Syntax and semantics in representational noun phrases: Sense selection of representational noun affects binding behavior

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**Abstract**

Representational noun phrases (RNPs), such as *picture of myself* and *book about him,* have notoriously presented a challenge to theories of binding and reflexivity. Despite vigorous theoretical and experimental research, the precise mechanisms underlying binding in RNPs remain relatively elusive. In the present study, I attempt to elucidate our understanding of RNPs by examining the interplay between binding in RNPs and the lexical semantics of representational nouns—specifically, the observation that all representational nouns (e.g., *book*) can refer to both an object (e.g., a *dusty book)* and to the content within that object (e.g., a *mystery book)*. Results from a self-paced reading task suggest that RNPs preferentially allow reflexives with *content* readings of representational nouns, whereas *object* readings of representational nouns disfavor reflexives. I find theoretical motivation for these findings in Grimshaw’s (1990) observations on participant structure and wh-extraction behavior with respect to her typology of nouns. Ultimately, I propose a new model to account for binding in RNPs, which combines elements of leading approaches from Chomsky (1981, 1986) and Reinhart & Reuland (1993).

Keywords: *psycholinguistics, binding theory, reflexivity, polysemy*

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**Table of Contents**

Abstract 1

Acknowledgments 1

Table of Contents 2

List of Abbreviations 3

Introduction 4

CHAPTER 1: PRELIMINARIES 6

1.1. Basic binding 6

1.2. Subjects and subjects 8

1.3. Problems for BT 11

1.3.1. The nature of the RNP 12

1.3.2. Syntactic problems in RNPs. 13

CHAPTER 2: SYNTAX OF REPRESENTATIONAL NOUN PHRASES 16

2.1. PRO-in-NP 16

2.2. Reflexivity 19

2.2.1. RNPs in Reflexivity 22

2.2.2. Logophors 23

2.3. Interim summary 26

CHAPTER 3: SEMANTICS OF REPRESENTATIONAL NOUN PHRASES 27

3.1. Homophones and polysemes 27

3.2. Regular polysemy 28

CHAPTER 4: PRESENT STUDY AND RESULTS 30

4.1. Design 31

4.2. Predictions and implications 32

4.3. Subjects and materials 32

4.4. Procedure 34

4.5. Results 34

4.5.1. Monoclausal items 35

4.5.2. Multiclausal items 36

4.5.3. Cumulative reading times 37

CHAPTER 5: DISCUSSION 39

5.1. Overview of results 39

5.2. Incorporation into theories of binding 40

5.2.1. PRO-in-NP 41

5.2.1.1. Monoclausal sentences. 41

5.2.1.2. Embedded clauses 41

5.2.2. Reflexivity 43

5.2.3. Summary 44

5.3. Grimshaw’s (1990) typology of nouns 45

5.3.1. Participants 46

5.3.2. Extraction 47

5.4. RNPs in Grimshaw’s (1990) typology 49

5.4.1. Extraction from RNPs 50

5.4.2. Binding in RNPs 52

5.5. Definiteness effects 53

5.5.1. Results and discussion 54

5.6. Proposed model 55

5.6.1. Salience of syntax 55

5.6.2. Distribution of logophors 55

5.6.3. Participant structure 56

5.6.4. Conclusion 57

CHAPTER 6: ADDITIONAL CONSIDERATIONS AND CONCERNS 60

6.1. The blurry nature of representational nouns 60

6.1.1. Cross-contamination between senses 60

6.1.2. Semantic distance between senses 63

6.2. Kuno’s (1987) discourse factors 63

6.3. Condition B violations 65

6.4. Spanish: a way to save PRO-in-NP? 66

CHAPTER 7: CONCLUSIONS AND FUTURE RESEARCH 69

7.1. Future directions 69

7.1.1. Cross-linguistic 69

7.1.2. Comparison among representational nouns 70

7.1.3. Psych-verbs and binding 71

7.2. Conclusions 72

Appendix A: Stimuli used for MWT experiment 75

Appendix B: Stimuli used for definiteness survey 76

References 77

**List of Abbreviations**

BT *Binding Theory*  Comp *Complementizer*

MWT *Moving Window Task*  Log *Logophor*

RNP *Representational Noun Phrase* Pro *Pronoun*

RRT *Residual Reading Time*

**Introduction**

This paper empirically examines the previously untested relationship between lexical semantics in representational nouns (e.g., *picture)* and binding behavior in representational noun phrases (e.g., *picture of myself)*. It is partitioned into seven chapters, each of which is described in turn below.

Chapter 1 introduces the fundamental theory motivating Chomsky’s (1981) widely influential Binding Theory (BT). I define basic principles and conditions of binding, as well as provide some challenging data that BT struggles to account for. I devote special attention to reflexives in representational noun phrases (RNPs), a topic that has repeatedly proven problematic for BT.

Chapter 2 provides an in-depth analysis and critique of two leading theories that attempt to reconcile the anomalous binding behavior of RNPs into general theories of binding. First, I explain Chomsky’s (1986*) PRO-in-NP* approach, which is rooted in syntactic structure; later, I explain Reinhart & Reuland’s (1993) *logophoricity* approach, which is rooted in predicate structure.

Chapter 3 explores the lexical semantics of RNPs. In particular, I note that all RNPs belong to a special class of words called *regular polysemes* (Apresjan, 1974), whose multiple meanings are characterized by predictable underlying patterns.

Chapter 4 outlines the design of the present study, which uses a self-paced reading paradigm known as the Moving Window Task, henceforth referred to as the MWT (Just, Carpenter, & Woolley, 1982). After describing the methods and procedure of the present study, I analyze and interpret the data obtained.

Chapter 5 attempts to reconcile the results from the present study into the two approaches outlined in Chapter 2. Ultimately, I find that each approach on its own fails to adequately account for the data. Instead, I present an updated model for binding in RNPs, which finds theoretical motivation in Grimshaw’s (1990) typology of nouns, as well as Davies & Dubinsky’s (2003) observations on wh-extraction from NPs. My proposed model draws parallels between the behavior of binding and wh-extraction, and combines elements from both Chomsky’s (1986) PRO-in-NP approach and Reinhart & Reuland’s (1993) logophoricity approach.

Chapter 6 addresses some lingering considerations and concerns regarding binding in RNPs. First, I consider the possible confounding influence of the unique semantic properties of regular polysemes (Pustejovsky, 1995). Next, I consider other influences and behaviors in RNPs that do not directly concern my present model. Finally, I provide cross-linguistic data that tentatively support an analysis of binding in RNPs that more closely resembles Chomsky’s (1986) PRO-in-NP approach.

Lastly, Chapter 7 suggests directions for future studies to closely scrutinize the relationship between syntax and semantics in binding and RNPs. I conclude Chapter 7 by summarizing the key points drawn from the present study.

**CHAPTER 1: PRELIMINARIES**

(1) a. Caseyi sees him\*i, j in the mirror.

b. Caseyi sees himselfi,\*j in the mirror.

As the examples in (1) show, pronominals (e.g., *him*) and reflexives (e.g., *himself*) tend to exist in complementary distribution. This basic observation led to Chomsky’s (1981) classic Binding Theory (BT), which argues that the distribution of pronouns[[1]](#footnote-2) has a structural basis. This section will introduce some of the basic tenets of Binding Theory à la Chomsky (1980, 1981, 1986).

**1.1 – Basic binding**

In traditional approaches to BT, there are three general types of DPs. *Pronominals,* such as *I, him,* and *them,* refer to either an entity in the discourse or to some other entity outside of the discourse, as in (2a). *Reflexives,* such as *himself* and *myself,* necessarily refer to a discourse-internal entity, as in (2b). Finally, referential expressions (called *R-expressions*) or “full DPs” necessarily refer to a discourse-external entity, as in (2c-d).

(2) a. Caseyi likes him\*i,j b. Caseyi likes himselfi,\*j

c. Caseyi likes Bobj d. \*Caseyi likes Caseyi

The contrast between parallel constructions in (2a-d) motivated the idea that pronominals and reflexives exhibit inherently different grammatical properties. Specifically, reflexives must share reference with an *antecedent*, whereas pronominals must not co-refer with an antecedent. The sentences in (3) suggest that this antecedent must be in the same clause as the reflexive with which it co-refers:

(3) a. Caseyi hurt himselfi

b. \*Caseyi thinks that Ella hurt himselfi

Chomsky (1981) formalizes the pattern observed in (2) and (3) with his two[[2]](#footnote-3) core conditions of Binding Theory, simplified below in (4):

(4) Binding Theory (provisional)

Condition A: a reflexive must be bound (i.e., must co-refer with an antecedent) in its binding domain

Condition B: a pronominal must be free (i.e., must not co-refer with an antecedent) in its binding domain

...where the *binding domain* is the minimal clause that contains the pronoun

These binding conditions are subject to structural constraints. For instance, the sentences in (5) illustrate the importance of c-command in binding. In (5), the DP *Casey’s friend* co-indexes with its nominal head, *friend,* but not with *Casey,* which is in a [Spec, DP] position.

(5) a. Caseyi’s friendj likes himi/\*j

b. Caseyi’s friendj likes himself\*i/j

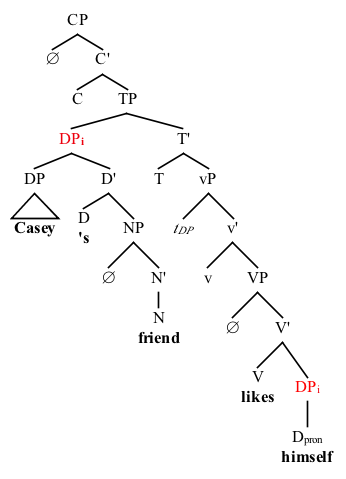
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Figure 1. Syntax tree for (5a). Co-indexed DPs are indicated in red. Given that *Casey* does not c-command *himself, Casey* cannot serve as an antecedent.

As we see in (5b), a reflexive is grammatical only when interpreted as sharing reference with the c-commanding DP *Casey’s friend;* it cannot co-refer with the DP *Casey,* which is not in a c-commanding position (Fig. 2). Thus, a preliminary account of binding can be formulated as follows:

(6) Binding

An antecedent X binds Y iff X c-commands Y, and X and Y are coindexed

**1.2 – Subjects and subjects**

In our examination of binding thus far, we have looked only at DPs in verbal argument positions (i.e., subject and object). However, as (7) shows, DPs can also exist as nominal arguments. Given our definition of BT in (4), DPs in nominal argument positions seem to behave as predicted: the reflexive *himself* is bound by the antecedent *Casey,* which is within its binding domain.

(7) Caseyi took a picture of himselfi/\*himi

However, if we expand our database to include NPs with prenominal arguments (i.e., possessors), non-reflexives are permitted, or even obligatory (Büring, 2005; *cf.* Keller & Asudeh, 2001):

(8) Caseyi saw Ella’s picture of \*himselfi/himi

Therefore, we propose a refinement to our definition of *binding domain* as formulated in (4). This new definition, presented in (9), incorporates Chomsky’s (1981) idea of a Subject, which is defined as a DP in either [Spec, TP] or [Spec, DP] position. Thus, (9) yields the same results for sentences with DPs in verbal argument positions, while capturing the contrast between (7) and (8).

(9) Binding domain (provisional)

XP is the binding domain for YP iff XP is the smallest clause that contains the pronoun and a Subject

...where a Subject is either a verbal argument or a possessive

Still, however, this definition is not sufficient. The examples in (10) illustrate that the definition of a binding domain in (9) requires an additional nuance:

(10) a. \*Casey hopes that himself won the race

b. Casey expects himself to win the race

In both versions of (10), the reflexive is bound by an antecedent outside of the minimal clause that contains the reflexive and a Subject. Accordingly, (10a) is ungrammatical: the antecedent (*Casey*) is not in the binding domain of the reflexive (*himself*), and thus two cannot co-index. However, contrary to the conception of a binding domain in (9), the reflexive *is* grammatical in (10b), where it appears in a non-finite ECM construction.

Given the data in (10), Chomsky (1981: 209) proposes a distinction between a Subject and a subject, the latter of which corresponds to tense and agreement features.[[3]](#footnote-4) In other words, for DPs in verbal argument positions, a pronoun’s binding domain must include *finite* T. With this addition, we update our definition of a binding domain in (11):

(11) Binding domain (provisional)

XP is the binding domain for YP iff XP is the smallest clause that contains the pronoun and a subject

...where a subject is either finite T or a possessive

In Section 1.3.2, we will propose a final addendum to the idea of a binding domain. But for now, this definition neatly explains the contrast in (10). In (10a), the finite T in the embedded clause has tense; therefore, the minimal clause containing a subjectis the embedded clause. As a result, the embedded clause constitutes the binding domain. The antecedent (*Casey*) is located outside of the binding domain, and the sentence is ungrammatical (Fig. 2a).

Conversely, in (10b), the infinite T in the embedded clause does *not* have tense, and therefore the minimal clause containing a subject is the matrix clause. Therefore, the binding domain is the matrix clause, which contains both the reflexive and the antecedent, and the sentence is grammatical (Fig. 2b).

|  |  |
| --- | --- |
| a) | b) |

Figure 2. Syntax trees for the sentences in (10). The maximal node of the binding domain for each sentence is indicated in red.

**1.3 – Problems for BT**

A structural conception of BT as outlined in (6) and (9) accounts for a vast amount of data in English. However, it has long been noted (e.g., Jackendoff, 1972; Reinhart & Reuland, 1993; Postal, 1970; Ross, 1970; Zribi-Hertz, 1989) that certain contexts do not show the strict complementarity between pronominals and reflexives that would be predicted by Chomsky’s (1981) purely syntactic account of binding:

(12) a. Physicists like you/yourself are a godsend. (Ross, 1970, p. 230)

b. There were five tourists in the room apart from me/myself. (Reinhart & Reuland, 1993, p. 669)

c. “She gave both Brenda and me/myself a dirty look.” (actual discourse, quoted in Zribi-Hertz, 1989)

Further, one of the most notorious and oft-studied contexts in which the predictions of BT are not borne out is the representational noun phrase (RNP),[[4]](#footnote-5) popularly referred to as the “Picture Noun Phrase.” The examples in (13) exemplify the challenge that RNP constructions present to structural theories of binding:

(13) a. The fact that there is a picture of himi/himselfi hanging in the post

office is believed to be disturbing Tomi. (Jackendoff, 1972, p. 137)

b. Johni knows that there is a picture of himi/himselfi in the morning

paper. (Kuno, 1987, p. 164)

c. Maryi was extremely upset. That picture of heri/herselfi on the front page of the *Times* would circulate all over the world. (Pollard & Sag, 1992, p. 268)

RNPs have garnered significant attention in binding literature due to their exceptional behavior regarding the distribution of pronominals and reflexives. Specifically, the possibility of a reflexive in the sentences in (13) is problematic, as Condition A predicts that a reflexive should be ungrammatical in these cases. The following section will examine RNPs in greater depth, and evaluate two proposals regarding how to incorporate them into theories of binding.

