive.

Taken together, these examples suggest that subject-oriented reflexives and personal pronouns are both possible in perception sentence LPPs under an SC complement parse, and that logophoricity is not necessary to license the former. Before we tackle the ramifications of this outcome, let's first see how things look in the VP-adjunct and DP-adjunct parses.

As noted in Section 3.2.1, it is not a given whether the LPP comprises a small clause when it is parsed as an adjunct. Chomsky (1981) and Bassel (2018, 2022) treat VP-adjunct LPPs as clausal (see also Stowell 1981, 1983, Hoekstra 1988, Bowers 1993, 2001). Hestvik (1991),

Reinhart & Reuland (1993), Buring (2005), Rooryck & Vanden Wyngaerd (2007|2011), Hicks (2009), and Bader (2011) do not (see also Williams 1980, 1983, Winkler 1997 and citations therein). While most of these works focus on adjuncts in VP, it is safe to assume that the treatments of DP-adjuncts would follow the same basic assumptions.

If adjunct LPPs are clausal, we would again predict that only the personal pronoun can be used to express coreference with the sentence subject, modulo logophoricity. If the LPP is not clausal, CBTs would predict the reflexive to be required, while NBTs and PBTs would predict both forms to be possible. Let me stress here that it is not my intention to use pronoun licensing to diagnose small clause structure. Such an argument would run the risk of circularity without independent motivation,⁴⁴ and any outcome that disfavors a small clauses analysis would be equivocal anyway given what we have seen already for the SC complement parse. However, we can still ask whether we find evidence of strict complementarity in either of the adjunct parses.

We saw above that VP-adjunct and DP-adjunct parses can be distinguished from the SC complement parse by adverbial intervention. Just like with the bare verbal predicate in (143), the subject oriented reflexive is generally rejected in (150) with a participial predicate, even when an adjunct parse is forced by intervention with the adverb *in the hallway*.

(150) *John_i heard Mary in the hallway criticizing himself_i.

| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | 1 | 4 | 1 | 1 |
|---|---|---|---|---|---|

⁴⁴ Let me illustrate this point. If we were to find that the reflexive could not be used, concluding from that the LPP comprises a small clause could be an instance of a fallacy known as affirming the consequent, if we formulate our premise as in (a):

- (a) Premise: If the LPP is a small clause, the (inanimate) reflexive cannot be used. (Principle A)
- (b) Observation: The (inanimate) reflexive cannot be used.
- (c) Conclusion: The LPP is a small clause.

This fallacy is avoided if the premise is instead stated as in (d):

- (d) Premise: If the LPP is not a small clause, the (inanimate) reflexive can be used. (Principle A)

However, if we adopt this formulation, we cannot conclude from the availability of the reflexive that the LPP is not a small clause without again falling into affirming the consequent; the opposite is of course true for the formulation in (a). Nothing about Principle A would push us towards one premise over the other. Therefore, any argument of this shape is somewhat dubious, logically speaking.

This does not mean that pronoun licensing should never be used to diagnose structure—it can certainly be a helpful tool, and has been used to that end in the past (including in Charnavel & Bryant 2022). However, it does mean that we should seek out independent evidence for structural proposals whenever possible.

Once again, the situation is different in LPPs. (151) shows intervention with the manner adverbial *clear as day*, while (152) shows intervention with the temporal adverbial *yesterday*.

- | | | | | | | | | |
|-------|---|--|---|---|---|---|---|--|
| (151) | a. Noah _i saw a ladybug clear as day on him _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>5</td><td>2</td><td>3</td><td>4</td><td>4</td><td></td> </tr> </table> | 5 | 2 | 3 | 4 | 4 | |
| 5 | 2 | 3 | 4 | 4 | | | | |
| | b. Noah _i saw a ladybug clear as day on himself _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>2</td><td>5</td><td>5</td><td>5</td><td>5</td><td></td> </tr> </table> | 2 | 5 | 5 | 5 | 5 | |
| 2 | 5 | 5 | 5 | 5 | | | | |
| (152) | a. Noah _i saw a ladybug yesterday on him _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>3</td><td>2</td><td>3</td><td></td><td>3</td><td></td> </tr> </table> | 3 | 2 | 3 | | 3 | |
| 3 | 2 | 3 | | 3 | | | | |
| | b. Noah _i saw a ladybug yesterday on himself _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>4</td><td>5</td><td>5</td><td></td><td>3</td><td></td> </tr> </table> | 4 | 5 | 5 | | 3 | |
| 4 | 5 | 5 | | 3 | | | | |

Regardless of the adverb, the reflexive remained the preferred option for some of the people consulted on these sentences. (One person disliked intervention with *yesterday* regardless of pronoun choice.) Importantly, the personal pronoun also appears to be a viable option: it was preferred by one speaker when judgments for (151) were elicited.

In examples (153)-(154), we see that adverbial interruption similarly does not preclude the reflexive when the antecedent is inanimate. We can't tell about the personal pronoun in this case, since both people who preferred it in the baseline sentence pair found intervention with *yesterday* degraded regardless of proform.

- | | | | | | | | | |
|-------|--|---|---|---|---|---|---|--|
| (153) | a. The porch sensor _i detected a ladybug on it _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td></td><td>3</td><td>3</td><td>5</td><td>5</td><td></td> </tr> </table> | | 3 | 3 | 5 | 5 | |
| | 3 | 3 | 5 | 5 | | | | |
| | b. The porch sensor _i detected a ladybug on itself _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td></td><td>5</td><td>5</td><td>3</td><td>4</td><td></td> </tr> </table> | | 5 | 5 | 3 | 4 | |
| | 5 | 5 | 3 | 4 | | | | |
| (154) | a. The porch sensor _i detected a ladybug yesterday on it _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td></td><td>3</td><td>2</td><td>3</td><td>3</td><td></td> </tr> </table> | | 3 | 2 | 3 | 3 | |
| | 3 | 2 | 3 | 3 | | | | |
| | b. The porch sensor _i detected a ladybug yesterday on itself _i . | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td></td><td>5</td><td>5</td><td>3</td><td>3</td><td></td> </tr> </table> | | 5 | 5 | 3 | 3 | |
| | 5 | 5 | 3 | 3 | | | | |

So, we do not find evidence of strict complementarity in the adjunct parses generally. However, it could be that only one of the adjunct parses permit the reflexive, and that this parse was simply not the one that was accessed by those folks who preferred the reflexive when assessing the sentences in (151)-(154).

Our only way of pulling apart the adjunct parses is through passivization. Recall that the LPP can be passivized along with DP2 only if it can be parsed as a constituent of DP2 (155a). When only a VP-adjunct parse is possible, passivization of the LPP is out (155b).

- (155) a. A bear next to the slide was seen by local children. (=(135))

b. *Abby next to the slide was seen by local children. (= (121))

Unfortunately for us, passivization is quite degraded for the sentences in (156) regardless of pronoun type.

(156) a. A ladybug on him_i was seen by Noah_i.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 1 | 2 | 1 | 2 | |
|---|---|---|---|---|--|

b. A ladybug on himself_i was seen by Noah_i.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 1 | 3 | 3 | 3 | |
|---|---|---|---|---|--|

This could simply follow from infelicity of the passive structure given the coreference—something like a Principle C violation—or perhaps from some sort of crossover effect.⁴⁵

Considering that there is something off with the passive sentences in (156) independent of pronoun choice, I am reluctant to conclude anything definitive about pronoun choice from this example.

I suggested above that the DP-adjunct reading may be most appropriate when the LPP helps to pick out the referent of DP2, for example in response to a question like *Which insect?* We might therefore use this kind of question set-up to draw out a DP-adjunct parse. Four people found the reflexive to be the more natural choice in the response sentences in (157); according to my judgments, the reflexive is also the more natural choice in (158).⁴⁶

⁴⁵ Whether we would expect a standard binding relation to be possible at all in this case depends entirely on our theory of passive structures, in particular the status of the *by*-phrase subject. If we treat *by* as something akin to a case marker (e.g., Bader 2011), and if we assume that the subject c-commands the direct object at some point in the derivation of passive sentences, then we might allow binding to go through before c-command is mangled by subsequent movement. Absent these assumptions, we would have to assume that the reflexive in (156b), to the extent that it is licensed at all, is licensed logophorically. No matter the case, whatever is going on in the passive sentences re: binding would not necessarily be what is going on in active sentences, where c-command is satisfied in the surface syntax.

⁴⁶ In both cases, the pronoun bears prosodic stress along with the head noun, *ladybug*. Same goes for (159). I don't take this to signal that the reflexive is exceptionally licensed in these examples, as far as the syntax is concerned (see Charnavel & Sportiche 2016; cf. Reinhart & Reuland 1993, who discuss focus as a way for reflexives in with syntactic coarguments to nevertheless escape their predicate-based Principle A). Following standard assumptions about question-answer congruence and focus structure (Rooth 1992), the entire DP2 is focus marked in (157) and (158). Association with prosodic stress may however be a contributing factor to rendering the reflexive a natural choice here, especially in the inanimate example, since its relative length renders it a better landing site for stress than the personal pronoun (though the latter is certainly compatible with stress as well).

(157) *Context: There were several ladybugs, grasshoppers, and dragonflies on the porch.*

Q: *Which insect did Noah see?*

a. Noah_i saw the ladybug on him_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 3 | 4 | 3 | | |
|---|---|---|---|--|--|

b. Noah_i saw the ladybug on himself_i.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

(158) *Context: There were several ladybugs, grasshoppers, and dragonflies on the porch.*

Q: *Which insect did the porch sensor detect?*

a. The porch sensor_i detected the ladybug on it_i.

b. The porch sensor_i detected the ladybug on itself_i.

We see the same in (159), where the antecedent is the negative quantifier *no one*. (One person remarked that they would prefer the singular form *themselves* in (159b).)

(159) *Ladybugs landed on every person sitting on the porch. Everyone saw at least one of the ladybugs, but ...*

a. ... no one_i noticed the ladybug on them_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 3 | 3 | 4 | | |
|---|---|---|---|--|--|

b. ... no one_i noticed the ladybug on themselves_i.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 4 | 5 | 5 | | |
|---|---|---|---|--|--|

These examples show that the reflexive is indeed possible in DP-adjunct LPPs, and even preferred when conditions are right (cf. fn. 46). Because we can't tell for sure which adjunct parse was tapped into in the adverb intervention manipulation, we aren't able to say for sure whether a VP-adjunct parse also allows the reflexive (though my intuition tells me that it was really the VP-adjunct parse that was tapped into in (154)). I must therefore leave it as an open question whether LPPs in perception sentences are ever parsed in such a way that subject-oriented reflexives are ruled out by Principle A. That being said, the evidence currently available to us does not show any signs of Principle A playing an active role.

As flagged above, the focus here was whether there were any parses that disallow subject-oriented reflexives: since a preference for the personal pronoun was found to hold for perception sentences overall, we can take it for granted that perception sentence LPPs are not generally interpreted in such a way that the personal pronoun is ruled out by Principle B. Even if limited in the current sample, individual preferences for the personal pronoun in the examples above do suggest that this form, too, is grammatically available in all of the parses that are available for

perception sentence LPPs. Future work may directly target the effects of parse on personal pronoun licensing by starting with baseline examples that more generally favor the personal pronoun, for instance using sentences that favor non-contact interpretations. (I personally prefer the personal pronoun over the reflexive for every sentence pair above if *on* is replaced with *next to*, regardless of syntactic manipulation.) For now, I believe it is safe to assume that we are very unlikely to find evidence of an LPP parse in perception sentences that precludes subject-oriented personal pronouns.

3.2.4 Takeaways from perception sentences

Let's take stock of what we've found for perception sentence LPPs. First, we found syntactic behavior that is consistent with all three of the parses put on the table for perception sentence LPPs in Section 3.2.1. Those parses, the SC complement parse, VP-adjunct parse, and DP-adjunct parse, are schematically represented once more in (160a-c), respectively.

- (160) a. Noah_i saw [_{PP} a ladybug_k on him_i(self)].
 b. Noah_i saw [_{DP} a ladybug]_k [_{PP} (PRO)_k on him_i(self)].
 c. Noah_i saw [_{DP} a ladybug (PRO)_k on him_i(self)].

While the goal was not to determine definitively what the structure of perception sentences is, compatibility with multiple parses opens up the possibility that pronoun licensing in perception sentence LPPs depends on the parse. Using syntactic manipulations in the hopes of teasing these parses apart, we asked whether we find evidence of any of the parses giving rise to strict complementarity between subject-oriented reflexives and personal pronouns. While it is possible that we have simply fallen short in our search, leaving a key syntactic parse untapped, the answer we are left with so far is no: any parse we were able to pin down permits the reflexive and (I suspect, though we have less direct evidence here) the personal pronoun. Importantly,

based on the inanimacy diagnostic of Charnavel & Sportiche (2016), we would conclude the availability of the reflexive in these parses is not contingent on logophoric licensing.⁴⁷

The outcome is then two-fold. First, it would seem that binding principles do not drive the general preference for the personal pronoun in perception sentences that was turned up in Experiments 1 and 2: the reflexive is syntactically permitted, even if it is not generally the preferred choice. Perhaps we can't entirely rule out the possibility that Principle A, whether antecedent-based or predicate-based, does sometimes play a role: after all, an absence of evidence is not always evidence of absence. Future investigation of the parses available for LPPs in perception sentences may provide us with better ways of identifying possible parses and, hence, better ways of testing how these parses behave with respect to pronoun licensing. However, if there is a parse that precludes the reflexive (or, less likely, the personal pronoun), our failure to find it here would suggest that this parse is not particularly prevalent and, therefore, not likely to play a big role in driving the overall preference pattern. For now, I conclude that our best bet is seeking explanations for this pattern elsewhere.

Second, regardless of whether a possible parse was missed, we can confidently abandon any assumption of strict complementarity between reflexives and personal pronouns in English LPPs. More specifically, the evidence presented above reveals that both pronoun forms are permitted under the same LPP parse, ruling out CBTs and other binding theories falling in camp #1 that rely on internal subject projection and/or attachment site to maintain complementarity. While this section did not target the structural contrast proposed in Rooryck & Vanden

⁴⁷ This conclusion follows as long as we adopt the stance argued in Charnavel & Sportiche (2016) and Charnavel (2020a, 2020b) that logophoric licensing requires mental perspectives. One might argue that sensors and cameras do have perspective in some sense, albeit not mental perspective. Indeed, this fact could very well have something to do with why the reflexive is at all good with inanimate antecedents in perception sentence LPPs, and even preferred in some cases. However, Rooryck & Vanden Wyngaerd (2007|2011) argue that perspectival effects and logophoric licensing are not one and the same: according to them, the former can arise even when local binding is possible (see also Kuno 1987). I think this view is correct. (See fn. 51 for more reasons to conclude that the sentence is syntactically local.)

Wyngaerd (2007|2011), according to which feature valuation of AxPart determines binding possibilities, nor the treatment pursued in Bader (2011), according to which the apparent absence of complementarity is the result of reliably different interpretations, I argued in Chapter 2 that both treatments are untenable in face of the full range of data that must be accounted for. Hence, in the absence of alternative routes to strict complementarity, we may take this outcome as motivation for moving away from camp #1 altogether.

Things are looking better for the camp #2 theory space, which allows for an overlap in the distribution of reflexives and personal pronouns. However, there are two additional findings that must be accounted for: namely, the apparent permissibility of the reflexive in an SC complement parse, and the divergence between verbal/participial predicates and LPPs.

Now, it is possible that none of the LPP parses actually involve small clause structure, even what I have referred to as an SC complement parse, despite the properties shared with complements headed by bare verbal predicates. In that case, no problem arises. I would like to pursue the more interesting possibility that at least one of these parses targeted here truly does involve small clause structure, and that small clause structure does not preclude the subject-oriented reflexive. In that case, what would we have to say to make our syntactic theories of pronoun licensing compatible with what we have found?

For PBTs, the problem arises from the pair of assumptions that small clause structure entails that the complement of the LPP has a syntactic coargument, and that the presence of a syntactic coargument within the LPP necessarily precludes antecedence by the sentence subject. Abandoning either assumption would render the outcome in principle compatible with PBTs.

Varaschin (2021) drops the latter assumption in his predicate-based approach to reflexive licensing.⁴⁸ In particular, Varaschin argues that Principle A is not enforced for reflexive

⁴⁸ Varaschin does not assume projection of a syntactic subject within the LPP *per se*, but association of locative prepositions with a subject function. The problem posed by reflexive licensing within LPPs still applies.

complements of locative prepositions because such prepositions are anti-reflexive, meaning that coreference with the subject of the preposition would be semantically anomalous. There are a few of problems with this approach, however, as we saw already in Chapter 2. First, Varaschin observes that not all locative prepositions are anti-reflexive, illustrating with the preposition *on*:

- (161) Julie_i stepped on herself_i.
(Varaschin 2021:254, fn. 10)

Even if anti-reflexivity allowed avoidance of Principle A, we would therefore not expect this semantic escape route to be available for the complement of *on*. However, the several speakers in fact preferred the reflexive in (140)-(142), each of which included the preposition *on*. Second, anti-reflexivity does not appear to be sufficient to permit violation of Principle A in the complement of verbs that likewise imply a spatial distinction between its arguments, as shown in (73) with *pass*. Hence, the contrast with verbal predicates cannot be explained.

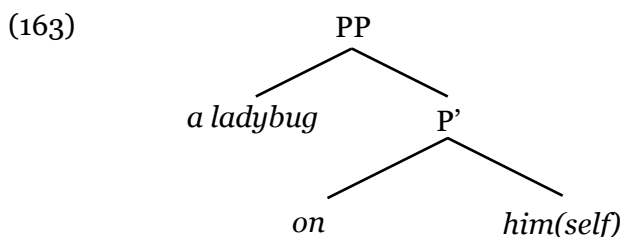
- (162) *Bob_i saw Michele pass himself_i in the hallway.

Another way that we might move away from the latter assumption is to say that there is simply something special about verbal predicates in constraining reflexive interpretation, rather than predicates generally. This is the line taken in Clark & Jäger (2000), which cites Szabolcsi (1987) and Hepple (1990) as precursors. It is also compatible with the suggestion in Reinhart & Reuland (1993) and Reuland (2011) that what really matters to Principle A is association with an event variable in the semantics. The latter stance invites the possibility of extension to the nominal domain, where event roles have also been shown to constrain reflexive interpretation.⁴⁹

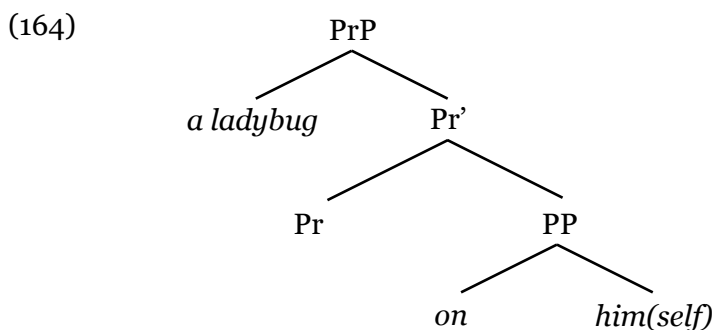
Alternatively, we could let go of the first assumption, that is, that the subject of an LPP small clause is a syntactic coargument of the LPP complement. So far I have used the category label ‘PP’ for the small clauses with prepositional predicates. If we take small clauses to be

⁴⁹ See Charnavel & Bryant (2022) on subject-oriented reflexives in picture noun phrases.

projections of lexical predicates (Stowell 1981, 1983, a.o.) DP2 would indeed be the subject of the preposition, as captured in (163).



However, we might instead follow proposals according to which predication in non-verbal small clauses is mediated by a functional head (Bowers 1993, 2001, Adger & Ramchand 2003, Den Dikken 2006, Ramchand 2008, 2018, a.o.). This would look something like (164), where I adopt Bowers' label 'Pr' for the functional head.



Under this analysis, there is room to maintain that DP2 is the subject of Pr but, crucially, not of P. As such, the preposition would not count as a syntactic predicate, and a reflexive complement would lack a syntactic coargument. Under PBTs, the reflexive would thus be predicted to be exempt from Principle A, opening up the possibility of taking the sentence subject as its antecedent.⁵⁰

⁵⁰ It is possible that what I've called the VP-adjunct parse is also involves SC complementation. Indeed, as mentioned above, the clause structure we get in the VP-adjunct parse will look a lot like a small clause structure, depending on the theory of adjunction we assume (see example (106) and fn. 23). In fact, it is possible given a Pr analysis that the VP-adjunct parse and SC complement parse are one and the same. In that case, LPPs in perception sentences have two possible parses, corresponding to two possible functions: it can be an adjunct within PrP, specifying where the object was when it was seen, and it can be an adjunct within DP2, specifying which object it was that was seen. I leave this possibility for further

We still need to account for the contrast between LPP predicates and verbal predicates under this approach, that is, to explain why a predicate-based Principle A does apply in the latter. If we adopt Bowers' (1993, 2001) proposal that Pr is involved in the introduction of all subjects, including verbal subjects, we would be left without a syntactic contrast between verbs and prepositions that would predict a difference with regard to Principle A. However, we might capture the distinction in the syntax by assuming that verbal subjects merge in an extended projection of the verb (e.g., vP) rather than in a categorically distinct functional projection, as in Citko (2014). In that case, verbal predicates *would* take syntactic subjects in the relevant sense, such that reflexives selected by verbal predicates would have at least one syntactic coargument, thereby triggering the circumstances under which PBT Principle A applies. Indeed, this take is compatible with Baker's (2003) argument that while verbs license subjects/specifiers on their own, prepositions never do (though cf. Ramchand 2008, who posits true PP-internal subject projection to account for particle shift in verb-particle constructions).

No matter the route we take to render the findings reported above compatible with PBTs generally, it is important to note that PBTs that take Principle A exemption to require logophoric licensing (e.g., Pollard & Sag 1992, Varaschin 2021) would still run into trouble, since the behavior of inanimate reflexives would suggest that logophoric licensing is not necessary. However, it is perfectly consistent with a coargument-based Principle A to allow local binding relations to hold when Principle A is not enforced. For instance, Reinhart & Reuland's (1993) theory allows reflexive licensing via chain formation (though cf. Charnavel & Bryant 2022 on the limits of this explanation within the nominal domain). Once we allow this possibility, though, it

exploration down the road, noting that if it is pursued, something will need to be said about the absence of free adverbial intervention in possession and location change sentences. (We would also need to square this with the proform substitution possibilities, that is, the possibility of using both *that* and *her*.)

We could even go one step further, and say that perception verbs always select for SC complements, even when all we see is DP2—consistent with Bowers' proposal that direct object always merge in specifier position. The lower projection would be Pr (semantically, something like BE). This isn't far off from what Dechaine et al. (1995) argue for possession sentences, as we will see below.

may be necessary to impose structural limits on licensing via binding relations, for instance by adopting something akin to an antecedent-based Principle A.

While restricting Principle A to certain predicates or severing the small clause subject from the LPP proper could render the picture presented here consistent with the predictions of PBTs, neither solution can salvage things for NBTs, which take subjects to delimit the local domain of the reflexive regardless of coargumenthood. This does not spell the demise of antecedent-based binding theories more generally, however. It simply requires that we decouple the definition of locality from the notion of subjecthood.

Indeed, this move is entirely consistent with Minimalist theories of binding, which identify the domain of the reflexive with the phase or spellout domain rather than the minimal phrase containing a subject. While small clauses are often regarded as comprising phases (as noted in Section 3.1.1), this is not always the case. Rooryck & Vanden Wyngaerd (2007/2011) assume and SC complement analysis of possession sentences (see Section 3.3.1) but nevertheless maintain that an LPP-internal reflexive can be locally bound by the sentence subject. Ramchand (2008, 2018) also presents a decomposition of the first phase that can include multiple small clauses (see Section 3.4.1). Furthermore, as pointed out in Section 3.2.1 (fn. 23), many contemporary approaches to vP composition propose syntactic structures that superficially resembles a small clauses, complete with a filled specifier position, requiring that one define the notion of “subject” relevant to binding relative to maximal projections/phasal boundaries anyway. It seems then that the simplest way forward for antecedent-based theories is to move away from defining binding domains in terms of subjects altogether.⁵¹

To account for the contrast between LPPs and verbal and participial predicates, we might be tempted to appeal to the standard assumption that vPs are phases (while also assuming that

⁵¹ The conclusion that the complements of perception verbs do not comprise distinct phases/spellout domains is consistent with two observations in the literature regarding the interpretation of perception sentences: referential transparency (Barwise & Perry 1983, Gisborne 2010) and exportability (Barwise 1981, Barwise & Perry 1983, Higginbotham 1983, Hornstein et al. 2006, Gisborne 2010).

verbal perception complements are or contain vPs, as I have done here). In that case, we would predict subject-oriented reflexives in LPPs to be blocked by Principle A if the LPP is itself embedded within a vP complement, at least in the absence of logophoric binding. However, the sentences in (165) suggest that this is not the case: the reflexive is much better in the complement of a preposition than in the complement of a verb even when the LPP expresses the endpoint of motion, which is generally taken to signal that the LPP is a complement of the verb (and, therefore, solidly within the vP) rather than an adjunct (Gerhke 2008, Ramchand 2008, 2018, Bassel 2018, 2022, a.o.; see Section 3.4.1).

(165) a. Noah_i saw a ladybug land on himself_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 5 | 3 | 5 | | |
|---|---|---|---|--|--|

b. Noah_i saw a ladybug landing on himself_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

c. The sensor_i detected a ladybug landing on itself_i.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 5 | 5 | 4 | | |
|---|---|---|---|--|--|

There are two ways we could account for this. The first is to assume that vP (or whatever the category of the complements in (165)) is also not a phase; this is in line with work that rather locates the phasal boundary at AspP, above the projection introducing the verbal subject (e.g., Svenonius 2004, Ramchand & Svenonious 2014; cf. Ramchand 2018, which labels the phasal boundary as EvP). The second is to assume that binding is constrained by spellout rather than phasal boundaries *per se* (e.g., Charnavel & Sportiche 2016, Charnavel 2020a), and to couple that with a weak version of the Phase Impenetrability Condition, according to which spellout occurs only upon merge of the next higher phase head (Citko 2014, a.o.).

However we capture the relative goodness for the reflexives in (165), we still need some way to capture the badness of the reflexives in (143) and (150). One possibility is to supplement the antecedent-based binding principles with something like PBT Principle A. Another is to follow Charnavel & Bryant (2022), according to which the English reflexive is in some cases blocked by

competition with a weak non-reflexive pronoun form. I refer the reader to that work for the details surrounding this proposal.⁵²

To summarize: LPPs in perception sentences appear to be compatible with more than one parse, but we did not find evidence of strict complementarity in the parses we were able to pin down. This means that binding principles do not (always) play a role in pronoun choice in perception sentences LPPs, ruling out pronoun licensing theories in camp #1. Depending on how confident we are in having targeted an SC complement parse, we can also rule out antecedent-based theories in camp #2 that take subjects to reliably delimit the local domain of

⁵² On the topic of SC complement structure, let me flag another interesting difference between LPPs and bare verbal predicates. While DP2 can be passivized when the following predicate is a preposition, this is not possible when DP2 is followed by a bare verb:

- (vi) a. Abby was seen next to the slide.
- b. *Abby was seen sneeze in the kitchen.

Importantly, we see the same difference with verbal and non-verbal predicates under *make*, where an adjunct parse does not appear to be possible:

- (vii) a. *John was made cook dinner.
- b. John was made an expert by years of study.

This again points to a structural distinction between DP2 in sentences with verbal secondary predicates and non-verbal secondary predicates. On the other hand, passivization does not predict pronoun licensing possibilities: it is possible for DP2 followed by a participial predicate, as in (viii), though the latter was shown to also bar subject-oriented reflexives, just like bare verbal predicates.

- (viii) Abby was seen sneezing in the kitchen.

To account for the passivization facts, there is Basilico's (2003) proposal, which distinguishes between "categorical" SCs, about entities, and "thetic" SCs, about events. The former are shown to have a DP in the specifier of the topmost functional projection, labeled as TopP (for Topic Phrase), while the latter are shown to have an event variable in specifier. In both cases it is assumed that DP2 merges in a projection of the lexical head, undergoing movement to TopP when the SC is categorical:

- (ix) a. [_{TopP} e [_{Top} [_{VP} Abby sneeze]]]
- b. [_{TopP} Abby [_{Top} [_{VP} t sneezing]]]
- c. [_{TopP} Abby [_{Top} [_{PP} t next to the slide]]]

The problem with this approach is that it fails to predict the difference between LPPs on the one hand and participial/bare verbal predicates on the other when it comes to binding. Instead, we might combine Basilico's TopP with the vP/PrP distinction:

- (x) a. [_{TopP} e [_{Top} [_{VP} Abby sneeze]]]
- b. [_{TopP} Abby [_{Top} [_{VP} t sneezing]]]
- c. [_{TopP} Abby [_{Top} [_{PrP} t [_{Pr} [_{PP} next to the slide]]]]]

Alternatively, we could say that participial predicates also involve Pr (with or without an additional TopP), in conjunction with an internal PRO subject:

- (xi) a. [_{VP} Abby sneeze]
- b. [_{PrP} Abby [_{Pr} [_{PartP} PRO sneezing]]]
- c. [_{PrP} Abby [_{Pr} [_{PP} next to the slide]]]

Appeal to an implicit subject might anyway be necessary to account for restrictions on the reflexive observed even when a VP-adjunct parse is enforced with adverbial intervention. That being said, if we allow that participial predicates independently license subjects, it isn't immediately clear why we would also need Pr. Future work may explore these possibilities further.

the reflexive. We've also seen the structural assumptions that must be made to capture the contrast between LPP and verbal predicates under PBTs and phase-based binding theories.

