SLUICING, ISLANDS AND SENTENCE PROCESSING

by

Bilge Palaz

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ABSTRACT

This dissertation presents research that aims to make new contributions to the study of sluicing (more broadly, ellipsis) and to the study of (extra-)grammatical constraints in language that are attested in sluicing settings. These two topics are currently understudied, particularly from the perspective of experimental syntax. I thus apply quantitative methods, first, to enhance our understanding of sluicing regarding its unpronounced source, of islands regarding the status of subject islands as grammatical constraints, and I further examine how sluicing and subject islands interact. In a series of experiments, I first provide new evidence for strict syntactic isomorphism in one form of sluicing – contrast sluicing. In view of syntactic isomorphism, I test the nature of subject islands in contrast sluicing, where the findings point that subject island effects cannot be due to purely structural restrictions.

Second, a set of sentence processing constraints that have so far been reserved for ellipsis constructions are re-evaluated in this dissertation. This is achieved by exploring processing of sluicing and sluicing-like sentences in a language different from English, which is Turkish. Findings of a self-paced reading experiment conducted in Turkish attest one factor (i.e., Locality, or linear distance) to impact processing of both sluicing and sentences that are minimally different from sluicing. Findings further suggest that processing is not conditioned by the way the sentence is structured or the forms of the words as long as there is a strong match in meaning between the two parts of a sluicing-like sentence in Turkish.

Chapter 1

INTRODUCTION

One fascinating phenomenon in language is how "silence" is implicated to have meaning in certain linguistic settings. Curiously, this interpretive process can be figured out successfully and with ease by humans – but not so successfully by machines, or Artificial Intelligence (AI), for the time being. An example is interpreting the so-called elliptical constructions, or *ellipsis*. These constitute environments where linguistic form and meaning do not appear to match. For instance, comprehenders can understand that the second conjunct after "but" in (1) means "I don't know who John was talking to." even though there is no overt linguistic material after "who". This type of elliptical constructions like in (1) are known as *sluicing* (e.g., Ross, 1969), which will be the focus of this dissertation.

    (1)   John was talking to someone, but I don't know who.

Sluicing, or more broadly, ellipsis, has been argued to have certain construction-specific properties, from the perspective of both theoretical/formal accounts (e.g., "island insensitivity/repair" under ellipsis), and processing accounts (e.g., "Locality" and "Parallelism" constraints under ellipsis). Exploring these properties is one of the primary goals of this dissertation as it will be detailed in the subsequent sub-sections.

I will first focus on the two types of sluicing: regular sluicing with an indefinite antecedent/correlate (i.e., "a monster") as in (2a), and contrast sluicing with a contrasted definite antecedent/correlate (i.e., "the Sandman") as in (2b).

(2)   a. *A monster* terrified John, but I don't know *which monster*.

       b. *The Sandman* terrified John, but I don't know *which other monster*.

Sluicing, however, is not uniformly acceptable in every kind of environment. Contrast sluicing is observed to be unacceptable, for instance, when the correlate (i.e., "the cake") resides in an if-clause (bracketed) as shown in (3a). This is unlike regular sluicing with a correlate in the same structural configuration (3b) (e.g., Merchant, 2001; Ross, 1969).

(3)   Adjunct islands

       a. *Ben will be angry [if you don't try *the cake*], but I don't know *what else*.

                                                        (Barros et al., 2014: 20, (90))

       b. Ben will be angry [if you don't try *an appetizer*], but I don't know *which appetizer*.

Interestingly, these types of bracketed environments are the same environments as those which disallow *wh* dependency formation, known as *islands*. Islands have long been taken to be structural domains out of which *displacement* or *movement* of a phrase is not allowed (e.g., Chomsky, 1973; Ross, 1967), causing

unacceptability of the sentence as shown in (4). Notice that the moved phrase (i.e.,
which appetizer) leaves a marker (i.e., __) in its original position in the sentence.

(4)   *W*hich appetizer* Ben will be angry [if you don't try __]?

In comparison with (4), the acceptability pattern in (3a) versus (3b) is curious,
and this is all intertwined with an important question: what the nature of the
sluicing/ellipsis is. Non-structural approaches consider sluicing as sentential
"fragments" with no underlying covert structure (e.g., Barker, 2013; & Jackendoff,
1995; Ginzburg & Sag, 2000). These approaches do not straightforwardly explain why
there seem to be island effects under sluicing, as in (3a). Another strand of approaches,
structural approaches as couched in the Generative Framework (e.g., Lasnik, 2001;
Merchant, 2001; Ross, 1969), suggest that there is covert syntax (e.g., after the *wh-*
word in the second conjunct) at some level of representation although no strings of
sounds are pronounced due to ellipsis. Although the island effects point towards the
need for a structural approach, they don't adjudicate between which one. This is one
of the questions this dissertation will tackle.

The first construction-specific property of sluicing I will investigate is the
(in)sensitivity to island violations (e.g., Ross, 1969; Merchant, 2008) (See Section
1.2). Importantly, how sluicing interacts with islands naturally begs the question as to
what the source of sluicing may be. I first address this from an experimental
perspective. The discussion then centers on the questions pertaining to both sluicing
and (extra-)grammatical and processing constraints in language that are argued to
apply under sluicing.

1.1 Source of Sluicing

Different assumptions have been made regarding the syntax of the unpronounced clause. In regular sluicing like in (5), one syntactic form the elided sentence may have (shown in gray) is a parallel structure to the first conjunct (5a) (e.g., Lasnik, 2001). Alternatively, different syntactic forms (e.g., a sentence with the copular verb "to be") are able to convey the same meaning as the first conjunct. Hence, a copular sentence (e.g., "…who that was") is considered to be a possible silent structure under regular sluicing by a strand of structural approaches (e.g., Barros et al., 2014; Merchant, 2001), as in (5b). It has been unsettled what exact syntactic form the source of sluicing in (5) is.

(5)   a. John was talking to someone, but I don't know who John was talking
            to.
        b. John was talking to someone, but I don't know who that/s/he was.

However, the source in contrast sluicing is taken to be required to parallel the syntax of its antecedent clause by all structural accounts, as shown in (6). This is unlike the case of regular sluicing in (5b).

(6)   Jill left early, but I don't know who else left early.

It is often challenging to identify what the form of the silent structure is. Engaging an experimental perspective to the study of sluicing, this dissertation attempts to do this. In Chapter 2, I offer new quantitative evidence suggesting that the silent structure has the same syntax as the first conjunct in contrast sluicing, but not in

regular sluicing, in parallel to (6) and (5b) respectively. The source of sluicing deserves serious attention because syntactic non-isomorphism in regular sluicing, together with the strict isomorphism in contrast sluicing, determines the syntactic form and complexity of the silent structure. This affects how sluicing interacts with constraints in language, one being island constraints.

1.2 Sluicing in Relation to Island Constraints

Starting with Ross (1969), ellipsis/sluicing has been explored in relation to the constraints on movement dependencies – islands. Islands are considered to cause ill-formedness when a *wh* dependency is involved. See a subject island construction in (7a) (i.e., "[stories about __] in the subject position), in comparison to the acceptability of movement of "which monster" out of the same phrase (shown in brackets) in object position (7b).

(7)   a. *Which monster did [stories about __] terrify John?

         b. Which monster did John hear [stories about __]?

Island violations, like in (7a), have been proposed to be *repaired* under regular sluicing (e.g., Merchant, 2001; Ross, 1969). This is based on the acceptability of sentences like in (8), which is taken to involve movement of "which monster" out of a silent subject island (bracketed).

(8)   Stories about a monster terrified John, but I don't know which monster [stories about __] terrified John.

Importantly, this informal observation regarding insensitivity to islands does not hold under contrast sluicing (9) (e.g., Merchant, 2008).

(9)   *Stories about the Sandman terrified John, but I don't know which other monster [stories about __] terrified John.

I offer new experimental evidence verifying the acceptability patterns in (8) and (9) in Chapter 3. With careful consideration, this pattern is actually not surprising, and there is no need for an "island repair" under sluicing: regular sluicing (8) can actually host an unpronounced copular structure (e.g., "…but I don't know which monster that was."), which does not involve any (subject) island violations (see also Barros et al., 2014).

In view of syntactic parallelism in contrast sluicing and its sensitivity to islands (9), Chapter 3 also evaluates the status of subject islands as being grammatical (e.g., Sprouse et al., 2012) or extra-grammatical constraints (e.g., Chaves & Dery, 2014), thus, paves the way for evaluating the status of the island constraints in sluicing environments. I conduct an acceptability experiment, which shows that the acceptability of sentences akin to (9) increases when comprehenders are exposed to similar sentences repeatedly. Replicating the effect of the repeated exposure on increasing the acceptability of subject islands (Chaves & Dery, 2019; Francom, 2009; Hofmeister & Sag, 2010; Snyder, 2000) in a new linguistic setting – under sluicing, this finding collaborates with the growing body of evidence that suggests subject island effects cannot be due to purely structural constraints.

1.3 Processing Constraints under Sluicing

How people comprehend linguistic forms and presumed underlying structures in real-time has been of great interest in sentence processing. However, processing of sentences involving sluicing, especially from a cross-linguistic perspective, has been understudied. Strikingly, not every language always applies the same strategies that English does in linguistic environments where sluicing is attested. Another primary goal of this dissertation is to explore processing of sluicing and sluicing-like sentences in a language different from English, which will be Turkish.

Turkish has sluicing-like sentences (i.e., *pseudosluicing*) which are silenced because of independently attested, language-specific reasons (null subject *pro* and null copula on the *wh* predicate *kim* "who" in (10a)). These are fundamentally different from English-type sluicing that are argued to involve deletion due to ellipsis (10b).

(10)　　a. Ali birin-i　　　ara-dı ama　　kim　　bil-mi-yor-um.
　　　　　Ali someone-Acc call-Pst but *pro* who.Cop know-Neg-Prs-1sg
　　　　　'Ali called someone, but I don't know who (that/(s)he was).'

　　　　b. Ali birin-i　　　ara-dı ama kim-i　　Ali __ aradı
　　　　　Ali someone-Acc call-Pst but　who.Acc
　　　　　bil-mi-yor-um.
　　　　　know-Neg-Prs-1sg
　　　　　'Ali called someone, but I don't know who (Ali called).'

Different from prior experimental work on processing sluicing, I use an experimental paradigm that looks into comprehension of both sluicing and sluicing-

like sentences in Turkish in Chapter 5. I re-evaluate two processing constraints that have been previously attested under sluicing: *Locality* (e.g., Frazier & Clifton, 1998) and *Parallelism* (e.g., Carlson, 2001) constraints. Broadly speaking, Locality guides the resolution of meaning under sluicing toward an object interpretation. In a sentence like "Somebody likes someone, but I don't know who.", pairing the *wh*-word "who" in sluicing with "someone" in object position is preferred over "somebody" in subject position. Another factor that affects processing of sluicing/ellipsis is Parallelism, which simply favors match over mismatch (at structural, morphological, or semantic dimensions) across the two conjuncts under sluicing. Critically, this dissertation makes a novel contribution by showing that Locality is neither language-specific (e.g., attested in Turkish), nor construction-specific (e.g., attested in not only under sluicing, but in minimally different constructions as well.). On the other hand, how Parallelism is operationalized appears to be more complex, and may be language-dependent.

1.4   Overview of the Dissertation

This dissertation engages a cross-linguistic as well as an experimental perspective in the investigation of sluicing and explores how various constraints apply in sluicing(-like) environments both in English, and in a typologically different language, Turkish. First constraint I explore is the subject island constraint in sluicing in English.

However, there is a prior sub-topic that needs examination before investigating subject islands under sluicing. This is the syntactic form that goes unpronounced across regular and contrast sluicing since the island effect is considered to arise in certain structural configurations. Chapter 2 presents a forced-choice, sentence-completion experiment in English that addresses the form of silent structure (i.e.,

source) in sluicing. Findings provide new evidence for a syntactic match in one form of sluicing, contrast sluicing. In the case of regular sluicing, the view that allows varying syntax is supported by the current data.

Chapter 3 presents two sets of acceptability experiments investigating how subject island constraint operates under sluicing. First novel contribution is quantitatively evaluating the subject island (in)sensitivities of regular and contrast sluicing in English. Findings verify the informal observations in the literature. Subject island effect is attested in contrast sluicing, but not in regular sluicing. I next test the grammatical status of subject islands in a new linguistic setting, contrast sluicing. The subject island effect is found to be attenuated as a consequence of a non-structural factor, frequency, suggesting that the island effect in the first place may not be due to structural reasons.

Chapter 3 further reveals that comprehenders find contrast sluicing sentences not as acceptable as minimally different complex sentences in English (e.g., regular sluicing and embedded pronounced interrogatives). Crucially, presenting a prior context story improves the acceptability of contrast sluicing. Chapter 4 explores this newly attested acceptability penalty in contrast sluicing further by entertaining different hypotheses about its sources. I conduct another acceptability experiment here by implementing further contextual manipulations, which establishes that the initial acceptability penalty decreases via supporting discourse level manipulations.

I lastly turn to the investigation of processing constraints Locality and Parallelism as outlined in Section 1.3. Chapter 5 thus reports a self-paced reading study conducted in Turkish. Turkish offers a unique testing ground to examine whether these constraints are peculiar to sluicing/ellipsis. Findings point out that a

more fine-grained approach is needed to better understand the Parallelism constraints, and Locality should be considered beyond the scope of sluicing/ellipsis.

Finally, Chapter 6 summarizes the insights gained in this dissertation through the experimental investigation of sluicing in tandem with constraints in language and recognizes the areas that future work needs to explore.

Chapter 2

THE SOURCE OF SLUICING

2.1   Introduction

Sluicing, first described by Ross (1969), is a type of clausal ellipsis where a *wh*-phrase indeed signals a complete interrogative clause. Sluicing is attested both in matrix clauses, as in B's response in (11), and in embedded clauses, as in (12). My focus will be on constructions like in (12), which constitute 72% of all natural instances of sluicing according to a recent survey (Anand et al., 2021b).

> (11)   A: John was talking to someone on the phone.
>
> B: Really? Who?
>
> (12)   John was talking to *someone* on the phone, but I don't know *who*.

Conventionally, the first clause (i.e., "John was talking to someone on the phone") is called the *antecedent clause*, and the indefinite (i.e., "someone") in the antecedent clause is referred as the *correlate*. The *wh*-phrase in the second clause (i.e., "who") is called the *wh-remnant*. Notice that the correlate and the remnant in the examples above correspond to the same person in the discourse whose identity is unknown.

There are different kinds of sluicing that can be identified based on the properties of the correlate. I will refer to sluicing constructions where the correlate is an indefinite (as in (12)) as *regular sluicing*. The indefinite correlate in regular

sluicing can be a pronominal element (12), or it can be an indefinite Noun Phrase (NP) as in (13).

(13)   John was talking to *a student* on the phone, but I don't know
        who/which student.

Indefinites are the most common correlates in sluicing. As well as an indefinite, it has been shown that the correlate can be a definite expression (Merchant, 2001). Such sluicing constructions where the definite correlate bears the prosodic prominence (e.g., contrastively focus marked) are referred to as *contrast sluicing*.

(14)   a. Abby speaks *Greek*, but I don't know *what other language(s)*.
        b. *Beth* was there, but you'll never guess *who else*.

                                                        (Merchant, 2001:3 (1c))

Notice that in contrast sluicing, the *wh*-remnant involves an extra linguistic element such as "other" or "else", which I call *exceptive modifier* following the previous work (Barros, 2014; Culicover & Jackendoff, 2007; von Fintel, 1994). Unlike in regular sluicing, the correlate and the remnant do not refer to the same entity in contrast sluicing. On the contrary, the exceptive modifier ensures that the potential referent(s) of the remnant to be the other candidate(s) in discourse that is/are distinct from the correlate.

Inevitably, one also notices that the meaning is recovered from silence in sluicing. There appears to be no pronounced strings of words after the *wh*-remnant,

which I refer to as *ellipsis site*. However, the meaning attributed to the ellipsis site intuitively parallels the meaning of the antecedent clause. Consequently, one prevailing question that has attracted a lot of attention on the topic of ellipsis has been what (or if any) syntactic structure may be unpronounced in the ellipsis site. This is spelled out in Merchant (2019) as the *structure* question.

(15)   <u>Structure Question</u>: In elliptical constructions, is there syntactic structure that is unpronounced?

This chapter focuses on the structure question. I will first mention the empirical and conceptual coverage of structural and non-structural approaches to the ellipsis site. Adopting a generative approach that argues for the existence of an unpronounced structure in sluicing, it still appears to be controversial what exact structure may be unpronounced. As the discussion continues, recent observations suggest that the silent structure under regular sluicing does not necessarily need to be syntactically parallel to the structure of its antecedent clause. Contrast sluicing, in contrast, is shown to require a silent structure that is completely isomorphic to the antecedent clause. I present novel quantitative evidence supporting the view that the ellipsis site commonly has the same syntax as its antecedent clause in contrast sluicing, but not in regular sluicing. The implications of such syntactic non-isomorphism will also be considered.

2.2 Is There Silent Structure in Sluicing?

Broadly speaking, approaches to the syntax of sluicing can be partitioned into two categories as structural and non-structural approaches (Merchant, 2019), depending on their answer to the structure question (15). Structural approaches derive the meaning of a sluice in correspondence with some unpronounced syntactic structure that exists at the ellipsis site (Ross, 1969; Merchant, 2001, 2008; Lasnik, 2001; a.o.). In the generative framework, the common view is that sluicing deletes a clausal constituent (TP), as shown in gray ink in (16), except for a wh-phrase that escapes from the ellipsis site via movement/displacement (Merchant, 2001; Ross, 1969; and the work following.).

(16)   John was talking to someone, but I don't [$_{VP}$ know [$_{CP}$ who$_1$ [$_{TP}$ John was talking to t_1]]].

Within this body of approaches, however, it is not agreed upon as to whether the elided structure is always syntactically isomorphic to its antecedent clause, as illustrated above. An alternative structural view, called *evasion approaches*, proposes that the clausal architecture of the ellipsis site is not always required to be structurally parallel to its antecedent clause (e.g., Barros et al., 2014). Evasion approaches argue that the syntax of the elided clause may be variant, one possibility being a copular clause as shown in (17).

(17)   John was talking to someone, but I don't [$_{VP}$ know [$_{CP}$ who$_1$ [$_{TP}$ that was t_1]]].

I will evaluate these two views (as illustrated in (16) and (17)) and syntactic non-isomorphism further in Section 2.3. It should suffice for now to note that both strands of structural approaches advocate for the existence of silent syntax in the ellipsis site.

Non-structural approaches, on the other hand, argue that the intended meaning in sluicing can be achieved without positing any structure in the ellipsis site. More precisely, proponents of the non-structural approach claim that there is no linguistic element that goes unpronounced in sluicing. One view, called as *Direct Interpretation (DI) approach*, assumes that the *wh*-phrase is under one syntactic node, [S], on its own, as the complement of the verb "know" in (18) (Culicover & Jackendoff, 1995; Ginzburg & Sag, 2000). The interpretation of sluicing, according to this view, is achieved via featural properties of the syntactic node that dominates the *wh*-word.

(18)   John was talking to someone, but I don't [VP know [S who]].

A similar non-structural view assumes that there is a silent null element, a *pro-form e*, in the ellipsis site. The meaning of *e* is anaphoric to the antecedent (Barker, 2013; Chung et al., 1995).

(19)   John was talking to someone, but I don't [VP know [CP who [IP *e*]]].

Barker (2013)'s account appears to be more radical in that any form of silent structure in sluicing is dismissed altogether, whereas Chung et al. (1995) argues for a

structure copying mechanism that assigns internal structure of the antecedent clause to

e at LF.

Both structural and non-structural approaches are able to capture observations regarding properties of sluicing. First, as Ross (1969) shows, agreement patterns in sluicing environment indicate that the sluice should have clause-like properties. For instance, a *wh*-remnant that is in the subject position of the embedding verb of a sluice always checks singular agreement on the verb (20).

(20)   He is going to give us some problems, but [CP which problems ___] isn't / *aren't clear.

That singular agreement on the verb *to be* is triggered despite the plurality of the *wh*-remnant ("which problems") in (20) is taken to be an indication of the existence of a silent clause that undergoes agreement with the verb. Structural approaches account for this by pointing that (20) parallels (21), where pronouncing the entire clause requires singular agreement. Hence, singular agreement pattern is taken to follow from the assumption that there is an unpronounced clause underlyingly in sluicing.

(21)   He is going to give us some problems, but [CP which problems he is going to give us] isn't / *aren't clear.

Non-structural approaches account for the agreement pattern by assuming that the remnant occurs under a sentential node (and there is no other linguistic element

than the remnant NP under this node). Sentential subject (i.e., [S]), rather than the remnant itself, checks agreement with the verb; therefore, singular agreement pattern can be explained without the need for positing silent syntax, according to this view.

(22)   He is going to give us some problems, but [s which problems] isn't / *aren't clear.

Second, it has been shown that there are *connectivity effects* that regulate the form of the *wh*-remnant in sluicing. One such observation is case connectivity, as pointed out by Ross (1969) and Merchant (2001)[1]:the *wh*-remnant bears the same case as its correlate. This can explicitly be observed in languages that have morphological case marking. German examples below illustrate that the *wh*-remnant must bear a case in parallel to its correlate; otherwise, unacceptability. In (23a), the indefinite correlate bears the dative case as the argument of the verb "to flatter". Following the case connectivity, the *wh*-remnant "who" must bear the same case: the dative marked form of the remnant, *wem,* fulfils the case matching condition, whereas the accusative marked form *wen* causes a mismatch, resulting in ill-formedness. Similarly, if the correlate has accusative case as the argument of the verb "to praise", as in (23b), then the accusative marked remnant *wen* is the legitimate form rather than *wem*.

---

[1] As well as sluicing that exhibits case connectivity, there are well-attested "sluicing-like" constructions where case connectivity seems to fail (Merchant, 1998). Merchant and the subsequent work consider such instances as not genuine sluicing constructions; hence, the term *pseudosluicing*. More recently, Barros (2014) broadens the use of the label pseudosluicing by involving sluices with a copular source cross-linguistically. I reserve the term pseudosluicing for certain copular sources attested in pro-drop languages that involve a silent pronoun, a *wh*-in-situ phrase, and a silent copula (see Chapter 5 for pseudosluicing in Turkish).

(23)   a. Er will   jemandem   schmeicheln, aber sie wissen nicht *wen

He wants someone.Dat flatter   but   they know not *who.Acc

/ wem.

/ who.Dat

'He wants to flatter someone, but they don't know who.'

b. Er will   jemanden   loben, aber sie   wissen nicht wen

He wants someone.Acc praise but   they know   not   who.Acc

/ *wem.

/ *who.Dat

'He wants to praise someone, but they don't know who.'

(Ross, 1969:18 (4,5))

Case connectivity has been argued to follow from the assumption of the structural approaches that the ellipsis site contains articulate (yet unpronounced) syntax. More precisely, an unpronounced case assigner in the ellipsis site, akin to the case assigner in the antecedent clause, can easily capture the case connectivity. Case connectivity is thus taken to be an indication of a "local" relation (between a silent head in the ellipsis site and the remnant) by structural approaches. On the other hand, the view that there is no silent structure under sluicing argues for a non-local licensing mechanism. Nykiel & Kim (2022), for instance, propose a direct interpretation approach where the argument structures of lexical heads in the antecedent clause are suggested to be accessible to fragments, via their correlates. Hence, non-structural approaches consider case connectivity effect as an outcome of a "non-local" relation where the morphosyntactic information of the correlate is inherited by the remnant.

Structural and non-structural approaches both appear to have the tools to explain agreement patterns and case matching. There are, however, further connectivity effects that appear to be captured by structural approaches, but not by non-structural approaches. Binding connectivity is one of them. As an argument for the existence of an unpronounced structure under clausal ellipsis, Lasnik (2001)[2] and Yoshida et al. (2019) provide data showing that binding effects, which normally arise under certain structural configurations in pronounced sentences, are active under sluicing. Yoshida et al. (2019) show this in *stripping*: a type of clausal ellipsis in which both the correlate (*Bill*) and the remnant (*Mary*) are contrastively focused NPs (24). In stripping, coreference of a pronoun in the antecedent clause (i.e., "she") and the name, or the R-expression, in the ellipsis site (i.e., Mary) causes unacceptability (24a) (rated 2.4 (out of 7)). This is unlike its counterpart in (24b) where the coreference between a name in the antecedent clause and a pronoun in the ellipsis site is acceptable (rated 4.8/7).

(24)　　a. Joe: She$_1$ said the manager assigned the job to *Bill*.

　　　　　　Bill: *No, to *Mary1* [she$_1$ said the manager assigned the job __].

　　　　b. Joe: Mary$_1$ said the manager assigned the job to *Bill*.

　　　　　　Bill: No, to *her$_1$* [Mary$_1$ said the manager assigned the job __].

