Iron Range English long-distance reflexives

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Dedication

This dissertation is dedicated to the people of the Iron Range.
Abstract

This dissertation investigates the distribution of Iron Range English (IRE) reflexives, using judgments collected in a Magnitude Estimation task (Bard et al 1996), and presents a phase-based analysis for their distribution. IRE reflexives (e.g., himself) can corefer with nominal expressions outside their minimal clause in subject or object position. Coreference with an expression outside the minimal clause is not acceptable in two environments: (i) if there is an intervening subject that does not match the reflexive for person (c.f., Blocking Effects in Mandarin) or (ii) if the reflexive is in an island.

The distribution of IRE reflexives is unexpected because generally only monomorphemic reflexives behave this way (Pica 1987). Complex reflexives that behave this way, such as Malay diri-nya ‘himself/herself’ (Cole & Hermon 2003) and Turkish kendi-sin ‘himself/herself’ (Kornfilt 2001), are shown to have pronominal qualities. IRE reflexives do not have pronominal qualities since they exhibit Blocking Effects and island effects. Therefore, they are true long-distance reflexives.

Blocking and island effects provide evidence that the reflexive undergoes raising to [Spec, CP], as is suggested for long-distance reflexives in other languages (e.g., Katada 1991). From the [Spec, CP] position, the reflexive is able to corefer with a nominal expression in a higher clause, in accordance with the Phase Impenetrability Condition (Chomsky 2001). Two processes are needed to account for the distribution of IRE long-distance reflexives (c.f., Cole & Wang 1996) since the set of expressions that are potential antecedents and the set of expressions that trigger Blocking Effects are not the same: a reflexive can corefer with a subject or an object, but only subjects trigger Blocking Effects. I posit that reflexives have a [VAR] feature that must be valued by a c-commanding nominal expression within the same phase via Agree, extending Hicks’ (2009) analysis of English anaphors. Agree accounts for coreference and offers an inherent c-command relationship between the antecedent and reflexive. I account for Blocking Effects by considerably modifying Hasegawa’s (2005) analysis for English anaphors. I suggest that a [+multi] feature on T licenses the reflexive and requires that the reflexive and the subject Agree for person.
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1 INTRODUCTION

1.1 Overview

Much research has been done on the cross-linguistic distribution of reflexives. Many reflexives in unrelated languages have the same distribution: they must be in a specific structural relationship to another nominal expression that is in the same local domain (roughly, the clause) as the reflexive. The cross-linguistic similarity in behavior of reflexives led to a universal statement about the distribution of reflexives (as anaphors) in the Chomsky’s (1981) Binding Theory. However, many counter-examples to this generalization have been found: in some languages, reflexives can corefer with nominal expressions outside the local domain of the minimal clause i.e., Mandarin Chinese *ziji* ‘self,’ Italian *se* ‘himself/herself,’ Icelandic *sig* ‘himself/herself.’ These are often referred to as long-distance reflexives.

From these counter-examples, a new vein of research began. Linguists questioned whether these counter-examples were arbitrary, or if they shared a specific domain or other typological characteristics that make their deviation systematic. This question has led to work on determining cross-linguistic classification of reflexives as well as to work determining if there are universal principles governing the distribution of reflexives across languages. Since Pica (1987), it has been observed that long-distance reflexives share a number of characteristics: (i) they are monomorphemic, (ii) they corefer with subjects (but not objects), and (iii) their occurrence is often restricted to specific domains (such as infinitive or subjunctive clauses). It has also been reported that Blocking Effects
exist in languages with long-distance reflexives that do not have subject/verb agreement. In languages with Blocking Effects, a long-distance reflexive cannot corefer with a nominal expression in the matrix clause when there is an intervening subject that does not match lower subject for person. These typological characteristics indicate that these counter-examples occur in a systematic manner rather than an arbitrary manner.

This dissertation aims to further address the goals of classification and understanding universal processes needed to account for the distribution of reflexives cross-linguistically by investigating the distribution of Iron Range English (IRE) reflexives (e.g., himself). Iron Range English is a variety of English spoken in the northern arrowhead region of Minnesota (see map in Appendix A). Understanding their distribution will help to determine (i) if and how they fit into existing theoretical categories and frameworks and (ii) if universal processes posited to account for the distribution of other reflexives can also account for the distribution of IRE reflexives.

IRE reflexives can corefer with nominal expressions outside their simple clause. The behavior of IRE reflexives raise questions about the generalizations of long-distance reflexives made in the literature. Though they can corefer with a nominal expression outside their minimal clause, they are not monomorphemic and they can corefer with subjects and objects. Also, despite having subject/verb agreement, IRE reflexives exhibit Blocking Effects. The distribution of IRE reflexives may lead to speculation that IRE have pronominal qualities, as is posited for other reflexives that are complex but can still corefer with nominal expressions outside the simple clause, i.e. Malay diri-nya (Cole & Hermon 2003) and Turkish kendi-sin (Kornfilt 2001). However, I argue that IRE
reflexives do not have pronominal qualities and are long-distance reflexives. The introduction section includes an overview of IRE reflexives and other long-distance reflexives as well as the reasoning for choosing a Magnitude Estimation task to collect naturalness judgments from speakers.

1.2 IRE reflexives and the cross-linguistic classification of reflexives

The morphology of IRE reflexives matches Standard American English (SAE) reflexives. The bound morpheme –self attaches to a pronominal form. IRE reflexives must carry overt markings for person, number, and gender (these are called φ-features in syntactic literature). In IRE –self cannot stand alone, and therefore is not a “bare” reflexive (c.f. Mandarin ziji). Below in Table 1-1 are the IRE reflexives.

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; person</td>
<td>Myself</td>
<td>Ourselves</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; person</td>
<td>Yourself</td>
<td>Yourselves</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; person</td>
<td>Himself/Herself</td>
<td>Themselves</td>
</tr>
</tbody>
</table>

Although IRE reflexive have the same form as SAE reflexives, the two reflexives are interpreted differently. For example, in SAE, (1) only has a single interpretation, namely: Jill said that Hillary believes in Hillary. However, in IRE (1) has two interpretations: (i) Jill said that Hillary believes in Hillary and (ii) Jill said that Hillary believes in Jill.

(1) Jill said that Hillary believes in herself.
For SAE speakers, *herself* can only receive its interpretation from the local nominal expression, which is located in the same simple clause as the reflexive, i.e., *Hillary* in (1). For IRE speakers, however, *herself* can receive its interpretation from either the local nominal expression, *Hillary*, or the non-local nominal expression, *Jill*, which is outside the simple clause. The data in (1) illustrates that SAE and IRE reflexives have two different distributions, and therefore (may) need to be classified as separate types.

Previous research suggests that there are (at least) four distinct types of reflexives, cross-linguistically (Chomsky 1981; Cole, Hermon & Huang 2001: 11, 2006).1

The first type includes reflexives which can only corefer with a nominal expression that is in subject (or, in some dialects, object) position and is also in the same simple clause (e.g., Standard American English *himself*). An example of this type is given below in (2). *Himself* can only corefer with the nominal expression that is in the same simple clause (*Matt*). The simple clause is indicated by brackets.

(2) John$_i$ said that [Matt$_j$ likes himself$_{i,j}$].

The second type is reflexives which only have a sloppy interpretation in verb phrase ellipsis environments (e.g., Hindi-Urdu *aap*). An example of this type of reflexive is given below in (3). Here, the null reflexive *aap* must corefer with *Vikram*, which is the closest nominal expression to the elided reflexive, and not with *Guatam*.

1 The behavior of these reflexives is stated in more formal terms both in my Chapter 2 and in the works cited above. The descriptions listed here is an attempt to describe the reflexives’ behavior without using technical terms.
(3) Guatam apnee (aap)-koo caalaak samajhata hai [aur Vikram bhii Ø]
   Guatam self’s self-dat smart consider-impf is and Vikram also
   “Guantam considers himself smart, and so does Vikram.”
   = Vikram considersVikram smart (sloppy)
   ≠ Vikram considers Guatam smart (strict)

This is in contrast with SAE reflexives, which can have both a strict and sloppy
interpretation in verb phrase ellipsis environments, as illustrated below (c.f. Sag 1976).

(4) Barbara looked at herself in the mirror and so did Anna.
   = Anna looked at Anna in the mirror (sloppy)
   = Anna looked at Barbara in the mirror (strict)

The third type is reflexives which can corefer with a nominal expression that is within
the same simple clause or a nominal expression outside the simple clause in any position
(i.e., subject, object, or possessor) (e.g., Malay dirinya). An example of a Type III
reflexive is below in (5). Here, the reflexive dirinya can corefer with the nominal
expression in the same simple clause (Salmah), the nominal expression in the matrix
clause (Ahmad) or the external speaker (represented by the subscript “k”).

(5) Ahmad$_i$ tahu Salmah$_j$ akan membeli baju untuk dirinya$_{i,j,k}$
   Ahmad knows Salmah will buy clothes for self.3sg
   “Ahmad knows Salmah will buy clothes for him/herself.”

Type III reflexives are reported to have a pronominal status that accounts for their
distribution (Cole & Hermon 2003; Kornfilt 2001).
The fourth type of reflexives usually must corefer with a nominal expression within the same simple clause, but can corefer with a nominal expression outside the simple clause in specific syntactic and discourse contexts (e.g., Chinese ziji). An example of a Type IV reflexive is given below in (6). The reflexive can corefer with the nominal expression within the same simple clause or with subject nominal expressions outside the simple clause.

(6) Zhangsan_i renwei Lisi_j zhidao Wangwu_k xihuan ziji_{i/j/k}
    Zhangsan thinks Lisi know Wangwu likes self
    “Zhangsan thinks Lisi knows Wangwu likes self.”

However, a nominal expression in the middle clause that does not match the subject of the simple clause for person prevents the reflexive from coreferring with the subject of the matrix clause, even if the subject of the matrix clause matches the subject of the simple clause for person. This is illustrated below:

(7) Zhangsan_i renwei wo_j zhidao Wangwu_k xihuan ziji_{i/*j/k}
    Zhangsan thinks I know Wangwu likes self
    “Zhangsan thinks I know Wangwu likes himself.”

Ziji can only corefer with the subject of the simple clause, Wangwu, when a nominal expression in the middle clause does not match the subject of the simple clause for person. In this case, first person wo prevents ziji from being able to corefer with the subject of the main clause, Zhangsan. In contrast, Type III reflexive would be able to corefer with the subject of the matrix clause, even when there is an intervening nominal
expression that does not match the subject of the simple clause for person (Cole & Hermon 1998, 2003).

In summary, there are four types of reflexives reported in the literature:

Type I: Reflexives which can only corefer with a nominal expression that is in subject or object position and is also in the same simple clause (e.g., Standard American English *himself*)

Type II: Reflexives which only have a sloppy interpretation in verb phrase ellipsis environments (e.g., Hindi-Urdu *aap*)

Type III: Reflexives which can corefer with a nominal expression that is within the same simple clause or a nominal expression outside the simple clause in any position (i.e., subject, object, or possessor) (e.g., Malay *dirinya*)

Type IV: Reflexives that usually must corefer with a nominal expression within the same simple clause, but can corefer with a nominal expression outside the simple clause in specific syntactic and discourse contexts (e.g., Chinese *ziji*)

As illustrated above, an IRE reflexive can corefer with a nominal expression outside its simple clause. While we know that an IRE reflexive can corefer with a nominal expression outside its simple clause, until this study, it was unknown whether this ability could occur in any environment (as it can for Type III), if this ability could only occur in specific syntactic and discourse environments (as it does for Type IV), or even if IRE reflexives fit into any of the types outlined in the literature that allow for this type of distribution. IRE reflexives behave similarly to *ziji*: they cannot corefer with the subject of the matrix clause when there is an intervening nominal expression that does not match the reflexive for person. It is unexpected that IRE reflexives exhibit Blocking
Effects\(^2\) for two reasons: (i) it is typically only monomorphemic reflexives that exhibit Blocking Effects (Pica 1987) and (ii) among languages that have long-distance reflexives Blocking Effects are not found in languages that have subject/verb agreement (Cole 1990). IRE has subject/verb agreement.

(8) a. He likes/*like me.
   b. He eats/*eat pasta.

It is rare for a reflexive that has overt \(\phi\)-features to be able to receive its interpretation from a nominal expression outside its simple clause. Most reflexives that have a distribution like IRE reflexives do not have overt \(\phi\)-features: they just mean “self” (Cole, Hermon & Huang 2006). In fact, there is (to my knowledge) evidence of only a handful of reflexives with overt \(\phi\)-features that are able to receive their interpretation from a non-local nominal expression: e.g., Malay \textit{dirinya} “him/herself,” (Cole & Hermon 2003) Kumyk \textit{o'ziu} “him/herself’s” (Humnick, personal communication), Peranakan Javanese \textit{awake dheen} “him/herself” (Cole et al 2008) and Turkish \textit{kendi-sin} “him/herself” (Kornfilt 2001).\(^3,4\) Furthermore, these complex reflexives are shown to have a pronominal

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\(^2\) Throughout the dissertation, I use “Blocking Effects” to indicate that an intervening subject that does not match a lower nominal expression for person blocks a long-distance interpretation of the reflexive pronoun. This is not meant to be a general term. It is true that semantically heavy verbs, tense, and other items can block a long-distance interpretation. I follow Huang and Liu (2001) with this more narrow definition of Blocking Effects.

\(^3\) The Turkish long distance reflexive \textit{kendi} can be inflected for any number or person (Kornfilt 2001).
status that accounts for their distribution. IRE reflexives, on the other hand, do not have a pronominal status (as evidenced by an intervening subject having the potential to prevent coreference with an expression outside the simple clause or “Blocking Effects”—see chapter 2). The distribution of IRE reflexives raises questions about the generalization that only monomorphemic reflexives behave this way while lacking a pronominal status (Pica 1987).

Interestingly, in IRE, the set of potential antecedents (subjects and objects) and the set of expressions that can prevent the reflexive from coreferring with an antecedent in a higher clause (subjects) are not the same. This motivates positing that two separate processes are needed to account for the distribution of IRE reflexives: one for binding and another for “blocking” (c.f. Cole & Wang 1996). While there is cross-linguistic evidence from unrelated languages (such as Italian and Mandarin) that two separate processes are needed, IRE offers evidence for two processes within the same language.

Generalizations about the cross-linguistic distribution of reflexives have been made in the literature based on data from reflexives in only a few languages. It is important to research whether or not these generalizations hold for other reflexives that have overt φ-features. Furthermore, to my knowledge, the property of a reflexive being able to corefer with a non-local antecedent is not attested in any other dialect of English. It is important to explore syntactic variation within a single language, as much knowledge

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4 All these examples carry features for number (singular) and person (3rd); however, none of these reflexives carry gender specifications. IRE reflexives, on the other hand, do carry gender information (himself and herself).
about how languages differ and are alike has come from research on lexical and phonetic variation within a single language.

1.2.1 Magnitude Estimation

There is no corpus of IRE that has (i) all reflexive forms or (ii) reflexives in the variety of syntactic and discourse environments that would allow us to classify them. While there are some oral histories of Iron Rangers collected by the Iron Range Research Center, these histories mostly have only instances of *myself* rather than second and third person reflexives. Therefore, it was necessary to collect naturalness judgments of a variety of reflexives in a variety of environments in order to fully understand their distribution.

Magnitude Estimation (ME) methodology was used to collect acceptability judgments for different interpretations of sentences in IRE with reflexives (Bard *et al* 1996). While ME has been used in psychophysics for many years, this method has only recently been incorporated into linguistic acceptability surveys. The ME scale allows participants to create their own flexible scales of acceptability, thus allowing for higher resolution results than are produced with traditional acceptability surveys. Linguists believe that an adequate theory of language will need to incorporate gradable acceptability judgments (Chomsky 1975, Schütze 1996). A more flexible acceptability scale will allow linguists to collect data that they can better incorporate into theory that

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5 The uses of *myself* in these oral histories indicate that this reflexive does not behave like SAE reflexives. A more detailed account of these uses is in the conclusion of this study (Chapter 7).
predicts these types of judgments. The scales that informants produce in an ME task are ratio-scales, which allow for a variety of statistical analyses.

ME offers the following advantages over paper and pencil surveys with pre-set acceptability scales: (i) it allows for potentially more levels of grammaticality to emerge from the data than a pre-set scale allows for, and (ii) it gives an informant the ability to more accurately report acceptability judgments of the data. For example, if a person rates a sentence that seems “pretty natural” with the highest number of a pre-determined scale, and then she encounters another sentence that is more natural, she has no means by which to show that this second sentence is (i) even more acceptable than the first and (ii) how much more acceptable this second sentence is than the first when she is using a pre-set scale.

Since ME allows finer judgments to emerge from the data, some may be concerned that this method of acceptability data collection encourages speakers to make distinctions that do not accurately reflect their intuitions. In my opinion, there are two responses to this concern. First, running a statistical analysis will not only tell us which data were truly rated differently (i.e., differences in scores between sentence types that is probably not due to chance), but this type of analysis will also give information about which data were not rated differently (i.e., differences in scores between sentence types that are probably due to chance). Secondly, there is evidence that linguistic data needs more finely delineated categories than a traditional scale allows for. For example, Featherston (2005) found that the acceptability of wh- questions were more complicated
than closed scale judgments revealed, and therefore ME was an appropriate tool to use to collect naturalness ratings when more than one factor is at work.

Using ME to gather naturalness ratings has the potential to advance the standardization of data collection techniques in linguistics. Interpretation of syntactic data is often based on acceptability judgments of the investigator. As a result, conflicting acceptability judgments of data are reported in the literature, including studies of reflexives. Conflicting acceptability judgments are a result of at least two potential sources: (i) true variation that can be traced to social factors (e.g., region, age, or gender) or (ii) non-standardized methods of data collection. The use of ME methods in this study, coupled with the collection of demographic information will allow me to identify true variation based on social factors. In addition, this more flexible scaling method may reduce overall variation in reported acceptability data. For more discussion on the use of ME in linguistics, see §3.4.

With the acceptability judgment data, I was able to conclude if and how IRE reflexives fit into the proposed reflexive categories in the literature, since I could test for different distribution patterns among reflexive types. It is important to understand the typology of different reflexives so that we can create a classification system that is able to predict the distribution of all types of reflexives. The acceptability data also provided clues as to which type of analysis will best predict the distribution of IRE reflexives. For example, I collected data that helped determine whether a syntactic analysis is viable, or if I should use a functional (discourse) analysis.
This chapter is organized as follows: §1.2 is an overview of the Iron Range and its inhabitants; §1.3 is an overview of previous studies of IRE which suggest that IRE is a distinct dialect of English. These previous studies, however, do not examine the interpretation of sentences with reflexives. §1.4 is a roadmap of the dissertation.

1.3 Iron Range

1.3.1 Location & History

The term Iron Range refers to three distinct Iron Ranges in northern Minnesota: the Mesabi Range, the Vermilion Range, and the Cuyuna Range. This dissertation will focus on the variety of English spoken in the Mesabi Range, as other linguistic literature on IRE has done in the past (Underwood 1981, Linn 1988, and Bauer 2005). The Mesabi Iron Range (henceforth Iron Range) is located in the arrowhead region of Northern Minnesota in Itasca and St. Louis County. It runs roughly 110 miles from Aurora, MN to Grand Rapids, MN (Map in Appendix A, supplied by Tim Pastika, MN DNR lands and minerals, 1/2009).

Before the discovery of iron ore in the 1880’s, the Iron Range was largely uninhabited by immigrant Europeans: dense forests and rocky soil were both deterrents for would-be settlers who wanted to farm. However, during a small-scale gold rush in what is now the Vermilion Range, high-grade iron ore was found rather than gold. The ore (hematite) was so rich and so easy to mine, that demands for laborers shot up after the first mine was built in Mountain Iron, MN in 1890 (De Kruif 1929, Geology 1887, Jennings 1894, Underwood 1981). Because of the mines’ need for laborers, the
population of the Iron Range increased from almost zero in the 1880’s to over 70,000 by 1920 (Underwood 1981).

1.3.2 Ethnicity of inhabitants

The ethnic make-up of early immigrants to the Iron Range is not well documented. While information on ethnic background exists, scholars warn against inconsistencies in official documents. Underwood gives Minnesota State Census data from 1905. The 1905 census reported that almost 7,000 people on the Range had ties to Finland, about 3,000 to Austria, 2,000 to Sweden, 1,500 to Canada and fewer than 1,000 each to England, Germany, Russia, Ireland, Poland and Denmark, and a minor amount to others. Underwood warns against using this data, since the census did not differentiate between people who arrived directly from one of these countries and those who had been born in America, but whose ancestors had emigrated from another country. Also, census administrators in the early 1900’s often grouped several countries under the name of a single country. For example, Scandinavian countries were often listed as the same country (Underwood 1981).

Underwood supplements the census data with Sirjamaki’s (1965) dissertation which details the development of the Iron Range. Sirjamaki writes that the origins of early Iron Rangers were mostly: Cornish, English, French-Canadian, Swedish, Slovenian, Croatian, Polish, Italian, Slovenian, Bohemian and Lithuanian (among others). Sirjamaki also suggests that while some inhabitants of the area immigrated to the Iron Range, some settlers may have come from other mining communities in the Great Lakes (such as Iron Mountain in the Upper Peninsula of Michigan). Sirjamaki states that by the mid 1930’s,
as many as one third of Iron Rangers had intermarried; therefore, he concludes that “[t]he range is actually a melting pot” (Sarjimaki 1965: 127).

With this melting pot atmosphere, immigrants made the switch from their native languages to English. According to an Oliver Mining Company survey in 1907, 49% of its workforce could speak English (though fluency was not assessed), which is high considering that it was common mining practice to separate miners by their native languages (Underwood 1981).

According to Underwood, English was brought into the home by children who used it in school. In fact, many of Underwood's informants claim that once they started school, they used English in most domains, save the home, where, often, the native language of the parent(s) was used. Linn (1988) hypothesizes that this led to an incomplete learning of English by many inhabitants on the Iron Range, and that IRE can attribute most of its non-standard features to this imperfect learning as well as the influence of the other languages and English dialects used in the area.

As noted above, most immigrants to the Iron Range were not native speakers of English. Therefore, this first generation of Iron Rangers was not the first generation of speakers of IRE. The first generation to speak IRE was their offspring, who were taught in English in the school system.

1.3.3 Economic position

The rich deposits of hematite were rapidly depleted and now a lower-grade of ore called taconite is mined. Since taconite is a lower grade of ore, it costs more to mine and process these deposits. Because of this, profits are now lower. The Iron Range's economy
has both high times and low times. As Kelleher (2004) writes, “[o]n the Iron Range, you ride the booms and survive the busts.” In the 1980’s, 1990’s, and late 2000’s steel (made from iron ore) was not in high demand, and many mines (such as Evtac in Eveleth, MN and LTV Steel in Hoyt Lakes, MN) closed. Additionally, fewer people are staying on the Iron Range to work in the mines. Most mines now require that their employees have a college degree. However, after receiving a college degree, not many people decide to return north to drive truck\(^6\) in a mine instead of pursuing a desk job in a more urban area.

1.3.4 Covert and Overt Prestige

Some Iron Rangers are proud of their heritage while others are not. In this same vein, some Iron Rangers identify with their community while others do not. Linn (1988) reports a correlation of prestige with use of features of IRE. He cites one family in particular to present this correlation. In this family, the father, who does not mix much with the community does not use any features of IRE. His son, on the other hand, strongly identifies with the Iron Range and has, according to Linn, “all of the Range features” that Linn found in other speakers the son’s age.

Linn (1988) claims that for later generations, there may be more of a desire to sound “educated” and to use “good” English (in this case SAE) than to use language that identifies one as an Iron Ranger; this may cause more and more unique features of this dialect to be dropped. In fact, Bauer (2005) suggests that IRE is dying. However, Bauer’s work focused on a specific pronunciation feature of IRE. It is important to point out that syntactic variation is not usually as salient as pronunciation variation. For this reason,

\(^6\) Intentional use of non-standard IRE form.
while many younger speakers of IRE do not have as many unique features as their predecessors (especially where pronunciation is concerned), speakers of IRE may not even be aware that they use reflexives in a “non-standard” manner.

Also, there is still a fair amount of pride that can be seen among Iron Rangers. For example, there are a number of Facebook (a social networking website) groups that show Iron Range pride (some examples of the names of these groups are: “Iron Rangers”, “the range aka the iron range is the shit” (which has a positive connotation), and “I’m from the Iron Range and Proud of It!”).

1.4 Iron Range English

When comparing IRE to a standard dialect, one question is: how different is Iron Range English from Standard American English and Minnesota English. Growing up on the Iron Range, I can offer my own experiences.\(^7\) I feel that I speak differently from people outside the Iron Range. Some of the markers that set my speech apart include socioeconomic status markers, such as using the suffix [-ɪn] rather than [-ɪŋ] (Trudgill 1984). However, other aspects of my speech set me apart from other lower socioeconomic status speakers reported in the literature. Some features are part of my lexicon (I eat sarmas (minced meat wrapped in cabbage) and potica (a nut roll dessert) and some of the people I know who work in the mines drive truck (drive a truck)). Another feature is the absence of the to be auxiliary in questions. For example, “You going back to

\(^7\) I was born on the Iron Range in Virginia, MN and lived in Keewatin, MN until the age of 10, when my family moved to another community on the Iron Range, Hibbing, MN. I graduated from Hibbing High School, and left the Iron Range when I was 18. I have not lived there since graduating (summers excluded).
Duluth tonight?” (Linn 1988). Anecdotally, I am not the only Iron Ranger who feels that IRE is unique. A man named Kalibabky has written four volumes titled *Hawdaw talk Rayncher* (i.e., “How to Talk Ranger”) in which he details what he considers to be unique characteristics of IRE (1978, 1978, 1979, and 1996).

Linn’s description of IRE is the first (to my knowledge) to report syntactic variations between IRE and the dialect of English spoken throughout the rest of Minnesota (Minnesota English). His report does not include a description of IRE reflexives. However, the existence of these syntactic differences between IRE and Minnesota English indicates that other, less obvious syntactic differences may exist as well. Below, I report on some dialect studies done on IRE (including Linn’s study) and a pilot study that looks specifically at IRE reflexives are reported below.

### 1.4.1 Allen’s *Dialect of the Upper Midwest* (1976)

Allen (1976) conducted a dialect survey of the Dakotas, Iowa, Nebraska and Minnesota which was originally planned to be part of *The Linguistic Atlas of the United States and Canada*, but in the end was published as a separate research project. Most of the information collected in the atlas focuses on lexical items, preposition use and pronunciation. There is no section on the use of reflexives. Also, out of 208 informants across the five states, only two were from the Iron Range (both from Virginia, MN). The survey was meant to produce a broad characterization of the distribution of regional speech characteristics, and smaller dialect areas within the states are discussed in a passing manner. That said, there is some speculation that Iron Range English is distinct
from Minnesota English (though four speakers from Duluth, MN, which is outside of the Iron Range, are included in this group).

1.4.2 Underwood's *Dialect of the Mesabi Iron Range* (1981)

Underwood’s (1981) study looks explicitly at the variety of English spoken on the Mesabi Iron Range. Underwood’s goals were (1) to determine if Allen’s speculation that the Iron Range has a unique dialect is true when the speech of Iron Rangers is compared to the speech of other Minnesotans and (2) how both Minnesota English and IRE compare to dialect areas along the east coast. In order to compare IRE to Minnesota English, Underwood compared the speech of 17 Iron Rangers (two elicitations from Allen's *Atlas* and 15 elicitations that Underwood collected) to the elicitations from 54 Minnesotans in other areas across the state. Underwood’s third data set was taken from Kurath and McDavid’s (1961) *Pronunciation of English in the Atlantic States*.

Underwood was then able to compare and contrast three possible dialect areas: (i) the eastern seaboard, (ii) Minnesota, and (iii) the Iron Range.

Underwood modeled his survey after both Allen’s survey and Kurath & McDavid’s survey. As a result, Underwood’s survey was like a worksheet interview during which he elicited specific pronunciations and lexical items. For example, informants were asked questions that elicited certain responses. Through this interview, Underwood found that the verb *going* was being produced in three different ways: [goʊ̊ŋ], [goʊ̊ŋ], and [goʊ̊nə] (120). Underwood then computed correlations between the three data sets.
Underwood concluded that Iron Range speech was virtually indistinguishable from Minnesota Speech (less than 2% of vocabulary is different and there was a 3% difference for verb conjugations).\(^8\) Pronunciation was the biggest difference between Iron Range speech and standard speech, with a five-eight percent difference, depending on what Atlantic states were mixed in the comparison. Underwood concludes that IRE is not a distinct dialect because there are not enough distinctions between IRE and Minnesota English.

It should be noted, though, that no acoustic analysis was done, but rather lexical items were coded impressionistically. Also, a dialect can differ in more ways than lexicon and pronunciation. No syntactic data was collected outside the use of constructions such as double negation vs. single negation, as in (9).

\[
(9) \text{I don't have } no \text{ money. ("I don't have any money.")}
\]

Additionally, Underwood did not collect syntactic data since there would be no Atlantic or Minnesota data with which to compare it.

### 1.4.3 Linn's *Origin and Development of the Iron Range Dialect* (1988)

Linn (1988) conducted a smaller study of first, second and third generation Iron Rangers and gives a list of different lexical items, pronunciations, and word orderings that Underwood’s study does not report on. While Underwood did look at the use of

\(^8\) This begs the question: how different does one group’s speech need to be to be considered its own dialect? As far as I can tell, there is no standard by which to measure how different speech must be to be considered a separate dialect.
prepositions, he did not specifically look at variations in word order. According to Linn, one example of a syntactic variant of IRE that is not shared with Minnesota English is: “You play with five cards just” (his (10b)), which means, “You play with only five cards.” Another example of syntactic variation that Linn reports on is the loss of inflectional endings on nouns: “You had to stay sometimes two, three night” (his (9a)).

1.4.4 Pilot Study: Schmelzer (2006)

In 2006, I conducted an acceptability study that looked specifically at IRE reflexives. I conducted the pilot study in order to determine whether my interpretation of sentences with reflexives (that they can have (at least) two interpretations when SAE reflexives have only a single interpretation) was a characteristic of my idiolect or was a characteristic of a broader dialect area (see 0 for an example). The participants in my study were three middle-aged men who had grown up on the Iron Range and, at the time of the study, lived there. The grammaticality judgments were collected via a paper and pencil survey with three levels of grammaticality: “good,” “so-so” and “bad.” The stimuli for the study were a collection of sentences that were modified from the data in Huang & Tang (1991) and Batistella (1989). An example of a survey sentence is given in (10) below. Grammaticality of three different interpretations was collected (modified from Huang & Tang 1991 (30)). Note that coreference is indicated by indices.

\[(10) \quad \text{John}_i \text{ told Bill}_j \text{ that Tom}_k \text{ hates himself}_{ijk}.\]

I found that other IRE speakers shared some of my interpretations of reflexive sentences.
One finding of the study was that my informants had a more difficult time with interpretations where the reflexive was meant to corefer with the object than interpretations where the reflexive was meant to corefer with the subject in the maximal clause. For example, my informants preferred interpretations where *himself* was coreferenced with *John* and did not prefer interpretations where *himself* was coreferenced with *Bill* in (10) (above).