**1.3.1 – The nature of the RNP**

Representational noun phrases are headed by content-bearing nouns such as *picture, statue,* or *book,* and contain pronouns in DP-internal positions (e.g., *picture of himself*). Semantically, the head noun refers to some sort of representation of the DP in the postnominal PP. For example, *a picture of Casey* refers to a visual representation of Casey; similarly, *a book about Ella* refers to a written representation of Ella.

**1.3.2 – Syntactic problems in RNPs**

Given the definition of BT formulated in (6), sentences with RNPs in object positions follow the predictions of pronominal/reflexive complementarity. In (14), for example, the minimal clause containing a subjectis the entire TP, and thus Conditions A and B apply as predicted:

(14) a. Theyi spent hours taking pictures of them\*i/j

b. Theyi spent hours taking pictures of themselvesi/\*j

However, the theory runs into problems with sentences where RNPs are in subject positions, like (15):

(15) \*Poiroti thinks that [TP [DP a picture of himi]i will be on show]]. (Haegeman, 1991, p. 207)

In (15), the embedded clause contains the reflexive and a subject,and thus the binding domain for the pronominal *him* is the embedded TP*.* Therefore, the c-commanding DP *a picture of him* is, in theory,[[5]](#footnote-6) a potential antecedent for the pronominal *him.* However, given that pronominals must not be bound, we do want this to be the case, as it would constitute a Condition B violation. To solve this problem, Chomsky (1981) introduces the i*-within-*i *filter,* which prevents a DP from binding another DP contained within it:

(16) *i­*-within-*i* filter (adapted from Haegeman, p. 206)

\*[DP . . . DPi . . .]i

Using Chomsky’s (1981) terminology, in (15), the finite T in the embedded clause constitutes a subject,but this subject is not “accessible,”as it violates the *i*-within-*i* filter; as such, *a picture of him* cannot serve as an antecedent. The pronominal in (15), therefore, is free within its binding domain, and the sentence is grammatical. Given the *i­*-within*-i* filter, final definitions of BT and binding are given in (17) – (19):

(17) Binding Theory (final)

Condition A: a reflexive must be bound in its binding domain

Condition B: a pronominal must be free in its binding domain

(18) Binding domain (final)

XP is the binding domain for YP iff XP is the smallest clause that contains the pronoun and an accessible subject

...where a subject is either finite T or a possessive

(19) Binding

An antecedent X binds Y iff X c-commands Y, and X and Y are coindexed

The notions of the accessible subjectand the *i­-*within-*i* filter remove the possibility of Condition B violations in sentences like (15). However, our definition of BT in (17) cannot account for analogous constructions which appear to violate Condition A. For example, a version of (15) containing a reflexive seems acceptable, despite the absence of a local antecedent:

(20) Poiroti thinks that [TP [DP a picture of himselfi] will be on show]]. (Haegeman, 1991, p. 207)

The example in (20) is akin to the examples in (13), reproduced below as (21), in which reflexives in RNPs do not always fit the predictions mapped out by Condition A of BT. For instance, the antecedent does not always c-command the reflexive (21a), and may be part of a different clause (21b) or even a different sentence (21c). Further, in all of these instances, there is a lack of complementarity between pronominals and reflexives:

(21) a. The fact that there is a picture of himi/himselfi hanging in the post

office is believed to be disturbing Tomi.

b. Johni knows that there is a picture of himi/himselfi in the morning

paper.

c. Maryi was extremely upset. That picture of heri/herselfi on the front page of the *Times* would circulate all over the world.

Ultimately, then, Chomsky’s (1981) notions of accessible subject and the *i-*within­-*i* filter help explain some of the data, but do not provide a complete syntactic account for how to deal with RNPs. The next chapter outlines two popular proposals—one from Chomsky (1986), and one from Reinhart & Reuland (1993)—regarding how to account for the anomalous behavior of RNPs.

**CHAPTER 2: SYNTAX OF RNPs**

This section will examine the two main structural approaches to reconcile RNPs into theories of binding: the PRO-in-NP approach (Chomsky, 1986; Davies & Dubinsky, 2003), which is based on syntactic structure, and the “logophor” approach (Reuland, 2001; Reinhart & Reuland, 1993), which is based on predicate structure.

**2.1 – PRO-in-NP**

The PRO-in-NP approach, introduced by Chomsky (1986), proposes that the noncomplementarity between pronominals and reflexives in RNPs can be explained by the optional presence of a null pronominal possessor PRO[[6]](#footnote-7) in the specifier of the DP containing the representational noun. Therefore, PRO would serve as a c-commanding antecedent for RNPs that otherwise lack a same-clause antecedent. Under this analysis, a sentence such as (22) would be derived as follows (Fig. 3):

(22) a. I hate the story about himselfi that Johni always tells

b. I hate PROi’s story about himselfi that Johni always tells

c. I hate hisi story about himselfi that Johni always tells

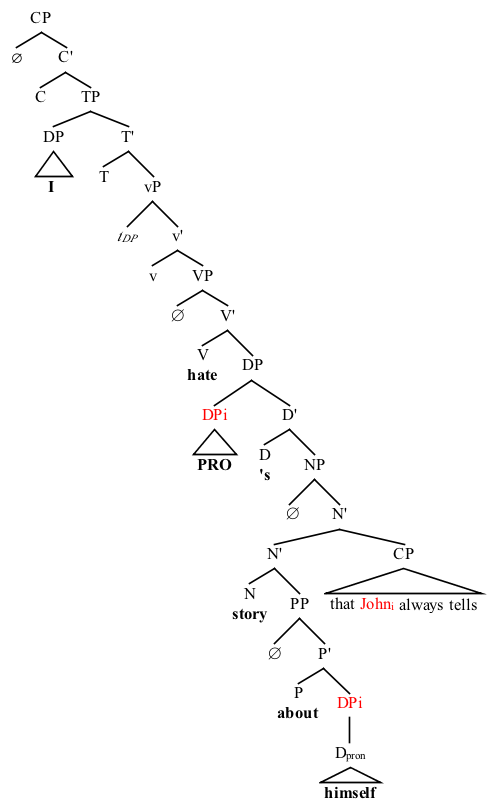
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Figure 3. Syntax tree for the derivation in (22b). The reflexive *himself* is bound by the c-commanding antecedent PRO, with which it co-indexes.

As Davies & Dubinsky (2003) note, the distribution of this PRO is not arbitrary; rather, it is used to indicate implicit agency (i.e., ownership) of the representational noun. For example, consider the contrast between the (a) and (b) versions of (23):

(23) a. Why did you write me that letter about yourself/\*you?

b. Why did you send me that letter about yourself/you?

(Davies & Dubinsky, 2003, p. 25)

According to Davies & Dubinsky (2003), in (23a), *you* is ungrammatical because *you* are the author (i.e., owner) of the letter, and thus the RNP contains a possessive PRO that corefers with *you.* In this case, a pronominal would violate Condition B. Further, they argue that the interpretation of (23b) changes in accordance with the choice of either a pronominal or a reflexive. That is, if *yourself* is chosen, then *you* are understood to be the author of the letter, and the RNP contains a possessive PRO. Conversely, if *you* is chosen, then someone else is understood to have written the letter. Therefore, the two versions of (23b) correspond to the overt alternations in (24):

(24) a. Why did you send me your letter about yourself?

b. Why did you send me his letter about you?

(Davies & Dubinsky, 2003, p. 26)

Some experimental work supports the idea that RNPs can contain a possessive PRO in cases of implicit agency. An eye-tracking study from Kaiser and colleagues (2004) found that, in ditransitive constructions like (25), participants were significantly more likely to interpret the subject *Peter* (rather than the object *Andrew*) as the antecedent of the reflexive in (25a) relative to (25b):

(25) a. Peter told Andrew about the picture of himself on the wall.

b. Peter heard from Andrew about the picture of himself on the wall.

According to Jaeger, Butt, & King (2004), this supports a PRO-in-NP hypothesis, as verbs like *tell* assign agentive creator-roles to their subjects, whereas verbs like *hear* do not. Therefore, the RNP in (25a) contains an implicit PRO that co-indexes with *Peter;* as a result, PRO is the closest c-commanding antecedent for the RNP reflexive, and the reflexive is more likely to co-index with *Peter*.

Given the pattern of data observed in Kaiser et al. (2004), the idea of presupposing a possessive PRO in cases of implicit agency seems viable. Further, this proposal is attractive because it posits that PRO—rather than the conditions of BT—is subject to non-structural factors like implicit agency,[[7]](#footnote-8) and thus it accommodates the troublesome behavior of RNPs while preserving the central tenets of BT.

As Runner (2007) remarks, however, there are some reasons to doubt this proposal. First, reflexives can appear in RNPs in which the antecedent has neither agency nor ownership of the representational noun, as in (26). If the presence of PRO is not always determined by agency or ownership, it is not entirely clear what causes PRO to appear in some contexts and not others.

(26) Casey sent me a picture of himself from his sister’s album that his mother

took

Further, the PRO-in-NP approach requires that there be a possessive determiner in syntactic contexts where possessive determiners are not otherwise allowed, such as in the existential *there* construction (Runner, 2007). Therefore, in order to account for a subset of data, the proposal posits empirically unsupported claims about well-established syntactic phenomena, as in (27).

(27) a. John said that there was a picture of himself in the post office

b. \*John said that there was his picture of himself in the post office

(Runner, 2007, p. 62)

**2.2 – Reflexivity**

Chomsky’s conception of BT has been criticized by many researchers (e.g., Reinhart & Reuland, 1993; Everaert, 1986, 1991; Hellan, 1988), who have noted that it flounders when faced with even basic cross-linguistic data. For instance, in German, pronominals are sometimes, but not always, licensed in the presence of a c-commanding antecedent, as in (28c):

(28) a. \*Maxi haat zichi German

Max hates him

‘Max hates him.’

b. Maxi haat zichzelfi

‘Max hates himself.’

c. Maxi schaamt zichi

Max shames him

‘Max shames himself.’

(Reinhart & Reuland, 1993, pp. 665-666)

Given that the pronominal in (28c) is clearly bound by a c-commanding antecedent, Condition B fails to explain why the (c) version of (28) is grammatical. In order to account for data like (28), Reinhart & Reuland (1993) argue that binding is not a purely structural phenomenon, and that semantic influences are necessarily involved. Thus, they propose an alternative to Binding Theory that is based on *predicate* structure instead of *syntactic* structure. Like BT, Reflexivity is grounded on two core conditions:

(29) Reflexivity (Reinhart & Reuland, 1993, p. 662)

Condition A: A reflexive-marked (syntactic) predicate must be reflexive.

Condition B: A reflexive (semantic) predicate must be reflexive-marked.

The principles in (29) outline the ways in which these two conditions are met. Importantly, Condition B can be realized both syntactically (i.e., by the presence of a self-anaphor) and semantically (i.e., by inherent lexical reflexivity):

(30) a. A predicate is reflexive iff two of its arguments are co-indexed

b. A predicate is reflexive-marked iff it is lexically reflexive (e.g., *behave)* or one of its arguments is a self-anaphor (e.g., *herself)*

(Reinhart & Reuland, 1993, p. 663)

The conditions of Reflexivity can explain much of the same data as BT; the sentence in (1b) is reproduced below as (31):

(31) Caseyi sees himselfi,\*j in the mirror.

In (31), the predicate *see* is reflexive because its two arguments (i.e., *Casey* and *himself)* are co-indexed, and it is reflexive-marked because one of its arguments is a self-anaphor. Thus both Condition A and B are satisfied: the reflexive-marked predicate *see* is reflexive (Condition A), and the reflexive predicate *see* is reflexive-marked (Condition B).

The definitions in (29) and (30) can also explain the puzzling pattern of German data in (28c). The predicates in all versions of (28) have two co-indexed arguments, and therefore qualify as reflexive; by Condition B, then, they must also be reflexive-marked. Recall, though, Condition B can be satisfied both syntactically (i.e., through the presence of a self-anaphor) *and* semantically (i.e., through inherent lexical reflexivity).

Thus, the discrepancy between (28a-b) and (28c) is due to the fact that the sentences meet (or fail to meet) Condition B in different ways: whereas the predicate in (28b) is *syntactically* reflexive-marked because it contains a self-anaphor, the predicate in (28c) is *semantically* reflexive-marked because verbs like *schamen* are lexically reflexive. This intrinsic lexical reflexivity is indicated by the fact that such verbs cannot take any object distinct in reference from the subject:[[8]](#footnote-9)

(32) \*Max schaamt sie

Max shames her

‘Max shames her.’

Therefore, even though the predicate in (28c) lacks a self-anaphor, it still qualifies as being reflexive-marked, as it is inherently lexically reflexive; as a result, Condition B is satisfied. Finally, (28a) is ungrammatical because its predicate *haat* is reflexive (i.e., has two co-indexed arguments), but it is not reflexive-marked semantically (*haat* is not lexically reflexive) or syntactically (there is no self-anaphor), thus constituting a Condition B violation.

By positing that binding can be realized both syntactically and semantically, Reinhart & Reuland (1993) solve some of the cross-linguistic problems that arise with a structure-only account of binding. The next section will examine how Reflexivity interacts with RNPs.

**2.2.1 – RNPs in Reflexivity**

In their analysis of RNPs, Reinhart & Reuland (1993) make a crucial distinction between RNPs with possessors and those without. In (33a), the representational noun *picture* is the relevant predicate. Its two arguments (*you* and *himself)* are not coindexed; thus, the predicate is not reflexive, and reflexive marking is not licensed.

(33) a. \*Casey likes your picture of himself

b. Casey likes the picture of himself

In contrast, the predicate *picture* in (33b) has only one argument, and therefore the RNP does not meet the criteria for reflexivity as described in (30). Importantly, though, the RNP has no external argument, and thus does not qualify as a syntactic predicate as defined in (29). Given that Condition A applies only to reflexive-marked *syntactic* predicates, it does not apply to the RNP in (33b). Consequently, possessor-less RNPs are exempt from the binding conditions of Reflexivity.