Even if we did not find evidence of binding principles shaping preferences in perception sentences, we might yet find evidence that one or the other is active in sentences expressing possession or location change. With that, let us leave perception sentences behind and press on with the other two event types considered in this study.

3.3 Possession sentences

In this section we turn our focus to sentences expressing possession, as in (166).

(166) Chloe_i had some glitter on her_i/herself_i.

Like perception sentences, possession sentences were found to have an overall personal pronoun preference that was strongest in sentences that did not express direct contact, though the reflexive was also permitted, and even preferred for some sentence pairs. The fundamental question we are pursuing is once again whether there is any evidence for binding principles playing an active role in shaping these preferences. We can also ask whether the similarity observed between perception and possession sentences tracks with compatibility with the same kinds of LPP parses.

I want to start by clarifying what it is I mean by “possession” here. The sentence in (166) is compatible with at least two senses of possession, which I will describe as *co-location* and *causal* readings.

Under the co-location reading, the referent of DP2 is functionally a part of the referent of the subject, or the immediate vicinity determined by the subject, and its presence is described as an attribute of the latter. Under this reading, (166) would mean that the glitter was one of Chloe's features at the time. I believe this is the same sense of possession we access with sentences like (167), where the direct object of *have* is a body part term.

(167) Chloe has green eyes.

I also take the attributive reading to cover sentences like (168): here, the neighboring tree is treated as an attribute of the bench, or perhaps more precisely the area associated with the bench (a welcome one, if shade is sought).

(168) The bench_i has a tree next to it_i.

Under the causal reading, the referent of the subject is responsible in some way for the location of DP2. Under this reading, (166) could mean that Chloe owns or is in control of some glitter, which may be intentionally applied to Chloe's skin or contained in a tube in Chloe's pocket. Though this sense of possession is compatible with co-location, co-location is not a necessary for an ownership relation to hold. Consider, for example, (169).

(169) Chloe has a computer in Sue's office.

This sentence can be truthfully said even when Chloe is nowhere near Sue's office. What matters is that the computer is in Chloe's control, more specifically, that Chloe is the one who determines the location of the computer. (If the computer were stolen and in someone else's control, we would no longer say that Chloe *has* a computer anywhere, even if we still consider her the rightful owner.) This sense of *have* + LPP is very similar to *keep* + LPP: *Chloe keeps a computer in Sue's office*.

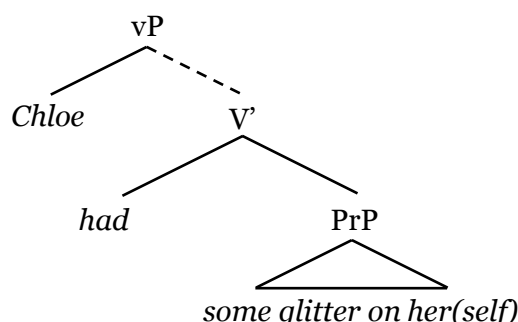
I'm carving up the descriptive space a little differently from how some prior theoretical work has treated possession sentences. Déchaine et al. (1995) treats (167) as *inherent* or *inalienable* possession but (166) and (168)-(173) as *contingent* possession (see also Belvin 1993, a.o.). The distinction there comes down to whether the noun is inherently relational, and whether the possession relation is permanent. Ultimately, what matters for the present investigation isn't really how we categorize the senses involved in possession sentences, but the parse(s) with which those senses correspond and, most importantly, the subject-oriented pronoun forms those parses allow.

3.3.1 Possible parses for possession sentence LPPs

Déchaine et al. (1995) argues for a SC complement analysis for all contingent possession sentences, including the LPP sentences we care about, with DP2 serving as the subject of the small clause, as shown in (170)-(171) (see also Rooryck & Vanden Wyngaerd 2007|2011, which maintains this analysis).⁵³

(170) Chloe_i had [_{Pr} [_{DP} some glitter] on her_i(self)].

(171)



Association with an oblique (locative) element is treated as part of the lexical specification of *have*: in line with Kayne (1993), Dechaine et al. (1995) treat *have* resulting from incorporation of an oblique element (P) into BE/SE, a partitive operator. In other words, whenever *have* is used, a prepositional element is necessarily part of the structure.

A key part of this analysis is the hypothesis that contingent possession requires that the subject bind something in the complement of *have*, due to the partitivity of BE/SE (see also Kayne 1993, Rooryck & Vanden Wyngaerd 2007|2011). Maintaining this hypothesis, the authors propose the same kind of structure for sentences like (172a) where no LPP is present. In that case, the structure is what we see in (172b), where P is the preposition of “central coincidence” of Hale (1986) and the prepositional complement is an animate pro.

(172) a. Chloe had a computer.

⁵³ In light of the perception discussion, I will switch to labeling small clauses as ‘PrP’ rather than ‘PP,’ though I will leave out indication of the null Pr head. Note that Déchaine et al. (1995) propose that SC complements (labeled as ‘SC’ there) are dominated by TP in possession sentences, due to the temporally bounded nature of the relation.

b. Chloe_i had [_{Pr} [_{DP} a computer] P pro_i]

Note that the SC complements in contingent possession sentences are taken to denote eventualities (“a temporally limited state of affairs,” p. 3), just like SC complements of perception sentences. Indeed, the same SC analysis is extended to possession sentences with verbal predicates like those in (173).

(173) a. Mary_i had a mosquito bite her_i arm.

b. Mary had Bill cook dinner.

Sentences like (173a), where the subject is most likely interpreted as an experiencer⁵⁴ rather than causer, are given the same structure as sentences with LPPs, with the verbal predicate heading the SC complement:

(174) Chloe_i had [_{Pr} [_{DP} a mosquito] bite her_i arm].

There, the binding relation required in the expression of contingent possession is overtly satisfied. Causative sentences like (173b) are proposed to have a structure more akin to the structure in (172), with an unexpressed LPP serving as the small clause predicate and the complement of the LPP the bound element. The vP (*Bill cook dinner* in (173b)) is taken to be the subject of the SC complement, as shown in (175).⁵⁵

⁵⁴ I use “experiencer” here in a very general sense to include both animate and inanimate event participants. Inanimate subjects are also possible in this kind of sentence, as in *This castle had many visitors pass through its doors* (Déchaine et al. 1995:11).

⁵⁵ Though Déchaine et al. model the covert locative relation as one of co-location in sentences like (172) and (173a), note that neither actually entail that the referent of subject of the SC complement (DP or vP) occur in the same space as the referent of the sentence subject: Chloe’s computer can be in another building, for instance, and Mary need not have been present with Bill cooked. This is in contrast with experiential sentences like (173b), which do generally require co-location. (Maybe co-location can be relaxed: I believe we can say *Mary had someone steal her car* in a non-causative sense. Crucial then is the sense that Mary was affected by the event, such that the event can still be said to have happened *to Mary*.) The parallelism between verbal predicate and LPP possession sentences in the co-location/control split is an interesting one, but not one I will not explore in any depth here.

- (175) Chloe_i had [_{Pr} [_{VP} Bill cook dinner] to pro_i]
(cf. Déchaine et al. 1995:9)

If it is correct that contingent possession sentences always involve SC complementation, we would predict possession sentences with LPPs to consistently pattern with possession sentences with verbal predicates on diagnostics that pick out SC complementation—just as we saw in our examination of LPPs in perception sentences.

Is an adjunct parse also plausible? We would predict a DP-adjunct parse or VP-adjunct (if distinct from the SC complement parse) to be possible only when DP2 can stand alone as the direct object of *have*. *Have* is generally taken to select a DP object when the DP is inherently relational, as in (167). Déchaine et al. propose the structure in (176) (cf. Kayne 1993).⁵⁶

- (176) a. John has a nose.
 b. John_i has [_{DP} PRO_i a [_{NP} pro nose pro_i]]
 <1,2>
 (cf. Déchaine et al. 1995:3)

This structure is said to correspond to a part/whole reading, e.g., the nose is part of John. I have suggested that at least some LPP sentences correspond to roughly this same sense, e.g., (166) can mean that the glitter is functionally a part of Chloe, its presence characterizing Chloe, even if the co-location relation is temporally bounded. In that case, we might entertain a DP-adjunct LPP parse like the following (cf. tree in (110)), with the preposition supplying the bound argument:

- (177) Chloe_i had [_{DP} some [_{NP} [_{NP} pro glitter] on her_i(self)]]].

As shown above, Déchaine et al. propose that non-relational DPs never stand alone in the complement of *have*: they are always the subject of an SC, even if the LPP material is not overt.

⁵⁶ The two ‘pro’ arguments shown within NP are the R-argument of Williams (1981) plus an “experiencer” argument that is present when the noun is used in a relational sense. Déchaine et al. (1995) does not show where exactly P originates in (176), though it is said to originate external to the DP; nevertheless, the DP is taken to be the complement of the verb, rather than a small clause. Note that Kayne (1993) shows P originating within DP.

However, Rooryck & Vanden Wyngaerd (2007|2011) proposes straightforward DP complementation for sentences like (172a), where an ownership reading is possible. In such sentences, a binding relation is proposed to not be needed thanks to the animacy of the sentence subject. In that case, a VP-adjunct parse (if distinct from the SC complement parse; see fn. 50) could be possible as well.

3.3.2 Structural tests for possession sentence parses

Let's look first at tests for constituency. We would expect DP2 + LPP to behave as a constituent under both an SC complement parse and a DP-adjunct parse. Consistent with this, the DP2 + LPP string can be coordinated, as in (178c-d). The same is true for verbal predicates, as in (178a-b).

- (178) a. Chloe had [Bill cook dinner] and Tom clean the bathroom.
 b. Chloe had [a mosquito bite her arm] and a bee sting her nose.
 c. Chloe had [a medal on her shirt] and a flower in her hair.
 d. Chloe had [some mud on her shirt] and some grass in her hair.

On the other hand, judgments appear to be mixed when it comes to right-node-raising:

- (179) a. Chloe had, and Sue didn't have, [Bill cook dinner for her birthday].

| | | | | | |
|---|---|---|---|--|--|
| 2 | 3 | 5 | 4 | | |
|---|---|---|---|--|--|

- b. Chloe had, and Sue didn't have, [a mosquito bite her arm].

| | | | | | |
|---|---|---|---|--|--|
| 2 | 2 | 5 | 4 | | |
|---|---|---|---|--|--|

- c. Chloe had, and Sue didn't have, [a medal on her shirt].

| | | | | | |
|---|---|---|---|--|--|
| 2 | 5 | 5 | 4 | | |
|---|---|---|---|--|--|

- d. Chloe had, and Sue didn't have, [some mud on her shirt].

| | | | | | |
|---|---|---|---|--|--|
| 2 | 3 | 5 | 4 | | |
|---|---|---|---|--|--|

This is surprising given that right-node-raising has been known to over-diagnose constituency (see Appendix B). I won't try to account for this result, though I will note that it could follow from the "lightness" of *have*, which may make it a less than ideal target for the kind of contrastive focus needed for right-node-raising.⁵⁷

⁵⁷ We will see below that right-node-raising is also degraded with *make*, which is also often treated as a light verb.

For possession sentences with verbal predicates, judgments also appear to be mixed when it comes to pseudoclefting, again in contrast to what we saw for perception sentences:

- (180) a. What Chloe had was [Bill cook dinner].

| | | | | | |
|---|---|---|---|--|--|
| 3 | 2 | 4 | 3 | | |
|---|---|---|---|--|--|

 b. What Chloe had was [a mosquito bite her arm].

| | | | | | |
|---|---|---|---|---|--|
| 3 | 2 | 4 | 3 | 3 | |
|---|---|---|---|---|--|

This, too, I will have to leave unaccounted for. But notice that, in this case, we find a clear contrast with possession sentences with LPPs, where pseudoclefting appears to work just fine:

- (181) a. What Chloe had was [a medal on her shirt].

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 3 | | |
|---|---|---|---|--|--|

 b. What Chloe had was [some mud on her shirt].

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 3 | | |
|---|---|---|---|--|--|

 c. What Chloe had was [some glitter on her sleeve].

| | | | | | |
|---|---|---|---|---|--|
| 5 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|

If complements with LPPs were strictly SCs, we would not expect them to behave any differently from complements with verbal predicates.

Proform substitution shows further differences between verbal and LPP possession sentences. In (182) we see that ratings were mixed for both verbal predicate sentences and LPP sentences when the substituting form was *that*, though one person was more accepting of the latter.

- (182) a. Chloe had [Bill cook dinner]. Sue had that, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 2 | 3 | 5 | | |
|---|---|---|---|--|--|

 b. Chloe had [a mosquito bite her arm]. Sue had that, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 2 | 3 | 5 | | |
|---|---|---|---|--|--|

 c. Chloe had [a medal on her shirt]. Sue had that, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 2 | 4 | 5 | | |
|---|---|---|---|--|--|

 d. Chloe had [some mud on her shirt]. Sue had that, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 2 | 5 | 5 | | |
|---|---|---|---|--|--|

For the verbal predicate sentences, this could follow from an incompatibility with a strict reading, according to which *that* picks out the exact same event as bracketed string. Certainly, we can't say that Sue experienced the same mosquito bite that Chloe did. In line with this, substitution greatly improves when *happen* is included as well, such that *that* is interpreted as picking out a kind of event, rather than a particular occurrence:

- (183) a. Chloe had [Bill cook dinner]. Sue had that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

b. Chloe had [a mosquito bite her arm]. Sue had that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

This could also be related to the lightness of *have* in these sentences. (We will see below that the same facts hold for *make*.) As with the right-node-raising facts, I will leave this for another day.

Inclusion of *happen* doesn't improve things for LPP sentences. For the sentences in (184), it rather tended to make things worse.

(184) a. Chloe had [a medal on her shirt]. Sue had that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 2 | 2 | 5 | | |
|---|---|---|---|--|--|

b. Chloe had [some mud on her shirt]. Sue had that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 4 | 3 | 5 | | |
|---|---|---|---|--|--|

c. Chloe had [some glitter on her sleeve]. Sue had that happen, too.

| | | | | | |
|---|---|---|---|---|--|
| 5 | 2 | 2 | 5 | 2 | |
|---|---|---|---|---|--|

However, this could simply follow from the fact that *happen* is only compatible with dynamic events and not with states. Importantly, substitution with *one/some* is perfect for possession sentences with LPPs:

(185) a. Chloe had [a medal on her shirt]. Sue had one, too.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

b. Chloe had [some mud on her shirt]. Sue had some, too.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

Notice that *one/some* substitution is not limited to cases where ownership can be inferred. It is also generally acceptable when the subject is inanimate, as in (186).

(186) This bench has a tree next to it. That bench has one, too.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 4 | 5 | | |
|---|---|---|---|--|--|

For me, this kind of substitution is no good for possession sentences with verbal predicates:⁵⁸

(187) a. Chloe had [Bill cook dinner]. *Sue had him, too.

b. Chloe had [a mosquito bite her arm]. *Sue had one, too.

⁵⁸ I can sort of get (187) to work by analogy with something like *Chloe hired Bill to cook dinner; Sue hired him, too*. But substitution with *him* is absolutely out for something like *Chloe had Bill make her a sandwich; *Sue had him, too*.

These differences are unexpected if verbal predicates and LPPs always involve exactly the same parse. Remember, verbal predicates and LPPs patterned together in perception sentences when it came to pseudoclefting and *that* substitution. There are two ways we can interpret this outcome. If we want to maintain that the sentences all involve SC complementation, we might say that the difference comes down to the nature of the subject of the SC complement: perhaps the structure proposed in Dechaine et al. (1995) for causative sentences, with vP serving as the subject of the SC complement, is also right for experiencer sentences. (Maybe it is right for bare verbal predicates in perception sentences, too; see fn. 37.) Otherwise, we can take these differences to signal that possession sentence LPPs are compatible with at least one of the adjunct parses, such that the complement of *have* is DP2 rather than a small clause. More on this option in a moment.

As a final test for SC complementation, we can consider evidence from quantifier float. Quantifier float is shown for verbal predicates in (188). Interestingly, while quantifier float was uniformly accepted in (188a), where a causative reading is most natural, ratings were lower in (188b), where inclusion of the adverb *unknowingly* blocks a causative reading. Indeed, two people consulted for this section noted that quantifier float seems to require a causative reading.

(188) a. Two chefs arrived to cater the party. Chloe had the chefs both cook dinner.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

b. Two mosquitos flew into Chloe's classroom. Chloe unknowingly had the mosquitos both bite her arm.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 4 | 2 | 4 | | |
|---|---|---|---|--|--|

Ratings were also somewhat lower for the LPP sentences shown in (189), though they generally fell on the high end of the scale. Notice that ratings from two people were a bit higher in (189a) than in (189b), perhaps again pointing to a relationship between quantifier float and causation.

(189) a. Chloe had [the medals both on her shirt].

| | | | | | |
|---|---|---|---|---|--|
| 4 | 4 | 5 | 4 | 5 | |
|---|---|---|---|---|--|

b. Chloe had [the spiders both on her shirt].

| | | | | | |
|---|---|---|---|---|--|
| 4 | 3 | 5 | 4 | 4 | |
|---|---|---|---|---|--|

I will not offer an explanation for this relationship here. Overall, possession sentences with LPPs do appear to be compatible with quantifier float, which we might again take as a sign of compatibility with an SC complement parse.

With SC complement tests out of the way, let's return to the question of whether LPPs in possession sentences are compatible with adjunct parse. In the discussion of perception sentences, I suggested that phrasal integrity could serve as a diagnosis for adjunction. There, we found that the LPP could be separated from DP2 by temporal and manner adverbials, consistent with the availability of an adjunct parse:

- (190) a. Chloe saw Abby clear as day next to the slide.
 b. Chloe saw Abby yesterday next to the slide. (=(122))

While only a VP-adjunct parse is plausible for (190), we saw that adverbial intervention is also possible for adjuncts of DP:

- (191) a. Chloe met a woman yesterday from Chicago.
 b. Chloe met a woman yesterday living in Chicago. (=(139))

In fact, we don't find this same kind of adverbial freedom in possession sentences. As shown in (192) and (193), intervention with the adverbs *unknowingly* and *yesterday* was judged to be nearly as bad in sentences with LPPs as in sentences with verbal predicates.⁵⁹ (I use '*' to signal judgments that were provided with indication from the consultant of an unintended interpretation, where the adverb modifies the embedded event rather than the matrix event.)

⁵⁹ For a better comparison between perception and possession sentences, we could consider the sentence pair in (vi). For me, (vi.a) is perfect, while (vi.b) is very degraded unless taken to mean that Chloe was holding a coffee mug while standing next to the sink.

- (xii) a. Chloe noticed a sparkly coffee mug yesterday next to the sink.
 b. ??Chloe had a sparkly coffee mug yesterday next to the sink.

Intervention with *yesterday* is even worse in the possession sentence below under a reading where Chloe is not in Sue's office with the computer:

- (xiii) *Chloe had a computer yesterday in Sue's office.

Compare the above to what we find with *keep*, where intervention is also quite bad:

- (xiv) *Chloe kept a computer yesterday in Sue's office.

- (192) a. Chloe had [a mosquito unknowingly bite her arm].
 b. Chloe had [a medal unknowingly on her shirt].
 c. Chloe had [some mud unknowingly on her shirt].

| | | | | | |
|---|---|----|---|--|--|
| 2 | 2 | 5* | 5 | | |
| 3 | 2 | 3 | 5 | | |
| 3 | 2 | 3 | 5 | | |

- (193) a. Chloe had [Bill yesterday cook dinner].
 b. Chloe had [a mosquito yesterday bite her arm].
 c. Chloe had [a medal yesterday on her shirt].
 d. Chloe had [some mud yesterday on her shirt].

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 2 | 3 | | |
| 2 | 1 | 2 | 3 | | |
| 3 | 1 | 3 | 3 | | |
| 3 | 1 | 3 | 3 | | |

I don't take these results to prove that an adjunct parse is never possible for LPPs in possession sentences, just as I do not take the right-node-raising results to prove that DP2 + LPP never comprises a constituent. There could be something else going on with possession sentences that rules out adverbial intervention, independent of where in the clause the LPP attaches. However, if an adjunct parse is possible for LPPs in possession sentences, we cannot use adverbial intervention to draw it out.

Interestingly, things do look a little better for intervention in LPP sentences when the adverb is *intentionally*, for some people at least:

- (194) a. Chloe had [Bill intentionally cook dinner].
 b. Chloe had [a medal intentionally on her shirt].
 c. Chloe had [some mud intentionally on her shirt].

| | | | | | |
|---|----|----|---|--|--|
| 3 | 4* | 5* | 5 | | |
| 4 | 2 | 5 | 5 | | |
| 4 | 2 | 5 | 5 | | |

Notice that *intentionally* can occur in the absence of any explicit reference to a causer: *The lamp was very intentionally on that table*. It could be that *intentionally* is able to modify locations directly. Another possibility is that the adverb attaches to a causal projection within an SC complement. I leave this as an open question.⁶⁰

⁶⁰ If an SC complement parse and VP-adjunct parse are one and the same, as suggested in fn. 50 for perception sentence LPPs, we will need to explain why intervention is more constrained for the "SC" parse here. We might say that the difference arises from the greater degree of integration between the verb and LPP in possession sentences, as posited in the works cited in Section 3.3.1.

For perception sentences, passivization provided positive evidence for the possibility of a DP-adjunct parse. In contrast with what we saw there, passivization of the DP2 + LPP string is unacceptable in possession sentences, as shown in (195).

(195) *A medal on Chloe's shirt was had (by Chloe).

However, this unacceptability could stem in part from the need refer to the possessor in the LPP, which runs against the sort of backgrounding that would make passivization felicitous. Notice as well that passivization with *have* is off even without the LPP.

(196) ?Medals were had by every student.

If a DP-parse is possible, we are left without a way to pin it down.

In all, the evidence available for LPP parses in possession sentences is less clear than what we saw for perception sentences. Compatibility with quantifier float can again be taken to signal compatibility with an SC complement parse. Behavior on pseudoclefting and proform substitution could be taken to signal compatibility with an adjunct parse; however, without additional support from adverbial intervention and passivization, this outcome is equivocal. As before, our goal is not really to provide definitive syntactic analyses for these sentences. But to ensure that we are covering our bases when looking for potential effects of binding principles on pronoun preference in possession LPPs, we can use these tests (quantifier float on the one hand, pseudoclefting and proform substitution on the other) in an attempt to draw out the possible parses for possession sentence LPPs—just in case there is in fact more than one parse available.

3.3.3 Pronoun licensing across possession sentence parses

Like with perception sentences, we will focus on pronoun licensing possibilities in possession sentences involving contact, as they were relatively more permissive of subject-oriented reflexives than non-contact sentences. Because we found an overall preference for the personal pronoun in possession sentences—somewhat stronger even than the personal pronoun

preference found in perception sentences—I assume that whatever parses are possible for possession sentences do not require use of the reflexive. The question is, then, whether either parse requires use of the personal pronoun.

To get us started, consider the sentences in (197)-(199).

| | | | | | | | |
|-------|--|---|---|---|---|---|--|
| (197) | a. Chloe _i had some glitter on her _i . | 5 | 3 | 3 | 4 | 5 | |
| | b. Chloe _i had some glitter on herself _i . | 2 | 5 | 5 | 5 | 4 | |
| (198) | a. The doorbell _i camera had a ladybug on it _i . | 5 | 5 | 4 | 3 | | |
| | b. The doorbell _i camera had a ladybug on itself _i . | 3 | 3 | 5 | 5 | | |
| (199) | a. Comet A _i had a gaseous halo around it _i . | 5 | 5 | 5 | 3 | | |
| | b. Comet A _i had a gaseous halo around itself _i . | 3 | 4 | 5 | 5 | | |

Three out of five people consulted on the animate sentence pair in (197) preferred the reflexive over the personal pronoun, consistent with the weak preference for the reflexive that was found for these sentences in Experiments 1 and 2. Preferences from four people were split for the inanimate sentence pairs in (198) and (199).⁶¹ Already, the availability of inanimate reflexives allows us to rule out logophoricity as a necessary condition for subject-oriented reflexive licensing in possession sentence LPPs, giving us further reason to reject approaches that maintain strict complementarity. But if it is the case that possession sentences are compatible with more than one parse, it is possible that logophoric licensing is necessary in one of them.

Let us first try to pin down an SC complement parse, which is distinguished by compatibility with quantifier float. As before, in order to test the effects of quantifier float, we need to consider pronoun preferences in sentences with a definite DP2. Preferences were not

⁶¹ Note that we do not see a clear difference between the latter two when it comes to pronoun licensing, with both permitting both forms. This is so even though only (199) is compatible with an inherent part/whole possession relation—the LPP can be excluded, as shown in (ix)—which Rooryck & Vanden Wyngaerd (2007/2011) suggest is necessary for the inanimate reflexive to be used in possession sentences.

(xv) Comet A had a gaseous halo.

affected by quantifier float for the sentences in (200)-(201), with two people preferring the reflexive and two the personal pronoun.

(200) a. Chloe_i had her medals on her_i.

| | | | | | |
|--|---|---|---|---|--|
| | 4 | 5 | 3 | 5 | |
|--|---|---|---|---|--|

b. Chloe_i had her medals on herself_i.

| | | | | | |
|--|---|---|---|---|--|
| | 5 | 4 | 4 | 4 | |
|--|---|---|---|---|--|

(201) a. Chloe_i had her medals all on her_i.

| | | | | | |
|--|---|---|---|---|--|
| | 2 | 5 | 3 | 5 | |
|--|---|---|---|---|--|

b. Chloe_i had her medals all on herself_i.

| | | | | | |
|--|---|---|---|---|--|
| | 4 | 4 | 4 | 4 | |
|--|---|---|---|---|--|

Compare to inanimate, where we also see a split in preference:

(202) a. The doorbell_i camera had the ladybugs both on it_i.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 3 | 4 | 3 | | |
|---|---|---|---|--|--|

b. The doorbell_i camera had the ladybugs both on itself_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 3 | 5 | 4 | | |
|---|---|---|---|--|--|

Though quantifier float is not perfect for everyone for possession sentences, especially when a causal reading isn't possible, it doesn't not seem to be the case that quantifier float blocks use of the subject-oriented reflexive.

Next consider what happens under pseudoclefting and substitution with *one/some*, which may target an adjunct parse (if such a parse is possible). Pseudoclefting is shown in (203)-(204).

(203) a. What Chloe_i had was some glitter on her_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 4 | 4 | 3 | | |
|---|---|---|---|--|--|

b. What Chloe_i had was some glitter on herself_i.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

(204) a. What Comet A_i had was a gaseous halo around it_i.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 4 | 4 | 3 | | |
|---|---|---|---|--|--|

b. What Comet A_i had was a gaseous halo around itself_i.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 2 | 5 | 5 | | |
|---|---|---|---|--|--|

In both sentence pairs, we see that pronoun preferences were generally maintained, with no sign of complementarity. We see the same under *one/some* substitution in (205)-(206).

(205) a. Chloe_i had some glitter on her_i. Mary had some, too.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 3 | 4 | 3 | | |
|---|---|---|---|--|--|

b. Chloe_i had some glitter on herself_i. Mary had some, too.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

(206) a. Comet A_i had a gaseous halo around it_i. Comet B had one, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 4 | 3 | | |
|---|---|---|---|--|--|

b. Comet A_i had a gaseous halo around itself_i. Comet B had one, too.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 4 | 5 | 5 | | |
|---|---|---|---|--|--|

Hence, whatever parse tapped into here appears to be compatible with both pronoun forms.

3.3.4 Takeaways from possession sentences

In our continued quest for evidence of complementarity between subject-oriented reflexives and personal pronouns within LPPs, we have again come up empty-handed. This outcome is not unexpected considering what we saw already with perception sentences. (Recall as well that Rooryck & Vanden Wyngaerd (2007|2011) take local binding by the sentence subject to be possible for reflexives in an SC complement of *have*.) If there remains some untapped parse in which binding principles do enforce complementarity in possession sentence LPPs, I must leave it to future research to figure out what it is. That being said, as mentioned in the discussion of perception sentences, if it is the case that we have failed to tap into a potential parse that precludes one of the pronoun forms, it seems unlikely that such a parse would have been particularly popular for participants in Experiments 1 and 2.

At the start of the section on possession sentences, I also floated the possibility that the similarity with perception sentences when it comes to subject-oriented pronoun choice could reflect similarity in the kinds of parses that are possible for the LPP. We do have positive evidence of an SC complement parse being available; things are less clear for a VP- or DP- adjunct parse (but I think we can go without). As observed above, though, even under the SC complement parse, behavior on syntactic tests is a little different. I take these differences to follow from the lightness of *have* and incorporation between the verb and locative preposition along with the requirement for binding, as proposed in Dechaine et al. (1995) and Rooryck & Vanden Wyngaerd (2007|2011). In other words, though both perception verbs and *have* involve small clause complementation, there is a greater degree of structural integration between verb and complement in the possession sentences than in perception sentences.