Additionally, it was found that verbs such as *complained* prevented the reflexive from having more than one interpretation. This is illustrated in (11).

(11)  
*Bill* complained that *Tom* often said that the *Jack* does not like *himself*.

Though in (10) *himself* was able to corefer with the subject in the main clause, in (11), this is ungrammatical. The difference is the “heavy” verb *complained* (vs. *told* in (10)).

Another finding was that a first person possessor did not prevent a reciprocal (e.g., *each other*) from having two interpretations, as it can in some dialects of Mandarin Chinese. Reciprocals are thought to pattern similarly to reflexives in dialects of English and are, therefore, group together (Chomsky 1986). An example of a first person possessor not preventing a long-distance interpretation of the reciprocal *each other* in IRE is below in (12).

---

“Heavy” and “light” refer to how much semantic content a verb has. “Heavy” verbs have much semantic content on their own, while “light” verbs have little semantic content.
(12) The players$_i$ heard our$_j$ stories about each other$_{ij}$.

Here, the reciprocal each other can corefer with either players (third person plural) or our (first person plural). In many languages where reflexives can have more than one interpretation, a nominal expression with non-matching φ-features (i.e., person, number, and gender in English) would prevent the existence of two interpretations.

The main goals of the pilot study were to (i) determine if others had judgments where reflexives could have more than one interpretation and (ii) to compare these judgments of IRE speakers with those of Mandarin speakers. Because of limited scope of the study, I did not look at other languages with long distance reflexives. Also, the pilot study did not test every situation where a speaker of Mandarin found were able to have two interpretations, as this would have resulted in too many stimuli to test at once. Therefore, there were a number of shortcomings in the study.

One shortcoming of this study (apart from the small number of informants) was that I tested a subset of the available Mandarin data. I did not fully explore the role of discourse and syntactic structures that can affect a long-distance interpretation in Type IV reflexives.

Another limitation of the study was that I asked informants to make grammaticality judgments using a scale with only three levels. Recent studies offer support for the claim that grammaticality judgments are gradient by nature (Bard et al 1996 and Sorace & Keller 2005 inter alia). In fact, after one survey, one of my informants explicitly reported having more fine-grained intuitions than a three-level
ranking system had allowed him to report: perhaps there were five levels of naturalness that the informant would have liked to report.

Additionally, I did not include a context for the different interpretations of each sentence. My goal at the time was to determine whether others, without prompts, would report that they found the sentences ambiguous or not. Even without contexts for less favorable readings, IRE speakers in my pilot study shared my intuitions concerning the ambiguity of sentences with reflexives. It is important to note that even with a less-than-desirable ranking system and no contexts, other speakers of IRE reported similar judgments to those that I had.

While IRE speakers are aware that their dialect is not (overtly) prestigious, and, therefore, may try to “correct” various features of their dialect, there are two reasons I believe that informants are willing to report non-standard interpretations for sentences with reflexives: (i) the possible existence of covert prestige among IRE speakers, as discussed in §1.3.4 and (ii) the fact that many IRE speakers may not realize that there is a difference as to how reflexives are interpreted between SAE and IRE.

1.5 Plan for the remaining chapters

Understanding the extent to which languages differ and are alike helps us understand both how languages are structured and how children acquire language. Examining how IRE long-distance reflexives are distributed is important since they seem to be a counter-example to an observation about how complex and bare morphology affects the behavior of reflexives (Pica 1987). It is key to study counter-examples to an observation since generalizations about the extent to which languages differ and are alike
are made based on these observations. To truly understand the extent to which languages differ or are similar, all data must be considered. It is also important to understand how IRE long-distance reflexives fit (or do not fit) into the current classification system used for reflexives. Generalizations based on the behavior of a reflexive are often made according to its classification; however, if these classifications are too general, then our generalizations will be incorrect.

Chapter 2 presents a literature review of the current classification of reflexives and their behavior and morphological structure. The chapter includes a special focus on the role of discourse in the distribution and interpretation of reflexives.

Chapter 3 outlines the methodology used to collect judgments of sentences with reflexives. Speakers of both IRE and SAE were asked to rate the naturalness of sentences using Magnitude Estimation.

Chapter 4 contains the results. I found that IRE speaking women 35 and older rated sentences with long-distance reflexives as significantly more natural than speakers of SAE and other IRE speakers. Furthermore, I found that IRE reflexives behave most similarly to Type IV reflexives, since IRE reflexives exhibit island effects. This is unexpected, since their complex morphology should preclude them from being members of this category. IRE reflexives also exhibit island effects.

Chapter 5 provides a theoretical analysis that predicts the distribution of IRE reflexives. I suggest that their long-distance capabilities come from having an operator-like quality as part of their lexical make-up. I suggest this quality allows them to behave like wh-words in English: both move successive-cyclically to [Spec, CP] (Katada 1991).
From this position, the reflexive is able to corefer with a nominal expression in a higher clause, according to the Phase Impenetrability Condition (Chomsky 2001). The set of expressions that are potential antecedents and the set of expressions that trigger blocking effects are not the same: a reflexive can corefer with a subject or an object; but only subjects trigger Blocking Effects. Therefore, two different processes are required to explain both binding and Blocking. (c.f. Cole & Wang 1996). I posit that reflexives have a \[\textit{VAR}\] feature that must be valued by a c-commanding nominal expression within the same phase via Agree, extending Hicks’ (2009) analysis of English anaphors. Agree accounts for coreference and offers an inherent c-command relationship between the antecedent and reflexive. I account for Blocking Effects by considerably modifying Hasegawa’s (2005) analysis for English anaphors. I suggest that a \[+\text{multi}\] feature on T licenses the reflexive and requires that the subject and the reflexive Agree for person.

Chapter 6 looks into the classification of IRE reflexives in the current system. I suggest that IRE reflexives be grouped as a sub-type of Type IV reflexives, since while they pattern similarly to other reflexives in this broad category, they (i) do not share all features with other reflexives in this category and (ii) the proposed analysis for IRE reflexives cannot be extended to account for Mandarin data.

Chapter 7 concludes the dissertation.
2 LITERATURE REVIEW

2.1 Overview

Linguists have made numerous proposals that attempt to predict the cross-linguistic distribution of nominal expressions in general and reflexives in particular. While it would be advantageous to have one theory that accounts for the distribution of all reflexives, there may be different types of reflexives that behave differently across languages and even within a given language. As mentioned in Chapter 1, there are (at least) four different types of reflexives cross-linguistically (Chomsky 1981; Cole, Hermon & Huang 2001, 2006). These types are listed more formally below and explained further in the subsequent sections of this chapter.

(i) Forms which are locally bound anaphors
(ii) Forms which are long-distance bound anaphors
(iii) Forms which are anaphors locally and pronouns non-locally
(iv) Forms that are “primarily” bound anaphor reflexives, but can be non-local in specific syntactic and discourse contexts

This chapter is a review of the current state of understanding of the cross-linguistic distribution of reflexives. Special attention will be paid to the role of discourse contexts that are reported to license long-distance interpretations, as this is one of the main distinction between the forms in (iii) and (iv) and plays a role in understanding the distribution of (ii). Understanding how reflexives are currently grouped will allow us to determine if and how IRE reflexives fit into the current classification system. Note that
emphatic use of reflexives (like that in (13)) will not be addressed in this dissertation, since they have a unique distribution different from anaphoric pronouns (Zribi-Hertz 1995, Baker 1995).

(13) I myself would never have worn that!

As a short hand, I will refer to the different types of reflexives by Roman numerals: thus, reflexives which are locally bound anaphors (e.g., SAE English reflexives) will be referred to as Type I; reflexives which are long-distance bound anaphors (e.g., Hindi-Urdu reflexives) will be referred to as Type II, reflexives which are anaphors locally and pronominals non-locally (e.g., Malay reflexives) will be referred to as Type III; and reflexives that are “primarily” locally bound anaphors, but can be non-local in specific syntactic and discourse contexts (e.g., Mandarin bare reflexive ziji) will be referred to as Type IV.

This chapter outlines the characteristics of each of the four main types of reflexives reported in the literature. §2.2 reviews locally bound anaphors. §2.3 reviews reflexive forms which are long-distance bound anaphors. §2.4 reviews reflexive forms which are anaphors locally and pronominals non-locally. §2.5 reviews reflexive forms that are “primarily” bound anaphor reflexives, but can be non-local in specific syntactic and discourse contexts. §2.5.1 outlines the (potential) role of discourse effects on the distribution of reflexive forms, including a section on logophors and logophoric environments (§2.5.1.1) and another section on de se environments (§2.5.1.2). §2.6 looks
at unique characteristics of the four types in order to compare these distribution patterns to the distribution of IRE reflexives. Finally, §2.7 concludes the chapter.

2.2 Locally bound anaphors

One of the most influential proposals for the distribution of reflexives is Chomsky’s Binding Theory (BT), detailed below. Binding Theory describes where anaphors (e.g. *himself, each other* in SAE), pronominals (e.g. *him, them*) and referring (R) expressions (e.g., *Jenny, the puppy*) are located in a sentence. Anaphors, unlike pronominals and R-expressions, are usually characterized as expressions that have no inherent capacity for reference as they depend on another form for reference. This dependency is the motivation for positing that anaphors have a particular set of distribution requirements that pronominals and R-expressions do not need to follow. Chomsky’s proposal is formalized below in (14).

(14) Binding Theory (Chomsky 1981: 188)

Condition A
An anaphor must be bound in its governing category
Condition B
A pronominal must be free in its governing category
Condition C
An R-expression is free
Part of the definition of Binding requires that the reflexive and its antecedent agree for person, number, and gender\textsuperscript{10}, as illustrated below in (15):

\begin{equation}
(15) \quad \text{Binding (Chomsky 1981)}
\end{equation}

A node $\alpha$ is said to bind a node $\beta$ iff $\alpha$ and $\beta$ have the same coindexing (share $\varphi$-features and corefer with one another) and $\alpha$ c-commands $\beta$.

This requirement prevents sentences such as those in (16) while it allows sentences such as those in (17).

\begin{equation}
(16) \quad \begin{align*}
\text{a. } & \ast \text{Ben}_i \text{ likes herself}_i. \\
\text{b. } & \ast \text{The Smiths}_i \text{ like yourself}_i.
\end{align*}
\end{equation}

\begin{equation}
(17) \quad \begin{align*}
\text{a. } & \text{Ben}_i \text{ likes himself}_i. \\
\text{b. } & \text{The Smiths}_i \text{ like themselves}_i.
\end{align*}
\end{equation}

Here, in (16) the $\varphi$-features for Ben are: masculine, singular and third person while the $\varphi$-features for the reflexive are: feminine, singular and third person. Since the reflexive and the potential antecedent do not match for gender, Ben cannot act as the antecedent for herself. Therefore, (16) is ungrammatical. Similarly, the $\varphi$-features of the potential antecedent in (16) the Smiths do not match the $\varphi$-features of yourself: namely, the Smiths is plural and third person while yourself is singular and second person.

\textsuperscript{10}Some researchers claim that there are more attributes than gender, number and person in $\varphi$-features. For example, Yadava (1992) believes that $\varphi$-features for Nepali include honorifics. I will focus on person, number and gender in this paper, as these are the relevant features for dialects of English.
In addition to the requirement that the antecedent and anaphor share a matching set of $\varphi$-features, anaphors also have structural and locality restrictions that determine which nominal expressions within a sentence are eligible to act as their antecedents. Structurally, an anaphor must be bound by an antecedent within a “local” domain. As noted earlier, Binding makes use of the notion of c-command. The definition of c-command is given below.

(18) C-Command (Chomsky 1981)
\[ \alpha \text{ c-commands } \beta \text{ iff } \alpha \text{ does not dominate } \beta \text{ and every node } \gamma \text{ dominating } \alpha \text{ also dominates } \beta. \]

This structural restriction is necessary to accurately predict the grammaticality of the following data in SAE.

(19) [[[Bill,]'s dad], believes in himself{ij}.]

Here in (19), Bill does not c-command himself and therefore cannot act as the antecedent for the reflexive. On the other hand, the nominal expression Bill’s dad does c-command himself, and can act as the antecedent of the reflexive.

Turning now to the locality restriction, an antecedent must be within the same minimal domain as the anaphor. Though this minimal domain has been expressed in different ways, I will use the following definition, since it is one of the first in the literature:
(20) Governing Category (Chomsky 1981: 211)
\[ \alpha \text{ is the governing category for } \beta \text{ iff } \alpha \text{ is the minimal category containing } \beta \text{ and a governor (a head or maximal projection) of } \beta \text{ and a SUBJECT that is accessible to } \beta. \]

(21) SUBJECT = AGR where present, a subject NP otherwise

(22) \[ \alpha \text{ is accessible to } \beta \text{ iff } \alpha \text{ is in the c-command domain of } \beta \text{ and the assignment to } \alpha \text{ of the index of } \beta \text{ would not violate [below]} \]

(23) \[ *[\gamma...\zeta...], \text{ where } \gamma \text{ and } \zeta \text{ bear the same index (Chomsky 1981: 212)} \]

The locality restriction predicts the following grammaticality judgments of SAE speakers in (24); brackets indicate the Governing Category.

(24) a. Jill knows that [Jen believes in herself].
   
   b. *Jill knows that [Jen believes in herself].

Here, Jen and herself can be interpreted as referring to the same individual ((24)a), while Jill and herself cannot ((24)b). Note, Jen is the only nominal expression that is local to herself, as Jill is outside the Governing Category (indicated by brackets) of the reflexive. The Governing Category is determined as the clause Jen believes in herself since this clause includes both the reflexive and the governor of herself. Inclusion of the verb (believes) indicates that AGR is present (since AGR is needed for believes in English) in the Governing Category and is therefore the SUBJECT rather than a subject NP.

Though Conditions A, B, and C of Binding Theory correctly account for the distribution of nominal expressions in SAE and many other languages, these conditions do not correctly predict the distribution of reflexives in other languages such Mandarin
Chinese, if we assume that all reflexives in Mandarin should behave like reflexives in SAE (i.e. as anaphors). For example, if Mandarin reflexives are anaphors, their distribution is not accounted for in Binding Theory. This is illustrated below in (25) (from Huang & Tang 1989: (4)).

(25) Zhangsan, shuo [Wangwu, zhidao [Lisi, chang piping ziji, /ta,/*k]]
Zhangsan said Wangwu know Lisi often criticize self him
‘Zhangsan said that Wangwu know that Lisi often criticized self/him.’

Here, ziji ‘self’ can corefer with any of the R expressions in the sentence: Zhangsan, Wangwu, or Lisi. In addition, ta ‘him/her’ can corefer with nominal expression outside the simple clause, Zhangsan and Wangwu. It appears that ziji and ta are not in complementary distribution since each expression can corefer with both Zhangsan and Wangwu.

In response to data like that in (25) where reflexives can corefer with nominal expressions both inside and outside of their simple clause, researchers have attempted to modify different aspects of Binding Theory (Wexler & Manzini 1987, Yang 1983, Harbert 1995, Koster 1987 *inter alia*). For example, Manzini and Wexler (1987) suggested that the parameters of the binding domain are underspecified in the Universal Grammar (UG), allowing speakers to determine the size of their own local domains within a given language or even at the level of individual lexical items. For example, the binding domain of sig would be the whole sentence rather than the minimal clause. However, changing the binding domain does not change the stipulation that anaphors and pronominals are in complementary distribution, which is not true for monomorphemic
and complex reflexives in Icelandic. The definition of binding was not revised; only the
definition of the local domain was revised.

Even SAE anaphors and pronominals are not always in complementary
distribution, as in (26) and (27):

(26) They, saw [each other;'s friends].
(27) They, saw [their, friends].

In order to account for this distribution, Chomsky (1995) suggests that the concept of a
Complete Functional Complex (CFC) should replace the notions of accessible subject
and governing category (Chomsky 1995: 102).

(28) Complete Functional Complex (CFC)
A projection that contains all grammatical functions compatible with
its head.

(29) Governing Category
GC for $\alpha$ is the minimal CFC that contains $\alpha$ and a governor of $\alpha$ and in
which $\alpha$’s binding condition could, in principle, be satisfied.

In (26), both the noun phrase containing the reciprocal (each other’s friends) and the
sentence (They saw each other’s friends) are complete functional complexes. However,
only in the CFC of the entire sentence do we find an acceptable antecedent. For the
possessive pronoun (their) in (27), on the other hand, it is the noun phrase CFC that
satisfies the requirement that the pronominal is free within its Governing Category. This
means that the binding domain of an element depends on its status as an
anaphor/pronominal. However, note that this non-complementary distribution is predicted
only within the same clause (root sentence CFC). In a sentence with two clauses, the non-local antecedent would no longer be within the “minimal” CFC. Therefore, complementary distribution should be found when the sentence contains two clauses.

This analysis will not work for languages where different types of nominal expressions are not in complementary distribution when in a complex sentence, such as IRE (Schmelzer 2006):

(30) Jill said that Hillary likes herself.
(31) Jill said that Hillary likes her.

Here, both herself (in (30)) and her (in (31)) can corefer with the nominal expression in the maximal clause: Jill.

Reinhart and Reuland (1993) proposed a modification to Binding Theory in order to account for the behavior of complex reflexives (e.g. himself) and simplex reflexives (e.g. Italian se ‘self’). Complex reflexives and simplex reflexive have different distributions in most languages. Complex reflexives must be bound within a local domain. In contrast, simplex reflexives can be bound or free within that local domain. Reinhart and Reuland suggest that there are two types of reflexives: SE reflexives (which are simplex) and SELF reflexives (which are complex). SE reflexives behave in a long-distance manner and do not have \( \phi \)-features. SELF reflexives behave in a local manner and can have \( \phi \)-features. Reinhart and Reuland propose that SELF reflexives are subject to Binding Conditions while SE reflexives are subject to movement restrictions. Reinhart and Reuland’s Binding Conditions (for SELF reflexives) are different from those
proposed by Chomsky (1981) and subsequent versions. Their conditions are below (their (19)):

(32)  
   a. Condition A: A reflexive-marked syntactic predicate is reflexive  
   b. Condition B: A reflexive semantic predicate is reflexive-marked

According to Reinhart and Reuland, SE reflexives must move to INFL in order to obtain \(\phi\)-features. Therefore, the distribution of SE reflexives is governed by movement theory rather than Binding Theory. In this way, a SE reflexive can move covertly to a position where it has a local relationship with a nominal expression in a higher clause.

Reinhart and Reuland further suggest that a Chain Condition governs the distribution of anaphors and pronominals. Their Chain Condition is below (their (25)):

(33)  
   A maximal A-chain \((\alpha_1, \ldots, \alpha_n)\) has
   a. exactly one link – \(\alpha_1\), which is both +R and marked for structural Case and
   b. exactly one \(\theta\)-marked link.

This analysis implies that anaphors (SELF reflexives) must be coarguments with their antecedent (in thematic terms like Case-marking). Thus, if a reflexive is in a coargument position, it is an anaphor. In contrast, if a reflexive is in an adjunct position and it corefers with an antecedent outside of the adjunct, then it is a logophor. So, reflexives that are in complement position are anaphors while reflexives that are in adjunct positions are logophors. According to Reinhart and Reuland’s analysis, logophors and anaphors (e.g.,
complex reflexives) are in complementary distribution. Note that pronominals can be in logophoric positions, but they have a different surface form in English than reflexives.

In conclusion, theories for the behavior of reflexives which must be bound in their local domain suggest that reflexives (anaphors) are in complementary distribution with pronominals (Binding Theory) and logophors (Reinhart and Reuland 1993).

2.3 Forms that are long-distance bound anaphors

Reflexives in languages like Kannada and Hindi/Urdu can corefer with nominal expressions outside their simple clause. The following is an example from Hindi (Davidson 2001: (1)).

(34) Siitaa-ne raam-koo [PRO apnee-ko deekh-nee kee liyee majbuur
Sita-ERG Ram-DAT self-DAT see-INF -GEN for force
kiya]
do-PERF
‘Sita forced Ram [PRO to look at self’]

The reflexive apnee ‘himself/herself’ can corefer with PRO in the minimal clause or Siiitaa in the main clause. However, there are restrictions on when Hindi long-distance reflexives can behave in a long-distance manner (see Davison 2001 for a full description). For example, clauses with finite tense prohibit long-distance coreference.
(35) *Raadhaa, ya pasand nahiiN kar-tii ki apnaa,
Radha this liking not do-IMPF-F-SG that self-POSS-GEN
bhaii aisee loogooN-see baat kar-ee
brother such people-with talk do-SUBJ-3SG
‘Radha doesn’t like it that self’s brother should talk to such people.’

Here, apnee ‘self’ cannot corefer with Raadhaa which is in the finite main clause.
Therefore, only non-finite clauses allow for long-distance reflexives in Hindi-Urdu and potentially other languages with Type II reflexives.\(^{11}\)

According to Cole, Hermon, and Huang (2001, 2006), reflexives like apnee are long-distance bound anaphors, and they show a distribution that is, overall, consistent with bound anaphors: (i) they cannot grammatically corefer with the external speaker and (ii) they require a c-commanding (or, in some languages, a sub-commanding\(^{12}\)) antecedent, and (iii) they require (or strongly favor) sloppy readings in Verb Phrase

\(^{11}\) I am unsure of the difference between Type II reflexives and Type IV reflexives given the broad categories outlined in Cole, Hermon, and Huang (2006), since it seems that both reflexives can corefer with a nominal expression outside their simple clause in specific syntactic domains. The main difference, as I can tell, is that Type II reflexives do not exhibit Blocking Effects and are not affected by discourse environment. Only Type IV reflexives exhibit Blocking Effects in languages without subject/verb agreement (Cole, Hermon, & Huang 2006). Therefore, Type IV reflexives have a more restricted environment than Type II reflexives since Type IV reflexives can only be in some types of clauses, exhibit Blocking Effects, and are (potentially) influenced by discourse environment.

\(^{12}\) \(\alpha\) sub-commands \(\beta\) iff (Ouhalla 1999: 194):

(i) \(\alpha\) does not dominate \(\beta\) and \(\beta\) does not dominate \(\alpha\)

(ii) The first maximal projection dominating \(\alpha\) also dominates \(\beta\).
Ellipsis (VPE) environments. Cole, Hermon and Huang (2001, 2006) claim that sloppy interpretations in VPE environments are due to the fact that the reflexive must be bound by the most local nominal expression.

Since Sag (1977) it has been observed that syntactic behavior of VPE constituents differ depending on whether the antecedent for VPE contains a reflexive or a pronominal. In English, VPE distinguishes between pronominals and reflexives. Pronominals can receive either a strict or sloppy reading, while reflexives only receive a sloppy reading. In English, VPE distinguishes between pronominals and reflexives. Pronominals can receive either a strict or sloppy reading, while reflexives only receive a sloppy reading. An example is below (Cole & Hermon 1998, modified from their (9) and (10)).

(36) John said that Susan met him in the library and Ted did too.
    = Ted said that Susan met Ted at the library (sloppy)
    = Ted said that Susan met John at the library (strict)

(37) John looked at himself in the mirror and Harry did too.
    = Harry looked at Harry
    ≠ Harry looked at John

When the antecedent of the VPE contains a pronoun, such as *him* in (36), the elided constituent can receive a sloppy or a strict interpretation. In contrast, when the antecedent of the VPE contains a reflexive, such as *himself* in (37), only a sloppy reading is available. Due to the difference in interpretation of VPE constituents with reflexives or pronouns, it is thought that reflexives behave as anaphors and must have a sloppy

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13 Cole and Hermon (2003), Sag (1976), and Fiengo and May (1994) point out both strict and sloppy interpretations of these sentences can be available in certain environments in English.
interpretation while pronouns behave as pronominals and can have either a sloppy or a strict interpretation.

In languages with long-distance bound anaphors, the reflexive is required to be interpreted locally. Therefore only sloppy readings are available. For example, in Hindi-Urdu, which has reflexives that are long-distance bound anaphors, sentences with VPE have only sloppy interpretations, as shown in (38) (Cole, Hermon & Huang 2006 (8)):14

(38) Guatam apnee (aap)-koo caalaak samajhata hai aur Vikram
Guatam self’s self-dat smart consider-impf is and Vikram Ø
also
bhii
“Guantam considers himself smart, and so does Vikram.”
= Vikram considers Vikram smart (sloppy)
≠ Vikram considers Guatam smart (strict)

Here, the sentence can only be interpreted as “Vikram considers Vikram to be smart;” the sentence cannot have a strict interpretation where “Vikram considers Guatam to be smart.”

Thus, Type II reflexives behave like bound anaphors but can behave like long-distance reflexives in limited syntactic environments (e.g., across non-finite clauses).

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14 Huang and Liu (2001) note that the Mandarin bare reflexive ziji ‘self’ exhibits obligatory sloppy identity in VPE environments. They claim that this data is consistent with an analysis that designates ziji as a logophor, since Huang and Liu treat logophoric ziji a variable that is A’-bound by an operator (which is anaphoric).
Also, Type II reflexives must have a linguistic antecedent, and do not exhibit Blocking Effects.

2.4 **Forms that are anaphors locally and pronominals non-locally**

Languages with reflexives that distribute like anaphors locally and pronominals non-locally are set apart from the other types of reflexives in that they need no special syntactic or discourse environment in order to exhibit a grammatical long-distance interpretation. Rather, it is reported that this type of reflexive can corefer with: (i) any nominal expression in the sentence or (ii) the external speaker regardless of verb type or consciousness (see section 2.7). An example from Malay is given below (Cole & Hermon 2003: 629):

(39) Ahmad\_i tahu Salmah\_i akan membeli baju untuk dirinya\_i\_j\_k
Ahmad knows Salmah will buy clothes for self.3SG
“Ahmad knows Salmah will buy clothes for him/herself.”

Here, the reflexive *dirinya* can corefer with the nominal expression within the simple clause (*Salmah*), the nominal expression in the maximal clause (*Ahmad*), or to a referent understood in the discourse (represented by the subscript “k”). Type III reflexives are indeterminate between an anaphor and a pronominal (in the Binding Theory sense). Thus, any environment where a pronominal is grammatical, a Type III reflexive will also be grammatical. Similarly, in any environment where an anaphor is grammatical, a Type III reflexive will also be grammatical.
2.5 Forms that are primarily bound anaphors, except in specific syntactic and discourse contexts

Some reflexives pattern for the most part like bound anaphors, but can, in specific syntactic and discourse contexts, corefer with a nominal expression outside the simple clause. An example of this type of reflexive comes from Mandarin Chinese:

\[(40)\quad \text{Zhangsan, renwei Lisi zhidao Wangwu xihuan ziji} \]

Zhangsan thinks Lisi know Wangwu likes self

“Zhangsan thinks Lisi knows Wangwu likes self.”

Here, the reflexive ziji ‘self’ can corefer with the nominal expression in the simple clause (Wangwu), the nominal expression in the middle clause (Lisi), or the nominal expression in the main clause (Zhangsan). Typically, only nominal expressions in subject position can act as antecedents of ziji. Nominal expressions in object position cannot act as antecedents.

\[(41)\quad \text{Zhangsan, song (gei) Lisi yi-zhang ziji-de xiangpian.} \]

Zhangsan give to Lisi one-CL self’s picture

“Zhangsan gives Lisi a picture of himself.”

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15 According to Battistella (1989), not all dialects of Mandarin allow for coreference with the subject of the middle clause. He calls this the Maximal Clause Effect.

16 Cole & Wang 1996 provide evidence that c-command is the important feature, not subject or object position of the antecedent nominal expression.
Here, \textit{ziji} cannot corefer with \textit{Lisi}, which is in object position, but can corefer with \textit{Zhangsan}, which is in subject position.

In some environments, coreference is prevented by an intervening nominal expression that does not match a lower nominal expression for person. If a nominal expression in the middle clause does not match a nominal expression in the simple clause for person, the bare reflexive \textit{ziji} cannot corefer with a nominal expression in the matrix clause. This is illustrated below:

\begin{equation}
Zhangsan \text{ renwei } wo_j \text{ zhidao } Wangwu_k \text{ xihuan } ziji^{*i/j/k}
\end{equation}

\textit{Zhangsan} thinks \textit{I} know \textit{Wangwu} likes \textit{self} \textit{“Zhangsan thinks I know Wangwu likes self.”}

Here, the subject of the middle clause, \textit{wo}, is first person while the subject of the simple clause, \textit{Wangwu}, is third person. In this example, \textit{ziji} can only corefer with the subject of the simple clause. This is called a “Blocking Effect.”

Since coreference is possible for nominal expressions in some syntactic positions (without intervening non-matching nominal expressions), but not others (with intervening non-matching nominal expressions), it has been suggested that the ability of the reflexive to corefer with a nominal expression outside the minimal clause is influenced by syntactic environments. However, the Blocking Effect data in Mandarin Chinese is more complicated than (42) suggests.

While only subjects can be antecedents, both subjects and objects can trigger Blocking Effects (Huang & Tang 1991; Xue, Pollard & Sag 1994, Pollard & Xue 1998, Huang & Liu 2001).
Zhangsan tell me Lisi hate self

“Zhangsan told me that Lisi hated self”

In (43) wo “me” is in object position, but triggers Blocking Effects. Wo blocks ziji from coreferring with the long-distance antecedent Zhangsan. Therefore, both subjects and objects that do not match φ-features with the local antecedent prevent a long-distance interpretation even though ziji can only corefer with a nominal expression in subject position.

Thus, in Mandarin, the set of possible antecedents and the set of Blockers is not the same. Nominal expressions in subject and object position can trigger Blocking Effects, but only nominal expressions in subject position can act as antecedents.

Huang and Liu (2001) also report that Blocking Effects are asymmetrical. Their data indicate that a first or second person pronoun can effectively block a third person long-distance antecedent, but a third person nominal expression does not prevent a first or second person pronoun from acting as a long-distance antecedent.

It should be noted that a recent study by He and Kaiser (2011) found that Blocking Effects in Mandarin are not consistent. In a forced choice test about the interpretation of a sentence, a first person local subject did not prevent the bare reflexive ziji from coreferring with a third person subject in the matrix clause. In fact, a higher than expected number of forced choice interpretations indicated that the bare reflexive could corefer with a third person matrix subject when there was a first person local subject (26.88% answers that reported coreference with the matrix subject vs. 73.12% answers
that reported coreference with the local subject). This is in contrast to a sentence where there should be no Blocking Effects: a sentence with a third person local and matrix subject (14.33% answers that reported coreference with the matrix subject vs. 85.67% answers that reported coreference with the local subject). Mainland China Mandarin speakers participated in He and Kaiser’s study while mostly Taiwanese Mandarin speakers participated in Huang’s research. This difference in Blocking Effects may be due to regional differences.