　　　　　　　　　　　　(Yoshida et al. 2019; exs 13a and 13b respectively)

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[2] See Section 2.3.1. for a brief discussion of and challenges to the binding connectivity effects as put forth by Lasnik (2001).

Yoshida et al. (2019) argues that the unacceptability in (24a) is due to the violation of the Binding Condition C: R-expressions cannot be coreferential with a c-commanding antecedent, they must be free (Chomsky, 1981). In (24a), the pronoun in the ellipsis site ("she" in gray) c-commands "Mary" in its reconstructed (i.e., gap) position, hence binds the R-expression, violating Condition C. Compare this with (24b), where the R-expression is structurally higher than the pronoun in its reconstructed/ gap position; therefore, it is free, and no violation of the Condition C. Importantly, as Yoshida et al. (2019) show, this pattern parallels the acceptability of non-elliptical counterparts of these sentences, as shown in (25a) (rated 2.4/7) and (25b) (rated 5.6/7).

(25)   a. Joe: She$_1$ said the manager assigned the job to *Bill*.

        Bill: *No, she$_1$ said the manager assigned the job to *Mary$_1$*.

      b. Joe: Mary$_1$ said the manager assigned the job to *Bill*.

        Bill: No, Mary$_1$ said the manager assigned the job to *her$_1$*.

                      (Yoshida et al. 2019; exs 18e and 18f respectively)

Considering that Condition C violation, thus unacceptability in (24a), occurs due to the structurally higher position of the pronoun relative to the R-expression in the ellipsis site (akin to (25a)), binding connectivity data as above poses a challenge for non-structural approaches that argue against the existence of such structure in the ellipsis site. Recall that non-structural approaches advocate for a non-local relation between the antecedent clause and the remnant. It is, therefore, not evident how they

could successfully capture the data bearing on binding connectivity, which is an instance of a local relation.

Notice further that the diverge on the view of locality and its role in sluicing also leads to crucial differences in how structural and non-structural approaches see the relation of sluicing with islands. I will discuss this briefly in the next subsection (Chapter 3 explores sluicing in relation to (subject) islands in a more detailed manner).

2.2.1 Sluicing and Islands

Island constructions are traditionally considered to be certain environments out of which extraction of a linguistic element is disallowed (Ross, 1967). For instance, extraction of an NP from another NP in object position is well-formed (26a), whereas the same operation appears to cause unacceptability, when the extraction is from another NP in subject position (26b), known as the subject island effect (Chomsky, 1973).

(26)   a. Who$_1$ did you hear [NP stories about t_1]?
        b.*Who$_1$ did [NP stories about t_1] terrify John?

Crucially, informal observations in the literature indicate that regular sluicing and contrast sluicing do not interact with islands in the same manner, which I will call "differential island effects under sluicing". Island effect is not attested in regular sluicing environment as first noted by Ross (1969), and shown in (27a). This has led to the view that sluicing is "island insensitive", as opposed to the island sensitivity of its pronounced, non-elliptical counterpart (27b) (Chung et al. 1995; Lasnik 2001; Merchant 2001; a.o.).

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(27)   a. Stories about a mythical character terrified John, but I don't know

[which mythical character]₁ [NP stories about t₁] terrified John.

b.*Stories about a mythical character terrified John, but I don't know

[which mythical character]₁ [NP stories about t₁] terrified John.

Curiously, island insensitivity does not hold in contrast sluicing (28) as observed in Merchant (2008) and the work following.

(28)   *Stories about the Sandman terrified John, but I don't know [which

other mythical character]₁ [NP stories about t₁] terrified John.

Structural approaches account for the differential island effects under sluicing either by suggesting a selective repair strategy under ellipsis (e.g., Merchant, 2005, 2008), or by claiming that the ellipsis site in regular sluicing, where the island effect is inactive (e.g., (27a)), indeed involves an alternative, no island violating silent syntax (e.g., Barros et al., 2014). Non-structural approaches, on the other hand, do not currently have the tools to account for the differential island effects under sluicing, in particular, island sensitivity of contrast sluicing as in (28). Rather, they characterize sluicing as being *always* immune to the island effect (e.g., Barker, 2013; Sag & Nykiel, 2011), and argue that the lack of island effect in sluicing is exactly as predicted by the non-structural approaches because they assume that remnants are directly generated.

More recent work on ellipsis observes the island sensitivity in other types of contrastive clausal ellipsis as well (e.g., Griffiths & Lipták, 2014), indicating that the

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differential island effects under sluicing is highly likely to be genuine. Based on these grounds, I henceforth pursue a structural approach to sluicing, as couched in the generative syntactic framework (as suggested in Merchant 2001 and the subsequent work) since such an approach seems to be better equipped to capture the observations regarding locality effects under sluicing, and the interaction of sluicing with constraints on *wh*-dependency formation (i.e., islands). At the same time, I highlight that the questions I address throughout this dissertation can actually give useful insights to both structural and non-structural approaches to sluicing, noting that the nature of the island effect itself is also controversial as will be addressed further in Chapter 3.

2.3 On the Nature of the Structure in the Ellipsis Site

Although structural approaches agree that there must be unpronounced syntax in the ellipsis site, it is not settled whether the elided structure is syntactically isomorphic to its antecedent clause. A deletion operation is generally assumed to apply under some identity (parallelism) condition in sluicing, which also affects if/how much syntactic non-parallelism may be allowed across the antecedent clause and the elided clause. I will hence discuss two different approaches to the structure in the ellipsis site next (i.e., syntactic isomorphism vs non-isomorphism), accompanied by their identity assumptions when necessary.

2.3.1 Syntactic Isomorphism under Sluicing

Starting with Ross (1969), several researchers have assumed that there is a "strict" syntactic identity requirement in sluicing. This means that the elided clause is

structurally isomorphic to the antecedent clause, and it involves the same lexical forms as in the antecedent clause, as illustrated before, and repeated in (29) for convenience.

(29)   John was talking to someone, but I don't [$_{VP}$ know [$_{CP}$ who$_1$ [$_{TP}$ John was talking to t_1]]].

In particular, approaches to sluicing that view ellipsis as a form of phonological reduction and assume reconstruction or copying of the syntax of the antecedent clause in the ellipsis site (e.g., Chung et al., 1995; Fiengo & May, 1994; Rooth, 1992) require the syntax of the antecedent clause and the ellipsis site to be *strictly* isomorphic.

Strict syntactic isomorphism under sluicing, however, is challenged in more recent work. Merchant (2001) proposes an influential theory of sluicing, following the spirit of Rooth (1992) and Schwarzschild (1999), and endowed with a generative syntax. To put simply, Merchant suggests that ellipsis is a feature (i.e., [E]) at the head of the inflectional node (i.e., C^0) which hosts the *wh*-remnant in its specifier position. [E] licenses the deletion of the TP complement (a.k.a. the ellipsis site) at PF, resulting in non-pronunciation. The elided TP must be *e-GIVEN*. *e-GIVENness* is a semantic condition, and it simply requires the elided TP to be in a mutual entailment relation with the antecedent clause. The identity is calculated via *focus closure* (i.e., f-closure: replacing the focus marked parts of a clause with variables and existentially closing the result, see Merchant (2001)) of the antecedent clause (TP$_A$) and the elided clause (TP$_E$). How *e-GIVENness* is calculated for the example in (29) is shown in (30).

(30) [John was talking to someone] = TP_A = F-closure (TP_A) = $\exists x$. John was

talking to x.

[John was talking to who] = TP_E = F-closure (TP_E) = $\exists x$. John was

talking to x.

Since the antecedent clause [John was talking to x] entails the TP in the ellipsis

site [John was talking to x], and vice versa, *e-GIVENness* is met in (30), and TP_E can

get deleted under sluicing according to Merchant's theory. Importantly, strict syntactic

isomorphism as in Rooth's sense is not required by *e-GIVENness* as it is a semantic

condition.

Merchant (2001) further presents data which shows that sluicing is licensed in

certain environments where a parallel, but not strictly isomorphic, structure is

understood to be deleted, as illustrated in (31).

(31) a. I remember meeting him, but I don't remember when [I met him].

($\neq$ #when [(I remember) meeting him].)

b. John seems to me to be lying about something, but I don't know what

[he is lying about].

($\neq$ #what [he seems to me to be lying about].)

According to Merchant (2001), examples as in (31) should incorrectly be

dismissed by the strict isomorphism view because in (31a), for instance, a non-

isomorphic gerund form "meeting him" fails to license the deletion of a finite clause "I

met him". However, such sluices as in (31a-b) are acceptable and can be licensed

following Merchant's *e-GIVENness account* if, critically, TP_A is considered to be a sub-part of the first clause (e.g., "[$PRO_{[I]}$ meeting him (at a certain time)]" in (31a), "John/he is lying about something" in (31b)).

At the same time, it has been more recently shown that a purely semantic identity condition that licenses sluicing, such as *e-GIVENness,* overgenerates: some form of syntactic identity condition (e.g., supplementing a semantic or a pragmatic identity condition) is argued to be required in sluicing (Chung, 2006, 2013; Merchant, 2013). This has been motivated by examples like (32a-b), where an active-passive voice mismatch between the antecedent clause and the ellipsis site is disallowed.

(32)   a. *Kelly was murdered, but we don't know [$_{CP}$ who$_1$ [$_{TP}$ t_1 murdered Kelly]].

b. *Someone murdered Kelly, but we don't know [$_{CP}$ by who$_1$ [$_{TP}$ Kelly was murdered t_1]].

(Chung 2013; exs 5a and 5b respectively)

e-GIVENness is met in (32a-b) in that active and passive forms are mutually entailing each other, but the sluices are not legitimate. Therefore, a supplementary syntactic identity condition that disallows licensing of such sluices as in (32a-b) has been proposed, which is commonly formulated as a ban on argument structure mismatch between the antecedent clause and the ellipsis site (Chung 2006, 2013; Merchant 2013)[3]. At its core, such a syntactic identity condition requires the argument

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[3] Notice once again that non-structural approaches (e.g., Nykiel & Kim 2022) also take the nontrivial role of the argument structure match into account, especially to

structure of the predicate in the antecedent clause and the argument structure of the predicate in the ellipsis site to match. Importantly, the domain of the syntactic identity calculation is taken to be the predicate (e.g., Rudin, 2019), allowing for higher inflectional head mismatches.

Critically, natural occurrences of sluicing in a recently developed sluicing dataset also suggest that mismatches in the inflectional domain must be allowed (Anand et al., 2021a, 2021b). Anand et al. (2021b) attested 4,700 instances of sluicing in English. Among the mismatches between the antecedent clause and the elided content, there report instances of tense mismatch (involving cases as in (33a)) and modality mismatch (as illustrated in (33b)).

(33) a. Everyone exhibits it, of course. People misplace their keys. [They enter a room] only to realize they don't know why [they enter-ED THAT ROOM].

b. And then you get (Pam) Shriver finding a bald man standing at the fence with a giant-sized tennis ball in his hand, asking, '[Would you sign my ball]?' So, she darted her red eyes from his head to the ball: 'Which one [MODAL I sign]?'

(Anand et al., 2021b; exs 25 and 30c respectively)

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explain the patterns of case connectivity, and formulate it as feature inheritance from the correlate, based on a non-local licensing mechanism.

Syntactic non-isomorphism to a certain degree appears to be allowed in this strand of approaches: they permit mismatches at the inflectional domain (e.g., tense/aspect/mood), but they still require structural parallelism below TP level (e.g., argument structure mismatches are not tolerated). Therefore, these approaches, which supplement sluicing licensing mechanism with a syntactic identity condition based on the argument structure congruence (e.g., Merchant, 2013), are still considered to be proponents of the syntactic isomorphism view. Apparent supporting evidence for syntactic isomorphism comes from the interaction of sluicing with binding as put forth in Lasnik (2001), and from the licensing of parasitic gaps in sluicing (Yoshida et al., 2015), both of which I will evaluate next.

First, Lasnik (2001) adopts the syntactic isomorphism view, and asserts that it is the right approach based on the binding relations in sluicing environment as shown in (34).

(34) Every$_i$ linguist met a philosopher who criticized some of his$_i$ work, but I'm not sure [$_{CP}$ [how much of his$_i$ work]$_1$ [every$_i$ linguist met a philosopher who criticized t_1]].

The *wh*-remnant in (34) involves a bound pronoun, "his", which is argued to require a c-commanding quantifier to be interpretable. The argument goes that the ellipsis site must involve a quantifier to bind the variable (i.e., the *wh*-remnant) in its reconstruction site (i.e., trace position). This follows naturally if the elided TP is syntactically isomorphic to the antecedent clause that contains such a c-commanding quantifier, "every".

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However, the availability of bound reading in sentences like (34) being evidence for the existence of a syntactically isomorphic structure in the ellipsis site has been challenged in (Barros, 2014a). Crucially, Barros shows that the bound pronoun interpretation does not solely depend on the existence of a c-commanding binder. The same interpretation holds even when such a binder is missing in an alternative nonelliptical clause, as illustrated in (35).

(35)   Every$_i$ linguist met a philosopher who criticized some of his$_i$ work, but I'm not sure [$_{CP}$ [how much of his$_i$ work]$_1$ [the philosopher criticized *t$_1$*]].

Contra Lasnik (2001), who argues that (35) is missing a bound variable reading, Barros (2014a) reports that out of seven native speakers consulted informally, four of them found no difference in terms of the availability of bound reading between (34) and (35), two people preferred (35) rather than (34) for bound pronoun interpretation, and one speaker preferred (34). Given that (35) also has the bound pronoun interpretation despite the lack of a c-commanding quantifier, Barros argues against binding relations' (as in (34)) being strong evidence for the syntactic isomorphism view.

Yet a more recent argument in favor of syntactic isomorphism comes from the licensing of parasitic gaps (PGs) in sluicing environment (Yoshida et al., 2015). Yoshida and colleagues examine sluicing sentences as in (36) and claim that the gap (PG2) in the *wh*-remnant is a parasitic gap which requires a real gap to be licensed.

(36)   The editor told me which book I must review __RG1 soon after

receiving __PG1, but I don't remember [exactly how soon after receiving

__PG2].

<div align="right">(Yoshida et al., 2015: 1443, (12a))</div>

According to Yoshida et al. (2015), the parasitic gap (PG1) in (36) is licensed
by a real gap (RG1) left by the movement of [which book] in the antecedent clause.
They argue that the parasitic gap contained in the *wh*-remnant (PG2) also requires a
real gap in the ellipsis site to be licensed. It follows naturally if there is a real gap left
by the movement of [which book] (RG2) (before ellipsis applies), as illustrated in
(37)[4]. Yoshida et al. takes this as evidence that the elided structure under sluicing must
be a syntactically isomorphic structure to its antecedent clause.

(37)   The editor told me which book I must review __RG1 soon after

receiving __PG1, but I don't remember [exactly how soon after receiving

__PG2] [TP the editor told me which book I must review __RG2 __RG3].

Yoshida et al.'s argument is based on two critical assumptions that need to be
addressed; (i) PGs require a real gap to be licensed as summarized above, and (ii) a

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[4] RG3 corresponds to the trace left by the *wh*-remnant itself. Unelided version of (37)
is unacceptable since it violates a *wh*-island, which does not constitute a problem
when sluicing applies since regular sluicing is insensitive to the islands. The
interaction of sluicing with islands will be discussed further in the next chapter.

non-isomorphic pronounced structure in the ellipsis site, as shown in (38), is taken to be unacceptable.

(38)   *The editor told me which book I must review ___RG1 soon after receiving ___PG1, but I don't remember [exactly how soon after receiving ___PG2] [TP I must review it].

(Yoshida et al., 2015: 1444, (13a))

Moving forward, I will challenge both assumptions. First, it has been shown that a gap can occur on its own in environments where PGs occur, without any other gap in the construction, as illustrated in (39) (Chaves, 2013).

(39)   a. Which report did Kim go to lunch [without reading ___]?
         b. What did he fall asleep [complaining about ___]

(Chaves, 2013: 8, (12b, c))

Accordingly, the gap within the *wh*-remnant (PG2) in (36) does not necessarily require another gap to be licensed. This brings us back to the possibility that a non-isomorphic structure as in (38) can indeed be the unpronounced structure in the ellipsis site. Yoshida et al. dismiss this possibility by stating that (38) is an unacceptable sentence. However, I highlight that the unacceptability of (38) is controversial, especially in comparison with constructions like (36), which Yoshida et al. focus on by implying that they are fully acceptable. To supplement Yoshida et al.'s informal judgements, I further consulted eight native speakers of English, and found out that the

acceptability of (38) is quite high (average: 4.3/5); indeed, it seems to be higher than the acceptability of sluicing in (36) (average: 2/5)[5]. This, coupled with the observation that such gaps as in (36) can actually be licensed without the existence of another gap (as in (39)), weakens Yoshida et al.'s arguments for strict structural parallelism under sluicing, and points that the unpronounced sentence in the ellipsis site could indeed be a sub-part of the antecedent clause. This is compatible with the view that the ellipsis site does not have to involve a completely isomorphic syntax to its antecedent clause, which is originally defended in Merchant (2001). I will next discuss the non-isomorphism view, which argues for the possibility of having more drastic structural and lexical differences between the antecedent clause and the ellipsis site.

2.3.2 Syntactic Non-isomorphism under Sluicing

An alternative view to the syntax of the ellipsis site argues that a non-isomorphic structure can be a possible underlying structure in sluicing, as originally proposed in Merchant (2001) and advocated further mostly by evasion approaches (e.g., Barros et al., 2014). This view suggests that the syntactically isomorphic structure is only one of the available silent structures; a syntactically non-isomorphic structure may as well be the source of a sluice (i.e., target of deletion) as long as it is felicitous and the intended meaning is recoverable as regulated by semantic and/or pragmatic conditions (Barros, 2014a, 2014b; Barros et al., 2014; Griffiths, 2019; Vicente, 2008). Focus-based semantic conditions such as Merchant's e-GIVENness

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[5] A more through quantitative investigation of the constructions that are discussed in Yoshida et al. (2015) is needed to better understand if sluicing actually allows such gaps that are considered as parasitic, as in (35). I leave this for future research as the focus here is not particularly on those constructions.

(see also Barros & Kotek, 2019) or "QUD"-based conditions that calculate parallelism over a question under discussion (Barros 2014a, 2014b; Griffiths, 2019) are compatible with the view which permits syntactic non-isomorphism. Important for our purposes, such conditions are loose enough to allow structural non-parallelism between the antecedent clause and the ellipsis site.

What is taken to be a potential non-isomorphic ellipsis source is commonly decided based on the presumed structure's being a felicitous continuation when pronounced. The source expresses the intended meaning of the sluice. As contemplated so far in the literature, a non-isomorphic silent structure may be (i) a short source, which parallels an embedded clause under the antecedent clause (40), (ii) a cleft (involving reduced clefts whose head (a.k.a. "it" in (41)) is an E-type pronoun) (41), or (iii) a copular clause (42) (see Barros et al. 2014 for a more detailed discussion).

(40)   Jack heard that Sally is dating someone, I wonder who [Sally is dating] (= short source)

　　(cf. who [Jack heard [that Sally is dating]]) (= isomorphic long source)

(41)   Jack heard that Sally is dating someone, I wonder who [it is (that Sally is dating)] (= cleft)

　　(cf. who [Jack heard [that Sally is dating]]) (= isomorphic long source)

(42)   Jack heard that Sally is dating someone, I wonder who [(s)he/that is] (= copular source)

　　(cf. who [Jack heard [that Sally is dating]]) (= isomorphic long source)

A short source is a syntactically isomorphic sub-part of the antecedent clause, as illustrated in (40); it could potentially be the source of the sluice when the antecedent clause involves clausal embedding, and the embedded clause hosts the correlate. Similarly, a (reduced) cleft can as well be the source of a sluice as in (41). Clefts, or reduced clefts whose pivots act like E-type pronouns, are first suggested as potentially elided structures under sluicing in Merchant (2001). Merchant mentions that an atomic source involving a reduced cleft as in (41) can still satisfy a semantic (or pragmatic) identity condition and license sluicing because the pronoun "it" behaves like an E-type pronoun whose interpretation covaries depending on the correlate and its antecedent clause. Accordingly, in (41), the pronoun "it" refers to "the unique person that Sally is dating" - thus satisfies the identity requirement. Last but not least, a copular clause which involves a pronoun as its subject and the *wh*-remnant as its predicate could also serve as the source of a sluice. The meaning of the subject pronoun in a copular source (i.e., "(s)he" or "that" in (42)) is anaphoric to the meaning of its antecedent, akin to the case of the reduced clefts. Therefore, a copular source can also correspond to the intended meaning of a sluice and is likely to be a potentially elided structure under sluicing.

Growing body of support for a looser structural parallelism requirement that permits a syntactically non-isomorphic silent structure under sluicing comes from various domains, including cross-linguistic observations (Barros, 2014b, Rodrigues et al., 2009; van Craenenbroeck, 2010; Vicente, 2008; a.o.). Rodrigues et al. (2009), for instance, propose that a cleft, rather than an isomorphic structure, serves as the ellipsis source under certain sluicing constructions in Spanish and Brazilian Portuguese. These constitute environments where a preposition is not expected to be stranded (a.k.a.

deleted) under sluicing otherwise, following the *P-stranding generalization* which permits prepositions to be deleted under sluicing only if they can be stranded under regular *wh*-movement (see Merchant, 2001). Rodrigues et al. show that prepositions do not survive deletion under sluicing in Spanish (43a), yet the non-elliptical, interrogative counterpart of the isomorphic structure where the preposition is stranded is ill-formed (43b).

(43) a. Juan ha hablado con una chica, pero no sé cuál.

  Juan has talked with a girl but not know which

  'Juan has talked with a girl, but I don't know which.'

  b.* ¿Qué chica ha hablado Juan con?

   what girl has talked   Juan with

   Int: 'Which girl has Juan talked with?'

                    (Rodrigues et al., 2009; exs 4b and 4a respectively)

Therefore, Rodrigues et al. propose that a non-isomorphic silent structure, a (reduced) cleft (44), can better explain the preposition stranding illusion in Spanish.

(44) Juan ha hablado con una chica, pero no sé cuál [TP es [DP la chica

  Juan has talked with a girl but not know which   is   the girl

  [RC con la que ha   hablado Juan]]]].

   with the that has talked   Juan

  'Juan has talked with a girl, but I don't know which.'

                    (Rodrigues et al., 2009; ex (6b))

Further support for the flexibility of the syntax of the elided structure comes from *p or q sluices* as investigated in Barros (2014b). Barros, following AnderBois (2011), suggests that p or q sluices, where the correlate involves two disjoined clauses (e.g., Either TP$_X$ or TP$_Y$), must be analyzed as having a non-isomorphic elided structure as in (45), and states that "…it is difficult to see how isomorphism could ever be achieved…" in these cases (Barros, 2014b:50).

(45)   Either something's burning, or Sally's baking a cake, but I don't know which.

        Plausible continuations: {it is /is true /is the case /is happening /etc.}

                                                                (Barros, 2014b:50, (2.55a))

Barros further shows that case connectivity does not hold under p or q sluices in languages that morphologically mark the case, such as German in (46). He considers the correlate (i.e., the two disjoined TPs) as not of a case-bearing category, whereas the remnant bears the nominative case, hence compatible with a silent cleft structure.

(46)   Entweder etwas   brennt oder Marie backt einen Kuchen, aber ich weiβ
        Either   something burns or   Mary bakes a   cake but I   know
        nicht, welches von beiden (es ist).
        not   which   of.the two (it is).
        'Either something is burning, or Mary is baking a cake, but I don't
        know which of the two (it is).'

                                                                (Barros, 2014b:51, (2.56))

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Another argument for the necessity of non-isomorphic (cleft) sources under sluicing is presented in Weir (2014) –the example attributed to Matthew Barros. Weir (2014) points out that the source of the grammatical sluice in (47a) can be the non-isomorphic cleft structure in (47b-i), and crucially, not the isomorphic structure in (47b-ii). This is because "I don't know who left" would cause a contradiction as the speaker already stated in the antecedent clause that they do know that Jack left.

(47)   a. Jack left and someone else did too, but I don't know who.

          b. (i) … but I don't know who [it was].

             (ii)*… but I don't know who [left].

<div align="right">(Weir, 2014:148, (307))</div>

All in all, it appears that the syntactic mismatch between the ellipsis site and its antecedent clause is not solely limited with the structural mismatches at the inflection domain. Non-isomorphic sources, which exhibit a greater amount of structural mismatch with the antecedent clause, are substantially required under sluicing. Note, however, that not all types of sluicing are compatible with a non-isomorphic ellipsis source. Although alternative non-isomorphic sources can be the silent structure under regular sluicing as discussed so far, there are certain instances of sluicing where non-isomorphic ellipsis sources are not as readily available. One such environment is the case of contrast sluicing. I will discuss this in the next section.