In fact, this syntactic difference lines up with differences in meaning. In the case of perception events like the ones expressed in (207), the perceiver is entirely independent from the object or eventuality that was perceived: Chloe had no part in Abby sneezing, or in Abby being next to the seesaw.

(207) Chloe saw Abby sneeze/Abby next to the seesaw.

But for possession events like the ones expressed in (208), the possessor (in whatever sense) is necessarily involved in the eventuality denoted by the complement, whether by virtue of co-location or by virtue of being the causer.

(208) Chloe had glitter on her shirt/Bill cook dinner/a mosquito bite her arm.

So while perception verbs capture someone's external experience of an object or eventuality, the function of *have* here is to highlight a someone's participation in an eventuality.

If this view is right, results from Experiments 1 and 2 would suggest that degree of integration does not bear in any big way on subject-oriented pronoun choice. In particular, greater integration does not lead to better outcomes for the reflexive, as the overall preference for the personal pronoun was somewhat stronger in possession sentences than in perception sentences.

3.4 Location change sentences

This section treats the third and final event type under investigation in this study, location change, illustrated by the sentences in (209).

- (209) a. Jason_i set a book next to him_i(self).
b. Jason_i dropped a book next to him_i(self).

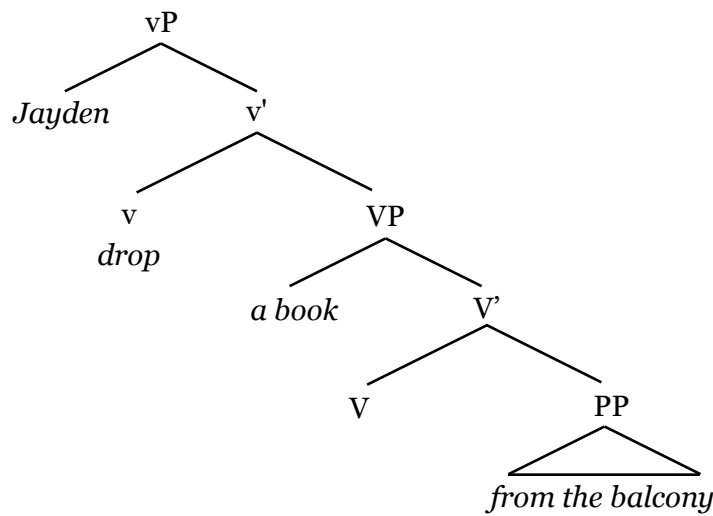
In contrast with perception and possession sentences, location change sentences turned up an overall preference for the reflexive in Experiments 1 and 2. The big question, of course, is whether this difference is driven by binding principles. Considering the preference for the reflexive, we might wonder whether location change LPPs are compatible with a parse that we didn't turn up in our investigation of perception and possession sentences, specifically a parse that blocks subject-oriented personal pronouns.

3.4.1 Possible parses for location change sentence LPPs

The possibility of a Principle B-inducing parse in location change sentences is argued in Bassel (2018, 2022). Motivated mainly by Hebrew data, location change sentences are there argued to be compatible with two parses. In both, the LPP is taken to attach as the complement of the verb. Where the parses are said to diverge is in internal complexity of the LPP. The structure in (210)-(211) is said to correspond with a path interpretation of the LPP: the LPP is a modifier of the event, expressing the trajectory but not endpoint of motion, and it does not project a subject of its own (cf. Bassel 2022:23).

(210) Jayden dropped a book [PP from the balcony]

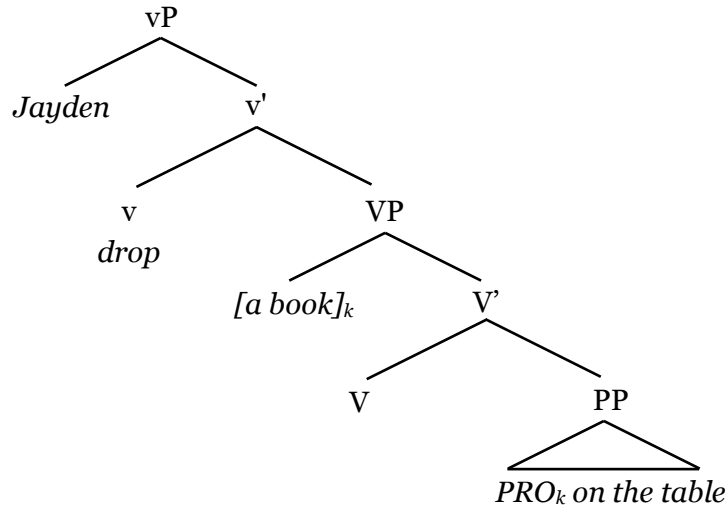
(211)



The structure in (212)-(213) is said to correspond with a place interpretation of the LPP: the LPP specifies the endpoint of motion and does project a subject, there identified as PRO (cf. Bassel 2022:24).

(212) Jayden dropped a book [PP PRO on the table]

(213)



Crucially, these two structures are also taken to diverge with respect to pronoun licensing. Under an assumption of strict complementarity between reflexives and personal pronouns, Path LPPs are argued not to comprise a local domain for binding, ruling out subject-oriented personal pronouns. In contrast, Place LPPs are taken to comprise a local domain for binding by virtue of internal subject projection, ruling out subject-oriented reflexives.

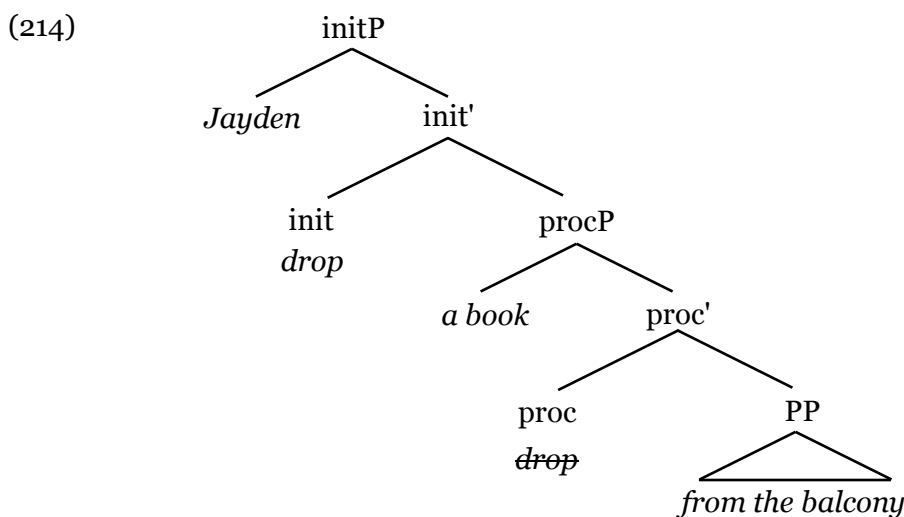
However, we have seen already that small clause complements do not appear to preclude subject-oriented reflexives in English, nor do they require that the reflexive be logophorically licensed. Furthermore, as reported in Section 2.4.1.3, it was not the case that the reflexive received higher ratings in sentences with verbs that are compatible with path PPs, such as *slide* or *throw*, as compared to sentences with verbs that obligatorily occur with a specified endpoint, such as *set* or *lay*. In fact, the preference for the reflexive was somewhat greater with the former than with the latter ($B=-0.18771$, $p=0.0385$), contrary to what we would expect if path compatibility were driving higher ratings for the reflexive in location change sentences.

There was another issue mentioned in Section 2.4.1.3, which is that directional LPPs like *to* and *toward*, taken to be unambiguously path-denoting in Bassel (2018, 2022),⁶² do not

⁶² Ramchand (2008) argues that *to* corresponds to a place (there, result) rather than path structure. While Ramchand also takes *toward* to be unambiguously path-denoting, note that it is compatible with stative

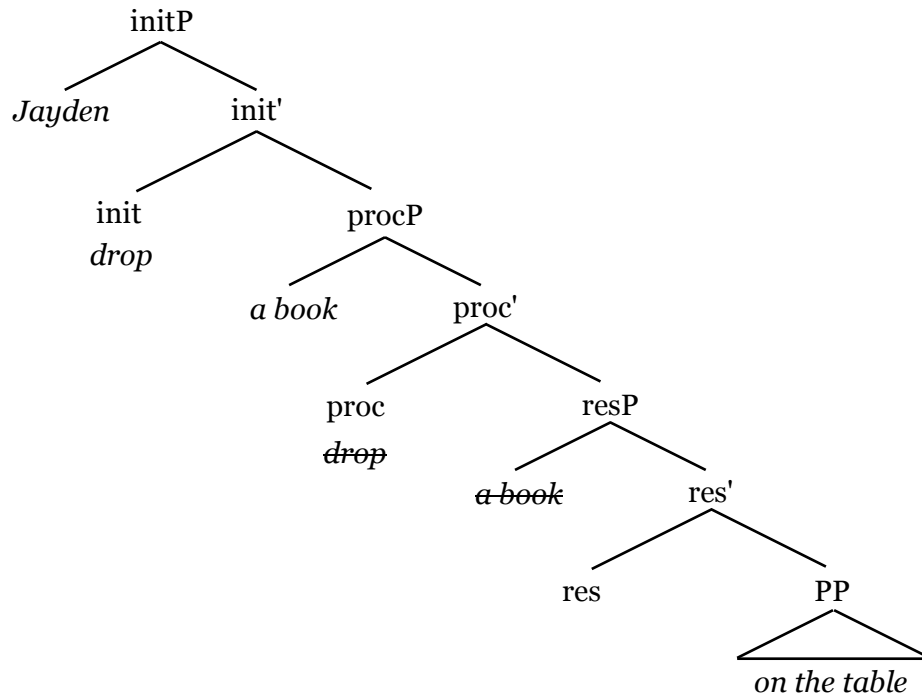
preclude subject-oriented personal pronouns, as observed already in Chomsky (1965, 1981). It is suggested that the personal pronoun is permitted when the directionality associated with the LPP matches the directionality inherent to the action expressed by the verb. While deictic matching could play a part in favoring the personal pronoun in certain path LPPs, it isn't clear that this follows from lexically-restricted exceptionalism to Principle B, as opposed to a more general relationship between expectation and pronoun choice (see Chapter 4). Furthermore, as mentioned above for perception sentences, structures that locate the direct object in a specifier position look rather like structures involving small clause complementation, requiring ad hoc restrictions of the kinds of subjects that delimit small clauses.

A simpler solution would be to say that path LPPs simply allow both forms, too, just like place LPPs. In fact, this stance is consistent with the analysis put forth for paths and places in Ramchand (2008, 2018). The proposed structures are almost identical to those proposed in Bassel (2018, 2022). The path structure is shown in (214) (cf. Ramchand 2018:33), and the result structure is shown in (215) (cf. Ramchand 2018:34).



locations, as in *John stood toward the back of the room*. It may then be the case that neither preposition is actually always path-denoting.

(215)



In both cases, the LPP sits in the complement of a predication head—proc in the case of paths, res in the case of results—which in turn has a filled specifier. Consistent with appearances, both procP and resP are treated as “small clauses” in the standard sense. Importantly, Ramchand maintains that both are part of the first phase, along with initP in the trees above, all together expressing one core event. As a result, both subject-oriented pronoun forms are (correctly) predicted to be possible in both structures under PBTs and antecedent-based theories that identify the domain of the reflexive with the phase or spellout domain and the domain of the personal pronoun as something smaller.⁶³

Hence, if a path/place distinction does exist in English, this distinction does not appear to correspond to distinct binding possibilities. Another potential structural distinction comes from Hestvik (1991). There, LPPs in location change sentences are treated as being either arguments or adjuncts, depending on whether they can be excluded from the sentence. For example, the

⁶³ The best candidate seems to be PrP (cf. the “semantic subject” of Reinhart & Reuland 1993). This accounts for the fact that the personal pronoun cannot be used to corefer with the direct object.

LPP in (209a) would be classified as an argument since it cannot be excluded, as shown by the ungrammaticality of (216a). In contrast, the LPP in (209b) would be considered an adjunct by virtue of its optionality, exemplified in (216b).

- (216) a. *Jayden set a book.
b. Jayden dropped a book.

Indeed, Hestvik appeals to an argument/adjunct distinction to account for the contrast reported for (217), where both sentences express a change in location.

- (217) a. John_i put the sword down in front of him_i/himself_i.
b. John_i dropped his glasses in front of him_i/??himself_i.
(Hestvik 1991:463-4)

Survey results do in fact show a significant difference between sentences with verbs that do not require an LPP and verbs that do, with a greater reflexive preference in the latter ($B = -0.35911$, $p < 0.001$). Crucially though, the reflexive was reliably preferred over the personal pronoun regardless of LPP optionality. No difference in relative preferences was found between (67a), where the LPP counts as an adjunct according to the excludability criterion, and (67b), where the LPP is an argument.

- (218) a. Maya_i spilled some paint on ??her_i/herself_i.
b. Chloe_i poured some glitter on ??her_i/herself_i.

Note, too, that Strahan (2006) reports no difference in endorsement of the reflexive in argument and adjunct LPPs in change in location sentences.

It will be noticed as well that the LPPs that might be classified as “adjuncts” in location change sentences on the basis of optionality play a very different role in the sentence than what was described for adjunct LPPs above. In Section 3.2.1, VP-adjunct LPPs were said to describe the location of an event participant throughout the event, while DP-adjunct LPPs were said to help characterize the referent of DP2. Under the most natural readings of sentences like (209b) and (67a), the LPP rather expresses the endpoint of motion, that is, the location is true of the

referent of DP2 only when the location change event is complete. In other words, LPPs with verbs like *drop* have the same meaning contribution as LPPs with verbs like *set*. This would suggest that these LPPs enter into the composition in the same way, namely as a complement of the verb.⁶⁴

That being said, a DP-adjunct does appear to be plausible for a couple of the location change sentences tests in Experiments 1 and 2. In particular, the sentences in (219) could be compatible with DP-adjunct parses, with the LPP picking out which papers were shoved and which flowers were gathered.

- (219) a. Lauren_i shoved some papers next to her_i/herself_i.
b. Aaron_i gathered some flowers around him_i/himself_i.

How likely a DP-adjunct reading is for these sentences, I cannot say.⁶⁵ I will note that the personal pronoun was significantly preferred over the reflexive for (219a) in Experiment 1, though not for (219b). But we also find examples where the personal pronoun was preferred despite an adjunct reading being implausible (according to my judgment, at least), namely the sentences in (220).

- (220) a. Logan_i sprinkled some flour in front of him_i/himself_i.
b. Esther_i threw some bird seed around her_i/herself_i.
c. Jayden_i stacked some books behind him_i/himself_i.

Still, we cannot rule out the possibility that the availability of a DP-adjunct parse played a part in shaping preferences between the reflexive and personal pronoun. (Perhaps these

⁶⁴ Baker (2002) and Rooryck & Vanden Wyngaerd (2007|2011) treat all LPPs as adjuncts, obligatory or not. Baker distinguishes between “high” adjuncts and “low” adjuncts; Rooryck & Vanden Wyngaerd take all LPP adjuncts as attaching to vP. I prefer the route taken in Ramchand (2008), according to which the meaning contribution of the LPP is reflected in its location in the syntax. Ultimately, what we call these LPPs (and even where we locate them) isn’t important, as long as the treatment is compatible with the pronoun licensing facts presented here.

⁶⁵ Future work could aim to answer this question by running a paraphrase endorsement task, for instance asking participants whether the sentence in (219) can mean “Laura shoved some papers that were next to her(self).”

sentences allow a DP-adjunct parse, too, for some of the folks who read them.) That being said, we did see in the section on perception sentences that the DP-adjunct parse appears to permit subject-oriented reflexives. If the personal pronoun is favored, this does not seem to follow from Principle A. And certainly, compatibility with a DP-adjunct parse cannot be at the heart of the overall preference for the reflexive that distinguishes location change sentences from perception and possession sentences.

So let's circle back to the primary interpretation available for location change sentences, according to which the LPP expresses the endpoint of motion. For both Bassel and Ramchand, this reading corresponds to an SC complement structure, as shown in (213) and (215). These works are not alone in arguing for or assuming small clause analyses of location change sentences (see for instance Hoekstra 1988, Bowers 1993, 2001, Folli & Harley 2006, Gehrke 2008, Mateu & Acedo-Matellan 2012, Ahn 2015). In this regard, location change fall in with other kinds of resultative constructions, like the ones in (221), which have also frequently been treated as involving a small clause (Kayne 1984, Larson 1988, Hoekstra 1988, Bowers 1993, 2001, den Dikken 1995, Kratzer 2005, Harley 2005, 2008, a.o.)

- (221) a. Alex hammered the metal flat.
 b. Alex sang herself horse.
 c. Alex ran her shoes ragged.

However, other works have eschewed a small clause analysis for location change LPPs (Koster 1985, Reinhart & Reuland 1993, Rothstein 2006, den Dikken 2010, van Dooren, Hendriks & Matushansky 2014, Bruening 2018, a.o.) and/or for resultatives generally (McCawley 1971, Dowty 1972, Parsons 1990, Levin & Rappaport Hovav 1995, Li 1995, Rappaport Hovav & Levin 2001, Embick 2004, Rothstein 2004, 2006, Williams 2015, a.o.).

A common sticking point in the literature is the syntactic status of DP₂, specifically whether there are ground to treat it as a small clause subject rather than a direct object. Some work has distinguished between intransitive and transitive resultative constructions (Yamada 1987,

Rapoport 1990, Wilder 1991, Carrier & Randall 1992, a.o.; see Winkler 1997 for an overview). In the former, DP2 would be incompatible with the verb if the result predicate was not present, suggesting that it is licensed by (and, hence, a subject of) the secondary predicate (221b-c). In the latter, on the other hand, DP2 is truly a direct object, obligatorily selected by the verb ((221a) and location change sentences). As evidence of this structural distinction, Wilder (1991) observes that only transitive resultatives allow middle formation, with the undergoer showing up as the sentence subject (see also Rappaport 1990, Carrier & Randall 1992; cf. Goldberg 1991:72 for counterexamples):

- (222) a. *German children make happy easily.
 b. This table wipes clean easily.
 (Wilder 1991:227)

According to Carrier & Randall (1992), only transitive resultatives allow adjectival passive formation, as shown in (223).⁶⁶ In a similar vein, Yamada (1987) observes that only transitive resultatives can form verbal compounds, as shown in (224).

- (223) a. *the danced-thin soles
 b. the smashed-open safe
 (Carrier & Randall 1992:195)
 (224) a. a clean-shaven face
 b. blind-cried eyes
 (Yamada 1987:79)

These facts have been taken to show that transitive resultatives do not involve SC complementation after all, but rather involve flat predication or complex predicate formation.

3.4.2 Structural tests for location change sentence parses

⁶⁶ On the other hand, Google turns up hits for the following: *the empty-eaten bowl*, *the clean-eaten fish bones*, where the result precedes rather than follows the verb.

This section considers additional facts that can be brought to bear on the complement structure of location change sentences, following the template of Sections 3.2.2 and 3.3.2 above. Along the way, I will compare location change sentences to sentences with *make*, as in (225).

(225) Jayden made Bill cook.

Semantically speaking, *make* has a lot in common with location change verbs. Both express a causal relation between an entity (or an action performed by an entity) and a resulting eventuality. The eventuality is dynamic in (225), but *make* is also compatible with stative results, as in *Jason made Bill happy*. *Make* differs from verbs like *set* in *drop* in allowing different kinds of result predicates, in particular verbs, nouns, and adjectives. On the flip side, *make* is incompatible with LPP complements, as shown in (226).

(226) *Jayden_i made a book next to himself_i.

(cannot mean: Jayden made it such that a book was next to himself)

This could mean that *make* and motion verbs split the work, in a sense. That is, it is possible that both involve the same underlying semantics and, therefore, the same kind of syntactic structure (if we assume isomorphy between the two).

Like verbal complements in perception and possession sentences, the complement of *make* is very often taken to comprise a small clause. As Rothstein (2006) notes, standard entailments do not apply between the verb and with DP2 when a result predicate is present: for instance, (225) does not entail that Jason made Bill. Furthermore, the complement of *make* is compatible with a pleonastic subject, as shown in (227).

(227) Mary made it such that the dress will fit.

(Bassel 2018:58)

In fact, it is on the basis of comparison with the complement of *make* on these points that Rothstein argues against a small clause analysis of transitive resultatives, advocating instead for a complex predicate analysis: standard entailments do apply, and pleonastic subjects are not

allowed, as shown in (228). Bassel (2018) observes that the same is true for location change sentences, as shown in (229).

- (228) a. Mary painted the house red #but she didn't paint the house.
b. *Mary painted it such that the house was red.
(Bassel 2018:58).
- (229) a. Max rolled the carpet over itself #but he didn't roll the carpet.
b. *Max rolled it such that the carpet was over itself.
(Bassel 2018:58).

However, there are also ways in which *make* and location change verbs pattern similarly. Both allow coordination of the postverbal string, as in (229).

- (230) a. Jayden made [Bill cook dinner] and Tom clean up after.
b. Jayden set [a book on the table] and a lamp next to the chair.

Both also allow quantifier float, as in (231).⁶⁷

- (231) a. Jayden made his siblings all pack their lunches.
b. Jayden set his books all on the table.

In both, the adverb *again* can be interpreted as applying to the resulting eventuality rather than the causal action, as in (232); this sort of scopal behavior has been taken to indicate the presence of a small clause complement to which the adverb is able to attach (Beck & Johnson 2004, Harley 2008, Citko 2011, Copley & Harley 2015; cf. Dowty 1979, Egg 1999, Jäger & Blutner 2003, Williams 2015, Bruening 2018).

- (232) a. *Stephen made Bill cook dinner three nights ago. Last night ...* Jayden made Bill cook dinner again.

⁶⁷ Compatibility of location change sentences with quantifier float was observed already in Bowers (1993:624), which illustrates with *return* and *put*:

- (i) a. They returned the books all to their owners
b. She put the two books both on the table.

b. *Stephen placed a book on the table three nights ago. Then, Bill moved the book to the dresser. Last night ...* Jayden set the book on the table again.

When it comes to right-node-raising, proposed in Bowers (1993, 2001) to pick out SC complements, location change sentences in fact fair better than sentences with *make*: while the sentence in (233a) received mixed reviews from the people consulted, (233b-c) received top marks across the board. (Notice that it does not matter whether the LPP is obligatory or optional.)

(233) a. Jayden let, but didn't make, Bill cook dinner.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 2 | 3 | 3 | | |
|---|---|---|---|--|--|

b. Jayden set, but didn't slam, a book on the table.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

c. Jayden dropped, but didn't slam, a book on the table.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

In this regard, *make* patterns with *have*. I suggested above that the incompatibility between possession sentences and right-node-raising followed from the fact that *have* is a so-called light verb. The very same explanation could apply to *make*, which is also often treated as a light verb.

Sentences with *make* also pattern with possession sentences when it comes to pseudoclefting and proform substitution (when the complement is verbal, at least). Example (234) shows that pseudoclefting is quite degraded for sentences with *make*.

(234) What Jayden made was Bill cook dinner.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 3 | 3 | | |
|---|---|---|---|--|--|

Example (235) shows that proform substitution with *that* is acceptable only if *happen* is included as well (and even then is less than perfect for some people). This is so even though a strict reading is in principle possible in this case: Sue could be responsible for the same Bill-cooking event as Jason.

(235) a. Jayden made Bill cook dinner. Sue made that, too.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 3 | 3 | | |
|---|---|---|---|--|--|

b. Jayden made Bill cook dinner. Sue made that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 4 | 5 | | |
|---|---|---|---|--|--|

These data point to similarities in the structures of sentences with *have* and *make*. Indeed, both verbs are often treated as light verbs, as noted above. We also saw above that *have* even permits

a causal sense that corresponds to a meaning not terribly different from *make* (though, perhaps, with a bit less force implied). This pushes us towards similar treatments for these kinds of sentences, at least when verbal complements are involved.

Of course, the real question is how these structures compare with the structures of location change sentences. These, too, don't do very well on pseudoclefting for most people, as shown in (236). Notice that this is true both for *set*, which requires a locative element, and verbs like *drop*, for which inclusion of a locative is optional.

(236) a. What Jayden set was a book on the table.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 2 | 3 | 5 | 2 | |
|---|---|---|---|---|--|

b. What Jayden dropped was a book on the table.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 2 | 3 | 5 | | |
|---|---|---|---|--|--|

Nor are such sentences compatible with *that* substitution, as in (237a). Inclusion of *happen* in (237b) only makes things worse, just as we saw with possession sentences with LPPs. However, we can't blame the incompatibility on stativity in the case, consider the location change sentences involve dynamic eventualities.

(237) a. Jayden set a book on the table. Bill set that, too.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 3 | 3 | | |
|---|---|---|---|--|--|

b. Jayden set a book on the table. Bill set that happen, too.

| | | | | | |
|---|---|---|---|--|--|
| 1 | 1 | 1 | 1 | | |
|---|---|---|---|--|--|

What we need for proform substitution to go through with *set* is the addition of a locative element, as in (238a). With verbs like *drop*, we can get away with just a proform targeting the DP2, as in (238b).

(238) a. Jayden set a book on the table. Bill set one there, too.

b. Jayden dropped a book on the table. Bill dropped one (there), too

A finally notable difference between *make* sentences and location change sentences pertains to adverbial intervention. Rothstein (2006) observes that an adverb cannot intervene between DP2 and the postverbal predicate in sentences with *make*, while intervention is possible in location change sentences. Bassel (2018:59) illustrates with the examples in (239)

(239) a. *Mary made the dress skillfully fit.

b. Max rolled the carpet aggressively over itself.

Judgments elicited for the sentences in (240) also show this contrast.

(240) a. Jayden made Bill cunningly cook dinner.

| | | | | | |
|---|---|---|---|--|--|
| 2 | 1 | 2 | 3 | | |
|---|---|---|---|--|--|

b. Jayden set a book gently on the table.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

Importantly, though, intervention in location change sentences appears to be restricted to only certain adverbs. In contrast with what we found for perception sentences, but similar to what we saw in possession sentences location change sentences do not allow the temporal adverbial *yesterday* to intervene between DP2 and the LPP:

(241) Jayden set a book yesterday on the table.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 2 | 3 | 3 | | |
|---|---|---|---|--|--|

Coordination, right-node-raising, quantifier float, and low-scoping *again* are all consistent with clausal structure in the complements of location change verbs. On the other hand, pseudoclefting, substitution, and adverbial intervention suggest against these verbs selecting for fully-formed SC complements. In fact, all of these facts are compatible with analyses of location change sentences along the lines of Ramchand (2008) or Bassel (2018, 2022). Let's zoom in on Ramchand's account in particular.

As shown in the tree in (215) above, this account involves three nested predication structures. DP2 pulls double-duty, serving as the subject of *proc* and *res*, while the sentence subject sits in the specifier of *init*. The articulate structure shown here accounts for the constituent-like behavior of the DP2 + LPP string on coordination and right-node-raising: what is targeted in these tests is *procP*. This structure also provides attachment sites for *again* (whether *proc* or *res*) that are distinct from *init*, accounting for the scope possibilities shown

above. The movement proposed for DP2 also provides a natural explanation for the availability of quantifier float.⁶⁸

Importantly, though, the *proc* and *res* tiers are not taken to be wholly separate from the *init* tier. In (215), I have shown *drop* as corresponding to two heads in the structure, *init* and *proc*.⁶⁹ By virtue of the latter association, *drop* requires an undergoer—the thing that is dropped. But the process itself comes about from the verb. In other words, whenever *drop* is used in a transitive sense, it brings with it a structure that includes *init* and *proc* projections, and all it needs for completion is DP1 (the initiator) and DP2 (the undergoer). A schema for the lexical specifications of *drop* is shown in (242), with variables *x*, *y* standing in for DP1 and DP2.

(242) *drop*: [*x* *init* [*y* *proc*]]

Because *drop* does not obligatorily occur with a locative element, the *res* projection does not come from the verb, but is instead introduced into the clause as an optional complement of *proc*. Things are different for verbs like *set*, which require indication of the endpoint. These verbs integrate even more of the clausal structure, associating not only with *init* and *proc*, but also with *res*. Indeed, some verbs in this class clearly lexicalize the result state, including *drape*; the verbs *lay* and *set* differ from the statives *lie* and *sit* only in vowel quality. (Verbs like *stack* and *gather* also lexicalize the result state, though they do not require explicit indication of a location.) For *set*, we might give a lexical schema as in (243): here we see variables for initiator (*x*), undergoer (*y*), and final location (*PP*) (cf. Levin & Rappaport Hovav's (1995) lexical semantics for verbs expressing an externally caused change in state).

⁶⁸ I did not provide an explanation for quantifier float in perception and possession sentences, but noted that it was consistent with movement within the small clause (Basilico 2003, Yogokoshi 2007) or into the matrix clause (Bowers 1993, 2001). I leave it for future work to adjudicate between these approaches.