Recall that there is a specific syntactic environment that is posited for long-distance reflexives in Mandarin Chinese. The antecedent must c-command the reflexive. It has been argued that Blocking Effects are also syntactic in nature, since it has been noted that only languages that lack subject/verb agreement exhibit Blocking Effects. The role of syntax and discourse in regards to Blocking Effect is under investigation.

The asymmetry of which nominal expressions trigger Blocking Effects as well as the fact that nominal expressions in object position can trigger Blocking Effects, but cannot act as antecedents, points to a discourse environment governing the distribution of (some) Type IV reflexives. First, it is strange that a nominal expression that cannot act as an antecedent triggers Blocking Effects. We would expect the same structural relationship to be responsible for Blocking Effects and binding, however this is not the case. Objects are in a relationship with reflexives that allows them to trigger Blocking Effects, but not act as an antecedent. It is possible that the relationship for binding is structural while the relationship for Blocking Effects is a discourse relationship.
Asymmetry of Blocking Effects led Cole, Hermon, & Huang (2006) to suggest that Blocking effects where there is a mismatch in person (3rd to 1st) in subject position, there is a double violation of both syntactic and discourse Blocking. For Mandarin, it is thought that both syntactic (e.g., c-command) and discourse environments play a role in the behavior of ziji.

Most literature on Blocking Effects, especially those in Mandarin, maintains that there is a discourse component to Blocking (Chen 2009, Cole, Hermon & Huang 2006, Huang & Liu 2001). However, the discourse environment that is responsible for the distribution of long-distance reflexive in Mandarin is not completely understood. Understanding the discourse environments that influence the coreference of Type IV reflexives is a difficult task. Two of the more prominent attempts to understand discourse environments are outlined below. The first is the role of logophoric environments and the second is the role of de se environments.

2.5.1 Role of discourse: logophoricity and de se attitudes

A current aim of the research in long-distance reflexives is to understand the various discourse/pragmatic licensers of reflexives that may function alongside any syntactic licensers of long-distance reflexives. The literature on Mandarin ziji suggests that there is great variation across dialects as well as across speakers of the same dialect. This variation may indicate a difference of how important the pragmatic environment of long-distance reflexives is (Cole, Hermon and Huang 2006).17

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17 As I suggest in Chapter 3, this may be due to how acceptability judgments are traditionally collected.
In languages and dialects where there are discourse/pragmatic licensers for long-distance reflexives, Cole, Hermon and Huang (2001, 2006) suggest that these licensers trigger a logophoric “conversion” of reflexives from anaphors to pronominals. This conversion occurs when the antecedent satisfies logophoric conditions (see §2.5.1.1). Also, according to Reinhart & Reuland 1993 and Zribi-Hertz 1989, this type of conversion usually occurs when the reflexive is in the adjunct position rather than a complement position.

Evidence for positing a logophoric conversion comes from the existence of logophoric pronouns in languages like Ewe. A logophoric pronoun corefers with a discourse antecedent. A logophor can be bound or free within its local domain as long as its antecedent is licensed by the discourse. Some researchers, e.g. Cole, Hermon, and Huang (2001, 2006) and Huang and Liu (2001) posit that a logophoric “conversion” can occur when a reflexive form can corefer with a discourse antecedent outside its simple clause rather than only with a local nominal expression. Note that for reflexives that undergo a “conversion” from an anaphor to a pronominal, the reflexive can always corefer with the subject of the simple clause regardless of the discourse environment because the reflexive start as anaphors. Later in the process, these reflexive forms may undergo a logophoric conversion to a pronominal if there is an appropriate discourse antecedent. There is speculation that licensers that trigger logophoric conversions of reflexives from anaphors to pronominals and licensers for “true” logophoric pronouns may be similar to each other (Reuland 2006). For this reason, it is thought that logophoric conversions have the same licensers as logophoric pronouns. The following sections look
at the concept of logophoricity and the requirements for logophors found in different languages as well as an overview of a proposal to substitute two independent types of logophoric licensers with a single *de se* attitude requirement (§2.5.1.2).

### 2.5.1.1 Logophoricity

Unlike anaphors, logophors do not need a local (or even linguistic) antecedent in order to be interpreted (though they may have one). Rather, they require a special type of discourse antecedent. For example, the speaker may act as the discourse antecedent of a logophor. An example of a logophor in SAE that has no linguistic antecedent but has a discourse antecedent is in (44).

---

18 It has long been noted in British English that some reflexive forms are subject to (at least some type of) discourse requirements for their distribution rather than syntactic environments (e.g., Zribi-Hertz 1989, Baker 1995). It is debated how much discourse environment plays a role in the distribution of British English reflexives. For Zribi-Hertz, discourse environment is the key player. In contrast, Baker suggests that discourse environment is one of the players for the distribution of reflexives. An example from Zribi-Hertz (1989) is below:

(1) Maggie looked at him. Did he mean herself—herself, and the baby?

[Woolf 1937, 188; cited in Zribi-Hertz 1989, 707]

Fasold (2003) suspects that in American English it is not the syntactic environment that is important, but rather that reflexive forms are undergoing a structural change that allows them to be bound in such a way that it seems they have long-distance behavior. He suggests that English pronominals have the form \([DP \text{ pro } [NP \text{ herself}]]\). The pro in the D position allows the reflexive to behave like a pronominal. Note that we would not expect Blocking Effects if a language has reflexives with this form.
(44) As for myself, coffee is fine.

Here, *myself* has no linguistic first person singular nominal expression with which to corefer. Rather, *myself* is bound by the discourse antecedent, the speaker. There are restrictions, however, on when a nominal expression can be analyzed as a logophor. For example, while (44) is grammatical for most speakers of SAE, (45) and (46) are not grammatical in SAE.

(45) ??As for yourself, coffee is fine. / As for yourself, is coffee OK?
(46) *As for himself/herself, coffee is fine.

In (44) *myself* has a discourse antecedent in the speaker. However, (45) and (46) illustrate that in the same type of sentence *yourself* and *himself/herself* do not have a discourse antecedent or linguistic antecedent, and therefore are not grammatical. In English, only the speaker can act as a discourse antecedent.

Some of the first reports of logophors were made by Clements (1975) and Hagège (1974) who studied the Niger-Congo language Ewe.¹⁹ Ewe is reported to have three types of pronouns: personal pronouns, anaphoric pronouns and logophoric pronouns. All these pronouns have different surface forms. The following charts illustrate the pronouns, anaphors and logophors in Ewe. Note the differences among the three forms (Clements 1975: 148-9).

¹⁹ However, Latin and ancient Greek were earlier hypothesized to have reflexive pronouns that had a logophoric use. They were called “indirect reflexivization” (Clements 1974).
Table 2-1 Pronominal nominal expressions

<table>
<thead>
<tr>
<th></th>
<th>First person</th>
<th>Second person</th>
<th>Third person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong-sg.</td>
<td>nye</td>
<td>wò</td>
<td>ye (yi)</td>
</tr>
<tr>
<td>Strong-pl</td>
<td>miawo</td>
<td>miawo</td>
<td>woawo</td>
</tr>
<tr>
<td>Weak-subj sg.</td>
<td>me</td>
<td>è (nè)</td>
<td>e (wò)</td>
</tr>
<tr>
<td>Weak-obj sg.</td>
<td>m</td>
<td>wò</td>
<td>e (i)</td>
</tr>
<tr>
<td>Weak-gen sg.</td>
<td>nye</td>
<td>wò</td>
<td>e</td>
</tr>
<tr>
<td>Weak-subj pl.</td>
<td>mie</td>
<td>mie</td>
<td>wo</td>
</tr>
<tr>
<td>Weak-obj pl.</td>
<td>mi</td>
<td>mi</td>
<td>wo</td>
</tr>
<tr>
<td>Weak-gen pl.</td>
<td>mia</td>
<td>mia</td>
<td>wo</td>
</tr>
</tbody>
</table>

Table 2-2 Anaphoric pronouns

<table>
<thead>
<tr>
<th></th>
<th>First person</th>
<th>Second person</th>
<th>Third person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>ɖokui-nye</td>
<td>ɖokui-wò</td>
<td>e-ɖokui</td>
</tr>
<tr>
<td>Plural</td>
<td>mia-ɖokui</td>
<td>mia-ɖokui</td>
<td>wo-ɖokui</td>
</tr>
</tbody>
</table>

Table 2-3 Logophoric pronouns

<table>
<thead>
<tr>
<th></th>
<th>First person</th>
<th>Second person</th>
<th>Third person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>yè</td>
<td>yè</td>
<td>yè</td>
</tr>
<tr>
<td>Plural</td>
<td>ywo</td>
<td>yèwo</td>
<td></td>
</tr>
</tbody>
</table>

Clements (1975) proposes that logophors “distinguish reference to the individual whose speech, thoughts or feelings are reported or reflected in a given linguistic context from reference to other individuals” (141). An example from Ewe of a logophor that corefers with a nominal expression whose speech is reported rather than the local nominal expression is given in (47) (from Harbert 1995 (24b)).
In (47), Kofi’s speech is being reported, so the information is from Kofi’s perspective. Logophors corefer with the individual whose speech is recorded, so, the logophor ye corefers with the non-c-commanding nominal expression Kofi and not Kwami. Kwami’s speech, thoughts, or feelings are not reported in the sentence.

It should be noted that Culy (1994) distinguishes “purely” logophoric languages from what he calls “mixed” logophoric languages. A purely logophoric language is one that has pronouns that have solely a logophoric use, and cannot be used as reflexives or emphatic markers (such as Ewe). On the other hand, a mixed logophoric language is one that has a word that can be used either as a logophor or an emphatic marker or an anaphor (such as Mandarin).

Sells (1987: 462) proposes a pragmatic/discourse analysis that predicts the distribution of logophoric pronouns in mixed logophoric languages. He claims that “an unanalyzed notion of the ‘speaker’ or the ‘I’ […] does not allow for enough distinctions to be drawn when a range of languages are considered.” He claims that there is “no unified notion of logophoricity per se and that logophoric phenomena are instead a result of the interaction of these more primitive notions: the source of the report, the person with respect to whose consciousness (or ‘self’) the report is made, and the person from
whose point of view the report is made.” Sells goes on to define each of these logophoric roles (455):

(48) a. The SOURCE is the one who makes the report (e.g., the speaker);
    b. The SELF represents the one whose "mind" is being reported;
    c. The PIVOT represents the one from whose point of view the report
       is made, the center of deixis.

SOURCE is the one making the report. Verbs of saying provide a SOURCE environment. Some analyses of SOURCE theorize that the logophor is coreferring with the subject of a higher (and unspoken) verb of saying (Sells 1987, Cole, Hermon & Huang 2003). An example of this is in (44), repeated here in (49) along with the higher, unspoken verb of saying.

(49) a. As for myself, coffee is fine.
    b. I say, “As for myself, coffee is fine.”

SELF is the person whose mental state is being described in the sentence. Verbs of thinking provide a SELF environment. An example of SELF is in (50) (Liu 1999’s (38)).

(50) [Ziji-de xiaohai mei de jiang]-de xiaoxi shi Lisi hen
    Self's child not get prize DE news make Lisi very
    shangxin.
    sad.
    “The news that his child didn't win the prize made Lisi very sad.”
Here, Lisi’s thoughts (and feelings) are recorded and the reflexive ziji “self” can corefer
with the non-local nominal expression.

Finally, PIVOT is the perspective from which a report is made. Deictic
expressions provide an environment for PIVOT. An example of this is in (51) (Liu
1999’s (35)).

(51) Mama shuo [jia chuqu-de nuer yijing hui lai ziji-de jia
Mother say marry go-out daughter already return come self's home le].
SFP
“Mother, said that [the married daughter] already came back to her*i home.”

Here, the verb hui lai “return come” is deictic from the mother’s perspective (as opposed
to a verb that means “to go” which would be from the daughter’s perspective). The
logophor ziji corefers with mother, the non-local nominal expression rather than
daughter, the local nominal expression since the sentence is from the mother’s perspective.

Sells’ three types of logophoric antecedent licensors have a hierarchical
relationship, as illustrated below.

(52) SOURCE ≤ SELF ≤ PIVOT

Sells argues that reporting the speech or thoughts of an internal source necessarily
invokes the source’s mental state (SELF) as well as information given from the person’s
point of view (PIVOT). Therefore, SOURCE must include the notions of SELF and
PIVOT as part of its definition. In that sense, SOURCE is more restricted in how it is used than SELF and PIVOT. PIVOT is the least restrictive: information only needs to be given from the antecedent’s point of view, but his or her words or mental state do not need to be given. According to Sells, languages differ as to how many of these relations they permit. For example, a language may have SOURCE but not SELF or PIVOT or a language may have SOURCE and SELF but not PIVOT, or a language may have all three relationships.

Sells (1987) suggests that different logophoric licensers are required for different languages. For example, according to Sells (1987) Icelandic sig “self” does not act in the same way as Japanese zibun “self”. Sells posits that while the Icelandic sig requires a [+ self] interpretation, it also must be in a subjunctive phrase. Japanese zibun, on the other hand, requires a [+ pivot] interpretation and does not need to be in a subjunctive phrase. In addition to these discourse licensers of logophoric expressions, Cole, Hermon and Huang (2001, 2006) claim that there might be syntactic structure requirements (a c-command relationship between the reflexive and its antecedent) along with pragmatic requirements that predict the distribution of logophoric ziji “self.”

2.5.1.2 De se requirements

Pollard and Xue (2001) have data that illustrates an instance of SOURCE that does not license long-distance use of the Mandarin reflexive ziji (53):

(53) Zhangsan\textsubscript{i} cong Lisi\textsubscript{i} chu tingshuo Wangwu\textsubscript{k} bu xihuan ziji\textsubscript{i/*j/k}

Zhangsan from Lisi place hear Wangwu not like self

“Zhangsan heard form Lisi that Wangwu does not like himself.”
In (53), the information came from Lisi, so Lisi is the SOURCE; however, the reflexive *ziji* is still unable to corefer with *Lisi*. Additionally, Cole *et al* (2001) found that in the Teochew dialect spoken in Singapore *ziji* is licensed by SOURCE or SELF. However, the bare reflexive in Mandarin, which is spoken in the same city, is licensed by PIVOT only.

Since there is a division between SOURCE and SELF in one group and PIVOT in another group, some scholars have suggested (e.g., Huang & Liu 2001, Pan 2001) that (at least) SOURCE and SELF can be subsumed under the notion of *de se*. The requirement of *de se* is that the antecedent must be aware that the sentence is a description of an event in which he himself or she herself is a protagonist. The theory of *de se* comes from Chierchia (1989) who provides data suggesting that consciousness is important whenever a word obtaining its meaning from an antecedent is used. His data comes from Italian. Chierchia (1989) points out that (54) includes a contradiction while (55) does not (Chierchia (43)).

(54) #Pavarotti crede che i *propri* pantaloni siano in fiamme.
Pavarotti believes that the self pants are in flame
Ma non si è accorto che i pantaloni sono i propri.
But not realize that the pants are the own.
“Pavarotti believes that self’s pants are on fire, but he hasn’t realized that the pants are his own.”
Pavarotti believes that his pants are on fire, but he hasn’t realized the pants are his own.”

In (54), Pavarotti cannot believe that his own pants are on fire if he has not already realized (is conscious) of his role in the situation. On the other hand, Pavarotti can believe someone’s pants are on fire in (55), without yet coming to the realization that the pants are his own. The example that Chierchia gives is that Pavarotti is looking in a mirror, but does not realize he is seeing his own reflection. He then sees flaming pants in front of him—he believes that “his” (the reflection’s pants) are on fire, but has not yet realized that he is the protagonist. Alternatively, it may be that Mandarin does not have de se requirements that encompass both SOURCE and SELF, but rather that it has syntactic requirements above and beyond logophoricity: specifically there may also be a requirement of c-command.

There is a difference between a logophor and a reflexive that undergoes a logophoric conversion from an anaphor to a pronominal. A logophor cannot behave like an anaphor unless the logophoric environment allows for it. On the other hand, a reflexive that undergoes a conversion can behave like an anaphor even if there is no logophoric environment for this interpretation.
2.6 Towards a classification of IRE reflexives

In the literature, there are four types of reflexives. Understanding how IRE reflexives fit (or do not fit) into these types is important because it will help us understand what types of universal properties govern the distribution of reflexives. Each type of reflexive outlined in the literature has a distribution that makes it unique from the other types. In this section, I will highlight the unique traits of each reflexive type that will guide us in the classification of IRE reflexives.

Type I reflexives must corefer with a nominal expression within a local domain (roughly the clause). We already know that IRE reflexives must not belong to Type I, since they are able to corefer with a nominal expression outside their simple clause, as in (56). Here, *himself* can corefer with *Tom*, which is outside the simple clause.

(56) Tom said that Bill likes himself.

Although IRE reflexives are not Type I, it is possible that IRE reflexives pattern like Type II, Type III, Type IV, or they are a separate type of reflexive.

If IRE reflexives are Type II reflexives, we expect them to have the distribution of a bound variable (much like long-distance reflexives in Kannada). Bound variables must be c-commanded by an antecedent and cannot take an extra-sentential antecedent. Thus, a sentence like (57) should be unacceptable, as *myself* needs an extra-sentential antecedent (the speaker), however the sentence is acceptable.

(57) As for myself, coffee is fine.
Also, Type II reflexives must have a sloppy interpretation in VPE. Type II reflexives remain anaphors in the elided clause; they do not under a “change” to a pronominal (which would indicate that they have some pronominal qualities, as is posited for Malay dirinya ‘himself/herself’).

Finally, we might expect that if IRE reflexives pattern like Type II reflexives, then long-distance interpretations of the reflexive will only occur in a subset of clause types, such as non-finite clauses.

If IRE reflexives are Type III reflexives, we expect them to be indeterminate between anaphors and pronominals in the sense of Chomsky’s Binding Theory (1981). Type III reflexives can be bound or free in their local domain (e.g., long-distance reflexives in Malay and Turkish). However, if IRE reflexives are not indeterminate between anaphors and pronominals, then they are not members of Type III. So, if IRE reflexives exhibit island effects or Blocking Effects, they cannot belong to Type III, since pronominals do not exhibit island effects or Blocking Effects.

Lastly, if IRE reflexives are Type IV reflexives, then they should be able to corefer with a nominal expression outside the simple clause only in some syntactic and pragmatic environments, such as logophoric environments. Type IV reflexives should be able to corefer with a nominal expression outside of its simple clause only in specific environments. For example, they may exhibit Blocking Effects or logophoric effects. If IRE reflexives exhibit neither Blocking Effects nor logophoric effects, they are not members of this group. It is unexpected that IRE reflexives will exhibit Blocking Effects for two reasons: (i) IRE reflexives are complex and it is thought that only
monomorphemic reflexives exhibit Blocking Effects (Cole, Hermon, & Huang 2006) and (ii) IRE exhibits subject/verb agreement and it is thought that only languages that lack subject/verb agreement exhibit Blocking Effects (Cole & Sung 1994).

2.7 Concluding remarks

This chapter has been a review of the literature on long-distance reflexives. We have seen that there are four types of reflexives (i) forms that are locally bound anaphors; (ii) forms that are long-distance bound anaphors; (iii) forms that are anaphors locally and pronominals non-locally; and (iv) forms that are “primarily” bound anaphor reflexives, but can be non-local in specific syntactic and discourse contexts.

We have also looked at some typological characteristics of these different types of reflexives (such as influence of discourse/pragmatic licensors and monomorphemicity). These characteristics of classification will guide the type of stimuli that are used in this study. They will allow us to later determine if, and how, IRE reflexives fit into the current classification system. These behaviors are used to classify reflexives across languages. Languages with reflexives that belong to the same classification may not have the same analyses. Therefore, while classification is important for understanding how much diversity exists in cross-linguistic reflexives, classifications alone will not point to an analysis that is appropriate for each reflexive in that grouping. In the next chapter (Chapter 3), I outline the methodology used to collect information about the behavior of IRE reflexives that will lead both to the classification of IRE reflexives and an analysis of their behavior.
3 METHODOLOGY

3.1 Overview

This chapter details how judgments of different interpretations of sentences with reflexives were collected and analyzed. Conducting research on the behavior of reflexives in Iron Range English requires the collection of naturalness judgments because there are not enough corpora available to offer a clear indication of which environments allow, and do not allow, a reflexive to corefer with a nominal expression outside its simple clause. There were three challenges with gathering judgments of sentences with reflexives from IRE speakers. First, due to the nature of long-distance reflexives in other languages (such as a person asymmetry found in Blocking Effects illustrated in Chapter 2), it is necessary to use a collection technique that allows for gradation in acceptability to be apparent. Second, since long-distance reflexives can potentially have both a local and a long-distance interpretation, they make test sentences ambiguous. The collection technique must explicitly mark which reading is meant to be evaluated. Lastly, it has been noted that collecting acceptability judgments from non-standard speakers is difficult because the informants may give judgments on (what they believe to be) standard uses of the form, so the collection technique must help the informant give judgments for the dialect under investigation.

Grammatical (naturalness) judgments tend to be graded. This is also true in the case of judgments about the possible coreference of reflexives. For example, the behavior of long-distance reflexives in Mandarin Chinese indicates that there is a person
asymmetry for Blocking Effects. For example, first person pronouns like wo ‘I’ seem to have stronger blocking effects than third person nominal expressions such as Wangwu. This is illustrated below. In (58), wo prevents ziji from coreferring with the subject of the middle clause, Wangwu. In (59), for some speakers Wangwu does not prevent ziji from coreferring with the subject of the middle clause wo.

(58) Zhangsan_i renwei Wangwu_j zhidaow o_k xihuan ziji_{i/*j/k}  
Zhangsan think Wangwu know I like self  
‘Zhangsan thinks that Wangwu knows that I like myself.’

(59) Zhangsan_i renwei wo_j zhidaow Wangwu_k xihuan ziji_{i/**j/k}  
Zhangsan think I know Wangwu like self  
‘Zhangsan thinks that Wangwu knows that I like myself/??him.’

From the above data, it appears that first person subjects trigger stronger Blocking Effects than third person subjects in Mandarin. There is gradability in Blocking Effects. Thus, in order to understand the nature of Blocking Effects cross-linguistically, it is important to use a collection technique that is able to register such gradability in order to understand if Blocking Effects are asymmetrical in all languages. Magnitude Estimation is a data collection technique that allows for gradability to become apparent (Bard et al 1996), so this method was chosen to collect judgments for IRE reflexives.

It is necessary to use multi-clausal sentences in order to understand the behavior of long-distance reflexives. Due to the nature of long-distance reflexives, multi-clausal sentences are ambiguous: if there is a long-distance interpretation of the reflexive, there is
also a local interpretation of the reflexive. For example, in (60), *ziji* can corefer with *Zhangsan, Wangwu* or *Lisi.*

(60) \begin{align*}
Zhangsan_i \text{ renwei } & \text{Wangwu}_j \text{ zhidao } \text{Lisi}_k \text{ xihuan } ziji_{i/j/k} \\
\text{Zhangsan think } & \text{Wangwu know } \text{Lisi like } \text{self}'
\end{align*}

‘Zhangsan thinks that Wangwu knows that Lisi likes self.’

Often in sentences with more than one reading, it is easier to “get” one reading over the other reading(s). For this reason, I included a pragmatic situation for each sentence that biased the informant for a long-distance interpretation of the reflexive. Both the control group and the test group saw the same pragmatic situations. Another hurdle of multi-clausal sentences is that it can be difficult to recall who is doing what. In order to help informants remember all the players in a situation, I opted to use written stimuli. This also allowed me to overtly mark a specific interpretation using visual cues. These methods helped informants focus on a particular reading and evaluate that reading alone.

Finally, gathering judgments on a non-standard dialect is difficult because respondents may give judgments for (what they believe to be) the standard variety (Henry 2005). Henry suggests that naturalness judgments be collected orally in order to help informants respond only with their non-standard dialect. This is because (usually) the standard dialect is written while the non-standard dialect is not. As I mentioned earlier, due to the nature of the stimuli needed to understand the behavior of long-distance reflexives, I opted for written stimuli. In order to make certain that speakers consider the tested variety, each stimuli sentence was accompanied by an audio clip with a speaker of informant’s dialect (IRE or Metro English) saying the sentence.
In the following sections of this chapter, I will outline some previous studies that used Magnitude Estimation to gather judgments as well as how I worked with speakers of a non-standard dialect. I will also describe the methodology of the current study. The chapter is organized as follows. The first subsection looks at Magnitude Estimation as a technique for gather linguistic judgments and, specifically, coreference judgments. This section also outlines my reasons for using this method to collect judgments. The second section (§3.3) expands on how I worked with speakers of a non-standard dialect and what additional precautions I took to ensure that I obtained IRE judgments rather than (what the informants believed were) SAE judgments. Next, is information about who participated in the study. §3.5 includes an overview of the types of stimuli included in the study, and §3.6 illustrates how the data was analyzed. The next section details the demographic information that I collected after judgments were gathered. §3.8 concludes this chapter.

3.2 Magnitude Estimation in linguistic research

This subsection is a brief summary of some of the findings of ME as a reliable technique to collect judgments. ME was first used to collect gradient measures in psychophysics (see Stevens (1975) for an overview) and has recently been used to collect naturalness judgments in linguistics. As mentioned in Chapter 1, ME allows participants to create their own naturalness scale. Informants rate stimuli sentences against a modulus sentence with a numerical rating. The numerical rating indicates how much different each stimuli sentence is from the modulus sentence. For example, a sentence that is twice as natural as the modulus will be given a value that is twice as high as the value given to the
modulus sentence. This rating system allows informants to “build” a flexible grammaticality scale where values are not restricted. The scale that informants produce is a ratio-scale, which allows for statistical analysis of the data.

Bard et al (1996) first used Magnitude Estimation to collect linguistic judgments. In their study, they gathered naturalness judgments on sentences with \textit{wh}-movement from both linguists and undergraduate anatomy students. Bard et al found that linguists and anatomy students rated sentences similarly—that is, sentences that were unnatural for linguists were also unnatural for anatomy students, and sentences that were natural for linguists were also natural for anatomy students. Thus, naturalness judgments can be collected using ME from both sophisticated and naïve informants. Cowart (1997) also used ME to gather grammaticality judgments. He found that ME allows for similar judgments as in traditional laboratory settings.

Keller and Asudeh (2001a and 2001b) used Magnitude Estimation to collect judgments of linguistic coreference, a specific kind of grammaticality judgment. First, they replicated a published experiment on coreference judgments that used a conventional ordinal scale (Gordon and Hendrick’s (1997) Experiment 3) with a ME task. They found a high correlation of ME results with the original study, and determined that ME is available to investigate judgments about coreference. Then, Keller and Asudeh (2001) looked at sentences with reflexives to determine whether both syntactic environment and pragmatic environment play a role in binding. One of the main pieces of data was sentences with \textit{picture}-NPs and the varying acceptability judgments reported for
these constructions in the literature. For example, in (61), Hanna can corefer with herself or with her, but in (62), Hanna can only corefer with her.

(61)

a. Hanna, found a picture of her,

b. Hanna, found a picture of herself,

(62)

a. Hanna, found Peter’s picture of her,

b. *Hanna, found Peter’s picture of herself,

They found that both pragmatic and syntactic information contributed to the acceptability of sentences with reflexives. Keller and Asudeh (2001) were able to collect judgments for interpretations that explicitly tested for both syntactic and pragmatic factors governing the distribution of reflexives. Therefore, ME is an appropriate tool to use to collect information about IRE reflexives which may have both pragmatic/discourse and syntactic licensors.

3.3 Collecting judgments from speakers of a non-standard dialect

Collecting acceptability judgments from speakers of non-standard dialects (such as IRE) can be difficult for two reasons: (i) the non-standardized dialect is often stigmatized and (ii) the non-standard dialect is often oral. Since it is difficult to collect acceptability judgments from non-standard speakers, I followed Henry’s (2005) guidelines on how to collect meaningful judgments from non-standard speakers. Henry has done much work with on gathering syntactic judgments from speakers of non-standard Belfast English. Since Henry works with a non-standard English dialect as well as with syntax, she is an
appropriate resource to use when planning my own syntactic research with another non-standard English dialect.

Henry (2005) provides a summary of tactics for gathering data from speakers of non-standard dialects and has outlined a methodology for researchers who work with speakers of non-standard dialects. Special techniques are needed to work with speakers of non-standard dialects, as speakers of nonstandard dialects may feel ashamed of the dialect or may be prone to give judgments using what they know of the standard dialect, rather than judgments about their own speech. Henry (2005) suggests that researchers be very specific when working with informants so that they understand that the researcher is interested in the local dialect rather than “some notion of ‘correctness’” (1603).

Following Henry’s advice, I informed IRE speakers that I was interested in the uniqueness of Iron Range English. Participants in both the control and the test group were explicitly told that I was asking about their particular dialect region (either metro area English or IRE), and not for the type of judgments they thought a high school English teacher would give. I also asked for “naturalness” judgments rather than “grammaticality” judgments with the assumption that “grammatical” would trigger judgments of the standard dialect more than “natural.”

Henry also recommends conducting research in a non-standard dialect orally, since often the non-standard dialect itself is oral. While the current study was not fully oral, due to reasons mentioned in the introduction, I was in the room with each

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20 There is some concern that fluency of the speaker was used to gauge how natural the sentence sounded. All sentences were produced by the same speaker to minimize this effect.
participant, and all participants knew that they could ask me questions at any point during
the task. I also went through the directions and practice stimuli with each participant to
ensure they understood that I was interested in the coreference capabilities of the
reflexive. Also, along with each target interpretation visually denoted on the screen, there
was an audio file of a native speaker of the participant’s dialect reciting the sentence with
appropriate intonation: SAE speaking participants listened to a speaker of SAE say each
stimuli sentence and IRE speaking participants listened to a speaker of IRE say each
stimuli sentence.

Henry goes on to recommend that field workers review the data that the
informants provide and check them against these four criteria:

1. Make sure that informants are giving sensible answers to sentences for which
   the (un)grammaticality is already known
2. Make sure that stigmatized local forms are not rejected
3. Make sure that pragmatically odd sentences are not rejected
4. Check that speakers are not accepting sentences which they have heard used,
   but are not part of their local dialect.

Thus, the current study also included fillers (found in Appendix A) that included stimuli
already known to be either grammatical or ungrammatical. Some of the fillers used
stigmatized forms (such as *he don’t* or *I says*). Finally, since some of the test stimuli were
pragmatically odd, no additional pragmatically odd fillers were added.
3.4 Participants

The study included both a control and a test group. The control group consisted of participants from the metro area of Minneapolis/St. Paul, MN. It was assumed that native English speakers from this area would approximate more of a standard usage of English than “outstate” speakers.

The test group was composed of speakers of Iron Range English who were born, raised, and continue to live on the Iron Range. Some participants left the Iron Range for a few years to go to college elsewhere\textsuperscript{21}; however, all participants returned to the Iron Range after spending only a handful of years outside the area.