(34) The *syntactic predicate* formed of (a head) X is X, all its syntactic

arguments, and an external argument of X (subject).

(Reinhart & Reuland, 1993, p. 678)

Since the predicate in (33b) is not reflexive, it does not satisfy Condition A; thus, Reinhart & Reuland (1993) maintain that *himself* cannot be a “true” self-anaphor. Instead, they interpret RNP reflexives as a separate class of reflexives that they deem “logophors,” which will be discussed in the next section. These logophors are exempt from typical constraints on binding, and instead are sensitive to a variety of discourse factors, such as perspective (Reinhart & Reuland, 1993).

Given that *all* RNPs are exempt from Condition A of Reflexivity, both pronominals and reflexives should be possible in all constructions with RNPs, even monoclausal ones. However, such an analysis incorrectly predicts the grammaticality of sentences like (35):

(35) \*Hei took a picture of himi

\*Shei wrote a book about heri

To avoid this problem, Reinhart & Reuland (1993) propose that verbs of creation necessarily involve an implicit agent (i.e., creator), and thus have an implicit possessor. This analysis is reminiscent of the PRO-in-NP approach, but applies to a much narrower range of data (i.e., only to phrases such as *take a picture* or *paint a portrait*).

**2.2.2 – Logophors**

There is reason to believe that this classification of RNP reflexives as logophors is cross-linguistically motivated. Logophoric pronouns are found in a variety of African languages (Hagége, 1974; Clements, 1975). They necessarily co-refer with an antecedent which is the “author of a secondary discourse” (Sells, 1987, p. 445). For instance, Ewe, a language spoken in southeastern Ghana and southern Togo (Ethnologue, 2009), has the logophoric pronoun *yè:*

(36) a. Kofi be yè-dzo Ewe

Kofi say Log-leave

‘Kofii said (that) hei/\*j left.’

b. Kofi be e-dzo

Kofi say Pro-leave

‘Kofii said (that) hej/\*i left.’

(Sells, 1987, p. 448)

As (36) shows, the logophoric pronoun *yè* is used to indicate perspective: its antecedent is the one whose speech or thoughts are reported—in other words, the author of the secondary discourse (Clements, 1975). This idea of logophoricity aligns with Kuno’s (1987) observation that, in English, reflexives are more likely to occur in RNPs when they co-index with the antecedent whose point of view is expressed in the discourse:

(37) a. John said to Mary that there was a picture of himself in the post

office.

b. ?Mary said to John that there was a picture of himself in the post

office.

(Kuno, 1987, p. 126)

As mentioned previously, RNP reflexives like those mentioned in Section 1.3.2 can take antecedents outside of their clause, or even their sentence. Similarly, (38) shows that logophoric pronouns can take different-clause antecedents.[[9]](#footnote-10) Thus, RNP reflexives appear to have the same distribution as logophors in language with distinct logophoric pronouns, both in their semantic qualities (i.e., they can express perspective) and their syntactic distribution (i.e., they can be bound by antecedents in a different clause).

(38) Kofi nya be me-kpɔ yè Ewe

Kofi know Comp Pro-see Log

‘Kofii knew that I had seen himi.’ (Sells, 1987, p. 449)

However, Reinhart & Reuland’s (1993) analysis of RNPs is problematic in that it overgeneralizes the noncomplementarity of pronominals and reflexives in RNPs. As Reinhart & Reuland (1993) note, reflexives in RNPs may “appear more marked than in reflexivity environments, where the anaphor is the only grammatical option” (p. 672). Indeed, in the examples in (37), reproduced below, pronominals seem to always be acceptable in RNPs, whereas the acceptability of reflexives varies:

(39) a. John said to Mary that there was a picture of himself/him in the

post office.

b. Mary said to John that there was a picture of ?himself/him in the

post office.

Given that all RNPs are exempt from Reflexivity conditions, this markedness should apply equally to monoclausal and multiclausal constructions involving RNPs. However, reflexives in RNPs are often *less* marked in monoclausal environments:

(40) a. Mary found a picture of herself/?her

b. Mary read a book about herself/??her

Since the examples in (40) do not implicate Mary as the author of any secondary discourse, it is hard to categorize them as descriptively comparable to the logophors in Ewe, shown above. Thus, Reinhart & Reuland’s (1993) logophor approach nicely accounts for contexts in which RNP reflexives do not have a same-clause antecedent, but overgeneralizes this tendency to cases in which they do.

**2.3 – Interim summary**

In summary, both the PRO-in-NP and logophor approaches find ways to accommodate the exceptional presence of RNP reflexives into structural theories of binding, without ruling out the possibility that non-structural factors may be relevant. Specifically, the PRO-in-NP account posits that some RNP reflexives are bound by a possessive PRO, whose presence depends on discourse influences like ownership or implicit agency. Similarly, the logophor account conjectures that binding conditions simply do not apply to possessor-less RNPs, and thus context, rather than structure, influences the logophoric use of reflexives.

As we have seen, both approaches have strengths and weaknesses. In Chapter 5, taking into account the results of the present study, I propose a new model for binding in RNPs that borrows elements from both approaches. I maintain Chomsky’s (1981) syntax-based account of binding in general, and adopt Reinhart & Reuland’s (1993) concept of logophoricity in specific instances where syntactic constraints fail.

**CHAPTER 3: SEMANTICS OF RNPs**

Chapter 2 reviewed some of the experimental and theoretical work studying the anomalous binding behavior of RNPs. To my knowledge, however, no study to date has experimentally examined a potentially relevant feature of all RNPs, which is related to the semantic nature of the representational noun itself. Specifically, representational nouns are inherently *polysemous,* in that they contain multiple related meanings. For example, the word *book* can refer to both an object (e.g., *a dusty book*) and to the content that the object contains (e.g., *a scary book*).This section will provide an overview of the literature on polysemy, with special emphasis on the patterns of RNPs.

**3.1 – Homophones and Polysemes**

Words are often ambiguous. The word *bank,* for instance, can refer to either a financial institution or a sandy slope alongside a river; an *orange* can be either a color or a fruit. But lexical ambiguity is not a uniform phenomenon: whereas *bank* refers to two semantically unrelated words that happen to sound the same, it is no coincidence that the two meanings of *orange* share identical phonology. Traditionally, theoretical linguists (e.g., Apresjan, 1974; Lyons, 1977, Nunberg, 1979) have categorized ambiguous words into two general types: *homophones* and *polysemes.* The meanings of polysemes are related, whereas the meanings of homophones are not. Thus, using the examples above, *bank* is a homophone, and *orange* is a polyseme.

Further, by examining the semantic patterns of different polysemous words, Apresjan (1974) proposes a distinction between *regular* and *irregular* polysemy. Regular polysemy is characterized by underlying semantic patterns that can be expressed with generalizable rules (hence “regular”). But the patterns in *irregular* polysemes do not generalize beyond a given word. The exact semantic nature of regular polysemes will be discussed in the next section.

**3.2 – Regular Polysemy**

Apresjan (1974) notes that regular polysemes have underlying semantic patterns that can be expressed with generalizable rules. Examples of such patterns are listed in Table 1. For instance, the *object-content* pattern demonstrates that content-containing objects can alternate with their contents. Thus the word *book* can refer to either the physical object itself (e.g., *a dusty book*) or to the content within it (*a scary book).*

|  |  |  |  |
| --- | --- | --- | --- |
| Table 1  *Types of regular polysemy* | | | |
| Pattern | Examples | Meaning 1 | Meaning 2 |
| **object-content** | book, novel, magazine, picture, photograph, DVD, essay, document | *dusty* book | *scary book* |
| **animal-meat** | chicken, turkey, shrimp, duck, lobster | *clucking* chicken | *juicy* chicken |
| **institution-person** | school, church, hotel, business, prison | *ivy-covered* school | *strict* school |
| **container-contents** | cup, dish, glass, bowl, box, mug | *plastic* bowl of cereal | *delicious* bowl of cereal |
| **producer-product** | author, novelist, musician, artist, sculptor | *tall* author | *Sci-Fi* author |

The regular polysemous patterns presented in Table 1 have several features that deserve attention. First, as Apresjan (1974) notes, these alternations are predictable: the object-contentalternation, for instance, can generalize to any object that has content (consider *novel, magazine, video,* etc.).[[10]](#footnote-11) Further, these patterns are not only predictable to existing words, but are also *productive,* in that they can apply to novel words (Lehrer, 1990; Murphy, 1997; Murphy, 2006). For example, when the word *DVD* was introduced into the lexicon several years ago, it immediately acquired both an object sense (e.g., *an expensive DVD)* and a content sense (e.g., *an exciting DVD*). Finally, the patterns underlying regular polysemy tend to hold cross-linguistically (Copestake & Briscoe, 1995; Huang, 2011; Nunberg, 1979), as the sentences in (41) – (43) illustrate:[[11]](#footnote-12)

(41) Spanish

a. libro bien escrito b. libro pesado

book well written book heavy

‘well-written book’ ‘heavy book’

(42) Japanese

a. yarubeta shashin b. utsukushii shashin

torn picture beautiful picture

‘torn picture’ ‘beautiful picture’

(43) Yoruba

a. adie ti së b. adie ti npariwo

chicken Comp cooked chicken Comp make-noise

‘chicken that is cooked’ ‘chicken that is making noise’

All representational nouns—by virtue of being representational—fit into the object-content pattern of regular polysemy (see Table 1). Further, given that regular polysemous patterns are consistent across languages, the grammatical properties of regular polysemes should hold cross-linguistically. However, to my knowledge, the interplay between regular polysemy and binding in RNPs has not been empirically studied. The present study seeks to experimentally examine this interplay, thus bridging the literature on regular polysemy and binding syntax.

**CHAPTER 4: PRESENT STUDY AND RESULTS**

As mentioned above, each RNP has two distinct interpretations, depending on whether the representational noun is being used in an object or content sense:

(44) a. *tattered* pictures of himself object

b. *flattering* pictures of himself content

Could this distinction between the two senses of representational nouns be relevant to the distribution of pronominals and reflexives in RNPs? This is the question that the present study hopes to answer. Specifically, I seek to bridge the literature on binding and polysemy in RNPs by examining if sense selection (i.e., object or content) of representational nouns interacts with the acceptability of the pronoun (i.e., pronominal or reflexive) in sentences with RNPs, such as (45).

(45) a. object interpretation

John knows that there is a *shredded* report about him/himself in the

office.

b. content interpretation

John knows that there is a *slanderous* report about him/himself in

the office

In my judgment, (45a) is worse with a reflexive relative to a pronominal, and (45b) is slightly better with a reflexive relative to a pronoun. Thus, I cautiously advance the prediction that *object* readings of representational nouns will favor pronominals, whereas *content* readings will favor reflexives. I present these predictions below, with the favored pronoun indicated in bold:

(45) a. object interpretation

John knows that there is a *shredded* report about **him**/himself in the office.

b. content interpretation

John knows that there is a *slanderous* report about him/**himself** in

the office

**4.1 – Design**

To empirically examine my intuitions about the sentences in (45), I will use a psycholinguistics paradigm known as the Moving Window Task (MWT), a self-paced reading task in which subjects read sentences one word at a time (Just, Carpenter & Woolley, 1982). The amount of time (in milliseconds) that subjects spend reading each word is recorded.

Several factors, including word length, word frequency (Gibson & Pearlmutter, 1998; Gibson et al., 1996), and sentence length (King & Just, 1991) affect reading times. Importantly, however, subjects stall on words that violate grammatical principles or subjects’ grammatical expectations (Ferreira, Anes, & Horine, 1996; Felser et al., 2003; Juffs, 1996; Pickering & Traxler, 2003; Stowe, Tanenhaus, & Carlson, 1991; see Marinis, 2010, for a review). For example, in (46), subjects would take more time to read the word *me,* as it would violate their expectation to see a reflexive instead of a pronominal:

(46) \*I took a picture of me last Sunday

The MWT is ideal for the present study in that it is implicit and sensitive. As is widely recognized (e.g., Kuno, 1987; Reinhart & Reuland, 1993; Reuland, 2001), binding judgments are variable, especially in constructions involving RNPs. Consequently, traditional grammaticality judgments, which are explicit and binary, are not well-suited to capture this variability. Given that the MWT is an implicit task based on reading times for individual words, it offers a fine-grained picture of subjects’ on-line sentence comprehension, thus avoiding the pitfalls of explicit grammaticality judgments.

**4.2 – Predictions and implications**

To my knowledge, no empirical study has tested the effect of representational noun sense selection on binding in RNPs. Likewise, the leading analyses of binding in RNPs, outlined in Chapter 2, do not explicitly mention the potential influence of sense selection in RNPs. Should such an influence arise, however, they make different predictions as to where these influences would occur.

(47) a. He carried a book about him/himself

b. He knows that there are pictures of him/himself in the newspaper

Under the PRO-in-NP approach, the object-content distinction of representational nouns should not affect ownership: presumably, it is equally likely to own *interesting* books as it is to own *heavy* books. Nor should it affect agency: it is equally likely to write a scathing article (content) as it is to write a long one (object). However, if the distinction does prove significant, this approach would assume that it would apply only in cases that lack a same-clause antecedent, so as to not violate Condition A (i.e., in 47a, but not 47b).

Given that logophors are susceptible to discourse factors, the logophor approach leaves open the possibility that sense selection of representational nouns may play a role in the processing of RNP reflexives. However, given that all RNPs are exempt from Condition A, any effect of sense selection on binding should apply in both monoclausal and multiclausal contexts (i.e., in 47a *and* 47b).

**4.3 – Subjects and materials**

Thirty-two undergraduates (20 female) at Carleton College served as subjects. Subjects ranged in age from 18-22, and were native English speakers.

Twelve representational nouns were used for the Moving Window Task. For each representational noun, four sentences were created that varied on pronoun type (i.e., pronominal/reflexive) and sense selection (i.e., object/content). In addition to the twelve target items, subjects read twenty-four filler sentences that matched the target sentences for length.