2.3.3   Contrast Sluicing and Isomorphism

Recall from the introduction that contrast sluicing is an instance of sluicing with a definite, contrastively focused correlate, and a *wh*-remnant followed by an exceptive modifier (e.g., else, other), as repeated in (48) for convenience.

(48)   a. Abby speaks *Greek*, but I don't know what *other* language(s).

b. *Beth* was there, but you'll never guess who *else*.

Even though it has been a matter of debate whether *regular* sluicing requires a syntactically parallel structure as its source, structural isomorphism is commonly believed to hold in *contrast* sluicing. Proponents of the view which argue for the elision of alternative non-parallel structures under regular sluicing mostly agree with the adherents of the syntactic isomorphism view in that the silent structure in contrast sluicing most naturally corresponds to a structure that is syntactically parallel to the antecedent clause (Barros, 2014b; Barros et al., 2014; Griffiths, 2019). Indeed, structural parallelism has been attested in all instances of contrastive clausal ellipsis (Barros, 2014a; Griffiths & Liptak, 2014; Weir, 2014, and see Yoshida et al., 2019 for quantitative evidence in the case of contrastive fragments), with "exceptions" as I will discuss momentarily.

The natural question is, then, what requires structural isomorphism to be more robust in the case of contrast sluicing? The common idea is that non-isomorphic sources are typically unavailable in contrast sluicing due to information structural reasons (Barros, 2014a; Griffiths, 2019; Weir, 2014, 2017). For Barros (2014a), for instance, the focus-background structure of the antecedent clause and the ellipsis site has to match for well-formedness in contrastive ellipsis (including contrast sluicing).

Therefore, an alternative short source (similar to (40)) is argued to be infelicitous

under contrast sluicing as the focus value of the ellipsis site is not congruent with the

focus value of the antecedent clause. Consider (49) to see how this focus-background

constraint works in the environment of fragment answers. According to Barros

(2014a), the fragment answer *[Christine]F* can only be licensed via a syntactically

isomorphic felicitous source as in (49B), whereas a non-isomorphic short source as in

(49B') is incongruent; semantically, its focus value does not match with the focus

value of the antecedent clause.

(49) A: Who does Jack think Sally hates?

B: [Christine]$_{1F}$ [Jack thinks Sally hates t_1].

{Jack thinks Sally hates x: x ϵ D$_{<e>}$} = {Jack thinks Sally hates x: x ϵ

D$_{<e>}$}

B': [Christine]$_{1F}$ [# Sally hates t_1].

{Jack thinks Sally hates x: x ϵ D$_{<e>}$} $\neq$ {Sally hates x: x ϵ D$_{<e>}$}

(Barros, 2014a; ex (11))

The subsequent work builds on the argument that the non-isomorphic sources

are infelicitous sources in sluicing when they yield to mismatching or incongruous

focus-background structure between the antecedent clause and the ellipsis site (Barros,

2014b; Weir, 2014, 2017; Griffiths, 2019). This mostly precludes the existence of a

non-isomorphic source under sluicing, unless, as mentioned in Griffiths (2019), there

is a pronoun in the short source that is interpreted like an E-type pronoun.

Accordingly, one way to overcome the focus-background constraint, and to have a

non-isomorphic ellipsis source, appears to be via the use of E-type pronouns in the ellipsis site that co-refer to a phrase in the antecedent clause. Such non-isomorphic sources are able to license contrastive ellipsis as long as the remnant is predicative (e.g., "short" in (50), see Barros et al. 2014 for a more comprehensive overview of similar cases), and the ellipsis source semantico-pragmatically matches with an implicit question raised after "No" (i.e., a Question-Under-Discussion, *QUD*), as shown in (50). The meaning of the elided E-type pronoun "he" corresponds to the phrase "her new boyfriend" in the antecedent clause (judgments are Griffiths').

(50)   A: Her new boyfriend is a *tall* man.

B: No, [*short*]$_{1F}$ [he (=her new boyfriend) is t_1].

(Implicit) QUD: *What is he (=her new boyfriend), then?*

(Griffiths, 2019: 23, (73))

Critically, such E-type pronouns are most naturally licensed when there is an indefinite in the antecedent clause as in (51a). When this option is controlled for, for instance, by making sure that the existential presupposition is not met via the use of "no one" as the head of the relative clause as in (51b), then having an E-type pronoun in the ellipsis source is not an option (see (51b, B)). Notice further that the contrastive ellipsis is not acceptable in this case, and this is because the isomorphic source causes unacceptability due to an island violation in (51b, B').

(51)   a. A: Did they hire someone who speaks French?

   B: No, [German]$_{1F}$ [s/he (=the person they hired) speaks t_1].

   b. A: Did they hire no one who speaks French in 2013?

   B: *No, [German]$_{1F}$ [#s/he speaks t_1 / it was t_1].

   B': *No, [German]$_{1F}$ [they hired no one [who speaks t_1] in 2013].

(Barros et al., 2014; ex (171) and (172))

I once again note that this is unlike the case of regular sluicing, where a structural mismatch appears to be more freely allowed. Importantly, the observation that contrast sluicing mostly disallows non-isomorphic structure as its source appears to be due to the properties of contrast sluicing environment that cumulatively makes it less appropriate for deriving non-isomorphic alternative sources (see Barros et al., 2014). One critical factor appears to be the nature of the correlate: an indefinite correlate in regular sluicing, contra a typically definite correlate in contrast sluicing, can easily license an E-type pronoun in the upcoming discourse, hence non-isomorphic ellipsis sources.

2.4   The Present Study

The purpose of the current study is to quantitatively investigate what structure may be unpronounced in regular and contrast sluicing. Although diverse evidence appears to indicate that structural parallelism is unlikely to be a strict requirement in regular sluicing as opposed to contrast sluicing, no prior study has attempted to provide direct quantitative evidence for this distinction. One reason for this empirical gap is that it is essentially not easy to test what kind of material is unpronounced under

ellipsis. Previous experimental work on sluicing has therefore made use of pronounced continuations to sluicing sentences in their research to address the questions regarding the unpronounced structure in the ellipsis site (Yoshida, Dickey, et al., 2013; Yoshida, Lee, et al., 2013). This seems intuitive and tenable, especially considering that formal research also takes the focus value or felicity of potential non-elliptical continuations into consideration when discussing the source of a sluice (Barros et al., 2014; Dayal & Schwarzschild, 2010; Merchant, 2001; a.o.). Within the same spirit, the current study presumes that a pronounced felicitous continuation mirrors the structure that undergoes deletion under sluicing; hence, non-elided counterparts of the target sluicing sentences are utilized. The aim is to look into the structure in the ellipsis site through a sentence completion task to test its nature under regular sluicing and contrast sluicing.

The main goal is to see whether the sentence continuations in the experiment, which parallel the silent structures in the ellipsis site, change depending on the type of sluicing, as predicted by the proponents of the non-isomorphism approach. To be more precise, the non-isomorphism approach predicts the structure in the ellipsis site to be typically parallel to the structure of its antecedent clause under contrast sluicing, but this should not be a strong requirement in the case of regular sluicing. According to this view, a structurally non-isomorphic continuation (e.g., an alternative copular source) is predicted to be allowed in the case of regular sluicing. The syntactic isomorphism view, on the other hand, always predicts structural parallelism between the antecedent clause and the sentence continuations, regardless of the sluice type.

The secondary goal in this study is to explore whether the availability of the source in sluicing is sensitive to the grammatical position of the correlate. Position of

the correlate has been argued to affect the interpretation of sluicing such that there is a processing advantage when the correlate is in object position (i.e., "object advantage" or "object bias" as first noted by Frazier & Clifton (1998). See Chapter 5 for an in-depth discussion and re-examination of this effect.). However, whether the correlate's position influences the type of structure under sluicing is a novel question. I thus stay agnostic about any possible outcome, highlighting that this may be an interesting new avenue to research in sluicing environment, especially considering the pivotal role of subjecthood and the subject-object asymmetry on other types of dependency relations in language. The grammatical role of the correlate and any potential effect of this on the source of a sluice is also relevant for the next phenomenon to be discussed in Chapter 3, *subject islands*, as subject-object contrast is a pertinent factor on subject islands.

2.4.1   Methods

2.4.1.1   Design and Materials

A three-alternative forced choice (3AFC) sentence completion experiment was conducted to explore which structure the ellipsis site hosts in regular and contrast sluicing. Following a 2x2 within-subjects design, sixteen critical item sets were created by crossing Sluice Type (regular sluicing; contrast sluicing) with the grammatical Position of the NP correlate as subject or direct object (NP_{subj}; NP_{obj}). Within this design, test sentences involved complex English sentences either in regular sluicing (e.g., with an indefinite NP correlate, *a(n) x* in the antecedent clause, followed by a *wh*-phrase, *which x,* in the potential sluice) or in contrast sluicing form (e.g., with a definite NP correlate, *(the) x*, followed by a *wh*-phrase, *which other x*).

After each sentence in the experiment, three options were presented as a potential continuation. Table 1 illustrates sample stimuli in four conditions followed by three options presented (See Appendix A for the complete list of items).

Table 1: Sample stimuli in four conditions crossing sluice type (contrast vs regular sluicing) and the position of the correlate (subject vs object), followed by three options presented.

Condition	Stimulus
Regular-Subj	A superhero amazed Mike, but his mother cannot recall which superhero…
Contrast-Subj	Captain America amazed Mike, but his mother cannot recall which other superhero…
Regular-Obj	Mike loved a superhero, but his mother cannot recall which superhero…
Contrast-Obj	Mike loved Captain America, but his mother cannot recall which other superhero…
Options	a) …that was. *Copular (non-isomorphic) continuation*
	b) …amazed Mike (b'. …Mike loved.) *Isomorphic continuation*
	c) …the fun were. *Ungrammatical distractor*

Among the three options presented, one option involved a copular clause in the form of a pronoun "that", followed by a copular verb (i.e., "that is", "that was"). Recall that copular clauses are considered to be one of the alternative non-isomorphic structures in the ellipsis site under sluicing (Vincente, 2008; Barros et al., 2014; a.o.).

In the present study, "that" was used as subjects in copular clauses rather than "it" to prevent ambiguity; "it" in this environment may as well be the subject of a reduced cleft (Barros et al., 2014) rather than a simple copular clause. Using "it" rather than "that" could have introduced undesirable complexity to the stimuli; hence, the non-isomorphic copular continuation option consistently involved "that". I highlight that "that" is interpreted e-typily in this environment (Merchant, 2001; Barros et al., 2014): its interpretation is anaphoric to the meaning of the antecedent clause, which basically corresponds to the meaning of a relative clause headed by a definite NP derived from the correlate. To illustrate, "that" in option (a) in (50) is interpreted as "the (unique) superhero that amazed Mike" in Regular-Subj condition.

As shown in Table 1, another continuation in the experiment (i.e., option (b)) involved a syntactically isomorphic source that mimicked the structure and the lexical forms in the antecedent clause. Because antecedent clauses were created as simple English sentences with a transitive verb and its core arguments, isomorphic continuation options had the same transitive verb as in the antecedent clause in addition to that verb's internal or external NP argument, both repeated as they appeared in the antecedent clause. Note that there were no substantial length nor complexity differences between the isomorphic and non-isomorphic continuation options in the experiment.

Along with these two options that correspond to the potential sources under sluicing, an ungrammatical continuation was added in the third option (see the option (c) in Table 1), which served as a distractor. The response variable was the option chosen for each stimulus.

Eight filler sentences were added to the critical stimuli. The fillers included complex English sentences conjoined by "but" and ended with an adjunct *wh*-word; "why" or "when", as in (52). Similar to the critical stimuli, three potential continuation options presented for filler sentences involved a copular continuation as well as a non-copular continuation and an ungrammatical distractor.

(52)   Sample Filler

A school trip is coming up, but parents still don't know when…
a) …that is. ➔ *Copular continuation*
b) …the students are leaving. ➔ *Non-copular continuation*
c) …arriving the bus. ➔ *Ungrammatical distractor*

All stimuli were fit in a Latin-square design and pseudorandomized to ensure that no more than three critical items were presented adjacently, and no two critical items of the same condition were presented consecutively during the experiment. Presentation order of the three options was also pseudorandomized so that participants would not be biased towards picking a certain option.

2.4.1.2   Participants

Forty native speakers of English were recruited on Amazon's Mechanical Turk (MTurk) to complete the study online. Participants were master workers who were independently qualified by MTurk based on their high-quality performance on various tasks. The location was restricted with the United States. Participants self-reported as

native speakers of English. Compensation was not contingent on their language background; all participants were paid 2 dollars in exchange for their participation.

2.4.1.3   Procedure

The experiment was created by using the online software PCIbex Farm (Zehr & Schwarz, 2018) and conducted on MTurk. Participants read and accepted a disclaimer approved by the University of Delaware Human Subjects Review Board before starting the experiment. Participants were instructed to read sentences that would appear on their screen and pick the option that best fits to complete the sentences. Three practice trials were included at the beginning of the experiment so that participants would get used to the task. No feedback was given. The task took approximately fifteen minutes to complete.

2.4.2   Results

Trials where the participants picked the ungrammatical distractor (0.52 % of all trials) were filtered. This left us with 637 critical trials for analysis. The dependent variable was whether participants picked the isomorphic continuation or not. Therefore, the results were transformed where isomorphic continuation option was coded as "1", and copular continuation option was coded as "0".

Descriptively, results show that the isomorphic continuation option was chosen with a proportion of 0.92 for all trials involving contrast sluicing; 0.91 with NP_{subj} correlates, and 0.92 with NP_{obj} correlates. This observation is predicted; all structural approaches to sluicing agree that contrast sluicing most naturally hosts an isomorphic structure that gets deleted under ellipsis. For regular sluicing conditions, however, a different pattern was observed. The proportion of choice of isomorphic continuation

was found to be 0.2 in regular sluicing conditions. Another notable finding is that the position of the NP correlate had a larger impact in the choice of the source in regular sluicing; the isomorphic source was chosen with a proportion of 0.13 when the indefinite NP correlate was in subject position, whereas it was 0.26 when the correlate was in object position. Figure 1 illustrates these results.
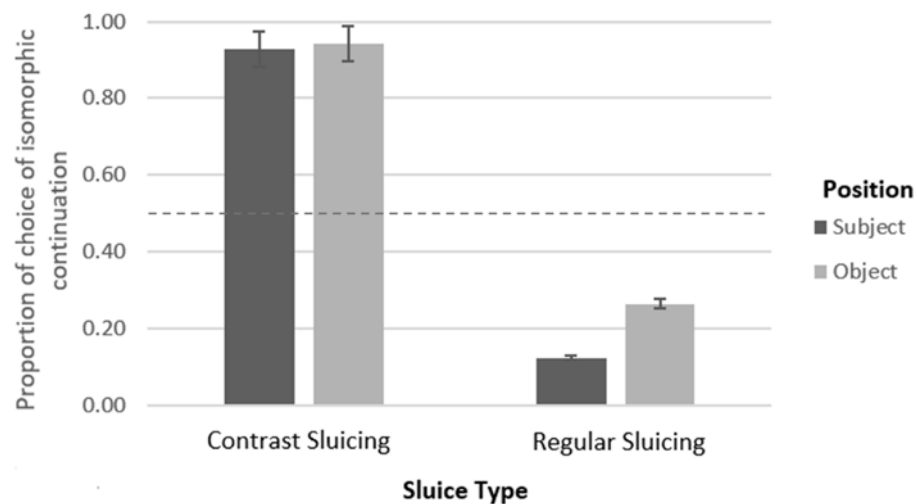
Figure 1: Proportion of choice of isomorphic continuation across contrast sluicing and regular sluicing. The dashed line represents the chance level (i.e., 50%).

Since the dependent variable of the present study is binary, the remaining proportion of choices (the reverse of the pattern in Figure 1) corresponds to the copular continuation responses. This means that the copular continuation was chosen more often than the isomorphic continuation in regular sluicing, with a proportion of 0.8, suggesting that regular sluicing may indeed have a non-isomorphic source. Notice that NPsubj correlates increased the likelihood of the choice of copular continuation in

regular sluicing (0.87 with NPsubj vs 0.74 with NPobj correlates), which is illustrated as a decrease in the proportion of choice of isomorphic source in Figure 1.

To scrutinize these patterns, the data was fitted to a 2x2 logistic mixed-effects regression model with crossed random effects for participants and items for analysis (Baayen et al., 2008). The analysis was conducted in *R* using the *lme4* package (R 3.4.4: Bates, Mächler, et al., 2015). The predictors *position* and *sluice type* were sum coded. The first coefficient contrasted sentences involving NP_{subj} correlates (given a value of 1/2) with the ones with NP_{obj} correlates (given a value of -1/2). The second coefficient contrasted regular sluicing (1/2) with contrast sluicing (-1/2). I started with the maximal random effects structure that converged and simplified the model by dismissing random slopes that did not significantly improved it. I report the results of the most parsimonious model (Bates, Kliegl, et al., 2015) which also corresponded to the maximal model that converged for this data set. The final model included random slopes for *sluice type* and *position* and their intercept for participants, and random slopes for *sluice type* and *position* for items. The results of this model are presented in Table 2.

Table 2: Results of the logistic mixed-effects regression model.

EFFECT	β	*SE*	*z*	*p*
Sluice Type (Regular vs Contrast Sluicing)	-7.89	1.48	-5.35	$9.01e^{-08}$
Position (Subject vs Object correlate)	-1.65	1.12	-1.48	0.14
Sluice Type X Position	-5.46	2.65	-2.06	0.03

The analysis revealed that Sluice Type was a significant predictor in participants' source choice; the isomorphic continuation was chosen significantly more in contrast sluicing conditions compared with the regular sluicing (0.92 vs 0.2; β = -7.89, SE = 1.48, z = -5.35, $p < .0001$). There was no significant effect of Position (0.53 vs 0.58; β = -1.65, SE = 1.12, z = -1.48, $p = .14$). The interaction of Sluice Type and Position was significant (β = -5.46, SE = 2.65, z = -2.06, $p = .03$). To unpack the interaction, planned comparisons were conducted to examine the effect of Position on each level of Sluice Type (predictors were re-coded following West et al., 1996). Note that the intercept is meaningful in understanding the results of the planned comparisons as its significance indicates the proportion of choice of isomorphic source was significantly different from the chance level (i.e., 50%, see the dashed line in Figure 1) for that subset of data, because 0 corresponds to 0.5 (or 50%) in logit space.

I report the results of two planned comparisons for each level of the Sluice Type, contrast sluicing and regular sluicing conditions. First planned comparison model showed that the isomorphic continuation option was picked significantly above chance level in contrast sluicing conditions: this is indicated by the intercept for the logistic regression model for this subset of the data (0.92; β = 4.07, SE = 0.72, z = 5.69, $p < .001$). The grammatical position of the NP correlate was not found to be a significant factor in the proportion of choice of the isomorphic continuation in contrast sluicing (0.91 vs 0.92; β = -1.17, SE = 0.73, z = -1.6, $p = .1$).

Second planned comparison model showed that the isomorphic continuation was chosen significantly <u>below</u> chance level in regular sluicing; the pattern was in the opposite direction as indicated by the negative values of the intercept of the model (0.2; β =-3.65, SE = 1.07, z = -3.4, $p < .001$). Recall that the regular sluicing

conditions showed a reverse pattern in terms of the proportion of the continuation choice by favoring a copular continuation over an isomorphic continuation (0.2 vs 0.8, the opposite of the pattern in Figure 1). The analysis further showed that the grammatical position of the correlate was a significant predictor in choosing the isomorphic continuation in regular sluicing (β =-4.4, SE = 1.95, z = -2.26, p = .02) such that the isomorphic continuation was chosen significantly less when the indefinite NP correlate was in the subject position compared to when it was in the object position (0.13 vs 0.26). The opposite pattern is that the NP_{subj} correlates significantly increased the likelihood of the copular continuation compared to the NP_{obj} correlates in regular sluicing conditions, which is observed as a decrease in the proportion of choice of isomorphic continuation in Figure 1.

2.4.3   Discussion

The results show that regular sluicing and contrast sluicing pattern differently regarding the syntax of the ellipsis source. In sentences compatible with a potential contrast sluicing construction, the continuations that parallel the structure in the antecedent clause are found to be the preferred continuations (92% of all). This provides experimental evidence for the common structural view in the literature that the elided structure in contrast sluicing is most naturally isomorphic to the structure of its antecedent clause.

The present study also offers new evidence supporting that a copular clause can be a potential ellipsis source under regular sluicing. Copular clauses are found to be legitimate structures that are chosen as potential continuations to the sentences compatible with regular sluicing in the present study. This is predicted by the syntactic non-isomorphism approach, but not by the isomorphism approach. Alternative copular

structures were attested as felicitous continuations in 80% of all instances of regular sluicing. A possible interpretation of this finding is that a non-isomorphic (copular) source is not only tolerated under regular sluicing, but indeed preferred over a syntactically isomorphic source. I will discuss this further in Section 2.5.

Another notable finding is that there is a significant contrast between sentences with subject NP correlates and object NP correlates in regular sluicing. Subject correlates increased the likelihood of choosing a copular continuation, "that was", in sentences compatible with regular sluicing, compared with the object NP correlates (with a likelihood of .87 vs .74, as shown in (53a-i) and (53b-i)). Complementarily, object correlates increased the likelihood of the isomorphic continuation, which repeats the verb and "Mike" (.26 vs .13, as shown in (53b-ii) and (53a-ii)).

(53)   a. A superhero amazed Mike, but his mother cannot recall which
        superhero…
        (i) … that was. (*.87*)
        (ii) … amazed Mike. (*.13*)

        b. Mike loved a superhero, but his mother cannot recall which
        superhero…
        (i) … that was. (*.74*)
        (ii) … Mike loved. (*.26*)

The pattern shown in (53) may reflect the cumulative effects of the two NP arguments: the indefinite correlate "a superhero" and the other NP argument of the verb "Mike". Basically, I propose these findings (i) suggest that there is a subject

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advantage in interpreting the copular source, and (ii) verify the saliency of object arguments- as opposed to subjects- in "sluicing-like" settings.

First, recall that the copular continuation option involved an E-type pronoun "that". In this environment, "that" is interpreted like a relative clause whose head roughly corresponds to the correlate. Accordingly, in (43a-i), "that" should be interpreted e-typily as "the superhero that amazed Mike.", which is a subject relative clause (SRC). The correlate "a superhero" is the subject of the antecedent clause. Similarly, in (43b-i), "that" should be interpreted as "the superhero that Mike loved.", which is an object relative clause (ORC), and the correlate "a superhero" is the object of the antecedent clause. Results show that speakers prefer constructing meanings for E-type pronouns that involve subject relatives over those that involve object relatives (.87 vs .74). I suggest this parallels the subject advantage in processing dependency relations in similar linguistic environments (e.g., in processing Relative Clauses (e.g., King & Just, 1991), in pronoun resolution (e.g., Gordon et al., 1993), in *wh*-comprehension (e.g., Donkers et al., 2013). Most relatedly, there is a well-attested "subject advantage" in processing relative clauses, such that SRCs are processed more easily compared to ORCs (see King & Just, 1991). Crucially, attesting a similar subject advantage with a copular source (involving an E-type pronoun) in sluicing environment is a new finding, and that the grammatical position of the correlate's having an impact on the *syntax* of the ellipsis site is not predicted by theories of sluicing or ellipsis, to the best of my knowledge.

Second, notice that an isomorphic source, which repeats the linguistic material in the antecedent clause, is preferred *less* when there is a repeated name – a referential NP (i.e., "Mike") in the object position compared with the subject position (with a

likelihood of .13 vs .26, as shown in (53a-ii) and (53b-ii)). It has long been proposed that repeated names are not preferred when their antecedent NP is a highly *accessible* or *salient* entity in the discourse (Ariel, 1990; Arnold, 2010; Gordon et al., 1993). As the saliency of an NP increases, it is expected to be referred to by a syntactically and semantically more impoverished form of anaphora rather than a richer (e.g., informationally more loaded, see Almor, 1999) form, otherwise incurs a processing cost known as the Repeated Name Penalty (RNP). Note that, in general, subject NPs are considered to be more salient linguistic entities than object NPs (Ariel, 1990; Grosz et al., 1995; Keenan & Comrie, 1977), hence typically, repeating a subject NP is predicted to be penalized more compared with repeating an object NP according to the RNP. The current results appear to be the opposite at first look: repeating an object NP is *less* preferable in sluicing environment (53a-ii). I suggest this finding is indeed in compliance with the RNP if the focus is on the concept of "salience", rather than the mere subject-object contrast. Critically, under sluicing, it has been independently argued that the most salient NP correlates are the object NP correlates, which leads to the so-called "object bias": correlates in object position are processed easier (Frazier & Clifton, 1998). Accordingly, in sluicing environments, repeating a more salient object NP ("Mike" as the object as in (53a-ii)) is naturally less preferable compared with repeating a subject NP ("Mike" in (53b-ii)).