⁶⁹ Ramchand (2008) adopts a theory of spans, according to which a single lexical item can correspond to multiple consecutive heads. Ramchand (2018) proposes that verbs associate with treelets (along with phonology and semantic denotations).

(243) *set*: [*x* init [*y* proc [*y* res [*PP*]]]

This kind of account straightforwardly predicts the ways in which location change complements do not act like small clauses, namely with regard to pseudoclefting and substitution. Since location change verbs integrate one or both of the embedded predicates, what they select for is not a clause, but the elements that are needed to complete the clause. The adverbial intervention facts also follow: those adverbs that are permitted between DP2 and the LPP are adverbs that attach to the projections associated with the verb.

As Ramchand (2008) points out, this analysis effectively merges small clause complementation and complex predicate formation approaches to location change sentences: while the verb does integrate multiple predicates, the outcome of composition involves small clause structure. This account also falls in line with flat predication perspectives with regard to the nature of the arguments that are ultimately selected. Whether we want to build all of this architecture into the syntax is in some ways a matter of taste. If we move away from the view that syntax and semantics are isomorphic, adopting instead a parallel architecture of language (e.g., Jackendoff 1990, Culicover & Jackendoff 2005), we might reserve the predication relations for the semantics, leaving the syntax on the simpler side. I will maintain the Ramchandian view in what follows, since it very elegantly captures the empirical facts presented above.

There is one open issue with assuming full syntactic representation of the result state, pointed out in Bruening (2018). It is shown that while object-oriented depictives are allowed in resultative sentences, they are not able to directly target the result state. For example, while the property of being wet need not hold until the end state of being flat in (244a), it must hold throughout the hammering process in (244b).

- (244) a. It's best to hammer metal flat wet, but it's OK if it has dried by the time it's completely flat.
b. #It's best to hammer metal flat dry, but it's OK if it's wet during the hammering.
(Bruening 2018:3)

The same kind of contrast is shown to arise in location change sentences in (245).

- (245) a. Albert walked Gertrude to his flat barely conscious, but she regained consciousness just as they arrived.
 b. Gertrude was completely lucid during the journey, but because of a sudden relapse right on his doorstep, #Albert walked her to his flat unconscious.
 (Bruening 2018:5)

I do not aim to account for these data here. However, notice that this only serves as a challenge for projection of a result state small clause—it is perfectly compatible with treating the process itself as a small clause.

3.4.3 Pronoun licensing across location change sentence parses

The prior section showed that the syntactic behavior of location change sentences is compatible with an SC complement analysis, so long as we make certain assumptions regarding lexicalization of the clausal architecture. I also noted above that some of the location change sentences investigated in the present study—namely, those that do not obligatorily select for an LPP—are also compatible with a DP-adjunct parse. We saw already for perception and possession sentences that both parses appear to permit both pronoun forms in the expression of coreference with the sentence subject. More as a sanity check than anything else, I will quickly note that the same goes for location change sentences.

For the pair of sentences in (246), four out of five people consulted showed a preference for the reflexive while one person showed no preference between forms, consistent with weak reflexive preference turned up for similar sentences in Experiment 1 & 2.

(246) a. Jayden_i set a book next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 3 | 4 | 5 | |
|---|---|---|---|---|--|

b. Jayden_i set a book next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|

In (247)–(249) we see that this preference was maintained across coordination, right-node-raising, and inclusion of low-scope *again*.

- (247) a. Jayden_i set a book on the table and a lamp next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 4 | 4 | 5 | |
|---|---|---|---|---|--|

b. Jayden_i set a book on the table and a lamp next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|
- (248) a. Jayden_i set, but didn't slam, a book next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 3 | 4 | 3 | |
|---|---|---|---|---|--|

b. Jayden_i set, but didn't slam, a book next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 4 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|
- (249) a. *Stephen set a book next to Jayden. Bill moved it. A few minutes later ...* Jayden_i
set the book next to him_i again.

| | | | | | |
|---|---|---|---|---|--|
| 2 | 3 | 3 | 4 | 5 | |
|---|---|---|---|---|--|

b. *Stephen set a book next to Jayden. Bill moved it. A few minutes later ...* Jayden_i
set the book next to himself_i again

| | | | | | |
|---|---|---|---|---|--|
| 5 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|

The examples in (250)-(251) show that preferences were generally maintained under quantifier float as well, though one person did express a dispreference for the reflexive in this case.

- (250) a. Jayden_i set his books next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 3 | 4 | 5 | |
|---|---|---|---|---|--|

b. Jayden_i set his books next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 5 | 5 | 5 | 5 | 5 | |
|---|---|---|---|---|--|
- (251) a. Jayden_i set his books all next to him_i.

| | | | | | |
|---|---|---|---|---|--|
| 3 | 3 | 3 | 4 | 5 | |
|---|---|---|---|---|--|

b. Jayden_i set his books all next to himself_i.

| | | | | | |
|---|---|---|---|---|--|
| 5 | 4 | 5 | 5 | 4 | |
|---|---|---|---|---|--|

Finally, (252) shows preferences under quantifier float: three people preferred the reflexive, and one person showed no preference.

- (252) a. Jayden_i set his books gently next to him_i.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 4 | 4 | 3 | | |
|---|---|---|---|--|--|

b. Jayden_i set his books gently next to himself_i.

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 4 | 5 | | |
|---|---|---|---|--|--|

I did not elicit judgments for sentences targeting a DP-adjunct parse. However, I will note that according to my intuitions, both of the sentences in (253) are acceptable (though I favor the personal pronoun in contexts where there is only one book).

- (253) a. What did Jayden_i shove? The book next to him_i.
b. What did Jayden_i shove? The book next to himself_i.

3.4.4 Takeaways from location change sentences

I have advocated for the view that location change sentences involve small clause complement structure, following Ramchand (2008, 2018) and Bassel (2018, 2022). Like Ramchand in

particular, I take it that small clause complementation is involved regardless of whether the LPP is interpreted as expressing a path or endpoint. Whether these structures do reliably differ with respect to subject-oriented pronouns cannot be determined from the data at hand. However, experiment results showed a relatively small difference in ratings for sentences that require an endpoint and sentences that don't, with reflexives in fact being more favored in the former, contrary to what we would expect under Bassel's proposal if path parses (in particular, the Principle B effects proposed to apply under path parses) were playing an active role in those data.

I suggested that the difference between sentences that require an endpoint and sentences that don't may stem from the compatibility of the latter with an additional DP-adjunct parse, where the LPP helps pick out the entity that underwent location change rather than the endpoint of that change. Importantly, while it may be the case that the reflexive is relatively worse in a DP-adjunct LPP than in an SC complement LPP, it does not seem to be the case that the reflexive is precluded from the former by Principle A.

In short, we again find no evidence of an LPP parse that precludes either subject-oriented pronoun form due to binding principles. That Principle A is not playing an active role is unsurprising in light of what we found for perception and possession sentences. However, the absence of evidence for a parse that induces Principle B effects means that, as things stand, we remain without an account for the contrast found between location change sentences and perception and possession sentences.

3.5 Small clause complementation across event types

I want to circle back to comparing the structures we find across event types, looking in particular at the SC complement parse that I take to be available with all three. I illustrate below, using a more general predicate label 'Pr' in place of 'res' to draw out the similarities across these

sentences. I take this head to be an existence predicate, which says that a referent fitting the description of the subject is present within the scene.

- (254) a. Noah_i saw [_{PrP} a ladybug [Pr [_{PP} on him_i(self)]]]
 b. Chloe_i had [_{PrP} some glitter [Pr [_{PP} on her_i(self)]]]
 c. Jayden_i set [_{procP} a book [proc [_{PrP} ~~a book~~ [Pr [_{PP} next to him_i(self)]]]]]

While these sentences look very similar when all put together, I would like to advocate for the view that they differ in the way the components of the clause are packaged in composition.

Perception verbs like *see* select for an individual (the percept), whether an entity or an eventuality, that exists in the scene independently from the perceiver and event of perception. Under the assumption that perception verbs are compatible with both DP and SC complements, it follows that SC complements of perception verbs enters the derivation fully packaged, in a sense, their structure wholly separate from the structure specified by the verb.⁷⁰

The possession verb *have* (as well as causative *make*, by the look of things) are more integrated with their SC complements, reflecting the intrinsic involvement of the subject with the entity or eventuality denoted by the complement. Following Dechaine et al. (1995), I take it that *have* incorporates an SC complement structure, including a locative relation, in its lexical semantics.⁷¹ It therefore composes not with a fully formed SC complement but, rather, with the elements needed to fill out the SC complement, namely a subject; the LPP comes along as well when the locative relation cannot be assumed from context.

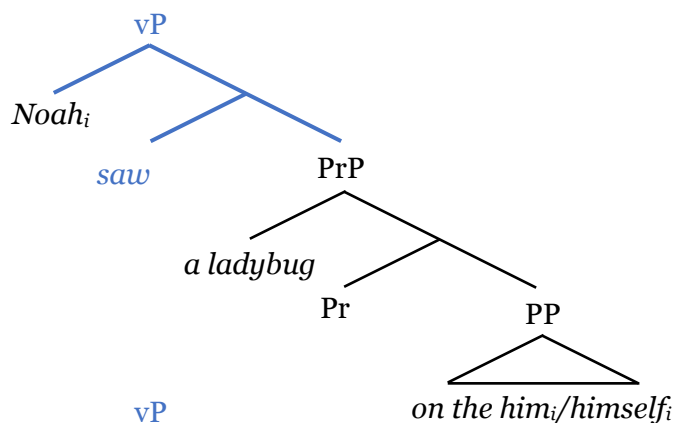
⁷⁰ As mentioned in fn. 50, we might say that the complement of verbs like *see* always have a structure as in (254), with a functional head introducing existence, even when no secondary predicate is present. In that case, we might say that perception verbs lexically specify for a PrP complement, though they crucially do not specify for an LPP within that complement. I favor this view, but I will leave it for another time to sketch it out in full.

⁷¹ Somewhat different from Dechaine et al. (1995) and Kayne (1993), I do not take *have* to be BE+P, but to contain both elements in its lexical semantics. *Have* is associated with a higher projection, maybe an applicative head a la Pytkäinen (2008).

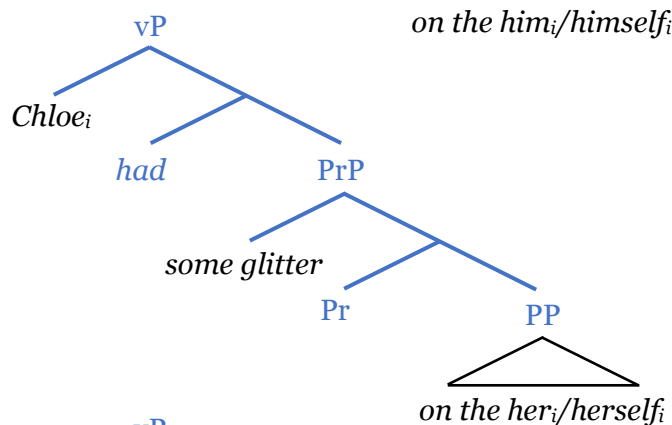
Finally, following Ramchand (2008, 2018), I take it that location change verbs incorporate aspects of their complements as discussed above. Here, too, the subject is intrinsically involved in the eventuality denoted by the complement, being the initiator of it.

The differences in integration suggested above are captured in the trees in (255), where blue is used to indicate the syntactic structure that is lexically specified by the matrix verb.

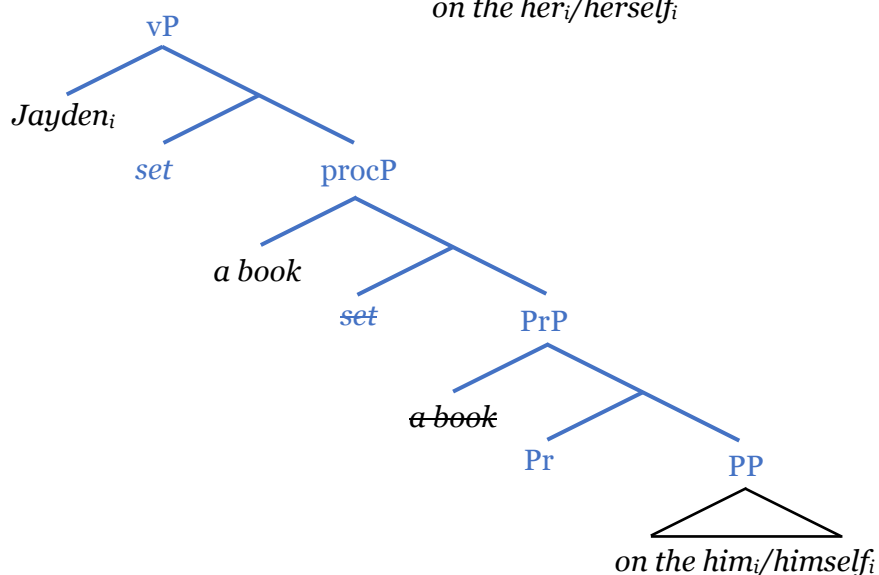
(255) a.



b.



c.



It may be tempting to take incorporation as having something to do with subject-oriented pronoun preferences, with greater integration correlating with greater relative preference for the reflexive. This would mean moving towards a notion of locality in licensing conditions that is gradient rather than categorical. Maybe there's good reason for that independent of the sentences we're looking at here. But let me note that possession sentences appear to involve greater integration between verb and complement than perception sentences, despite showing a somewhat greater overall preference for the personal pronoun. Therefore, even if incorporation does affect pronoun choice, this can't be the whole story.

3.6 Conclusion

The goal of this chapter was to determine whether binding principles play an active part in determining pronoun preferences in LPPs. To do so, we asked what parses are independently motivated for LPPs across sentences expressing perception, possession, and location change. For perception sentences, we observe behavior consistent with a VP-adjunct parse, DP-adjunct parse, and SC complement parse. For location change sentences, we observe behavior consistent with an SC complement parse and, for certain verbs, a DP-adjunct parse. Things were less clear for possession sentences: while it may be the case that possession sentences are compatible with a DP-adjunct parse, we might maintain the stance taken in Dechaine et al. (1995), according to which possession sentences with LPPs always involve SC complementation. Crucially, using syntactic tests that aim to pull these parses apart, we found no evidence that any of the parses available for LPPs in the sentences investigated here preclude either pronoun form in the expression of coreference with the sentence subject. In other words, both the reflexive and personal pronoun are viable options across LPP parses, as far as binding principles are concerned.

While both forms appear to be syntactically licensed across LPP parses, this does not mean that both forms are equally good under all of possible parses. I suggested so much for location change sentences, in that the plausibility of a DP-adjunct parse correlates with a weaker preference for the reflexive over all. The relative plausibility of different parses could contribute to some of the between-item variation turned up in Experiments 1 and 2. I must leave it to future work to dig deeper into how relative preferences differ across LPP parses. That being said, I maintain that whatever differences there are across parses with regard to LPP pronoun preferences, they are not the product of binding principles.⁷²

Throughout this chapter, I focused specifically on parses and pronoun licensing across event types, leaving aside the effect of relation type on subject-oriented pronoun preferences. For each event type, we did not find evidence of difference in pronoun licensing across the LPP parses we were able to pin down. As a result, it appears not to be the case that complementarity induced by binding principles is responsible for the effect of relation type. While it is possible that pronoun preferences differ across parses, it is not obvious that the relative likelihood of different parses would depend on whether the LPP expresses contact. Therefore, it seems unlikely that the effect of relation type is rooted in syntactic structure of the LPP. (It certainly cannot be, if possession sentences are indeed compatible with only an SC complement parse.)

I conclude that binding principles are not driving the effects of event type and relation type on subject-oriented pronoun preferences turned up in Experiments 1 and 2. Let me stress again, this does not mean that the LPP parse makes no difference to relative preferences. My claim is that both subject-oriented reflexives and personal pronouns are in principle permitted across LPP parses for the kinds of sentences under investigation, such that the decision of what form to use ultimately rests on considerations other than binding principles.

⁷² Specifically, my claim is that binding principles do not distinguish between LPP parses. In Chapter 5, I discuss the possibility that complementarity—in particular, a requirement for the reflexive—may be induced by structural distinctions located elsewhere in the clause, namely inclusion of a reflexivizing function such as the reflexive Voice head of Ahn (2015).

Along with narrowing down the possibilities of what could be behind these key effects, this conclusion allows us to narrow down the range of binding theories that are compatible with LPP pronoun licensing. We are able to rule out theories of English pronoun licensing falling in camp #1, according to which pronoun forms are in strict complementarity across all contexts under a given interpretation. We also saw what additional assumptions need to be made to render LPP pronoun licensing compatible with predicate-based theories and antecedent-based theories in camp #2. PBTs can be made to work as long as we adopt the view that locative predication is always mediated by a functional head, *Pr*, in contrast with verbal predication. ABTs can be made to work as long as the domain of Principle A is associated with the phase or spellout domain rather than the minimal phrase containing a subject (and as long as predication phrases are not all phases).⁷³

At this point in the investigation of LPP pronoun choice, the question of what does push people to favor one form over the other remains open. In light of the conclusion that binding principles do not play an active role in determining subject-oriented pronoun preferences in English LPPs, I believe that the best way forward in accounting for the effects of event type and relation type is to look to the meaning of the sentences under consideration. In Chapter 4, we will shift our gaze away from syntax, asking instead whether and to what extent pronoun preferences in LPPs depend on the expectedness of the meaning they convey.

⁷³ One thing the data discussed here does not allow us to do is adjudicate between antecedent-based and predicate-based approaches to binding. See Charnavel & Sportiche (2016), Charnavel (2020a, 2020b), and Charnavel & Bryant (2022) for discussion of how these perspective fair in other domains.

CHAPTER 4: EXPECTATION AND LPP PRONOUN CHOICE

The acceptability surveys presented in Chapter 2 revealed robust effects of event type and spatial relation type on pronoun preferences in locative prepositional phrases (LPPs). With respect to event type, we found that subject-oriented reflexives are relatively more natural in the expression of location change than in the expression of perception or possession, while subject-oriented personal pronouns showed the opposite pattern. With respect to spatial relation, we found that subject-oriented reflexives are relatively more natural when the LPP expresses direct physical contact, while subject-oriented personal pronouns are relatively more natural in the absence of direct contact. The overall preference pattern is summarized in **Table 2-C**.

Table 2-C. Relative preferences between subject-oriented reflexives and personal pronouns in English LPPs, based on acceptability ratings from Experiments 1 and 2.¹

| | +contact | -contact |
|-------------|--|---|
| possession | Chloe had some glitter on ?her _i /??herself _i . | Chloe had some glitter next to ✓her _i /??herself _i . |
| perception | Chloe noticed some glitter on ?her _i /??herself _i . | Chloe noticed some glitter next to ✓her _i /??herself _i . |
| loc. change | Chloe poured some glitter on ??her _i /✓herself _i . | Chloe poured some glitter next to ?her _i /??herself _i . |

The question now is what exactly drives this preference pattern, that is, what it about these sentences that pushes people to favor one form over the other. In Chapter 3, I argued that

¹ '✓✓' marks strongly favored forms, '✓' marks weakly favored forms, '?' marks weakly disfavored forms, and '??' marks strongly disfavored forms.

binding principles do not play an active role in determining pronoun choice in LPPs: both the reflexive and personal pronoun are syntactically permitted in every parse available for the sentences captured in **Table 2-C**, even if both forms are not equally favored. This means that the effects of event type and relation type on pronoun preferences must be rooted in some other part of the language faculty.

This chapter investigates the extent to which LPP pronoun preferences depend on expectation, in particular how expected it is that the complement of the LPP will corefer with the sentence subject. Work in the functionalist tradition has proposed a close relationship between prior expectation and pronoun choice in English and beyond, with complex pronouns (e.g., *herself*) surfacing in place of simpler pronoun forms (e.g., *her*) to signal subject coreference when coreference is least expected. To test whether and to what extent expectation is responsible for the preference pattern shown above, I compare acceptability ratings from Experiments 1 and 2 with the relative expectedness of subject coreference in target sentences, measured as the likelihood of resolving referential ambiguity with a coreferent interpretation in a binary-choice reference resolution experiment. What we find is that while expectation does not account for the effects of event type and relation type, it does play a significant role in addition to these two factors in determining relative preferences between subject-oriented reflexives and personal pronouns in LPPs.

Section 4.1 begins by offering some background on the place of expectation in prior work on English pronoun choice, concerning both the historical development of the reflexive pronoun as a means of expressing subject coreference and the differences in pronoun preferences observed across LPPs today. In Section 4.2, I present the results of the reference resolution experiment and show how the results fit into our model of LPP pronoun preferences. The outcome is discussed in Section 4.3, which also looks forward to future directions for this line of inquiry. Section 4.4 concludes.

4.1 Expectation and LPP pronoun choice

Work in the domain of binding theory treats reflexives and personal pronouns as categorically distinct, subject to distinct syntactic constraints that give rise to (partially) distinct distributions. However, when it comes to their semantics, reflexives and personal pronouns are very often given the same formal treatment: both are taken to denote semantic variables, modeled as indices, which may either be bound or interpreted via the assignment function (e.g., Reinhart 1983, Heim & Kratzer 1998, Buring 2005, Ahn 2015). Other accounts do posit semantic distinctions, for instance treating the reflexive as denoting a reflexivizing function (e.g, Bach & Partee 1980, Steedman 1985, Keenan 1987, Szabolcsi 1987, Zwarts 1991, Schlenker 2005, Spathas 2010, Lechner 2012) or a proxy relation (e.g., Reuland 2011, Reuland and Winter 2009). But even then, it is certainly true that the reflexive and personal pronoun can be used to the same communicative end in many contexts—LPPs included. Considering that both forms can convey the same meaning, and may even be indistinguishable as far as the semantics are concerned, the question of pronoun choice may be cast as a question of motivation: why would English users ever favor the more cumbersome reflexive over the simpler personal pronoun if the latter would do the trick?

In addressing this question, work in the functionalist linguistic tradition has appealed to a general economy principle going back to Zipf (1935), according to which the morphophonological complexity of a word correlates with the frequency of its meaning, which in turn determines how expected or predictable the meaning is. As Haiman (1983:807) put it, “What is predictable receives less coding than what is not.” Applying this view to pronoun choice, the idea is that more complex pronoun forms (e.g., the English reflexive) are reserved for the expression of subject coreference in contexts in which subject coreference is relatively infrequent and, therefore, relatively unexpected (Haiman 1983, Faltz 1985, Comrie 1999, König and Siemund 2000, Smith 2004, Haspelmath 2008, a.o.).

This line of thinking has played a prominent role in work on the historical development of the English pronoun system, in particular the rise of the reflexive pronoun, commonly taken to have derived through adjunction of an intensifier *self* to the personal pronoun (Faltz 1985, König and Siemund 2000, van Gelderen 2000, Keenan 2002, Smith 2004, Gast & Seimund 2006, a.o.). Prior to the sixteenth century, both the simple personal pronoun and the complex pronoun + intensifier could be used to indicate subject coreference even in simple transitive sentences. However, when it comes to which marking was ultimately used, Faltz (1985) argues that a distinction could be found between so-called “introverted” verbs, or verbs denoting actions that are typically self-directed, and “extroverted” verbs, or verbs denoting actions that are typically other-directed. Introverted verbs as in (256) tended to occur with the personal pronoun; extroverted verbs, in particular verbs of bodily harm as in (257), uniformly occurred with the nascent reflexive (see also Farr 1905, Ogura 1989, König and Siemund 1998, 2000, Keenan 2003, Smith 2004). Verbs that fell somewhere in between introverted and extroverted appeared with both forms, as exemplified in (258) (Keenan 2003, Smith 2004, van Gelderen 2000).

- (256) he_i cladde hym_i as a poure laborer
‘He dressed as a poor laborer.’
(Canterbury Tales c.1385, quoted in Faltz 1985:243)
- (257) him self_i he_i hynge
‘He hanged himself.’
(Canterbury Tales c. 1385, quoted in Faltz 1985:243)
- (258) a. he_i hine_i vncuð makede.
‘He made himself unknown/unrecognizable’
(Caligula 3302, quoted in van Gelderen 2000:72)
- b. he_i makede him_i-seluen muchel clond.
‘He made for himself much pain’
(Caligula 5839, quoted in van Gelderen 2000:73)

The contrast in coreference marking observed across verbs has often been attributed to differences in the relative expectation of coreference: the complex intensifier form was favored

over the simple personal pronoun in the expression of events that usually involved distinct participants—distinct referents for subject and direct object—such that subject coreference was relatively rare. It is important to note that the notion of expectation invoked in the literature has generally been based on intuitions about *kinds* of events,² rather than about particular occurrences. For example, it is generally unexpected for one to hang oneself, much less expected than dressing oneself, even if the specific hanging described in (257) is in fact quite expected in the context.

While it may be the case that subject-object coreference is more frequent with some verbs than with others, it is generally assumed that, across transitive verbs, disjoint reference is the most frequent state of affairs. For instance, Faltz (1985:241-2) observes that “[i]n the case of a predication involving more than one argument, the unmarked situation is for the different arguments to have distinct referents.” In a similar vein, Levinson (2000:328-9) states that “agents normally act upon entities other than themselves; the prototypical action—what is described by the prototypical transitive clause—is one agent acting upon some entity distinct from itself.” With time, the preponderance of special marking for a large swathe of English transitive verbs gave way to grammaticalization of the reflexive as the primary means of expressing subject-object coreference, while the personal pronoun took on the function of expressing disjoint reference in these contexts (Smith 2004, König and Siemund 2000, Keenan 2002, a.o.). For the relatively small set of introverted verbs, a new strategy of indicating coreference emerged, namely exclusion of an overt direct object. The outcome observed in

² Haspelmath (2008) argues that what matters to expectations is in fact “speech frequency,” that is, how often coreference occurs in speech, rather than “world frequency,” or how often an event is self-directed vs. other-directed, though it is acknowledged that these two measures often go hand-in-hand. Unlike world frequency, speech frequency can be measured directly in corpora.

contemporary English is the contrast exemplified in (259), where parentheses are used to indicate optionality.³

- (259) a. Noah_i washed (himself_i).
b. Noah_i saw *(himself_i).

Functional pressures relating to expectation thus provide a plausible explanation for the historical trajectory of the English pronoun system, in particular the rise of the contemporary Principle B of binding theory. Nowadays, expectation does not factor into pronoun choice in simple transitive sentences, where hardwired syntactic constraints make the choice for us. This is particularly evident in sentences such as those in (260), where coreference between the (implicit) subject and direct object is obligatory but the reflexive is nevertheless required.

- (260) a. Sue_i perjured herself_i.
b. Behave yourself.
c. Sue_i perjured herself_i.

However, it is possible that the same pressures that gave way to the grammaticalized contrast in (259) remain active in corners of the language where pronoun choice is not syntactically fixed, including within LPPs.

Indeed, expectation has been invoked to explain how it came to be that subject coreference is at all possible for personal pronouns within English LPPs as in (261a), though not in direct object position as in (261b).

- (261) a. Noah_i saw *him_i/himself_i.
b. Noah_i saw a ladybug next to him_i/??himself_i.

³ Ample work has argued for a distinction between introverted and extroverted verbs (though not necessarily in those terms) in determining the manner of marking subject coreference cross-linguistically, including Jespersen (1924, 1933), Everaert (1986), Haiman (1983), Faltz (1985), Zubizarreta (1987), Kemmer (1993), Huang (2000), König and Siemund (2000), Levinson (2000), Smith (2004), and Haspelmath (2008); see also Reinhart and Reuland (1993) and Stojanovic (2002) on intrinsic vs. extrinsic reflexivization. Examples like (259) have been widely documented across the world's languages: see for instance Haiman (1983), Geniusiene (1987), Kemmer (1993), Huang (2000), König and Siemund (2000), and Haspelmath (2008).

This kind of asymmetry is certainly not unique to English: cross-linguistically, reflexive pronouns occur more often in direct object position than in locative phrases, and in no language is the reflexive found in the latter but not the former (Faltz 1985, Comrie 1999, Haspelmath 2008). According to Comrie (1999:341), the contrast in coding observed between subject-oriented direct objects and LPP complements arises from differences in expectation: the reflexive is required in simple transitive sentences like (261a) because coreference is generally unexpected between subject and direct object, whereas “the expectation for non-coreference is relaxed” in LPPs, such that the personal pronoun can be used as well.

The claim that subject coreference is relatively more expected in LPPs is given credence by the relative frequencies of subject-oriented pronouns serving as direct objects and LPP complements in English language corpora. Drawing from the Santa Barbara Corpus of Spoken American English, Ariel (2008:218) observes for simple transitive sentences like (261a) that, out of 103 pronominal direct objects, only two (2%) were coreferent with the sentence subject (that is, only two were reflexive). In contrast, Haspelmath (2008:57) reports that subject coreference is much more common in LPPs: looking only at personal pronouns, a random sample of 50 sentences each for five prepositions from the British National Corpus revealed rates of subject coreference ranging from 14% to 34%, as shown in **Table 4**.