Sense selection was modified in one of two ways: with an adjectival modifier (e.g., an *interesting* book/a *heavy* book), or with a verb (e.g., *carry* a book/*read* a book). A sample experimental paradigm for the word *book* is presented in Table 2.

|  |  |  |
| --- | --- | --- |
| Table 2  *Sample experimental paradigm* | | |
| **Type of pronoun** | **Selected sense of representational noun** | |
|  | *Object* | *Content* |
| *Pronominal* | The politician hoped that the stolen documents about him would not be reproduced. | The politician hoped that the personal documents about him would not be reproduced. |
| *Reflexive* | The politician hoped that the stolen documents about himself would not be reproduced. | The politician hoped that the personal documents about himself would not be reproduced. |

RNPs appeared with and without same-clause antecedents. Among those that lacked same-clause antecedents, half appeared in existential *there* constructions (48a), and half appeared as the subject of a CP verbal complement (48b). The remainder of the sentences included same-clause antecedents (48c). Because the word *her* is ambiguous between a pronominal and a possessor, all target items were presented using masculine pronouns.

(48) Sample experimental items, with target words in italics

a. Existential *there*

The strict teacher assumed that there would be *crumpled/angry* notes about *him/himself* after class

b. CP complement

The politician hoped that the *stolen/personal* documents about *him/himself* would not be reproduced.

c. Same-clause antecedent

John *carried/read* the book about *him/himself* in the library.

Participants were split into four groups, each of which saw one version of all twelve target items. The presentation of target items was counterbalanced across these groups, so that each group saw an equal number of sentences across the pronoun type and sense selection variables. In other words, each group saw an equal number of sentences from each cell of Table 2 (see Appendix A for a complete list of experimental stimuli).

**4.4 – Procedure**

Subjects were tested individually in soundproof rooms. They were seated in front of a computer, and the nature of the MWT was explained to them. They were told that they would be asked some basic questions about their comprehension of the sentences. After reading three practice sentences, they began the experiment. Most subjects finished the experiment within ten minutes.

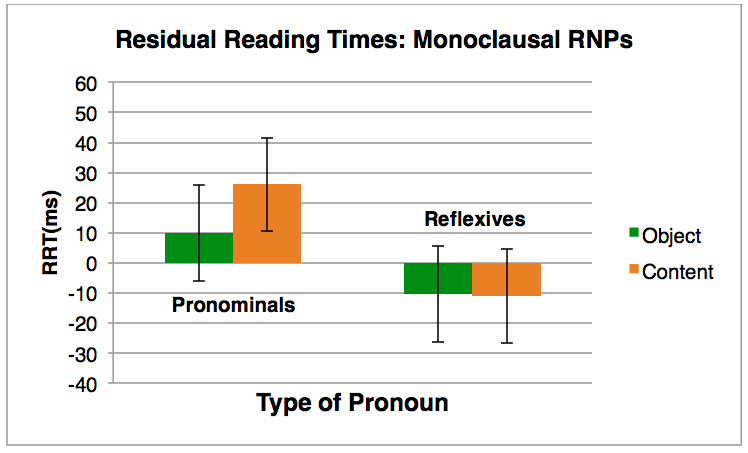
**4.5 – Results**

In order to account for word length and individual differences in reading times, residual reading times (RRTs) were calculated for target words. To calculate RRTs, participants’ reading times for pronominals and reflexives were aggregated separately, and the means for both were calculated. These means were then subtracted from individual test items. Thus, positive RRTs indicate that a given test item took longer than average to read, whereas negative RRTs indicate that a given test item took shorter than average to read.

*Clause type.* To test for main effects of clause type, results were submitted to a 2x2 between-subjects ANOVA that varied on *clause type* (monoclausal, biclausal) and *pronoun type* (pronominal, reflexive). The ANOVA was significant [*F*(3,31) = 4.564,   
*p* < .01]. There were no main effects, but there was a significant interaction between clause type and pronoun type: in *monoclausal* sentences, RRTs for pronominals (*M* = 17.92) and reflexives (*M* = -10.77) were significantly different [*F(*1,31) = 9.739, *p* < .01]. Given this difference, further data analysis was performed within clause types.

**4.5.1 – Monoclausal items**

A two-way 2x2 between-subjects ANOVA that varied on *pronoun type* (pronominal, reflexive) and *selected sense* (object, content) of the representational noun was marginally significant [*F*(3,31) = 2.578, *p* = .058). As described above, there was a significant main effect for pronoun type: pronominals had slower RRTs than reflexives [*F*(1,31) = 7.733, *p* < .01]. There was no significant main effect for selected sense [*F*(1,31) = .001 *p* = .974], and there was no significant interaction [*F*(1,31) < .001,  
 *p* = .988]. Figure 4 shows the data for monoclausal sentences.

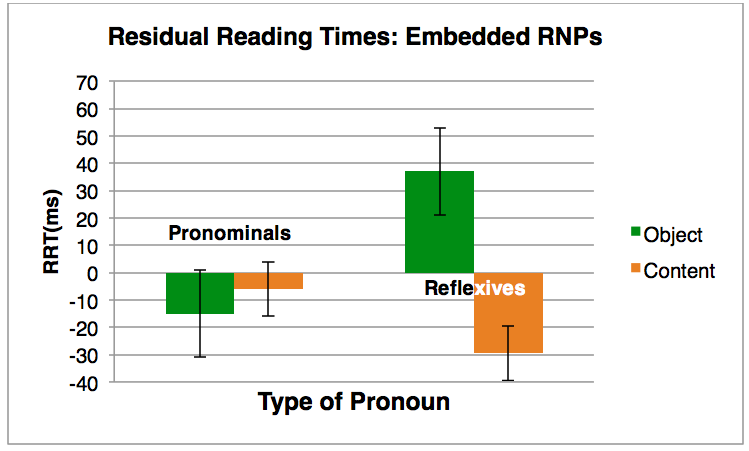


**\***

Figure 4. Residual reading times for RNP pronouns in monoclausal sentences. Error bars represent standard error. \* : *p* < .05.

**4.5.2 – Multiclausal items**

Results were submitted to a 2x2 between-subjects ANOVA that varied on *pronoun type* (pronominal, reflexive) and *selected sense* (object, content) of the representational noun. There was no main effect of pronoun type [*F*(1,31) = .404,   
*p* = .526]; however, there was a significant main effect of selected sense   
[*F*(1,31) = 7.464, *p* < .01]. This was likely due to a significant interaction between pronoun type and selected sense [*F*(1,31) = 12.917, *p* < .001]: as Fig. 5 shows, subjects had faster RRTs for reflexives in the *content* condition (*M* = -29.48) than in the *object* condition (*M* = 37.05).



**\*\***

Figure 5. Residual reading times for RNP pronouns in embedded-clause RNPs. Error bars represent standard error. \* : *p* < .05, \*\* : *p* < .01.

**4.5.3 – Cumulative reading times**

Finally, Fig. 6 shows cumulative reading times for the Reflexive condition of the sentence in Table 2, reproduced below as (49):

(49) a. The politician hoped that the *stolen* documents about himself

would not be reproduced.

b. The politician hoped that the *personal* documents about himself

would not be reproduced.

Reading times for each word following the adjectival modifier of the RNP (i.e., *stolen* or *personal*) were submitted to a two-tailed *t*-test. None of the reading times were statistically different except that of the reflexive: subjects took significantly longer to read *himself* in the Object condition (*M* = 553) than in the Content condition (*M* = 487; *t*(15) = 2.80, *p* < .05).

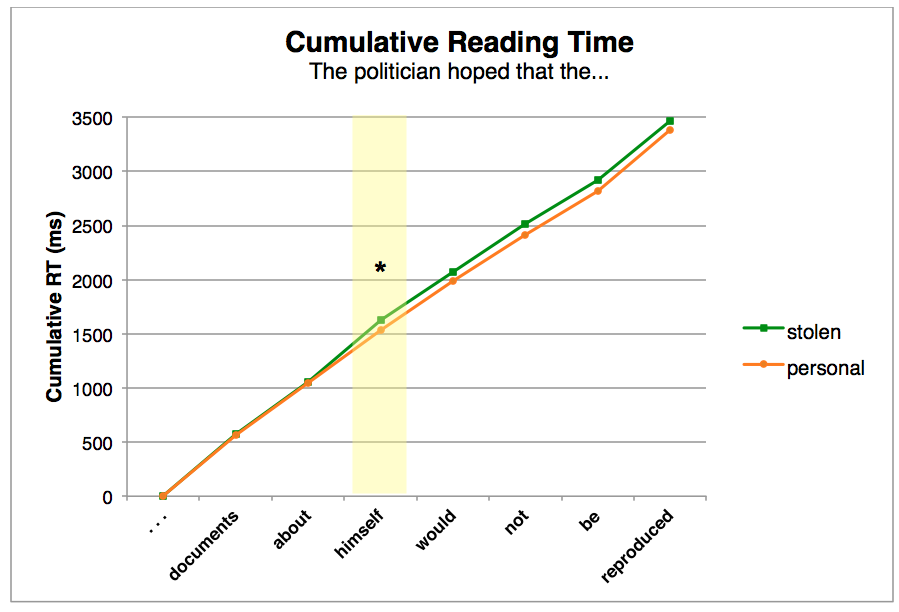


Figure 6. Cumulative reading times for a test item in the Reflexive condition. \* : *p* < .05.

**CHAPTER 5: DISCUSSION**

This chapter will discuss the results from the present study in terms of the theoretical analyses discussed previously. First, I will incorporate my findings into the proposals from Chomsky (1986) and Reinhart & Reuland (1993), and weigh the pros and cons of both. Second, I will explore relevant data from Grimshaw’s (1990) influential typology of nouns, and with it, attempt to provide a formal rationale for the results of the present study. Third, using Grimshaw (1990) as a framework, I will propose a new model for RNPs, that combines qualities from Chomsky (1986) and Reinhart & Reuland (1993).

**5.1 – Overview of results**

The present study found that, in sentences where RNPs do not have a same-clause antecedent, reflexives were more acceptable when the *content* sense of the representational noun was selected over the *object* sense. In other words, subjects showed slower-than-average reading times for the reflexive in (50a), and faster-than-average reading times for the reflexive in (50b):

(50) a. The politician hoped that the stolen documents about himself would not be reproduced.

b. The politician hoped that the slanderous documents about himself would not be reproduced.

Conversely, when the reflexives in (50) were replaced with pronominals, subjects responded to both equally quickly. Further, in monoclausal sentences containing RNPs, this distinction among reflexives disappeared. Rather, reading times were slower than average for pronominals in both the Object and Content conditions, suggesting that in monoclausal RNPs, pronominals are always the marked option. Thus, (51a) was more marked than (51b):

(51) a. John carried/read the book about him in the library.

b. John carried/read the book about himself in the library.

These findings are summarized in Table 3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 3A  *Summary of findings for monoclausal sentences. Statistically significant differences in RRTs are reported.* | | | | |
| John *carried/read* the book about *him/himself* in the library. | | | | |
| **Pronoun type** | Pronominal | | Reflexive | |
| **Selected sense of RN** | Object  ‘carrieda book about him . . .’ | Content  ‘reada book about him . . .’ | Object  ‘carrieda book about himself . . .’ | Content  ‘reada book about himself . . .’ |
| **RRT (ms)** | slow  (*M* = +17.3) | | average  (*M* = -7.0) | |
| Table 3B  *Summary of findings for biclausal sentences. Statistically significant differences in RRTs are reported.* | | | | |
| The politician hoped that that the *stolen/personal* documents about *him/himself* would not be reproduced. | | | | |
| **Pronoun type** | Pronominal | | Reflexive | |
| **Selected sense of RN** | Object  ‘stolen documents about him . . .’ | Content  ‘personal documents about him . . .’ | Object  ‘stolen documents about himself . . .’ | Content  ‘personal documents about himself . . .’ |
| **RRT (ms)** | average  (*M* = -10.4) | | slow  (*M* = 37.0) | fast  (*M* = -29.5) |

**5.2 – Incorporation into theories of binding**

The following section will attempt to incorporate these findings into the two proposals outlined in Chapter 2.

**5.2.1 – PRO-in-NP**

As explained in Section 2.1, the PRO-in-NP approach poses that embedded-clause RNP reflexives can appear in the absence of a same-clause antecedent in cases where the representational noun is implied to be possessed or created by the subject of the matrix clause. In this case, there is a possessive PRO, which co-indexes with the subject of the matrix clause, in the specifier of the RNP. A derivation of this process is given in (22), reproduced below as (52):

(52) a. I hate the story about himselfi that Johni always tells

b. I hate PROi’s story about himselfi that Johni always tells

c. I hate hisi story about himselfi that Johni always tells

*5.2.1.1 – Monoclausal sentences*

Chomsky’s (1981, 1986) conception of BT poses a straightforward syntactic prediction when RNPs appear in single clauses: given that monoclausal constructions have a same-clause accessible subject, RNP pronouns are bound. Therefore, RNP pronouns in monoclausal constructions should be reflexives, as pronominals would constitute a Condition B violation, as in (53):

(53) a. Johni read a book about himselfi.

b. \*Johni read a book about himi.

The results of the present study support this idea: RRTs were significantly longer for pronominals, but not reflexives, in monoclausal sentences. Thus, the present study does not pose a challenge to this facet of the PRO-in-NP theory.

*5.2.1.2 – Embedded clauses*

As described in Section 1.3.2, Chomsky (1986) proposes that unpossessed RNPs in embedded clauses, such as (54), cannot be locally bound due to the *i-*within-*i* filter:

(54) a. \*Poirot thinks that [TP [DP a picture of himselfi]i will be on show]].

b. Poiroti thinks that [TP [DP a picture of himi] will be on show]].

(Haegeman, 1991, p. 207)

Chomsky (1986) proposes that reflexives can appear in these constructions only in the presence of a possessive PRO, which co-indexes with the subject of the matrix clause, in the specifier of the DP containing the RNP. In this case, PRO constitutes an antecedent for embedded RNP pronouns, and sentences like (54b) are grammatical. Unfortunately, while such an analysis is attractively simple, it does not readily accommodate the findings of the present study.

Following the PRO-in-NP approach, we would have to suppose the presence of PRO in *content* readings of RNPs, but not the *object* readings. Thus in (50), reproduced below as (55), only (55a) would have a PRO in the specifier of the embedded subject DP.

(55) a. The politician hoped that the stolen documents about himself

would not be reproduced.

b. The politician hoped that the personal documents about himself

would not be reproduced.

There are a few problems with this assumption. It is certainly possible to imagine a scenario in which there is a mismatch between the possession of the object and contents of a RNP. For example, if John writes a book and gives it to Mary, Mary possesses the physical object, whereas John possesses the content. However, given that the test items were identical aside from the selected sense of the RNP, it would be far-fetched to apply such an interpretation to the test items.