All in all, the current study offers quantitative evidence supporting the view that a syntactically non-parallel structure is readily available as an ellipsis source in regular sluicing, but not in contrast sluicing. This is predicted by the non-isomorphism approach in that alternative non-parallel structures are permitted under regular

sluicing, whereas contrast sluicing requires strict syntactic parallelism. I will discuss the implications of non-isomorphism under sluicing further in the next section.

2.5   General Discussion: Implications of Non-isomorphism

Proponents of the non-isomorphism slightly differ in how they see the availability of non-isomorphic sources under sluicing. Starting with Merchant (2001), non-isomorphic sources have been considered as exceptional cases, and non-isomorphism is suggested to be "a last resort strategy" to save a legitimate sluice which would otherwise be unacceptable with an isomorphic source (Craenenbroeck, 2010). Vicente (2008), for instance, suggests non-isomorphic copular structures in the ellipsis site in Spanish are marked instances of ellipsis source that are licensed in certain environments, whereas isomorphic source is considered to be an elsewhere structure. On the other hand, Barros (2014b) contends that non-isomorphism is not special, rather it can be a general, readily applicable strategy under sluicing. Considering ample evidence supporting the commonality of as well as the requirement for the non-isomorphic source under sluicing (see Section 2.3.2), Barros's view appears to be justifiable. The results of the present study are compatible with this view since non-isomorphism is found to be not only tolerated, but also favored under regular sluicing, by consisting of 81% instances of all chosen sentence continuations.

One potential argument against this conclusion is that copular continuations may overall be advantageous as sentence continuations after a *wh*-phrase, regardless of being a sluicing source or not. The human parser may independently prefer a copular clause structure in a continuation sentence, as a processing strategy. To evaluate such an argument and see the overall effect of the copular verb and the pronominal NP on the choice of the sentence continuations, I turned to the filler

sentences of the present study. I conducted a further analysis on the filler sentences to see whether a copular clause is generally preferred over clauses with a non-copular verb, following a *wh*-phrase. Recall that filler sentences involved an adjunct *wh*-word, followed by a copular continuation or a non-copular continuation (see (52)). The non-copular continuation was chosen 72% of all instances of potential continuations for the fillers. The analysis showed that the non-copular continuation was picked as the continuation sentence above the chance level (i.e., 50%; $\beta = 1.97$, $SE = 0.98$, $z = 2.02$, $p = 0.04$). Therefore, it is warranted that a copular continuation is *not* generally preferred after a *wh*-phrase, but it is specifically preferred over a structurally parallel continuation in sentences compatible with regular sluicing. Accordingly, a theoretical view where deletion of both isomorphic and non-isomorphic sources are considered to be instantiations of the same ellipsis mechanism (see Barros 2014b) may indeed be a conceivable approach.

The nature of the structure under sluicing, more specifically, the availability of a non-isomorphic source, has also far-reaching consequences regarding the mechanisms that interact with this (unpronounced) structure. In line with the non-isomorphism, which is further evidenced by the current study, the view that it could be an option for regular sluicing to evade an island violating structure by positing a non-isomorphic source (see Barros et al., 2014; Merchant, 2001) appears to be tenable. This brings us to the second important topic in this dissertation, *subject islands*, which will be explored in Chapter 3.

Chapter 3

SLUICING AND ISLANDS

3.1   Introduction

Languages exhibit dependency relations where a *wh*-word, or a filler, appears at a place in the sentence which is not the location in which it receives its thematic interpretation. In generative syntax, the *wh*-filler is assumed to have undergone movement from its thematic merge site to the front of the clause, leaving a trace (i.e., *t*) or a *copy* behind. This is referred to as displacement or extraction, in the sense that the filler is displaced/extracted from a gap site (i.e., __). Such dependency relations can be long-distance. *Wh*-movement, for instance, can be very long-distance and cross clause boundaries as in (54a) where the *wh*-word "what" is extracted from its initial merge position in the embedded clause and fronted, but still gets interpreted as the internal argument of the verb "afford" in the gap site. Compare it with (54b) where "this expensive watch", the internal argument of "afford", does not undergo movement.

> (54)   a. What did Jamie hear [that Bill can afford __]?
>
> b. Jamie heard [that Bill can afford this expensive watch].

Long-distance dependencies, as in (54a), however, are not unrestricted. Since Ross's (1967) seminal work, certain syntactic configurations are considered to be *islands* in that the extraction of elements out of such domains are banned. Island

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constructions that make the movement illicit can be propositional (i.e., involving clause boundaries). Relative clauses (55a) and adjuncts (55b) are of this kind (island domains are bracketed).

(55) a. *Which language does Abby want to hire the candidate [who speaks __]?

b. *Which appetizer will Ben be angry [if you don't try __]?

There are also island constructions that are non-propositional (i.e., involving non-clausal phrase boundaries), such as subject islands, which will be the focus of the current study. Notice that although it is possible to displace an NP by extracting it from another NP in the object position (56a), the same mechanism appears to cause unacceptability when the extraction is from a complex subject NP (56b) (e.g., Chomsky, 1973).

(56) a. Who did you hear [stories about __]?

b. *Who did [stories about __] terrify John?

This contrast leads to *subject island constraint* which disallows the dependency formation when the extraction domain is a complex subject NP (56b). In the generative literature, subject island effect has been attempted to be explained by structural constraints, akin to other islands. However, whether island effects occur due to grammatical constraints (i.e., constraints on movement), or due to cognitive

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constraints that arise as a consequence of extra-grammatical, processing factors has still been unsettled.

Many attempts have been made to characterize the nature of island effects, including subject islands as in (56b). *Formal approaches* argue that island effects arise due to constraints on the syntactic operations forming the long-distance *wh*-dependencies (e.g., Phillips, 2006; Sprouse et al., 2012; Wagers & Phillips, 2009). *Functional approaches*, on the other hand, suggest that there is no principled reason to think the island effects should be part of the syntax. The functional approaches explain island effects based on some other extra-grammatical factors, such as processing difficulty (Hofmeister & Sag, 2010;Hofmeister et al., 2013; Kluender & Kutas, 1993) and/or discourse (pragmatic) factors (Abeillé et al., 2020; Chaves & Dery, 2019; Deane, 1991; Erteschik-Shir, 1973; a.o.).Certain observations such as the gradient acceptability of island violations, cross-linguistic variations regarding the island effect, and the frequency effect that improves the acceptability of island violations have been taken as indications that island effects cannot be due to constraints in the underlying syntactic representations of these configurations.

Island violating dependency relations have been experimentally tested to shed light on this discussion (Abeillé et al., 2020; Chaves & Dery, 2014; Chaves & Dery, 2019; Kush et al., 2018; Pham et al., 2020; Sprouse et al., 2012; a.o.). A common method has been to utilize acceptability judgment ratings to compare island violating structures with long-distance dependencies where there is no island violation. There is, on the other hand, one non-negligible challenge that experimental (e.g., acceptability rating) studies of islands face: island involving structures commonly constitute linguistic environments that independently incur extra processing costs due to various

reasons, which contributes to the unacceptability (see Culicover et al., 2022). Island constructions involve dependency formation with the intervening syntactic nodes and intervening NPs that consume memory resources (e.g., Hofmeister & Sag, 2010). It is, therefore, crucial to eliminate various extra-grammatical processing pressures in testing island effects in order to be able to see the real reflection of the island violations on acceptability (see particularly Hofmeister & Sag, 2010).

Accordingly, I explore subject island effects under sluicing in this chapter. Recall that sluicing constructions involve deletion of a clause, except for a *wh*-phrase. Sluicing may thus offer us a less costly environment for processing owing to the non-pronunciation at the ellipsis site. It has been suggested that the island effects may arise due to the "pronounced" syntactic structure. Island violating structures are deleted under ellipsis in sluicing, and this has been suggested to "repair" the island violations, making island-involving sluicing constructions acceptable (e.g., Ross, 1969; Merchant, 2001).

At first look, however, sluicing exhibits a puzzling behavior in relation to islandhood, which I will refer to as "differential island effects under sluicing". In the literature, regular sluicing with an indefinite correlate is taken to be insensitive to island effects, as shown with a relative clause island in (57a). However, the island effect is argued to be active in contrast sluicing where the correlate and the remnant are contrasted (57b), hence, unacceptability (Merchant, 2008).

(57) a. Abby wants to hire someone [who speaks *a Balkan language*], but I
      don't know *which Balkan language*.

      b. *Abby wants to hire someone [who speaks *Greek*], but I don't know
      which other language(s).

The acceptability pattern in (57) is based on the informal judgments reported in the literature and has not yet been tested in a controlled environment. Therefore, I first aim to quantify the differential subject island effects under sluicing. The goal is to reevaluate whether the contrast sluicing sentences involving a subject island (i.e., having a complex NP involving the correlate in subject position) are actually degraded, as in (58b), whereas their regular sluicing counterparts are expected to be acceptable (58a).

(58) a. [The costume of *a superhero*] used to amaze Megan's children, but
      she cannot recall [*which superhero*].
      b.*[The costume of *Captain America*] used to amaze Megan's children,
      but she cannot recall [*which other superhero*].

Two views stand out to account for such differential island effects under sluicing, *repair* and *evasion* approaches, which will be discussed further in Section 3.3. Crucially, both of these approaches appear to consider islands as structural constraints (e.g., Sprouse et al., 2012). However, as mentioned above, island effects have alternatively been attributed to non-structural factors, more specifically to discourse and pragmatic factors in the case of subject islands (e.g., Abeillé et al., 2020;

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Chaves, 2013 ; Chaves & Dery, 2019; Deane, 1991). Hence, if the differential subject island effects are experimentally attested, the second goal will be to further investigate the nature of the subject island effects in sluicing environment.

All in all, this chapter investigates the differential island effects under sluicing by using subject islands, and further explores the grammatical status of the subject island constraint in sluicing environment. I will first evaluate two different approaches (formal and functional approaches) to the island effects, focusing on the subject islands. The discussion will continue with the observations regarding the differential island effects under sluicing (and ellipses), and the two approaches that try to explain this behavior: *repair* and *evasion* approaches. Importantly, island effects are taken to be due to structural constraints by both of these approaches, whereas it is still controversial whether non-structural (e.g., pragmatic) factors can be the underlying factor. With these in mind, I first quantify the differential subject island effects under sluicing (section 3.4), providing new evidence for the contrast as in (58a) and (58b). Taking the sentences that the subject island effect is experimentally attested, I conduct another acceptability experiment to investigate (i) the role of context on the acceptability of contrast sluicing, and (ii) the grammatical status of subject islands in contrast sluicing environment. Section 3.5 discusses this experiment, which offers supporting evidence for the functional view to islands because the subject island effect attenuates as a function of repeated exposure. I will, finally, discuss the broader implications of the findings regarding sluicing in relation to subject islands.

3.2   Formal and Functional Approaches to Islands

Island effects are commonly viewed to arise as a consequence of structural violations in the generative approach. Following the same insights, *formal approaches*

consider island effects as "categorical" effects that arise due to constraints on the movement. Subject islands are not an exception (Chomsky, 1973, 1977 ; Huang, 1982; a.o.). Several experimental studies have provided supporting evidence for subject islands' being a grammatical constraint by showing that sentences that violate subject island constraint receive lower acceptability ratings compared to control structures, and the subject island effect cannot be attenuated (Crawford, 2011; Pham et al., 2020; Sprouse, 2009; Sprouse et al., 2012; Wagers & Phillips, 2009). Relatedly, Phillips (2006) found that a gap cannot be posited within a subject island by the parser during online language processing.

However, whether the island constraints are actually structural constraints that are part of the grammar is debatable. *Functional approaches* consider island effects as "gradient" effects that arise due to extra-grammatical factors, such as contextual and probabilistic (i.e., expectation-based) factors. This view commonly claims that the subject island effects arise due to discourse structure and pragmatic anomalies (Abeillé et al., 2020; Erteschik-Shir, 1973; Goldberg, 2013; Kuno, 1987; a.o.). Accordingly, the subject island effect has been argued to occur as a consequence of extra processing costs that cumulatively arise from discourse-related "expectation failures" and non-syntactic factors that contribute to the processing difficulty (e.g., Chaves, 2013 ;Chaves & Dery, 2014 ; Deane, 1991) rather than structural constraints that disallow movement out of a complex NP subject.

More recently, ample experimental evidence supporting the functional view has been accumulated. I will focus on the case of subject islands for the purposes of the current study. For instance, pragmatic relevance has been shown to play a crucial role in the acceptability of subject island violating sentences. When the extracted *wh-*

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phrase from the complex subject NP is pragmatically relevant to the main assertion denoted by the verb, the subject island violating sentences have been shown to become acceptable (Chaves, 2013; Chaves & Dery, 2014; Chaves & King, 2019; Deane, 1991). See the acceptable sentences in (59) which involve extraction of *wh*-phrases from complex subject NPs (Chaves & Dery (2019) attributes these sentences to Chaves (2012) and Hofmeister & Sag (2010), respectively).

(59)   a. Which President would [the impeachment of __] cause outrage?

         b. What did [the attempt to find __] end in failure?

(Chaves & Dery, 2019: 481 (9a-b))

Critically, it has been further shown that the acceptability of subject island violating sentences increases with repeated exposure (Chaves & Dery, 2014; Chaves & Dery, 2019; Francom, 2009; Hofmeister & Sag, 2010; Snyder, 2000)[6]. Known as the *satiation effect*, the amelioration on acceptability as a consequence of frequency has been taken to be an indication that the original degradation cannot be due to grammatical constraints. Chaves & Dery (2014), for instance, attested that subject island violating sentences as in (60) satiated: they became more acceptable as comprehenders read more sentences of this type.

_____

[6] See Sprouse (2009) and Crawford (2011) for contradictory experimental evidence (i.e., the lack of satiation effect in subject islands), and Chaves & Dery (2014) for potentials reasons that explain why the stimuli in those studies may not have showed attenuation.

(60)   a. Which politician did [opponents of __] organize a protest?

b. Which problem will [the solution to __] never be found?

(Chaves & Dery, 2014: 99 (10a), 101 (12a))

Furthermore, Chaves & Dery (2019) show that the subject island effect completely disappears with repeated exposure when symmetrical verbs are used in the stimuli (e.g., "resemble"), across the control sentences (61a) and subject island violating test sentences (61b).

(61)   a. Which country does the King of Spain resemble [the President of __]?

b. Which country does [the President of __] resemble the King of Spain?

(Chaves & Dery, 2019: 484 (14a-b))

The formal view, which considers the subject island effect as a consequence of the violation of a grammatical constraint, cannot explain the aforementioned attenuation and complete amelioration effects because such acceptable subject island violations (e.g., sentences in (59) - (61)) still involve the same structural configuration (i.e., a Complex NP subject) that is predicted to ban extraction. Variations in acceptability judgments are thus linked to the extra-grammatical factors by the functional view. These factors are suggested to be related to discourse and pragmatics, causing extra processing difficulty (Chaves, 2013; Culicover et al., 2022; Hofmeister, Arnon, et al., 2013; Kluender & Kutas, 1993; a.o.). The focus in this chapter will be on

such extra-grammatical costs that may increase the processing burden and cause the subject island effects.

3.3   Sluicing and Islands

If one assumes that sluicing is akin to regular *wh*-movement, only with an unpronounced clausal complement, sluicing is then expected to be constrained by the same sets of rules that regulate the *wh*-movement. Recall, for instance, the P-stranding Generalization (Merchant, 2001) mentioned in Chapter 2 – preposition omission under sluicing is allowed in a language only if that language allows prepositions to be stranded in regular *wh*-movement. Similarly, one expects a constraint that holds in *wh*-movement to be active under sluicing as well. Hence, according to the structural view, an island effect is expected to emerge under sluicing when the antecedent clause has an island structure which embeds the correlate.

Notice first that both regular and contrast sluicing can involve an antecedent deeply embedded in their antecedent clauses (62a-b). This indicates that the extraction of the *wh*-remnant in the ellipsis site can, in principle, cross over clause boundaries.

(62)   a. The principle said [Mr. Anderson talked to *a student*], but I don't

know *which student*.

b. The principle said [Mr. Anderson talked to *Abby*], but I don't know

which other student.

When an island structure is involved, however, regular and contrast sluicing respond to it differently. Regular sluicing is known to be immune to the island effects (Chung et al., 1995; Lasnik, 2001; Merchant, 2001; Ross, 1969), as shown with

Relative Clause Island in (63a). This is unlike contrast sluicing in (63b), which is degraded with islands (Merchant, 2008). Antecedent clauses in both sentences in (63) involve a relative clause island, as indicated by [RC], which is expected to create an island effect in the unpronounced ellipsis site. However, the island effect is observed in contrast sluicing (63b), but not in regular sluicing (63a).

(63)   a. Abby wants to hire someone [RC who speaks a Balkan language], but I don't know which Balkan language₁ [TP she wants to hire someone [RC who speaks t₁]].

b.*Abby wants to hire someone [RC who speaks Greek], but I don't know which other language₁ [TP she wants to hire someone [RC who speaks t₁]].

The unacceptability of contrast sluicing involving islands as in (10b) has been noted with other island structures as well. This is shown below with an adjunct island (64a). Contrast sluicing sentence in (a) is taken from Barros et al. (2014), minimally different one in (b) is created for comparison with regular sluicing, and the sentence in (c) illustrates that this environment is actually an island to *wh*-movement. Notice once again that the island effect is differential in (64): adjunct island causes unacceptability in (c), as in the case of contrast sluicing in (a), but crucially, no island effect in regular sluicing (b).

(64)   *Adjunct islands*

a. *Ben will be angry [if you don't try *the cake*], but I don't know *what else*.

<div style="text-align: right">(Barros et al., 2014: 20, (90))</div>

b. Ben will be angry [if you don't try *an appetizer*], but I don't know *which appetizer*.

c. *I don't know *which appetizer* [Ben will be angry [if you don't try ___]].

Such differential island sensitivity of contrast and regular sluicing has also been attested with non-propositional islands, as in the case with coordinate structure island (65).

(65)   *Coordinate structure islands*

a. *They expect [Cameron and *the Select Committee*] to meet next week, but I don't know *which other committee*.

<div style="text-align: right">(Barros et al., 2014: 20, (93))</div>

b. They expect [Cameron and *a committee*] to meet next week, but I don't know *which committee*.

c. *I don't know *which committee* they expect [Cameron and ___] to meet next week.

One can add subject islands to the (non-propositional) island environments where two types of sluicing once again exhibit differential island sensitivity. Regular

sluicing with a complex NP in subject position, which involves the correlate (i.e., [the costume of *a superhero*] in (66b)), appears to be well-formed. However, its contrast sluicing counterpart in (66a) is unacceptable, akin to (66c). This shows that the subject island effect is active in contrast sluicing.

(66)   *Subject islands*

a. *[The costume of *Captain America*] used to amaze Megan's children, but she cannot recall *which other superhero*.

b. [The costume of *a superhero*] used to amaze Megan's children, but she cannot recall *which superhero*.

c. *Megan cannot recall *which superhero* [the costume of __] used to amaze her children.

As proposed so far, there are two accounts that explain such differential island effects under sluicing, which originally differ in their view of syntactic parallelism. One view, known as *repair approaches* (e.g., Merchant, 2008), argues that the elided clause involves an isomorphic, island violating structure in both regular and contrast sluicing. Ellipsis operation is proposed to repair island violations in regular sluicing, but not in contrast sluicing. Alternatively, *evasion approaches* (e.g., Barros et al., 2014) adopt a more flexible view of structural isomorphism (see Chapter 2) and argue against a special island repair mechanism in sluicing. As non-isomorphism is allowed under regular sluicing, the elided clause can indeed involve an alternative non-island violating structure, resulting in no actual island violation. In contrast sluicing, however, the elided clause is syntactically isomorphic to its antecedent, which

ultimately causes the island effect. I will elaborate on these approaches in the subsequent sections, focusing on how they see the subject island effects under sluicing.

3.3.1   Repair Approaches

Repair approaches to island effects under sluicing assume that the source of sluicing is syntactically isomorphic to its antecedent clause: the syntactic structure of the antecedent clause is believed to be repeated in the ellipsis site. Accordingly, the sentence in (66b) (repeated below (67) for convenience) is assumed to have a subject island violating dependency link formed in the elided clause shown in grey ink. The island violation, however, is not reflected as an acceptability degradation under regular sluicing. On the contrary, such sluicing sentences as in (67) have been noted to be acceptable sentences (e.g., Ross, 1969).

(67)   [The costume of *a superhero*] used to amaze Megan's children, but she cannot recall [*which superhero*]$_1$ [$_{TP}$ *[the costume of t_1] used to amaze her children].

Given that the island effect is predicted yet unattested under sluicing, the effect is taken to be *fixed* when the ellipsis applies. The idea of island repair under ellipsis goes back to as early as Chomsky (1972), and it has been more recently developed in Lasnik (2001) and Merchant (2001). The assumption is that the island violations may occur due to certain properties of the "pronounced" structure rather than, for instance, being derivational constrains on extraction. Therefore, the early accounts of island

repair consider islands as phonological in their nature (e.g., Merchant 2001), and suggest that non-pronunciation via ellipsis nullifies island effects.

More precisely, it has been proposed that a movement operation that crosses over an island structure makes that structure uninterpretable at PF (Phonological Form) via marking it with * (i.e., marker of ill-formedness). As such, a crossed island node cannot be parsed at the PF interface when pronounced, causing unacceptability. This is the case of regular *wh*-movement involving islands. Ellipsis operation, however, involves deletion of the phonological form. When rendering a TP complement to be unpronounced at PF under sluicing, the ellipsis also eliminates PF-uninterpretable island nodes within that TP. Thus, the island violation is repaired, and the derivation converges as in (67).

Such island repair, on the other hand, appears to be selective, which has been one of the major criticisms. Island repair is claimed to be inapplicable in minimally different forms of clausal ellipsis: *fragment answers* and *contrast sluicing* (Merchant, 2005, 2008). Fragment answers constitute answers that contain new information to questions and are considered to be similar to sluicing in involving the deletion of a clausal complement of the remnant, which escapes from the deletion via displacement (see Merchant (2005)). This is illustrated in (68).

(68)   A: Does the candidate speak *Greek*?

B: No, *Albanian$_1$* [$_{TP}$ the candidate speaks t_1].

Contra in regular sluicing, Merchant (2005) notes that islands are not repaired in the case of fragment answers even though crossed island node (marked with * below) is deleted (69).

(69)   A: Do they want to hire the candidate who speaks *Greek*?

B: *No, *Albanian₁* [TP they want to hire the candidate *[RC who speaks *t₁*]].

This observation leads to a refinement of the island repair approach: Merchant (2005) proposes that island violations are due to PF-uninterpretable (* marked) "intermediate traces/copies" of the moved element, rather than such marked island nodes as originally proposed. Ellipsis operation indiscriminately deletes a clause (TP) both in sluicing and in fragment answers. Movement of the remnant, however, is suggested to target different positions at the left periphery of a clause (i.e., the functional domain above the clause (TP) level) under regular sluicing and fragment answers. *Wh*-remnant in sluicing targets Spec CP (70a), as in regular *wh*-movement. In fragment answers, however, the movement of the remnant (i.e., a focus bearing phrase) is suggested to involve one extra step. Its landing site is the specifier position of a functional phrase (i.e., FP) above CP (70b). When the ellipsis operation applies, all uninterpretable intermediate traces are deleted in regular sluicing, the derivation converges, thus, acceptability (70a). However, one deviant (uninterpretable) trace at Spec CP is left undeleted in fragment answers as it sits outside the domain of deletion (i.e., above TP), causing the crash and ill-formedness as shown in (70b).

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(70)   a. *Regular sluicing involving RC (island repair)*

They want to hire the candidate who speaks *a Balkan language*, but I

don't know [$_{CP}$ [*which Balkan language*]$_1$ [$_{TP}$ *t1 they [$_{vP}$ *t_1 want to

hire the candidate [$_{RC}$ who speaks t_1]]].

b. *Fragment answer involving RC (no repair)*

A: Do they want to hire the candidate [$_{RC}$ who speaks *Greek*]?

B: *No, [$_{FP}$ *Albanian*$_1$ [$_{CP}$ * t_1 [$_{TP}$ they [$_{vP}$ * t_1 want to hire the candidate

[$_{RC}$ who speaks t_1]]]].

Turning to the contrast sluicing, it behaves similar to fragment answers in

being unacceptable with islands (71a), unlike regular sluicing (71b). However, it is

structurally akin to regular sluicing. Since there survives no offending traces in both

(71a) and (71b), it is puzzling for repair approaches why the subject island is not

repaired under contrast sluicing.

(71)   a. *[The costume of *Captain America*] used to amaze Megan's

children, but she cannot recall [*which other superhero*]$_1$ [$_{TP}$ [the

costume of t_1] used to amaze her children].

b. [The costume of *a superhero*] used to amaze Megan's children, but

she cannot recall [*which superhero*]$_1$ [$_{TP}$ [the costume of t_1] used to

amaze her children].