Table 4. Proportion of coreferential and disjoint uses of the personal pronoun across 50 random occurrences of LPPs with *near*, *behind*, *in front of*, *above*, and *below* in the British National Corpus (Haspelmath 2008:57, Table 8).

| | pronoun use | count | % (out of 50) |
|-----------------|---------------|-------|---------------|
| near him | coreferential | 10 | 20% |
| | disjoint | 40 | 80% |
| behind him | coreferential | 12 | 24% |
| | disjoint | 38 | 76% |
| in front of him | coreferential | 17 | 34% |
| | disjoint | 33 | 66% |

Table 4. (Continued).

| | | | |
|-----------|---------------|----|-----|
| above him | coreferential | 7 | 14% |
| | disjoint | 43 | 86% |
| below him | coreferential | 8 | 16% |
| | disjoint | 42 | 42% |

Not only has expectation featured in accounts of the difference between direct objects and LPP complements when it comes to coding for subject coreference. Important to the present study, some work has also sought to explain differences in pronoun choice across LPPs in terms of expectation.

Smith (2004) appeals to expectation to capture those LPPs that most strongly favor the personal pronoun, exemplified in (262).⁴

- (262) a. Mary_i brought her lunch with her_i/*herself_i.
b. He_i looked about him_i/*himself_i.
c. The tramp_i had a lot of money on him_i/*himself_i.
d. The box_i has a spider in it_i/*itself_i.
(Smith 2004:596-7)

Following Quirk et al. (1985), Smith observes that these same sentences largely disallow disjoint reference within the LPP (see also Faltz 1985, Jackendoff 1987):

- (263) a. *Mary brought her lunch with Susan.
b. *He looked about her.
c. *The tramp had a lot of money on Susan.⁵
d. *The box has a spider in the closet.
(Smith 2004:596-7)

⁴ The acceptability markings shown in (262) are taken from Smith (2004). As in previous chapters, all acceptability markings included in cited examples are recreated from the source.

⁵ This sentence is acceptable under the unintended reading that the tramp has placed a bet on Susan.

In fact, disjoint reference is not totally impossible for these sentences, at least not for (262a-c). While *bring with* does typically occur with subject coreference, it is natural to ask a server to bring the check with dessert. In place of (262b) we might say *He looked about the room* without any evident change in meaning. And sentences similar to (262c) are free to take disjoint locations, as in *I have a blanket in the grad lounge*. However, it is true that the personal pronouns in (262) are only compatible with a coreferential interpretation. In other words, whenever a personal pronoun is used in these sorts of LPPs, subject coreference is certainly expected.

Smith classifies the sentences in (262) as introverted, following the functionalist literature on sentence like (259a) (especially Haiman (1983)). Such sentences are contrasted with extroverted LPP sentences that freely allow disjoint reference and (according to Smith) use of the reflexive within the LPP, including location change and perception sentences like the ones in (264).

- (264) a. John_i pulled the blanket over him_i/himself_i/Colin.
 b. They_i saw a snake near them_i/themselves_i/Colin.
 (cf. Smith 2004:593-4, 601)

Of course, the preference pattern shown in **Table 2-C** does not fit the dichotomy posited in Smith: perception sentences pattern more like possession sentences than location change sentences, favoring the personal pronoun overall, despite their amenability to disjoint reference. However, it could still be the case that broad differences across sentences types, in particular differences relating to event type, could be rooted in differences in expectation as Smith suggests.

Lederer (2013) also appeals to expectation in treating LPP pronoun choice, drawing a similar categorical distinction but, crucially, along a different line. Rather than attributing differences across event types to differences in expectation, Lederer proposes that expectation plays a role specifically in the expression of location change. Based on samples from the British National

Corpus, Lederer observes that subject-oriented reflexives are about one and a half times more frequent in LPPs expressing the direction of motion than in stative LPPs—consistent with the distinction between location change sentences and possession and perception sentences reported here. Crucially though, whether the reflexive is preferred over the personal pronoun in directional LPPs is argued to depend on the directionality typically expected for the kind of event expressed by the sentence.

To illustrate, Lederer offers the pair of sentences in (265).

- (265) a. John_i drew her toward him_i/himself_i.
 b. John_i pushed the book toward himself_i/??him_i.
 (Lederer 2013:516-18)

The trajectory expressed in both sentences is the same, with motion flowing in the direction of the agent (John). However, the personal pronoun is shown to be much more marked in (265b) than in (265a). (Chomsky (1965:146-7) in fact marks the reflexive in sentences like (265a) as ungrammatical.) Indeed, when it comes to sentences like (265a), Lederer observes that the personal pronoun is in fact more frequent than the reflexive in the corpus sample. According to Lederer, preference from the personal pronoun follows from the fact that the directionality expressed by the LPP in (265a) coincides with the directionality canonically associated with the action denoted by the verb: both are “inward directed,” in as Lederer puts it, such that the sentence is “intrinsically reflexive,” just like transitive sentences like (259a) (cf. Reinhart & Reuland 1993, Stojanovic 2003). In (265b), on the other hand, the directionality of the LPP is contrary to the canonical directionality of the verb, which is rather “outward directed,” and the entire sentence is “extrinsically reflexive,” like (259b). Hence, the reflexive is best relative to the personal pronoun when the directionality expressed by the LPP (and, hence, subject coreference within the LPP) is unexpected given the way the action expressed by the sentence tends to unfold. The same sort of interaction between LPP and verb directionality is also shown to arise when the LPP is outward directed, as in (266b).

- (266) a. John_i threw the can away from him_i/himself_i.
 b. John_i pulled the book away from himself_i/??him_i.
 (Lederer 2013:516-518)

While Lederer proposes a categorical split between intrinsic and extrinsic reflexive sentences, it is suggested that expectation may have gradient effects on pronoun preferences even within these categories. In the minimal pair in (267), Lederer observes that the choice of direct object can shift the strength of an overall reflexive preference in an extrinsically reflexive sentence.

- (267) a. John_i stabbed the knife into himself_i/???him_i.
 b. John_i stabbed the needle into himself_i/?him_i.
 (Lederer 2013:519)

According to Lederer, the reflexive preference is weaker in (267b) than in (267a) because stabbing oneself with a needle is more expected than stabbing oneself with a knife.

Importantly, in both Smith (2004) and Lederer (2013), expectation is not taken to be the whole story to LPP pronoun choice. Smith shows free variation between reflexives and personal pronouns in extroverted sentences as in (264), leaving open what drives pronoun choice in these cases. Lederer only discusses expectation in the context of location change sentences: differences across event types, as well as across relation types in non-location change sentences, are attributed to other aspects of meaning.⁶ Hence, while these works taken together suggest that expectation plays *some* part in LPP pronoun choice, it yet unclear how much weight it carries, nor whether it is responsible for the general preference pattern reported above.

In short, considering both synchronic and diachronic perspectives on subject-oriented pronoun choice, there is good reason to suspect that expectation has a hand in shaping

⁶ The contrast between location change sentences and non-location change sentences is attributed to event structure: following Kemmer (1993) and Van Hoek (1997), Lederer (2013) maintains that the reflexive is favored only in the expression of events with a reflexive event schema, in which the initiator and endpoint of the event are identical; see Chapter 5 for more on this proposal. An additional factor not explored in this study is association of the reflexive with description of the body as a container.

preferences in English LPPs. If so, we would predict the reflexive to be best, and the personal pronoun worst, when subject coreference is least expected. In accounting for the overall preference pattern turned up in Experiments 1 and 2, the main question that arises is whether the effects of event type and relation type reported in Chapter 2 be explained by the relative expectedness of subject coreference. With respect to event type, we would predict subject coreference to be relatively less expected for location change events than for events that do not involve location change, since the reflexive was relatively more natural in the former than in the latter. With respect to relation type, we would predict coreference between the sentence subject and LPP complement to be relatively unexpected across event types, since the reflexive was relatively more natural in +contact relations than in -contact relations. We might also ask whether expectation has an effect on pronoun preferences independent of event type and relation type. If so, we would predict the acceptability of the reflexive to vary inversely with the relative expectedness of subject coreference within a given sentence type, while the personal pronoun is predict to show the opposite tendency.

4.2 Experiment 3: Reference resolution survey

The goal of this survey was to test the extent to which expectation predicts the pronoun preferences found in Experiments 1 and 2 by comparing acceptability ratings with the relative expectedness of subject coreference, measured as the likelihood of selecting the subject in a binary-choice reference resolution task.

4.2.1 Design

Target stimuli were adapted from Experiments 1 and 2 to allow for direct comparison with acceptability rating results. In place of reflexives and personal pronouns, LPPs on this survey contained the indefinite expression “one of them,” which could be resolved as referring either to the subject of the sentence or to the second person named in a short background context.

Because possession sentences are more restrictive in their admission of disjoint locations than perception and location change constructions, such that continuation with “one of them” is relatively unnatural, only perception and location change sentences were included in this survey, resulting in a two-by-two design with 18 items per condition. One target sentence set used in this experiment is shown in **Table 5**.

Table 5. Example of target sentences used in Experiment 3.

| | +contact | -contact |
|-------------|--|---|
| perception | Chloe noticed some glitter on one of them. | Chloe noticed some glitter next to one of them. |
| loc. change | Chloe poured some glitter on one of them. | Chloe poured some glitter next to one of them. |

As shown in **Figure 9**, each question in this survey consisted of a context-sentence pair followed by the question prompt “Who do you think it was?” Two answer choices were presented below the question prompt, corresponded to the two people named in the context.

Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs.

Noah set a ladybug on one of them.

Who do you think it was?

Abigail

Noah

Figure 9. Example of a target question from Experiment 3.

By reducing the reference resolution space to the two people named in the context, this design rules out a wide range of possible continuations of the LPP, including continuations that refer to

a particular part of one of the people named in the context (e.g., *on Abigail's arm*) as well as continuations referring to locations that are not coextensive with either of the people mentioned in the context (e.g., *on the floor*). As such, this design does not provide a measure of absolute predictability. Rather, the aim was to probe the relative expectedness of subject coreference across sentences and sentence types given a pronominal complement (cf. Haspelmath 2008:§6).

Along with target questions containing LPPs, this survey also included twelve control questions in which “one of them” expressed the direct object of the verbal predicate, as well as six catch questions in which “one of them” expressed the sentence subject and contexts clearly favored one resolution over the other.

4.2.2 Recruitment and Procedure

121 adult participants were recruited via Prolific Academic. Participants were prescreened for nationality (American), first language (English), and fluent language (English) using Prolific demographic filters. Participants were instructed that they would be shown a short context and sentence that builds on that context, and that they would be asked to complete the scene by answering a multiple-choice question about which person they think the sentence refers to. Each participant was randomly assigned to one question block containing 12 target questions (3 per condition) along with 6 control questions and 6 catch questions. Questions were presented in random order, and the order of choices were randomized within questions.

4.2.3 Predictions

The first question addressed in this experiment is whether expectation correlates with either event type or relation type, such that one or both effects on LPP pronoun preferences may be reduced to an effect of expectation. Assuming that reflexive acceptability varies inversely with expectation, we would predict the subject coreference to be relatively less expected for sentence types that favor the reflexive than for sentence types that favor the personal pronoun. In the

context of the current study, we would therefore predict the sentence subject to be selected least often in sentences expressing location change and contact, and most often in sentences expressing perception and non-contact. The rate of subject selection for the remaining sentence types should fall somewhere in the middle. These predictions are captured in **Figure 10**.

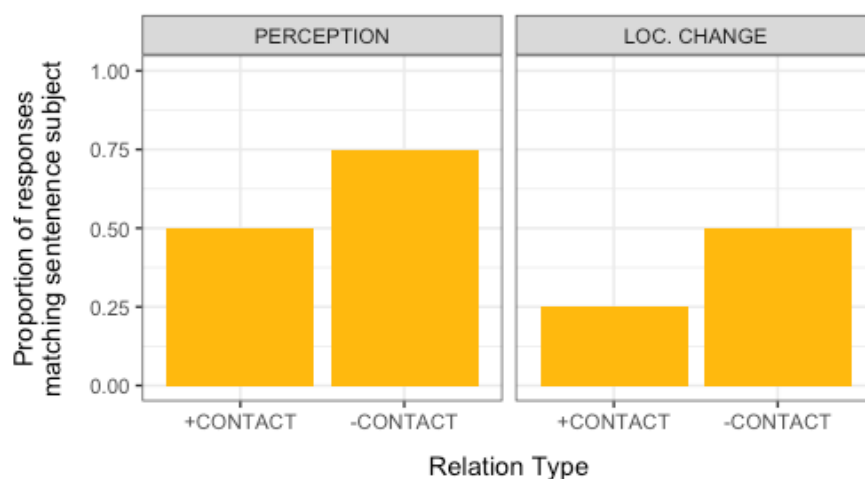


Figure 10. Predicted proportion of responses matching the sentence subject by event type (perception/location change) and relation type (+/-contact) predicted on Experiment 3, under assumption that expectation drives the effects of event type and relation type on pronoun acceptability found in Experiments 1 and 2.

The second question addressed in this study is whether expectation correlates with pronoun acceptability independently of event type and relation type. We would predict acceptability of the reflexive to vary inversely with the rate of subject selection, and the acceptability of the personal pronoun to vary directly with the rate of subject selection.

4.2.4 Results

Responses from three participants were excluded from analysis due to failure on more than one catch trial. Responses were coded for match, either '1/Yes' or '0/No,' depending on whether the person chosen as the referent of "one of them" matched the person named as the subject of the target sentence.

The proportion of subject match responses are shown in **Figure 11**.

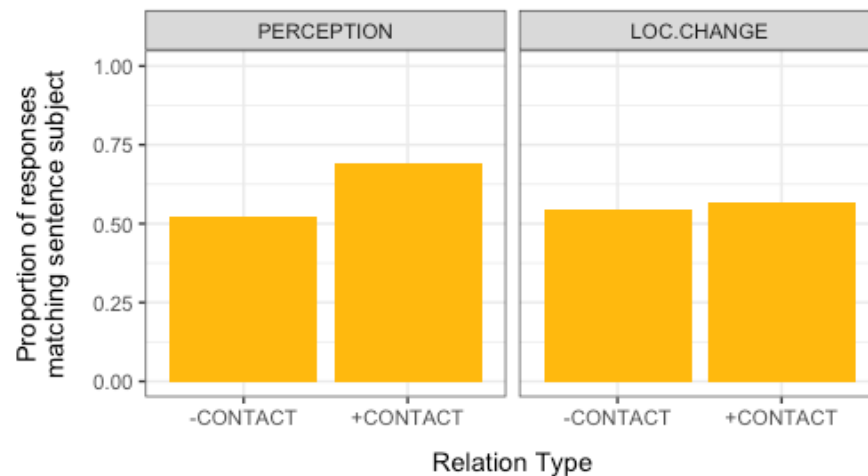


Figure 11. Proportion of responses matching the sentence subject by event type (perception/location change) and relation type (+/-contact) on Experiment 3.

With regard to event type, we see no clear difference in the relative frequency of match responses for perception sentences and location change sentences. With regard to relation type, we find that the relative frequency of match responses in fact trended in the opposite direction from what was predicted: subject matches were relatively more frequent for +contact sentences than for -contact sentences, in particular for sentences with perception verbs. A closer look at responses reveal that this trend is largely driven by sentences with the verb *feel* (used only in +contact sentences), which showed a significantly higher likelihood of match than other perception sentences ($p < 0.001$). A logistic mixed effects analysis with verb, subject, and item as random effects confirmed that neither relation type ($p = 0.44$) nor event type ($p = 0.43$) had a significant effect on the likelihood of subject match.

In order to determine whether the frequency of subject match correlates with pronoun acceptability independently of event type and relation type, an expectation score was computed for each item in Experiment 3 by dividing the number of subject match responses from the total

number of responses. Expectation scores were then paired with the corresponding items in Experiments 1 and 2.

Analysis of results from Experiment 1 (N=122) revealed significant interactions between pronoun and event type ($p < 0.001$) and between pronoun and relation type ($p < 0.001$) in determining acceptability ratings (see Section 2.2.4). To test whether pronoun preferences likewise depend on expectation, an interaction between pronoun and expectation score was added to the prior model, with Z-scored acceptability ratings as the response variable and subject, item, and verb included as random effects. A mixed effects linear regression analysis revealed the interaction between pronoun and expectation score to be significant ($p < 0.01$), and model comparison using the anova function in R showed that addition of the latter interaction significantly improves fit over the prior model ($p = 0.022$) (see **Table 6**).

Table 6. Comparison of linear regression models from Experiments 1 and 3.

| Model 1: Rating ~ Pronoun * Relation Type + Pronoun * Event Type + (1 Subject) + (1 Item) + (1 Verb) | | | | |
|---|--------|--------|--------|---------|
| Model 2: Rating ~ Pronoun * Relation Type + Pronoun * Event Type + Pronoun * Expectation Score + (1 Subject) + (1 Item) + (1 Verb) | | | | |
| | AIC | BIC | Chisq | Pr |
| Model 1 | 7389.2 | 7449.1 | | |
| Model 2 | 7385.6 | 7457.4 | 7.6541 | 0.02177 |

As shown in **Figure 12**, expectation score correlated with pronoun acceptability in the predicted way: the higher the expectation score associated with a particular pair of sentences, the less acceptable the reflexive relative to the personal pronoun.

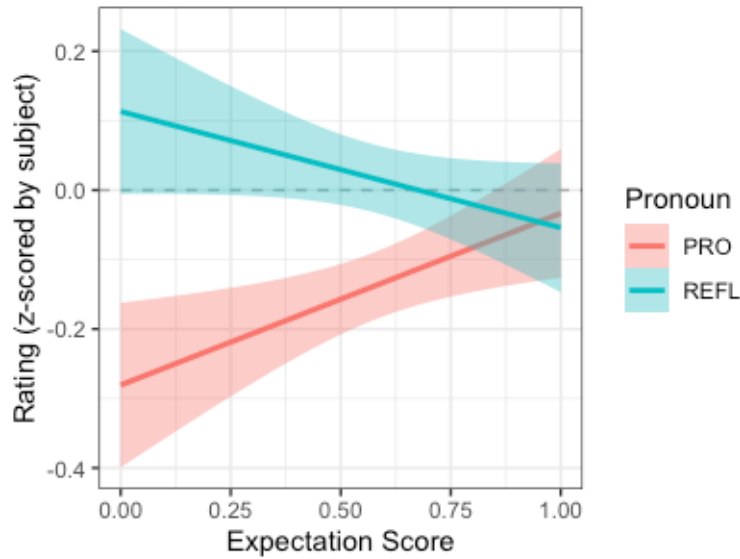


Figure 12. Mean acceptability ratings from Experiment 1 by expectation scores derived from Experiment 3. Across all sentence types, reflexive acceptability varies inversely with expectation score, while personal pronoun acceptability varies directly with expectation score.

Turning to acceptability ratings from Experiment 2 (N=31), analysis again revealed a significant interaction between pronoun and expectation score in the predicted direction ($p < 0.001$) alongside the interactions between pronoun and event type and pronoun and relation type, and inclusion of the former interaction significantly improved model fit ($p = 0.023$). The relationship between Experiment 3 expectation scores and Experiment 2 acceptability ratings is captured in **Figure 13**.

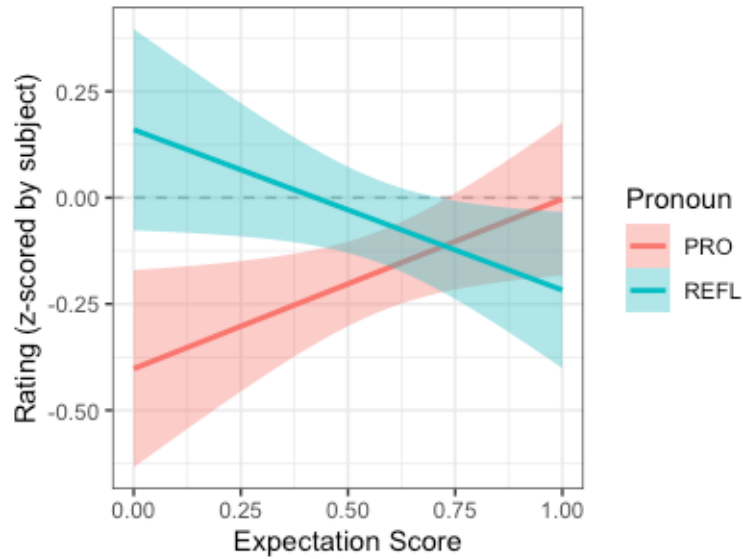


Figure 13. Mean acceptability ratings from Experiment 2 by expectation scores derived from Experiment 3. Across all sentence types, reflexive acceptability varies inversely with expectation score, while personal pronoun acceptability varies directly with expectation score.

4.3 Discussion

The goal of Experiment 3 was to test the hypothesis that pronoun choice in English LPPs depends on the relative expectation of subject coreference. We found that prior expectation, measured as the likelihood of selecting the sentence subject in a binary choice reference resolution task, is a significant predictor of pronoun acceptability, accounting for some of the variation found between sentences in Experiments 1 and 2. More specifically, expectation varied inversely with the acceptability of the reflexive relative to the personal pronoun: the more expected subject coreference was in a sentence, the better the personal pronoun and worse the reflexive.

This outcome sheds new light on the interplay between expectation and subject-oriented pronoun choice in English. It suggests that the correlation between pronominal complexity and expectation posited in accounts of the diachronic trajectory of subject-oriented pronouns in simple transitive sentences remains active in the language today, shaping in-the-moment

decisions within LPPs where the grammar leaves pronoun choice open. An interesting question is *why* this correlation should hold. Here I lay out a few possible explanations.

The first follows recent work exploring the principle of uniform information density, or UID (Levy & Jaeger 2007, Levy 2008, Mahowald et al. 2013, a.o.). According to this principle, language users aim to balance the amount of information conveyed across an utterance. The less predictable a word is in a given context, the more information it carries (Hale 2001, Levy 2008). As a result, less predictable words are expected to be longer than more predictable words, so that the information load is spread out more or less evenly as the sentence goes along.

UID has been implicated in online production choices, including syntactic choices such as that omission (Levy & Jaeger 2007) and verb-auxiliary contraction (Frank & Jaeger 2008), phonetic reduction and lengthening (Bell et al. 2003, Aylett & Turk 2004). Mahowald et al. (2013) extends the UID hypothesis to word choice, arguing from corpus and behavioral data that UID predicts the choice between semantically congruent content words, such as *bike* and *bicycle*. Analysis of the relative informativity of shorter vs. longer forms revealed that shorter forms occurred in more predictive contexts than their longer counterparts. In a forced-choice sentence completion study, participants were more likely to select the shorter form in supportive contexts, where the words were relatively predictable, than in neutral contexts. As mentioned in Section 4.1, English reflexives and personal pronouns are often treated as semantically congruent, not unlike the long/short word pairs investigated in Mahowald et al. If UID really is active in the choice between words such as *bike* and *bicycle*, it could be the driving force behind the observed effect of expectation on LPP pronoun choice as well.

Another possibility is that the effect is not about word length *per se*, but rather follows from association of the reflexive form with emphatic and contrastive focus, as suggested in Lederer (2013). Recall from Section 4.1 that the English reflexive is often taken to have derived from adjunction of an intensifier *self* to the personal pronoun. Though the association with emphasis waned for reflexive direct objects beginning in the sixteenth century (Keenan 2002, 2003), it

persists in other syntactic contexts. We see this for instance in the reflexive's continued use as an intensifier as in (268):

(268) Michele herself picked out the flower arrangement.

It could be that LPP sentences for which subject coreference is relatively unexpected are also relatively more likely to come along with emphatic or contrastive focus on the LPP complement. Relative preference for the reflexive could then follow from the fact that this form has retained the focus-marking function with which it began.^{7,8}

A third possibility is that greater preference for the reflexive in the expression of unexpected subject coreference follows from exploitation of locality constraints imposed on the reflexive and its antecedent. While the personal pronoun is very often used to refer to someone who was introduced into the discourse in an earlier utterance, the reflexive almost always requires an overt antecedent within the sentence containing it. Therefore, it could be the case that the reflexive receives a relative boost in acceptability whenever there is some other salient individual to whom a personal pronoun is likely to refer.

Whatever the reason for the relationship between expectation and LPP pronoun preferences, it is important to remember that expectation was found to account for only a small portion of

⁷ According to Kuno (1987), placement of contrastive stress on the personal pronoun in (xa), indicated with capitalization, forces disjoint reference with the sentence subject, such that the reflexive must be used instead when coreference is intended as in (xb):

(xvi) a. John_i saw a snake near HIM^{*_i/k}
b. John_i saw a snake near HIMSELF_{i/*k}
(cf. Kuno 1987:281)

While I don't share the intuition that a coreferential interpretation is totally out for (xa), I do agree that the reflexive is the more natural choice under focus when subject coreference is intended.

⁸ Reinhart & Reuland (1993:§3.2) also discuss an association between the reflexive pronoun and emphatic focus, noting that focus can allow reflexives to appear in an argument position even without a coargumental antecedent, in apparent violation of predicate-based Principle A:

(xvii) a. This letter was addressed only to myself.
b. Why should the state always take precedence over myself?
(Reinhart & Reuland 1993:672)

According to Reinhart & Reuland, this seeming exceptionalism follows from movement of the reflexive out of the argument position and into a focus position at LF, which obviates the conditions under which predicate-based Principle A applies. See Charnavel & Sportiche (2016) for critical discussion of the place of focus in reflexive pronoun licensing.

portion of the variation in relative acceptability turned up in Experiments 1 and 2. Most importantly, expectation as measured in Experiment 3 was found not to correlate with event type (specifically, perception vs. location change) or relation type, suggesting that expectation is not the driver of the much stronger effects on pronoun acceptability associated with these two factors.

With respect to event type, this outcome challenges the relevance of the introversion/extroversion dichotomy suggested for English LPPs in Smith (2004). Recall from Section 4.1 that Smith classifies both location change and perception sentences as extroverted on the grounds that both freely permit disjoint reference within LPPs, in contrast with introverted possession sentences. Indeed, the relative expectedness of subject coreference was found to be roughly equivalent for location change and perception sentences in Experiment 3, consistent with the common designation provided in Smith. However, when it comes to pronoun acceptability, perception sentences rather pattern very closely with possession sentences. Therefore, similarities and differences in pronoun preferences across event types do not appear to be driven by similarities and differences in the relative expectedness of subject coreference.

With respect to relation type, this outcome runs counter to the claim in Lederer (2013) that the reflexive is used to signal divergence from the expected directionality of an event. Because reflexives are relatively more natural in +contact sentences than in -contact sentences, Lederer's hypothesis would predict subject coreference to be relatively unexpected in the former, signaling that the anticipated directionality of the events described in these sentences is outward. Instead, results showed that subject coreference was no less expected for +contact sentences than for -contact sentences. In fact, for +contact sentences with the verb *feel*, subject coreference was highly predictable, and yet the reflexive was found to be much more acceptable relative to the

personal pronoun in *feel* sentences than in -contact perception sentences.⁹ Like the effect of verb type, then, the effect of relation type on pronoun preferences does not seem to reduce to the expectation of subject coreference.

It is possible that event type or relation type do in fact correlate with the expectation, but that the reference resolution task was insufficient to pick up on these effects. Restriction of possible resolutions to the people named in the background context may have obscured differences in expectation across sentence types by ruling out other likely scenarios. For example, it might be the case that some of the event types described by +contact sentences are typically “outward directed” without being typically “other directed.” Consider the scenario described in **Figure 9** above in which Noah sets a ladybug somewhere: it may be that Noah is no more likely to set a ladybug on Abigail than on himself, but also that neither Abigail nor Noah are as predictable a goal as, say, the ground. Exclusion of other possible endpoints could have falsely inflated the relative predictability of subject coreference for +contact items without having a commensurate effect on -contact items, for which the LPP described a location that was spatially discrete from the referent of its complement. Similarly, it might be that non-human goals are relatively more expected for location change events than non-human grounds are for perception events.

This potential confound could be resolved with an open-ended sentence completion task, which would also allow for inclusion of possession sentences. For this kind of task, two distinct predictions arise from the literature. If pronoun choice in LPPs is driven by the predictability of subject coreference *per se*, as suggested in Smith (2004), we would predict responses that corefer with the subject to be less frequent in sentence types that relatively favor the reflexive than in sentence types that relatively favor the personal pronoun. If it is rather directionality

⁹ Looking at Experiment 1 results, there is no significant difference in the naturalness of the reflexive and personal pronoun for *feel* items ($p=0.38$) while there is a significant difference for -contact perception items ($p<0.001$), for which the personal pronoun was strongly preferred.

that matters, as suggested in Lederer (2013), we would predict responses that spatially coincide with the referent of the subject, including reference to clothing or specific body parts, to be less frequent in sentence types that favor the reflexive.¹⁰

It should also be noted that even if the reference resolution task did successfully tap into participants expectations about the particular sentences included in the survey, it does not provide a measure of how predictable subject coreference is across different types of LPP sentences more generally. It could very well be the case that these two measures sometimes pull apart. Indeed, this is precisely what we find for subject coreference in simple transitive sentences. Consider for example the context-sentence pair in (269), which was included as a control on Experiment 3.

(269) *Context: Mia and Evan built a fire pit in their backyard. They decided to break it in by making s'mores.*

Evan burned one of them.