3.4.1 Control Participants

There were 12 control participants. Ages ranged from 23-56 ($M=36.5$, $SD=9.66$). Specific information for each informant is laid out in table format in Appendix B.

3.4.2 IRE Participants

There were 31 IRE speaking participants. Ages ranged from 22-77 ($M=46.26$, $SD=15.66$) (12 males; 19 females). Specific information for each informant, along with his or her reasons for living on the Iron Range, is laid out in table format in Appendix B.

\textsuperscript{21} Only a handful of my informants left the Iron Range for higher education opportunities, and most of these were men. Informants stayed in the Midwest for college, though, and most attended the University of Minnesota-Duluth (which is close to the Iron Range) and the University of Minnesota-Twin Cities (used to offer an undergraduate Mining Engineering major and continues to offer a Geology major).
3.5 Stimuli

The stimuli for this study are listed in Appendix C. The stimuli aim to gather acceptability judgments that will better our understanding of how IRE reflexives fit, or do not fit, into the current cross-linguistic classifications for reflexives. This information will help clarify the classification of reflexives as well as contribute to a proposal that accurately predicts the distribution of IRE reflexives. Recall that there are four types of reflexives:

Type I: Forms which are locally bound anaphors
Type II: Forms which are long distance bound anaphors
Type III: Forms which are anaphors locally and pronominals non-locally
Type IV: Forms that are “primarily” bound anaphor reflexives, but can be non-local in specific syntactic and discourse contexts

Type I reflexives are locally bound anaphors; Types II-IV reflexives are all under the umbrella term of long distance reflexives, and are predicted to have different typologies (Cole, Herman & Huang, 2001, 2006). In order to determine if and how IRE reflexives fit into these groups, stimuli will test for different typological characteristics that differentiate one type from another. Below is a table that illustrates the typological characteristics of each reflexive type.
Table 3-1: Characteristics of long-distance reflexive types

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| I    | • Can only corefer with a “local” nominal expression  
      |     • Often, the antecedent must c-command the reflexive |
| II   | • Cannot corefer with an external speaker  
      |     • Must corefer with a c-commanding antecedent  
      |     • Must have (or strongly prefer) a sloppy interpretation in VPE |
| III  | • Often not monomorphemic  
      |     • Does not exhibit Blocking Effects  
      |     • Does not exhibit logophoric effects |
| IV   | • Monomorphemic  
      |     • Exhibits Blocking Effects  
      |     • Exhibits logophoric effects |

Two types of stimuli were included in this study: (i) stimuli that tested for the classification of the IRE reflexive and (ii) stimuli that tested for specific analyses of IRE reflexives. Sentences with local and non-local interpretations of the reflexive were included. Additionally, I tested for sloppy and strict interpretations in verb phrase ellipsis environments and for the availability of a speaker acting as an antecedent to determine whether or not reflexive fit into Type II. I also tested for Blocking Effects (to determine if IRE reflexive are more like Type III or Type IV) in addition to various logophoric effects.

Finally, I included stimuli that tested syntactic structure claims about the distribution and analysis of reflexives. For example, Reinhart and Reuland (1993) suggest long-distance reflexives occur more often in adjunct positions rather than complement
positions, so reflexives in both of these positions were included in the stimuli. I also included some stimuli where the reflexive was housed in an island. Although we would not expect to see Island Effects since any potential movement of the reflexive is covert, some researchers suggest it is important to collect ratings from this type of stimuli since island effects could point to movement of the reflexive to a position where it is in a local relationship with a nominal expression in a higher clause (Cole, Hermon, & Huang 2006).

Participants were given three practice stimuli so that they were familiar with using the ME scale before presented with the test stimuli. In Figure 3.1 is an image of what the stimuli looked like. On the top of the page is a situation that is intended to set-up a long-distance interpretation of the reflexive. In bold is the sentence with the reflexive. Coreference is indicated by capital letters. Next is the audio player which plays the speaker saying the stimuli sentence with appropriate intonation. Finally, an open field box for naturalness ratings is at the bottom of the page.

The naturalness rating is determined in the following manner. The participants are presented with a modulus sentence. They give the modulus sentence an arbitrary naturalness rating. They then judge subsequent stimulus against the modulus sentence. For example, if the stimulus sentence is twice as natural as the modulus sentence, participants give it a rating that is twice as high as the rating they gave to the modulus sentence. On the other hand, if a stimulus is half as natural as the modulus sentence, participants give it a rating that is half as high as the rating they gave to the modulus sentence. The participant was not limited to a range, as this would defeat the purpose of
using ME. The field was open and allowed for 10 characters to be entered. The field allowed decimal points to show low naturalness ratings. In fact, one participant used 0.01 as a naturalness rating. This type of rating system ensured that a participant was not “trapped” into a pre-set scale.

Figure 3-1: Screen shot of an example stimulus

3.6 Normalization of Magnitude Estimation data

In order to normalize the raw ME ratings across subjects, the following steps were taken based on the standard procedure outlined in Baylis (2007) who summarized Engen (1971):
1. For each subject, calculate the logarithm of each response
2. For each subject, calculate the mean value of each of their (log-converted) responses
3. Calculate the grand mean of step 2
4. Subtract the grand mean of step 3 from the subject means of step 2
5. Add the values in step 2 to the values in step 4
6. Calculate the antilog of the values in step 5

3.7 Demographic information collected about participants

The following information was collected for each participant after they rated the stimuli for naturalness: age; sex;\(^{22}\) current residence; where the person has lived during his/her life; how they feel about living on the Iron Range; and why they live on the Iron Range. Age was gathered because it has been hypothesized that IRE is a dying dialect (Bauer 2005). It may be that older speakers of this dialect find long-distance uses of the reflexive more natural than younger speakers. Sex of the speaker is relevant because women in western cultures often use standard varieties while men more often use vernacular varieties (Trudgill 1972). It may be that more men use this dialect in

\(^{22}\) Sex and gender are different: sex is biological, and gender is a social construct. A person’s sex and gender may match, but they do not have to. There are biological males and females who identify with the opposite gender. Society is not always kind to people who identify with a gender that is different than their sex; therefore, asking for gender information is a more emotionally charged question than simply asking for a person’s sex. For this study, I assumed that people’s gender matched with their sex. Since the participant only had to answer their sex, I was not probing for information which may be very private for the participant. Also note that when Trudgill (1972) was conducting this research, there was no distinction between sex and gender.
conversation than women. Information about where a person has lived on the Iron Range was collected in order to see if there is a difference between the east (Aurora, MN) and west (Grand Rapids, MN) ends of the Range, as these bookend towns are roughly 75 miles apart. Finally, the last two questions aim at understanding how much a participant identifies with the Iron Range, such as if they are proud to be a Ranger. This is important because those informants who identify more strongly with their identity as Rangers may have more robust dialectal features than those who do not identify with their status as a Ranger due to effects of covert prestige (e.g. Labov 1966 and Trudgill 1972).

3.8 Conclusion

This research uses ME to collect acceptability judgments for sentences that display different interpretations of IRE reflexives. Special consideration was taken to gather accurate judgments from a non-standard dialect. ME collection technique (i) standardizes the grammaticality scale and (ii) allows for more gradable acceptability judgments, which in turn, will offer evidence for how acceptable (or unacceptable) sentences with certain types of Blocking Effects are.

The stimuli explicitly tests reflexive type characteristics in order to determine if and how IRE reflexives fit into our current knowledge of the distribution of reflexives. Additionally, specific discourse licensors (as discussed in Chapter 2) were tested in order to better understand if a logophoric “conversion” is occurring in IRE, as is suggested for Type IV reflexives.
4 RESULTS

4.1 Overview

In this chapter, I report the results from the Magnitude Estimation task presented in Chapter 3. I found that some IRE speakers rated sentences with long-distance reflexives as significantly more natural than English speakers from the Minneapolis/St. Paul metro area (Metro speakers) rated these same sentences. The results of the study suggest that IRE reflexives belong to Type IV: IRE reflexives usually must corefer with a nominal expression within its clause, but can corefer with a nominal expression outside its clause in specific syntactic and discourse contexts.

Here is an outline of Chapter 4. In §4.2, I report that IRE speaking women 35 and older rated long-distance interpretations of reflexives as natural. In §4.3, I give an overview of the behavior of IRE long-distance reflexives. I also test some claims about the behavior of long distance reflexives made in the literature, such as the claim that long-distance reflexives are in adjunct but not complement positions (Reinhart & Reuland 1993). It is important to investigate behavioral claims about long-distance reflexives since understanding their behavior can help develop a theoretical analysis. §4.4 reports that IRE reflexives behave similarly to Type IV reflexives since they (i) can have a long distance interpretation (ruling out Type I), (ii) do not require a sloppy interpretation in VPE environments and can corefer with a possessor (ruling out Type II), and (iii) exhibit Blocking Effects and some logophoric effects (ruling out Type III). The finding that IRE reflexives behave similarly to Type IV reflexives is unexpected, since
Type IV reflexives are assumed to be monomorphemic and IRE reflexives are complex. Also, it is unexpected that IRE exhibits Blocking Effects, as previously it has been thought that only languages without subject/verb agreement exhibit Blocking Effects. Finally, §4.5 concludes the chapter.

4.2 Iron Range women 35 and older rate long-distance reflexives as natural

I ran statistical analyses to determine if there is a significant difference in the naturalness ratings of sentences with long-distance reflexives between IRE speakers and Minneapolis/St. Paul area English speakers. In order to do this, I averaged the naturalness ratings for all sentence types reported in the literature to allow for a long-distance interpretation of a reflexive (numbers 1, 2, 3, 17, 18, 68, and 70 in Appendix C). I averaged ratings made by both IRE speakers and SAE speakers. Averaging the ratings allowed me to include each sentence with a long-distance interpretation of the reflexive while acknowledging that not all the ratings are independent of each other, since each

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23 A statistical analysis determines what the chances are that the naturalness ratings from two groups would be as different from each other as they are, assuming that there actually is no difference between the groups. Usually, a .05 p value is considered to be statistically significant in linguistic studies. A .05 p value means that there is only a 5% chance that we see this much difference between groups by chance if there really is no difference between groups. Most of the statistical analysis was done using t-tests since I was comparing two groups to each other. Unless otherwise stated, all results are two-tailed. Two-tailed results are used to determine if there is a difference between two groups without hypothesizing whether the difference is “more natural” or “less natural.” Using a two-tailed t-test reduces the likelihood of finding spurious statistically significant relationships.
participant gave seven responses for the same “type” of sentence. Then, I performed a
two-tailed independent t-test between the averaged SAE ratings and the averaged IRE
ratings. I found that IRE speakers as a group do not rate long-distance interpretations of
reflexives significantly different than SAE speakers in my study ($t(36) = .821, p = .417$).
Interestingly, according to the raw data, IRE speakers did rate these sentences as more
natural than Metro speakers ($M=1.04$ vs. $M=.9$).

It is possible that long-distance reflexives could be used by a subgroup of the IRE
speaking population. Particular subgroups have been found to vary in regards to speech
patterns from other subgroups in the same dialect. For example, Labov (1966) found that
a social group might exhibit variation depending on the age, class, and sex of the
speakers. Sociolinguists often report that men use more vernacular than women. The use
of long-distance reflexives is potentially non-standard since in SAE a reflexive must
corefer with a nominal expression within its same (local) clause. In order to determine if
IRE speaking men rated long-distances uses of reflexives as more natural than Metro
speakers, I ran an independent t-test between the IRE speaking men’s ratings and the
Metro speakers’ ratings. I found that these two sets of naturalness ratings were not
significantly different from each other ($t(22) = .8, p = .43$). Therefore, overall, IRE
speaking men and Metro speakers use reflexives similarly.

It has also been reported that IRE is a dying dialect (Bauer 2005). In response to
this hypothesis, I ran an independent t-test using the averaged ratings form IRE speakers
35 and older against Metro speakers’ averaged ratings. I chose 35 years of age as the cut-
off point since that allowed me to get rid of the fewest number of speakers to test this
claim (two males and six females); this left me about two-thirds of the participants. Speakers of IRE who are 35 years of age and older do not rate sentences with long-distance interpretations of reflexives differently than SAE speakers in my study (t(20) = 1, p = .025).  

Next, I tested whether older males rated long-distance interpretations of reflexives significantly differently than Metro speakers rate sentences with this type of interpretation. This hypothesis combines the two hypotheses that (i) men use more vernacular forms than women and (ii) IRE is a dying dialect. In my data, older male speakers of IRE did not rate sentences with long-distance interpretations of reflexives differently than Metro speakers rated these sentences (t(20) = 1, p = .063).  

I did find that IRE speaking women 35 and older rated long-distance interpretations of reflexives as significantly more natural than Metro speakers in my study (p = .035). Older women also rated these sentences as more natural than IRE

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24 Interestingly, had the hypothesis been that older IRE speakers rate sentences with long distance reflexives as more natural (rather than “different”) than Metro speakers rate these same sentences, this result would be statistically significant, since IRE speakers had a higher mean rating than Metro speakers (p = .032).

25 I did not test to see if IRE speaking males 35 year old and younger rate long-distance interpretations of reflexives as natural since I had only two participants who fit into that subgroup: running a statistical analysis on such a small sample size does not produce believable results. This is a group to potentially study further.
speaking men of all ages and IRE speaking women in their 20’s rated these sentences 
\( (t(23) = 2.56, p = .02) \).26

While it is rare to find that women are rating a vernacular form as more natural 
than men, this type of situation has been previously reported in the sociolinguistic 
literature. For example, women in the small Welsh mining community of Pont-rhyd-y-fen 
have been reported to use more vernacular forms than men (Thomas 1988). Thomas 
suggests that women in Pont-rhyd-y-fen have social networks that are more community-
based than men and younger people in the community. She suggests that women’s use of 
vernacular forms is a strong marker of local identity. Similarly, older women on the Iron 
Range may be using the vernacular form of the reflexive to mark their “local” identity.

IRE speaking women 35 and older are the only group of participants who cited 
the community as a reason they liked living on the Iron Range. One informant from 
Hibbing, MN reported: “I love living on the [Iron] Range because there are so many 
wonderful, caring people here. I don't know how to put it into words. I love the 
community.” Men, on the other hand, were more likely to say that they lived on the Iron 
Range either for job opportunities or because it is “more peaceful” on the Iron Range due 
to a lower population density than other areas in the state, such as the metro area of 
Minneapolis/St. Paul. Lastly, younger women often said that they would like to live 
somewhere else (such as Duluth, MN), but that their significant others did not want to

\[ \text{\textsuperscript{26} There were some men who rated this type of sentence as natural. However, men as a group, did not consistently rate sentences with long-distance reflexives as natural.} \]
move from the Iron Range. Thus, in an open response question, only older women cited the community as a reason for living on the Iron Range.

Recall that women rated sentences with long-distance reflexives as more natural than Metro speakers \((p = .02)\). It may seem surprising that naturalness ratings were not more divergent between IRE speakers and Metro speakers. I suggest that these results are due to the type of Metro speakers who participated in the study. I advertised for metro area speakers on the University of Minnesota-Twin Cities campus over the summer. Not surprisingly, most of my participants studied or worked at the University, which has a number of international students whose first language is not English. Many of my participants, therefore, had experience working with and communicating with non-native speakers of English. In fact, one of my participants was an English as a Second Language instructor. After completing the task, many participants told me that they used more of a “three-way rating system” that sometimes varied from their own judgments: one number meant “perfect,” one number meant “terrible,” and one number meant, “I guess I can understand what the speaker meant to say.” The third category concerned me the most. I asked the participants what type of sentences they placed in this category. Most informants said that a mismatch in gender between the reflexive and the nominal expression in the simple clause (and similar single \(\varphi\)-feature violations) is what triggered placement of the sentence into this category. For example, in a stimuli sentence like (63), participants were asked to answer whether \textit{himself} could corefer with \textit{Mark}, which is outside the clause that houses \textit{himself} (indicated with brackets).

(63) \hspace{1cm} \text{Mark}, said that [Kate cursed himself].
For the Metro participants, *himself* could only be meant to corefer with the other male nominal expression in the sentence—regardless of how “long-distance” this nominal expression was from the reflexive. In explaining their rating process, some of my participants specifically cited non-native speakers’ speech with regards to sentences like (63). For these speakers, a reflexive must agree in gender with its antecedent and it was simply a mistake that the speaker did not say *him*.

Perhaps if my Metro English speakers were not making non-native speaker allowances for sentences like (63) while giving naturalness ratings (in contrast to their directions), I may have found a wider difference between naturalness ratings of long-distance reflexives between IRE speakers and SAE speakers. In contrast, no IRE speakers had similar problems categorizing the stimuli sentences, as they reported only what they themselves (as opposed to a non-native speaker of English) did, or did not, find natural.

Since women aged 35 and older were the group to consistently rate long-distance interpretations of reflexives as natural, I used only their responses to perform various statistical analyses. The statistical analyses were performed to determine the behavior of IRE reflexives. Recall that thirteen women 35 or older participated in the study (*M*=54.3; *SD*=14.39). Note that the responses of women 35 and older fall roughly into a standard distribution model.
4.3 Distribution of IRE reflexives

4.3.1 General behavior of IRE reflexives

Iron Range English reflexives have a unique distribution compared to Metro English reflexives. IRE reflexives can corefer with an antecedent outside their simple clause, as in (64).

(64) Hillary said that [Jill believes in herself].

In (64), herself can corefer with Hillary, which is outside the simple clause of the reflexive.

IRE reflexives can have subject or object orientation. For example, in (65), himself can corefer with Bill (in subject position) or Tom (in object position). Both nominal expressions are outside the simple clause containing the reflexive, which is indicated with brackets.

(65) Bill told Tom that [Matt believes in himself].

IRE reflexives exhibit Blocking Effects: coreference with a nominal expression in a higher clause is blocked when an intervening nominal expression in subject position does not match the reflexive for person. Sentences with an intervening subject that does not match for person were rated as less natural than sentences where all subjects agreed for

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27 In appendix E there is a table of the mean ratings of this group for each type of stimuli.
person ($t(12) = 3.67, p = .003$). In (66), *I* “blocks” *himself* from coreferring with *John* and in (67) *you* “blocks” *himself* from coreferring with *John*.

(66) John$_i$ said that *I* know that Tom$_j$ likes himself$_{ij}$.
(67) John$_i$ said that *you* know that Tom$_j$ likes himself$_{ij}$.

However, Blocking Effects only occur when an intervening nominal expression does not match for person with the reflexive. An intervening expression that does not match for number or gender with the reflexive does not trigger Blocking Effects. Sentences with a nominal expression in subject position that does not match for number with the reflexive (as in (68)) were rated similarly to sentences with fully matching subjects ($t(12) = 1, p = .341$). Similarly, sentences with a nominal expression in subject position that does not match for gender with the reflexive (as in (69)) were rated similarly to sentences with fully matching subjects ($t(12) = 1.1, p = .12$).

(68) John$_i$ said that [*they* know that [*Tom$_j$ likes himself$_{ij}$]*].
(69) John$_i$ said that [*she* knows that [*Tom$_j$ likes himself$_{ij}$]*].

Also, Blocking Effects only occur when the intervening expression that does not match for person is in subject position. If the intervening non-matching expression is in object position, it does not trigger Blocking Effects, as in (70). Also, if the intervening non-matching expression is a possessor, it does not trigger Blocking Effects, as in (71).

(70) John$_i$ told *me* that [*Tom$_j$ likes himself$_{ij}$]*.
(71) John$_i$ said that [*my* behavior harmed himself$_{i}$].
Sentences like (70) were rated similarly to sentences with no mismatching intervening nominal expressions ($t(12) = 1.71, p = .11$), as were sentences like (71) ($t(11) = 1.04, p = .32$).

There is no person asymmetry of Blocking Effects like there is in Mandarin Chinese (see Chapter 2). In Mandarin, an intervening first or second person nominal expression can prevent the reflexive from coreferring with a third person non-local antecedent; however, an intervening third person nominal expression does not prevent a reflexive from coreferring with a first or second person antecedent (Xu 1993, Pan 1997, Huang & Liu 2001). However, I did not find this asymmetry in my data, as both types of sentences were rated similarly ($t(12 = 1.08, p = .3$).

In environments of verb phrase ellipsis (VPE), an IRE reflexive can have a sloppy or a strict interpretation. Strict and sloppy interpretations were rated similarly to each other ($t(12) = 1.36, p = .2$). In fact, looking just at the raw mean values for ratings of these two interpretations, participants rated strict interpretations as more natural than sloppy interpretations ($M = 2.32$ vs. $M = 2.06$).

(72) John takes care of himself, and Carl does too.

=John takes care of John and Carl takes care of John (strict)
=John takes care of John and Carl takes care of Carl (sloppy)

IRE reflexives cannot corefer with a non-c-commanding antecedent when the c-commanding nominal expression is animate (i.e., Jim’s coworker). These sentences were rated significantly less natural than their c-commanding counterparts ($t(12) = 3.68, p = .003$).
IRE reflexives can corefer with a non-c-commanding antecedent when the c-commanding nominal expression is inanimate. For example, in (74) myself can corefer with my, even though my does not c-command myself because behavior is inanimate. When tested individually, participants rated sentences with inanimate c-commanding nominal expressions significantly more natural than sentences with long-distance c-commanding antecedents ($M=1.4$, $M=2.58$; ($t(12) = 2.56$, $p = .012$).

(74) My behavior harmed myself.

### 4.3.2 Logophoric effects and IRE reflexives

IRE reflexives also exhibit some logophoric effects. For example, IRE reflexives cannot corefer with a discourse antecedent, unless the discourse antecedent is the speaker.

(75) *As for himself, coffee is fine.
(76) ?As for yourself, coffee is fine.
(77) As for myself, coffee is fine.

In my data, (77) was rated significantly more natural than other instances of long-distance reflexives ($t(12) = 2.7$, $p = .019$). Furthermore, the reflexive that does not corefer with an external speaker, such as (75) and (76) were rated significantly less natural than (77), ($t(12) = .58$, $p = .025$) and ($t(12) = .14$, $p = .002$) respectively.

While IRE reflexives can corefer with an external speaker, they do not exhibit other types of logophoric effects documented in other languages with long-distance reflexives. Below I will illustrate that in IRE, (i) the type of (logophoric) verb does not
affect how a sentence is rated, (ii) the presence of deictic expressions do not affect how a sentence is rated, and (iii) there are no because effects.

According to Sells (1987), verbs of saying, which indicated a SOURCE relationship with the reflexive, verbs of thought, which indicate a SELF relationship with the reflexive and verbs of knowing that indicate a PIVOT relationship with the reflexive all have the potential to license a logophoric pronominal. Furthermore, Sells claims that languages differ as to how many of these relations they permit. For example, a language may have SOURCE as a licensor for a logophoric interpretation of the reflexive, but not SELF. Similarly, a language may have SOURCE and SELF as a licensor for a logophoric interpretation, but not PIVOT. Finally, a language may have all three relationships (recall the hierarchy in Chapter 2 ((52)). Stimuli in the present study tested (i) whether say, think, and know are necessary for a long-distance interpretation and (ii) whether say, think, and know all similarly license long-distance interpretations.

For IRE speaking participants, verbs other than those predicted to provide a logophoric environment (e.g. say, think, and know) also allow for a long-distance interpretation of the reflexive. For example, ask allows a long-distance interpretation and sentences with ask were rated similarly to sentences with logophoric verbs (t(12) = -1.75, p = .293). Also sentences with a long-distance reflexive that have the verb tell were rated as more natural than sentences with say, think, and know (t(12) = -.31, p = .045). Thus, a logophoric verb (say, think, know) is not necessary for a long-distance interpretation of a reflexive in IRE.
In IRE, verbs of SOURCE, SELF, and PIVOT all provide an environment for long-distance reflexives. There is no difference in how sentences with these words are rated for naturalness, as determined by a series analyses: (know vs. think \((t(12) = 1.2, p = .25)\); know vs. say \((t(12) = 2, p = .07)\); and think vs. say \((t(12) = 1.52, p = .15)\). Note, however, that sentences with verbs of knowing were given the highest natural ratings \((know M=1.08; \text{think } M=.73; \text{say } M=.51)\).

In the literature, logophoric expressions are also affected by deictic expressions like come and go, with sentences with reflexives and the verb come are rated better than sentences with the verb go. This is due to the expectation that PIVOT is the locus to which deictic expressions must refer. However, in my data there was no difference in naturalness ratings between sentences with come and go (Appendix C, 30 and 31) \((t(12) = -1.57, p = .14)\).

Lastly, Iida and Sells (1988) claim that the use of because denotes that the external speaker is making a judgment about the causal relation between two events from the internal protagonist’s point of view. In contrast, when makes no such denotation. Therefore, sentences with because should be rated differently than sentences with when. Sentences that test for this are in 19 and 20 in Appendix C. I did not find a difference in naturalness ratings for these two sentences in my data \((t(12) = .14, p = .89)\).

### 4.3.3 Syntactic distribution of IRE reflexives

Understanding the syntactic distribution of IRE reflexives can help lead to an analysis of their behavior. In the literature, it is thought that long-distance reflexives are found in argument/complement positions, but not adjunct positions (Reinhart & Reuland...
1993). Also, it is thought that long-distance reflexives undergo raising in order to corefer with a nominal expression outside the simple clause (e.g., Huang & Liu 2001). It is important to know if IRE reflexives behave like other long-distance reflexives are thought to behave.

Reinhart and Reuland (1991, 1993) and Reuland (2006) found that in some languages, such as German, a reflexive is more likely to have a long distance interpretation if it is in an adjunct position rather than an argument position. I compared the naturalness ratings given to (78) and (79).

(78) Mary, asked Gloria to write a letter about herself.
(79) Mary, asked Gloria to introduce herself to the group.

In (78) the reflexive is in an adjunct position while in (79) the reflexive is in the argument/complement position. However, I found that there was no difference in the naturalness rating between these two sentences ($t(12) = -1.38, p = .19$). Therefore, an IRE long-distance reflexive can originate in the argument or adjunct position.

I found that IRE reflexives exhibit island effects: a reflexive cannot corefer with a nominal expression outside of its simple clause when it is in an island. Islands are phrases that prevent (overt) movement across them. Below, are examples of different islands: a complex NP island, a relative clause, and an interrogative clause.\(^{28}\) My IRE speaking

\(^{28}\) Originally, I only tested for island effects with a relative clause island. I was surprised to find island effects, since covert movement does not usually trigger island effects. Since I found island effects, I tested additional islands with two IRE speaking women over 35.
participants rated sentences with the long-distance reflexive in an island significantly less natural than sentences with the long-distance reflexive outside of an island (t(12) = -2.88, p = .01).

(80) John_i made [the claim that Bill_j likes himself_{i,j}].
(81) Bill_i said that Paul_j saw [the person]_k [who dislikes himself_{i,j,k}].
(82) Bill_i wonders [who_j likes himself_{i,j}].

4.4 Classification of IRE reflexives

It is important to understand if and how IRE reflexives fit into the current classification system for reflexives. Classification systems must be accurate and complete if they are to be used by linguists to make predictions about the behavior other reflexives and lexical items or if the classification is to contribute to the creation of accurate translation systems. This section will determine if IRE reflexives fit into any of the types previously outlined in the literature by examining the typological characteristics of IRE reflexives against the behaviors of reflexives grouped into these types.

Since IRE reflexives can corefer with a nominal expression outside their simple clause, as in (64), repeated here, IRE do not belong to Type I, which only allows for local interpretations.

(83) Hillary_i said that [Jill_j believes in herself_{i,j}].

IRE reflexives cannot be classified as Type II, since reflexives in this type must only have sloppy interpretations in VPE, but IRE reflexives can have both sloppy and strict interpretations, as illustrated above in (83). Additionally, IRE reflexives can corefer
with a possessor antecedent when the c-commanding nominal expression is inanimate. This distribution indicates that IRE reflexives do not belong to Type II.

IRE reflexives do not belong to Type III. Type III reflexives have a distribution similar to pronominals: they can (i) corefer with any non-c-commanding antecedent, (ii) do not exhibit Blocking Effects, and (iii) do not exhibit any logophoric effects. IRE reflexives cannot corefer with a possessor (non-c-commanding) expression when there is an intervening c-commanding nominal expression that is animate (as in (73)). Also, IRE reflexives exhibit Blocking Effects (as in (66) and (67)). Finally, IRE reflexives exhibit logophoric effects. IRE first person reflexive can corefer with the speaker, which is a discourse antecedent. However, IRE second and third person reflexives cannot corefer with a discourse antecedent (as in (75)-(77)).

IRE reflexives behave like Type IV reflexives. They usually must corefer with a nominal expression within the same simple clause, but can corefer with a nominal expression outside the simple clause in specific syntactic and discourse contexts. IRE reflexives exhibit both Blocking Effects and (some) logophoric effects.

4.5 Conclusion

IRE long-distance reflexives are most similar to Type IV reflexives since they exhibit both Blocking Effects and logophoric effects. This is surprising, since only monomorphemic reflexives in languages without subject/verb agreement have been observed to behave this way. IRE reflexives are complex and IRE exhibits subject/verb agreement. IRE reflexives exhibit island effects: a reflexive cannot corefer with a nominal expression outside the simple clause when it is in an island. Island effects
indicate that a reflexive must undergo raising in order to corefer with a nominal expression in a higher clause. Table 4-1 is a representation of how IRE reflexives behave compared to reflexives in different typological categories.

**Table 4-1: How IRE reflexives fit into the current typology**

<table>
<thead>
<tr>
<th>Similar</th>
<th>Dissimilar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type I</strong></td>
<td>- Can corefer with a nominal expression within the minimal clause</td>
</tr>
<tr>
<td><strong>Type II</strong></td>
<td>- Must corefer with a c-commanding antecedent (or a possessor if the antecedent is inanimate)</td>
</tr>
<tr>
<td><strong>Type III</strong></td>
<td>- Can corefer with a nominal expression outside the simple clause (but only for 1st person)</td>
</tr>
<tr>
<td><strong>Type IV</strong></td>
<td>- Exhibits Blocking Effects despite also exhibiting subject/verb agreement</td>
</tr>
</tbody>
</table>

- Exhibits Island Effects

- Exhibits some (but not all) logophoric effects
5 ANALYSIS

5.1 Overview

First, I will recap the results of the study:

(i) IRE reflexives can corefer with nominal expressions outside their simple clause;
(ii) IRE reflexives can have subject or object orientation;
(iii) IRE reflexives cannot corefer with a nominal expression outside their simple clause when (a) there is an intervening subject that does not match the reflexive for person (i.e., they exhibit Blocking Effects) or (b) the reflexive is in an island (e.g., a relative clause, an interrogative clause, a complex NP (noun phrase), an adjunct clause).\(^{29}\)

\(^{29}\) An additional finding about the distribution of IRE long-distance reflexives is that IRE reflexives may corefer with a possessor in the same clause only when the c-commanding nominal expression is inanimate, as illustrated below.