To explain such differential island sensitivity of regular and contrast sluicing, Merchant (2008) contends that the unacceptability of island-violating contrast sluicing is due to the restrictions on *scope parallelism*[7]. This indeed implicates that the island repair mechanism is active under contrast sluicing – all offending traces are deleted. Yet the island effect arises due to uninterpretability at Logical Form (LF).

Alternatively, Griffiths & Lipták (2014) propose that the correct generalization regarding island (in)sensitivity of clausal ellipsis is contingent upon *contrastiveness*. Non-contrastive clausal ellipsis (e.g., regular sluicing), which involve a subset of fragment answers as well (i.e., elaborative fragments), are argued to be well-formed with islands (see Griffiths & Lipták, 2014). This has been shown to be unlike contrastive clausal ellipsis (e.g., corrective fragments, contrast sluicing etc.), which are sensitive to islands.

Griffiths & Liptak also take scope parallelism as the deciding factor for island (in)sensitivity. According to their account, scope parallelism is not met in contrastive ellipsis (including contrast sluicing) because the focus movement of the correlate is disallowed due to islands as scope is taken to be island sensitive (e.g., Krifka, 2006). Therefore, the correlate has low scope whereas its remnant has high scope at LF in contrastive ellipsis, causing non-parallelism and unacceptability. However, non-contrastive ellipsis (including regular sluicing) always satisfies scope parallelism

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[7] Following Krazter (1991), Merchant (2008) adopts that scope is island insensitive. This leaves no principled reason for the contrastively focused correlate not to cross an island boundary at LF. However, scope parallelism fails because the correlate (e.g., "Captain America" in (71a)) is taken to be disallowed to move to the highest clause node at LF: "Metaphorically speaking, it is as though escaping from an island cripples or hobbles further focus movement; it can only limp along VP, not to IP [a.k.a. TP]." (Merchant 2008: 150).

"…because the remnant's correlate is always a specific indefinite, and these are known to take sentential scope." (Griffiths & Lipták, 2014: 211).

To summarize, repair approaches basically argue for a mechanism that repairs island violations when they are unpronounced under ellipsis, including sluicing. The repair fails when the ellipsis is of the contrastive type, such as contrast sluicing. I once again highlight that these accounts rely heavily on the assumption that there is always a strict syntactic isomorphism between the antecedent clause and the ellipsis site, hence an island violating unpronounced clause in the ellipsis site. A major challenge for such an account of island repair emerges if syntactic isomorphism assumption fails to hold. This, indeed, appears to be the case in regular sluicing, as evidenced by the source experiment in Chapter 2. An alternative view, known as evasion approaches (e.g., Barros et al., 2014), seems to be more tenable because it adopts a looser parallelism requirement between the antecedent clause and the ellipsis site, allowing non-isomorphism in regular sluicing. Accordingly, the differential island sensitivity can be naturally captured by the evasion approaches, as will be discussed next.

3.3.2   Evasion Approaches

Evasion approaches argue against the proposal that there is a special mechanism under ellipsis that selectively repairs island violations (e.g., Barros et al., 2014; see Wu, 2022 for stripping). Rather, they argue that the so-called island repair under regular sluicing is an illusion, as there is no island violation in the first place to repair. Insensitivity of regular sluicing to islands follows naturally in the evasion view because the ellipsis site can host a syntactically non-isomorphic structure that does not actually involve any island constructions, different from the structure of its antecedent clause (Anand et al., 2021; Barros, 2014a, 2014b; Barros et al., 2014; Griffiths, 2019;

Vicente, 2008). Therefore, the island effect may not be active in regular sluicing even though the antecedent clause involves a correlate embedded in a potential island construction. The syntactic non-isomorphism is, indeed, a possibility independent of islandhood. Recall the results of the source experiment from Chapter 2, which show that a non-isomorphic copular sentence is a potential source in regular sluicing (72) (e.g., with a likelihood of .81, compared to an isomorphic source).

(72)   [*A superhero*] used to amaze Megan's children, but she cannot recall
        [*which superhero*]$_1$ [$_{TP}$ that was t_1].

Accordingly, a regular sluicing sentence, where the antecedent clause involves a potential subject island, can as well have a non-isomorphic copular source, as illustrated in (73).

(73)   [The costume of *a superhero*] used to amaze Megan's children, but she
        cannot recall [*which superhero*]$_1$ [$_{TP}$ that was t_1].

Regardless of the existence of a complex subject NP correlate in the antecedent clause (e.g., [the costume of x]), which would cause the subject island effect if the remnant (e.g., "x") were extracted out of it at the ellipsis site, no ill-formedness is predicted based on the structure of the elided clause in (73), and none is attested according to the informal judgments in the literature.

Turning to the island sensitivity of contrast sluicing, this also appears to follow from the evasion accounts which do not allow syntactic non-isomorphism in contrast

sluicing, again, independent of islandhood (e.g., due to focus-background matching constraints, see Chapter 2). Recall once again the results of the source experiment (Chapter 2), which indicate that it is very unlikely to have a non-isomorphic copular source under contrast sluicing (74) (e.g., with a likelihood of .18).

(74)   [*Captain America*] used to amaze Megan's children, but she cannot recall [*which other superhero*]$_1$ # [$_{TP}$ that was t_1].

Accordingly, if the correlate occurs embedded in a complex NP subject within the antecedent clause, the subject island effect is predicted to be active in the ellipsis site in contrast sluicing (75a) because of the illicit movement of the remnant from a syntactically parallel complex NP subject in the ellipsis site. Notice once again that this is unlike regular sluicing, which can have a no island violating, syntactically non-isomorphic (copular) source (75b). These predictions exactly match with the observed pattern of the differential island effects under sluicing.

(75)   a. *[The costume of *Captain America*] used to amaze Megan's children, but she cannot recall [*which other superhero*]$_1$ [$_{TP}$ [the costume of t_1] used to amaze her children].

        b. [The costume of *a superhero*] used to amaze Megan's children, but she cannot recall [*which superhero*]$_1$ [$_{TP}$ that was t_1].

Notice further that the island effect (i.e., the unacceptability of (75a)) is still taken to be due to structural configurations (i.e., the complex NP "[the costume of x]")

that ban the movement of the *wh*-remnant in the ellipsis site, according to the island evasion account.

3.3.3 Sluicing and Subject Islands

Demonstrating differential island sensitivity has been claimed to be a property of clausal ellipsis in general: it is observed with fragment answers and contrastive stripping as well (see Section 3.3.1). These motivated a generalization (Griffiths & Lipták, 2014) which assumes that the underlying factor is "contrastiveness". Notice that this idea, in its spirit, fits well with the assumptions of the evasion approaches: the non-isomorphic sources are disallowed in contrast sluicing. This yields the island effect when the correlate is embedded in an island evoking structure under contrast sluicing.

The observed pattern of the differential island effects under ellipsis, however, has been open to question. Some contrastive fragment answers involving islands, for instance, were informally reported to be acceptable as shown in (76) (see Barros, 2014b; Weir, 2014; contra Griffiths & Lipták, 2014).

(76)   A: Do they grant scholarships to students that study *Spanish*?
        B: No, *French*.

To test the differential island effects under ellipsis, Potter (2017) conducted a series of experiments to evaluate the island (in)sensitivity of "contrastive stripping" (which is commonly analyzed akin to sluicing and fragment answers). In the first experiment, Potter (2017) reports that non-contrastive stripping is island insensitive

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(77a) (e.g., rated 4.5 out of 7), in comparison to a no-island baseline (77b) (e.g., rated 4.9 out of 7).

(77)   *NON-CONTRASTIVE STRIPPING ((a) involves Relative Clause Island, (b) is control)*

a. Joe: Jordan mocked the salesman [$_{RC}$ who sold a car *to an elderly customer*].

  Bill: **Yeah**, *to Ashley*.

b. Joe: Jordan implied that the salesman sold a car *to an elderly customer*.

  Bill: **Yeah**, *to Ashley*.

(Potter, 2017: 79-80 (117(ii)))

The results, however, are mixed in the subsequent experiments with other types of contrastive stripping (see Potter, 2017). Potter discusses the shortcomings of their experiments, such as the baseline flaws and the possibility of non-native participants. Yet it is still argued that unlike non-contrastive stripping (77a), contrastive stripping, as illustrated in (78a), is "partially" sensitive to the island effect (e.g., rated 4.8/7, in comparison to (78b), which is rated 5.2/7).

(78)   *CONTRASTIVE STRIPPING ((a) involves Relative Clause Island, (b)*
       is control)

       a. Joe: Jordan mocked the salesman [$_{RC}$ who sold a car *to an elderly*
       customer].

          Bill: **No**, *to Ashley*.

       b. Joe: Jordan implied that the salesman sold a car *to an elderly*
       customer.

          Bill: **No**, *to Ashley*.

                                                        (Potter, 2017: 97-98 (120(ii)))

       More recently, Yoshida et al. (2019) revisit the acceptability of the contrastive
stripping involving relative clause islands like in (79a). (79b) illustrates one of their
control sentences. Yoshida et al. (2019)'s findings contradict Potter (2017). Since the
acceptability of (79a) is (5.02 out of 7) almost as high as its non-island counterpart in
(79b) (5.21), Yoshida et al. (2019) conclude that contrast stripping is not sensitive to
islands[8].

(79)   *CONTRASTIVE STRIPPING ((a) involves Relative Clause Island, (b)*
       is control)

       a. Joe: James met the journalist [who got *a commissioned piece*].

          Bill: **No**, *a salaried position*.

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[8] More specifically, Yoshida et al. (2019) argue that islands get repaired under ellipsis
in contrast stripping.

b. Joe: James heard that the journalist got *a commissioned piece*.

Bill: **No**, *a salaried position*.

(Yoshida et al. 2019; exs 8a and 8b respectively)

Notice, however, that, in (79a-b), the remnant "a salaried position" is an indefinite NP, and it is contrasted with the indefinite correlate "a commissioned piece". This is unlike the conventional contrastive ellipsis examples that involve contrasted definite NP correlates and remnants (see Merchant, 2008). Crucially, from a processing perspective, it is possible that contrasting indefinites is less costly (e.g., compared to definite NPs), increasing the acceptability of (79a).

Aside from the aforementioned mixed findings on the island effects under contrastive ellipsis, no study so far experimentally tested whether contrast sluicing is island sensitive as predicted by the structural approaches (Barros et al., 2014; Griffiths & Liptak, 2014; Merchant, 2008; a.o.). More specifically, there is no prior experimental study on how regular and contrast sluicing respond to islands (i.e., whether the differential island effects under sluicing are real).

The present study, thus, aims to quantify the differential island sensitivity of regular and contrast sluicing involving subject islands. Note that the subject island effect is chosen to test the differential island effects in order to be able to further investigate the grammatical status of the subject islands in a subsequent study (see Section 3.5). In line with the informal intuitions regarding island (in)sensitivity of contrast and regular sluicing, regular sluicing is predicted to be acceptable with a subject complex NP involving an indefinite NP correlate (80a). This is unlike contrast

sluicing with a subject complex NP involving a contrasted NP correlate, which is predicted to be unacceptable (80b).

(80) a. [The costume of *a superhero*] used to amaze Megan's children, but she cannot recall [*which superhero*].

b. *[The costume of *Captain America*] used to amaze Megan's children, but she cannot recall [*which other superhero*].

However, considering the unsettled status of the differential island effects under ellipsis in general, it is to be seen whether this prediction will be met. The current study, thus, aims to provide new evidence for the differential island effects by testing the acceptability of the subject islands under regular and contrast sluicing.

3.4 Experiment 1: Differential Island Effects

3.4.1 Methods

3.4.1.1 Design and Materials

A 3 (Sluice Type) x 2 (Position) acceptability rating study was conducted to quantify the differential subject island effects under sluicing (as in (80a) and (80b) above). Position factor had two levels: Complex NP embedded either in subject position (CNP$_{subj}$, potential subject islands for sluicing) or in object position (CNP$_{obj}$, no island conditions). In creating the Complex NPs, the preposition "of" is used consistently in order to obviate any potential effects of using different prepositions. Subject island effect is predicted to be seen as a degradation in acceptability ratings by

comparing ratings to CNP_{subj} with CNP_{obj}. The former is predicted to be lower if the island effect is active. The other factor, Sluice Type, had three levels: Contrast, Regular and NoSluice. Contrast conditions consist of sluicing sentences that contrast a definite correlate (embedded in a CNP) with the remnant ("which other x"). Regular conditions include regular sluicing sentences with an indefinite correlate (embedded in a CNP), and a *wh*-remnant ("which x"). NoSluice conditions involve complex English sentences conjoined by the subordinator "but" and followed by an "articulated" embedded clause, rather than ellipsis. Hence, sentences in NoSluice condition indeed involve neither sluicing nor a subject island. Table 3 presents sample stimuli in all six conditions (brackets added to indicate the complex NPs). A complete list of items is provided in Appendix B.

Table 3: Sample stimuli across Sluice Type and Position

		CNP_{subj} (potential subject island)	CNP_{obj} (no islands, baseline)
Sluice Type	**No Sluice**	[The costume of a superhero] used to amaze Megan's children, but she cannot recall the popular villain.	Megan's children used to love [the costume of a superhero], but she cannot recall the popular villain.
	Regular	[The costume of a superhero] used to amaze Megan's children, but she cannot recall which superhero.	Megan's children used to love [the costume of a superhero], but she cannot recall which superhero.
	Contrast	[The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero.	Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero.

Informal judgments in the literature regarding island (in)sensitivity of regular and contrast sluicing (e.g., Merchant, 2008) predict a finding where sentences in Contrast-CNP$_{subj}$ condition are degraded compared with Contrast-CNP$_{obj}$, and the degradation is expected to be significant under contrast sluicing but not in the instances of regular sluicing. This parallels the acceptability judgment contrast between (80a) and (80b). NoSluice baseline was added to ensure that a potential island effect in sluicing conditions is a genuine effect. If such a difference is found in Regular and/or Contrast sluicing conditions, it should be warranted that it is not due to some other factors, such as having different verbs in the antecedent clauses across CNP$_{subj}$ vs CNP$_{obj}$ conditions, or a potential effect of animacy on subjecthood (e.g., subject NPs are always animate in CNP$_{obj}$ conditions, whereas they are always inanimate in CNP$_{subj}$). If there is no significant difference in ratings between CNP$_{subj}$ vs CNP$_{obj}$ in No Sluice conditions, then it will be safer to conclude that any other such difference in any sluicing conditions is due to the subject island effect.

Following the 3x2 design as illustrated in Table 3, 24 critical item sets were created and put in a Latin-Square design. 36 filler sentences were added to the critical stimuli. Half of the fillers were created as complex English sentences conjoined by "but", and the other half was of the same fashion plus involving an embedded adjunct *wh*-word. None of the fillers involved sluicing. In total, 18 fillers were grammatical English sentences, whereas the remaining 18 were ungrammatical sentences, which had argument structure or word order violations. See (81) for a sample quadrant of fillers, and Appendix B for the full list.

(81)   a. The famous car manufacturer hopes to release a new model soon, but the sales might not go up as expected.

b. The tree hesitated a flower to bloom last March, but it did not survive the leaves long.

c. The manager criticized a barista for his work, but he failed to explain why he was unhappy about the work.

d. The pirates sank a boat the ship, but the news didn't mention how the crew were rescued the captain.

The presentation order of the stimuli was pseudorandomized and filler sentences were interspersed. No more than two critical items were presented after one another, and neither of the two adjacent critical items were of the same condition.

3.4.1.2   Participants

Thirty-nine undergraduate students were recruited from the University of Delaware community. Three participants' data was excluded as they did not self-identify as native English speakers. Compensation was not contingent upon being a native speaker of English or not. All participants received 1 credit in a Linguistics course in exchange for their participation.

3.4.1.3   Procedure

The experiment was created and conducted on the online software Ibex Farm (Drummond, 2013). Participants read and accepted a consent form approved by the University of Delaware Human Subjects Review Board before starting the experiment.

In the experiment, participants were instructed to read complex English sentences that would appear on their screen and rate their acceptability on a seven-point scale (1-unacceptable, 7-acceptable). The experiment took approximately 15 minutes to complete.

3.4.2 Results

The results of thirty-six native speakers are reported: these involved 1296 trials involving filler sentences, and 864 critical trials. On a seven-point scale, the mean of the ratings to the grammatical filler sentences was 5.98 (SD = 1.34), and it was 1.81 (SD = 1.10) for the ungrammatical fillers, indicating that the scale was used reasonably.

Among all Sluice Types, sentences in Contrast condition received lower ratings (4.29) compared with Regular (5.48) and No Sluice (5.26) (see Figure 2). Overall, sentences in CNP_{subj} conditions, where the complex NP is in subject position, were rated lower than the ones in CNP_{obj} conditions (4.88 vs 5.15). Among the three levels of the Sluice Type, the difference between CNP_{subj} and CNP_{obj} seemed to be the largest when the stimuli involved contrast sluicing sentences (4.03 vs 4.55), whereas it was quite small in Regular (5.43 vs 5.53) and No Sluice conditions (5.17 vs 5.35).
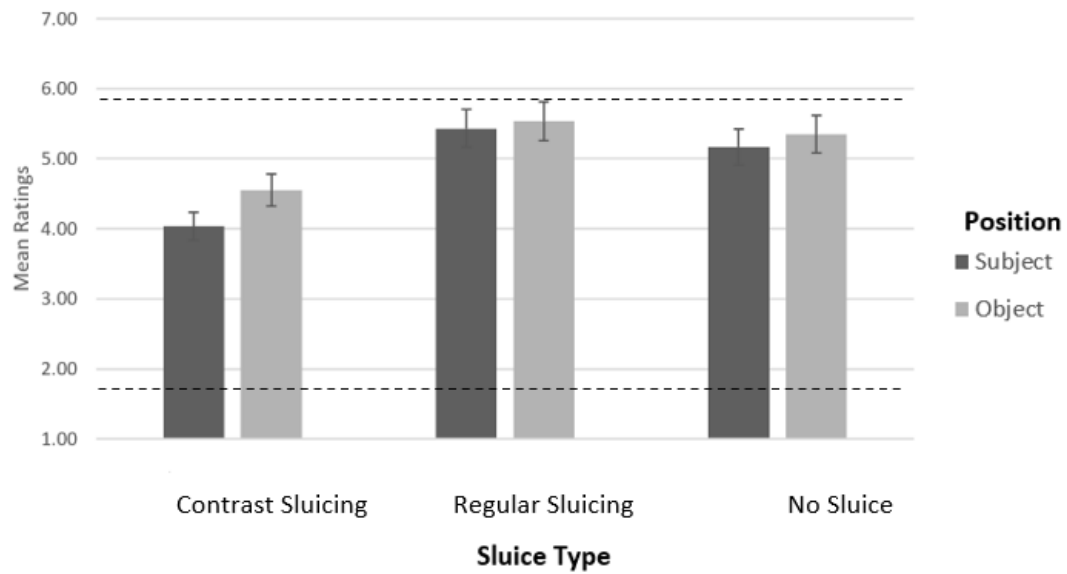
Figure 2: Mean ratings across Contrast Sluicing, Regular Sluicing and No Sluice.
Error bars represent the confidence interval (95%). The dashed line at the top
represents the mean ratings to the grammatical fillers (5.98). The dashed line
below is for the ungrammatical fillers (1.81).

Because each participant might have used the scale slightly differently, raw
ratings were normalized via z-score transformation for the analysis (means and
standard deviations estimated by participant). Figure 3 illustrates the results.
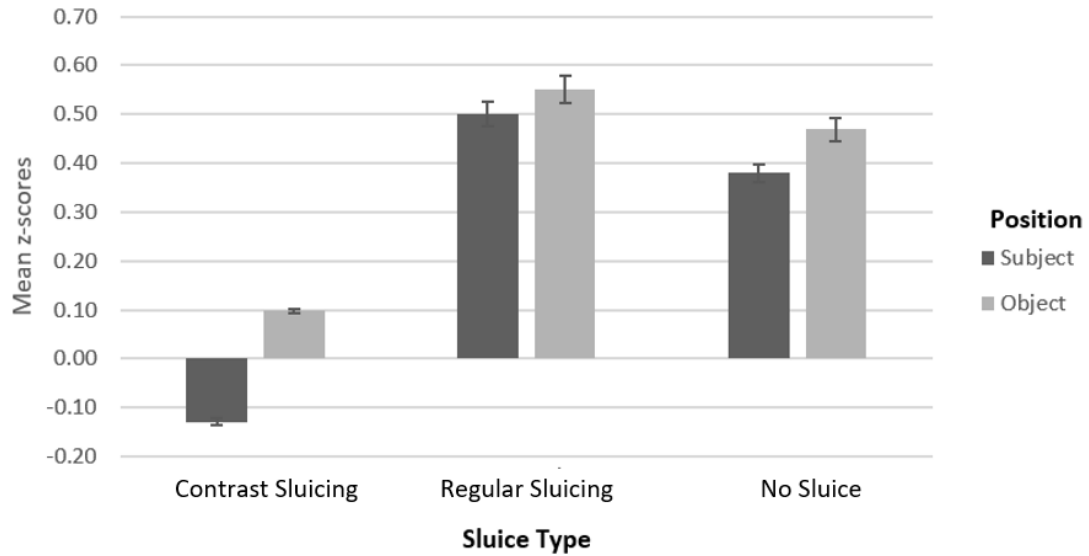
Figure 3: Mean z-scores across Contrast Sluicing, Regular Sluicing and No Sluice.

The data was fitted to a linear-mixed effects regression model with crossed random effects for participants and items for analysis (Baayen et al., 2008). Position was sum coded: CNPobj were given a value of -1/2, and CNPsubj were 1/2. Three levels of the Sluice Type predictor were coded with Repeated Contrasts, in accordance with the research question of the present study. The first coefficient *ellipsis* contrasted acceptability of sentences in No Sluice conditions (coefficient: -2/3) with Regular Sluicing (coefficient: +1/3 for regular conditions; +1/3 for contrast conditions). The aim was to see if there were any potential effects of applying ellipsis or not on acceptability. The second coefficient *contrast* contrasted acceptability of Regular Sluicing (coefficient: -1/3) with sentences in Contrast Sluicing conditions (coefficient: +2/3 for contrast conditions; -1/3 for No Sluice). The results of this would show if the acceptability of regular and contrast sluicing differed.

The maximal model that converged was the simplest model, which included random intercepts for participant and item. In reporting the results, I follow the previous work on ellipsis and islands (Jung & Goodall, 2022) and discuss all marginal (<.1) and significant values (<.05). Jung & Goodall (2022) found interactions of island effects under ellipsis (e.g., backward sprouting) to be only marginally detectable: the effect did not reach the conventional threshold of statistical significance. Marginality was unlikely to be due to low power because they tested 89 participants. Thus, there is a possibility that island effects under sluicing could correspond to statistically marginal values. This will not be overlooked.

The analysis revealed that the effect of Position was significant, which manifests itself as lower ratings to sentences when the correlate was embedded in the complex NP in subject position compared to object position (4.88 vs 5.15; β = -0.12, SE = 0.04, t = -2.94, p = .003). There was also a significant effect of applying *ellipsis*: Regular sluicing sentences were rated significantly higher than sentences that do not involve sluicing (5.48 vs 5.26, β = 0.1, SE = 0.05, t = 2.02, p = .04). Furthermore, *contrast* was a significant predictor in acceptability in that sentences in Contrast Sluicing conditions were overall rated significantly lower than in Regular Sluicing conditions (4.29 vs 5.48; β = -0.54, SE = 0.05, t = -10.7, p < .0001). There was a marginal interaction of Position with *contrast* (β = -0.18, SE = 0.1, t = -1.75, p = .08), implicating the existence of differential island effects under contrast and regular sluicing. Table 4 shows the results of this analysis.

Table 4: Results of the linear-mixed effects regression model, Experiment 1.

EFFECT	β	SE	t	p
(Intercept)	0.31	0.04	7	<.0001
Position (CNP$_{subj}$ vs CNP$_{obj}$)	-0.12	0.04	-2.94	.003
ellipsis (No Sluice vs Regular)	0.1	0.05	2.02	.04
contrast (Contrast vs Regular)	-0.54	0.05	-10.7	<.0001
Position X *contrast*	-0.18	0.1	-1.75	.08
Position X *ellipsis*	0.04	0.1	0.4	.7

Because the literature makes different predictions regarding island effects in regular sluicing versus contrast sluicing, planned comparisons were conducted to evaluate the effect of Position on each level of the Sluice Type. Results showed that Position had a significant effect on acceptability *only* in Contrast Sluicing conditions: contrast sluicing sentences with a correlate embedded in a complex subject NP were rated significantly lower than the ones with a correlate embedded in a complex object NP (4.03 vs 4.55; β = -0.23, SE = 0.07, t = -3.16, p = .02). The effect of Position was not significant in Regular Sluicing conditions (5.43 vs 5.53; β = -0.05, SE = 0.07, t = -0.7, p = .5) and in No Sluice conditions (5.17 vs 5.35; β = -0.09, SE = 0.07, t = -1.24, p = .2), verifying the existence of subject island effect under contrast sluicing only.