Second, and perhaps more problematically, the test items were inconsistent with a reading in which the subject of the matrix clause could co-index with the possessor of the RNP in question. In (56), for instance, one would be hard-pressed to argue that the teacherwas the creator of thecrumpled notes written angrily about him:[[12]](#footnote-13)

(56) The strict teacher assumed that there would be crumpled/angry notes about himself after class.

Ultimately, then, it is hard to motivate the existence of a possessive PRO as responsible for the findings of the present study.

**5.2.2 – Reflexivity**

In Reinhart & Reuland’s (1993) Reflexivity approach to binding, reflexives in RNPs are not subject to traditional binding constraints, as they are instance of BT-exempt *logophors* rather than “true” reflexives, whose interpretation is influenced by non-structural discourse factors. Thus, unlike the PRO-in-NP approach, the logophor approach leaves open the possibility that such non-structural factors can influence RNP pronouns. In light of the present study, then, the selected sense of the RNP could simply be a factor that modulates the likelihood of a logophoric RNP reflexive.

However, the catch-all classification of all RNP reflexives as “logophors” proves to be overly simplistic. That is, although Reinhart & Reuland (1993) remain relatively neutral as to which non-structural factors influence the presence of logophors, their framework suggests that discourse factors should apply equally to RNPs in both matrix and embedded clauses:

(57) a. Luciei found a picture of heri/herselfi.

b. Luciei knows that there is a picture of heri/herselfi on display.

(Reinhart & Reuland, 1993, p. 677)

In the present study, however, the selected sense of the representational noun affected reading times only for RNP reflexives in *embedded* clauses.Reading times for RNP reflexives in monoclausal sentences were not significantly different in the Object and Content conditions. Thus, the selected sense of the representational noun seems to selectively affect RNP reflexives in embedded clauses, contrary to the predictions of Reinhart & Reuland (1993).

Additionally, as mentioned in Section 2.2.2, Reinhart & Reuland (1993) state that RNP reflexives, by virtue of being logophors, may be more “marked” (p. 672) than pronominals in RNPs. However, in single-clause sentences, RRTs for pronominals were actually *longer* than those for reflexives, implying that *pronouns,* and not reflexives,are the “marked” option in monoclausal RNPs.

Thus, the findings of the present study—specifically, the discrepancy in RRTs between single- and embedded-clause environments—are not in accord with Reinhart & Reuland’s (1993) predictions. The current conception of logophoricity cannot explain this discrepancy without appealing to some sort of extra structural mechanism that increases the acceptability of logophors when they are part of an embedded clause.[[13]](#footnote-14)

**5.2.3 – Summary**

In summary, the PRO-in-NP and Reflexivity approaches appear to each get half of the puzzle right: PRO-in-NP makes the right predictions regarding the difference between RNPs in monoclausal and embedded-clause constructions, and Reflexivity allows for the influence of sense selection without posing the seemingly unmotivated existence of a possessive PRO.

In Section 5.6, I will propose an analysis for RNP reflexives that combines these two proposals. First, however, I have not yet considered *why* the content reading of representational nouns would favor reflexives more than the object reading. In section 5.3, using the typology of nominals devised by Grimshaw (1990), I attempt to provide a theoretical basis for this pattern by drawing parallels between binding and extraction.

**5.3 – Grimshaw’s (1990) typology of nouns**

In her oft-cited typology of nouns, Grimshaw (1990) argues that semantic differences between nouns have consequences for their syntactic properties. Specifically, some nouns obligatorily take arguments, some obligatorily do not take arguments, and others still optionally take arguments.

At one end of the spectrum, nouns that denote *processes,* or events,necessarily take arguments, as shown in (58):

(58) a. the felling \*(of the trees)

b. the destroying \*(of the city)

(Grimshaw, 1990, p. 50)

Given that these nouns indicate processes, they can be modified with adverbial temporal adjuncts like *frequent* or *constant:*

(59) a. the frequent felling of the trees

b. the constant destroying of the city

Conversely, at the other end of the spectrum are *concrete* nouns, which denote inherently static entities, and thus cannot occur with modifiers like *frequent:*

(60) a. the (\*frequent) dog

b. the (\*frequent) stone (Davies & Dubinsky, 2003, p. 10)

Toward the middle of the spectrum are *result* nouns, which denote the outcome of some past event, like those in (61). However, as illustrated in (61c-d), result nouns, unlike process nouns, do not seem to require their arguments:

(61) a. the examination of the patients

b. the expression of one’s feelings

c. The examination was long.

d. The expression was desirable.

(Davies & Dubinsky, 2003, pp. 9-10)

To provide a more clear divide between process and result nominals, Grimshaw (1990) disambiguates the two through the use of temporal modifiers such as *frequent.* When the modifier occurs with a noun like *examination,* the arguments of the noun are obligatory; thus, it forces a process interpretation:

(62) a. The examination was annoying.

b. The frequent examination of the patients was annoying. (process)

c. \*The frequent examination was annoying. (result)

(Davies & Dubinsky, 2003, p. 10)

Therefore, certain result nominals like *examination* or *expression* can belong to both process and result nominals in Grimshaw’s (1990) typology, depending on whether or not they overtly express arguments.

**5.3.1 – Participants**

Importantly, however, although the result nouns in (61) do not *require* their arguments, Grimshaw (1990) notes that they still “imply the existence of certain *participants* in the situation they are used in” (p. 54). Using Grimshaw’s (1990) terminology, participants fulfill the same semantic role as arguments, but are not required by the syntax to be explicitly present. For example, the verb *explain* intrinsically implies the existence of participants: someone must do the explaining, and something must be explained. These participants—the agent and theme, respectively—are required by the syntax, as in (63):

(63) a. He explained his results.

b. \*He explained.

Likewise, the result noun *explanation* implies the existence of corresponding participants: the explanation must be done by someone (i.e., has an agent), and must be about something (i.e., has a theme). However, unlike verbs and process nouns, result nouns do not require that their participants be realized as syntactic arguments (Davies & Dubinsky, 2003):

(64) a. His explanation of the results was confusing.

b. His explanation was confusing.

To summarize, then, both process and result nouns have participants. Process nouns, like *destroying,* require their participants to be realized as arguments. Result nouns, like *explanation,* optionally permit their participants to be realized as arguments. Concrete nouns, like *dog,* do not have participants, and thus cannot take any arguments.

**5.3.2 – Extraction**

The three types of nouns—*process, result,* and *concrete*—outlined at the beginning of Section 5.3 feature differing behavior in terms of wh-extraction possibilities. First, it appears to be the case that it is always possible to extract arguments of process nouns:

(65) a. The film students observed the production of *The Godfather.*

b. What did the film students observe the production of \_\_?

(66) a. The king sanctioned the killing of the witches.

b. Who did the king sanction the killing of \_\_?

But extraction is less favorable in sentences with concrete nouns:

(67) a. Mike adores students of linguistics as his research assistants.

b. \*Which discipline does Mike adore students of \_\_ as his research assistants?

(68) a. Gene was hoping to find an oak table for his study.

b. \*Which wood was Gene hoping to find a table of \_\_ for the kitchen? (Grimshaw, 1990, p. 53)

Based on the data above, there are two possibilities for constraints on extraction from NPs. First, it could be that only nouns that obligatorily take arguments (i.e., process nouns) can extract those arguments. Second, it could be that extraction is not related to argument structure per se, but rather to *participant* structure*:* it may be true that only *participants* can extract.

To test this theory, Davies & Dubinsky (2003) examined extraction from result NPs like *victory*, which have participants that are only optionally expressed as arguments. As we see in (69), extraction is possible in indefinite contexts:

(69) a. Sparta was preparing for a victory over Athens.

b. Who was Sparta preparing for a victory over?

(Davies & Dubinsky, 2003, p. 16)

But definiteness blocks extraction in (70):

(70) a. Sparta was preparing for the victory over Athens.

b. \*Who was Sparta preparing for the victory over?

|  |  |
| --- | --- |
| Table 3  *Weak and strong determiners (Milsark, 1977, p. 18)* | |
| **Weak determiners** | **Strong determiners** |
| indefinite articles: *a, some* | “definites”  + article: *the*  + demonstratives: *this, that, those*  + possessives: *his, their, her, its* |
| number determiners: *one, two, five, six-thousand* |
| Ø plural and mass determiners | universals: *all, every, each, any* (when not polarity item of *some*) |

The definiteness effects in (69) and (70) were first observed by Milsark (1977), who divided determiners into two groups according to which are permissible and which are barred in existential *there* constructions (Table 3). He found that null, indefinite, and number determiners are “weak” (i.e., can appear in existential constructions); definite determiners, demonstratives, possessives, and universals are “strong” (i.e., cannot appear in existential constructions).

(71) a. There is a/one/\*the/\*his/\*that ghost in the closet.

b. There are Ø/some/six/\*all/\*those ghosts in the closet.

(Milsark, 1977, p. 18)

Thus, from the examples above, we can distill the following generalization regarding extraction from NPs: only participants can extract (Davies & Dubinsky, 2003). Therefore, both process and result nominals can undergo wh-extraction, and the latter group is subject to definiteness effects. This finding is summarized in Table 4, adapted from Davies & Dubinsky (2003).

|  |  |  |
| --- | --- | --- |
| Table 4  *Extraction properties of different types of nouns* | | |
| **process nominals** | **result nominals** | **concrete nominals** |
| the destroying of the city | the victory over Athens | the dog |
| participants are obligatorily expressed as arguments | participants are optionally expressed as arguments | no participants or arguments |
| extraction of participants permitted, no definiteness effects | extraction of participants permitted, definiteness effects observed | extraction not permitted |

**5.4 – RNPs in Grimshaw’s (1990) typology**

How do RNPs fit into Grimshaw’s (1990) typology? First, let us consider that nouns can belong to more than one class: as noted in Section 5.3.1, *examination* can have both a process and a result reading, and thus behaves differently with respect to extraction:

(72) a. process reading

Which patient did the surgeon forget to observe an/the examination of \_\_?

b. result reading

What subject was the student hoping to pass an/\*the examination on\_\_?

As Davies & Dubinsky (2003) conjecture, it seems to be the case, too, that the object and content senses of representational nouns belong to different noun classes with respect to participant structure. In the *content* sense, the focus is on the information contained within the book—information that had to be written *by* somebody and *about* something. Therefore, the *content* sense of book necessarily involves participants. In this way, the *content* sense of book resembles result nominal like *victory* and *examination,* which can optionally express its participants as arguments.

Contrarily, in the *object* sense of *book,* the focus is not on the information within the book, but rather on the book as a physical entity. In this reading, what is important is the physical object—its pages, its binding, etc. Who wrote the content of the book, or what that content is about, is irrelevant in this *object* sense. Thus, semantically, the *object* sense of book seems descriptively similar to a concrete noun, like *dog* or *stone*.

**5.4.1 – Extraction from RNPs**

We have posed that representational nouns belong to two nominal categories in Grimshaw’s (1990) typology: content readings pattern with result nouns, and object readings pattern with concrete nouns. If this is the case, we should see different extraction behavior when different senses of representational nouns are accessed.

First, let us consider *content* readings of representational nouns. If these pattern like result nominals, they involve participants, and thus extraction should be possible. Indeed, as (73) shows, this is the case:

(73) a. I wrote a book about linguistics.

b. What did you write a book about?

Conversely, if *object* readings of representational nouns pattern like concrete nominals, extraction should be less acceptable:

(74) a. I burned a book about linguistics.

b. ??What did you burn a book about?

Thus, as Davies & Dubinsky (2003) suggest, it does seem to be the case that the object and content readings of RNPs fit into different categories within the typology proposed by Grimshaw (1990). An updated table of this typology is provided in Table 5.

|  |  |  |
| --- | --- | --- |
| Table 5  *Extraction properties of different types of nouns, including RNPs* | | |
| **process nominals** | **result nominals** | **concrete nominals** |
| the destroying of the city | the victory over Athens  the well-written book | the dog  the dusty book |
| participants are obligatorily expressed as arguments | participants are optionally expressed as arguments | no participants or arguments |
| extraction of participants permitted, no definiteness effects | extraction of participants permitted, definiteness effects observed | extraction not permitted |

**5.4.2 – Binding in RNPs**

Consider (75), a slight modification of a sentence pair that was used in the present study. When the content sense of *book* was selected (75a), reading times were faster for non-clause-bound RNP reflexives than when object sense was selected (75b).[[14]](#footnote-15)

(75) a. The politician thought that there were slanderous reports about himself in the office.

b. ??The politician thought that there were shredded reports about himself in the office.

This pattern parallels Davies & Dubinsky’s (2003) observations on wh-extraction from RNPs, in which extraction is possible only under content readings:

(76) a. The politician thought that there were slanderous reports about himself in the office.

b. Who did he think that there were slanderous reports about \_\_ in the office?[[15]](#footnote-16)

c. ??The politician thought that there were shredded reports about himself in the office.

d. \*Who did he think that there were shredded reports about \_\_ in the office?

As explained in Section 5.3.3, Davies & Dubinsky (2003) attribute the contrasting extraction behavior of RNPs to a difference in participant structure: content readings of RNPs are result nouns and thus have participants, whereas object readings are concrete nouns and do not have participants. Since only participants can extract, it follows that content readings of RNPs permit extraction, whereas object readings cannot.

Given the similarities between wh-extraction and data obtained on binding behavior, could it be possible that participant structure is also responsible for the results of the present study? As (76b,d) show, a wh-element can be extracted from *report* only in its content reading, likewise, (76a,c) show that the reflexive *himself* can have a non-clause-bound antecedent only when the content reading of *report* is selected.

It seems plausible, then, that in RNPs, binding behavior mirrors extraction behavior, and is governed by a similar underlying mechanism: wh-extraction and non-clause-bound binding can occur only in the *content* readings of representational nouns.

**5.5 – Definiteness effects**

In section 5.3.3, Davies & Dubinsky (2003) observed that extraction is possible from result nouns only when they occur with indefinite, and not definite, determiners:

(77) a. Sparta was preparing for a victory over Athens.

b. Who was Sparta preparing for a victory over \_\_?

(78) a. Sparta was preparing for the victory over Athens.

b. \*Who was Sparta preparing for the victory over \_\_?

(Davies & Dubinsky, 2003, p. 16)

Further, following Davies & Dubinsky’s (2003) assumption that the content readings of RNPs are result nouns, we see see similar definiteness effects in RNPs:

(79) a. Dorae read a great book about corn.

b. What did Dorae read a great book about \_\_?