(i) [My behavior] harmed myself.

This is similar to findings in Mandarin Chinese (Huang & Tang 1989: (9)).

(ii) [Wo de jaoao] hai-le ziji

\[\text{I’s pride hurt-ASP self}\]

‘My pride hurt myself.’

However, in both IRE and Mandarin, these types of sentences are ungrammatical when the intervening c-commanding nominal expression is animate. Similar judgments are made by some speakers of SAE (personal communication). Thus, any theory of binding (in IRE, SAE, or Mandarin) will also need to account for data like that in (i) and (ii). The ability of a reflexive to corefer with a possessor only occurs in
Any proposed analysis for the distribution of IRE long-distance reflexives must account for these findings.

In this chapter, I propose a phase-based account for the unique distribution of IRE long-distance reflexives. The analysis includes two separate processes of Agree: one to account for the binding (and orientation) of the reflexive and another to account for the Blocking Effects. Two processes are required to account for the distribution of IRE reflexives because the types of nominal expressions that can act as antecedents (subjects and objects) and the types that can act as “blockers” (subjects) are not the same set.

This chapter begins with a quick sketch of how local and long-distance Binding is currently understood in the Minimalist Program (MP). In §5.3 I provide an overview of Hicks’ (2009) analysis of the distribution of anaphoric pronouns in standard varieties of English and some Germanic languages with long-distance reflexives. I will use Hicks’ analysis as a starting point for analyzing the distribution of long-distance reflexives in IRE. In §5.4, I extend Hicks’ analysis so that it also accounts for the IRE data. In order to account for the IRE data, I propose that IRE reflexives behave like operators and can raise successive-cyclically to [Spec, CP]. From the [Spec, CP] position, the IRE long-distance reflexive is able to participate in processes of higher phases, such as a binding process. While extending Hicks’ (2009) analysis to IRE long-distance reflexives correctly a limited domain, and is outside the scope of this study, as it is for many analyses on the distribution of reflexives.
predicts their subject and object orientation as well as their ability to corefer with a nominal expression outside their simple clause, Hicks’ analysis cannot account for the Blocking Effects found in IRE. In IRE, an intervening subject that does not match the reflexive in person prevents the reflexive from taking an antecedent outside its simple clause. Therefore, I propose that an additional process is needed to check person features between the subject and the reflexive. I suggest that Hasegawa’s (2005) use of Multiple Agree (Hiraiwa 2001) is an appropriate candidate for this process. In §5.4.5 I provide a summary of the proposed analysis for the distribution of IRE long-distance reflexives, which includes the interaction between the two processes at work: the process of binding and the process that accounts for Blocking Effects. In the next section (§5.5), I compare IRE reflexives to SAE reflexives and illustrate that the only difference between these two reflexives is that IRE long-distance reflexives behave like operators, but SAE reflexives do not behave like operators. This section includes a focus on oneself in SAE, which is shown to have a similar distribution to IRE long-distance reflexives. The operator-like behavior of oneself is predicted by Katada’s (1991) analysis of long-distance reflexives. The next section (§5.6) summarizes the logophoric effects that are not addressed by this analysis. Finally, §5.7 concludes the chapter.

5.2 Background of binding in MP

Most work on long-distance reflexives was done before the advent of the Minimalist Program (MP), and therefore does not incorporate the economic principles of this newer theory nor the insights to human language that have been made through use of this theory (c.f. Sohng 2004, Lee 1998, Richards 1996, inter alia). Therefore, it is my
plan to evaluate a recent theory of the distribution of reflexive pronouns in the MP in order to determine if and how a MP analysis can be extended to include IRE reflexives and potentially capture the distribution of all Type IV reflexives.

Though the distribution of nominal expressions, including local and long-distance reflexive pronouns, previously dominated syntactic literature in the Government and Binding framework, much less work has been done on this topic in the MP (Hornstein 2000, Hicks 2009, Quicoli 2008, *inter alia*). This is important because in a move to make syntactic theory a set of fewer and simpler operations, the MP eliminates many of the tools researchers previously used to analyze the distribution of reflexive pronouns. For example, the *Inclusiveness Condition* (Chomsky 1995) eliminates indices since they are not present in the numeration. Indices were originally required to mark coreference between two nominal expressions, such as a reflexive pronoun and its antecedent. Also, the MP eliminates two out of the three domains in which binding was hypothesized to occur: Deep Structure (DS) and Surface Structure (SS). This leaves only Logical Form (LF) as a previously hypothesized domain in which binding is proposed to occur. Finally, some theories of the distribution of reflexive pronouns rely on the concept of SUBJECT, which is also eliminated in the MP, due to its ad-hoc nature. Without these tools, researchers have had to rethink how to explain the distribution of different types of nominal expressions and the distribution of reflexives in particular. Theoretical work in both local and long-distance reflexive pronouns now has had to answer questions such as: (i) how is coreference determined without indices, (ii) where does binding occur, and (iii)
should there even be a separate binding theory in the grammar? The following is a short overview of the literature. For a more complete review, see Hicks (2009).

Various proposals have been made to encode (local and long-distance) binding relationships without resorting to indices. For example, some researchers have suggested that feature movement/checking can encode binding relationships (e.g., Lee-Schoenfeld 2004, Sohng 2004, Hornstein 2000, *inter alia*). Others have suggested that an Agree operation encodes binding relationships (Hasegawa 2005, Hienat 2005, Hicks 2009, *inter alia*). Lee-Schoenfeld (2004) suggests that feature checking replaces indices. In her analysis for long-distance reflexives in German, a feature of the reflexive must check with a feature on the antecedent within the phase. On a similar vein, others, such as Richards (1996) and Hornstein (2000) have proposed that feature movement accounts for coreference. For example, Richards (1996) suggests that an uninterpretable feature on the reflexive must be moved to be checked by an antecedent. Furthermore, the uninterpretable feature on the reflexive must be checked by an interpretable feature on a nominal expression that is within the same clause. On the other hand, some researchers, such as Hicks (2009), propose that coreference is encoded by Agreement. In Hicks’ analysis, the reflexive has an unvalued [VAR] feature that agrees with a valued [VAR] feature on another nominal expression (pronominal or R-expression) that is within the same phase as the reflexive. An analysis that relies on Agree rather than feature movement is preferable, since Chomsky’s (2000, 2001) proposal of Agree eliminates feature movement.
Primarily in work on long-distance reflexives, feature movement and checking analyses have been proposed (Sohng 2004, Lee-Schoenfeld 2004, Hornstein 2000, Richards 1996, *inter alia*). Furthermore, the features that must be checked often are linked to the fact that φ-feature(s) are not (all) marked on monomorphemic long-distance reflexives (such as person and number in Mandarin *ziji* ‘self’ or gender in Italian *se* ‘him/herself’). In contrast to analyses that rely on interpreting an unmarked (or “missing”) φ-feature, there is evidence that all reflexives (monomorphemic and complex) have an unspecified feature that must undergo Agreement with a feature on a nominal expression within the same phase. An Agree analysis can account for the distribution of long-distance reflexives as well as local reflexives through the feature [VAR] (Hicks 2009). If so, this type of analysis would be preferred in light of the MP ambitions to economize syntactic theory since the same feature at work in analyses of local reflexives (like SAE reflexives) would also be at work in analyses of long-distance reflexives.

While the above approaches can capture coreference (and in some cases a c-command relationship) between a reflexive and its antecedent without resorting to indices, it is unclear how the binding domain should be defined in the MP: both its size and where in the derivation binding applies are debated. Feature movement theories often employ Shortest Move\(^{30}\) to determine the binding domain of local and long-distance reflexives (e.g., Rirchards 1996). More recent work in the MP suggests that binding

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\(^{30}\) Shortest move is a stipulation that suggests that shorter moves/links are preferred over longer moves/links. This idea is also known as the Minimal Link Condition (MLC) in later literature (Chomsky 2000).
occurs within the (LF) phase (Hicks 2009, Quicoli 2008, Hienat 2005, Lee-Schoenfeld 2004, *inter alia*). According to Chomsky (2000), LF phases are CP and vP. Hicks (2009) suggests that nP is also a phase.

Finally, work has also been done to eliminate Binding Condition A so that binding falls out naturally from other processes in MP (e.g., Hornstein 2000, Zwart 2002, Reuland 2001, 2006, Hicks 2009, Heinat 2005). Recall that binding has two requirements: for the two nominal expressions to be coreferenced and for there to be a c-command relationship between the antecedent nominal expression and the reflexive. Hicks (2009) suggests that binding can fall out naturally from the process of Agree. He claims that Agree eliminates Binding Condition A, since Agree already naturally incorporates the notion of c-command within a local domain (the phase).

5.3 Overview of binding in MP and Hicks’ (2009) analysis

With comparatively so little work done on the distribution of nominal expressions in the MP compared to Government and Binding, it is important to understand the analytical power of currently proposed analyses: can a theory for the distribution of local reflexive pronouns in the MP also account for the distribution of long-distance reflexives in IRE? For that reason, I first focus on one of the more current analyses for the distribution of reflexive pronouns: Hicks (2009). Hicks’ analysis is a good starting point because: (i) it is current and comprehensive, (ii) he makes a move to eliminate Condition A of the Binding Theory which is advantageous within the MP, and (iii) Hicks has already illustrated that his analysis has the potential to be extended to other languages with long-distance reflexives such as Dutch and Icelandic.
It is important to work with a current theory in order to not overlook the latest developments and insights of the MP (such as phase theory). One of the more current and appealing qualities of Hicks’ analysis is the proposal to eliminate Condition A of the Binding Theory (which is outlined in Chapter 2). Binding Conditions are extraneous to an economic grammar, and, therefore, do not fit into a perfect MP analysis (Chomsky 2001). The MP requires that algorithms that describe the distribution of nominal expressions should replace rules of construal (Hornstein 2000, Heinat 2005).

Another advantage of Hicks’ proposal is that it can be extended to account for non-standard uses of reflexives pronouns, such as those in Southern Hiberno-English as well as long-distance reflexives in languages such as Dutch, Norwegian, and Icelandic. It is a step in the right direction that the analysis can be extended in order to account for the distribution of both local and long-distance reflexives. I will show that it is possible to modify Hicks’ analysis for the standard distribution for reflexives in standard varieties of English so that Hicks’ analysis also accounts for the non-standard distribution of reflexives in IRE. The following is a summary of binding in the MP and Hicks’ analysis for the distribution of reflexive pronouns.

Hicks follows Hornstein (2000), Epstein et al. (1998), and Zwart (2002, 2006) (among others) in proposing that binding occurs in narrow syntax. Currently, there is a

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31 Southern Hiberno-English speakers can allow a reflexive to be in finite subject positions, as illustrated in (1) from Hicks’ (64): 143.

(1) Is yourself going out tonight?
debate about where binding occurs. Some claim that binding is a set of interpretative features at LF (Chomsky 1993; Chomsky & Lasnik 1993). Others propose that binding is determined via processes in narrow syntax (Epstein et al. 1998, Hornstein 2000, 2006, Kayne 2002, and Zwart 2002, 2006). The LF-view of binding may seem like a logical assumption, considering that LF has previously been hypothesized in the Government and Binding framework to be a location where binding conditions apply. However, Hornstein (2000) argues that the Binding Theory and binding principles exploit grammar internal processes, such as locality effects and c-command. Since binding exploits grammar internal processes, Hornstein suggests that Binding Theory is better represented in the grammar (narrow syntax) rather than at an interface (LF). Hicks adds to this argument by suggesting that, empirically, Binding Theory cannot occur at LF, since the process of binding requires information that is not accessible at LF, such as: Case, verbal inflections, and phonological factors.

Understanding how covert movement affects binding relationships is an important step to understanding whether binding occurs in LF or narrow syntax. If binding occurs at LF and if covert movement applies before the syntax is read off by the LF interface, then we expect covert movement to affect binding relationships. For example, a nominal expression that covertly moves from a non-c-commanding position to a c-commanding position should be able to bind a reflexive if binding occurs at LF rather than in narrow syntax. In contrast, if covert movement does not affect binding relationships, then binding must not occur at LF. If binding does not occur at LF, it is possible that binding occurs in the narrow syntax. At this point, the role of covert movement in binding
relationships is not understood. Lasnik & Saito (1991) provide evidence that covert movement does not affect binding relationships in expletive constructions, which indicates that binding does not occur at LF. In contrast, Branigan (2000) provides evidence that covert movement can play a role in binding relationships in ECM complements, which indicates that binding does occur at LF. Therefore, there is empirical evidence that points towards binding occurring in LF and binding not occurring in LF. To complicate matters, Chomsky (2007) writes that some movements may take place in narrow syntax, rather than at LF as is assumed currently. If movement takes place in both narrow syntax and LF, then binding relationships affected by covert movement as well as binding relationships not affected by covert movement could be evidence that binding occurs in narrow syntax. Hicks claims that there is theoretical evidence beyond the role of covert movement that binding occurs in narrow syntax rather than at LF: (i) binding exploits grammar internal processes which are represented in narrow syntax rather than at LF and (ii) binding requires information that is not available at LF. Therefore, I follow Hicks (2009) in suggesting that binding occurs in narrow syntax.

According to Hicks, if binding (coreference between two nominal expression and a c-command relationship between the two expressions) occurs in narrow syntax rather than at LF, this offers a natural local Binding Domain of the reflexive: the phase. A phase, according to Chomsky (2000: 106), must be “propositional;” in this way, he suggests that CP and vP are phases. Carstens (2001) suggests that nP is a phase, noting

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32 Quicoli (2008) suggests that the vP is propositional since it houses the argument structure and CP is propositional since it houses scope information. Chomsky (2001), however, does not fully explain how vP
its similarities to vP. Hicks (2009) follows Carstens in suggesting that nP (in analogy with vP) is a phase in order to explain the distribution of reflexives in

\[ (84) \quad \text{Proposed internal structure of DP} \]

\[
\text{DP} \\
\text{D} \quad \text{NumP} \\
\quad \text{Num'} \\
\quad \text{nP} \\
\quad \quad \text{n'} \\
\quad \quad \quad \text{n} \quad \text{NP}
\]

In summary, Hicks proposes that binding must occur in narrow syntax within a phase, which we will take to be CP, vP, or nP.

We now have a local domain within which binding must occur. This still leaves us with how Hicks proposes that binding is established within the local domain (the

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and CP are propositional. TP may seem at least as propositional as CP to some researchers, though it is not listed as a phase. Therefore, it may be that not all propositional phrases are phases (personal communication, David Schueler).
phase). Recall from Chapter 2 that there are two components to binding: (i) establishing coreference between the reflexive and another nominal expression and (ii) establishing a c-command relationship between the reflexive and its antecedent. Hicks proposes that the process through which binding is determined is Agree. There is an unvalued variable feature on the reflexive (even complex reflexives) that must be valued by a variable feature on a pronominal or an R-expression. By valuing the variable feature via Agree, coreference is determined. Since Agree is the mechanism used, we get a c-command relationship for free as well as a local binding domain (the phase). Hicks’ analysis is outlined below.

Hicks’ proposal of how Agree works deviates from traditional analyses in that he suggests that all features are interpreted (that is, there are no uninterpreted features), but they may or may not be valued. So, Hicks is only concerned with unvalued features; there are no uninterpreted features. An unvalued feature’s goal is to become valued, since being valued allows it to be interpreted at the LF or PF interface. Furthermore, Hicks proposes that valued features do not delete, but rather become one of two types of features: semantically-syntactic features or morphophonological features. Semantic-syntactic features are interpreted by the LF interface, and morphophonological features are interpreted by the PF interface. So, according to Hicks’ analysis, all features must be valued by the end of the derivation to prevent the derivation from crashing. These features are sent in chunks, or phases, to be interpreted by LF and PF. There is a debate over information being sent to LF at phase boundaries or all at once. Following Chomsky (2001), Hicks suggests that it is more economical to have multiple inspections,
as smaller chunks are easier to deal with and sending phases to be inspected is not considered a “costly” operation. I refer the reader to Hicks (2009) for a complete summary of his analysis.

Hicks suggests that reflexives have an unvalued feature variable: \([\text{VAR: } \_\_]\). Reflexives have an unvalued \([\text{VAR}]\) feature since reflexives do not have an inherent capacity for reference. Hicks proposes that “the role of a variable […] is to be able to covary with an element on which it is dependent” (115).\(^{33}\) This unvalued \([\text{VAR}]\) feature on the reflexive must obtain a value from its antecedent through Agreement.

Usually, Agree is assumed to work in the following way: an unvalued feature (the “probe”) probes down into its c-command area for a potential match (or “goal”) (Chomsky 2000, 2001). However, Rezac (2004) and Baker (2008) suggest that (at least) in some cases, a probe can search upwards for a value. In the most conservative proposals of probing upward, upward probing only occurs when a typical downward probe does not produce a goal. Therefore, when a reflexive is at the end of a sentence, its unvalued \([\text{VAR}]\) feature cannot find an appropriate goal in its c-command area since it does not c-command anything. The lack of an appropriate goal in the c-command area of the reflexive triggers the ability for the search domain to dynamically change into a search that also goes upwards. Also, recall that Agree must occur within the phase. For example, in (85), this analysis allows himself to corefer with Bill which is in the same (vP) phase as the reflexive (and not with John which is in a different phase). Hicks marks coreference with an alphabetical index. The vP phase is indicated with brackets.

\(^{33}\) Hicks marks this coreference with an alphabetical index.
The unvalued [VAR] feature on *himself* does not find a goal by a normal application of Agree. However, the probe [VAR: _] is able to find a goal in *Bill* when it probes upwards within the phase.

As we have seen, c-command is an inherent part of Agree: there must be a c-command relationship between the valued and the unvalued feature. Therefore, Agree not only gives the reflexive its reference by valuing its variable feature, but, as a by-product, Agree ensures that the antecedent c-commands the reflexives since a c-command relationship is required for Agree to apply. Also, Agree must occur within the phase, which lends itself to providing a local domain for binding. Therefore, Agree is the complete syntactic binding operation: it establishes coreference via Agreement of the [VAR] feature and also requires a c-command relationship between the antecedent and the reflexive within the same local domain.

Hicks (2009) proposes the following structure for the (standard) English reflexive reproduced in (86).

(86) Proposed structure of English reflexives (Hicks 2009: 127):

```
     DP
       \   /
    D   NP
   him    self
  [VAR: _]
```
This structure ensures that even if the reflexive is at the beginning of a sentence, it cannot probe downwards and find a goal. This is because *him*, which carries the unvalued feature [V\_AR], only c-commands *self*. This is true even if the DP containing the reflexive c-commands the antecedent, as in (87).

\[(87) \quad \ast \text{Himself loves John.}\]

Here, *himself* c-commands *John*. However, the head of the DP, *him*, which carries the unvalued [V\_AR] feature only c-commands *self*. Now, the probe cannot find a matching value (goal) when it probes into its c-commanding area (*self*) or above it (nothing).

Interestingly, Hicks’ (2009) analysis does not rule out grammatical long-distance uses of reflexives in standard varieties of English. An example is below. This type of construction was first noticed by Barss (1986).

\[(88) \quad \text{John}_i \text{ wondered which pictures of himself}_i \text{ Bill}_j \text{ claimed Paul}_k \text{ had bought.}\]

(88) is predicted to be acceptable in this analysis due to the Phase Impenetrability Condition, detailed below.\(^{34}\)

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\(^{34}\) Note that Hicks’ (2010) analysis uses Chomsky’s (2000) strong version of the PIC, given below.


In phase \(\alpha\) with head \(H\), the domain of \(H\) is not accessible to operations outside \(\alpha\); only \(H\) and its edge are accessible to such operations.
(89)  *Phase Impenetrability Condition* (PIC) (Chomsky 2001: 14)

[Given the structure \([ZP \ Z \ldots [\alpha \ H \ YP]]\), with \(H\) and \(Z\) the heads of phases]: The domain of \(H\) is not accessible to operations at \(ZP\); only \(H\) and its edge are accessible to such operations.

Since the reflexive in (88) is embedded in an operator phrase (*which pictures of himself*), the whole phrase moves successively-cyclically to the highest embedded [Spec, CP] via [Spec, vP] (Hicks 2009:158). The operator phrase movement is likely triggered by a strong EPP feature on the \(C^0\). This movement allows the reflexive to be accessible to operations in the higher phase, since it is on the edge of its own phase. An analysis of (88) is below in (90).\(^{35}\)

(90)  John wondered \([_{CP}[which \ pictures \ of \ himself]\) Bill claimed \([_{CP}<which \ pictures \ of \ himself>\) Paul had bought <which pictures of himself>]]

*Himself* moves through the [Spec, CP] of each phase (via [Spec, vP]), thereby making it possible for subjects in higher phases to act as its antecedent via an Agreement operation of \([VAR\]). Hicks suggests that the operation Agree can occur at any point in the derivation; if the operation is put off until the *wh*-phrase has raised to the highest

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The strong version of the PIC does not allow heads within a phase to participate in agreement operations with lexical items in lower phases. The weaker version (2001) is used in the current analysis of IRE reflexives since it is needed to account for Blocking Effects, as illustrated in §5.4.3.

\(^{35}\) Although I do not show it in the derivation, I assume that the operator phrase must move through [Spec, vP] in order to move to [Spec, CP]. This is necessary so that no violation of the PIC occurs.
embedded [Spec, CP], then the highest nominal expression (*John*) will be the antecedent.

On the other hand, Agree could apply right away in the first (*vP*) phase and corefer with *Paul*. In a similar manner, the reflexive could corefer with the middle subject, *Bill* if Agree applies after the operator phase moved to [Spec, CP] of the simple clause. This derivation is possible since as the reflexive raises through [Spec, CP] positions, it is in a position where it can be seen by the higher phase due to the PIC.

Hicks’ (2009) analysis predicts both subject and object orientation of the reflexive. Both object and subject R-expressions and pronominals are valued for [VAR] since they are both not reflexives. Also, both subject and object nominal expressions are within the same phase (*vP*) and both c-command the reflexive (in its upward probe area). Therefore, the reflexive can value its [VAR] feature from either the object or the subject within its same phase (if the reflexive has not raised yet to [Spec, CP]) or the subject or object in the immediately higher (*vP*) phase (if the reflexive has raised to [Spec, CP]—via [Spec, *vP*]—which is the edge of the phase). Below is a tree diagram that illustrates that both subjects and objects (i) are in the same phase and (ii) c-command the reflexive within that phase.
Here, both the object Jim and the subject Bill c-command the reflexive within the vP phase (before movement).

Note that as part of Hicks’ analysis, sentences that are ungrammatical because the antecedent and reflexive do not match for φ-features are not ruled out. Agree only occurs between the unvalued and valued [VAR] features. Therefore, a sentence like that in (92) is not ruled out. According to Hicks, it is only ungrammatical when the hearer cannot reconcile the mismatch.

(92) #Mary likes himself.
Finally, Hicks observes that there are two predictions borne from this analysis: (i) an anaphor will be ungrammatical if not c-commanded by its antecedent both in narrow syntax and at LF and (ii) local c-command need not hold between an anaphor and its antecedent.

5.4 Extension of analysis: the local nature of IRE reflexives

Hicks’ (2009) analysis of local reflexives in SAE is an appropriate analysis to extend to IRE long-distance reflexives for two reasons: (i) his analysis accurately predicts that the reflexive can have subject or object orientation and (ii) his analysis predicts that reflexives in phrases that have operator(-like) qualities can participate in processes in higher phases. I argue that IRE reflexives, unlike SAE reflexives, behave like operators, which allows them to raise successive-cyclically to [Spec, CP]. Recall that Hicks’ analysis allows for long-distance interpretations of reflexives in standard varieties of English when the reflexive is in a phrase headed by an operator (such as which). The operator allows the phrase that houses the reflexive to raise successive-cyclically to [Spec, CP] where it can participate in operations of higher phases. Similarly, IRE reflexives raise to [Spec, CP] where they can participate in operations of higher phases. The difference is that IRE reflexives are inherently operator-like and therefore do not need to be in an operator phrase to take a long-distance antecedent.

The proposal that IRE reflexives have an operator-like quality, however, is not enough to predict the IRE long-distance reflexive’s distribution. Hicks’ analysis must be

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36 SAE’s oneself is an exception to this statement, as I will illustrate below in §5.5.2.
further modified in order to fully account for the distribution of IRE reflexives. Recall that IRE long-distance reflexives exhibit Blocking Effects, detailed in Chapter 4. Blocking Effects indicate that (at least) the person feature must match between the reflexive and the subject in the phase. If an intervening subject does not match the reflexive in person, the sentence is ungrammatical. This type of sentence is not predicted to be ungrammatical in Hicks’ analysis, since Hicks proposes that Agree can occur at any time in the derivation, and there is no operation to ensure that φ-features match. Thus, I suggest that a mechanism that ensures that person matches between the subject and the reflexive is needed. Furthermore, I suggest that Hasegawa’s (2005) use of Multiple Agreement is a useful candidate operation to predict the distribution of Iron Range English reflexives. This is not the first analysis of reflexives to suggest that two separate processes account for Binding relationship and Blocking Effects (c.f. Cole & Wang (1996) for Mandarin). Cole and Wang suggest that the reflexive raises to adjoin to INFL where it is in a local relationship with the antecedent and can participate in a binding process. On the other hand, they suggest that [Spec, head] agreement on INFL accounts for Blocking Effects.

Below, I outline the proposed analysis for IRE reflexives in more detail. First, I provide evidence that IRE reflexives behave similarly to operators in that they undergo movement to [Spec, CP]. Then, I illustrate how this movement accounts for (some) long-distance uses of reflexives in IRE. Next, I propose a process that checks for agreement in person between the subject and reflexive in order to predict Blocking Effects in IRE.
5.4.1 IRE reflexives behave like operators

I claim that IRE long-distance reflexives are members of the set of operators because they behave similarly to other lexical items that are members of this set (such as quantifiers and *w*-*h*-words): both IRE reflexives and other operators appear to raise successive-cyclically to [Spec, CP]. Evidence for the proposal that IRE reflexives move successive-cyclically to [Spec, CP] comes from three sources: (i) the reflexive is able to participate with processes in higher clauses (phases), which suggests that it is raising to the edge of the CP phase, (ii) Blocking Effects are apparent in the data, which indicates that the reflexive is moving to a position where it is “local” to the potential antecedent (Cole, Hermon, & Huang 2001, 2006), and (iii) Island Effects are apparent in the data, which indicate that the reflexive must raise in order to corefer with a nominal expression outside the simple clause.

5.4.1.1 Movement evidence: participation in operations of higher phases

According to Chomsky’s (2001) Phase Impenetrability Condition (formally stated above in (89)), only items at the edge of a phase are able to participate in processes of higher phases. Therefore, the only position that would allow a reflexive from a lower clause to have its [VAR] feature valued by a nominal expression in a higher clause is [Spec, CP]. Furthermore, [Spec, CP] is a position usually reserved only for operators, as

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37 An operator is an element that A-bar binds a variable at LF. By virtue of moving, IRE long-distance reflexives would A-bar bind their variable trace at LF (Chomsky 1981).
C (rather than other nodes) is often assumed to house the feature (such as EPP) that triggers the movement of the operator (Chomsky 2007).

5.4.1.2 Movement evidence: Blocking Effects

IRE reflexives exhibit Blocking Effects, which prevents a reflexive from coreferring with an expression in a higher phrase. Blocking Effects occur when there is an intervening nominal expression in subject position that does not agree in person with the reflexives, as illustrated below.

(93) Paul said that Jill likes himself.
(94) Paul said that they like himself.
(95) *Paul said that I like himself.
(96) *Paul said that you like himself.

The existence of Blocking Effects is evidence that the IRE reflexive undergo raising since Blocking Effects suggest that the reflexive must move through (and be evaluated at) each clause (Cole, Hermon, & Huang 2006).

5.4.1.3 Movement evidence: Island effects

When an IRE reflexive is in an island, the reflexive cannot corefer with a nominal expression outside the simple finite clause. An island is a syntactic unit from which (overt) movement is not possible. Examples of island effects in IRE are given below (IRE island effects are similar to SAE island effects). The island in (97) is an adjunct clause island and the island in (98) is a relative clause island.
(97)  a. The speaker said that the boxer talked [during the announcer’s introduction of him].

b. *Who did the speaker say that the boxer talked [during the announcer’s introduction of I]?

(98)  a. They all want to meet the man [who gave the boy a ball].

b. *Who do they all want to meet the man [who gave I a ball]?

In (97), there is no movement, and the sentence is acceptable. In (97), however, who moves from the adjunct phrase to the beginning of the sentence. Since adjunct phrases are islands, the movement is prevented and the sentence is ungrammatical. Similarly, (98) is acceptable, but in (98) who cannot move out of the relative clause since it is an island; therefore (98) is unacceptable. Island effects are evidence that movement is occurring.

IRE reflexives cannot corefer with a nominal expression outside their simple clause when they are in an island. The island effects suggest that the reflexive is undergoing raising in order to corefer with a nominal expression in a higher clause. Examples of a reflexive in an island being unable to corefer with a nominal expression in a higher clause are below. Islands are indicated with brackets, as are complex nominal expressions.

(99)  Bill\textsubscript{i} said that Paul\textsubscript{j} saw [the person]\textsubscript{k} [who dislikes himself\textsuperscript{\textsubscript{i,j,k}}].

(100) Bill\textsubscript{i} wonders [who\textsubscript{j} likes himself\textsuperscript{\textsubscript{i,j}}].

(101) John\textsubscript{i} made [the claim that Bill\textsubscript{j} likes himself\textsuperscript{\textsubscript{i,j}}].

(102) [The speaker]\textsubscript{i} said that [the boxer]\textsubscript{j} talked [during [the announcer’s]\textsubscript{k} introduction of himself\textsuperscript{\textsubscript{i,j,k}}].
In (99), *himself* is in a relative clause island, and cannot corefer with either long-distance antecedent (*Bill or Paul*). It can only corefer with the local nominal expression *the person*. In (100), *himself* is in an interrogative clause island and it cannot corefer with the nominal expression *Bill* in the higher clause. Similarly, *himself* in (101) is in a complex NP island and cannot take a long distance antecedent. Finally, in (102) *himself* is in an adjunct island and, again, cannot corefer with a nominal expression outside the simple clause (*the boxer, the speaker*). The existence of island effects in IRE is evidence that the reflexive is raising.

It is unexpected that IRE reflexives exhibit island effects since island effects are usually found when there is overt movement. For example, English *wh*-words, which must overtly raise to [Spec, CP], are subject to island effects while Mandarin nominal *wh*-words, which are produced *in-situ*, are not subject to island effects.\(^{38}\) This is illustrated below ((104) is taken from Tsai (1999: (42)).

(103) *What did you wonder [why Lisi bought *t*]*?