‘Evan’ was far and away the most common resolution provided for this sentence, accounting for over 90% of responses. However, the predictability of subject coreference in this particular sentence is at odds with the predictability of subject coreference in simple transitive sentences generally, for which disjoint reference is much more frequent (Ariel 2008). It is the latter tendency that is generally assumed to have given rise to the grammatical requirement for reflexive marking across transitive sentences, thus overriding effects of expectation at the sentence level.

While the choice between subject-oriented reflexives and personal pronouns has not been grammaticalized in LPPs, the relative frequency of subject coreference at the level of sentence type could play a role in determining expectation and, in turn, general preferences between the

¹⁰ Perhaps one could say that a sentence like *John touched his head* also involves partial subject-object coreference, insofar as the referent of the object is a proper subpart of the referent of the subject. However, it is not clear from the literature whether/to what extent the likelihood of partial coreference is predicted to be relevant to pronoun choice.

two forms. Regardless of predictability of subject coreference in particular sentences used in survey, it might be the case that subject coreference is generally less frequent in location change sentences as compared to possession and perception sentences, or in +contact sentences as compared to -contact sentences.¹¹ It is furthermore possible that predictions generated on the basis of type-level frequency would not have shaped behavior on the reference resolution task, which foregrounded semantic expectation by prompting participants to imagine and complete a scene described by a sentence (and, thus, was really a matter comparing the likelihood of scenarios), while playing a significant role in the acceptability rating task, which asked participants to assess whether a sentence was something that someone would say (a matter of comparing the goodness of utterances). This opens up the interesting possibility that semantic expectation (world knowledge) and speech frequency (word knowledge) operate in parallel to determine pronoun preferences in English LPPs: the former shaping relative preferences observed across sentence types, the latter within sentence types. I leave it to future corpus studies to test this hypothesis.

4.4 Conclusion

Results of the reference resolution experiment allow us to further refine our predictive model of pronoun preferences in English LPPs by positioning the relative expectation of subject coreference alongside the effects of event type and spatial relation type reported in Chapter 2. In particular, the more expected subject coreference is, the worse is the reflexive relative to the personal pronoun. However, expectation as measured here was found not to correlate with verb

¹¹ It is worth noting here what we might mean by “+contact sentence” and “-contact sentence.” This distinction cannot be a property of prepositions: the preposition *around* was included in both +contact and -contact items in Experiments 1 and 2, and within these items we find an interaction between pronoun and relation type comparable to that observed across all items ($p < 0.001$). We also do not have evidence independent of pronoun preferences that suggests a difference in the syntactic expression of +contact and -contact relations. The distinction would thus have to be encoded at a semantic level of representation.

or relation type. It therefore remains an open question what lies at the heart of these two core factors. In the next and final chapter of this thesis, I lay out possible ways forward in addressing this question in future research, advocating for the view that the answer ultimately lies in the nature of the events themselves.

CHAPTER 5: FUTURE FRONTIERS IN LPP PRONOUN CHOICE

We have come to the conclusion of the present investigation into the impact of event type and relation type on the choice between subject-oriented reflexives and personal pronouns in English LPPs. At the outset, I introduced three main questions to be addressed in this thesis. First, to what extent do event type and relation type affect preferences between subject-oriented reflexives and personal pronouns in LPPs? Second, What should our binding theories look like considering what we find in LPPs? Third, why do event type and relation type affect pronoun preferences the way that they do?

The first question was answered through a pair of acceptability judgment surveys reported in Chapter 2. Findings revealed that both factors play a significant role in shaping pronoun preferences, resulting in the overall pattern captured once more in **Table 2-D**.

Table 2-D. Relative preferences between subject-oriented reflexives and personal pronouns in English LPPs, based on acceptability ratings from Experiments 1 and 2.¹

| | +contact | -contact |
|-------------|---|---|
| possession | Chloe had some glitter on ?her _i /?herself _i . | Chloe had some glitter next to ✓her _i /??herself _i . |
| perception | Chloe noticed some glitter on ?her _i /?herself _i . | Chloe noticed some glitter next to ✓her _i /??herself _i . |
| loc. change | Chloe poured some glitter on ??her _i /✓herself _i . | Chloe poured some glitter next to ?her _i /?herself _i . |

¹ '✓✓' marks strongly favored forms, '✓' marks weakly favored forms, '?' marks weakly disfavored forms, and '??' marks strongly disfavored forms.

Importantly, contrasts in acceptability were never as stark in LPPs as they are in simple transitive sentences, that is, even when one form was reliable preferred, the other was not altogether ruled out.

These findings served as the empirical starting point for tackling the second question in Chapters 2 and 3. Through careful consideration of the parses that are possible for LPPs across the sentence types considered here, as well as the pronoun licensing possibilities within those parses, I argued that our theory of binding must be such that both reflexives and personal pronouns are licensed in the expression of subject coreference within LPPs. This outcome allows us to rule out theories that presume strict complementarity between pronoun forms in local binding configurations. It also offers insight into the possible syntactic relations between pronoun and antecedent that remaining binding theories must be able to account for. With respect to antecedent-based theories, it motivates moving away from the notion of subjecthood in delimiting the local binding domain of the reflexive, favoring recent approaches that rather locate the domain boundary at the phase edge (under assumption that not all predication structures in English comprise phases). With respect to predicate-based theories, it calls for a distinction between lexical and functional predicates, with only the former constraining reflexive interpretation.

At this point, the third question on the table remains open. While we can be certain that both event type and relation type bear on LPP pronoun choice, it remains unclear why it should be so. The conventional wisdom permeating prior work casts the personal pronoun as the unmarked form for expressing subject coreference within English LPPs: it is morphophonologically simpler than the reflexive, perhaps also semantically simpler than the reflexive (e.g., Reuland 2011, Reuland and Winter 2009), it lacks the additional discourse requirements often argued to apply to the reflexive (e.g., Cantrall 1974, Kuno 1987, Reinhart & Reuland 1993), and it occurs much more frequently than the reflexive in English language

corpora (Haspelmath 2008, Lederer 2013²). Hence, we might reframe the third question as this: What is it about sentences expressing location change and direct contact that relatively favors use of the reflexive?

The conclusion reached in Chapter 3 suggests that the effects of event type and relation type on LPP pronoun preferences are not the byproduct of binding theory. As far as binding principles are concerned, both pronoun forms are perfectly viable in expressing coreference with the sentence subject. As a result, we cannot attribute differences across sentence types to complementarity imposed by Principles A and B, nor can this complementarity be called on in accounting for the overall gradience found for pronoun choice in LPPs. Findings from the reference resolution task reported in Chapter 4 suggest that the effects of event type and relation type are also not driven by functional pressures relating to the relative expectedness of subject coreference. It could yet be the case that the task design did not tap into the sort of expectation differences that would account for differences across sentence types; I have left it open for future corpus-based research to explore this possibility. However, as things stand, it would seem that the answer to our third question must be found elsewhere.

In this chapter, I will lay out some future directions for this line of work in pursuit of that answer. Section 5.1 will open by introducing another potential distinction between LPP sentences that could be responsible for the key effects explored here, namely the inclusion of a reflexivizing function in the derivation that requires use of the reflexive pronoun. This possibility will raise new questions that may be taken up in further investigation of LPP pronoun licensing. The first is whether there is evidence for inclusion of a reflexivizing function in LPP sentences of the sort considered here. The second is what constrains occurrence of the reflexivizing function, if it is available. Building from the latter question, Section 5.2 offers an

² With respect to third person masculine (*him, himself*) and first person singular (*me, myself*) subject-oriented pronouns across LPPs in the British National Corpus, Lederer (2013:496, table 8) reports counts of 1365 personal pronouns and 302 reflexives. Across all syntactic contexts and construals, Lederer (2013:496, fn. 8) reports counts of 285,105 personal pronouns and 40,988 reflexives.

overview of prior work exploring the semantic side of LPP pronoun choice, with particular focus on how pronoun choice relates to the nature of the events being described. The view from this work opens up room for future projects exploring the interplay between event structure and LPP pronoun choice, asking whether and to what extent different features of event structure feed into the preference pattern reported above. Section 5.3 concludes.

5.1 Reflexivization and LPP pronoun choice

In discussing the structure of the sentences under investigation here, I have focused on distinctions localized to the LPP, in particular its internal structure and where it attaches within the clause containing it. However, it could be the case that LPP pronoun choice is sensitive to structural distinctions found elsewhere in the clause. This section introduces one possibility to be explored in future research, namely inclusion of a reflexivizing function³ in the composition of the sentence, the semantics contribution of which is reflexivization, that is, enforcement of referential identity between two arguments.

In laying out this possibility, I will build from the prosody-based insights of Ahn (2015). Based on a combination of intuitive judgments and examples from NPR broadcasts, Ahn argues that English reflexives descriptively come in two types: local subject-oriented reflexives (LSORs), and all the rest. LSORs are distinguished by their extrametricality in broad focus contexts: where other DPs bear nuclear phrasal stress, LSORs do not, as illustrated in (270)-(271). As in Ahn, I use bolded underlined italics to indicate phrasal stress and ‘#’ to indicate infelicity due to violation of question-answer congruence.

- (270) *What happened in the kitchen?*
a. Remy accidentally burned *Maríe*.
b. #Remy accidentally *búrnéd* Marie.
(Ahn 2015:42)

³ I will use the terms “reflexivizing function” and “reflexivizer” interchangeably in this chapter.

- (271) *What happened in the kitchen?*
 a. #Remy_i accidentally burned **himself_i**.
 b. Remy_i accidentally **búrned** himself_i.
 (Ahn 2015:42)

Importantly, not all reflexives that take the sentence subject as their antecedent are LSORs. For example, reflexives that are separated from the subject by an island boundary bear phrasal stress just like any other DP, as shown in (272), where the reflexive appears in a coordinated structure.

- (272) *What happened in the kitchen?*
 a. Remy_i accidentally burned Marie and **himself_i**.
 b. #Remy_i accidentally burned **Marie** and himself_i.
 (cf. Ahn 2015:62)

Reflexives also bear phrasal stress when anteceded by a derived subject, as in (273).

- (273) *What happened at the meeting?*
 a. Liz_i was accidentally assigned to **herself_i**.
 b. #?Liz_i was accidentally **assigned** to herself_i.
 (cf. Ahn 2015:53, 106)

According to Ahn, these prosodic facts are rooted not in the nature of the reflexives themselves, but in “covert-overt” movement of LSORs to the specifier of a reflexive Voice head, or REFL, as shown in (274).⁴

- (274) [Remy_i ... [VoiceP ~~himself~~ REFL [_{VP} Remy_i accidentally burned himself_i]]].
 (cf. Ahn 2015:96)

This movement is said to be triggered by an EPP feature that obligatorily attracts a reflexive argument. In other words, whenever REFL is present, a reflexive must be present, too.

⁴ Charnavel & Bryant (2022) proposes that English also has a reflexivizer SELF that is not strictly associated with Voice and can therefore appear in non-verbal domains.

Ahn proposes that REFL denotes a reflexivizing function that imposes identity between the subject and reflexive object through an identity relation, IDENT, that takes the subject and reflexive as its arguments, as shown in (275).⁵

$$(275) \quad \llbracket \text{REFL} \rrbracket = \lambda P_{st}.\lambda x_e.\lambda y_e.\lambda e_s. [P(e) \ \& \ \text{IDENT}(x, y)]$$

(Ahn 2015:179)

That the English reflexive may in some cases be associated with reflexivization is not unique to Ahn's proposal. Spathas (2010) treats similar prosodic facts by proposing that the English reflexive is itself a reflexivizer when it serves as the object of a transitive verb. Under this kind of treatment—also pursued in, e.g., Bach & Partee (1980), Steedman (1985), Keenan (1987), Szabolcsi (1987), Zwarts (1991), Schlenker (2005), and Lechner (2012)—the reflexive is given a denotation along the lines of (276); rather than serving as the argument of the verb, the reflexive takes the relation denoted by the verb as its argument, effectively reducing the arity of the verb from two places to one.

$$(276) \quad \llbracket \text{himself} \rrbracket = \lambda R_{est}.\lambda x_e.\lambda e_s. [R(x)(x)(e)]$$

(Lechner 2012:22)

My aim here is not to adjudicate between these formal approaches; that I must leave to future work in this domain.⁶ What is important for the present discussion is simply the idea that the English reflexive is in some cases associated with reflexivization, and that this association may be detected in the prosodic behavior of the reflexive.

⁵ As shown in (274), Ahn (2015) takes the subject and reflexive object to merge within vP, before vP composes with REFL. However, the movement required for both arguments for subsequent saturation of REFL introduces complications for the proposed semantic derivation, as the traces left behind in vP must themselves be bound (see Heim & Kratzer 1998 for a standard semantic treatment of movement). These binding steps are not shown in Ahn's derivation (see p. 178 [106]); I leave it to future research to determine whether Ahn's proposal can be made compatible with inclusion of these steps.

⁶ For a comparison between the treatments of Ahn (2015) and Spathas (2010) with regard to their empirical coverage, see Ahn (2015:§4.5.3).

Ahn (2015) does not discuss subject-oriented pronouns within LPPs.^{7,8} However, evidence from *wh*-movement reveals that LPPs do not comprise islands in the types of sentences considered in the present study:

- (277) a. Which barrel did Mary see a snake under?
 b. Which barrel did Mary have a snake under?
 c. Which barrel did Mary put a snake under?

It is therefore syntactically possible for LPPs to host LSORs. Adhering to Ahn’s analysis, an LPP sentence such as (278a) would thus have the structure shown in (278b).

- (278) a. Chloe_i poured some glitter on herself_i.
 b. [Chloe_i ... [VoiceP ~~herself_i~~ REFL [vP ~~Chloe_i~~ poured some glitter on herself_i]]

Under this derivation, LPP sentences such as (278a) would be syntactically and semantically analogous to simple transitive sentences with reflexive objects such as (271b), *Remy accidentally burned himself*. We might then think of the LPP sentence as expressing a dynamic relation between referent of the subject and referent of the reflexive—just like the simple transitive sentence—with the string comprising the verb, direct object, and preposition acting as a complex predicate. Consistent with this view, observe in (279a) that the string *poured some glitter on* can be targeted by *do to* substitution just like the transitive verb in (279b). (Disjoint reference is used for illustration to avoid awkward repetition of the reflexive.)

- (279) a. What Chloe did to Richard was pour some glitter on him.

⁷ Ahn (2015:171) illustrates a derivation with REFL for the sentence *Ken introduced Angie to himself*, where *to herself* is identified as a PP. However, some work (e.g., Pollard & Sag 1992, Reinhart & Reuland 1993, Bader 2010) distinguishes between this sort of PP, where the preposition appears to be purely functional and does not have a clear spatial sense, and the LPPs under investigation in the present study, where the preposition has an evident semantic contribution apart from argument introduction and, hence, is treated as a lexical predicate in its own right.

⁸ Ahn (2015) does discuss LPP-internal reflexives that corefer with the direct object in location change sentences. In fact, based on prosody, Ahn argues that such reflexives are themselves LSORs, though the “local subject” is the subject of the small clause corresponding to the result state, thus lending more support to an SC complement analysis (cf. Section 3.4). Here I continue to use “subject-oriented” and “LSOR” to refer to pronouns that are anteceded by the subject of the matrix sentence.

b. What Remy did to Richard was burn him.

Hence, it is certainly plausible that at least some of the LPP sentences under investigation here involve reflexivization in their derivation. The presence or absence of a reflexivizer might then underlie the preference pattern reported in Chapter 2, summarized in **Table 2-D** above. More specifically, it could be the case that compatibility with reflexivization distinguishes those sentences in which the reflexive is consistently favored in the expression of subject coreference from sentences in which it is rather the personal pronoun that reliably wins out.

In light of this possibility, we are faced with two big questions that can be taken up in future research. The first is whether there is any evidence for reflexivization in English LPP sentences. I suggested above that compatibility with *do to* substitution may give us grounds for positing analogous treatments for simple transitive sentences and LPP sentences. However, *do to* substitution is not a foolproof diagnostic for structural compatibility with reflexivization. For one, it cannot be used with stative relations, including those expressed by simplex transitive verbs, even though they, too, allow LSORs:

- (280) a. Chloe_i admires herself_i.
b. Chloe admires Richard.
c. *What Chloe did to Richard was admire him.

Furthermore, *do to* substitution is possible for some sentences even when a complex two-place predicate cannot be formed:

- (281) a. Chloe poured glitter on Richard's shoes.
b. What Chloe did to Richard was pour glitter on his shoes.

Following Ahn (2015), the most reliable indicator of compatibility with reflexivization is the prosodic behavior of the reflexive pronoun. We would predict reflexive LPP complements to be extrametrical in broad focus contexts whenever the reflexive is an LSOR, that is, whenever the derivation includes a reflexivizing function. For example, in the sentence in (282a), we would predict phrasal stress to fall on the preposition rather than the reflexive LPP complement

(cf. Ahn 2015:119 [182]), in contrast with the prosodic pattern predicted for (282b), with the proper name LPP complement bearing stress.

(282) *What happened at daycare today?*

- a. Jayden_i stacked some books on top of himself_i.
- b. Jayden stacked some books on top of Kelly.

Another indicator is suggested in Charnavel & Bryant (2022). It is observed that syntactic contexts that permit LSORs do not permit logophoric reflexives, or reflexives that lack an overt local antecedent (cf. Pollard & Sag 1992, Reinhart & Reuland 1993). We see this for instance in the minimal pair in (283): whereas a reflexive can be used in a coordinated structure (283a) to corefer with the matrix sentence subject, it cannot be used to this same end in (283b) where it stands alone as the direct object of the embedded verb.⁹

(283) a. Max_i boasted that the queen invited Lucie and himself_i for a drink.

b. *Max_i boasted that the queen invited himself_i for a drink.

(Reinhart & Reuland 1993:670)

If LPP sentences are also compatible with a reflexivization, and if reflexivization is responsible for favoring the reflexive over the personal pronoun, we would predict the extent to which the reflexive is preferred over the personal pronoun in an LPP to correlate inversely with the acceptability of a logophoric reflexive in the same configuration. For example, we would predict the logophoric reflexive to be significantly worse in (284b), where it occurs in a configuration that strongly favors the reflexive in coreference with the local subject (i.e., *Jayden*; cf. (284a)), than in (285b), where the overall preference for the reflexive in expressing local subject

⁹ Reinhart & Reuland (1993) treat this contrast in terms of binding principles: the reflexive in (283b) is said to be subject to predicate-based Principle A, requiring coreference with the embedded subject, while the reflexive in (283a) is said to be exempt from binding principles (see also Pollard & Sag 1992). Motivated by comparison with French, we argue in Charnavel & Bryant (2022) that it is not Principle A that blocks the logophoric reflexive in (283b), but competition with a weak pronominal form; I refer the interested reader there for details surrounding this proposal. In formulating predictions for LPPs, I will focus specifically on the descriptive generalization that those contexts which permit LSORs do not permit logophoric reflexives.

coreference is weaker (cf. (285a)). (Acceptability markings on (284b) and (285b) reflect the judgments of myself and one other native English speaker; for us, the predict contrast is borne out.)

- (284) a. Kelly_i claimed that Jayden_k stacked some books on top of ??him_k/✓himself_k.
b. *Kelly_i claimed that Jayden_k stacked some books on top of herself_i.
- (285) a. Kelly_i claimed that Jayden_k stacked some books behind ?him_k/?himself_k.
b. ?Kelly_i claimed that Jayden_k stacked some books behind herself_i.

Importantly, tests for reflexivization in LPP sentences are somewhat complicated by the fact if it is possible, it cannot be obligatory. Recall that preferences for the reflexive over the personal pronoun are never as stark in LPPs as in simple transitive sentences, where the reflexive is syntactically required in the expression of subject coreference. Under the assumption that reflexivization requires use of the reflexive, it follows that a derivation without reflexivization must also be possible for LPP sentences, even for sentences in which the reflexive is generally preferred. As a result, we would expect to find mixed behavior in LPP sentences when it comes to both prosody and logophoric licensing, especially in sentences for which pronoun preferences are more variable.

The fact that reflexivization cannot be obligatory in LPP sentences leads us to the second big question: if it is possible, what are the conditions for its occurrence? According to Ahn (2015), REFL must be used whenever it can be used. Therefore, if inclusion of a reflexivizer were always possible for all of the LPP sentences considered in this study, we would expect to find a strong reflexive bias across the board, contrary to fact. Since the syntactic conditions for reflexivization appear to be met, i.e., since the LPPs are not islands, constraints on reflexivization would rather have to be attributed to some other aspect of LPP sentences.

Consider again *do to* substitution. Even if not a foolproof structural diagnostic, it can tell us something about the conditions that strongly favor the reflexive over the personal pronoun. As shown in (279a), repeated in (286a), *do to* substitution is perfectly natural with location change

sentences involving direct contact between figure and ground: in pouring glitter on Richard, Chloe has certainly done something to Richard. Recall that these same kinds of sentences turned up a reliable preference for the reflexive over the personal pronoun in expressing coreference between sentence subject and LPP complement. Importantly, *do to* substitution is less natural for location change sentences that do not involve direct contact, as in (286b). These same sentences turned up a weaker reflexive preference overall.

- (286) a. What Chloe did to Richard was pour some glitter on him. (= (279a))
 b. ?What Chloe did to Richard was pour some glitter next to him.

I take the correlation between *do to* compatibility and preference for the reflexive to signal that the latter is crucially sensitive to the meaning of the sentence, more specifically to the nature of the eventuality it describes.

5.2 Event structure and LPP pronoun choice

Whether or not reflexivization is involved in English LPP sentences, we are in any case pointed towards an account of LPP pronoun choice that factors meaning into the equation. This section introduces some of the ways in which the structure of the event described by a sentence—its participants and its spatial trajectory—have factored into prior work on pronoun choice in English LPPs, setting us up with additional questions that can be explored down the road.

Section 2.4.2.4 introduced the treatment provided in Kuno (1987). Here again is the gist of that treatment. Similar to more standard binding theories, Kuno proposes that the distribution of reflexive and non-reflexive pronouns in English is subject to a syntactic rule, stated in (74).

- (287) *Reflexive rule*: A [+reflexive] NP must be coindexed with a clause-mate NP that k-commands it. A [-reflexive] NP must be marked for disjoint reference with a clause-mate NP that precedes and k-commands it.
 (Kuno 1987:68)

Importantly, personal pronouns such as *her* are taken to be ambiguous between [+reflexive] and [-reflexive]. The personal pronoun in (75a), coindexed with the sentence subject, is treated as [+reflexive], just like the reflexive pronoun in (75b).

- (288) a. John_i put the blanket under him_i [+reflexive].
b. John_i put the blanket under himself_i [+reflexive].
(cf. Kuno 1987:68)

According to Kuno, the difference between the two sentences in (75) comes down to whether contact holds between John and the blanket: (75b) is said to require direct contact, for instance in a scenario in which John is attempting to hide the blanket with his body, while (75a) is neutral in this respect. To capture this difference, Kuno supplements with syntactic rule in (74) with the semantic constraint in (76).

- (289) *Semantic constraint on reflexives*: A [+reflexive] NP that ends with *-self/selves* can be used in English if and only if its referent is the direct recipient or target of the actions or mental states represented by the sentence.
(Kuno 1987:68)

Kuno's semantic constraint characterizes the role filled by of the referent of the pronoun in the event described by the sentence: the reflexive is used if the referent is a direct recipient or target, and the personal pronoun is used otherwise. Importantly, in all of the examples provided in Kuno, the referent of the pronoun also fills a second event role, namely the role assigned to its antecedent, the sentence subject. For example, in (75b), John is not only the recipient/target of the relocation of the blanket but also the agent responsible for that relocation.

Dual role assignment is front and center in the treatment of LPP pronoun choice put forth in Wilkins (1988). According to Wilkins, the function of the reflexive is to allow the assignment of multiple event roles (referred to there as *thematic roles*) to a single referent within a single thematic domain (cf. Jackendoff 1972). The distribution of the reflexive is thus said to be subject to the descriptive generalization stated in (290).

- (290) A reflexive anaphor and its antecedent must occur in the same thematic domain.
(Wilkins 1988:195)

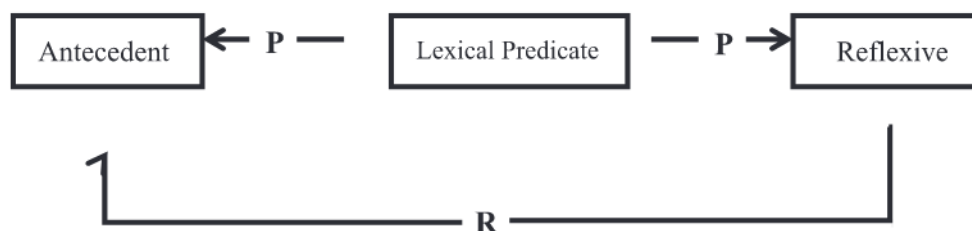
To see how this generalization is applied to LPP pronouns, consider the sentences in (291).

- (291) a. Ben saw a snake near him/*himself.
b. Ben put the blanket over ?him/himself.
(Wilkins 1988:194)

In (291a), Ben is assigned two roles, perceiver and location, but those roles are assigned in different thematic domains: the role of perceiver is assigned in the domain of *see*, while the role of location is assigned in the domain of *near*. Since the LPP is not assigned a role by the verb (that is, since the LPP is not necessary to the meaning of the verb), the domains of *see* and *near* are said to be distinct, and use of the reflexive is not warranted. In (291b), on the other hand, the LPP is assigned a role by *put*, expressing the endpoint of putting, such that the sentence subject and LPP complement fall within the same thematic domain. As a result, Ben is assigned two roles within the same domain, agent and location, and use of the reflexive is preferred.

Whereas Kuno (1987) and Wilkins (1988) frame their semantic treatments of LPP pronoun choice in terms of event roles, similar proposals in the tradition of Cognitive Grammar have focused also on event trajectory, or the way an event unfolds in space. Following Deane (1992), van Hoek (1997) eschews traditional syntactic constraints on English pronoun choice. In their place is a core reflexivization schema characterized by the semantic relationship between the pronoun and its antecedent. I illustrate this schema with the diagram in (292), taken from Lederer (2013).

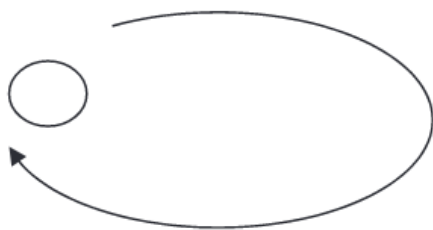
- (292) (Lederer 2013:489, adapted from Deane 1992:211)



Building on the insights of Kemmer (1993), van Hoek takes this schema to characterize events involving an “energetic interaction” between the antecedent and the pronoun—in other words, the initiator and endpoint of the action characterized by the lexical predicate are one and the same. The “circular” event trajectory associated with this kind of event is illustrated in Kemmer (1993) with the diagram in (293).

(293) (Kemmer 1993:52)

Initiator + Endpoint



According to van Hoek, the appearance of reflexives in LPPs follows from extension of the core reflexivization schema in (292). Importantly, such extension is taken to be possible only if the referent of the LPP pronoun is “construed as elaborating a participant in the energetic interaction profiled by the verb” (van Hoek 1997: 181); if the pronoun merely expresses a part of the ground, separate from the event itself, the personal pronoun must be used instead.

Like van Hoek, Lederer (2013: 519) argues that the use of the reflexive in LPPs signals a “circular energy transfer in which there is alignment between the Initiator and Endpoint of the event,” as in (294a). However, it is observed that some LPP sentences that seem to describe events fitting this spatial description nevertheless permit use of the personal pronoun, as in (294b).

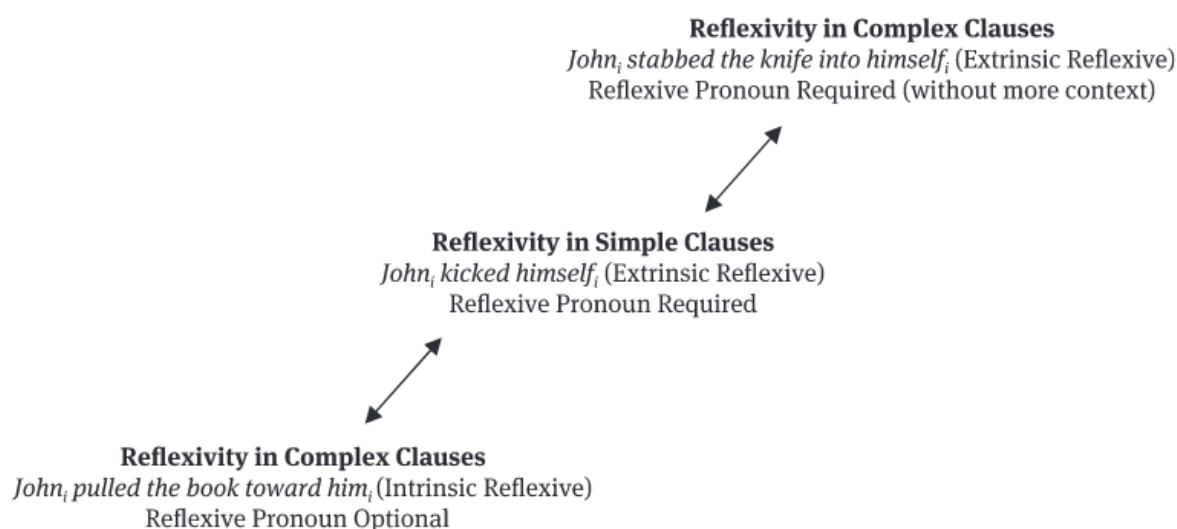
(294) a. John_i stabbed the knife into ???him_i/himself_i.

b. John_i pulled the book toward him_i/himself_i.