3.4.3 Discussion

This study has been first to quantify the differential (subject) island effects under sluicing. It provides supporting evidence for the differential island effects and shows that contrast sluicing is sensitive to islands. Results show that contrast sluicing sentences involving islands (e.g., a complex NP subject embeds the correlate) (82a) received lower ratings compared to the ones without islands (e.g., a complex NP

object embeds the correlate) (82b). Although regular sluicing showed the same tendency, the difference between having an embedded subject correlate (83a) or an object correlate (83b) did not reach significance in regular sluicing.

(82)   a. [The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero. (4.03)

b. Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero. (4.55)

(83)   a. [The costume of a superhero] used to amaze Megan's children, but she cannot recall which superhero. (5.43)

b. Megan's children used to love [the costume of a superhero], but she cannot recall which superhero. (5.53)

This acceptability contrast provides new evidence for the island (in)sensitivity under sluicing as advocated in Merchant (2008) and the subsequent work within the structural view. Island effects are differential under sluicing: contrast sluicing is island sensitive, whereas regular sluicing is not. Recall the two approaches that try to account for the differential island effects: repair and evasion approaches. Broadly speaking, repair approaches follow the strict syntactic isomorphism view and claim that island effect is active in contrast sluicing, but it selectively gets repaired in regular sluicing. Evasion approaches, on the other hand, allow non-isomorphic sources under regular sluicing. Accordingly, a copular source can be the unpronounced structure in regular

sluicing, causing no island violation in the first place. Even though the results of the current experiment by themselves do not speak in favor of either repair or evasion approaches, remember the finding from Chapter 2 which establishes that a copular clause is a potential source in regular sluicing. Differential island sensitivity and the current results can thus naturally be explained by evasion approaches (see also Section 3.6).

Crucially, sentences in contrast sluicing conditions were overall rated lower compared to sentences in regular sluicing conditions (4.29 vs 5.48), involving contrast sluicing with CNP objects (e.g., no islands involved). This is a new finding. The notable degradation in the acceptability of contrast sluicing sentences, irrespective of islandhood, is curious, and needs to be addressed.

I hypothesize that the overall degradation in contrast sluicing by comparison with regular sluicing may be due to pragmatic factors, as follows: Comprehenders reading contrast sluicing sentences, as in the present study, might require some discourse accommodation to be able to generate a licensor for the sluice (e.g., a QUD, involving a focus alternative to contrast with the correlate, which is embedded in the complex NP in the current study). Having a contrastive sentence (or a QUD that readily raises a question which asks for an alternative to a given phrase) could indeed be unnatural and unexpected in natural language when it occurs out of the blue. This should not be an issue in regular sluicing because an indefinite NP correlate is commonly taken to be a natural question raiser (e.g., Barros, 2014b; Griffiths, 2019). Thus, an indefinite correlate in regular sluicing could be a more obvious cue, which signals an upcoming sluice, compared with a contrasted, definite NP correlate in contrast sluicing. Naturally, the latter would be less predictable and harder/costlier to

process, thus, degraded in acceptability. In order to eliminate such accommodation costs, contrast sluicing should be predictable and relevant within a discourse. I will pursue this idea in the next section.

3.5   Experiment 2: Role of Context

Experiment 1 shows that contrast sluicing is overall degraded in acceptability (e.g., compared with regular sluicing). Based on this finding, the following hypothesis is formed: Building a contrast out of the blue is unnatural and unexpected in language. Following this hypothesis, one can form a linking theory which predicts lower acceptability ratings to unnatural and unexpected contrast sluicing sentences presented out of the blue, contra such sentences presented following a brief context. I pursue this idea and test the effects of presenting a context story before presenting the target contrast sluicing sentences to the comprehenders. See (84) for a sample.

(84)   **Brief Context:** *Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. They were allowed to eat a little more chocolate and candy than at other times. Due to old age, Megan unfortunately forgets the details of such lovely memories now.*

Target Sentence: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Compared with presenting contrast sluicing sentences out of the blue, presenting such prior contexts potentially has several contributions to render the target sentence (i.e., contrast sluicing sentence) more predictable and relevant within the

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discourse. For instance, the context above mentions the "Halloween" and ends with a sentence that expresses Megan's poor memory. This increases the predictability (or lexical accessibility) of both the target complex NP (i.e., the costume of x) and the embedding verb of the sluice (i.e., "cannot recall"). Saying what Megan can remember in the antecedent clause (e.g., about the past Halloweens) and what she cannot remember, as in the sluice part, become more relevant within the discourse. Moreover, notice that the target contrast sluicing sentences are very complex English sentences. They involve two conjoined tensed clauses, a *wh*-word, definite (and contrasted) NPs, which would collectively make these sentences quite hard to process (Culicover et al., 2022; Gibson, 2000; Hofmeister & Sag, 2010). A prior context story that introduces a participant of the event denoted by the verb in the antecedent clause (e.g., Megan's children = Carl and Jo) could, therefore, potentially eliminate some of the processing costs.

The present study utilizes context stories presented before contrast sluicing sentences pursuing two goals. First, it is questioned whether the acceptability of contrast sluicing is, in general, sensitive to a prior discourse. It is predicted that contextualization will make contrast sluicing sentences more natural and easier to process, which will manifest as an increase in their acceptability. The second goal is to evaluate whether the subject island effect is a grammatical (a.k.a. structural) constraint, aiming to bring in a new perspective to the islandhood discussion by investigating the island effects in sluicing environment. If the subject island effect under sluicing is found to be attenuated by an extra-grammatical factor, this will be an indication that it cannot be a purely structural constraint.

3.5.1 Methods

3.5.1.1 Design and Materials

To evaluate the hypothesis about the role of context, a 2 (Position) x 2 (Context) between-subjects acceptability rating study was designed. Sixteen sets of contrast sluicing sentences from the previous acceptability experiment (Section 3.4) were used as test sentences in the present study. Hence, the within-subject factor Position had two levels: contrast sluicing sentences with CNP_{obj} ("baseline"), and with CNP_{subj} ("subject islands"). To evaluate the role of context on the acceptability of contrast sluicing, a between-subjects Context factor was added. This involved either presentation of a brief context story before a target sentence to rate (i.e., context group), or no prior context story (i.e., control group). See Table 5 for sample stimuli following this 2 (Position) x 2 (Context) design. As discussed in the previous section, the context stories were constructed so that they would make the target sentences more relevant to utter within the discourse and eliminate certain processing costs. Thus, an increase in the acceptability of contrast sluicing is predicted if the linking hypothesis about the role of context on the processing of contrast sluicing is on the right track.

Table 5: Sample stimuli across Context and Position.

Context	CNP$_{subj}$ (subject island)	CNP$_{obj}$ (baseline)
Context Group **Prior context:** *Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. They were allowed to eat a little more chocolate and candy than at other times. Due to old age, Megan unfortunately forgets the details of such lovely memories now.* **Control Group** **No context**	**Target sentence:** [The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero.	**Target sentence:** Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero.

Sixteen sets of target sentences (with or without a context story) were put in a Latin-square design, and sixteen filler sentences were added to each list. Filler sentences were also presented with or without a prior context, depending on participants' groups. First set of the fillers were complex English sentences conjoined by "but", where the second clause involved an embedded question with a *wh*-adjunct (i.e., *how*, *where*, *why* followed by a clause). Half of these were ungrammatical English sentences involving severe violations such as argument structure or word order violations, and the other half were grammatical sentences. Second set of the fillers were also complex English sentences conjoined by "but". The first clause involved an embedding predicate (e.g., *convince*), and there were no *wh*-words. Similar to the first set of the fillers, half of these were grammatical sentences whereas the remaining half were ungrammatical due to argument structure or word order violations. None of the fillers involved ellipsis. See Table 6 for a sample filler

sentence (presented with or without context, according to the group of the participants).

Table 6: A sample ungrammatical filler as presented in Context and Control groups.

Context	
Context Group **Prior context:** *Katie and her friends wanted to go to a party last night. She promised her mother to come back home by midnight, and her friends assured her that they would make sure that she arrived no later than 12am. That's how her mother allowed Katie to go to the party.*	**Filler sentence (Ungrammatical):** Katie on time believed to have left possibly a party, but her friends pretended lovingly.
Control Group **No context**	

Five Yes/No comprehension questions were presented following some filler sentences to ensure that participants were paying attention to the task. See Appendix C for the comprehension questions and the complete set of fillers.

3.5.1.2   Participants

Thirty-two self-reported native speakers of English were recruited on Amazon's Mechanical Turk (MTurk). The recruitment procedure was similar to the one reported before in Chapter 2: Participants were master workers residing in the US, all received 2 dollars for participation. Compensation was not contingent upon being a native speaker of English or not. Participants who had completed the acceptability experiment (as reported in the Section 3.4) were excluded from the recruitment pool

because a sub-part of the stimuli of the previous study (i.e., contrast sluicing sentences) was recycled and utilized as test materials in the current experiment.

3.5.1.3 Procedure

The experiment was created by using the online software Ibex Farm (Drummond, 2013) and conducted on MTurk. Participants read and accepted a disclaimer approved by the University of Delaware Human Subjects Review Board before starting the experiment. Depending on their group (decided based on the 2x2 between-subjects design as detailed in Section 3.5.1.1), one group of participants were instructed to read short stories that would appear on their screen, then proceed to read complex English sentences and rate their acceptability on a seven-point scale (1-unacceptable, 7-acceptable). The other group was only instructed to read complex English sentences and rate their acceptability on a seven-point scale (1-unacceptable, 7-acceptable). Participants were additionally instructed to answer randomly presented comprehension questions that would appear on their screen after some judgement scales. No feedback was given. The task took about twenty minutes to complete.

3.5.2 Results

One participant's data was not recorded due to technical problems; therefore, the results of thirty-one native speakers are reported here: these involve 992 trials, 446 of which are critical trials. Mean ratings for the grammatical filler sentences was 6.45 ($SD = 0.89$), and for the ungrammatical fillers, it was closer to the other end of the scale, being 1.27 ($SD = 0.66$). These suggest that the participants used the seven-point scale as expected. The mean accuracy rate to the comprehension questions was 94.6%, indicating that context stories were read carefully.

3.5.2.1 Analysis

   Overall, contrast sluicing sentences presented after a brief context story received higher ratings compared to sentences presented without a context (4.44 vs 3.18). Also, no-island involving contrast sluicing sentences (i.e., sentences in CNP_{obj} conditions) were rated higher than the ones that involve subject islands (i.e., CNP_{subj} conditions) (4.02 vs 3.56). Degradation with CNP subjects is attested regardless of the presentation of a prior context (3.33 vs 3.02 without a context, 4.75 vs 4.13 after a context). See Figure 4 for an illustration of these results.
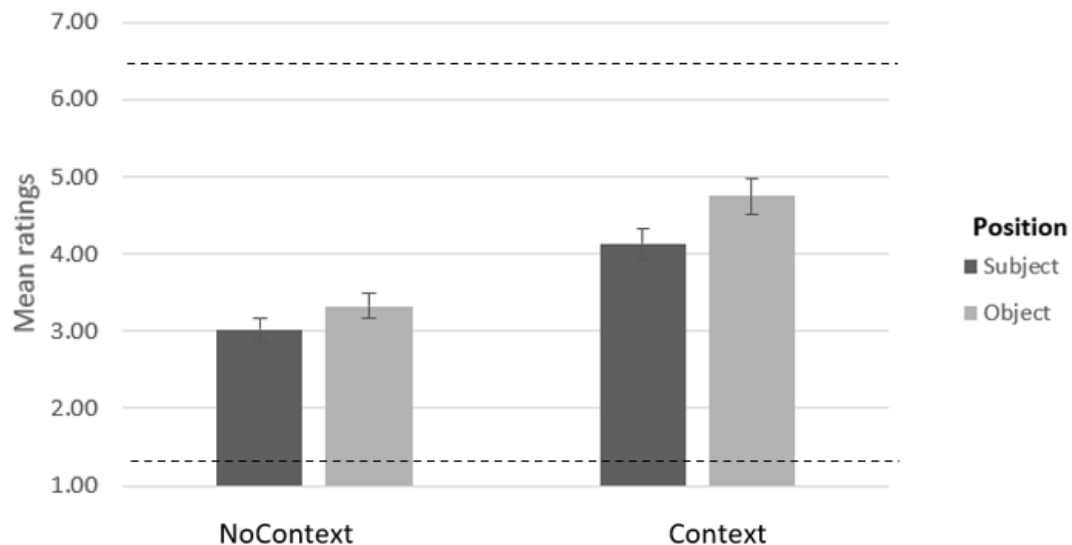
Figure 4: Mean ratings across NoContext and Context conditions. Error bars represent the confidence interval (95%). The dashed line at the top represents the mean ratings to the grammatical fillers (6.45). The dashed line below is for the ungrammatical fillers (1.27).

Similar to the data normalization procedure followed in Experiment 1 (as reported in Section 3.4.2), raw ratings were z-score transformed for the analysis. Figure 5 shows these results.
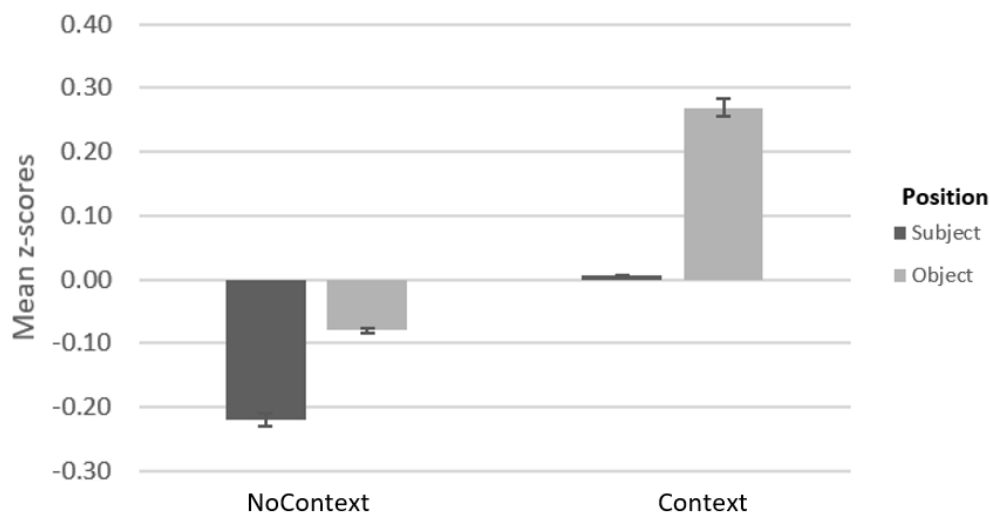
Figure 5: Mean z-scores across NoContext and Context conditions.

Similar steps to Experiment 1 were followed for the main analysis of the current study. The data was fitted to a linear-mixed effects regression model with crossed random effects for participants and items (Baayen et al., 2008). Position and Context factors were sum coded. The maximal model that converged was the simplest model with random intercepts for participant and item.

The analysis showed that Position was a significant predictor on the acceptability of contrast sluicing sentences: contrast sluicing with CNP_{subj} embedding the correlate received lower ratings compared to contrast sluicing with CNP_{obj} embedding the correlate (3.56 vs 4.02; $\beta = -0.2$, $SE = 0.05$, $t = -4.3$, $p < .0001$). The

model also revealed a significant effect of Context, such that contrast sluicing sentences presented after a brief context story were overall rated higher compared with the ones presented without a prior context (4.44 vs 3.18; $\beta = 0.29$, $SE = 0.09$, $t = 3.3$, $p = .002$). The interaction of Position and Context, however, was not found to be significant ($\beta = -0.12$, $SE = 0.09$, $t = -1.28$, $p = .2$).

3.5.2.2 The Satiation Effect

Following the methodology of the previous research investigating the nature of the island effects (e.g., to understand whether the island effect is a grammatical constraint), the data was also analyzed to evaluate if the ratings to the stimuli improved over the course of the experiment. Such improvements in ratings indicate the satiation effect. The existence of the satiation effect implicates that some extra-grammatical factors may have affected the original lower ratings to the sentences in the experiment, rather than the structural configurations that stayed constant.

This analysis aims to show whether the ratings to the test sentences in the experiment improved with repeated exposure. To evaluate if the contrast sluicing sentences satiated, presentation order of the stimuli was added as another fixed factor to the regression model. I report the results of the regression model with random intercepts for participant and for item. The model revealed Position was a significant predictor on acceptability as the ratings to contrast sluicing with CNP subjects were rated significantly lower compared to objects (3.56 vs 4.02; $\beta = -0.37$, $SE = 0.11$, $t = -3.5$, $p = .0005$). This replicates the finding of the main analysis in the previous section, verifying that contrast sluicing is sensitive to subject islands. Results further showed marginal interactions of Context and Position ($\beta = -0.4$, $SE = 0.21$, $t = -1.89$, $p = .06$),

and Position and presentation Order ($\beta = 0.01$, $SE = 0.005$, $t = 1.79$, $p = .07$). No other

significant effects were found. See Table 7 for an overview of the results.

Table 7: Results of the linear-mixed effects regression model with presentation Order
added as a third fixed effect, Experiment 2.

EFFECT	β	SE	t	p
(Intercept)	-0.14	0.12	-1.15	.3
Context	0.13	0.13	1	.3
Position (CNP_{subj} vs CNP_{obj})	-0.37	0.11	-3.5	.0005
Order	0.007	0.006	1.28	.2
Context X Position	-0.4	0.21	-1.89	.06
Context X Order	0.009	0.005	1.64	.1
Position X Order	0.01	0.005	1.79	.07
Context X Position X Order	0.02	0.01	1.47	.1

I conducted two planned comparisons to unpack the interactions. The first

planned comparison investigated the effect of Context on each level of Position (i.e.,

on the acceptability of contrast sluicing with CNP subjects and CNP objects). Results

showed that presenting a prior context story significantly improved the ratings in

sentences with both CNP subjects (4.13 vs 3.02; $\beta = 0.22$, $SE = 0.1$, $t = 2.33$, $p = .02$),

and CNP objects (4.75 vs 3.33; $\beta = 0.35$, $SE = 0.1$, $t = 3.5$, $p = .001$). The second

planned comparison explored the effect of presentation Order, again, on the

acceptability of sentences with CNP subjects versus objects. It was found that the

acceptability marginally improved with repeated exposure only with CNP subjects (β

$= 0.01$, $SE = 0.006$, $t = 1.88$, $p = .07$). Crucially, the effect of Order was not a

significant factor when the correlate was embedded in CNP objects ($\beta = 0.002$, $SE =$

0.006, $t = 0.38$, $p = .7$). See Figure 6 which illustrates the satiation effect in Contrast Sluicing with CNP subjects. The black dashed line represents the acceptability improvements with subjects. Compare it with the grey dashed line representing objects.
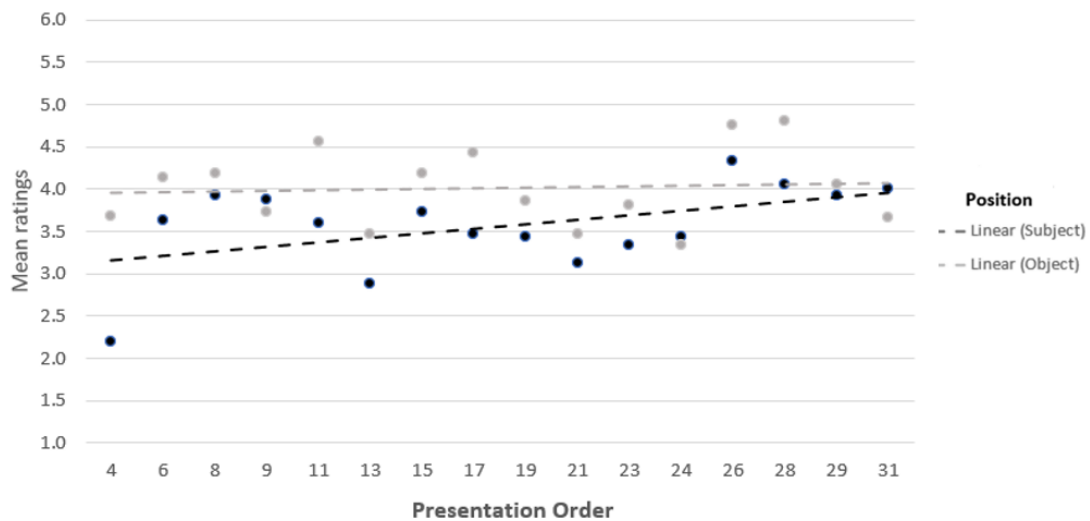
Figure 6: Linear regression (subject: black, object: grey) fitted on the acceptability means as a function of presentation order. The dots represent the mean ratings for each presentation order.

3.5.3 Discussion

Recall the two goals of the present study: (i) to test the effect of a prior context on the acceptability of contrast sluicing, and (ii) to explore the nature of the island effect in sluicing environment. Both goals were achieved. First, it was found that the context improved the acceptability of contrast sluicing, confirming the predictions about the role of context on decreasing the processing cost of contrast sluicing. Second, the acceptability of subject island involving contrast sluicing sentences

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increased with repeated exposure, showing that the reason behind the original degradation may be extra-grammatical factors.

I first formed a hypothesis on the acceptability of contrast sluicing, upon the results of Experiment 1 (Section 3.4), which showed an overall degradation in the acceptability of contrast sluicing (e.g., unlike regular sluicing). The hypothesis on the role of context broadly asserts that the predictability of a contrastive sentence, uttered out of the blue, is quite low in natural language. Pragmatic accommodations are needed to understand that one expression will be contrasted with another expression in the upcoming sentence, as in the contrast sluicing sentences (e.g., the correlate vs the remnant). It is predicted that such discourse accommodations should be less costly when the contrast is cued within a discourse. Accordingly, contrast sluicing sentences were presented after a brief context so that the processing costs related to the pragmatics would be eliminated, at least to a certain extent. This was predicted to lead to an increase in the acceptability of contrast sluicing. Critically, results of the current experiment support this prediction. There was an obvious advantage of reading a brief context story before reading and evaluating the acceptability of target contrast sluicing sentences (see (85)).

(85)   **Prior Context:** *Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. They were allowed to eat a little more chocolate and candy than at other times. Due to old age, Megan unfortunately forgets the details of such lovely memories now.*

Sample Target Sentence: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Sentences read after a context were rated more acceptable compared to the ones read without a context (4.44 vs 3.18). This conforms to the predictions about the role of context in that the acceptability of sentences involving a contrast could be improved via extra-sentential, discourse-level manipulations, as attested in the contrast sluicing environment.

Furthermore, the present study once again shows that contrast sluicing is island sensitive, supporting the observations of Merchant (2008) and the proponents of the structural approach to sluicing. The findings show that contrast sluicing sentences which involve correlates embedded in a complex NP in subject position were degraded in acceptability compared to the ones with complex NP object (compare (86a) with (86b)). The degradation with the subject correlates holds true regardless of presenting or not presenting a prior context.

(86)   a. [The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero. (4.03)

b. Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero. (4.55)

Related to the second goal (ii), the current findings provide evidence supporting the view which argues that the island effects arise from non-structural factors. The island effects are argued to occur due to processing constraints, rather than their being structural constraints in the grammar (Hofmeister & Sag, 2010; Hofmeister, et al., 2013; Kluender & Kutas, 1993). For subject islands, the reason behind the island effect is commonly argued to be related to discourse and pragmatic

anomalies (e.g., Abeillé et al., 2020 ; Chaves & Dery, 2019). The present study shows that comprehenders find contrast sluicing sentences involving subject islands more acceptable as their exposure to such sentences increase through the experiment. Such improvements, importantly, were attested only when there was a subject island involved (i.e., with CNP subjects, *not* with objects). This indicates that the underlying reason for the subject island effect cannot be merely structural because the effect attenuates with repeated exposure. Hence, the current results support the functional view to islands.

3.6   General Discussion

Experiment 1 is the first study to quantitatively investigate the differential island effects in regular and contrast sluicing (compare (87a) with (87b), in relation to subject islands. Contrast sluicing sentences involving subject islands (87a) are found to be unacceptable, unlike their regular sluicing counterparts (87b). The results support Merchant (2008) and Griffiths & Liptak (2014) by attesting significant degradation with islands in contrast sluicing only.

(87)   a.*[The costume of *Captain America*] used to amaze Megan's children, but she cannot recall [*which other superhero*].

b. [The costume of *a superhero*] used to amaze Megan's children, but she cannot recall [*which superhero*].