\(^{38}\) Mandarin Chinese adverbial *wh*-phrases (such as *weishenme* ‘reason-why’) do exhibit island effects even though there is no apparent overt movement (Tsai 1999, Soh 2005). The following example is from Soh (2005: (1))

(i) *Akiu xihuan [ DP [CP Opi [IP Luxun weishenme xie e i] de shu]]?*

Akiu like Luxun why write DE book

‘What is the reason x such that Akiu likes [books that Luxun wrote for x]?’
(104)  Akiu kan-bu-qi  [ DP [CP Opi [IP e i zuo shenme]] de reni]?
        Akiu look-not-up do what DE person
        ‘What is the thing/job x such that Akiu despises [people [who do x]]?'

In (103), *what* cannot raise past the interrogative clause island *why Lisi bought*, and the sentence is ungrammatical. However, in (104), *sheme* “what” does not overtly raise and there is no island effect: the sentence is grammatical. Data like that in (103) and (104) are taken to be evidence that islands are a property of PF and do not hold at the level of LF (Lasnik 2001; Pesetsky 1997, 1998; Merchant 2001). However, this generalization that only overt movement is subject to island effects is challenged by Hindi-Urdu data. In Hindi-Urdu, *wh*-words seem to remain in situ, but are still subject to island effects, as illustrated below (Malhorta & Chandra 2007: (15)).

(105)  *Raam-ne  kya kahaa ki  Sitaa bazaar jayegii [kyunki John-ne kyaa nahi Ram-erg what said  that Sita  market go-will because John-erg what not diyaa]
gave
        ‘What did Ram say that Sita will go to the market because John didn’t give?’

*Kis-se* “who-with” does not overtly raise to [Spec, CP], yet the sentence is ungrammatical. Malhorta suggests that in cases like (105) the *wh*-word is undergoing overt raising (in order to account for the subjacency/island effects), but that the lowest copy of the *wh*-word is being pronounced. Saito (1994), Pesetsky (1987), and Hagstrom (1998) (*inter alia*) also noted similar effects in Japanese.
Various claims have been made that a lower copy of a nontrivial chain can be pronounced in PF if and only if this is needed to avoid a violation in PF (Franks 1998; Bobaljik 1995; Pesetsky 1998; Bošković 2002a, 2002b; and Lambova 2002; *inter alia*). Some PF violations found in other languages that allow a lower copy to be produced are: (i) proximity of identical elements, (ii) the second position requirement providing support for a prosodically weak element, and (iii) intonational requirements, among others. For an overview of PF violations see Bošković & Nunes (2007). If lowest copies of a chain are produced to prevent a PF violation, then all instances of long-distance reflexives in IRE must have a PF violation that would occur by pronouncing the raised reflexive. At this time, I do not know what type of PF violation is causing the reflexive to be pronounced in the lower position. It may be that reflexives cannot start a sentence. Interestingly, a reflexive in object position of an embedded clause can corefer with the subject of the main clause when it is topicalized (Agbayani 2006: 711).

(106) John thinks that himself, Mary likes $t$.

It appears that reflexives pronounced in a raised positions are acceptable in English dialects. It may be that a new type of PF violation is being avoided by producing the lowest copy of the reflexive, or it may be that lowest copy productions are triggered by non-PF violations as well.

An opposing hypothesis is that prosody governs whether a lower or higher copy of the form is pronounced (e.g., Kandybowicz 2006, 2008). If this is the case, it could be that reflexives only in English are produced at the end for prosodic reasons rather than to
avoid a PF violation. This deserves more investigation. While I do not have an answer as to why the lower copy of the IRE long-distance reflexive is being produced, there is ample evidence that the reflexive is, in fact, raising.

5.4.1.4 Evidence from other languages

Other long-distance reflexives have been analyzed to behave like operators: Japanese *zibun* “self” (Katada 1991), the Romance clitic *se* “self” (Zubizarreta 1987), and Mandarin *ziji* “self” (Huang & Liu 2001). The operator like behavior is thought to allow these reflexives to raise to positions where they are “local” to the potential antecedent. Katada (1991) suggests that two types of reflexives exist cross-linguistically: operator and non-operator anaphors. Operator anaphors can corefer with a long-distance antecedent while non-operator anaphors must corefer with an antecedent within their same clause. The operator reflexives in the languages mentioned above lack information such as number, person, and gender. I argue that while this is a productive pattern, an operator reflexive may be marked for these features, as other operators, such as *wh*-words, can be marked for these features. For example, *who* in English is specified for the \( \phi \)-feature number; *who* is singular. The data that illustrates that *who* is singular is below: the verb must have singular agreement morphology.

\[
\begin{align*}
\text{(107)} & \quad \text{Who is at the door?} \\
\text{(108)} & \quad \ast \text{Who are at the door?}
\end{align*}
\]

Despite having a specified range for number, English *who* is an operator. Similarly, in Greek *who* is an operator, despite being overtly marked for all \( \phi \)-features: person,
number, and gender. The derivation of the Greek third person *who* is below (Katada 1991).

**Table 5-1 Derivation of Greek who**

<table>
<thead>
<tr>
<th></th>
<th>Masculine</th>
<th>Feminine</th>
<th>Neuter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singular</strong></td>
<td>piós</td>
<td>piá</td>
<td>pió</td>
</tr>
<tr>
<td><strong>Plural</strong></td>
<td>pii</td>
<td>piés</td>
<td>piá</td>
</tr>
</tbody>
</table>

Thus operator-hood and the marking of number, person, and gender information are not exclusive: operators can be marked for these features.

**5.4.2 Operator-like status of reflexive and long-distance binding possibilities**

IRE reflexives, unlike SAE reflexives (besides possibly *oneself*, as I will illustrate in §5.5.2), behave like operators in that they raise successive-cyclically to the [Spec, CP] position. I suggest that the structure of IRE long-distance reflexives is like that in (109). Here, the reflexive carries both an unvalued [VAR] feature (as proposed by Hicks 2009) and an operator-like [OP*] feature,\(^\text{39}\) which raises due to a strong EPP feature on C (Katada 1991).

---

\(^{39}\)I am not proposing that the reflexive is an actual operator at this time. I am only suggesting that it behaves in an operator-like manner.
Therefore, an IRE sentence like that in (110) has a derivation like that in (110). Here, *herself* raises to [Spec, CP] (like other operators) due to an EPP feature on C. If agreement of the [VAR] feature applied before raising occurred, then *Jill* binds the reflexive: *Jill* corefers with *herself* due to Agreement of the [VAR] feature and *Jill* c-commands *herself*.

(110)   a. Jill likes herself.

[VAR: _]

[Op*]

b. herself [Jill likes <herself>]

Here, in the vP phase, Agree can apply (upward) and the unvalued [VAR] feature on *herself* can be valued by *Jill*. Even though *herself* later raises due a strong EPP feature on the C⁰, this does not affect its ability to value the [VAR] feature from the local goal *Jill*.

In a similar manner, the operator-like behavior of the reflexive allows it to (optionally) participate in agreement processes in higher phases. For example, in the sentence below, the reflexive raises successive-cyclically to [Spec, CP] (via [Spec, vP]). The point in the derivation when the process of Agree occurs determines the coreference...
of the reflexive. This analysis is similar to that of overt movement of reflexives in wh-phrases acting in a long-distance manner in Hicks (2009). The difference is that the IRE reflexive does not need to be in a wh-phrase in order to raise to [Spec, CP] since it inherently behaves like an operator, which accounts for its long-distance coreference ability. Below is an example sentence of a long-distance reflexive in IRE as well as its proposed derivation.

(111) a. Johni said that Billj knows that Mikek likes himselfijk.
    b. [CP himself John said that [CP <himself> Bill knows that [CP <himself> 
        Mike likes <himself>]]]40

Here, himself can undergo agreement with the local subject, Mike, the subject of the middle clause Bill or the subject of the matrix clause John, depending on when in the derivation Agree occurs. This is because at each phase boundary, himself is in the [Spec, CP] position which allows it to participate in an Agree processes with the higher clause.

5.4.3 Blocking Effects

If IRE reflexives have an inherent operator-like quality, Hicks (2009) analysis is able to account for the subject or object orientation of the reflexive and the long-distance behavior of IRE reflexives. The reflexive raises to a position ([Spec, CP]) where it can participate in processes of higher phases. IRE long-distance reflexives behave similarly to

40 Note that himself could continue to raise the [Spec, CP] of the matrix clause, as it does in (25b). However, since himself cannot value its [VAR] feature in this position (as in (6)), this final move was not included in the derivation.
SAE reflexives: they must undergo an Agree operation within their phase and can have either subject or object orientation. However, Hicks (2009) analysis cannot account for the Blocking Effects found in IRE. His analysis cannot account for Blocking Effects since there is no mechanism to ensure that (at least person) φ-features match between the reflexive and the local subject during the derivation. In fact, Hicks purposefully excludes a mechanism that ensures that φ-features match in the derivations, as he argues that ungrammaticality from non-matching φ-features is not due to the derivation crashing, but rather is only because the listener cannot interpret the sentence: a nominal expression cannot be both masculine and feminine. To back up this claim, Hicks specifically cites the example of sentences that reference female characters who are played by men as evidence that there is no grammatical mechanism to ensure that φ-features match (fn 27), as in (112).

(112) Dame Edna, shot himself, yesterday. 41

Here, Dame Edna is played by a male and with this knowledge the non-matching gender between the reflexive and its antecedent is acceptable. Similarly, Hiem (2008) suggests that the following sentence is correct, though we do not presume that every student in the class is male (her (12)).

(113) [Every student,] voted for himself.

41 Dame Edna is the drag persona of Australian actor Barry Humphries. So, for us in North America, a good substitute would be Rupaul.
Due to data like (113), Hiem (2008) concludes that it is advantageous to have a grammar that does not check for the matching of $\varphi$-features.

However, I suggest that not all $\varphi$-features can be treated as having this much interpretable flexibility as gender has: some mismatches in $\varphi$-features seem to be much less natural than others. In particular, a mismatch for person seems to make the same type of construction much less natural.

(114) *[Every student], voted for myself,
(115) *[Every student], voted for yourself,
(116) [Every student], voted for himself/herself/themself,

Here, every student cannot corefer with myself or yourself in the same way that every student can corefer with himself (or even third person plural themselves). Therefore, SAE reflexives seem to be sensitive to a mismatch in person while they are not (as) sensitive to a mismatch in number or gender, as illustrated by Hicks and Heim. Similarly, Blocking Effects indicate that IRE reflexives are more sensitive to a mismatch in person than a mismatch in number or gender. A process that ensures person matching between a reflexive and the subject of the sentence must be incorporated into Hicks’ analysis to account for Blocking Effects in IRE.
5.4.3.1 Blocking Effects Facts

The following is a recap of the Blocking Effects in IRE. IRE long-distance reflexives cannot behave in a long-distance manner if there is an intervening subject that does not match in person with the reflexive. (117)-(120) illustrate that a mismatch in gender and number do not trigger blocking effects, but a mismatch in person does.

(117)  Paul said that Jill likes himself.
(118)  Paul said that they like himself.
(119)  *Paul said that I like himself.
(120)  *Paul said that you like himself.

(117) and (118) both illustrate that an intervening subject that does not match for gender or number does not prevent the reflexive from having a long-distance antecedent. On the other hand, (119) and (120) each illustrate that an intervening subject that does not match for person does prevent the reflexive from having a long-distance antecedent.

Furthermore, Blocking Effects only occur when the intervening nominal expression that does not match for person is in subject position, as illustrated below.

(121)  Paul thought that my behavior harmed himself.
(122)  Paul told me that Matt likes himself.
(123)  *Paul said that I like himself.

The example in (121) illustrates that a non-matching possessor nominal expression does not prevent the reflexive from acting in a long-distance manner. Similarly, (122) illustrates that a non-matching object does not prevent the reflexive from acting in a long-
distance manner. Finally, (123) illustrates that a non-matching subject prevents the reflexive from acting in a long-distance manner. Therefore, a mechanism is required to ensure that only the person feature of the reflexive agrees only with the subject in its same simple clause. Consequently, the operation that allows binding to occur and the operation that requires person agreement must be separate since the processes target nominal expressions in different structural positions: binding targets both subjects and objects while blocking effects are triggered only by a mismatched nominal expression in subject position.

Note that we cannot say that only c-commanding nominal expressions trigger Blocking Effects, since c-commanding objects do not trigger Blocking Effects. I assume that the sentence John told Bill that Matt likes himself, where himself can corefer with Matt, Bill, or John is good in IRE, as all three nominal expressions c-command himself. The tree given below illustrates that the object me c-commands himself, but does not trigger Blocking Effects. Therefore, we need a mechanism that prevents me from triggering Blocking Effects.

42 A binding mechanism can target possessors, as well, when the intervening subject is inanimate. For example,

(i) My behavior harmed myself.

(i) was rated as natural among IRE speakers, suggesting that a the concept of c-command may be more loose when the intervening subject is inanimate. For a discussion of similar data, see Huang and Tang (1989).
Bill told me that John believes in himself.
Here, *himself* (covertly) moves successive-cyclically to [Spec, CP] through the intervening [Spec, vP] due to a strong EPP feature on the C^0 (Chomsky 2001, Radford 2004). 43

5.4.3.2 Possible checking mechanism

A possible candidate for the operation that ensures that the subject and the reflexive match for person is Multiple Agree (Hiraiwa 2001, Hasegawa 2005). In Hiraiwa’s definition (formalized below in (125)), a probe agrees with all the matched goals at the same derivational point in a single simultaneous operation if the goals are in a c-commanding relationship (represented by >) with the probe and each other.

(125) MULTIPLE AGREE as a single simultaneous operation

\[ \alpha > \beta > \gamma \]

(Agree (\( \alpha, \beta, \gamma \)) where \( \alpha \) is a probe and both \( \beta \) and \( \gamma \) are matching goals for \( \alpha \)).

Hiraiwa (2001) proposes Multiple Agree in response to Japanese raising data. In previous analyses of Japanese raising data, it was proposed that multiple feature checking played a role (e.g., Ura 2000). However, feature checking was dropped from the Minimalist

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43 Although this tree does not show it, *himself* continues to move successive-cyclically through the Spec, vP and [Spec, CP] of the matrix clause. I have not shown this in the tree since for a grammatical sentence Agree must occur by the time *himself* has raised to the [Spec, CP] of the simple clause.
Program in favor of Agree. Hiraiwa (2001) proposes that Multiple Agree is a viable replacement for multiple feature checking.

Hasegawa (2005), in turn, suggests that Multiple Agree can be used to account for \( \phi \)-feature matching between a reflexive and the subject in the simple clause. Hasegawa claims that reflexives are licensed by the [+ multi] feature on T. He suggests that Multiple Agreement between the T (the probe) and the reflexive and the subject nominal expression (the goals) is triggered by the [+ multi] feature on T. A mismatch between the two goals that are probed by T will cause the derivation to crash, since they cannot give contradictory values to T. Take, for example, the SAE sentence in (126).

(126)  \( \text{John}_i \) said that \( \text{Bill}_j \) likes himself\( _{ij} \).

According to Hasegawa, T has a [+multi] feature that licenses the reflexive. The [+multi] feature allows T to undergo Multiple Agreement with both the reflexive and the closest subject. It is generally assumed in English that T undergoes agreement with the subject since English exhibits subject/verb agreement.\(^{44}\) Additionally, T undergoes agreement with the reflexive since it has a unique relationship with the reflexive as the reflexive’s licenser (it is a matched goal). Agreement between T (in the CP phase) and the reflexive himself (in the vP phase) does not violate Phase Impenetrability Conditions (PIC;

\(^{44}\) Evidence for subject/verb agreement in SAE is below:

(i)  Jim likes ice cream.
(ii) *Jim like ice cream.
Chomsky 2001) since Chomsky notes a distinction within the PIC. In the following structure, ZP and HP are strong phases, i.e. CP and vP respectively (Chomsky’s (12)).

\[(127)\quad [ZP \, Z \ldots [HP \, a [H \, YP]]]\]

Chomsky writes that there is “an important distinction between \(\Sigma = ZP\) and \(\Sigma\) within ZP, for example \(\Sigma = TP\). The probe T can access an element of the domain YP of HP; PIC imposes no restriction on this. But with \(\Sigma = ZP\) (so that \(Z = C\)), the probe Z cannot access the domain YP” (Chomsky 2001: 14).\(^{45}\) So, while the domain of \(v\) is not accessible to operations at CP, it is accessible to operations “within” CP. Thus, a head like T can establish an agreement relationship with vP internal dependents, given the PIC in (89) and a structure like that in (128).

\[(128)\quad [CP [TP \, T \, [vP \, [vP \, ]]]]\]

Note that Hasegawa’s analysis predicts that reflexives have only subject orientation, since the binding process can only involve the subject, as the feature is on T. Hasegawa’s use of Multiple Agree on T is an appropriate operation to account for Blocking Effects in IRE since it is already well established that T and the subject (but not the object or the possessor) are in an agreement relationship.

\(^{45}\) In Hasegawa’s analysis, a reflexive cannot corefer with an antecedent outside the simple clause because this would violate the PIC: the subject in the matrix clause is too far away to agree with a reflexive in the simple clause.
Hasegawa’s analysis must be modified for IRE long-distance reflexives, however. First, not all the $\varphi$-features on T are probing for goals. Rather, only person is undergoing Multiple Agreement with the reflexive and the subject. This is in order to ensure that only a mismatch in person (and not a mismatch in number or gender) results in an ungrammatical sentence. Others have noted that agreement for person does not always follow the same patterns as agreement for gender or number. Most documented cases deal with subject/verb agreement. For example, in Standard Arabic, Samek-Lodovici (2003) has data that indicates that verbs agree only with person and gender with post-verbal subjects, as shown in (129).

(129) Darab-at / *-na ?al-banat-u Zayd-an
    Hit-past-3fem.sg/*3fem.pl the-girls-Nom Zayd-Acc
    ‘The girls hit Zayd’

Baker (2008) also reports that person seems to have locality requirements that number does not. Therefore, previous studies have already noted a special status of the person feature not found for number and gender features. Another difference is that I must stipulate that all T’s have [+multi] feature in an IRE sentence with a reflexive. This ensures that person agreement occurs at each phase.

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46 I am not making a claim about whether the probe is a separate head (similar to Sigurðsson & Holmberg 2008) or if the probe is a feature on the head T (similar to Ussery 2009). Currently, the proposals seem to be similar in terms of what these different probes would predict. I do maintain, however, that a person feature or head probes independently from gender and number.
Finally, for Hasegawa (2005), Multiple Agree is the operation through which a binding relationship is formed. However, I suggest that Multiple Agree is only a side effect of the T being a licenser for the reflexive. A binding relationship is still formed via agreement of the [VAR] (following Hicks 2009). If Multiple Agree created a binding relationship, we would expect object orientation of the reflexive to be ungrammatical. However, we have seen in Chapter 4 that this is not the case.

Now, let us see how Multiple Agree predicts Blocking Effects in IRE. Take (130) for example.

(130) *John, knows that I said that Bill likes himself.

Here, the [+multi] feature on T requires that it multiply Agree with both Bill and himself for person in the simple clause. There is no mismatch for person, and the derivation continues. Next, himself raises to [Spec, CP] where it can participate in operations of higher phases. Now, the T in the middle clause undergoes Multiple Agreement with I and himself. There is a mismatch, as one is first person and the other is third person. This causes the derivation to crash before himself raises to a position where it can participate in an operation in the maximal clause.

Note that once the [VAR] feature is valued, Multiple Agree no longer occurs. This stipulation ensures that if the subject of the simple clause (Bill) and himself corefer with each other in (130) (instead of the subject in the matrix clause (John) and himself) that the sentence is acceptable even though I does not agree with himself for person. The addition of a Multiple Agree operation on T accounts for the Blocking Effects in IRE.
An unfavorable alternative to an analysis that involves Multiple Agree on T is to suggest that binding conditions still apply, as Quicoli (2008) suggests. Quicoli proposes that the phase is the binding domain (similar to Hicks (2009)), but that a binding application (like Chomsky’s Binding Conditions) applies cyclically as the reflexive in a wh-clause raises through the sentence. While this analysis would make the correct prediction that a mismatch in person would cause the derivation to crash, this analysis would not predict why a mismatch in gender or number does not create an ungrammatical sentence. Furthermore, including an out-dated Binding Theory into this analysis is undesirable since it makes use of tools outside of the internal mechanisms of the theory. Therefore, I suggest that using Multiple Agree to ensure that a subject and reflexive match for person is preferred over suggesting that binding occurs via Condition A.

Recall that above in (114)-(116) I argued that a mismatch in person between the subject and the reflexive created a much more unnatural sentence than a mismatch in gender or number. Therefore, it I posit that SAE sentences with reflexives also have a [+multi] feature on T that requires Multiple Agreement of only the person feature.47

47 There are some similarities between the MP analysis presented here and a Lexical Functional Grammar (LFG) analysis. A top-down Agree operation is formally similar to outside-in functional uncertainty (OIFU) in LFG, and a bottom-up Agree operation is formally similar to an inside-out functional uncertainty operation (IOFU) in LFG. The Agree operation proposed here is similar to an IOFU in LFG. Also, in LFG, “off-path” constraints (Dalrymple 1993, p.128) restrict the search for antecedents to certain domains and certain antecedents, similar to the Multiple Agree operation proposed here. The Multiple Agree operation is not strictly involved in the binding operation, but it does have an effect on what types of sentences are grammatical.
5.4.4 Predictions for SAE

The analysis that accounts for Blocking Effects in IRE makes some predictions for the behavior of reflexives in operator phrases in SAE, if SAE also has a [+ multi] feature that both (i) licenses the reflexive and (ii) ensures person feature matching between the local subject and reflexive. The current analysis predicts that an SAE reflexive in an operator phrase cannot corefer with a long-distance antecedent just in case there is an intervening subject that is mismatched for person with the reflexive. Therefore, SAE should exhibit similar Blocking Effects to those exhibited in IRE: a mismatching subject prevents a reflexive in an operator phrase from coreferring with a long-distance antecedent. The prediction may be borne out. (personal communication, Adam Baker’s judgments below).

(131) ? Which pictures of herself, did Karen say that you thought that Mary saw?

(132) Which pictures of herself, did Karen say that Bill thought that Mary saw?

Here, the mismatched (for person) intervening subject you in (131) affects the acceptability of Karen coreferring with the reflexive herself. However, a mismatch in gender, as given in (132), does not affect the acceptability of Karen coreferring with the reflexive in the operator phrase. This is an area for future investigation.
In contrast, a mismatched nominal expression for person in object position does not affect the reflexives ability to corefer with a long-distance antecedent, *Karen*.

\[(133)\] Which pictures of herself\(_i\) did Karen\(_i\) tell you that Mary found?

I suggest that a [+multi] feature on T is responsible for the Blocking Effects in (131). As the reflexive in the operator phrase raises through the clauses, the [+multi] feature on T ensures that the reflexive agrees in person with the local subject (and only the subject). If the reflexive and the local subject do not Agree for person, the derivation crashes.

### 5.4.5 Summary of analysis for IRE long-distance reflexives

The following is a summary of the derivation of binding relationships in IRE. First, I claimed that IRE reflexives behave like operators in that they move successive-cyclically to the top [Spec, CP] via every intervening [Spec, vP] and [Spec, CP]. The evidence I used for this claim is: (i) the ability of the reflexive to participate in processes of higher phases, (ii) the existence of Blocking Effects, and (iii) island effects. The operator-like behavior of the reflexive allows it to corefer with nominal expression outside its simple clause. Hicks’ (2009) analysis, in which the unvalued [VAR] feature on the pronominal component of the reflexive agrees with a valued feature on another nominal expression in the phase accounts for the local and long-distance uses of IRE reflexives.

However, we noted that a reflexive was “blocked” from coreferring with a higher nominal expression if an intervening subject did not match the reflexive in person. A mismatch in number or gender, though, does not block the reflexive from coreferring
with a higher nominal expression. Blocking Effects are not predicted by Hicks’ analysis. I suggested that a [+multi] feature on T both licenses the reflexive and allows T to undergo Multiple Agreement for person with the subject and the reflexive, following Hasegawa (2005). If there is a mismatch between person, the derivation will crash. T undergoes Multiple Agree before each successive-cyclic raising of the IRE reflexive, as all T’s have the [+ multi] feature in an IRE sentence with a long-distance reflexive. However, I maintained that Multiple Agree by T with the subject and reflexive does not constitute a binding relationship (contra Hasegawa 2005). Rather, the [+ multi] feature merely licenses the reflexive. The reflexive must get its reference via the unvalued [VAR] feature it is generated with (Hicks 2009).

This analysis correctly makes the following predictions: (i) that IRE reflexives can take an antecedent outside their simple clause, (ii) that both subjects and objects can act as antecedents, (iii) that only a mismatch for person in the subject causes the derivation to crash. First, IRE reflexives can corefer with a nominal expression outside their simple clause because they are operator-like, and, therefore, raise to a position in the sentence structure where they are able to participate in a binding relationship with nominal expressions in higher phases. Also, this analysis predicts that either the subject or the object of a sentence can act as an antecedent: both nominal expressions are in the same

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48 The role of T with subject agreement could possibly also be responsible for a preference for subject orientation of the reflexive over the object. However, more research needs to be done to establish if there is truly a preference for this. Schmelzer (2006) found that subject orientation was preferred over object orientation, but the current study does not find a preference for subject orientation over object orientation.
phase as the reflexive (within its simple clause or in a higher clause once the reflexive has moved), and each expression is valued for the [VAR] feature. Including an operation that ensures person matching between the subject nominal expression and the reflexive predicts (i) that only a mismatch in person will cause the derivation to crash and (ii) that only a mismatched subject causes the derivation to crash. If person is the only feature the T probes for, this is the only feature that must match. Furthermore, T is already predicted (in English which has subject/verb agreement) to get person information from the subject and not the object. Therefore, a person probe associated with T does not care whether it matches with the object. Finally, Hasegawa suggested that the Multiple Agreement between the probe T and its goals, the subject and the reflexive is a binding operation: Multiple Agree binds the reflexive to the subject. Note that using Hasegawa’s analysis to predict the behavior of IRE reflexives does not work, since his analysis would predict only subject orientation, but a reflexive can have subject or object orientation.

5.5 Comparison of SAE reflexives and IRE reflexives

5.5.1 The difference between IRE reflexives and SAE reflexives

IRE long-distance reflexives have a quality that allows them to behave like operators; SAE reflexives lack the “operator-like” quality. Though the morphology of IRE and SAE reflexives suggests that they should behave similarly, I have illustrated that this is not the case. While IRE reflexives can corefer with a nominal expression outside their simple clause, SAE reflexives cannot. The behavior of SAE reflexives suggests that they are not moving to the edge of a phase ([Spec, CP]) and therefore are not eligible to participate in processes of higher phases, due to the PIC. Similarly, there is evidence that
the movement of IRE reflexives is to [Spec, CP] since sentences a long-distance reflexive cannot have a long-distance antecedent when they are in an island phrase, as illustrated above.

IRE reflexives may have an operator-like quality that SAE reflexive do not have due to the history of IRE. In Chapter 1, I noted that there was a heavy wave of immigration to the Iron Range and the mines created an environment that is thought to have caused an incomplete learning of English. Due to an incomplete learning of English, there may have been negative transfer from the speaker’s native language. Negative transfer is caused by differences between a speaker’s first language and the target language (in this case English). Errors in the target language result from using habits from the speaker’s native language in the target language. Many immigrants who came to the Iron Range were native speakers of languages that have operator-like reflexives, such as Italian, Finnish, Norwegian, German, etc. Furthermore, some of these languages have operator-like reflexives that are marked for at least some φ-features. Se “himself/herself” in Italian is marked for number and person and the possessive reflexive in Finnish itsenstään ‘himself/herself’ is marked for person. An example from Finnish is illustrated below. The –än suffix (or more generally –n) on the reflexive is a possessive

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49 An example of negative transfer is a native Mandarin Chinese speaker not using subject/verb agreement for number in English, since Mandarin Chinese does not require subject/verb agreement. In contrast, there can be “positive” transfer if two languages use the same type of grammar—a native Italian speaker may just assume that all languages have subject/verb agreement because her native language has subject/verb agreement.
marker that is marked for third person (van Steenbergen 1991: (1)). Brackets indicate the simple clause.

(134) Pekka<sub>i</sub> sanoi Jusille<sub>j</sub> [Matin<sub>k</sub> katsovan hänestä itsestään<sub>i/*j/*k</sub>]

Pekka said Jussi Matin-GEN watch-PTC-GEN he self-POSS

‘Pekka said to Jussi that Matti watched himself’

Here, itsestään corefers with only the subject of the maximal clause Pekka. Despite being marked for person, the Finnish possessive reflexive takes a long-distance antecedent.

Immigrants were free to interpret English reflexives, which are also marked for φ-features, as having a similar operator-like behavior. Furthermore, there may be evidence of a reflexive from SAE that a reflexive that has (at least some) overt φ-features may also have an operator-like quality: oneself.

5.5.2 The status of oneself in SAE

Interestingly, if Katada (1991) is correct in assuming that reflexives that are not marked for all φ-features have a “semantic range” that allows them to behave like operators, SAE’s oneself should behave like an operator anaphor rather than a non-operator anaphor (such as himself in SAE) since oneself is not marked for gender. In fact, researchers have claimed that oneself does not pattern entirely like other English reflexives. Stroik (1992, 1995, 1999) suggests that oneself is operator-bound by PRO, which plays a role in giving it a middle voice interpretation. Zribi-Hertz (1993) suggests that oneself is arbitrary in reference and therefore can either have an arbitrary antecedent (e.g., one or PRO<sub>arb</sub>) or that it can occur without a linguistic antecedent as an arbitrary
logophor in the right semantic environment (one of them being middle voice). Despite the difference in analyses, Stroik and Zribi-Hertz both present data of *oneself* having a distribution that is different than the distribution of other reflexives in SAE ((135) is taken from Stroik 1992: 130).

(135) Because of computers, [today’s memos to oneself] compose more quickly than ever before.

(136) *Because of computers, [today’s memos to himself/herself/themselves] compose more quickly than ever before

Furthermore, I present new evidence that *oneself* is behaving like an operator in that it can have a long-distance antecedent. My officemates and colleagues outside of linguistics who use a standard variety of English (and definitely are not speakers of IRE) find the sentence below to be acceptable. Brackets indicate the simple clause inside which reflexives typically must have an antecedent.

(137) One hopes that [a banker will loan money to oneself].

Here, *oneself* is able to corefer with a long-distance antecedent (*one*) in a standard variety of English. In contrast, *herself* cannot behave in a similar manner.

(138) *He hopes that [a banker will loan money to himself].

In (138), *herself* cannot corefer with the antecedent outside its simple clause. Therefore, (at least some) standard varieties of English also have operator and non-operator
anaphors, which follows from Katada’s prediction that the existence of both types is a universal property.