(Lederer 2013:517-19)

Lederer suggests that both kinds of sentences, categorized as “extrinsic” and “intrinsic” reflexive constructions respectively, belong to a common semantic network along with simple transitive sentences such as *John kicked himself*. Comprising three distinct constructions, these clause types are said to be semantically linked to one another by virtue of their shared functionality—namely, the expression of events with circular spatial schemas. The proposed network of reflexive clauses is shown in the diagram in (295).

(295) (Lederer 2013:520)



Though subtly different in their formulations, what is common across the proposals above is the idea that use of the reflexive is tightly linked to the expression of a particular kind of event, that is, an event in which one individual fills more than one role, resulting in a sort of circularity in the way the event unfolds in space. While these works focus on LPPs in the verbal domain, we in fact find evidence of a tight link between event structure and pronoun choice in English in the nominal domain, too—even when the nominal does not itself express an event, and even when the nominal does not contain overt representation of the antecedent.

Work in collaboration with Isabelle Charnavel investigated semantic restrictions on subject-oriented reflexives in so-called picture noun phrases (PNPs) such as *picture of himself*, *book about himself*, and, most importantly for the present study, *letter to himself*. Sentences such as

(296) were included in an online acceptability judgment survey (see Bryant & Charnavel 2020 for details).

- (296) a. Ellis enjoyed the letter to himself.
b. Ellis didn't like the portrait of himself.

Sentences in the survey were paired with short background contexts that established the creator of the object picked out by the picture noun phrase, for instance the author/sender of the letter to Ellis in (296a). Strikingly, we found that reflexives in sentences such as (296a), where the reflexive expresses a goal, are highly degraded whenever the antecedent was not the established author of the letter, even when there are no other possible overt antecedent present in the sentence:¹⁰

- (297) a. *Context: Ellis wrote himself a letter filled with words of encouragement.*
Ellis_i enjoyed the letter to himself_i. (M = 5.81/7)
b. *Context: Ellis's older sister wrote letters to everyone in their family.*
??Ellis_i enjoyed the letter to himself_i. (M = 3.24/7)

This is in contrast with what we see in sentences such as (296b), which are by and large acceptable regardless of whether the antecedent is the creator:

- (298) a. *Context: Ellis painted portraits of everyone in his family.*
Ellis_i didn't like the portrait of himself_i. (M = 6.09/7)
b. *Context: Ellis's older sister painted portraits of everyone in their family.*
Ellis_i didn't like the portrait of himself_i. (M = 5.68/7)

A subsequent online acceptability judgment survey showed that personal pronouns in *letter to* PNPs are similarly sensitive to the identity of the author (see Charnavel & Bryant 2022: fn. 69 for details). In particular, personal pronouns are significantly worse when they corefer with the author than when the antecedent is not the author:

¹⁰ Means shown in (297)-(299) are for sentences tested in the condition exemplified by the context/sentence pairs provided.

- (299) a. *Context: When Jack was young, he wrote a letter to his future self. His mom, Faye, kept the letter in her scrapbook of family mementos. Over the holidays, Jack looked through the scrapbook.*
 *Jack_i tore up the letter to him_i. (M = 2.4/7)
- b. *Context: When Faye was young, she wrote a letter to her brother Jack. Their mom kept the letter in her scrapbook of family mementos. Over the holidays, Jack looked through the scrapbook.*
 ?Jack_i tore up the letter to him_i. (M = 4.5/7)

The descriptive generalization that emerges for *letter to* PNPs is that use of the reflexive to express the intended recipient of the letter is fully acceptable only if the recipient is the same as the letter's sender, while use of the personal pronoun is fully acceptable only if the recipient is distinct from the sender.¹¹ This is not unlike what we find in sentences such as (300), where the directional PP expresses the intended recipient of the writing/sending events, though there the choice feels even more fixed.

- (300) a. Jack_i wrote a letter to *him_i/himself_i.
 b. Jack_i sent a letter to *him_i/himself_i.

Notice that while the sentences in (300) straightforwardly follow from the formal constraints and constructions introduced above, things aren't so clear for the PNP sentences in (297)-(299): while the referent of the PNP is associated with a transfer event (i.e., the transmission of information via the written modality) and is defined for an intended recipient, the PNP cannot

¹¹ In Bryant & Charnavel (2020, 2021) and Charnavel & Bryant (2022), we attribute the restrictions on pronoun choice in *letter to* constructions to the obligatory projection of a subject within the noun phrase. Under that treatment, the sentence in (296a) would have a structure as in (i.a), where the subject (pro) goes unpronounced. The structure is analogous to sentences such as (i.b) with an overt possessor.

- (i) a. Ellis_i enjoyed [the pro_i/*_k letter to himself_i].
 b. Ellis_i enjoyed [his_i/*_k letter to himself_i]

This analysis allows us to subsume these kinds of cases under a more general binding theoretic treatment of reflexives in picture noun phrases. However, it does not explain why these noun phrases obligatorily project subjects. One might say that syntactic representation of a goal as an object/oblique rather than as a subject is possible only if there is a subject that syntactically represents the source.

be said to express an action or mental state,¹² and it certainly does not contain a verb, nor does it fit the description of a reflexive clausal construction. However, it is clear that whatever is going on in LPPs in the verbal domain is playing a role here, too.

In short, the view from previous work on the semantic side of LPP pronoun choice suggests that event structure plays an important role in determining which pronoun form is favored in the expression of subject coreference: the reflexive is favored whenever its referent fills two distinct roles in the event, such that the event is construed as having a circular event trajectory, while the personal pronoun is favored otherwise. As a shorthand, I will characterize events that satisfy the semantic conditions for reflexive use as being reflexive in kind.

An immediate question is whether this view of LPP pronoun choice, which is rather categorical in nature, is amenable to the overall gradient preference pattern found in the acceptability judgment surveys. Across the LPP sentence types investigated here, neither pronoun form is ever entirely ruled out in the expression of subject coreference, even if one form is generally preferred over the other. Indeed, Lederer (2013: 516) notes from corpus findings that association between reflexive pronoun use and the description of an event that is reflexive in kind “should be qualified as a tendency rather than a rule.”

As acknowledged in Chapter 3, some of the gradience could be due to the availability of more than one LPP parse. While I argued that no parse syntactically precludes one or the other pronoun form, it is still the case that the interpretations corresponding to particular parses could diverge in the pronoun form that is ultimately favored. Consider for instance the sentence in (301).

(301) Michele_i pushed a pillow on top of her_i/herself_i.

¹² Note, too, that unless we assume covert representation of the antecedent within the noun phrase, as in Charnavel & Bryant (2022), the pronoun in sentences (297)-(299) is not k-commanded by its antecedent, as the sentence subject is not dominated by the NP dominating the pronoun. As a result, the pronoun is not [+reflexive] and, hence, Kuno’s (1987) semantic constraint in (76) is not predicted to apply.

The LPP in this sentence is compatible with two parses: a VP complement parse, in which the LPP expresses the endpoint of pushing, and a DP adjunct parse, in which the LPP helps pick out the book that was pushed but does not necessarily characterize where the book wound up. Under the former construal, the event described by the sentence fits the bill of being reflexive in kind, since the referent of the pronoun, Michele, fills two event roles (agent and recipient/endpoint) and the event follows a circular trajectory. Under the latter construal, Michele may not fill two roles, and the event may not have a circular trajectory, such that the personal pronoun may instead come out on top.

Even when the semantic conditions for reflexive use are met, the extent to which the reflexive is preferred could depend on factors that have been proposed to bear on LPP pronoun choice. In Chapter 4, we saw that pronoun choice in LPPs is sensitive to the relative expectedness of subject-coreference. Lederer (2013) provides the minimal pair in (294), repeated in (267), where the strength of the reflexive preference in a self-directed stabbing event is shown to depend on the nature of the implement which, in turn, determines how likely we are to expect the stabbing to be self-directed.

- (302) a. John_i stabbed the knife into himself_i/???him_i. (= (294a))
 b. John_i stabbed the needle into himself_i/?him_i.
 (Lederer 2013:519)

On the flip side, expectation can lead to a preference for the reflexive even in sentences that do not describe events that are reflexive in kind. Lederer exemplifies with the sentence in (303), where the event described does not have the circular schema associated with reflexive use, but the reflexive is nevertheless preferred over the personal pronoun.

- (303) John_i pulled the book away from himself_i/??him_i.
 (Lederer 2013:519)

According to Lederer, this follows from the fact that the direction of motion runs counter to the typical direction associated with the action described by the verb, such that subject coreference is relatively unexpected.

Though not investigated in the present study, it has also been observed that LPP pronoun choice may be sensitive to point-of-view. For example, Kuno (1987: 157) argues that the subject-oriented reflexives in LPPs are subject to a constraint requiring that the sentence containing them reflect the point-of-view of their antecedent, even when the semantic conditions for reflexive use are met (cf. Cantrall 1974). This constraint said to account for the contrast reported for the minimal pair in (304), where the reflexive is degraded when the antecedent is indefinite and, hence, identity of the referent is most likely unknown.¹³

- (304) a. Someone_i, who shall remain nameless, plastered mud all over himself_i and tried to frighten the ladies.
 b. (?)?Someone_i plastered mud all over himself_i and tried to frighten the ladies.
 (Kuno 1987:155)

Alongside the influence of competing parses and additional pressures on pronoun choice, it is possible that much of the gradience observed across LPP sentences—including the gradience stemming from the combined effects of event type and relation type—arises from the fact that the events described by LPP sentences fall in something of a grey area when it comes qualifying as reflexive in kind. Indeed, speaking to the difference between LPP sentences on the one hand and simple transitive sentences on the other, Kuno (1987:157) states that “the direct object of a verb is the target of the action or state represented by the verb to a much greater extent than the object of a preposition is the target of the action or state represented by the predicate.” Even when the events expressed by sentences containing LPPs are structurally similar to those expressed by simple transitive sentences, the nature of the interaction between the subject and LPP complement is less direct than the nature of the interaction between the subject and direct object. In other words, they don’t exactly fit the structure associated with “prototypical” reflexive

¹³ On the acceptability of these and similar sentence pairs, Kuno (1987:155) says the following: “There may be idiolectal variations on the native speakers’ judgments on the level of acceptability of the (b) sentences, but most speakers would agree that the (b) sentences are not as good as the corresponding (a) sentences unless the speaker knows the identity of the referent of *someone* [...] but has chosen not to reveal it.”

events, that is, events expressed by a simple transitive sentence where use of the reflexive is obligatory.

Hence, the problem of deciding which subject-oriented pronoun ought to be used in an LPP might be conceived of as a problem of categorization. Under this line of thinking, the choice between using a reflexive or personal pronoun in an event description is not unlike the choice between the object labels “cup” and “bowl” when describing rounded dishware. When it comes to cup/bowl categorization, multiple factors are likely to come into play, including its size, the height to width ratio, the presence of a handle, and how the object is being used in the moment. Similarly, when it comes to categorizing an event as reflexive in kind, the decision may come down to a number of factors relating to its structure. This includes not only the spatial trajectory of the event, but also the nature of the participants involved, for instance whether the participant picked out by the pronoun is considered the initiator of the event, and whether that participant is affected by the event. The more similar an event is to “prototypical” reflexive events, the more likely it is to be categorized as reflexive in kind and, hence, the more it is to be described using the reflexive pronoun.

To see how an approach to pronoun choice based on event structure could be applied to the LPP sentences investigated in this study, consider again the sentence in (305).

(305) Chloe_i poured some glitter on herself_i/??her_i.

Characteristic of location change sentences with direct contact, this sentence turned up a reliable preference for the reflexive over the personal pronoun. As we would expect under the semantic proposals summarized above, the event described by this sentence checks several boxes for counting as reflexive in kind. It can be said to follow a circular trajectory, beginning with Chloe picking up the glitter, and ending with the glitter falling back onto Chloe. With regard to event roles, Chloe is the agent of the pouring event, having initiated its occurrence, and she is affected by the pouring event, winding up in a more sparkly state than before.

The similarity of the event described in (305) to prototypical reflexive events is underscored by comparison with the sentences in (306), where the reflexive expresses the direct object of a transitive verb.

- (306) a. Chloe_i glittered herself_i.
b. Chloe_i covered herself_i in glitter.

There are subtle differences between these sentences and (305), according to my judgments at least. Chloe seems somehow more detached from her body in (306a), and more affected on the whole in (306b), and neither specifies the manner in which the glitter was applied. Nevertheless, there is certainly overlap in the set of events these sentences could be used to describe.

Furthermore, all three events are compatible with *do to* substitution, as shown in (307).

- (307) a. What Chloe did to Richard was pour glitter on him.
b. What Chloe did to Richard was glitter him.
c. What Chloe did to Richard was cover him in glitter.

Compare this to what we find for a sentence like (308), where we find a much weaker preference for the reflexive.

- (308) Chloe_i poured some glitter next to herself_i/her_i.

Here again Chloe is an agent, and the trajectory of the event is not far off from that of the event described by (305). But crucially, the trajectory isn't quite the same: the glitter does not land on Chloe, but somewhere in her vicinity. While Chloe may be affected in some way, for instance benefiting from having glitter at the ready for application to a waiting Valentine's Day card, she is not affected in the very clear physical sense that we get in (305). It is also much more difficult to come up with a transitive paraphrase in this case, and substitution with *do to* in (309) is a bit more stilted, requiring more contextual support to fill in exactly how it was that Richard was affected.

- (309) ?What Chloe did to Richard was pour glitter next to him.

While on the topic of location change sentences, I would like to return to an example encountered above, repeated here in (310).

(310) John_i pulled the book toward him_i. (= (294b))

Drawing from corpus findings, Lederer (2013) observes that the personal pronoun is more frequent than the reflexive in this kind of sentence, where the directionality indicated by the preposition matches with the directionality inherent to the verb, despite the sentence expressing what Lederer characterizes as the same kind of circular event schema as sentences like (305), where the reflexive is strongly favored. Sentences such as (310) are said to instantiate a distinct reflexive construction, involving “intrinsic” reflexivity, where the reflexivity comes about by virtue of the verb (cf. diagram in (295)). However, notice that the event described in (310) departs from sentences such as (305) not only with respect to the directionality of the verb, but also in the nature of the relation expressed by the preposition: whereas the glitter certainly reaches Chloe in (305), the book does not reach John in (310). Hence, though the book-pulling does begin with John, it doesn’t really end with him. It is therefore possible that the dispreference for the reflexive in (310) is due not to its association with a distinct reflexive construction but, rather, follows from the fact that it is not likely to be categorized as reflexive in kind.

Next consider the perception sentences in (311a-b).

- (311) a. Noah_i saw a ladybug on him_i/himself_i.
b. Noah_i saw a ladybug next to him_i/??himself_i.

Though the personal pronoun was found to be preferred overall in perception sentences, this preference was much weaker for sentences expressing direct contact. For (311a) in particular, the reflexive received higher ratings on the whole. Noah is not an agent in this case, and he cannot be said to be a part of the “energistic interaction” described (311a), since perception sentences do not describe an energistic interaction to begin with. However, we can think of

perception events as having trajectory. Indeed, some perception verbs are compatible with directional LPPs:

(312) I could see into my neighbor's living room through a hole in my wall.

In the event described by (311a), the trajectory of Noah's gaze ends at a ladybug on Noah and, therefore, at Noah himself. Furthermore, since the ladybug is not likely to take up the entirety of Noah's field of vision, we are likely to infer from (311a) that Noah also saw himself in the process, meaning that Noah may be said to fill two event roles, perceiver and percept. Together, these factors may be sufficient to warrant categorization of the perception event as reflexive in kind, prompting the reflexive to be favored over the personal pronoun. In the event described by (311b), on the other hand, the trajectory of perception does not end at Noah, and Noah does not obviously fill more than one event role. While the reflexive is not altogether ruled out, and may even still be preferred if other factors weigh in its favor, it gets no help from the semantics.

Finally, consider the possession sentences in (313).

(313) a. Chloe_i had some glitter on her_i/herself_i.

b. Chloe_i had some glitter next to her_i/??herself_i.

The events described by these sentences cannot be said to express a trajectory of any sort. Nevertheless, we find an effect of relation type that is commensurate with the effect observed for perception and location change sentences. My intuition is that the reflexive is most natural in sentences such as (313a) when the referent is in some sense responsible for the state of affairs expressed by the sentence, and is also affected by that state of affairs. Hence, what is shared with prototypical reflexive events is not the trajectory, but the dual roles associated with the referent of the pronoun. While a sense of causality may hold as well for sentences such as (313b), where direct contact does not hold, a sense of affectedness is much less likely to arise.

To summarize, it is possible that pronoun choice in English LPPs depends on whether the event described by the LPP is categorized as being reflexive in kind, which in turn depends on the similarity of the event to prototypical reflexive events with regard to its structure, including

it spatial trajectory and the nature of its participants. This hypothesis raises empirical questions that may serve as the basis for future work on LPP pronoun choice. First, is it the case that speakers judge LPP sentences that favor the reflexive in the expression of subject coreference to be more semantically similar to simple transitive sentences than LPP sentences that rather favor the personal pronoun? If so, what aspects of event structure drive the determination of similarity, and to what extent?

With regard to the second question, we may take the event features discussed in the works summarized above as the starting point for further experimental research on the factors shaping LPP pronoun choice. Following Kuno (1987), van Hoek (1997), and Lederer (2013), we would predict the likelihood of judging the referent of LPP complement to be a target or recipient to be higher for sentences that favor the reflexive than for sentences that favor the personal pronoun. Following van Hoek and Lederer, we would also predict the likelihood of judging the referent of the sentence subject to be an agent or initiator to be higher for sentences that favor the reflexive than for sentences that favor the personal pronoun. Finally, following Wilkins (1988), we would predict the likelihood of judging the referents of the subject and LPP complement to fill distinct roles in the eventuality described by the matrix verb phrase (whatever those roles may be) to be high for sentences that favor the reflexive than for sentences that favor the personal pronoun.

5.3 Conclusion

Though the question of what underlies the effects of event type and relation type on LPP pronoun preferences must remain open for now, this chapter introduced two lines of inquiry that may bring us closer to finding an answer. Section 5.1 discussed the possibility that preferences for the reflexive may follow from inclusion of a reflexivizing function in the derivation of the LPP sentence. Section 5.2 discussed the possibility that preferences for the reflexive may depend on event structure, in particular whether the event is construed as being reflexive in kind. It is important to note that these possibilities are not mutually exclusive: it

could be the case that reflexivization as described in Section 5.1 is the structural side of the reflexive event categorization described in Section 5.2. Let me emphasize as well that the ideas discussed in this chapter are compatible with a number of formal treatments, whether stated over syntax, semantics, or a combination of the two. However, no matter the course followed in future work on LPP pronoun choice, I would like to advocate for the view that an empirically adequate account will need to take semantics, and in particular event structure, into account. In this way, the study of pronoun choice in English LPPs promises not only to deepen our understanding of binding and reference in natural language, but also to shed important light on the richness of ways in which languages express events in space.

APPENDIX A: TARGET STIMULI FROM EXPERIMENTS 1 AND 2

The following table contains the 18 sets of target sentences included in Experiments 1 and 2, the acceptability rating surveys reported in Chapter 2, along with their accompanying background contexts. Sentences are categorized according to event type (possession, perception, location change) and relation type (+contact, -contact). Reflexive and personal pronouns are shown together in a single line, but note that pronoun forms were shown in separate sentences presented side-by-side in the surveys (see **Figure 1** and **Figure 5** in Chapter 2).

Table 7. Target stimuli used in Experiments 1 and 2.

| Set | Event Type | Relation Type | Context | Sentence (personal pronoun/reflexive) |
|-----|-----------------|---------------|---|---|
| 1 | Possession | +Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe had some glitter on her/herself. |
| 1 | Perception | +Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe noticed some glitter on her/herself. |
| 1 | Location Change | +Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe poured some glitter on her/herself. |
| 1 | Possession | -Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe had some glitter next to her/herself. |
| 1 | Perception | -Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe noticed some glitter next to her/herself. |
| 1 | Location Change | -Contact | Richard and Chloe made a mess decorating Valentine's Day cards in their kitchen. | Chloe poured some glitter next to her/herself. |
| 2 | Possession | +Contact | Marcus and Summer fell asleep in the living room. They woke up to find they had been moved to their beds. | Summer had a blanket over her/herself. |
| 2 | Perception | +Contact | Marcus and Summer fell asleep in the living room. They woke up to find they had been moved to their beds. | Summer saw a blanket over her/herself. |
| 2 | Location Change | +Contact | Marcus and Summer fell asleep in the living room. They woke up to find they had been moved to their beds. | Summer pulled a blanket over her/herself. |

Table 7. (Continued).

| | | | | |
|---|-----------------|----------|---|---|
| 2 | Possession | -Contact | Marcus and Summer were chatting on the patio when it started raining. | Summer had an awning over her/herself. |
| 2 | Perception | -Contact | Marcus and Summer were chatting on the patio when it started raining. | Summer saw an awning over her/herself. |
| 2 | Location Change | -Contact | Marcus and Summer were chatting on the patio when it started raining. | Summer pulled an awning over her/herself. |
| 3 | Possession | +Contact | Nathan and Michelle watched their friends' softball game from the uncomfortable metal bleachers. | Michelle had a cushion under her/herself. |
| 3 | Perception | +Contact | Nathan and Michelle played a game where Michelle was blindfolded and had to guess which objects Nathan was holding. While blindfolded, Michelle sat down on the playroom floor. | Michelle noticed a cushion under her/herself. |
| 3 | Location Change | +Contact | Nathan and Michelle watched their friends' softball game from the uncomfortable metal bleachers. | Michelle slid a cushion under her/herself. |
| 3 | Possession | -Contact | Nathan and Michelle sat in the children's area of the waiting room while they waited for their annual check-ups. | Michelle had a cushion next to her/herself. |
| 3 | Perception | -Contact | Nathan and Michelle sat in the children's area of the waiting room while they waited for their annual check-ups. | Michelle noticed a cushion next to her/herself. |
| 3 | Location Change | -Contact | Nathan and Michelle sat in the children's area of the waiting room while they waited for their annual check-ups. | Michelle slid a cushion next to her/herself. |
| 4 | Possession | +Contact | Ethan and Esther walked home after a long day at the neighborhood pool. | Esther had a towel around her/herself. |
| 4 | Perception | +Contact | Ethan and Esther played a game where Esther was blindfolded and had to guess which objects Ethan had given her. | Esther felt a towel around her/herself. |
| 4 | Location Change | +Contact | Ethan and Esther prepared to leave after a long day at the neighborhood pool. | Esther threw a towel around her/herself. |
| 4 | Possession | -Contact | Ethan and Esther sat in a popular spot of birdwatching in the local park. | Esther had some bird seed around her/herself. |
| 4 | Perception | -Contact | Ethan and Esther sat in a popular spot of birdwatching in the local park. | Esther saw some bird seed around her/herself. |
| 4 | Location Change | -Contact | Ethan and Esther sat in a popular spot of birdwatching in the local park. | Esther threw some bird seed around her/herself. |
| 5 | Possession | +Contact | Aiden and Maya checked their appearances in the window as they left the painting class. | Maya had some paint on her/herself. |

Table 7. (Continued).

| | | | | |
|---|-----------------|----------|---|--|
| 5 | Perception | +Contact | Aiden and Maya checked their appearances in the window as they left the painting class. | Maya saw some paint on her/herself. |
| 5 | Location Change | +Contact | Aiden and Maya hastily cleaned up at the end of their painting class. | Maya spilled some paint on her/herself. |
| 5 | Possession | -Contact | Aiden and Maya sat down at the arts and crafts table at camp. | Maya had some paint in front of her/herself. |
| 5 | Perception | -Contact | Aiden and Maya sat down at the arts and crafts table at camp. | Maya saw some paint in front of her/herself. |
| 5 | Location Change | -Contact | Aiden and Maya sat down at the arts and crafts table at camp. | Maya spilled some paint in front of her/herself. |
| 6 | Possession | +Contact | Caleb and Lauren tried to do homework outside on a windy day. | Lauren had some papers under her/herself. |
| 6 | Perception | +Contact | Caleb and Lauren walked through a long-abandoned library at night. | Lauren saw some papers under her/herself. |
| 6 | Location Change | +Contact | Caleb and Lauren tried to do homework outside on a windy day. | Lauren shoved some papers under her/herself. |
| 6 | Possession | -Contact | Caleb and Lauren sat down their uncle's cluttered dining room table. | Lauren had some papers next to her/herself. |
| 6 | Perception | -Contact | Caleb and Lauren sat down their uncle's cluttered dining room table. | Lauren saw some papers next to her/herself. |
| 6 | Location Change | -Contact | Caleb and Lauren sat down their uncle's cluttered dining room table. | Lauren shoved some papers next to her/herself. |
| 7 | Possession | +Contact | Tim and Hannah played hide and seek in their grandparents' attic. Tim searched while Hannah hid in the clutter. | Hannah had a rug on top of her/herself. |
| 7 | Perception | +Contact | Tim and Hannah played hide and seek in their grandparents' attic. Tim searched while Hannah hid in the clutter. | Hannah noticed a rug on top of her/herself. |
| 7 | Location Change | +Contact | Tim and Hannah played hide and seek in their grandparents' attic. Tim searched while Hannah hid in the clutter. | Hannah dragged a rug on top of her/herself. |
| 7 | Possession | -Contact | Tim and Hannah sorted through the old furniture stored in their parents' basement. | Hannah had a rug in front of her/herself. |
| 7 | Perception | -Contact | Tim and Hannah sorted through the old furniture stored in their parents' basement. | Hannah noticed a rug in front of her/herself. |
| 7 | Location Change | -Contact | Tim and Hannah sorted through the old furniture stored in their parents' basement. | Hannah dragged a rug in front of her/herself. |

Table 7. (Continued).

| | | | | |
|----|-----------------|----------|---|---|
| 8 | Possession | +Contact | Hunter and Zoey hosted a reptile show at the middle school spring fair. | Zoey had a snake around her/herself. |
| 8 | Perception | +Contact | Hunter and Zoey went camping in the rain forest. They woke up in the middle of the night to an unwelcome intruder. | Zoey felt a snake around her/herself. |
| 8 | Location Change | +Contact | Hunter and Zoey hosted a reptile show at the middle school spring fair. | Zoey wrapped a snake around her/herself. |
| 8 | Possession | -Contact | Hunter and Zoey hosted a reptile show at the middle school spring fair. | Zoey had a snake next to her/herself. |
| 8 | Perception | -Contact | Hunter and Zoey went camping in the rain forest. They woke up in the middle of the night to an unwelcome intruder. | Zoey saw a snake next to her/herself. |
| 8 | Location Change | -Contact | Hunter and Zoey hosted a reptile show at the middle school spring fair. | Zoey set a snake next to her/herself. |
| 9 | Possession | +Contact | Josh and Kaitlyn washed up after tending to the chickens on their farm. | Kaitlyn had some feathers on her/herself. |
| 9 | Perception | +Contact | Josh and Kaitlyn washed up after tending to the chickens on their farm. | Kaitlyn noticed some feathers on her/herself. |
| 9 | Location Change | +Contact | Josh and Kaitlyn decided to dress up as farm animals for Halloween. Josh went as a cow, and Kaitlyn went as a chicken. | Kaitlyn glued some feathers on her/herself. |
| 9 | Possession | -Contact | Josh and Kaitlyn decorated their booths at the farmers market, where they both sold eggs from their farms. | Kaitlyn had some feathers over her/herself. |
| 9 | Perception | -Contact | Josh and Kaitlyn set up their booths at the farmers market, where they both sold eggs from their farms. | Kaitlyn noticed some feathers over her/herself. |
| 9 | Location Change | -Contact | Josh and Kaitlyn decorated their booths at the farmers market, where they both sold eggs from their farms. | Kaitlyn glued some feathers over her/herself. |
| 10 | Possession | +Contact | Jasmine and Logan spent the day making cookies for an upcoming bake sale. | Logan had some flour on him/himself. |
| 10 | Perception | +Contact | Jasmine and Logan cleaned up their kitchen after spending the day baking cookies for an upcoming bake sale. | Logan felt some flour on him/himself. |
| 10 | Location Change | +Contact | Jasmine and Logan spent the day making cookies for an upcoming bake sale. By the last batch, they were both feeling a little silly. | Logan sprinkled some flour on him/himself. |
| 10 | Possession | -Contact | Jasmine and Logan decided to bake a loaf of bread. As Logan mixed the ingredients, Jasmine prepared to knead the dough. | Logan had some flour in front of him/himself. |

Table 7. (Continued).