(80) a. Dorae read the/that/one great book about corn.

b. \*What did Dorae read the/that/one great book about \_\_?

If binding behavior mirrors extraction behavior, will we also observe definiteness effects in RNP reflexives? To test this, I administered a short survey that included versions the test items used in the present study that were modified to include either a “strong” or “weak” determiner following Milsark (1977). I used only the sentences that occurred in biclausal contexts and selected the *content* sense of the representational noun. If the definiteness effects we see in (79) and (80) apply to binding, then (81b) should be degraded compared to (81a):

(81) a. Max wondered if a heartfelt article about himself would be

published in the magazine.

b. Max wondered if the heartfelt article about himself would be

published in the magazine.

There were two versions of four sentences; thus, I split the surveys into two groups, who each judged four sentences total: two with strong determiners as defined by Milsark (1977), and two with weak determiners (see Appendix B for a full list of stimuli). A total of 30 subjects filled out the survey, resulting in 120 judgments total, and 15 judgments for each of the two versions of each sentence.

**5.5.1 – Results and discussion**

A two-tailed *t*-test yielded significant results: subjects rated sentences with strong determiners (*M* = 3.31, *SD* = 0.59) as significantly worse than those with weak determiners (*M* = 2.77, *SD* = 0.67; *t*(29) = -2.37, *p* < .05). This once again mirrors the extraction data from Davies & Dubinsky (2003), and provides further evidence that binding and extraction in RNPs are subject to the same constraints.

**5.6 Proposed Model**

Given the parallels between extraction and binding described above, I propose a new model for binding in RNPs that takes into account the idea of participant structure à la Grimshaw (1990) and Davies & Dubinsky (2003). This model combines elements from the PRO-in-NP and logophor approaches, outlined in Chapter 2, to provide a unified syntactic account of binding in RNPs.[[16]](#footnote-17)

**5.6.1 – Salience of syntax**

Syntactic structure and c-command are the primary determinants of binding behavior in RNPs. Following Chomsky (1981, 1986), pronominals with a same-clause antecedent (i.e., an accessible subject) must be bound, and therefore RNPs in monoclausal sentences by default take reflexives. This is in accord with the results of the present study, in which RRTs were higher for RNP pronominals compared to reflexives in monoclausal environments.

**5.6.2 – Distribution of logophors**

RNP reflexives that lack same-clause antecedents do not seem to be bound by a null local antecedent, as Chomsky (1986) suggests. Rather, as Reinhart & Reuland (1993) claim, these reflexives appear to be exempt from typical constraints on binding, and thus can take non-clause-bound antecedents.

In addition, as discussed in Section 2.2.2, the classification of these BT-exempt reflexives as “logophors” appears to be well-grounded. By definition, logophors co-index with the “author of a secondary discourse” (Sells, 1987, p. 445). Similarly, RNP reflexives occur inside of CP complements of verbs such as *to know, to say,* and *to like,* which automatically imply this kind of secondary discourse. Further, logophors can find antecedents across clause boundaries, mirroring the behavior of RNP reflexives in English.

**5.6.3 – Participant structure**

The distribution of RNP reflexives is contingent upon the distinct extraction behavior of different types of nouns (Grimshaw, 1990): extraction is possible from NPs headed by *result* nominals, which have *participants* (i.e., an agent and a theme), whereas extraction is not possible from NPs headed by *concrete* nominals, which do not have participants. The object and content senses of representational nouns correspond to different nominal categories: as conjectured in Section 5.4, content readings of representational nouns are *result* nominals, and thusnecessarily involve participants; conversely, object readings are *concrete* nominals, which do not have participants.

Therefore, just as wh-extraction can occur exclusively with result nominals (and not concrete nominals), so too can cross-clausal binding occur only in the *content* (result), and not the *object* (concrete) reading of a representational noun. This distinction explains why differences in RRTs were observed only when the *content* reading of the representational noun was selected: only then is extraction permitted,[[17]](#footnote-18) allowing logophoric RNP reflexives to find an antecedent in a different clause. It also explains why RNPs were judged as less grammatical when they were headed by definite determiners: definiteness effects are observed in both extraction and binding.

As a final note, observe that the prominence of syntax also accounts for the fact that the selected sense of the representational noun selectively affected RRTs for reflexives*,* and not pronominals. Since pronominals in embedded-clause RNPs are the syntactically unmarked option, they are acceptable with either sense of the representational noun. Thus, even if the content sense of a representational noun facilitates reading times for *reflexives,* this does not translate to a corresponding inhibition of reading times in *pronominals:* syntactic biases override semantic ones. This reasoning alsoexplains why sense selection had no effect on RNP reflexives in monoclausal sentences.

**5.6.4 – Conclusion**

Thus, my proposed model bridges the literature on syntax and lexical semantics. In it, I accept the basic logic of BT (Chomsky, 1981, 1986), which accounts for the fundamental distinction between matrix- and embedded-clause RNPs. I borrow from Reinhart & Reuland (1993) the interpretation of RNP reflexives as logophors, but restrict their domain—first, to embedded-clause RNPs, and second, only to those RNPs headed by a *content* reading of the representational noun. This latter distinction between object and content reading is motivated by the parallels between binding and wh-extraction in different types of nominals, as observed by Grimshaw (1990) and Davies & Dubinsky (2003).[[18]](#footnote-19)

This model correctly predicts the results of the present study. In (82), a reflexive is favored because Condition B (Chomsky, 1981) requires that a pronominal be free in its binding domain—in this case, the entire clause.

(82) Caseyi found a picture of ??himi/himselfi.

Similarly, in (83), both a pronominal and an reflexive are acceptable. The pronominal in (83a) is acceptable by virtue of being syntactically unmarked as per Condition B. The reflexive (83b) is acceptable because its environment—in a content-based RNP with no same-clause antecedent—permits its logophoric use, and it is thus exempt from typical binding constraints.

(83) a. Caseyi thinks that a flattering portrait of himi would brighten the

room.

b. Caseyi thinks that a flattering portrait of himselfi would brighten

the room.

Finally, the sentences in (84) and (85b) are disfavored: in (84), a logophoric reflexive occurs in the presence of an object-selected representational noun, which prohibits co-indexation with a cross-clausal antecedent. And in (85b), the presence of the definite determiner *the* reduces the acceptability of the RNP reflexive.

(84) ??Casey knows that there is a ripped-up article about himself in the trash.

(85) a. Casey thinks that a portrait of himself would brighten the room.

b. ?Casey thinks that the portrait of himself would brighten the room.

Syntactic structures for two variations of the sentences in (83) are illustrated below in Figure 7.

|  |  |
| --- | --- |
| a) | b) |

Figure 7. Syntax trees for two varations of (83). In (7a), a pronominal is favored due to the presence of a strong determiner and the object sense of the representational noun *portrait.* In (7b), a reflexive is favored due to the presence of weak determiner and the content sense of *portrait.*

**CHAPTER 6: LINGERING CONCERNS AND FURTHER CONSIDERATIONS**

Having arrived at a model for binding in RNPs in Section 5.6, this section will examine some issues that have arisen along the way, as well as consider the cross-linguistic implications for this model.

**6.1 – The blurry nature of representational nouns**

Chapter 3 discussed several remarkable semantic properties of regular polysemes, as noted by theoretical linguists (e.g., Apresjan, 1974; Nunberg, 1979; Lehrer, 1990). These unique properties have given rise to a *single-entry* approach to regular polysemy (Pustejovsky, 1995; Rabagliati & Snedeker, 2013), which theorizes that the two meanings of polysemes are not distinct, and are actually stored in the same semantic entity. It may be the case that this blurriness between senses is part of the reason why binding judgments in RNPs are so variable. This section discusses some of the implications of this blurriness for the present study.

**6.1.1 – Cross-contamination between senses**

It is well-established in the literature that the multiple meanings of homophones are stored as separate lexical entries in our mental dictionaries. Thus, *bank*—slope and *bank*—institution actually represent distinct words.[[19]](#footnote-20) The multiple meanings of polysemes, on the other hand, have been theorized (see Pustejovsky, 1995, for a review) to constitute a single semantic entry; consequently, in context, it is hard to singly isolate the object and content meanings of regular polysemes like *book.[[20]](#footnote-21)*

The *single-entry* account to polysemy, proposed by experimental psychologists (e.g., Klepousniotou, Titone, & Romero, 2008; Rabagliati & Snedeker, 2013; Rodd, Gaskell, & Marslen-Wilson, 2002) and theoretical linguists (.g., Caramazza & Grober, 1976; Pustejovsky, 1995) alike, postulates that both meanings of regular polysemes are stored as a single lexical item, whose intended meaning is selected from context. Under this approach, various senses of polysemous words do not need to be stored in memory at all, but rather are generated from a single, underspecified semantic core meaning. For instance, the meaning of a polysemous word like *line* might specify only a one-dimensional extension of space; from this underspecified core, we can talk about *lines of people, lines of text, train lines,* and so on.

Though this single-entry approach is rooted in semantics, there is also evidence that the senses of regular polysemes like *book* live in a single *syntactic* entry. Chomsky (1970) notes that syntactic rules governing co-reference must operate on the “same lexical item” (p. 59). For example, in (86), *Casey* and *he* co-refer, and thus the sentence is well-formed syntactically.

(86) Caseyi eats whatever hei wants.

Similarly, in (87), *the mystery novel* and *it* both refer to the *content* meaning of *novel,* and the sentence is grammatical:

(87) He enjoyed mystery noveli because iti was so well-writteni.

However, the picture becomes a bit more complicated when we consider sentences like (88), in which the novel in question has been dropped into a puddle:

(88) The mystery noveli was interesting, but iti was too wet to read.

Here, *the mystery novel* denotes a content reading of *novel,* whereas *it was too wet to read* denotes an object reading of the novel. Still, however, (88) is well-formed grammatically, even though *novel* and *it* refer to different senses of the word *novel.* In other words, the two different meanings of *novel* appear to behave like the exact same word in the syntax.

The example in (88) highlights that the different senses of regular polysemes are often conflated without a resultant loss in grammaticality. As a result of this conflation, it is often the case that representational nouns do not “purely” select one sense over another. In (89), for instance, the adjective *fascinating* suggests a content interpretation of *book;* at the same time, the verb *put down* points to an objectinterpretation. Thus, in context, representational nouns often alternate between object and content senses in a way that is difficult to quantify.

(89) She could barely put down the fascinating book.

The test items in the present study are not free from this “cross-contamination” of sense selection. In sentences like (90), for example, the existential construction itself implies the existence of some physical object, even if the rest of the sentence is biased toward a content reading.

(90) He knew that there were slanderous reports about himself in the office.

(91) a. He shredded some reports about himself.

b. He shredded some reports.

Similarly, in the Object condition, the simple presence of the PP within the RNP forces a content interpretation (compare 91a and 91b). Therefore, I cannot claim that the test items examined the absolute difference between *purely* content and *purely* object interpretations. Rather, I can postulate only a *relative,* qualitativedistinction between the two senses: for instance, items in the Object condition were more object-biased than analogous sentences in the Content condition.

**6.1.2 – Semantic distance between senses**

Moreover, the semantic distance between the object and content senses of representational nouns varies. For instance, the object and content sense of *novel* are relatively distinct: one refers to physical pages and binding, whereas the other refers to abstract stories and characters. In other words, the form of the object has no bearing on the content. That is, a novel can be made long or short, large or small, hardcover or paperback, without fundamentally altering its content. But with words like *statue,* this distinction is less clear-cut, as its form and content are inextricably related: a statue of Noam Chomsky and a statue of Lady Gaga could not possibly take the same form.

But this idea of semantic distance, like that of cross-contamination between senses, defies quantification. Thus, in the present study, I treat all representational nouns as semantically equal, and do not make any claims about the potential grammatical consequences of the semantic distance between their senses.

**6.2 – Kuno’s (1987) discourse factors**

Kuno’s (1987) provides a long list of discourse factors which he argues are key determinants in the binding behavior of RNPs. Three of these factors— “awareness,” “point of view,” and “focus,”—are presented below in (92) – (94). Kuno (1987) constructed a quantitative model for these discourse influences, assigning each factor a relative weight that corresponds to its importance in influencing binding behaviors.

(92) a. John knows that there is a picture of himself in the morning paper.

b. \*John still doesn’t know that there is a picture of himself in the

morning paper.

(93) a. John was going to get even with Mary. That picture of himself in

the paper would really annoy her.

b. \*Mary was taken aback by the publicity John was receiving. That

picture of himself in the paper would really annoy her.

(94) a. John didn’t tell *Mary* that there was a picture of himself in the post

office; he told *Deborah.*

b. \**John* didn’t tell Mary that there was a picture of himself in the

post office; *Deborah* did.

(Kuno, 1987, pp. 162-179)

Most of these influences remain empirically untested. However, that such factors are indeed relevant to binding in RNPs has been substantiated by several psycholinguistics experiments which have found that discourse manipulations like perspective (Kaiser, et al., 2004, 2009) systematically affect the processing of RNPs. For instance, in Kaiser et al. (2009), eye movements revealed a preference for reflexives in RNPs when antecedents were *sources* of information (95a), and a preference for pronominals when antecedents were *receivers* of information (95b), which is closely related to Kuno’s (1987) idea of awareness.[[21]](#footnote-22)

(95) a. Maxi heard from Sally that there was a picture of himi in the

newspaper

b. Maxi told Sally that there was a picture of himselfi in the

newspaper

Given that the test items in the present study were minimal pairs that varied only on the sense of the representational noun, other semantic influences like those described by Kuno (1987) or Kaiser et al. (2009) were held constant. However, it is probable that sense selection interacts with other semantic and discourse factors, which work together to jointly influence binding behaviors. An examination of this interaction remains to be researched.

**6.3 – Condition B violations**

Using Chomsky’s (1981, 1986) terminology, the present study deals with Condition A violations, in which reflexives appear in the absence of a clause-mate antecedent. However, as noted by Reinhart & Reuland (1993) and many others (e.g., Jackendoff, 1972; Kuno, 1987; Pollard & Sag, 1992), RNPs have also been observed to feature Condition *B* violations, in which pronominals appear to be bound by a same-clause antecedent:

(96) a. I like to hear jokes about me/myself

b. Lucie found a picture of her/herself

(Reinhart & Reuland, 1993, p. 677)

There are two points worth raising here. First, in (96), reflexives are certainly possible, and maybe preferable; pronominals seem to be the marked option. Thus, these violations seem to indicate at most a *flexibility,* rather than a hard-and-fast exception, in binding constraints. As noted previously, binding judgments in RNPs are so variable that it is prudent to treat these judgments as evidence of trends or patterns, rather than hard-and-fast rules.