The claim that oneself can corefer with a nominal expression outside its simple clause suggests that oneself is an operator. This in turn suggests that oneself moves successive-cyclically to [Spec, CP] similar to the proposal for IRE long-distance reflexives. If oneself is operator-like, it should not be able to corefer with a long-distance antecedent when it is in an island clause. Speakers of SAE tell me that this is the case at least for a relative clause island. The example is given below:

\[(139) \quad *\text{One, hopes that a supervisor does not talk to someone [who dislikes oneself].}\]

In (139), oneself is inside a relative clause island (indicated with brackets), and cannot corefer with an antecedent outside its simple clause. SAE seems to have two manners in which a reflexive can have a long-distance interpretation: (i) when the reflexive itself has an inherent operator-like quality, perhaps due to a semantic range from lacking a φ-feature (e.g., oneself) and (ii) when the reflexive is in a wh-phrase (e.g., which picture of himself). Both manners are due to operator qualities. Oneself is predicted by Katada to behave like an operator due to its lack of gender. The behavior of oneself mirrors the behavior of IRE long-distance reflexives. The similarity in behavior between the SAE oneself and IRE long-distance reflexives suggests that IRE reflexives are operator-like similar to oneself.
The behavior of *oneself* provides additional evidence that SAE requires an operation that ensures that the reflexive and the subject nominal expression match for person because Blocking Effects exist for (at least) person. Furthermore, Blocking occurs when the mismatched nominal expression is only in subject position. Blocking effects are illustrated below.

(140) Santa Claus said: *Onei hopes I will bring oneselfi gifts.

(141) Onei hopes that one’s husband will buy oneselfi gifts with his bonus!

(142) Santa Claus said: Onei hopes that my generosity leads to presents for oneselfi!

*Oneself* cannot have a long-distance antecedent when it is blocked by a mismatched nominal expression in subject position, as in (140). However, (141) indicates that when there is no mismatch, the long-distance interpretation is acceptable. Furthermore, when the mismatch is the possessive position, there is no Blocking Effect.\(^{50}\) The unacceptability of a mismatch in person between the subject and the reflexive is further evidence that SAE, like IRE, requires a [+ multi] feature on T to license the reflexive. Furthermore, it is appropriate that the [+ multi] feature be housed in T, which already is proposed to agree for person with the subject, but not the possessor. These data also

\(^{50}\) I cannot come up with a sentence that includes an intervening non-matching object without having the subject of the simple clause be *one*. Therefore, at this time, I cannot test whether an intervening object that does not match for person is grammatical or ungrammatical.
indicate that when there is a long-distance reflexive (in this case *oneself*), all T’s in the sentence require this feature.

In this section, we have seen that a reflexive lacking featural (e.g., *oneself*) information can act in a long-distance manner, which is predicted by Katada (1991). Furthermore, the behavior of *oneself* mirrors the behavior of IRE long-distance reflexives. This is further evidence that IRE long-distance reflexive behave like operators, similar to their less-specified counterparts in other languages. Therefore, the main difference between SAE reflexives (excluding *oneself*) and IRE reflexives is that IRE reflexives inherently behave like operators. This operator-like behavior allows IRE reflexives to move to [Spec, CP] where they can participate in processes of higher phases. SAE reflexives (excluding *oneself*), on the other hand, cannot participate in processes in higher phases, and, therefore, must not be operators.

### 5.6 Logophoric uses of IRE reflexives

Note that this analysis does not cover logophoric uses of the reflexive such as (i) when the reflexive corefers with an external speaker (as in (143)) and (ii) when the reflexive corefers with a sub-commanding antecedent when the intervening c-commanding antecedent is inanimate (as in (144)).

(143) As for myself, coffee is fine.
(144) My behavior harmed myself.

I suggest that these instances are purely logophoric instances of the reflexive. Note that these sentences are also acceptable in SAE (for some speakers) and are attested in British
English literature (Zribi-Hertz 1989), though analyses of reflexives in SAE also do not regularly account for these uses without turning to logophoricity.

5.7 Conclusion

Therefore, IRE reflexives are very similar to SAE reflexives: the difference is that IRE reflexives have an inherent operator-like behavior that SAE reflexives (except oneself) do not have. Furthermore, oneself, which is predicted by Katada (1991) to behave in a long-distance manner, has a similar distribution to IRE long-distance reflexives: (i) It has a long-distance distribution, (ii) it exhibits “island effects” when it is in a relative clause, and (iii) exhibits a Blocking Effect when an intervening subject does not agree for person. This suggests that IRE reflexive and oneself behave just like SAE reflexives, except that their operator-like feature allows them to move to a position where they can participate in operations in higher phases.

A combination of Hicks’ (2009) analysis with a mechanism that ensures that the person feature of the subject of a simple clause agrees with the reflexive accounts for the distribution of IRE long-distance reflexives. While it is not the most “minimal” of proposals to have two mechanisms contribute to binding, the fact that a reflexive can corefer with either a subject or an object and Blocking Effects are triggered only by subjects suggests that a single mechanism cannot account for both binding possibilities and Blocking Effects since nominal expressions in different parts of the structure are triggered for each. Therefore, as it stands, I have two mechanism that account for binding relationships in IRE: (i) a mechanism that both licenses the reflexive and requires that the subject and reflexive match for person features and (ii) a mechanism that allows the
reflexive to receive its interpretation. Also, the IRE long-distance reflexive is able to enter into long-distance relationships with its antecedent because of an operator-like behavior. Long-distance uses of the reflexive are not established via a separate operation, but, rather, are due to a quality of the reflexive.
6.1 Overview

In this chapter, I attempt to place IRE reflexives into the current classification system of reflexives outlined in the literature. It is important to understand how IRE reflexives fit into the current classification system because classification systems are one way we can understand the extent to which languages differ from one another or are alike. A good classification system has categories that are (i) general enough to include some languages and (ii) specific enough to exclude some languages. A good classification system also allows us to make accurate predictions about how languages behave. In §6.2, I show that IRE reflexives behave like Type IV reflexives according to Cole, Hermon, and Huang’s (2006) classifications. By definition, Type IV reflexives “usually must corefer with a nominal expression within the same simple clause, but can corefer with a nominal expression outside the simple clause in specific syntactic and discourse contexts.” In §6.3, I provide data that illustrates that Mandarin Chinese bare reflexive \textit{ziji} ‘self’ is also a Type IV reflexive according to the Type IV definition. In §6.4, I provide evidence that though Mandarin Chinese \textit{ziji} and IRE reflexives belong to the same category, the reflexives have distributions that are different enough that the same analysis cannot account for both distributions. The problem is that the definition of Type IV reflexives allows for a wide range of distribution patterns of reflexives. For example, the Type IV definition allows for (i) Icelandic reflexives which are long-distance only in subjunctive clauses; (ii) Mandarin reflexives which are blocked when
there is any intervening mismatching nominal expression (subject, object, possessive); and (iii) IRE reflexives which are blocked only when there is an intervening mismatching nominal expression in subject position. In §6.5, I suggest that the solution to further demarcate the types of distributions that Type IV generates is to create sub-categories of Type IV. As it is, Type IV distinguishes between types of reflexives cross-linguistically, as we saw in Chapter 2. However, the ways that reflexives can distribute in this category are too broad to allow us to make meaningful generalizations about the distribution of Type IV reflexives. Creating sub-categories will allow us to both keep Type IV as a narrow classification and to have a classification system that allows for more fine-grained predictions than are currently allowed for.

6.2 IRE reflexives belong in Type IV

IRE reflexives usually corefer with a nominal expression within the same simple clause; however, IRE reflexives can corefer with a nominal expression outside the simple clause in specific syntactic and discourse environments. Below is an example of an IRE reflexive coreferring with a nominal expression outside of the simple clause.

(145) John₁ knows that Tom₂ believes in himselfᵢⱼ.

Here, *himself* can corefer with the subject of the simple clause (*Tom*) or the subject of the main clause (*John*). However, an IRE reflexive cannot corefer with a nominal expression outside the simple clause in all environments. Rather specific discourse and syntactic environments are needed for the reflexive to corefer with a long-distance nominal
expression. For example, IRE first person reflexives can take a discourse antecedent, as illustrated below.

(146) As for myself, coffee is fine.

In (146), *myself* can corefer with a discourse antecedent which is a logophoric environment. Logophoric environments are special discourse environments as discussed in Chapter 2. Also, an IRE reflexive exhibits Blocking Effects: it cannot corefer with a nominal expression outside the simple clause when there is an intervening nominal expression in subject position that does not agree with the reflexive for person.

(147) *Tom knows that I believe in himself.*

Therefore, IRE reflexives can only corefer with a nominal expression outside the simple clause when there is no intervening nominal expression in subject position that does not match the reflexive for person. This is an example of a specific syntactic environment that allows for a long-distance interpretation. These facts suggest that IRE reflexives belong to Type IV. This classification is unexpected since IRE reflexives are not monomorphemic, and one of the defining properties of Type IV reflexives since Pica (1987) is thought to be monomorphemicity.

### 6.3 Mandarin Chinese bare reflexive *ziji* belongs in Type IV

Mandarin bare reflexive *ziji* belongs to Type IV for similar reasons that IRE LDR belong to Type IV. *Ziji* can corefer with a nominal expression outside the simple clause, as illustrated below.
However, similar to IRE reflexives, *ziji* cannot corefer with a nominal expression outside the simple clause in all environments. Rather specific discourse and syntactic environments are needed for the reflexive to have a long-distance interpretation. For example, *ziji* can corefer with a discourse antecedent (Yu 1992, 1996). Again, this environment is a specific type of discourse environment.

(149) Zhe-ge xiangfa chule ziji, zhiyou san-ge renzan cheng.
This-CL idea, besides self only three-CL people agree
‘As for this idea, besides myself, only three other people agree.’

Also, *ziji* cannot corefer with a nominal expression outside the simple clause when the matrix subject does not agree for person with an intervening nominal expression.

(150) *Zhangsan renwei ni hen ziji.
Zhangsan think you hate self
‘Zhangsan thinks that you hate self.’

Here, second person *ni* prevents *ziji* from coreferring with the long-distance third person nominal expression *Zhangsan*. It has been noted in the literature that blocking effects from mismatched objects and possessors are less severe than Blocking Effects from mismatched subjects (Cole, Hermon & Huang 2006). Therefore, *ziji* can only corefer with a nominal expression outside the simple clause when the matrix subject agrees for

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person with an intervening nominal expression. This is an example of a specific syntactic environment that allows for a LDR interpretation. These facts suggest that ziji also belongs to Type IV.

### 6.4 Type IV reflexives ziji and IRE reflexives have different distributions

Since, as we determined above, IRE and ziji are both Type IV reflexives, we might expect that IRE reflexives and ziji to have few, if any, differences in distribution. Furthermore, we might also expect that the analysis presented for IRE in Chapter 5 can be easily extended to the Mandarin Chinese bare reflexive ziji, which is also a Type IV reflexive. Below, I will provide data that show that IRE reflexives and ziji have distributions that are different. For example, in Mandarin the reflexive can only corefer with a nominal expression in subject position. In contrast, an IRE reflexive can corefer with a nominal expression in subject or object position.\(^{51}\) Also, an intervening nominal expression that is mismatched for person with a lower nominal expression can prevent a long-distance reading in both languages. However, in IRE the mismatched expression must be in subject position to prevent a long-distance interpretation, while in Mandarin the mismatched expression can prevent a long-distance interpretation when it is in subject, object, or possessor position. These differences are big enough that the analysis

\(^{51}\) In some specific contexts, a Mandarin ziji and IRE reflexives can corefer with a possessor expression on the subject. However, the subject must not be animate for this type of coreference to occur. An example from IRE is given below:

(1) [His, bad attitude] harmed himself.
(2) *[His, bad cat] harmed himself.
presented for IRE reflexives cannot be extended to \textit{ziji}.

The first difference between \textit{ziji} and IRE reflexives is orientation of the reflexive. In Chapter 4, we saw that IRE LDR can have subject or object orientation.

(151) Bill\textsubscript{i} told Tom\textsubscript{j} that Sam\textsubscript{k} believes in himself\textsubscript{i/j/k}.

In contrast, \textit{ziji} must have subject orientation. It cannot corefer with the object of a sentence. An example of this is given below (from Huang & Liu 2001: ((3)b)).

(152) Zhangsan\textsubscript{i} song (gei) Lisi\textsubscript{j} yi-zhang ziji\textsubscript{i/*j}-dexiangpian.

Zhangsan give to Lisi one-CL self’s picture
‘Zhangsan, gives Lisi a picture of himself\textsubscript{i/*j}.

Blocking Effects are also different between the two languages. Unlike in IRE, in Mandarin Chinese a mismatched nominal expression does not have to be in subject position to trigger Blocking Effects. Recall that in IRE only a mismatching nominal expression in subject position causes Blocking Effects. This is illustrated below.

(153) *John\textsubscript{i} said that I believe in himself\textsubscript{i}.

(154) John\textsubscript{i} told me that Bill believes in himself\textsubscript{i}.

(155) John\textsubscript{i} thinks that my behavior harmed himself\textsubscript{i}.

In contrast, in Mandarin the mismatched expression does not have to be in subject position to trigger Blocking Effects. A mismatched nominal expression in possessor position and a mismatching nominal expression in object position can also trigger Blocking Effects. This is illustrated below. (156) is an example of a possessor blocking a
long-distance interpretation, and (157) is an example of an object blocking a long-distance interpretation.

\[(156)\] Zhangsan, shuo ([ni j zuo de chunshi] haile ziji) [nj zuo de chunshi haile ziji]

Zhangsan say you do silly deeds harm self

‘Zhangsan says that the silly things you have done have harmed you.’

\[(157)\] Zhangsan, cong ni j nar ting shuo Mali k hen taoyan ziji [nj nar ting shuo Mali k hen taoyan ziji]

Zhangsan from you there hear say Mary very hate self

‘Zhangsan heard from you that Mary hates herself.’

Therefore, IRE reflexives and ziji have different orientations. Also even though both languages exhibit Blocking Effects, these Blocking Effects have two different types of manifestations: any intervening mismatching nominal expression triggers Blocking Effects in Mandarin while only a mismatching nominal expression in subject position triggers Blocking Effects in IRE.

6.4.1 **IRE LDR analysis cannot be extended to ziji**

Due to these differences, the analysis for IRE reflexives posited in Chapter 5 cannot be extended to Mandarin Chinese, even though IRE reflexives and Mandarin bare reflexives both belong to Type IV and both have Blocking Effects. The analysis for binding cannot be extended to ziji since Hicks’ analysis predicts both subject and object orientation of the reflexive. Ziji has only subject orientation. Also, the analysis for Blocking Effects cannot be extended since the modification of Hasegawa’s analysis predicts that only mismatching nominal expressions in subject position trigger Blocking
Effects. However, Blocking Effects in Mandarin are triggered by an intervening mismatching nominal expression in any position.\textsuperscript{52}

It makes sense that Mandarin would only make use of the Multiple Agree operation since \textit{ziji} is simplex. Recall the proposed structure for IRE reflexives from Chapter 5, repeated below:

\begin{equation}
\text{(158) \ Proposed structure of IRE reflexives:}
\end{equation}

\begin{center}
\begin{tikzpicture}
\node (dp) {DP};
\node (d) [below left of=dp] {D};
\node (np) [below right of=dp] {NP};
\node (him) [below of=d] {him};
\node (self) [below of=np] {self};
\node (var) [right of=him] {VAR: _} [Op*]
\end{tikzpicture}
\end{center}

The variable feature is on \textit{him} and not on \textit{self}. This structure predicts that reflexives that only mean \textit{self} (and potentially all monomorphemic reflexives) do not have a \([\text{VAR}]\) feature that must undergo agreement in order to corefer with another nominal expression. Therefore, the Mandarin bare reflexive does not have a \([\text{VAR}]\) feature that needs to be checked. Since there is no \([\text{VAR}]\) feature on Mandarin reflexives, \textit{ziji} does not undergo binding in the same manner as IRE reflexives. However, it is still possible that \textit{ziji} undergoes the Multiple Agree operation. I propose that Multiple Agree accounts for both binding relationships and (syntactic) Blocking Effects in Mandarin Chinese. Multiple

\textsuperscript{52} This difference may be due to the fact that Mandarin does not require subject/verb agreement. Exploring this connection is outside the scope of the current research on IRE reflexives.
Agree for binding predicts that *ziji* must be subject orientated. The Multiple Agree mechanism also accounts for the fact that subject blockers lead to less grammatical sentences than object and possessor blockers. Additional Blocking Effects (object, possessors) would come from discourse. It has been long thought that Mandarin exhibits both syntactic and functional/discourse Blocking Effects (Cole, Hermon, Huang 2006). For example, Xu (1993) noted a person asymmetry in Blocking Effects between first/second and third person nominal expressions. An intervening first or second person nominal expression prevents the reflexive from coreferring with a higher third person subject, but an intervening third person nominal expression does not prevent the reflexive from coreferring with a higher first or second person subject. This is also noted in Huang & Liu (2001: (11)).

(159)  Zhangsan, danxin wo/ni hui piping ziji*i/j*.
     Zhangsan worry I/you will criticize self
     ‘Zhangsan is worried that I/you might criticize myself/yourself/*him.’

(160)  Wo, danxin Zhangsan, hui piping ziji*i/j*.
     I worry Zhangsan will criticize self
     ‘I am worried that Zhangsan will criticize?me/himself.’

Since there is a person asymmetry, Blocking cannot be totally syntactic. The Multiple Agree analysis is advantageous, since it predicts subject orientation and provides an analysis for why an intervening mismatched subject creates a less grammatical sentence than an intervening object or possessor. A mismatched intervening subject is both a
syntactic blocker and a discourse blocker; objects and possessors, on the other hand, are only discourse blockers.

6.5 Proposal for sub-types of Type IV

Although Type IV is an adequate category in that it includes a variety of languages (e.g., Mandarin, IRE, many Germanic languages, some Romance languages, etc) while excluding others (Standard American English, Malay, Turkish, Hindi, etc), we are unable to further predict how reflexives within Type IV behave differently from one another. As illustrated above, this single definition generates two languages that pattern differently (IRE reflexives and Mandarin ziji), with no apparent mechanism to distinguish between the two languages in the same broad category. This is a problem because in order for us to make predictions about how LDR behave, we require a more fine-grained grouping. Currently the classification system allows too much variation in how Type IV reflexives are manifested. For example, currently on might assume that all Type IV languages have both specific discourse and syntactic environments that allow for long-distance interpretations (as Mandarin and IRE do). However, it currently seems as though this is not the case, as Icelandic only requires a specific syntactic environment (a subjunctive mood clause). On a more specific level, we might expect similar Blocking Effects in Type IV languages. However, as illustrated above, Mandarin and IRE have different manifestations of Blocking Effects. These differences make it so that our assumptions about behavior are limited under the current definition. However, the definition of Type IV is accurate and has been shown to be an adequate category, since it is both inclusive and exclusive of languages as a classification category should be.
In order to maintain the classification of Type IV, but to also improve our ability to make accurate assumptions about the behavior of reflexives, I propose that we create sub-categories of Type IV reflexives based on specific behaviors of different Type IV reflexives. Under this new classification system, IRE reflexives and Mandarin Chinese *zìjī* would belong to different sub-categories within Type IV. They would be in three different sub-categories for (potentially) these differences: (i) Mandarin bare reflexive is monomorphemic while IRE LDR are complex, (ii) these reflexives have different orientations, and (iii) these reflexives have different manifestations of Blocking Effects. The addition of sub-categories will allow us to make more fine-grained predictions about their behavior. Furthermore, creating sub-categories of reflexives allows us to keep the generalization that monomorphemic reflexives only can act in a long-distance manner (if the Type IV language has both monomorphemic and complex morphemes). Mandarin has both complex and monomorphemic reflexives while IRE only has complex reflexives. Also, by creating sub-categories, we may even find a three-way distinction between monomorphemic reflexives without φ-features, monomorphemic reflexives with φ-features, and complex reflexives. Much work needs to be done in order to further classify Type IV reflexives.

**6.6 Conclusion**

A good classification system has categories that are general enough to include some languages while being restrictive enough to exclude other languages. Classification systems are also useful in that they can help us determine the extent to which languages
are similar or dissimilar. Classification systems can also help us make accurate predictions about behaviors of various linguistic items.

Above, I illustrated that IRE reflexives belong to Type IV because they are primarily bound, but can corefer with a nominal expression outside its simple clause in specific discourse and syntactic environments. Similarly, Mandarin $ziji$ also belongs to Type IV. However, despite being in the same group, IRE reflexives and $ziji$ have different distributions. These distributions are significantly different enough that an analysis for one can not be extended to the other. Therefore, I suggested that future work should consider sub-categories of Type IV to be established in order for linguists to make more accurate predictions about the behavior(s) of Type IV reflexives.
CONCLUSION

7.1 Overview

The goals of this research have been to (i) determine if and how IRE reflexives fit into current classification systems for reflexives and (ii) determine if there are universal principles governing the distribution of reflexives across languages. The distribution of IRE can be predicted using operations such as Agree (which incorporates both coreference and c-command) and Multiple Agree. I presented an argument that (i) IRE reflexives behave like operators in that they undergo raising to [Spec, CP] from where they can corefer with subject and object nominal expressions in higher phases and (ii) T has a [+ multi] feature that both licenses the reflexive and requires agreement for person between the subject nominal expression (which agrees with T in English) and the reflexive (which has a special relationship to T by being licensed by it). The proposed analysis innovatively combines mechanisms from previous analyses of reflexives: my work is the first time, to my knowledge, that Hicks’ and Hasegawa’s proposals have been brought together to explain the distribution of a single reflexive. Hicks (2009) proposes that Agree of a variable feature is the binding mechanism; and Hasegawa (2005) proposes an Agreement processes between the reflexive and the subject of the clause.

The analysis for the distribution of IRE reflexives leads to some interesting predictions about the distribution of SAE reflexives. For example, we saw that SAE oneself (which is predicted to behave like an operator according to Katada (1991)) behaves similarly to IRE reflexives: both can corefer with a nominal expression outside
the simple clause. However, both SAE *oneself* and all IRE reflexives are prevented from coreferring with a nominal expression outside the simple clause when (i) the reflexive is in a relative clause island or (ii) there is an intervening nominal expression in subject position that does not match the reflexive for person. These similarities suggest that an analysis where IRE reflexives (i) behave like operators and (ii) exhibit Blocking Effects are on the right track.

I found that IRE reflexives are Type IV reflexives: they are “forms that are ‘primarily’ bound anaphor reflexives, but can be non-local in specific syntactic and discourse contexts.” This classification is unexpected since Type IV reflexives are monomorphemic. The present research indicates that Type IV reflexives do not have to be monomorphemic. The analysis for IRE reflexives cannot be extended to Mandarin *ziji*. Though both languages exhibit Blocking Effects, *ziji* is blocked by a non-matching nominal expression in subject, object, or possessor position. In contrast, only a mismatching subject blocks IRE LDR. Therefore, a different analysis for Blocking Effects is needed. The fact that the two languages require different mechanisms to account for Blocking Effects suggests that although they are both Type IV according to the current classification system, they are actually too different from one another to be grouped together. I suggested that IRE reflexives and Mandarin Chinese bare reflexives belong to two different sub-types of Type IV reflexives.

The remainder of this chapter is as follows: §7.2 discusses the limitations of the study, which leads into suggestions for future research in §7.3. §7.4 provides anecdotal
evidence of non-standard uses of reflexives in IRE, including instances of LDR. Finally, §7.5 concludes the chapter.

7.2 Limitations

As with any study, this research had limitations. First, I was working with a non-standard dialect, but used both oral and written stimuli in order to gather judgments. While I think it was necessary to use written stimuli in order to explicitly ask about certain coreference capabilities of the reflexive, it was unfortunate that written material needed to be used. Also, since the participants started playing the audio of the target sentence when they were ready, some were resistant to play the audio since they felt that (i) they didn’t need it and (ii) that listening to the audio would slow them down during the task. I stood by the participants and checked that they were clicking the audio button (some took surveys in the same room or in the library, so they used headphones to listen to the audio). I explained why it was important to listen to the audio (spoken dialect, everyone does the exact same type of task so I can compare results), but some participants thought the audio was unnecessary. On the other hand, some participants stated how much the audio helped them decide how to rate the sentence.

Also, the study had a fair number of participants in general, but it turned out that older females were the group who was most likely to rate a long-distance interpretation of a reflexive as natural. There were only 13 older female participants. This made the numbers lower. It would be desirable to focus just on this group in the future.

Finally, as I suggested in Chapter 4, I recruited SAE speakers who had an affiliation with the University of Minnesota, and were, therefore, used to interacting with
non-native English speakers who use (English) reflexives in a different manner than native SAE speakers use English reflexives. In the future, it would be interesting to compare IRE judgments to judgments of native SAE speakers who do not have much contact with non-native speakers.

7.3 Future research

This dissertation offers many avenues for future research. For example, there is an interesting sociolinguistic situation going on since it is older women who are using these reflexives. This could signal that long-distance reflexives are falling out of the dialect or that a language change is in process. Either way, it is interesting that women are the ones primarily using long-distance reflexives. Also, there are avenues for future syntactic research. The distribution of IRE reflexives requires a unique analysis that involves two processes. Interestingly, it appears that the distribution of oneself in SAE also involves two processes. Understanding if these mechanisms also play a role in the distribution of other Type IV (and non-Type IV) reflexives is important. Another syntactic (and pragmatic) research possibility is to work within Type IV reflexives in order to determine appropriate sub-categories that make more powerful claims about the distribution of reflexives. Finally, there is room for a phonological analysis of the suprasegmental features of local and long-distance IRE reflexives. There is anecdotal evidence that stress triggers a local interpretation.

The roles of age and gender in relation to language use have been well studied. That IRE speaking women 35 and older are using long-distance reflexives is unexpected. Understanding why older women are the group that is judging IRE LDR to be natural is
important—especially since most previous research in sociolinguistics suggests that men use more non-standard forms than women and long-distance uses of reflexives is non-standard. Since it is so unexpected that women are the ones using long-distance reflexives, this situation may reflect a unique social network situation where women feel closer to other Iron Rangers and therefore (perhaps subconsciously) use non-standard forms that are not as stigmatized as forms that lack subject/verb agreement (he don’t; I says) or have double negatives (don’t have no money). If a future study is done, the questionnaire should include a question that explicitly asks about the informant’s connection to other people on the Iron Range. In addition to gathering information about attitudes, information about social networks should also be gathered. Understanding who is talking to whom will help us to determine if a specific group of Iron Rangers are using long-distance reflexives.

This research also makes claims about the distribution of reflexives in SAE: that oneself can have a long-distance interpretation and is subject to Blocking Effects. It is necessary to do a large-scale study in order to confirm if the SAE judgments about oneself are similar across a large group of speakers. The existence of Blocking Effects is particularly interesting since Blocking Effects are thought to be found only in languages with monomorphemic reflexives, and one-self is complex. Furthermore, it is necessary to investigate Blocking Effects to understand if Blocking in SAE is similar to Blocking Effects in IRE or Mandarin or neither language. Understanding how LDR and Blocking Effects work in a variety of languages can help us create a more accurate and complete classification system.
There is much work that needs to be done to create accurate sub-categories of Type IV reflexives to build a better classification system. Researchers will need to re-evaluate Type IV reflexives and determine more narrow factors by which to classify these reflexives. It may be that there are a group of reflexives that are purely logophoric and another group that are purely syntactic. It may be that there are a group of languages that exhibit Blocking Effects and another group of Type IV languages that do not exhibit Blocking Effects.

Further exploration of the distribution of IRE reflexives may help elucidate the relationship between intensification and the interpretation of reflexive pronouns. Intensification generally refers to the morphological make-up of the reflexive with additional morphemes leading to intensification. For example, in Danish the monomorphemic reflexive sig ‘self’ is unintensified while the complex reflexive sigselv ‘himself’ is intensified (Bergeton 2003). There are two different thoughts on the effects of intensification on the interpretation of reflexive pronouns. First, it has been thought that intensification is responsible for a local reading (e.g., König & Siemund 2000). König and Siemund (2000) suggest that morphologically complex reflexives are reflexives with intensifiers, which leads to their local interpretation. This hypothesis would explain why in some language with long-distance reflexives (e.g., Mandarin), monomorphemic reflexives (e.g., ziji ‘self’) may have a long-distance interpretation, while complex reflexives (e.g., taziji ‘himself/herself’) must have a local interpretation. On the other hand, it has also been suggested that intensified reflexives, unlike regular reflexives, are subject to semantic/pragmatic factors rather than syntactic factors. For
example, Bergeton (2004) claims that when Standard English *himself* is used in a non-anaphoric manner, there is a null pronominal that acts like an intensifier attached to the reflexive, as in *[him] himself*. The null intensifier pronoun accounts for the non-anaphoric behavior of the reflexive pronoun. Adding a further complication to the situation, Kaiser and Runner (2008) suggest that source effects from verbs (i.e., *told* vs. *heard from*) are a stronger predictor of reflexive resolution (between subject and object in *picture-NPs*) than intensification effects (which they assume in English lead to a logophoric interpretation) in both German and Dutch. Source effects come from the notion that non-anaphoric reflexives are logophoric expressions. Logophoric expressions corefer with the SOURCE of information (see Chapter 2); therefore *heard from* and *told* affect which nominal expression is the antecedent of the reflexive pronoun.

IRE reflexives can help us understand the role of intensification (with or without source effects) because IRE reflexives can be intensified with stress instead of additional morphology. Stress as a type of intensification is unique among long-distance reflexives since usually intensification means morphology. My intuition is that intensified reflexives, that is, reflexives produced with additional stress, have local (bound) interpretation while un-intensified reflexives may corefer with a nominal expression outside the minimal clause. The IRE speaker who recorded the stimuli sentences shares this intuition. This situation indicates that intensification can be added to morphologically complex long-distance reflexives. This situation further suggests that intensification can look different across language (i.e., intensification is indicated with stress in some languages and with an additional morpheme in other languages). Using IRE data, it is
also possible to further explore any interaction between source and intensification. There are four logical situations for the relationship between intensification and source (in the sense of Sells (1987)): (i) there is no interaction between intensification and source, (ii) there is an interaction between intensification and source and intensification is a stronger predictor, (iii) there is an interaction between intensification and source and source is a stronger predictor, or (iv) there is interaction between intensification and source and each plays an equal role. Future research includes exploring the intuition that intensification affects the interpretation of IRE reflexives. If this intuition is born out across users, then understanding interactions (or lack of interactions) between source verbs and intensification in IRE is the next step for this line of research.