The differential island effects appear to be unexpected given the analogous structures of the antecedent clauses in both (87a) and (87b): "[The costume of x] used

to amaze Megan's children" – "x" corresponds to the correlate. The assumptions of the evasion approaches, however, can easily account for the differential island effects in regular and contrast sluicing. Evasion approaches allow unpronounced syntax under ellipsis to be structurally non-isomorphic to its antecedent clause in regular sluicing, but crucially, not in contrast sluicing (e.g., Barros et al., 2014; Griffiths, 2019). Supporting this view, the experiment discussed in Chapter 2 shows that a copular source can be the unpronounced structure in regular sluicing, but not in contrast sluicing. Accordingly, there could be a no-island violating copular structure deleted in (87b) (e.g., "…she cannot recall *which superhero* [that was __]"). This is unlike the source of the sluice in (87a): it involves a subject island out of which the remnant cannot move (e.g., "…she cannot recall *which other superhero* [[the costume of __]] used to amaze Megan's children]"). Therefore, the differential island effects under sluicing may not be very puzzling, indeed.

I next focus on the contrast sluicing in Experiment 2 for two reasons. First, contrast sluicing exhibits the subject island effect when the correlate is embedded in a complex NP subject. Second, the acceptability of contrast sluicing is overall degraded (e.g., compared to regular sluicing).

I investigate the nature of the island effect in contrast sluicing environments. The aim is to evaluate if islands are structural constraints, as argued by the formal approaches. Alternative is the functional view, which claims that the island effect occurs due to processing difficulties, which may arise from pragmatic reasons in the case of subject islands. This line of thinking predicts the island effects to be gradient, and to be ameliorated when the non-structural factors that cause extra-processing costs are controlled for. Amelioration can happen to a certain extent, in the form of

"satiation": acceptability improves as a consequence of frequency. This is what Experiment 2 finds: the acceptability of contrast sluicing sentences involving subject islands increases with repeated exposure. This signals that the degradation in the first place may not be structural, supporting the functional view to islands.

At the same time, Experiment 2 shows that presentation of a prior context decreases the processing burden and increases acceptability of contrast sluicing. A prior context, however, does not ameliorate the subject island effect. This may not be very surprising given that factors contributing to the processing of contrast sluicing are many in the first place (independent of islandhood). Several extra-grammatical processing factors influence the acceptability of complex sentences (Hofmeister & Sag, 2010), including contrast sluicing. Eliminating such factors helps us better evaluate the effects of the grammatical constraints on the acceptability scores of contrast sluicing sentences. It is possible that the prior contexts presented in Experiment 2 do not completely eliminate the effects of such extra-grammatical factors. One potential path to take is to explore if the processing costs could be lessened more via further contextual manipulations. This will be explored in the next chapter.

Chapter 4

A CLOSER LOOK AT CONTRAST SLUICING

4.1 Introduction

A judgment of acceptability of a sentence is commonly taken to reflect its well-formedness. However, many have argued that there are also extra-grammatical factors that affect the processing, thus, acceptability of sentences (e.g., Culicover et al., 2022; Hofmeister & Sag, 2010, Hofmeister et al., 2013, 2014). In this view, acceptability of a sentence is considered to reflect a combination of both grammatical and extra-grammatical factors. To give an example, locality of a dependency (e.g., the linear distance between a filler and its gap) has been shown to be one of the factors that affect processing difficulty and acceptability of a sentence (see Gibson, 2000). The human parser has limited cognitive resources, and maintaining a filler in memory is taxing (e.g., Kluender & Kutas, 1993). Therefore, longer filler-gap dependencies consume more cognitive resources and increase the processing complexity. This in turn decreases acceptability.

Recall that Experiment 1 in Chapter 3 uncovered a previously undetected acceptability penalty in contrast sluicing by comparison with regular sluicing. Experiment 1 explored subject islands (e.g., sentences like "[The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero."). The attested degradation in contrast sluicing was actually independent of the presence of subject islands – it was also attested when the NP correlate was in the object position. In this experiment, contrast sluicing sentences, as in (88b) (correlates

and remnants are *italic*), received lower ratings (4.29 out of 7) compared with their regular sluicing counterparts (5.48 out of 7) as shown in (88a).

(88)   REGULAR SLUICING VERSUS CONTRAST SLUICING

a. Regular sluicing: Mean rating 5.48

Megan's children used to love the costume of *a superhero*, but she cannot recall *which superhero*.

b. Contrast sluicing: Mean rating 4.29

Megan's children used to love the costume of *Captain America*, but she cannot recall *which other superhero*.

Subsequently, one factor that increases the acceptability of contrast sluicing was found to be the presence of contextual support. Experiment 2 showed that presenting a prior context story renders contrast sluicing sentences more acceptable. See a sample context in (89).

(89)   EXAMPLE CONTEXT SNIPPET

Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. They were allowed to eat a little more chocolate and candy than at other times. Due to old age, Megan unfortunately forgets the details of such lovely memories now.

A prior context makes uttering the embedding verb of a sluice (e.g., "cannot recall" in (88b)) more natural. It cues both the complex NP that involves the correlate

(e.g., "the costume of x"), and the other NP argument of the verb (e.g., "Megan's children") in the antecedent clause. I thus hypothesized that a prior context, like in (89), would make contrast sluicing sentences, as in (88b), more relevant within the discourse. This would decrease the processing complexity and increase acceptability (see Chapter 3, Section 3.5). The findings from Experiment 2 supported this hypothesis: Presentation of a prior context increased acceptability of contrast sluicing compared to the absence of such a context (mean ratings: 4.44 vs 3.18, respectively). However, acceptability of contrast sluicing still did not reach to the same levels as the acceptability of grammatical fillers (these were rated 6.45).

The goal of this chapter is to investigate the acceptability penalty in contrast sluicing further. I explore the potential sources of processing complexity associated with contrast sluicing, and test whether the observed acceptability decrease in contrast sluicing could be eliminated. The existence of a prior context has been attested to aid in the processing of contrast sluicing, as mentioned above (Experiment 2 in Chapter 3). The next question is whether contextual manipulations can increase the acceptability of contrast sluicing even more. Before moving on to testing the role of context further, I first evaluate another possible factor which may be causing low levels of acceptability. This is the embeddability of "which other N".

4.2 Corpus Study: Embeddability of "which other N"

There are various extra-grammatical factors that may influence the acceptability of a sentence (e.g., Culicover et al., 2022; Hofmeister & Sag, 2010). One of these is the effect of "surprisal" (see Culicover et al., 2022). Infrequent occurrences of certain constructions, for instance, create a "surprisal" effect, thus, lower acceptability. Following these assumptions, it stands to reason that contrast sluicing

sentences (e.g., Merchant, 2008) receive lower acceptability scores than their regular sluicing counterparts as a consequence of "surprisal". The surprisal, which causes the degradation in this particular case, may be because it is not common to embed a wh-phrase that involves an expletive "other" (e.g., "which other N"). I therefore conducted a corpus survey to examine whether (in)frequency of an embedded "which other N" may be causing the lower acceptability of contrast sluicing sentences.

The corpus survey was carried out using *Corpus of Contemporary American English* (*COCA*; Davies, 2008). *COCA* is a widely used database which comprises approximately one billion words of text, from the years 1990 to present. The data comes from eight different genres: academic texts, blogs, fiction, magazines, newspapers, transcripts of spoken dialogue, television and movie subtitles, and webpages. I focus the corpus search on the instances of the question word "which" followed by a noun (i.e., "Which N") and "which other" followed by a noun (i.e., "Which other N"). Notice that "which N" corresponds to the form of the remnant in regular sluicing (i.e., "which superhero" in (90a)), and "which other N" parallels the *wh*-remnant in contrast sluicing (e.g., "which other superhero" in (90b)).

(90)   a. Mike loved *a superhero*, but I don't remember *which superhero*.
        b. Mike loved *Captain America*, but I don't remember *which other superhero*.

Sluicing corresponds to an embedded interrogative where only the embedded *wh*-word (i.e., "which (other) N") is pronounced. Accordingly, the corpus survey compares the *embeddability* of *Which N* form with *Which other N* form by looking

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into matrix and embedded interrogatives. I first searched for instances of "which N" in both matrix and embedded interrogatives and identified a total of 2,484 token sentences. Of all *Which N*s in interrogatives, 87% were found to be embedded (a total of 2163 tokens). The second search was conducted to detect the instances of "which other N" in matrix and embedded interrogatives, and a total of 41 tokens were identified. Of all *Which other N*s in interrogatives, 97.5% were embedded interrogatives (a total of 40 tokens). Given these results, the form of the remnant in contrast sluicing (i.e., "which other N") is actually more embeddable compared with its counterpart in regular sluicing (e.g., "which N") (97.5% vs 87%). These indicate that the embeddability of the *wh*-remnant in contrast sluicing should not cause a surprisal effect (at least, vis-à-vis the remnant in regular sluicing).

However, the surprisal, or the difficulty of processing contrast sluicing, may arise from the use of expletive "other". Notice that the instances of *Which other N* was much less frequent than *Which N*, both in matrix (e.g., 1 of a total of 322 tokens) and embedded (e.g., 40 of a total of 2203 tokens) interrogatives. This may be contributing to the processing difficulty. Next section thus discusses possible ways to reduce the surprisal effect and increase the acceptability of *Which other N* in contrast sluicing environment via contextual manipulations.

4.3   The Experiment: Revisiting Contrast Sluicing

I turn next to the role of context. I re-examine the effect of context on the acceptability of contrast sluicing. Building on the findings from two previous studies (Experiment 1 and 2, Chapter 3), I investigate whether presenting the correlate and its (focus) alternative (i.e., the referent of the *wh*-remnant) in a prior context improves the acceptability of contrast sluicing sentences.

First, recall the hypothesis regarding contrastive sentences, which is repeated in (91). This hypothesis was motivated by the overall low acceptability scores given to contrast sluicing sentences in Experiment 1 (Chapter 3).

(91)   Hypothesis 1: Building a contrast out of the blue is unnatural and
         unexpected in language.

Therefore, contrast sluicing sentences were presented after a prior context in Experiment 2 (Chapter 3). Context stories were created so that the target contrast sluicing sentences would be more relevant to utter within the discourse. This was predicted to be unlike presenting the target sentences without a context. The findings showed that presenting a prior context indeed increased the acceptability of target sentences (92).

(92)   **Context:** *Megan has two children, Carl and Jo. Halloween was the*
         best time of the year for them as kids. They were allowed to eat a little
         more chocolate and candy than at other times. Due to old age, Megan
         unfortunately forgets the details of such lovely memories now.

         Target Sentence: Megan's children used to love the costume of
         Captain America, but she cannot recall which other superhero.

Notice that the context story cues the complex NP that embeds the correlate (i.e., "the costume of Captain America"). It does so indirectly, by mentioning what used to happen at Halloween. The present study takes this manipulation one step

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further by presenting more direct cues in context stories, such as the correlate itself (e.g., "Captain America") and the actual referent of the *wh*-remnant (e.g., Wonder Woman"). I thus investigate the effects of discourse saliency of the correlate and the remnant on the acceptability of contrast sluicing.

4.3.1   The Rational of the Current Study

Acceptability of *wh*-movement (i.e., filler-gap dependencies) has long been known to improve depending on the informational content of a *wh*-phrase (i.e., filler). Pesetsky (1987), for instance, points that Subjacency violations, where a *wh*-phrase (i.e., "what" in (93a)) is extracted over another, intervening, *wh*-phrase (i.e., "who"), is not acceptable. In other words, subjacency violations give rise to crossed *wh*-dependencies. Such sentences, however, become more acceptable when the *wh*-words are "D(iscourse)-linked" (i.e., Which N, as in (93b)).

(93)   a. *What did you persuade *who* to read __?

b. *Which book* did you persuade *which person* to read __?

The observations regarding D-linking have been re-evaluated in processing models of filler-gap dependencies (e.g., Hofmeister, 2007; Hofmeister et al., 2007; Hofmeister & Sag, 2010). In this line of research, acceptability improvement is formalized as a consequence of the memory retrieval ease of the filler when it is linguistically more complex (e.g., *Which book* is more complex than *What* in (93)). Hofmeister (2007) presents a hypothesis (94), in which linguistic complexity causes

higher levels of activation in memory representations of linguistic entities. Thus, complexity increases saliency. A more salient filler is reactivated easier in its gap site.

(94)   *Memory Facilitation Hypothesis*

Linguistic elements that encode more information (lexical, semantic, syntactic, etc.) facilitate their own subsequent retrieval from memory.

(Hofmeister 2007:4)

Building on this view, Troyer et al. (2016) show that elaborative descriptions of fillers facilitate processing even when those descriptions are not locally given but presented within a broader discourse. To illustrate, giving more information about a filler (e.g., "The senator" in (95a)) in a prior context (e.g., "a man from Ohio who was running for president") leads to faster reading times (RTs) at the gap site in the target sentence (95a). This is unlike the retrieval of a less elaborately described filler (e.g., "The senator" in (95b)), which leads to longer RTs.

(95)   **Context**: Two senators were arguing with a Democrat and a Republican after a big debate. The Democrat had voted for one of the senators, and the Republican had voted for the other, a man from Ohio who was running for president.

a. **Target sentence:** The senator who the Republican had voted for __ was picking a fight about health care reform.

b. **Target sentence:** The senator who the Democrat had voted for __ was picking a fight about health care reform.

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I take this as an indication that saliency (e.g., having increased activation levels in a memory representation) of a filler can be altered by discourse-level manipulations as well.

Turning back to contrast sluicing, I explore effects of discourse saliency status of the *wh*-remnant and the correlate on acceptability. Following the insights of the prior work on processing *wh*-dependencies (e.g., Hofmeister, 2007; Troyer et al., 2016), I form the following hypothesis.

(96)   <u>Hypothesis 2</u>: Acceptability of contrast sluicing increases as a function of discourse saliency of the contrasted NPs (e.g., the correlate and the remnant).

To test this hypothesis, I form the following linking theory:" An NP becomes more salient in memory when it is explicitly mentioned in the discourse". Accordingly, the current study investigates if the acceptability of contrast sluicing increases when the correlate and its (focus) alternative (i.e., the referent of the *wh*-remnant) are presented in a prior context. Discourse saliency, hence, acceptability is predicted to increase with the addition of an "informative" context that involves the correlate and the referent of *wh*-remnant.

4.3.2   Methods

4.3.2.1   Design and Materials

A 2 (Context Type) x 2 (Position) with-in subjects acceptability rating study was conducted. The overall goal was to see whether discourse saliency (e.g., explicit

mention of the correlate and the referent of the wh-remnant in a prior context) would have an effect on acceptability of contrast sluicing. In parallel to the prior experiments (Chapter 3), correlate position was also manipulated although there is no a priori hypothesis as to whether saliency will have an effect on islandhood.

The position factor had two levels: correlate embedded in a Complex NP either in subject position (CNP$_{subj}$, subject island conditions) or in object position (CNP$_{obj}$, no island conditions). As in the previous experiments (Chapter 3), the preposition "of" was used in complex NPs across all critical stimuli. Recall that contrast sluicing is island sensitive (e.g., Merchant, 2008), which is experimentally attested in Chapter 3. If the island effect is robust, it is predicted that ratings to CNP$_{subj}$ (97a) will be lower compared to CNP$_{obj}$ (97b).

(97)   a. **CNP$_{subj}$:** [The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero.

b. **CNP$_{obj}$:** Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero.

The second factor, Context Type, had two levels too: a "Neutral" context (as with Experiment 2) and an "Informative" context. Both context types involved presentation of brief stories prior to the presentation of the target contrast sluicing sentences. The stories in Neutral condition were recycled from Experiment 2 (Chapter 3, Section 3.5). As such, neutral context stories were aimed to set the scene for the target sentences by mentioning the broader context (e.g., the "Halloween" in the context story makes uttering [the costume of x] in (98a-b) more relevant). The stories

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ended with a sentence that increases the predictability (or lexical accessibility) of the embedding verb of the sluice (e.g., "cannot recall"). Notice that the Informative context minimally differed from the neutral context (see (98): the correlate (e.g., "Captain America") and the referent of the *wh*-remnant (e.g., "Wonder Woman") were explicitly mentioned in the Informative context stories. This is predicted to increase the saliency of the correlate and the referent of the remnant, hence, improve the acceptability if the Hypothesis 2 (see (96)) is correct.

(98)   **Context ({*Neutral / Informative*}):** Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. {*They were allowed to eat a little more chocolate and candy than at other times. / Carl used to wear the costume of Captain America, and Jo became Wonder Woman every year.*}). Due to old age, Megan unfortunately forgets the details of such lovely memories now.

a. **CNP$_{subj}$:** [The costume of Captain America] used to amaze Megan's children, but she cannot recall which other superhero.

b. **CNP$_{obj}$:** Megan's children used to love [the costume of Captain America], but she cannot recall which other superhero.

Sixteen sets of target contrast sluicing sentences (recycled from the previous experiments in Chapter 3) were put in a Latin-square design. Sixteen filler sentences (following those from the previous experiments) were also included. Filler sentences were presented with a prior context story, akin to the target contrast sluicing sentences.

In half of the context stories for the fillers, explicit names were mentioned in the "such as/like … and/or …." frame (see (99a)), so that participants would not have a bias to always expect a contrast sluicing sentence after a so-called "informative" story. (99b) illustrates a grammatical filler presented after a context.

(99) Sample Fillers

a. **Context:** *The board was announced to have another meeting towards the end of the month. The news was very surprising for the long-term members like Mr. Jackson and Ms. Plum because the board normally meets only once each month. The reason for the second call for the meeting was also explained, but it didn't catch people's attention.*

Filler Sentence (Ungrammatical): The board a day appointed, but the members forgot why month they would meet again.

b. **Context:** *A well-known company that produces luxury vehicles has been experiencing some difficulties lately. Their sales team has offered a few suggestions so far to be able to increase the market share and the sales. Hoping that a new release of a specific product could work, the company is effectively working on it these days.*

Filler Sentence (Grammatical): The famous car manufacturer hopes to release a new model soon, but the sales might not go up as expected.

Following five of the filler sentences, a Yes/No comprehension question was presented to make sure that participants were completing the task attentively. Filler sentences were dispersed among critical items, and the presentation order of the stimuli was pseudorandomized. No more than two critical items were presented after one another, and neither of the two adjacent critical items were of the same condition. See Appendix C for the complete set of items in this experiment.

4.3.2.2   Participants

Thirty-two self-reported native speakers of English were recruited on Amazon's Mechanical Turk (MTurk). The recruitment procedure was similar to the procedures reported before in previous chapters. Participants were master workers who are located in the US, all received 2 dollars for participation. Compensation was not contingent upon being a native speaker of English or not. Participants who had completed the previous acceptability experiments were excluded from the recruitment pool.

4.3.2.3   Procedure

The experiment was created by using the online software Ibex Farm (Drummond, 2013) and conducted on MTurk. Participants read and accepted a disclaimer approved by the University of Delaware Human Subjects Review Board before starting the experiment. Participants were instructed to carefully read brief stories that would appear on their screen, then proceed to read complex English sentences and rate their acceptability on a seven-point scale (1-unacceptable, 7-acceptable). They were additionally instructed to answer some comprehension

questions that would be randomly presented after some judgement scales. No feedback was given. The task took about twenty minutes to complete.

4.3.3   Results

One participant's data was excluded due to poor accuracy scores on the comprehension questions[9]. Another participant's data was excluded because this person failed to follow the instructions in the experiment. I report the results of the remaining thirty participants: these comprised 480 critical trials. The mean rating for the grammatical filler sentences was 5.74 ($SD = 1.95$). For the ungrammatical fillers, it was 1.48 ($SD = 1.07$). These indicate that the seven-point acceptability scale was used expectedly. The mean accuracy rate to the comprehension questions was 93%.

The findings show that contrast sluicing sentences presented after an informative context story received higher ratings compared with sentences presented after a neutral context (4.53 vs 4.35). This reflects the difference between the explicit mention in the context (i.e., informative context) or not (i.e., neutral context). Furthermore, sentences in CNP_{obj} conditions (i.e., no island conditions) were rated higher than the ones in CNP_{subj} conditions (i.e., subject islands) (4.56 vs 4.32). This difference (i.e., island effect) was observed regardless of the context type (4.43 vs 4.27 after a Neutral context, 4.69 vs 4.38 after an Informative context).

For the analysis, raw acceptability ratings were normalized - z-score transformed (means and standard deviations estimated by participant). Figure 7 illustrates the normalized results.

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[9] This participant had 60% accuracy rate.

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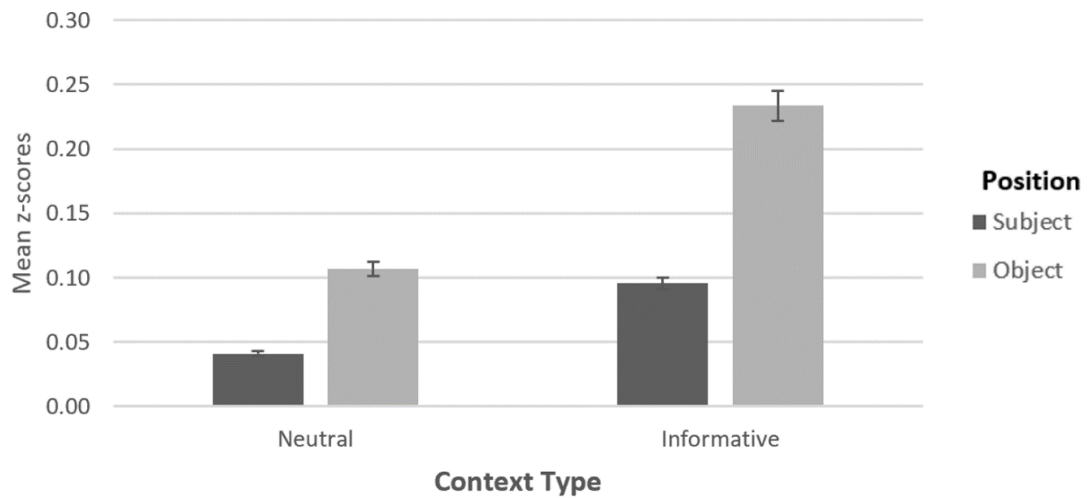
Figure 7: Mean z-scores across Neutral and Informative context types.

The data was fitted to a linear-mixed effects regression model with crossed random effects for participants and items (Baayen et al., 2008). Position was sum coded: CNPobj were given a value of -1/2, and CNPsubj were 1/2. The results of this would show if the subject island effect was active in contrast sluicing. Context factor was also sum coded: Neutral context conditions were given a value of -1/2, and Informative were 1/2. This would show a potential effect of discourse saliency (i.e., the explicit mention in a prior context) on the acceptability of contrast sluicing.

The maximal model that converged was the simplest model with random intercepts for participant and item. Results showed a marginal effect of Context in that sentences presented after an Informative context received higher acceptability scores compared to a Neutral context (4.53 vs 4.35; β = -0.09, SE = 0.05, t = 1.77, p = .08). This suggests having salient memory representations for the correlate and the remnant improves acceptability of contrast sluicing. There was also a marginal effect of

Position: sentences involving a correlate embedded in a CNP subject (i.e., CNP_{subj} /island conditions) were rated lower than sentences with CNP object correlates (i.e., CNP_{obj}/baseline conditions) (4.32 vs 4.56; β = -0.1, SE = 0.05, t = -1.93, p = .05). The interaction of Position with Context was not found to be significant (β = -0.07, SE = 0.1, t = -0.7, p = .4). See Table 8 for a summary of the results.

Table 8: Results of the linear-mixed effects regression model.

EFFECT	β	SE	t	p
(Intercept)	0.12	0.06	2	.05
Context (Informative vs Neutral)	-0.09	0.05	1.77	.08
Position (CNP_{subj} vs CNP_{obj} correlates)	-0.1	0.05	-1.93	.05
Position X Context	-0.07	0.1	-0.7	.4

The effects of both Context and Position were found to be marginal ($<.1$) and did not reach conventional levels of statistical significance ($<.05$). This parallels the findings of prior studies (e.g., Jung & Goodall, 2022; Experiment 2 in Chapter 3), which also detected marginal effects (of islandhood) under ellipsis.

4.3.4 Discussion

Findings of the present study, as well as the prior experiments (e.g., Experiment 1 and 2 as reported in Chapter 3), demonstrate two things; (i) an acceptability penalty in contrast sluicing (as a consequence of processing complexity), and (ii) the existence of an active subject island effect in contrast sluicing. Presenting a prior context story, as well as the discourse saliency status of the correlate and the

remnant (e.g., presenting an "informative" context) are found to affect the acceptability of contrast sluicing.

The current findings show that discourse saliency status of the *wh*-remnant and the correlate influences the acceptability of contrast sluicing sentences. More precisely, presenting a prior informative context, which involves explicit mention of the NP correlate and the referent of the *wh*-remnant, increased ratings to contrast sluicing sentences. To illustrate, ratings to contrast sluicing sentences in (100a-b) both increased after an informative context which explicitly mentioned "Captain America" and "Wonder Woman", compared with a neutral context. Mean ratings, on a scale of 7, were 4.53 after an informative, and 4.35 after a neutral context.