Second, it could be the case that pragmatic factors, such as Grice’s (1975) conversational maxims, are relevant here. Consider the difference between the two versions of (97):

(97) a. Luciei found a picture of heri.

b. Ii found a picture of mei.

In a previous survey, I collected grammaticality judgments for sentences with Condition B violations, like (97). Using 5-point Likert scale, I found that participants these sentences as more grammatical when they contained pronominals in the first person (*M* = 4.0) relative to those in third person (*M* = 2.25). Klug (2013) interpreted these data as suggesting that pragmatic factors involving ambiguity avoidance affect the acceptability of pronouns in RNPs.

Grice’s Maxim of Manner, which mandates that speakers avoid ambiguous expressions (Grice, 1975), seems relevant here: Condition B violations were deemed more acceptable when the pronoun had only one possible referent (i.e., *me* can co-refer only with *I*) than when it had multiple possible referents (i.e., *him* could refer to *John* or to another male person). More research remains to be done, however, to substantiate this claim; this relationship between binding judgments and conversation-oriented pragmatic factors like Grice’s Maxims is a potentially fruitful area for future study.

**6.4 – Spanish: a way to save PRO-in-NP?**

In Section 5.2, part of the rationale for dismissing Chomsky’s (1986) PRO-in-NP hypothesis was the existence of sentences like (26), reproduced below as (98), in which the RNP reflexive seems incompatible with a relationship of ownership or creation with the representational noun:

(98) Casey sent me a picture of himself from his sister’s album that his mother

took

In (98), then, there seems to be little motivation to pose the existence of a possessive PRO in the determiner slot of the RNP. However, it is not always the case that possessive determiners are used to indicate explicit ownership. For example, it is possible to imagine a scenario for (99) in which *her picture* means roughly “the picture that Mary appears in,” and does not mean that Mary either created or owns the picture:

(99) Mary, an aspiring actress, wants her photograph in all the newspapers.

(=wants some picture of her to be in the newspapers)

Further, in Spanish, the use of possessive pronouns to indicate a broader sense of possession is standard in RNPs. In (100), for example, the most standard interpretation for the RNP *la foto suya* (“her photograph”)is one in which Maria appears in, but did not create and does not own, the photograph in question (Hernández, 2014, personal correspondence):[[22]](#footnote-23)

(100) María sabe que la foto suya está en la oficina.

Maria know that the picture hers is in the office

‘Maria knows that a picture of her in the office.’

(=a picture of her is in the office)

Thus the Spanish data in (100) could lend more credit to the PRO-in-NP hypothesis: by expanding our definition of possession to include scenarios such as those in (99) and (100), the PRO-in-NP approach becomes more semantically tenable. Further, this broader definition of possession seems to apply exclusively to content readings, as it deals directly with the photographs’ content. With respect to the present study, then, it seems plausible to hypothesize that this loose possession relationship would apply preferentially to content over object interpretations, and is thus consistent with the results.

Still, however, the PRO-in-NP approach retains its syntactic issues noted by Runner (2007), such as posing the existence of a possessive determiner in places where they are disallowed, such as existential *there* constructions.

**CHAPTER 7: CONCLUSIONS AND FUTURE DIRECTIONS**

This final chapter will summarize the conclusions drawn from the present study, and will offer ideas for future research.

**7.1 – Future Directions**

This section will propose three ideas for future study. First, I will consider the ideas for cross-linguistic experiments involving the nature of RNPs and representational nouns. Second, I will propose a more in-depth examination of representational nouns themselves. Finally, I will consider ways in which the present study could be incorporated into Belletti & Rizzi’s (1989) influential paper on binding behavior in psych-verb constructions.

**7.1.1 – Cross-linguistic**

Section 3.2 showed that regular polysemy is a cross-linguistic phenomenon, and that regular polysemous patterns (e.g., animal-meat, object-content, contents-container) identified by Apresjan (1974) are present in such diverse languages as English, Japanese, Spanish, and Yoruba. Thus, the critical question is: do they also have similar grammatical properties, or effect similar grammatical influences? Would the results obtained in the present study extend to languages other than English? Given that the underlying semantic patterns of regular polysemes appear more or less the same cross-linguistically, it is possible that they would have similar behavior to regular polysemes in English.

However, the Spanish data in Section 6.4 suggests that the picture might not be so simple. Although regular polysemes in Spanish reflect those of English, RNPs are structurally different in both languages: whereas English indicates the content of the RNP with a prepositional *of*-phrase (101a), Spanish shows the same relationship with a possessive pronoun (101b):

(101) a. a picture of me b. una foto mía

a photo mine

‘a picture of me’

It is not immediately clear how (or if) the sense selection of the representational noun would affect RNPs when they are of the structure in (101b). Thus, it would be valuable to conduct a cross-linguistic analysis of RNPs, and determine the extent to which binding and polysemy do or do not interact.

**7.1.2 – Comparison among representational nouns**

Section 6.1.2 introduced the concept of *semantic distance* between the senses of representational nouns. Some representational nouns, like *book,* have clearly delineated object and content senses that are mostly independent from each other: the form of a book does not depend on the content within it. Conversely, others, like *statue,* have a nearly inextricable relationship between their object and content senses: the form of a statue is highly dependent on the content it depicts.

It would be worthwhile to examine the effect of this varying semantic distance in terms of both binding and extraction. Specifically, are the semantically-distant senses of *book* and semantically-overlapping senses of *statue* subject to the same extraction and binding restrictions? Sentences (102) and (103) show the comparison in question:

(102) a. Who did you read a book about \_\_? content

b. ??Who did you burn a book about \_\_? object

(103) a. Who did you critique a statue of \_\_? content

b. ?Who did you destroy a statue of \_\_? object

Based on the extraction data in (102) and (103), it could be the case that extraction constraints are stronger for representational nouns with more clearly defined object and content senses (e.g., *book)*, and weaker for those whose senses overlap more (e.g., *statue*).

**7.1.3 – Psych-verbs and binding**

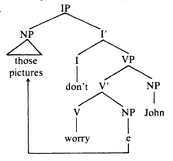
Kim & Larson (1989) note that a distinction exists between sentences like (104a) and (104b):

(104) a. Pictures of himself worry John.

b. ??Pictures of himself portray John well.

The traditional analysis for this distinction comes from Belletti & Rizzi’s (1988) paper on psych-verbs and θ-theory. In their proposal, they argue that psych-verbs are, in essence, unaccusative constructions that have two internal arguments. On this view, a sentence like (105a) would be derived as (105b):

(105) a. Those pictures don’t worry John.

b.  (Kim & Larson, 1989, p. 683)

With this structure, it is easy to account for the difference between (104a-b): in (104a), which contains a psych-verb, *John* c-commands the RNPin the deep structure, and thus serves as an antecedent. Therefore, when the RNP moves to [Spec, TP], Condition A has already been satisfied, and the sentence is grammatical. But in (103b), which does not contain a psych-verb, the RNP starts out in the [Spec, TP], and thus does not have a c-commanding antecedent for *himself*. Here, a reflexive would be ungrammatical, as there is no c-commanding antecedent to bind it.

The interplay between binding and psych-verbs is beyond the scope of the present study. Given that the present study does not involve psych-verbs, the movement analysis as proposed by Belletti & Rizzi (1988) cannot account for the data examined presently. However, it is relevant to general concerns that the present study addresses. For example, as Reinhart & Reuland (1993) ask in a footnote, does the structure of psych-verbs account for contrasts like (106), as well? Note that the RNP in (106a) is likely content-biased, whereas the RNP in (106b) is object-biased:

(106) a. Pictures of herself amuse Lucie.

b. \*Pictures of herself fell on Lucie.

Thus, there are two important questions to ask: are (104b) and (106b) equally ungrammatical, or is one markedly worse than the other? Further, are they both ungrammatical for the same reason—or could the object-content distinction play a role here, too? This question remains to be determined.

**7.2 – Conclusions**

In the present study, two primary results emerged. First, in monoclausal sentences, RRTs for RNP pronominals were slower than for reflexives. Second, reading times in embedded-clause RNPs varied significantly based on the selected sense of the representational noun: RRTs for reflexives were faster in the Content condition, and slower in the Object condition. This section will isolate several conclusions that can be drawn from this study, and will identify some directions for future research.

Overall, the present study supports a model for binding in RNPs that combines elements from Chomsky’s (1986) PRO-in-NP approach and Reinhart & Reuland (1993)’s logophor approach (see Section 2.2.2 for specifics). Specifically, I adopt the general binding framework from Chomsky (1981), which contends that hierarchical syntactic relationships like c-command are important. At the same time, I maintain Reinhart & Reuland’s (1993) claim that some RNPs (albeit in much more restricted settings) are logophoric, and thus are exempt from binding constraints. Unlike “true” reflexives, these logophoric reflexives, like logophors in languages such as Ewe, can cross clause boundaries to find an antecedent.

The context in which RNP reflexives can be BT-exempt logophors is determined jointly by syntax and semantics. Syntactically, in order to avoid violations of Chomsky’s (1986) Condition A, they must occur in contexts where there is no same-clause antecedent. Semantically, I adopt Grimshaw’s (1990) idea of *participant structure,* along with Davies & Dubinsky’s (2003) observation that wh-extraction out of NPs can occur only in NPs that have participants. Given that *content* readings of RNPs have participant structure but *object* readings do not, I argue for a parallel between binding and extraction from RNPs: when wh-extraction is possible out of a RNP, so too is cross-clausal binding.

Therefore, only in RNPs with *content* readings are reflexives exempt from typical binding constraints. Felicitously, these environments (i.e., CP complements of verbs like *think, know,* and *like*) introduce the author of a secondary discourse, and thus match those in which true logophors appear (e.g., in Ewe), fortifying their classification as logophors (Sells, 1984).

From the model outlined above, three main conclusions can be drawn. First, semantic phenomena can have syntactic consequences: the selected sense of the RNP can affect the acceptability of RNP reflexives. Second, there can be parallels between extraction and binding. Though it is not the case that binding and extraction operate under identical syntactic principles (Cole, Hermon, & Sung, 1990), the parallels between binding and extraction outlined in Chapter 5 are suggestive of shared principles (e.g., participant structure, definiteness) that affect both extraction and binding.

Finally, the present study further validates the Moving Window Task as an effective tool for studying the implicit processing of linguistic phenomena. It was both sensitive and precise: reading time differences of tens of milliseconds proved to be statistically significant.

**Appendix A**

Stimuli used for the MWT experiment. Italicized words indicate object/content and pronominal/reflexive variations.

|  |  |  |
| --- | --- | --- |
| **Noun** | **Clause type** | **Sentence** |
| **article** | CP complement | After the accident, Max wondered if a *long/heartfelt* article about *him/himself* would be published in the magazine. |
| **book** | monoclausal | John *carried/read* the book about *him/himself* in the library. |
| **document** | CP complement | The politician hoped that the *stolen/slanderous* documents about himself would not be reproduced. |
| **image** | existential | The middle schooler found out that there was a(n) *tiny/ugly* image of *him/himself* all over the school computers. |
| **note** | existential | The strict teacher assumed that there would be *crumpled/angry* notes about *him/himself* after class. |
| **painting** | CP complement | The model was glad that some of the *huge/gorgeous* paintings of *him/himself* won prestigious awards. |
| **photograph** | existential | The shy author disliked that that there were  *life-size/close-up* photographs of *him/himself* all throughout the city. |
| **picture** | monoclausal | The mayor *cut out/looked at* pictures of *him/himself* from the local newspaper. |
| **recording** | monoclausal | The singer *burned/played* some recordings of *him/himself* when he was upset. |
| **report** | monoclausal | David *shredded/edited* a report about *him/himself* on Tuesday. |
| **statue** | existential | The hotel manager thought that ther should be a *bronze/realistic* statue of *him/himself* in the local newspaper. |
| **video** | CP complement | The celebrity thought that a(n) *expensive/scandalous* video about *him/himself* would garner good sales. |

**Appendix B**

Stimuli used for the definiteness survey. Italicized words indicate versions of the sentence with weak/strong determiners.

|  |  |
| --- | --- |
| **Noun** | **Sentence** |
| **article** | After the accident, Max wondered if *a/the* article about himself would be published in the magazine. |
| **document** | After the , the politician feared that *some/those* documents about himselfwould be released to the public. |
| **painting** | The model was glad that *some/six* paintings of himself won prestigious awards. |
| **video** | The celebrity thought that *a/the* video about himselfwould garner good sales. |

**References**

Apresjan, J. (1974) Regular polysemy. *Linguistics,* 142, 5-32.

Belletti, A., & Rizzi, L. (1988). Psych-verbs and θ-theory. *Natural Language &  
 Linguistic Theory, 6*(3), 291-352.

Büring, D. (2005). *Binding theory.* Cambridge University Press.

Caramazza, A., & Grober, E. (1976). Polysemy and the structure of the subjective  
lexicon. `In C. Rameh (Ed.), *Georgetown University Roundtable on Languages and*   
 *Linguistics. Semantics: Theory and application* (pp. 181-206). Washington, DC:   
Georgetown University Press.

Carnie, A. (2012). *Syntax: A generative introduction* (Vol. 19). John Wiley & Sons.

Chomsky, N. (1970). *Remarks on nominalization.* Waltham, MA: Ginn and Company.

Chomsky, N. (1980). On binding. *Linguistic Inquiry,* 11, 1-46.

Chomsky, N. (1981). *Lectures on Government and binding.* Dordrecht: Foris.

Chomsky, N. (1986). *Barriers.* Cambridge, Mass.: MIT Press.

Clements, G. N. (1975). The logophoric pronoun in Ewe: Its role in discourse. *Journal of   
 West African Languages, 10*, 141-177.

Cole, P., Hermon, G., & Huang, C. T. J., Eds. (2001). Long-Distance Reflexives. *Syntax   
 and Semantics,* 33. San Diego, Calif.: Academic Press.

Cole, P., Hermon, G., & Sung, L. M. (1990). Principles and parameters of long-distance  
reflexives. *Linguistic inquiry,* 1-22.

Copestake, A., & Briscoe, E. J. (1995). Semi-productive Polysemy and Sense Extension.  
 *Journal of Semantics,* 12, 15-67.