7.4 Anecdotal Evidence of IRE LDR

As I collected data for this study and presented the findings, I came across a variety of anecdotal evidence that speakers of IRE use reflexives in a non-standard, and sometimes long-distance, manner. The first piece of anecdotal evidence I encountered was working with the IRE speaker who recorded the stimuli sentences for the study. My speaker definitely had intuitions on when a long-distance interpretation was available (for example, a long-distance reading was not available when the reflexive was in a relative clause). The speaker also had intuitions about how the reflexive must be said in order to facilitate a long-distance interpretation. For him, a stressed reflexive triggered a local interpretation of the reflexive while an un-stressed reading triggered a long-distance interpretation of the reflexive.
While presenting the data at an out-reach poster session sponsored by the University of Minnesota, I met an assistant to the dean who had graduated from Hibbing High School, which is located on the Iron Range. He told me that his high school English teacher had explicitly taught students that a reflexive can corefer with a nominal expression within the same simple clause or a nominal expression outside the simple clause. Students were taught that a reflexive can have a long-distance interpretation in the classroom.\textsuperscript{53}

Finally, there is some corpus data that suggests that IRE speakers use reflexives in a non-standard way. The Research Center at the Minnesota Discovery Center (previously called \textit{Iron World}) in Chisholm, MN has a collection of transcribed oral histories of Iron Rangers.\textsuperscript{54} Some examples of non-standard uses of reflexives are below. Most of the reflexives are first person singular (\textit{myself} rather than \textit{himself} or \textit{herself}) since in the oral histories speakers are talking about themselves in the first person. In the first example the reflexive corefers with the possessor. In the rest, the reflexive corefers with the speaker. I have highlighted the reflexive. Some of these sentence will sound grammatical to speakers of Standard English since there are logophoric uses of \textit{myself} below.

\textsuperscript{53} This English teacher had retired before I started high school.

\textsuperscript{54} Website for oral histories:

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(161) *Your* welfare was *yourself*. Your abilities. [reflexive corefers with possessor]

(162) First person reflexive corefers with speaker:
MIKE: Who knows the recipe?
ALBERT: My son Tom.
MIKE: And you.
ALBERT: Some of the boys, *myself*. [reflexive corefers with speaker, like a logophor]

(163) *Even myself* before I went into service, school vacations we worked in mines, 14, 15 years old. [reflexive corefers with speaker, like a logophor]

(164) Interviewer: (laughing) Well I won’t print that. You must have had a couple of fights in your time.
Nick: Well yeah. You uh, not *myself*, I didn’t have any *myself*. [reflexive corefers with speaker, like a logophor]

(165) She had, well there was Dan and *myself*, and of course before Dan there was a baby sister to look after. [reflexive corefers with speaker, like a logophor]

(166) I do recall my grandmother giving my aunt a basket and *myself* a basket, to pick little yellow flowers. [reflexive corefers with the subject of a higher clause; it is a long-distance reflexive]

### 7.5 Concluding remarks

An IRE reflexive can corefer with a nominal expression within the simple clause or outside the simple clause unless (i) there is an intervening subject that does not match for person with the reflexive or (ii) the reflexive is in a island clause. I suggested that the IRE has two features: a variable feature that accounts for coreference and binding (following Hicks 2009) and an operator-like feature that allows the reflexive to move to
[Spec, CP] where it can participate in processes of higher phases. Finally, I suggested that Blocking Effects can be accounted for by a [+multi] feature on the Tense node that requires agreement for person between the subject (only) and the reflexive. Data from SAE supports a theory that LDR behave like operators, and there is a [+multi] feature for agreement of person between the subject and the reflexive on T. *Oneself* can corefer with a nominal expression outside its simple clause unless (i) there is an intervening subject that does not match for person with the reflexive or (ii) the reflexive is in a island clause headed by a *wh*-word.
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http://scholarworks.umass.edu/open_access_dissertations/138


APPENDIX A: Map
## APPENDIX B: Informant Information

<table>
<thead>
<tr>
<th>Informant ID</th>
<th>Sex</th>
<th>Age</th>
<th>Residence</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>27</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>19</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>32</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>56</td>
<td>Stillwater</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>32</td>
<td>Anoka</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>23</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>27</td>
<td>Shoreview</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>37</td>
<td>St. Paul</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>34</td>
<td>St. Paul</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>33</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>42</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>M</td>
<td>39</td>
<td>Minneapolis</td>
<td></td>
</tr>
<tr>
<td>Informant</td>
<td>Sex</td>
<td>Age</td>
<td>Residence</td>
<td>Notes (why the speaker lives on the range)</td>
</tr>
<tr>
<td>-----------</td>
<td>-----</td>
<td>-----</td>
<td>----------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>F</td>
<td>22</td>
<td>Nashwauk</td>
<td>“Because my boyfriend and family live here. It feels like I’m always on vacation because people are so laid back.”</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>23</td>
<td>Hibbing</td>
<td>“Combination of cost of living and job availability and local values.”</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>25</td>
<td>Nashwauk</td>
<td>“I like it here.”</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>27</td>
<td>Hibbing</td>
<td>“Because it's a good place to have a family. It’s familiar. I like the terrain.”</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>32</td>
<td>Goodland</td>
<td>“I was born here and I love it. There's nowhere else better to live.”</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>33</td>
<td>Bovey</td>
<td>“I don't know. It's where my family is, is probably the only reason. I would move.”</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>35</td>
<td>Nashwauk</td>
<td>“It’s home.”</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>37</td>
<td>Chisholm</td>
<td>“We don't really want to live here, but we could afford to buy a home here more easily.”</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>42</td>
<td>Bovey</td>
<td>“Family. Simple life.”</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>42</td>
<td>Grand Rapids</td>
<td>“We work here. It's employment.”</td>
</tr>
<tr>
<td>11</td>
<td>F</td>
<td>44</td>
<td>Hibbing</td>
<td>N/A</td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>51</td>
<td>North of Nashwauk</td>
<td>“I like small towns. I like the four seasons. My family is here.”</td>
</tr>
<tr>
<td>ID</td>
<td>Gender</td>
<td>Age</td>
<td>Location</td>
<td>Quote</td>
</tr>
<tr>
<td>----</td>
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</tr>
<tr>
<td>13</td>
<td>F</td>
<td>53</td>
<td>Hibbing</td>
<td>“I love living on the Range because there are so many wonderful, caring people here. I don't know how to put it into words. I love the community.”</td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>55</td>
<td>Hibbing</td>
<td>“We got stuck.”</td>
</tr>
<tr>
<td>15</td>
<td>F</td>
<td>57</td>
<td>Gilbert</td>
<td>“I guess because I went to school up here and I got a job up here. So I just stayed. Wished I'd moved to the cities like you. I wish I would have stayed down there. Better job market.”</td>
</tr>
<tr>
<td>16</td>
<td>F</td>
<td>67</td>
<td>North of Nashwauk</td>
<td>“I like the Iron Range. I really don't want to live anywhere else. I like the people. I wouldn't ever move. I just like it here.”</td>
</tr>
<tr>
<td>17</td>
<td>F</td>
<td>71</td>
<td>Dewey Lake</td>
<td>“I was born here. Family is here. Everything is provided here—like HCC. I don't know if I would have liked to live somewhere else... I don't think so. I like it up here. God's country.”</td>
</tr>
<tr>
<td>18</td>
<td>F</td>
<td>75</td>
<td>Hibbing</td>
<td>“Jobs. Family is here.”</td>
</tr>
<tr>
<td>19</td>
<td>F</td>
<td>77</td>
<td>Hibbing</td>
<td>“I like it here. I like small towns. I have family here. I enjoy the four seasons. I don’t like big cities.”</td>
</tr>
<tr>
<td>20</td>
<td>M</td>
<td>28</td>
<td>Hibbing</td>
<td>“Family and friends were located here and we wanted to be around them when we started a family I think no matter where you live there are pros and cons. It's probably as good as anywhere.”</td>
</tr>
<tr>
<td></td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>21</td>
<td>M</td>
<td>35</td>
<td>Nashwauk</td>
<td>“I like it here.”</td>
</tr>
<tr>
<td>22</td>
<td>M</td>
<td>38</td>
<td>Goodland</td>
<td>“I live here because there's no people around here.”</td>
</tr>
<tr>
<td>23</td>
<td>M</td>
<td>42</td>
<td>Bovey</td>
<td>“Jobs. I like it here.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Used LDR</td>
</tr>
<tr>
<td>24</td>
<td>M</td>
<td>49</td>
<td>Nashwauk</td>
<td>“Jobs. Don't like the big city.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Used LDR</td>
</tr>
<tr>
<td>25</td>
<td>M</td>
<td>49</td>
<td>Nashwauk</td>
<td>“Because I love it. Peaceful, very peaceful.”</td>
</tr>
<tr>
<td>26</td>
<td>M</td>
<td>52</td>
<td>North of Nashwauk</td>
<td>“I enjoy the simple life- more simple on the Range; less stress.”</td>
</tr>
<tr>
<td>27</td>
<td>M</td>
<td>56</td>
<td>Marble</td>
<td>“Because I've been trapped here. I was born and raised here. I've got family here in the area. And all my close friends live in the area. At times. I find the older I get, the less I like winter.”</td>
</tr>
<tr>
<td>28</td>
<td>M</td>
<td>57</td>
<td>Keewatin</td>
<td>“Job opportunity. Family is here.”</td>
</tr>
<tr>
<td>29</td>
<td>M</td>
<td>59</td>
<td>Hibbing</td>
<td>“Jobs.”</td>
</tr>
<tr>
<td>30</td>
<td>M</td>
<td>62</td>
<td>Dewey Lake</td>
<td>“It's where I grew up. I'm happy here. The nut doesn't fall far from the tree.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Used some LDR</td>
</tr>
<tr>
<td>31</td>
<td>M</td>
<td>63</td>
<td>Hibbing</td>
<td>“We were born here. We love the seasons. There are good schools. Good hunting and fishing and winter sports. Good people live here. You’re not afraid to drive.”</td>
</tr>
</tbody>
</table>
# | Type | Stimuli | Context |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic</td>
<td>JOHN knows that Matt believes in HIMSELF.</td>
<td>Matt believes in John and Johns knows it! To describe this situation, could you say:</td>
</tr>
<tr>
<td>2</td>
<td>Basic</td>
<td>JOHN thinks that Matt believes in HIMSELF.</td>
<td>Matt may or may not believe in John, but John seems to think that Matt is confident in John's abilities. To describe this situation, could you say:</td>
</tr>
<tr>
<td>3</td>
<td>Basic</td>
<td>JOHN said that Matt believes in HIMSELF.</td>
<td>Matt believes in John and he told John this. Now, John is telling everyone! To describe this situation, could you say:</td>
</tr>
<tr>
<td>4</td>
<td>Basic</td>
<td>John knows that MATT believes in HIMSELF.</td>
<td>Matt is confident in his own abilities. John knows this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>5</td>
<td>Basic</td>
<td>John thinks that MATT believes in HIMSELF.</td>
<td>Matt seems to be confident in his own abilities. John notices Matt's confidence. To describe this situation, could you say:</td>
</tr>
<tr>
<td>6</td>
<td>Basic</td>
<td>John said that MATT believes in HIMSELF.</td>
<td>Matt is confident in his own abilities. He told John this and John repeated it to you. To describe this situation, could you say:</td>
</tr>
<tr>
<td>7</td>
<td>Basic</td>
<td>THE BROWNS said that the Smiths take care of THEMSELVES.</td>
<td>The Browns are older and often rely on their neighbors, the Smiths, to do things for them, like shovel the driveway. The Browns tell people how nice the Smiths are. To describe this situation, could this man say:</td>
</tr>
<tr>
<td>8</td>
<td>Basic</td>
<td>The Browns said that THE JOHNSONS said that the Smiths take care of THEMSELVES.</td>
<td>The Smiths also take care of the Johnsons. The Browns know this because the Johnsons told them. You heard all this from the Browns. To describe this situation, could you say:</td>
</tr>
<tr>
<td>9</td>
<td>Basic</td>
<td>The Browns said that THE JOHNSONS said that the Smiths take care of THEMSELVES.</td>
<td>The Smiths take care of the Johnsons. The Browns know that the Smith family cares for the Johnsons. The Johnsons didn't know who was helping them shovel their driveway in the winter. The Browns told the Johnsons about the Smiths' kind acts. To describe this situation, could you say:</td>
</tr>
<tr>
<td>10</td>
<td>Basic</td>
<td>The Browns said that THE JOHNSONS said that the Smiths take care of THEMSELVES.</td>
<td>Craig didn't invite Sam to the party, so he won't go. Bill tells everyone this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>11</td>
<td>Basic</td>
<td>BILL says that Sam won't go to the party because Craig didn't invite HIMSELF.</td>
<td>Sam won't go to Craig's party because Craig didn't invite Sam's best friend, Bill. Bill tells everyone why Sam isn't going to Craig's party. To describe this situation, could you say:</td>
</tr>
<tr>
<td>12</td>
<td>Blockers</td>
<td>JOHN said that they said that Bill believes in HIMSELF.</td>
<td>John's parents claim that Bill believes in John. John told you this. To describe this situation, could you say:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>13</td>
<td>Blockers</td>
<td>JOHN said that Jen said that Bill believes in HIMSELF.</td>
<td>Jen claims that Bill believes in John. John told you this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>14</td>
<td>Blockers</td>
<td>JOHN said that you said that Bill believes in HIMSELF.</td>
<td>You are talking to a person who said that Bill believes in John. You know who said this because John told you. To describe this situation, could you say:</td>
</tr>
<tr>
<td>15</td>
<td>Blockers</td>
<td>JOHN said that I said that Bill believes in HIMSELF.</td>
<td>You said that Bill believes in John. John then told this to his cousin. To describe this situation, could you say:</td>
</tr>
<tr>
<td>16</td>
<td>Blockers</td>
<td>JIM'S coworker harmed HIMSELF.</td>
<td>Jim's coworker always blames Jim for his mistakes; this hurts Jim's career. To describe this situation, could you say:</td>
</tr>
<tr>
<td>17</td>
<td>Argument/adjunct</td>
<td>MARY asked Gloria to write a letter about HERSELF.</td>
<td>Mary is applying for a scholarship and needs a recommendation letter. She asks Gloria to write a letter. To describe this situation, could you say:</td>
</tr>
<tr>
<td>18</td>
<td>Argument/adjunct</td>
<td>MARY asked that Gloria introduce HERSELF to the group.</td>
<td>Mary is about to speak to a crowd of people. Before hand, she asks her friend Gloria to introduce her and her speech. To describe this situation, could you say:</td>
</tr>
<tr>
<td>19</td>
<td>Because effects</td>
<td>CRAIG is happy because Matt believes in HIMSELF.</td>
<td>Matt believes in Craig and this makes Craig happy. To describe this situation, could you say:</td>
</tr>
<tr>
<td>20</td>
<td>Because effects</td>
<td>CRAIG is happy when Matt believes in HIMSELF.</td>
<td>Sometimes, Matt believes in Craig and this makes Craig happy. To describe this situation, could you say:</td>
</tr>
<tr>
<td>21</td>
<td>Island</td>
<td>Bill said that PAUL saw the person who dislikes HIMSELF.</td>
<td>There is a person who dislikes Bill. Paul saw this person just the other day. Bill knows about Paul seeing this person and told you all about it. To describe this situation, could you say:</td>
</tr>
<tr>
<td>22</td>
<td>Island</td>
<td>BILL said that Paul saw the person who dislikes HIMSELF.</td>
<td>There is a person who dislikes Bill. Paul saw him the other day. Bill told you about this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>23</td>
<td>Non-c-commanding SOURCE</td>
<td>MATT heard from me that Joe believes in HIMSELF.</td>
<td>Joe believes in Matt. You told Matt this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>24</td>
<td>Non-c-commanding SOURCE</td>
<td>MATT heard from you that Joe believes in HIMSELF.</td>
<td>Joe believes in Matt. You are talking to the person who told Matt this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>25</td>
<td>Non-c-commanding SOURCE</td>
<td>MATT heard from her that Joe believes in HIMSELF.</td>
<td>Joe believes in Matt. Mary told Matt this, and then he told you. To describe this situation, could you say:</td>
</tr>
<tr>
<td>26</td>
<td>non-c-commanding SOURCE</td>
<td>MATT heard from them that Joe believes in HIMSELF.</td>
<td>Joe believes in Matt. The coaches told Matt this, and Matt told you. To describe this situation, could you say:</td>
</tr>
<tr>
<td>27</td>
<td>non-c-commanding SOURCE</td>
<td>Matt heard from PAUL that Joe believes in HIMSELF.</td>
<td>Joe believes in Paul. Paul told this to Matt. You are reporting who heard what from who. To describe this situation, could you say:</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>28</td>
<td>Ungrammatical</td>
<td>Since Annie told STACY that HERSELF is a fool, Stacy is angry.</td>
<td>Annie called Stacy a fool. Now, Stacy is angry. To describe this situation, could you say:</td>
</tr>
<tr>
<td>29</td>
<td>Ungrammatical</td>
<td>When Annie told STACY that HERSELF is a fool, Stacy is angry.</td>
<td>Annie called Stacy a fool. Now, Stacy is angry. To describe this situation, could you say:</td>
</tr>
<tr>
<td>30</td>
<td>Deictic</td>
<td>ANNE wants Meg to go visit HERSELF.</td>
<td>Anne likes it when Meg visits. She wants Meg to visit. To describe this situation, could you say:</td>
</tr>
<tr>
<td>31</td>
<td>Deictic</td>
<td>ANNE wants Meg come visit HERSELF.</td>
<td>Anne likes it when Meg visits. She wants Meg to visit. To describe this situation, could you say:</td>
</tr>
<tr>
<td>32</td>
<td>Basic</td>
<td>KATE heard Mark curse HERSELF.</td>
<td>Mark cursed Kate and she overheard him. To describe this situation, could you say:</td>
</tr>
<tr>
<td>33</td>
<td>Basic</td>
<td>KATE said that Mark cursed HERSELF.</td>
<td>Mark cursed Kate and she overheard him. She told you about this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>34</td>
<td>Basic</td>
<td>MARY said that Tim loves no one but HERSELF.</td>
<td>Mary believes that Tim is faithful and totally in love with her. She told you this. To describe this situation, could you say:</td>
</tr>
<tr>
<td>35</td>
<td>Blockers</td>
<td>I said that Bill believes in MYSELF.</td>
<td>Bill believes in you. You told this to some people. To describe this situation, could you say:</td>
</tr>
<tr>
<td>36</td>
<td>Blockers</td>
<td>YOU said that Bill believes in YOURSELF.</td>
<td>Bill believes in the person you are talking to. You know this because earlier he told you so. You decide to remind him. You look at the person to summarize everything. To describe this situation, could you say:</td>
</tr>
<tr>
<td>37</td>
<td>Blockers</td>
<td>JEN said that Bill believes in HERSELF.</td>
<td>Bill believes in Jen. Jen told you this. Could you report:</td>
</tr>
<tr>
<td>38</td>
<td>Blockers</td>
<td>I think that your behavior harmed MYSELF.</td>
<td>You were at a meeting, and your coworker did not act professionally. Because your coworker’s behavior, you may have lost the deal. You turn to your coworker to tell him. To describe this situation, could you say:</td>
</tr>
<tr>
<td>39</td>
<td>Blockers</td>
<td>I think that his behavior harmed MYSELF.</td>
<td>You were at a meeting with this guy and he did not act professionally. Because of this you might have lost the account. To describe this situation, could you say:</td>
</tr>
<tr>
<td>40</td>
<td>Blockers</td>
<td>I think that our behavior harmed MYSELF.</td>
<td>You were at a meeting, but you and your coworker did not act professionally. Because of this, you might have lost the account. To describe this situation, could you tell your coworker:</td>
</tr>
<tr>
<td>Blockers</td>
<td>I think that their behavior harmed <strong>MYSELF</strong>.</td>
<td>You had a phone meeting and your kids were really loud in the background. You think you lost the job because of their behavior. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>HE thinks that my behavior harmed <strong>HIMSELF</strong>.</td>
<td>You were at a meeting with your boss and a potential client. You were not very respectful during the meeting. Your boss thinks you lost the account because of your behavior. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>HE thinks that our behavior harmed <strong>HIMSELF</strong>.</td>
<td>You were at a meeting with your boss and a potential client. You were not very respectful during the meeting. Your boss thinks you both lost the account because of your behavior. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>HE thinks that her behavior harmed <strong>HIMSELF</strong>.</td>
<td>Your female coworker was at a meeting with your boss and she was rude. Your boss thinks he lost the account because of how she acted. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>HE thinks that their behavior harmed <strong>HIMSELF</strong>.</td>
<td>Two of your coworkers were at a meeting with your boss and a potential client. Your coworkers were very rude. Your boss thinks that he lost the account because of their behavior. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>JOHN is worried that I might criticize <strong>HIMSELF</strong>.</td>
<td>You are writing a performance evaluation for John. You know that John is nervous about being evaluated. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>Is HE worried that we will criticize <strong>HIMSELF</strong>?</td>
<td>We are writing a performance evaluation for John. You know that John is nervous about being evaluated. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>JOHN is worried that we might criticize <strong>HIMSELF</strong>.</td>
<td>We are writing a performance evaluation for John. You know that John is nervous about being evaluated. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>I am worried that John will criticize <strong>MYSELF</strong>.</td>
<td>John is writing a performance evaluation for you. You are not sure what John will say about you. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>Should I be worried that John will criticize <strong>MYSELF</strong>?</td>
<td>John is writing a performance evaluation for you. You are not sure what John will say about you. In this situation, could you ask:</td>
<td></td>
</tr>
<tr>
<td>Blockers</td>
<td>MY coworker's behavior harmed <strong>MYSELF</strong>.</td>
<td>You were at a meeting with your coworker and he did not act professionally. Because of his behavior, you might have lost the account. To describe this situation, could you say:</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>Type</td>
<td>Full Text</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>52</td>
<td>Inanimate c-command</td>
<td>JOHN'S behavior harmed HIMSELF.</td>
<td>John was rude during a meeting. Because of this, he may be fired. To describe this situation, could you say:</td>
</tr>
<tr>
<td>53</td>
<td>Inanimate c-command</td>
<td>JOHN'S letter discusses HIMSELF.</td>
<td>John wrote you a letter about himself. To describe this situation, could you say:</td>
</tr>
<tr>
<td>54</td>
<td>Inanimate c-command</td>
<td>BILL'S letter indicates that they have no confidence in HIMSELF.</td>
<td>Bill wrote a cover letter, but he doesn't sound like he thinks he'd be a good employee. His old employees don't seem to have confidence in Bill. You know this because you read the letter. To describe this situation, could you tell your spouse:</td>
</tr>
<tr>
<td>55</td>
<td>Consciousness effects</td>
<td>A year ago, JOHN praised the people who killed HIMSELF this morning.</td>
<td>You know that John praised some folks a year ago. This morning those same people killed him. To describe this situation, could you say:</td>
</tr>
<tr>
<td>56</td>
<td>Consciousness effects</td>
<td>A week ago, JOHN praised the people who criticized HIMSELF this morning.</td>
<td>You know that John praised some folks a week ago. This morning those same people criticized him. To describe this situation, could you say:</td>
</tr>
<tr>
<td>57</td>
<td>Ungrammatical</td>
<td>JIM is sad because HIMSELF'S son did not win the prize</td>
<td>Jim expects his son to always win. If his son does not win, Jim is sad. You tell your friend why Jim is sad. To describe this situation, could you say:</td>
</tr>
<tr>
<td>58</td>
<td>External speaker</td>
<td>As for myself, coffee is fine</td>
<td>You were invited over to a friend’s house. She asks if you and your family would like anything to drink. To describe this situation, could you say:</td>
</tr>
<tr>
<td>59</td>
<td>External speaker</td>
<td>As for yourself, pop is fine</td>
<td>You and your child are at a relative's house. The relative asks if you want something to drink. Your child reaches for a pop. You think your child should have juice instead. Could you turn to your child and say:</td>
</tr>
<tr>
<td>60</td>
<td>External speaker</td>
<td>As for himself, coffee is fine</td>
<td>You and your friend are offered drinks while your friend is in the bathroom. So you answer for him:</td>
</tr>
<tr>
<td>61</td>
<td>Filler</td>
<td>And I says to him, &quot;you don't know what you're talking about.&quot;</td>
<td>You are telling a story about a disagreement you had with your neighbor. Could you describe the argument by saying:</td>
</tr>
<tr>
<td>62</td>
<td>Filler</td>
<td>He don't know when to quit.</td>
<td>Bill's coworker hurt his back yesterday when he lifted something heavy. Today, Bill is back lifting things that are too heavy. To describe this situation, could you say:</td>
</tr>
<tr>
<td>63</td>
<td>Filler</td>
<td>I was besides MYSELF with fear.</td>
<td>You are recounting a story where a drunk driver almost hit you. You were very afraid. To describe this situation, could you say:</td>
</tr>
<tr>
<td>64</td>
<td>VPE</td>
<td>CARL believes in CARL.</td>
<td>Bob believes in himself. Carl does too. To describe this situation, could you say:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>65</td>
<td>VPE</td>
<td>Carl believes in Bob.</td>
<td>Bob believes in himself. Carl does too. To describe this situation, could you say:</td>
</tr>
<tr>
<td>66</td>
<td>VPE</td>
<td>CARL takes good care of CARL.</td>
<td>Bob takes good care of himself. Carl does too. To describe this situation, could you say:</td>
</tr>
<tr>
<td>67</td>
<td>VPE</td>
<td>Carl takes good care of Bob.</td>
<td>Bob takes good care of himself. Carl does too. To describe this situation, could you say:</td>
</tr>
<tr>
<td>68</td>
<td>Subject/ask</td>
<td>ANNA asked Meg to clean up after HERSELF.</td>
<td>Anna is sick and is too tired to clean up her mess. She asks Meg to do it for her. To describe this situation, could you say:</td>
</tr>
<tr>
<td>69</td>
<td>Object/ask</td>
<td>Anna asked MEG to clean up after HERSELF.</td>
<td>Anna and Meg live together. Meg is a slob and Anna is sick of it. She told Meg to clean up. To describe this situation, could you say:</td>
</tr>
<tr>
<td>70</td>
<td>Subject/told</td>
<td>ANNA told Meg to clean up after HERSELF.</td>
<td>Anna is sick and is too tired to clean up her mess. She asks Meg to do it for her. To describe this situation, could you say:</td>
</tr>
<tr>
<td>71</td>
<td>Object/told</td>
<td>Anna told MEG to clean up after HERSELF.</td>
<td>Anna and Meg live together. Meg is a slob and Anna is sick of it. She told Meg to clean up. To describe this situation, could you say:</td>
</tr>
</tbody>
</table>
APPENDIX D: Directions

Welcome!

Thank you for your participation. I am interested in understanding how people use and interpret words like “himself” and “myself” in sentences. I am interested in how *you* would interpret these sentences, not how you think other people interpret these sentences. There are no "right" answers.

In this task, you will be presented with an imaginary situation along with a “target” sentence. Please imagine yourself in this pretend situation and decide if the person you hear say the target sentence could say the sentence with its *intended* meaning. Here is an example. The first line is the imaginary situation. The second line is the “target” sentence with the intended meaning. In this case, “Mary” and “herself” refer to the same person. To hear the target sentence, click on the sentence.

Anne wants a picture of Mary, so Mary gave her one. To describe this situation, could this person say:

MARY gave Anne a picture of HERSELF.

I am asking you to judge how natural each “target” sentence is by assigning a number to it. If the sentence sounds natural, give it a relatively high number in your scale. If it does not sound natural, give the sentence a relatively low number in your scale. By natural I mean the following: a sentence is natural if you think you could say the target sentence with its *intended* meaning in the imaginary situation.

Also, many sentences will contain two words in ALL CAPITALS. A sentence is natural if these two words can refer to the same person. Here is a new example. The first line is the imaginary situation. The second line is the “target” sentence with the intended meaning. Again, to hear the target sentence, click on the sentence.

Anne wants a picture of Mary, so Mary gave her one. To describe this situation, could this person say:
MARY gave Anne a picture of HIMSELF.

You would probably judge that this sentence does not sound natural because MARY and HIMSELF cannot refer to the same person. If you think this sentence does not sound natural, you would assign it a low number.

Now, recall the first imaginary situation and sentence: Anne wants a picture of Mary, so Mary gave her one. To describe this situation, could this person say:

MARY gave Anne a picture of HERSELF.

Here, MARY and HERSELF can refer to the same person, so you would probably decide that this sentence sounds natural. In this case, you would assign a higher number to this sentence. You should judge each sentence in comparison of the sentence directly before it. If this sentence is twice as good as “MARY gave Anne a picture of HIMSELF,” you would give this new sentence a number that is twice as big as the number you have to the sentence “MARY gave Anne a picture of HIMSELF.”

You may choose any number scale you wish, but please use the SAME scale throughout the entire experiment. If the sentence sounds twice as natural as the previous one, give it a number twice as big. If it sounds half as natural, give it a number half as big as the previous sentence. You *can* use decimals.

You will not be asked WHY you have rated a sentence as you did. You may, however, occasionally be asked a question about the content or meaning of the sentence. In these cases, type the answer to the question based on your own understanding of the sentence on the screen. You can type your answer directly into the dialog box that pops up on the screen.
### APPENDIX E: MEAN RATINGS FOR IRE STIMULI

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>Reflexive in island</td>
</tr>
<tr>
<td>0.23</td>
<td>Mismatch for person in subject position</td>
</tr>
<tr>
<td>0.32</td>
<td>Coreference with possessor with c-commanding animate noun</td>
</tr>
<tr>
<td>0.36</td>
<td>Mismatch for number in subject position</td>
</tr>
<tr>
<td>0.43</td>
<td><em>When</em> (logophoric effects)</td>
</tr>
<tr>
<td>0.49</td>
<td><em>Because</em> (logophoric effects)</td>
</tr>
<tr>
<td>0.51</td>
<td>Long-distance &quot;say&quot; only</td>
</tr>
<tr>
<td>0.55</td>
<td>Mismatch for person in object position</td>
</tr>
<tr>
<td>0.63</td>
<td>Mismatch for gender in subject position</td>
</tr>
<tr>
<td>0.64</td>
<td><em>As for himself</em></td>
</tr>
<tr>
<td>0.73</td>
<td>Long-distance &quot;think&quot; only</td>
</tr>
<tr>
<td>0.86</td>
<td>Mismatch for person in possessor position</td>
</tr>
<tr>
<td>0.92</td>
<td>Long-distance &quot;tell&quot; only</td>
</tr>
<tr>
<td>1.08</td>
<td>Long-distance &quot;know&quot; only</td>
</tr>
<tr>
<td>1.13</td>
<td>All long-distance sentences</td>
</tr>
<tr>
<td>1.21</td>
<td>Reflexive in adjunct position</td>
</tr>
<tr>
<td>1.29</td>
<td><em>As for yourself</em></td>
</tr>
<tr>
<td>1.36</td>
<td>Long-distance &quot;ask&quot; only</td>
</tr>
<tr>
<td>1.84</td>
<td>Reflexive in argument position</td>
</tr>
<tr>
<td>2.06</td>
<td>Sloppy interpretation VPE</td>
</tr>
<tr>
<td>2.28</td>
<td><em>As for myself</em></td>
</tr>
<tr>
<td>2.32</td>
<td>Strict interpretation VPE</td>
</tr>
<tr>
<td>2.58</td>
<td>Coreference with possessor with c-commanding inanimate noun</td>
</tr>
</tbody>
</table>