| | | | | |
|----|-----------------|----------|---|---|
| 10 | Perception | -Contact | Jasmine and Logan cleaned up the kitchen after spending the day baking cookies. Logan inspected the counters while Jasmine swept the floor. | Logan saw some flour in front of him/himself. |
| 10 | Location Change | -Contact | Jasmine and Logan decided to bake a loaf of bread. As Logan mixed the ingredients, Jasmine prepared to knead the dough. | Logan sprinkled some flour in front of him/himself. |
| 11 | Possession | +Contact | Ava and Ryan played dress-up in their grandfather's clothes. | Ryan had a medal on him/himself. |
| 11 | Perception | +Contact | Ava and Ryan played a game where they dress each other up in their grandfather's clothes. Ryan covered his eyes while Ava made his costume. | Ryan felt a medal on him/himself. |
| 11 | Location Change | +Contact | Ava and Ryan played dress-up in their grandfather's clothes. | Ryan pinned a medal on him/himself. |
| 11 | Possession | -Contact | Ava and Ryan had their photos taken in front of a display board at the war museum. | Ryan had a medal behind him/himself. |
| 11 | Perception | -Contact | Ava and Ryan had their photos taken in front of a display board at the war museum. | Ryan noticed a medal behind him/himself. |
| 11 | Location Change | -Contact | Ava and Ryan had their photos taken in front of a display board at the war museum. | Ryan pinned a medal behind him/himself. |
| 12 | Possession | +Contact | Olivia and Tyler sat on the front porch at a house party. | Tyler had a flask under him/himself. |
| 12 | Perception | +Contact | Olivia and Tyler sat down on an old sofa at a house party. | Tyler felt a flask under him/himself. |
| 12 | Location Change | +Contact | Olivia and Tyler were sitting on the front porch at a house party when the a police car drove past. | Tyler pushed a flask under him/himself. |
| 12 | Possession | -Contact | Olivia and Tyler sat on the front porch at a house party. | Tyler had a flask behind him/himself. |
| 12 | Perception | -Contact | Olivia and Tyler sat on the front porch at a house party. | Tyler saw a flask behind him/himself. |
| 12 | Location Change | -Contact | Olivia and Tyler were sitting on the front porch at a house party when the a police car drove past. | Tyler pushed a flask behind him/himself. |
| 13 | Possession | +Contact | Sophia and Aaron napped under a cherry tree on a sunny spring day. | Aaron had some flowers on top of him/himself. |
| 13 | Perception | +Contact | Sophia and Aaron napped under a cherry tree on a sunny spring day. They woke up when the wind picked up. | Aaron saw some flowers on top of him/himself. |

Table 7. (Continued).

| | | | | |
|----|-----------------|----------|---|---|
| 13 | Location Change | +Contact | Sophia and Aaron played under a cherry tree on a sunny spring day. | Aaron gathered some flowers on top of him/himself. |
| 13 | Possession | -Contact | Sophia and Aaron napped under a cherry tree on a sunny spring day. | Aaron had some flowers around him/himself. |
| 13 | Perception | -Contact | Sophia and Aaron napped under a cherry tree on a sunny spring day. They woke up when the wind picked up. | Aaron saw some flowers around him/himself. |
| 13 | Location Change | -Contact | Sophia and Aaron played under a cherry tree on a sunny spring day. | Aaron gathered some flowers around him/himself. |
| 14 | Possession | +Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah had a ladybug on him/himself. |
| 14 | Perception | +Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah noticed a ladybug on him/himself. |
| 14 | Location Change | +Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah set a ladybug on him/himself. |
| 14 | Possession | -Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah had a ladybug next to him/himself. |
| 14 | Perception | -Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah noticed a ladybug next to him/himself. |
| 14 | Location Change | -Contact | Abigail and Noah drank lemonade on their front porch, surrounded by all sorts of summer bugs. | Noah set a ladybug next to him/himself. |
| 15 | Possession | +Contact | Naomi and Michael hid from their babysitter in their mom's office. | Michael had some newspapers over him/himself. |
| 15 | Perception | +Contact | Naomi and Michael hid from their babysitter in their mom's office. Naomi covered Michael with whatever she could find. | Michael felt some newspapers over him/himself. |
| 15 | Location Change | +Contact | Naomi and Michael hid from their babysitter in their mom's office. | Michael laid some newspapers over him/himself. |
| 15 | Possession | -Contact | Naomi and Michael attempted to tie dye some old shirts in their garage. | Michael had some newspapers around him/himself. |
| 15 | Perception | -Contact | Naomi and Michael explored a long-abandoned movie theater. While Naomi checked out the stage, Michael took pictures of an office. | Michael noticed some newspapers around him/himself. |
| 15 | Location Change | -Contact | Naomi and Michael attempted to tie dye some old shirts in their garage. | Michael laid some newspapers around him/himself. |
| 16 | Possession | +Contact | Emily and Brian gathered supplies at base camp as they prepared for their climb up the mountain. | Brian had a rope around him/himself. |

Table 7. (Continued).

| | | | | |
|----|-----------------|----------|--|--|
| 16 | Perception | +Contact | Emily and Brian slept on a cliff face during their multi-day climb up the mountain. Groggy as they woke up, it took a moment to remember where they were. | Brian felt a rope around him/himself. |
| 16 | Location Change | +Contact | Emily and Brian gathered supplies at base camp as they prepared for their climb up the mountain. | Brian tied a rope around him/himself. |
| 16 | Possession | -Contact | Emily and Brian gathered supplies at base camp as they prepared for their climb up the mountain. | Brian had a rope next to him/himself. |
| 16 | Perception | -Contact | Emily and Brian gathered supplies at base camp as they prepared for their climb up the mountain. | Brian saw a rope next to him/himself. |
| 16 | Location Change | -Contact | Emily and Brian gathered supplies at base camp as they prepared for their climb up the mountain. | Brian placed a rope next to him/himself. |
| 17 | Possession | +Contact | Amelia and Jason took a nap between classes in the chilly student center. | Jason had a shawl over him/himself.. |
| 17 | Perception | +Contact | Amelia and Jason took a nap between classes in the chilly student center. They woke up to find that someone had covered their eyes while they slept | Jason noticed a shawl over him/himself.. |
| 17 | Location Change | +Contact | Amelia and Jason worked on a problem set together in the chilly student center. | Jason draped a shawl over him/himself.. |
| 17 | Possession | -Contact | Amelia and Jason picnicked under some make-shift canopies in a wooded part of the park. | Jason had a shawl over him/himself.. |
| 17 | Perception | -Contact | Amelia and Jason picnicked under some make-shift canopies in a wooded part of the park. | Jason noticed a shawl over him/himself.. |
| 17 | Location Change | -Contact | Amelia and Jason set up some make-shift canopies in a wooded part of the park. | Jason draped a shawl over him/himself. |
| 18 | Possession | +Contact | Alyssa and Jayden made a game out of tidying their playroom, sorting everything into several little piles. | Jayden had some books on top of him/himself. |
| 18 | Perception | +Contact | Alyssa and Jayden made a game out of tidying their playroom. Alyssa piled toys on Jayden, and Jayden tried to guess what they were | Jayden felt some books on top of him/himself. |
| 18 | Location Change | +Contact | Alyssa and Jayden made a game out of tidying their playroom, sorting everything into several little piles. | Jayden stacked some books on top of him/himself. |
| 18 | Possession | -Contact | Alyssa and Jayden dug through boxes in their parents' storage unit, pulling out things they wanted to keep. | Jayden had some books behind him/himself. |
| 18 | Perception | -Contact | Alyssa and Jayden explored their parents' storage unit, looking for things they would like to keep. | Jayden noticed some books behind him/himself. |
| 18 | Location Change | -Contact | Alyssa and Jayden dug through boxes in their parents' storage unit, pulling out things they wanted to keep. | Jayden stacked some books behind him/himself. |

APPENDIX B: DIAGNOSTICS FOR SMALL CLAUSE COMPLEMENTATION

This appendix introduces a set of 10 tests that aim to pick out small clause (SC) complements. While all but one of these tests has been drawn from prior work, to the best of my knowledge, no work has presented more than a handful of tests simultaneously. As we will see, results from these tests do not always converge, and interpreting the outcome of these tests is not always clear-cut. Therefore, this appendix serves as a thorough (though not complete¹) overview of the sort of evidence that has been brought to bear on SC complementation, providing a helpful resource for future work in this domain.

Two kinds of tests will be introduced. First are tests asking whether DP2 and the subsequent predicate comprise a syntactic constituent. Second are tests asking whether DP2 behaves like a syntactic subject. To see how these tests work, I will apply them to sentences with *consider* and *imagine*, both of which have been argued to take SC complements and have played a prominent part in prior work exploring the characteristics of purported SC complements. The goal is not to establish a foolproof battery for identifying small clause complements, but to present a cluster of characteristics that can help decide whether a small clause analysis is at all reasonable for a given complement.

B.1 Constituency tests for small clause complements

Let's begin with tests for syntactic constituency. I will walk through six tests targeting whether DP2 and the secondary predicate together form a constituent: *coordination*, *right-node-raising*,

¹ There are two tests presented in Culicover & Jackendoff (2005) that didn't make it into this overview: insertion of an adverbial between verb and complement, and so scopal ambiguity. I also left out the test for derived subjecthood, which shows roughly the same thing as the a-thematicity test, as well as the object deletion test, both presented in Clark & Jager (2000).

*phrasal integrity, pseudoclefting, proform substitution, and restitutive again.*² It is important to note that while all of these tests have been argued to pick out phrasal constituents (small clauses in particular, in the case of the latter two), they do not necessarily target constituents of the same syntactic category and may be sensitive to semantic distinctions independent of clausal status. As a result, successes and failures should be considered cumulatively rather than in isolation.

> COORDINATION. Among the most commonly used diagnostics for syntactic constituency, this test asks whether a string can be coordinated with another string of like category using connective such as *and*. Bowers (1993) invokes the coordination test to argue in favor of analyzing sentences with *consider* as involving SC complementation, providing the examples in (315)-(315). (Here and throughout this section, I use brackets to mark the strings under consideration for constituency.)

(314) I consider [John a fool].

(Bowers 1993: 593 [4a])

(315) Mary considers [John a fool] and Bill a wimp.

(Bowers 1993: 602 [16a])

In (316), we see that coordination is likewise possible for predicates embedded under *imagine*.

(316) a. I imagined [Robin drunk].

b. I imagined Sue laughing and [Robin drunk].

While the coordination facts are consistent with treating the complements of *consider* and *imagine*, it has been pointed out in numerous places in the literature that coordination is also apparently possible for strings that are not generally considered to comprise constituents (see,

² See Osborne (2018) for a great overview of several classic constituency tests, including the first four of the tests listed here, along with illustrative examples and numerous reference to works in which those tests have been used.

e.g., Baker 1989, McCawley 1998, Adger 2003, Carnie 2010, Sportiche et al. 2014). This is shown for instance in (317), where coordination appears to join a sequence of phrases.

- (317) Martha went [to Austin on Thursday] and [to Dallas on Friday].
(Baker 1989: 425)

Seeming examples of non-constituent coordination are typically treated as instances of compositional mechanisms distinct from coordination proper³ (e.g., Clark & Jager 2000, Milward 1994, Beavers & Sag 2004, Sportiche et al. 2014). The difficulty is determining from surface structure alone what mechanism was used. Hence, we should not take coordination as a knock-down argument in favor of constituency. However, under the assumption that coordination is always successful for constituents, we can take failure to coordinate as evidence *against* constituency.

> RIGHT-NODE-RAISING. Right-node-raising (henceforth, RNR) tests whether a sentence-final string can appear to the right of a coordinated structure. Bowers (1993, 2001) appeals to RNR as further evidence in favor of an SC complement analysis of *consider*, offering the example in (318). In (319), we see that RNR is also possible for predicates under *imagine*.

- (318) Most people probably consider, even though the courts didn't actually find, Klaus von Bulow guilty of murder.
(Bowers 1993: 605 [22e])
(319) I can imagine, but can't describe, [Robin drunk].

But as with coordination, it has long been observed that RNR does not appear to be limited to constituents (Grosu 1976, Abbott 1976, Wilder 1997, Chaves 2014, Citko 2017). Abbot (1976)

³ Bowers (2001: 604) argues against a “gapping” analysis of the sentence in (315), suggested in Gazdar et al. (1982) and Jackendoff (1990). I refer the interested reader there for details of the alternative analysis and arguments against it.

provides the sentences in (320) as counterexample to claim that RNR uniquely target single constituents.⁴

- (320) a. Mary baked, and George frost, [20 cakes in less than an hour].
b. Smith loaned, and his widow later donated, [a valuable collection of manuscripts to the library].
(Abbot 1976: 639 [4])

Interestingly, Bowers (1993: 604 [22a]) draws a different conclusion with respect to the sentence in (320b), taking it as evidence that objects and their complements (here, *a valuable collection of book* and *to the library*, respectively) do in fact form a constituent, along with a trace of the verb. This discrepancy speaks to the difficulty of interpreting these tests; to some extent, it seems that constituency is in the eye of the beholder.

> PHRASAL INTEGRITY. The phrasal integrity test for SC complementation comes to us from Stowell (1983). In the examples in (321), Stowell observes that an adverb licensed in the matrix clause cannot intervene between DP2 a predicate complement, suggesting that the DP and predicate together comprise a syntactic constituent. In contrast, intervention between DP2 and an infinitival complement is shown to be acceptable in the object control constructions in (322), where DP2 is taken to be an object of the verb rather than subject of the embedded predicate.

- (321) a. *I consider [the mayor myself foolish]
b. *I want [him very much off my ship]
c. *We feared [John with great concern killed by the enemy].
(Stowell 1983: 300)
- (322) a. Ann told [David early in the morning to call his mother].
b. I persuaded [Bill myself to leave].

⁴ Abbot (1976) also illustrates this point with the example in (v) (see also Citko 2017).

(ii) Smith loaned, and his widow later donated, a valuable collection of manuscripts to the library. On the other hand, Bowers (1993: 604 [22a]) uses the exact same sentence as an argument that objects and their complements (here, *a valuable collection of book* and *to the library*, respectively) do form a constituent, along with a trace of the verb. This discrepancy speaks to the difficulty of interpreting these tests; to some extent, it seems that constituency is in the eye of the beholder.

(Stowell 1983: 300)

Alongside Stowell's examples, I add the examples in (323) and (324), which show intervention in the complement of *imagine* with a temporal adverb (*yesterday*) and manner adverb (*vividly*).⁵ Judgments varied across the people consulted on these sentences, as shown in the adjacent arrays, where each cell corresponds to a particular consultant. Ratings were higher in (323) with the predicate *wearing a funny hat* than in (324) with the predicate *drunk*, suggesting that the weight of the predicate may bear on the acceptability of adverbial intervention. On the whole, though, it seems that intervention is generally marked under *imagine*, consistent with a small clause analysis.

(323) a. %?I imagined Robin yesterday wearing a funny hat.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 5 | 3 | 4 | | |
|---|---|---|---|--|--|

b. %?I imagined Robin vividly wearing a funny hat.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 2 | 4 | | |
|---|---|---|---|--|--|

(324) a. %??I imagined Robin yesterday drunk.

| | | | | | |
|--|---|---|---|---|--|
| | 3 | 2 | 1 | 2 | |
|--|---|---|---|---|--|

b. %??I imagined Robin vividly drunk.

| | | | | | |
|--|---|---|---|---|--|
| | 3 | 2 | 3 | 2 | |
|--|---|---|---|---|--|

Of course, it is well known that adverbs also cannot generally intervene between a verb and its direct object in English, as illustrated in Bowers' examples in (325).

(325) a. John spoke French intimately to Mary.

b. *John spoke intimately French to Mary.

(Bowers 1993: 609 [39a-b])

We certainly wouldn't take the string *spoke French* to be an SC complement. According to Stowell (1981), intervention is in the case ruled out not by phrasal integrity, but by obligatory adjacency between the English verb and a nominal to which the verb assigns accusative case. Bowers (1993) argues that the restriction rather follows from the assumptions that adverbs

⁵ Two kinds of adverbs were considered in order to control for potential effects of adverbial adjunction height on intervention possibilities, the assumption being that temporal adverbs merge higher in the syntax than do manner adverbials (cf. Jackendoff 1972, Bowers 1993, 2001). At least in this pair of sentences, we do not find a clear difference between the two.

strictly adjoin to bar levels, direct objects merge in Spec,V, and verbs raise to the Pr head that is sister to V (for illustration, see the tree in Bowers 1993: 611). No matter the cause, the outcome for us is that we cannot take phrasal integrity as positive evidence for SC complementation. However, we may take free allowance of adverbial intervention as evidence against SC complementation.

> PSEUDOCLEFTING. Pseudoclefting tests whether a string can be focused by placing it after the copula in a sentence containing a free relative clause as its subject. Culicover & Jackendoff (2005) observe in (326) that pseudoclefting distinguishes between sentences with *imagine* and *consider*, marking the former as acceptable and the latter as unacceptable. (Notice that the use of *what* rules against a reading of (326a) in which *Robin* alone is focused, with *drunk* serving as a predicative adjunct.)

- (326) a. What I imagined was [Robin drunk].
 b. *What I considered was [Robin drunk].
 (Culicover & Jackendoff 2005: 132 [46])

This discrepancy is surprising if we assume that both *imagine* and *consider* embed clausal complements, and that all clausal complements are alike in nature. Culicover & Jackendoff (2005) opt to abandon the former assumption, advocating instead for a flat predication analysis of sentences with *consider*. However, one could just as well let go of the latter assumption. It is undeniably true that the complements of *imagine* and *consider* diverge in significant ways. As captured in (327), *imagine* and *consider* differ with respect to the kind of predicate they can embed: whereas *imagine* occurs with stage-level predicates, *consider* can only take individual-level predicates.⁶

⁶ This selectional difference is obscured in the example from Culicover & Jackendoff (2005), which uses the adjectival predicate *drunk*. As Kratzer (1995) discussed, some predicates are compatible with both individual-level and stage-level interpretations, the distinction being whether the predication is part of an event description. I take *drunk* to be such a predicate.

- (327) a. Chloe considered Abby *sneezing/a genius.
 b. Chloe imagined Abby sneezing/*a genius.

Another way of putting it: the complement of *imagine* can describe an event, but the complement of *consider* cannot. Similarly, (328) show that *imagine* is compatible with simple DP complements—no secondary predicate needed—while *consider* is not.

- (328) a. *Chloe considered Abby.
 b. Chloe imagined Abby.

Together, these examples suggest that the complement of *imagine* expresses an individual, whether an event or entity (or anything else imageable). But this is not the case for the complement of *consider*. This opens up the possibility that the complement of *consider* is simply the wrong syntactic/semantic type to participate in pseudoclefting, even if constituency does hold between DP2 and the secondary predicate.⁷

> PROFORM SUBSTITUTION. Proform substitution tests whether a string can be replaced by a definite proform such as *it*, *there*, and *then*. The choice of form comes down to the meaning of the string being targeted: for SC complements that express events, the proform *that* is semantically appropriate. Perhaps unsurprisingly, we see in (329) that substitution with *that* is possible for the complement of *imagine* but not for the complement of *consider*.

- (329) a. I imagined [Robin drunk]. Sue imagined that, too.
 b. *I considered [Robin drunk]. Sue considered that, too.

As with pseudoclefting, this contrast could follow from the fact that the complement of *consider* does not express an event, whereas the complement of *imagine* does.

⁷ Note that the contrast in (326) is not predicted by the proposals pursued in Basilico (2003) and Yokogoshi (2007), where individual- and stage-level SC complements are distinguished by their internal structure but not by their category nor their semantic type. The contrast is also not predicted by Bowers (1993, 2001), which would treat the complements of *consider* and *imagine* as syntactically parallel (semantics are not discussed).

Before moving on, let me emphasize the importance of proform choice to this test. Along with providing positive evidence for constituency, it also tells us something about the denotation of the expression it targets. In (330), we see that a personal pronoun such as *her* must be used when the complement of *imagine* lacks a secondary predicate, that is, when the complement strictly denotes an entity rather than an event.

(330) I imagined [Robin]. Sue imagined her/#that, too.

This detail will come in handy down the road in teasing apart event-denoting clausal complements from entity-denoting nominal complements.

> ‘AGAIN’ SCOPE. Prominent in the literature on resultative constructions, this test asks whether the adverb *again* can target just the state denoted by the purported clausal complement, rather than the action or attitude expressed by the matrix verb (Beck & Johnson 2004, Harley 2008, Citko 2011, Copley & Harley 2015; cf. Bruening 2018). For example, in the sentence in (331), *again* can target the state of Maria possessing the ball, conveying that she has had it before, rather than the event of someone kicking Maria the ball.

(331) Maria started the game with the ball, but kicked it to someone else. For ten minutes, others had the ball. Finally, someone kicked her the ball again.
(Bruening 2018: 10 [26])

Beck & Johnson (2004) take the availability of restricted scope readings as evidence in favor of analyzing double object constructions as involving small clause complements. Syntactically speaking, this pattern would follow from attachment ambiguity: either *again* attaches to the matrix VP, giving rise to a repetitive reading (e.g., someone kicked Maria the ball before) or it attaches to the small clause complement, giving rise to the restitutive reading (Maria had the ball before). Evidence for a syntactic analysis of this phenomenon comes from stranding: under ellipses, only the repetitive reading survives:

- (332) Maria started with the ball, but then no one kicked it to her for a long time. Finally,
#Jorge did again.
(Bruening 2018: 10 [28])

While this test has largely been applied to resultative constructions in prior literature, judgments collected on the sentences in (333) and (334) reveal that the restricted scope reading is also generally available for sentences with *imagine* and *consider*.

- (333) *Robin sneezed on the cake at last year's end of term party. Thinking forward to this year's party ...* %Mary imagined Robin sneezing on the cake again.

| | | | | | |
|---|---|---|---|--|--|
| 4 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

- (334) *Mary was fluent in French in high school, but she grew rusty during college. When she began school, her advisor did not consider her fluent. But Mary practiced a lot, so that by the time she graduated ...* %her advisor considered her fluent again.

| | | | | | |
|---|---|---|---|--|--|
| 3 | 5 | 5 | 5 | | |
|---|---|---|---|--|--|

It is important to note that the efficacy of the restitutive *again* test in picking out SC complements has been a matter of ample debate. Bruening (2018) argues against it on the basis of comparison with another modifier, *for X time*, which has also been treated as a small clause diagnostic on par with restitutive *again* (Harley 2008, Copley & Harley 2015). Unlike restitutive *again*, *for X time* does survive ellipses:

- (335) Megan loaned him a car for a week, and I did for a month.
(Bruening 2018:)

We might take (335) to signal that *for X time* is simply always “high,” its contribution akin to *temporarily*. This would certainly rule out using *for X time* as a probe for SC complementation, but it would not require that we throw about restitutive *again* with it. That being said, Bruening notes that others have argued that the restitutive reading does not depend on syntactic constituency, including Dowty (1979), Egg (1999), Jäger & Blutner (2003), and Williams (2015). As such, the results of the restitutive *again* test are best taken with a grain of salt.

B.2 Subjecthood tests for small clause complements

Shifting the focus from constituency to subjecthood, we will now consider four tests that have been brought to bear on the grammatical status of DP2 in purported SC complementation configurations: *a-thematicity*, *passivization*, *quantifier float*, and *extraction*.

> A-THEMATICITY. The first test targets whether DP2 can be a pleonastic expression, such as *it* or *there*, that is not assigned a thematic role by either the embedded predicate or the matrix verb. Clark & Jager (2000) demonstrate that a-thematic DP2 can occur in the complement of *consider*, providing the example in (336) (see also Hoekstra 1988:108).

- (336) John considered it obvious that Bill stole the car.
(Clark & Jager 2000: 18 [8b])

Example (337) shows that that the same holds for complements of *imagine*.

- (337) Chloe imagined it snowing in Miami.

This signals that DP2 need not be a semantic argument in these configurations: motivation for its inclusion is purely syntactic, comparable to what we find in the subject position of unembedded English clauses with these sorts of predicates:

- (338) a. It is obvious that Bill stole the car.
b. It is snowing in Miami.

Of course, compatibility with a pleonastic subject depends not only on whether or not the complement is clausal, but also on whether the embedded predicate requires an external argument.

> PASSIVIZATION. This test asks whether DP2 can be targeted by passivization in the matrix clause. Rather than directly probing whether DP2 is a subject of the complement predicate, passivization tests whether DP2 might qualify as a direct object of the matrix verb. In fact, it has also been widely acknowledged that passivization is possible for DP2 in sentences with *consider*,

as shown in (339). Passivization was also found to be fully acceptable for the *imagine* sentence in (340) for some speakers, though others found it more degraded.⁸

(339) The prisoner is considered intelligent.

(Basilico 2003: 2 [4c])

(340) *The students were instructed to imagine Mary doing something silly.* %Mary was imagined quacking like a duck by at least one of the students.

| | | | | | |
|--|---|---|---|---|--|
| | 5 | 5 | 4 | 3 | |
|--|---|---|---|---|--|

Bowers (1993) argues that the ability to passivize follows from raising of the SC subject to object of the embedding verb. Basilico (2003) and Yokogoshi (2007) instead propose that passivization is not actually limited to direct objects, but is possible as well for small clause subjects that are located in the embedded clausal periphery.⁹

> QUANTIFIER FLOAT. Quantifier float, which asks whether a quantifier such as *all* can appear to the right of its corresponding DP, has been posited as evidence for an embedded subject position. It is important to note that for this test that what matters is not where DP2 winds up in the sentence, nor even its ultimate grammatical function, but the position occupied by the quantifier. Hoekstra (1992: 138) and Bowers (2001: 318) shows that the quantifier *all* can appear to the right of DP2 in sentences with *consider* (see also Hoekstra 2004, Starke 1995, Yokogoshi 2007, Tanaka and Yokogoshi 2010). As shown in example (342), quantifier float is also possible for sentences with *imagine*.

(341) a. We consider our friends all rather loyal. (Hoekstra)

b. We consider the men all fools/totally crazy. (Bowers)

(342) Chloe imagined her siblings all packing their lunches before school.

⁸ I suspect the variability in this case followed from the markedness of passivization generally, and not from properties of DP2 *per se*. This suspicion is supported by comments from the consultant who gave the sentence a 4/5, who remarked that they would say the sentence but suspect other people may disprefer the wordier phrasing.

⁹ On the other hand, Yokogoshi (2007) predicts that passivization should not be possible when the small clause contains a stage-level predicate, which appears to be false for *imagine*.

Compare this with (343), where float is shown not to be possible for direct object that lacks predicative complement.

(343) *Chloe imagined her siblings all.

The standard assumption since Sportiche (1988) is that quantifier float is the result of leftward movement of the DP, which strands the quantifier in a lower position. With this in mind, examples such as (341) and (342) can be taken to show that DP2 has undergone movement out of a subject position in course of the derivation. As noted in Citko (2011: fn 10), this is compatible with DP2 moving from a position within the clausal complement to VP (Bowers 1993, 2001) or with moving within the complement (Svenonius 1994, 1996, Basilico 2003). Because quantifier float is informative only for subjects that undergo movement, it will not be able to diagnose subjects that remain in their base position.

> EXTRACTION. Rounding out our set of subject diagnostics, this test asks whether a *wh*-expression such as *what* or *which* can be extracted from DP2. Since Ross (1967), it has been maintained that extraction out of a subject position is generally marked in English. Kayne (1984) suggests that failure to extract can thus be used to diagnose subjecthood in clausal complements, offering as an example the minimal pair in (344).

- (344) a. *Which book_i do you believe the first chapter of t_i to be full of lies?
b. Which book_i do you believe the first chapter of t_i?
(Kayne 1984: 169)

In (344a), in which DP2 is followed by the infinitive *to be full of lies*, extraction of *which book* out of DP2 is shown to result in ungrammaticality. In contrast, extraction is shown to be acceptable in (344b), where DP2 is not followed by an infinitive. Kayne takes this to signal that DP2 in (344a) is not a direct object, as it is in (344b), but is rather the subject of a clausal complement.

Basilico (2003) also shows extraction out of DP2 to be highly degraded in the complement of *consider*, illustrating with the example in (345).

- (345) ??Which subject_i do you consider a book about t_i too boring for your class?
(Basilico 2003: 5)

While not fully out, ratings elicited for the sentence in (346a) with *imagine* tended towards the middle of the scale. This is in contrast with (346b), which received overall high ratings.

- (346) a. ?Which president_i did Mary imagine a statue of t_i covered in paint?

| | | | | | |
|--|---|---|---|---|--|
| | 4 | 3 | 3 | 3 | |
|--|---|---|---|---|--|

- b. Which president_i did Mary imagine a statue of t_i?

| | | | | | |
|---|---|---|---|--|--|
| 5 | 5 | 4 | 4 | | |
|---|---|---|---|--|--|

Notice that this test is intended to tease apart small clause subjects from true direct objects. We might therefore expect extraction to be possible out of small clause complements that raise to direct object position, since such movement would obviate the structural conditions traditionally assumed to degrade extraction from a subject in the first place. On the other hand, Basilico (2003) suggests that extraction failure follows not from subjecthood *per se*, but from extraction from a derived position; in that case, raising-to-object would not result avoid this effect, but remaining *in situ* would. Under either take, compatibility with extraction would not be a surefire way of telling that DP₂ is not a small clause subject at least at some point in the derivation.

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