Culicover, P. W., & Jackendoff, R. (2001). Control is not movement. *Linguistic*

*Inquiry*, *32*(3), 493-512.

Davies, W. D., & Dubinsky, S. (2003). On extraction from NPs. *Natural language &   
 linguistic theory,* 21(1), 1-37.

Everaert, M. (1986). *The syntax of reflexivization.* Dordrecht: Foris.

Everaert, M. (1991). Contextual determination of the anaphor/pronominal distinction. In  
Koster and Reuland (1991), 77-119.

Felser, C., Roberts, L., Gross, R. & Marinis, T. 2003. The processing of ambiguous   
sentences by first and second language learners of English. Applied   
Psycholinguistics, 24, 453-489.

Ferreira, F., Anes, M., & Horine, M. (1996). Exploring the use of prosody during  
language comprehension using the auditory moving window technique. *Journal of  
 Psycholinguistic Research,* 25, 273-290.

Frazier, L., & Rayner, K. (1989). Taking on semantic commitments: Processing multiple  
meanings vs. multiple senses. *Journal of Memory and Language, 29*(2), 181-200.

Gibson, E. & Pearlmutter, N. 1998. Constraints on sentence comprehension. *Trends in  
 Cognitive Science, 2*, 262-268.

Gibson, E., Pearlmutter, N., Canseco-Gonzalez, E. & Hickok, G. (1996). Cross-linguistic  
attachment preferences: Evidence from English and Spanish. *Cognition,* 59, 23-59.

Grice, H. P. (1970). *Logic and conversation* (pp. 41-58). Cambridge, Mass: Harvard  
University Press.

Grimshaw, J. (1990). *Argument structure.* Cambridge, Mass.: MIT Press.

Haegeman, L. (1991). *Introduction to Government and Binding Theory.* Oxford: Basil  
Blackwell.

Hagége, C. (1974). Les pronoms logophoriques. *Bulletin de la Société de Linguistique de  
 Paris,* 69, 287-310.

Hellan, L. (1988). *Anaphora in Norwegian and the theory of grammar.* Dordrecht: Foris.

Hino, Y., & Lupker, S. J. (1996). Effects of polysemy in lexical decision and naming: An  
alternative to lexical access accounts. *Journal of Experimental Psychology: Human  
 Perception and Performance,* 22, 1331-1356.

Hornstein, N. (1999). Movement and control. *Linguistic inquiry*, *30*(1), 69-96.

Huang, L. (2011). Resolving word sense ambiguity of polysemous words in a second  
language. Doctoral dissertation, The University of Texas at Austin.

Jackendoff, R. (1972). *Semantic interpretation in generative grammar.* Cambridge,  
Mass.:MIT Press.

Jacobs, R. A., & Rosenbaum, P. S., Eds. (1970). *Readings in English transformational  
 grammar.* Waltham, Mass.: Ginn.

Jaeger, T. F., Butt, M., & King, T. H. (2004). Binding in picture NPs revisited: Evidence   
 for a semantic principle of extended argument-hood. In *Proceedings of the LFG04   
 Conference, Christchurch, New Zealand. Stanford: CSLI Publications*.

Juffs, A. & Harrington, M. (1996). Garden path sentences and error data in second  
language sentence processing. *Language Learning,* 46, 283-326.

Just, M. A., Carpenter, P. A., & Woolley, J. D. (1982). Paradigms and processes in  
reading comprehension. *Journal of Experimental Psychology: General, 111*(2), 228.

Kaiser, E., Runner, J., Sussman, R. S., & Tanenhaus, M. K. (2004). Susceptibility to  
discourse/semantic factors: An experimental approach to short-distance pronouns  
and logophoric reflexives. Handout for *Workshop on Semantic Approaches to  
 Binding Theory,* August 16th – 20th, 2004, Nancy, France.

Kaiser, E., Runner, J. T., Sussman, R. S., & Tanenhaus, M. K. (2009). Structural and  
semantic constraints on the resolution of pronouns and reflexives. *Cognition, 112*(1),  
55-80.

Kawamoto, A. H., Farrar, W. T., & Kello, C. T. (1994). When two meanings are better  
than one: Modeling the ambiguity advantage using a recurrent distributed network.  
 *Journal of Experimental Psychology: Human Perception and Performance,* 20,  
1233-1247.

Keller, F., & Asudeh, A. (2001). Constraints on linguistic coreference: Structural vs.  
pragmatic factors. In *Proceedings of the 23rd Annual Conference of the Cognitive  
 Science Society,* 483-488.

Kim, Y., & Larson, R. (1989). Scope Interpretation and the Syntax of Psych Verbs.  
 *Linguistic Inquiry,* 20, 681-688.

King, J., & Just, M. A. (1991). Individual differences in syntactic processing: The role of  
working memory. *Journal of Memory and Language,* 30, 580–602.

Klein, D. K., & Murphy, G. (2001). The representation of polysemous words. *Journal of  
 Memory and Language,* 45, 259-282.

Klein, D. K., & Murphy, G. (2002). Paper has been my ruin: Conceptual relations ofpolysemous senses. *Journal of Memory and Language,* 47, 548-570.

Klepousniotou, E., Titone, D., & Romero, C. (2008). Making Sense of Word Senses: The  
Comprehension of Polysemy Depends on Sense Overlap. *Journal of Experimental  
 Psychology, 34*(6), 1534-1543.

Koster, J., & Reuland, E., Eds. (1991). *Long-distance anaphora*. Cambridge: Cambridge:  
University Press.

Kuno, S. (1987). *Functional Syntax: Anaphora, discourse and empathy.* Chicago:  
University of Chichago Press.

Lasnik, H., & Uriagereka, J. (1988). *A course in GB syntax: Lectures on binding and  
 empty categories.* Cambridge, Mass.: MIT Press.

Lehrer, A. (1990). Polysemy, conventionality, and the structure of the lexicon. *Cognitive   
 Linguistics,* 1, 207-246.

Levelt, W. J. M. (1989). *Speaking: From intention to articulation.* Cambridge, Mass.:  
MIT Press.

Lyons, J. (1977). *Semantics (*Vol. 2), Cambridge, UK: Cambridge University Press.

Marinis, T. (2010). Using on-line processing methods in language acquisition research.  
 *Experimental methods in language acquisition research,* 27, 139.

Masson, M. E. J., & Freedman, L. (1990). Fluent identification of repeated words.  
 *Journal of Experimental Psychology: Learning, Memory and Cognition,* 16, 355-373.

Milwark, G. L. (1977). Toward an explanation of certain peculiarities of existential  
construction in English. *Linguistic Analysis, 3*(1), 1-29.

Murphy, G. L. (1997). Polysemy and the creation of novel word meanings. In T. B.  
Ward, S. Smith, & J. Vaid (Eds.), *Creative thought: An investigation of conceptual  
 structures and processes* (pp. 235–265). Washington, DC: American Psychological  
Association.

Murphy, G. L. (2006). Comprehending new words beyond their original contexts. *Skase  
 Journal of Theoretical Linguistics, 3*(2), 2-8.

Nunberg, G. (1979). The non-uniqueness of semantic solutions: Polysemy. *Linguistics  
 and Philosophy,* 3, 143-184.

Pickering, M. J., & Traxler, M. J. (2003). Evidence against the use of subcategorization  
information in the processing of unbounded dependencies. *Language and Cognitive  
 Processes,* 18, 469-503.

Pollard, C. and Sag, I. (1992). Anaphors in English and the scope of the binding theory.  
 *Linguistic Inquiry,* 23, 261-305.

Postal, P. (1970). On so-called pronouns in English. In Jacobs and Rosenbaum, 1970.

Pustejovsky, J. (1995). *The generative lexicon.* Cambridge, MA: MIT Press.

Rabagliati, H., & Snedeker, J. (2013). The Truth About Chickens and Bats: Ambiguity  
Avoidance Distinguishes Types of Polysemy. *Psychological science, 24*(7),  
1354-1360.

Reinhart, T., & Reuland, E. (1993). Reflexivity. *Linguistic inquiry,* 24, 657-720.

Reuland, Eric. 2001. Primitives of Binding. *Linguistic Inquiry, 32(*2), 439-492.

Ross, J. R. (1970). On declarative sentences. In Jacobs and Rosenbaum, 1970.

Runner, Jeffrey T. 2007. Freeing possessed NPs from Binding Theory. In L. Wolter and  
J. Thorson (Eds.), *University of Rochester Working Papers in the Language  
 Sciences,* *3*(1), 57-90.

Sells, P. (1987). Aspects of logophoricity. *Linguistic Inquiry,* 18, 445-481.

Stowe, L. A., Tanenhaus, M. K. & Carlson, G. N. (1991). Filling gaps on-line: Use of  
lexical and semantic information in sentence processing, *Language and Speech,  
 34*(4), 319–340.

Swinney, D. A. (1979). Lexical Access during Sentence Comprehension:  
 (Re)Consideration of Context Effects. *Journal of Verbal Learning and Verbal  
 Behavior,* 18, 645-659.

Zgusta, L. (1971). *Manual of Lexicography.* The Hague: Mouton.

Zribi-Hertz, A. (1989). A-type binding and narrative point of view. *Language,* 65,  
695-727.

1. Following Carnie (2012), I will use the term “pronoun” to refer to the general category that contains both pronominals and reflexives. [↑](#footnote-ref-2)
2. Chomsky (1981) actually names three core conditions of BT, the third of which deals with the distribution of R-expressions and thus is not relevant to the present study. For discussion on Condition C, see Büring (2005), pp. 256-260. [↑](#footnote-ref-3)
3. As Haegeman (1991, p. 204) notes, this rule stems from Romance languages, in which T encodes the agreement properties (i.e., person and number) of subject DPs. [↑](#footnote-ref-4)
4. The term “Noun Phrase” rather than “Determiner Phrase” is used here only because RNPs were studied before the widespread acceptance of the DP. Thus, for the sake of consistence and continuity, I use the term RNP rather than RDP. [↑](#footnote-ref-5)
5. As Lasnik (1988) notes, in (13), the *i-*within-*i* filter does not claim that A and B have the same index, or even that it is *possible* that they have the same index: it simply poses a hypothetical scenario in which they *do* co-refer, and blocks co-indexation in this case. [↑](#footnote-ref-6)
6. More specifically, both PRO and its corresponding possessive –*‘s* are phonologically null (see Fig. 3). [↑](#footnote-ref-7)
7. The distribution of PRO in the PRO-in-NP approach is in accord with the structural conditions on PRO, as well: PRO appears only in positions unmarked for case—namely, [Spec, TP] of a non-finite clause. Thus, PRO should appear only in RNPs in subject positions of non-finite clauses, and cannot be inserted arbitrarily into any RNP. [↑](#footnote-ref-8)
8. An English parallel is *to behave,* which cannot take an object disjoint in reference from the subject:

   a. He behaved himself.

   b. \*He behaved her. [↑](#footnote-ref-9)
9. Cole, Hermon, & Huang (2001) distinguish logophors from long-distance bound anaphors: the former are subject to constraints on binding; the latter are not, and can even be bound by an antecedent outside of the sentence. [↑](#footnote-ref-10)
10. Compare *book* to *orange,* an irregular polyseme. The color-fruit pattern in *orange* does not generalize: the word *banana* does not mean *yellow;* similarly; the word *red* does not also refer to an apple. [↑](#footnote-ref-11)
11. I am grateful to Rochelle Zheng and Michelle Irukera for the Japanese and Yoruba data, respectively. [↑](#footnote-ref-12)
12. Here, we define the *possessor* of the RNP as owner and/or creator of the representational noun. In Section 6.4, I consider the implications of a broader definition of possession. [↑](#footnote-ref-13)
13. Note, also, that applying this type of syntactic rule would be contrary to the logic behind Reflexivity, which seeks to divorce binding from syntax. [↑](#footnote-ref-14)
14. Based on the results of the present study, I will mark sentences that had longer reading times with a question mark. Given the wide variability of binding judgments, I hesitate to use an asterisk; for more on this variability, see Section 6.1. [↑](#footnote-ref-15)
15. Though this sentence violates the DP Island constraint, the effect seems relatively weak compared to that in (70d). [↑](#footnote-ref-16)
16. In this model, I establish parallels between extraction and binding. But how, exactly, does extraction relate to binding in RNPs? On a purely descriptive level, the two operations involve some vague sense of moving out of an NP: in wh-extraction, the extracted argument leaves the NP and moves to [Spec, CP]; in binding, a reflexive leaves its binding domain to find an antecedent. However, I do not wish to reduce binding to movement, as doing so has proven problematic in the past (e.g., Hornstein, 1999; see Culicover & Jackendoff, 2001, for a rebuttal). For the purposes of this paper, I wish only to note a correlation between the two effects, and pose that they may be governed by similar underlying mechanisms; what these mechanisms are, exactly, is topic for future study that is beyond the scope of this paper. [↑](#footnote-ref-17)
17. As will be discussed in Section 6.3, the word *permitted* may be too strong here. In RNPs, binding judgments are variable and flexible, and thus any “rules” should be treated more as patterns or guidelines. [↑](#footnote-ref-18)
18. A caveat: Both Chomsky (1981, 1986) and Reinhart & Reuland have spent years studying the nature of BT and Reflexivity, respectively. The present study deals with only a small sliver of the vast literature that exists on topics of binding. Thus, the model I propose is intended to provide a unified analysis for binding specifically in in RNPs—not for binding as whole. [↑](#footnote-ref-19)
19. This claim is supported by a substantial body of theoretical (e.g., Kawamoto, Farrar, & Kello, 1994; Levelt, 1989; Zgusta, 1971) and experimental (e.g., Frazier & Rayner, 1989; Hino & Lupker, 1996; Masson & Freedman, 1990; Swinney, 1979) work. [↑](#footnote-ref-20)
20. For an alternative viewpoint, which treats the meanings of polysemes as separate lexical entries, see Klein & Murphy (2001, 2002). [↑](#footnote-ref-21)
21. It is also worth noting that this analysis supports a logophoric interpretation of the reflexive in (89b), as it fits well with Sells’ (1987) analysis of logophors as “introducing ... notions of *source* ... and *point of view*” (p. 445, italics mine). [↑](#footnote-ref-22)
22. I thank native Spanish speakers Federico Fernández, Shoni Sánchez, and Rodrigo Vagoneta for verifying this phenomenon. [↑](#footnote-ref-23)