(100)   **Context ({*Neutral / Informative*}):** Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. {*They were allowed to eat a little more chocolate and candy than at other times. / Carl used to wear the costume of Captain America, and Jo became Wonder Woman every year.}). Due to old age, Megan unfortunately forgets the details of such lovely memories now.

a. The costume of Captain America used to amaze Megan's children, but she cannot recall which other superhero.

b. Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Attested acceptability improvement after an informative context provides evidence supporting the hypothesis (repeated in (101)) on the acceptability of contrast sluicing.

(101)   Hypothesis 2: Acceptability of contrast sluicing increases as a function of discourse saliency of the contrasted NPs (i.e., the correlate and the remnant).

Findings show that having a salient correlate (e.g., "Captain America"), and a salient referent (e.g., "Wonder Woman") of the *wh*-remnant (e.g., "which other superhero") within the discourse renders contrast sluicing sentences more acceptable, compared to a discourse where saliency of the correlate and the remnant are not boosted via explicit mention (e.g., in neutral context).

At the same time, results showed an active subject island effect in contrast sluicing, which was reflected as an acceptability decrease in contrast sluicing involving a correlate embedded in CNP subject. The island effect did not disappear as a consequence of discourse saliency: the acceptability of sentences with CNP subject (100a) was lower than CNP objects (100b) (4.32 vs 4.56), irrespective of the discourse saliency status (i.e., context type). Notice that discourse saliency is predicted to increase the ratings to contrast sluicing in general. How this, in turn, could affect the acceptability of contrast sluicing involving subject islands in comparison to no islands is less obvious and it remains to be explored further.

Relatedly, I explore a more pressing issue next, which is the underlying subject-object contrast in sluicing/ellipsis environment. Working in favor of object correlates (e.g., "object bias", see Frazier & Clifton (1998)), this inherent subject-

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object asymmetry that is presumed to occur under ellipsis, may contribute to subject island effects in sluicing environment. Notice that there is an anaphoric dependency between the correlate in the antecedent clause, and the *wh*-remnant of the sluice (102)[10].

(102)   …*correlate* ("x") …, but …. *remnant* (which (other) x).

This dependency is anaphoric because the remnant depends on the correlate for interpretability. In regular sluicing, for instance, the interpretation of the remnant (i.e., "which superhero" in (103a)) and the correlate (i.e., "a superhero" in (103a)) covary: they pick the same referent within the discourse. Their referent is a salient superhero from a set of superheroes. In contrast sluicing (103b), the remnant picks a referent, which is, critically, not the same referent as its correlate. The set of potential referents of the remnant in contrast sluicing (e.g., the referent of "which other superhero" in (103b)) is formed by *excluding* the correlate from a salient set of superheroes. In other words, "which other superhero" refers to a certain superhero that is *not* "Captain America". As such, the remnant still depends on the correlate for resolution of its meaning in contrast sluicing.

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[10] Note that from the perspective of structural approaches (see Chapter 2 for an overview of approaches to sluicing), there are two dependency formations under sluicing: an anaphoric dependency between the correlate and the remnant, and a filler-gap dependency between the remnant and its (elided) gap/trace. Alternatively, according to the non-structural approaches to sluicing (e.g., Barker, 2013; Sag & Nykiel, 2011), there is only an anaphoric relation between the antecedent clause and the remnant, and no filler-gap dependency.

(103)　　a. Megan's children used to love the costume of *a superhero*, but she

cannot recall *which superhero*.

b. Megan's children used to love the costume of *Captain America*, but

she cannot recall *which other superhero*.

Whether the anaphoric dependency formation in sluicing causes processing advantages or disadvantages for certain arguments of the verb (e.g., subjects versus objects) calls for research. This is also relevant to the investigation of subject islands under sluicing, as the inherent subject-object contrast (i.e., "object advantage") may be stemming from the processing of the anaphoric dependency, yet it could still be contributing to the acceptability scores of subject-island-involving sluicing.

I therefore investigate the real time comprehension of sluicing and its kin (i.e., "pseudosluicing", which involves no ellipsis) in the next chapter, aiming to accomplish an enriched understanding of processing of sluicing and sluicing-like sentences, and the inherent subject-object contrast under sluicing.

Chapter 5

PROCESSING OF SLUICING(-LIKE) CONSTRUCTIONS

5.1 Introduction

Within the generative framework, sluicing is considered to be an ellipsis construction where an interrogative clause is unpronounced (illustrated with gray ink in (104)), excluding the *wh*-word (e.g., Ross, 1969).

(104)   John was talking to someone, but I don't [$_{VP}$ know [$_{CP}$ who$_1$ [$_{TP}$ John was talking to t_1]]].

Sluicing constructions have also been attested in typologically diverse languages, such as in Turkish. Although Kizu (1997) suggests that the source of sluicing in *wh*-in-situ languages, including Turkish, may be clefts, İnce (2009) convincingly shows that an elliptical cleft analysis does not hold in Turkish[11]. He argues that sluicing constructions in Turkish should be analyzed akin to sluicing in English (as in (104)). Importantly, note that structures scrutinized in İnce (2009) display *case connectivity*, meaning that the *wh*-remnant (e.g., "who") bears the same

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[11] One reason İnce (2009) states is that pivots in clefts always bear nominative case in Turkish, so the underlying source of sluices cannot be clefts due to the case connectivity effect as illustrated in (105a-b). See İnce (2009) for a more in-depth discussion and other pieces of evidence provided against a cleft analysis of regular sluicing in Turkish.

case marking as its correlate (e.g., "someone"). See the example Turkish sentences in (105a-b), where the matching case on the correlate and the *wh*-remnant (e.g., Accusative in (105a), Ablative in (105b)) are bolded.

(105)   a. Ali birin-**i**   ara-dı ama kim-**i**$_1$ Ali t_1 aradı bil-mi-yor-um.

          Ali someone-**Acc** call-Pst but who-**Acc**   know-Neg-Prs-1sg

        'Ali called someone, but I don't know who.'

     b. Ahmet birin-**den**   borç al-dı   ama kim-**den**$_1$ Ahmet t_1

         Ahmet someone-**Abl** debt take-Pst but who-**Abl**

         borç al-dı bil-mi-yor-um.

               know-Neg-Prs-1sg

        'Ahmet borrowed money from someone, but I don't know from who(m).'

      Furthermore, it has been shown that Turkish has *pseudosluicing* constructions like in (106a-b) (see Palaz, 2019) as well as the so-called "English-type", regular sluicing (as in (105a-b)). Unlike regular sluicing, no case-connectivity holds between the correlate and the *wh*-phrase in pseudosluicing as illustrated in (106a-b). Pseudosluicing is thus fundamentally different from regular sluicing because no ellipsis is involved in their derivation. Rather, the pseudo-sluice is suggested to be a copular clause involving a null (E-type) *pro*-form as its subject, and the *wh*-phrase as its predicate (see also Adams & Tomioka (2012) for a *pro*-form analysis of Chinese pseudosluicing).

(106)　　a. Ali birin-**i**　　　　　ara-dı ama　　kim　　　　bil-mi-yor-um.

　　　　　　Ali someone-**Acc** call-Pst but *pro* who.Cop know-Neg-Prs-1sg

　　　　　　'Ali called someone, but I don't know who (that/(s)he was).'

　　　　b. Ahmet birin-**den**　　　borç al-dı　　ama　　　kim

　　　　　　Ahmet someone-**Abl** debt take-Pst but *pro* who.Cop

　　　　　　bil-mi-yor-um.

　　　　　　know-Neg-Prs-1sg.

　　　　　'Ahmet borrowed money from someone, but I don't know who

　　　　　(that/(s)he was).'

Notably, Turkish applies either ellipsis at the sentence level (105a-b), similar
to English, or captures the intended meaning of a sluice by constructing a silent
copular clause, like in (106a-b)). In this chapter, I utilize this optionality in Turkish to
explore the processing of sluicing and sluicing-like constructions.

Despite the lack of certain cues, ellipsis, including sluicing, is argued to be
processed incrementally and in a predictive fashion (e.g., Kim et al., 2020; Yoshida et
al., 2012), similar to regular *wh*-dependencies. Although processing of sluicing is an
understudied topic in sentence processing, particularly from a cross-linguistic
perspective, there are two attested factors that affect processing of sluicing, at least in
English: *Locality* and *Parallelism*.

Locality constraint points to an object antecedent privilege over a subject in
interpreting the remnant in sluicing (Frazier & Clifton, 1998; Harris, 2015; a.o.).
Accordingly, the remnant "who" in (107) picks "someone" in the object position as its

antecedent, rather than "somebody" in the subject position. Hence, the *wh*-remnant in (107) is most naturally interpreted as referring to the person that the president fired.

(107)   *Somebody* claimed that the president fired *someone*, but nobody knows *who*.

Another factor that affects processing of sluicing has been argued to be Parallelism constraint. Broadly speaking, semantic, prosodic, morphological, and structural matches between the conjuncts (and/or between the antecedent and the remnant) are argued to ease processing ellipsis, over mismatches (e.g., Carlson, 2001; Dickey & Bunger, 2011; Frazier & Clifton, 1998).

Although these two constraints are well-attested under ellipsis in English, how Locality and Parallelism are operationalized cross-linguistically, or whether one factor overrides the other remains less clear. Hence, one of the primary goals of this chapter is to explore these processing constraints in sluicing constructions in a structurally different language than English, which is Turkish. Second, this chapter aims to investigate whether these constraints are actually specific to ellipsis as claimed so far, or whether they are active in minimally different sluicing-like constructions that do not involve ellipsis (e.g., pseudosluicing). I thus conduct a self-paced reading experiment in Turkish and explore processing of sluicing(-like) constructions. Findings suggest that Locality, attested with both online (e.g., reading times) and offline (e.g., response times to comprehension questions) measures, is a strict constraint. Critically, object antecedents ease processing of not only English-type regular sluicing sentences (as in (105)), but importantly, the processing of

pseudosluicing (as in (106)) as well. The effect is found to be realized at the earliest temporal location in a sentence, which is the NP complement of the *wh*-phrase (e.g., "student" in "which student"). The effects of structural and morphological parallelism, on the other hand, are not found to be active in the present study. These findings and their implications are discussed more elaboratively at the end.

5.2   Sluicing and Its Kin in Turkish

Sluicing may appear in different forms across languages, hence the term pseudosluicing, which roughly corresponds to sluicing-like constructions that are argued to involve the unpronounced structure of a cleft or a copular clause. Merchant (1998), for instance, claims that Japanese do not exhibit "genuine", English-type sluicing. He proposes that sluicing-like constructions in Japanese (108a) actually involve a (reduced) cleft (108b). This is different from regular sluicing in English, which has been taken to involve non-pronunciation of a syntactically parallel source (e.g., Ross, 1969).

(108)   a. Pseudosluicing in Japanese

Dareka-ga   sono hon-o   yon-da   ga, watashi-wa dare ka

Someone-Nom that book-Acc read-Pst but, I-Top   who Q

wakaranai.

know.not

'Someone read that book, but I don't know who.'

b. Structure of the sluiced clause

[CP [TP *pro* dare da/de aru] ka]

　　　who be-pres　Q

'... who it is.'

(Merchant, 1998: 4 (17) and (20) respectively)

Similarly, an elliptical cleft analysis has been argued to be the underlying structure in sluicing in Spanish and Brazilian Portuguese, when sluicing and the so-called *preposition stranding* (i.e., P-stranding) facts are closely observed (e.g., Rodrigues et al.; 2009 ; Vicente, 2008; see Chapter 2). At the same time, notice that a (reduced) cleft is not the only option in sluicing-like structures cross-linguistically. Adams & Tomioka (2012), for instance, argue that Chinese sluicing constructions are an instance of pseudosluicing with a null pronoun (i.e., *pro*) and a copular verb (i.e., *shi*), followed by a wh-phrase (i.e., *shenme* "what"), as shown in (109).

(109)　Lisi mai le　yiyang　dongxi gei　Dawu, dan wo bu zhidao

　　　Lisi buy Asp one-CL thing　give Dawu but 1sg not know

　　　[*pro* shi shenme].

　　　　Cop what

　　　'Lisi bought something for Dawu, but I don't know what it/that was.'

(Adams & Tomioka (2012): 220 (4))

More interestingly, some languages like Japanese (see Fukaya, 2007; Fukaya & Hoji, 1999) and Turkish exhibit both English-type regular sluicing and

pseudosluicing. Turkish (an SOV, pro-drop language) has pseudosluicing (e.g., Palaz, 2019) constructions, as well as English-type sluicing (e.g., İnce, 2009), as indicated by the lack of or the existence of a matching case marker on the *wh*-word. The *wh*-word in English-type regular sluicing exhibits case connectivity with its remnant. See, for instance, the matching accusative case markings on the antecedent "someone" and the remnant "who" in (110a). The *wh*-word in pseudosluicing is, however, caseless (110b). Note further that both regular sluicing (110a) and pseudosluicing (110b) are well-formed, acceptable constructions in Turkish (see Kiper, 2020 for an experimental investigation of these two forms).

(110) a. Ali birin-**i**   ara-dı ama kim-**i**$_1$ bil-mi-yor-um.

   Ali someone-**Acc** call-Pst but who-**Acc** know-Neg-Prs-1sg

   'Ali called someone, but I don't know who.'

   b. Ali birin-**i**   ara-dı ama   kim   bil-mi-yor-um.

   Ali someone-**Acc** call-Pst but *pro* who.Cop know-Neg-Prs-1sg

   'Ali called someone, but I don't know who (that/(s)he was).'

Palaz (2019) proposes that the constructions that lack case connectivity (i.e., the form with *kim*) are instances of pseudosluicing[12], and that the syntax of

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[12] Properties of pseudosluicing in Turkish such as island insensitivity, incompatibility of pseudosluicing with implicit antecedents and well-formedness when *pro* and copula verb are overtly realized are accounted for in this analysis. See Palaz (2019) for further discussion.

pseudosluicing in Turkish is "[$_{TP}$ pro *wh*-phrase-Copula]", which is similar to the analysis of pseudosluicing in Chinese (as proposed in Adams & Tomioka, 2012). Accordingly, the proposed structure of a pseudosluice in Turkish involves an E-type *pro*-form, which comes to the derivation with a "uniqueness" interpretation. *pro* is anaphoric to the meaning of its indefinite NP antecedent, whose interpretation is restricted by the propositional content of the antecedent clause. More specifically, *kim* "*pro* who.Cop" in (110b) is interpreted as "the unique person that Ali called".

Crucial for the purposes of the current study, no ellipsis (and no displacement/A-bar movement, for that matter) is involved in the pro-form analysis of pseudosluicing in Turkish. Silent pro and silent copula are independent properties of Turkish grammar. Hence, it appears that Turkish can optionally apply ellipsis operation at the clause level, or resort to language-specific linguistic tools and posit an alternative syntax that captures the intended meaning. The present study utilizes this optionality and the properties of pseudosluicing and English-type regular sluicing in Turkish to investigate questions related to the processing of sluicing, such as the effects of the Locality bias conditioned by the position of the antecedent NP (e.g., object preference), and effects of the Parallelism (sematic, morphological, and structural) constraint(s).

5.3 Processing of Sluicing

Three basic steps have been assumed to be involved in the resolution of meaning in sluicing, or more broadly, ellipsis. Both structural and non-structural approaches agree on these steps (in the order presented in (111)), yet they differ in how the third step is conceptualized. Structural view assumes an underlying clause is unpronounced at the ellipsis site, hence, it is regenerated for interpretation at LF, as in

Step 3 in (111). Non-structural view assumes the interpretation is achieved via integrating the remnant (or the "fragment") into a proposition (without positing any syntax at any levels of representation), as in Step 3'.

(111)   Steps involved in processing sluicing/ellipsis.

- Step 1: Parse the (*wh-*)remnant.

- Step 2: Locate the correlate.

- Step 3: (Re)construct the elided clause at the Logical Form – LF (e.g., Chung et al., 1995; Frazier & Clifton Jr., 2001; Harris & Carlson, 2018).

- Step 3': Integrate the remnant into a proposition of which the correlate is a part of (e.g., Culicover & Jackendoff, 2005; Nykiel & Kim, 2022)

Note that it is an ambitious task to try to experimentally differentiate between Step 3 and Step 3' (e.g., see Phillips & Parker, 2014). The present study does not do that. Rather, I focus on investigating the two attested processing constraints on comprehending sluicing: *Locality* and *Parallelism*. I will discuss these momentarily. More specifically (and related to the steps in (111)), I investigate at what temporal location in a sentence these two processing constraints are operationalized. This is a new question regarding processing sluicing, and it will further uncover whether Locality and Parallelism are peculiar to sluicing (i.e., ellipsis), and whether they are cross-linguistically strict constraints (see Section 5.4). I will first discuss these two processing constraints in the subsequent sections.

5.3.1 Locality (Object) Bias

As first attested by Frazier & Clifton (1998), there is a strong tendency to pick object indefinite NPs over subjects as antecedents in sluicing. In an offline study, they showed comprehenders (n=60) overwhelmingly (77.0%; SE=0.02) picked the object NP, an exam, as the antecedent in an ambiguous sluicing sentence as in (112).

(112)   Some teacher says that the students will flunk an exam—guess which one.

Which one = ___ some teacher   ___ some exam.

In an online study, Frazier & Clifton (1998) further showed that an ambiguous sluicing sentence, as in (113a), was read faster despite the existence of two potential correlates: "somebody" and "someone", compared with an unambiguous sluicing sentence with one correlate in the subject position (i.e., "somebody") like in (113b). This is once again taken to indicate a bias towards object interpretation.

(113)   a. *Somebody* claimed that the president fired *someone*, but nobody knows *who*.
b. *Somebody* claimed that the president fired *Fred*, but nobody knows *who*.

Carlson et al. (2009) replicated the object preference in ambiguous contrast sluicing sentences with definite correlates, like "the lawyer" or "the witness", and with "who else" remnant (114). When participants were asked for the interpretation of the

sluice, they mostly chose an object interpretation (e.g., 72% of all: "I don't remember who else the lawyer insulted.").

(114) *The lawyer* insulted *the witness*, but I don't remember *who else*.

Subsequent work (e.g.: Carlson, 2013) on the comprehension of clausal ellipsis (e.g.: *stripping*, as in 'On Monday, *the curator* embarrassed *the gallery owner* in public, not *the artist*.') came to the same conclusion in that there was an object bias in interpreting the ellipsis (e.g., The sentence was interpreted as "The curator didn't embarrass the artist"). Therefore, object bias has been considered to constrain processing of ellipsis.

It is commonly taken that information structure, or "focus", is the main driving force behind the object preference in the interpretation of ellipsis (Carlson, 2013; Carlson et al., 2009; Frazier & Clifton, 1998; Harris & Carlson, 2016, a.o.), rather than, for instance, linear proximity of objects to the remnants (e.g., as would be predicted in distance-based processing theories). Because objects carry default focus in a sentence, they are claimed to be more readily available as antecedents in focus-sensitive ellipsis operations. This is tenable according to the view that considers ellipsis as a form of phonological reduction of given or backgrounded (e.g., non-focused) linguistic elements (e.g., Merchant, 2001; Rooth, 1992 ; Tancredi, 1992, a.o.). That the object bias could be mitigated by manipulating the placement of focus (via pitch accent or via syntactic position, see Carlson et al., 2009) have been proposed as further evidence for an information structural explanation for the object bias under ellipsis.

More recent work replicates the object bias in an eye-tracking study and re-formalizes it as a structurally determined "Locality Bias" as spelled out in (115) (Harris, 2015).

(115)   *Locality Bias*: Associate the remnant of clausal ellipsis with a correlate occupying the structurally most local position.

<div align="right">(Harris, 2015: 4 (7))</div>

This view considers the most deeply embedded argument as the most local one, which corresponds to the object position. As Harris (2015) claims, structural information is taken into account in deciding the Locality, but this does not necessarily preclude the effect of focus as the default focus marking also falls on the most deeply embedded argument of the verb – the object (e.g., Selkirk, 1984).

Important for the purposes of the present study, Locality (object) bias has long been considered to be a factor that constraints processing of ellipsis/sluicing. Although this fits well with the focus-based approaches to ellipsis, the locality bias may as well be a more general processing constraint that comes into play when forming a dependency relation between the remnant and the correlate in sluicing, as well as in sluicing-like sentences that does not involve ellipsis (e.g., pseudosluicing). No prior study has particularly explored this possibility. Keeping this in mind, I move on to the next factor affecting processing of sluicing, the Parallelism constraint.

5.3.2   Parallelism

Having parallel structures across two conjuncts has been known to ease processing of coordinated clauses. Frazier et al. (1984), for instance, show that the

second conjunct is processed faster when it involves a syntactic configuration that is parallel to the structure of the first conjunct (e.g., an embedded clause as in (116a)), in comparison to a sentence where the second conjunct involves a non-parallel structure (e.g., an NP instead of a clause, as in (116b)).

(116)   a. Jim believed [CP all Tom's stories were literally true], and Sue believed [CP Jim's stories were fictious].

b. Jim believed [CP all Tom's stories were literally true], and Sue believed [NP Jim's stories].

(Frazier et al., 1984: 423 (exs 2b, 2d))

Structural Parallelism has been argued to guide the parser in the processing of ellipsis as well (e.g., Carlson, 2001), including sluicing (e.g., Dickey & Bunger, 2011; Frazier & Clifton, 1998). Structural *non-parallelism*, for instance, can be observed in a type of sluicing, known as *sprouting* (e.g., Chung et al., 1995), where the antecedent of a *wh*-remnant is an empty category (e.g., an implicit argument of the verb "typed" in (13a)) that is "sprouted" at LF. Sprouting is thus considered to involve non-parallel structures across the antecedent clause and the sluice, unlike a regular sluicing sentence like in (117b). Frazier & Clifton (1998) found that non-parallelism as in sprouting (117a) elicits longer reading times compared with regular sluicing (117b), which exhibits parallelism. Non-parallelism under sprouting, therefore, has been taken to cause processing difficulty.

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(117)   a. The secretary typed, but I don't know what.

          b. The secretary typed something, but I don't know what.

Following work replicates these findings, plus, suggests that processing difficulty associated with (117a) may be a general non-parallelism penalty as the difficulty is observed both in sprouting (118a), and in non-parallel, non-elided comparable sentences (118b) (see Dickey & Bunger, 2011).

(118)   a. The secretary typed quickly, but I don't know what exactly.

          b. The secretary typed quickly, but I don't know what she typed.

More recent work has investigated effects of parallelism under ellipsis at the morphological level in diverse languages (e.g., Nykiel et al., 2022; Rasekhi & Harris, 2021). Rasekhi & Harris (2021), for instance, investigate the effect of Morphological Parallelism (see their definition in (119)) on the offline processing of Persian polarity stripping.

(119)   *Morphological Parallelism*: The processor favors correlate-remnant pairings for which the DPs are maximally similar along semantic and morphological dimensions.

                                                        (Rasekhi & Harris, 2021: 7)

Polarity stripping is a type of clausal ellipsis which involves a contrasted NP remnant and negation (i.e., "not"), as in "The manager hired *an assistant*, not *a*

secretary.". In Persian polarity stripping, as Rasekhi & Harris (2021) shows, a bare remnant ("assistant" in (120)) causes ambiguity (see the interpretations in (i) and (ii)): bare remnant is understood as either paired/contrasted with a subject or with an object antecedent.

(120)   modir   monshi   estekhdām=kard vali moāven na
         manager secretary hire=did.3sg   but assistant neg
         (i) Object contrast: 'The manager hired a secretary, but the manager did not hire **an assistant**.'
         (ii) Subject contrast: 'The manager hired a secretary, but **the assistant** did not hire a secretary.'

(Rasekhi & Harris, 2021: 4 (5))

Rasekhi & Harris (2021) notes that in resolving the ambiguity, Persian comprehenders rely on Morphological Parallelism. This is shown via *-ra* marking, which is a marker of specificity in Persian. When the object antecedent, "secretary", is marked with -ra (*monshirā* "(a particular) secretary"), it can be paired either with a -ra marked remnant (*moāven**ra*** "(a particular) assistant") or with a bare remnant (*moāven* "assistant"), as shown in (121). Importantly, sentences where both the object correlate and the remnant were -ra marked were rated to be more natural than mismatching -ra marked remnant- bare antecedent pairings (6.5 vs 5.5, on a scale of 7). This is taken as an indication that Morphological Parallelism is in effect in processing ellipsis in Persian.

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(121)   modir monshi-**rā** estekhdām=kard vali moāven**(-rā)** na

manager secretary-rā hire=did.3sg but assistant**(-rā)** neg

(Rasekhi & Harris, 2021: 13 (33))

Notice that this may actually not be a straightforward conclusion as the bare remnant in (121) (i.e., *moāven* "assistant") can also be paired with the "non-local" bare subject correlate (i.e., modir "manager"), with which the remnant indeed exhibits Parallelism (i.e., both the correlate and the remnant are bare - not -ra marked). I will not discuss the details of Rasekhi & Harris (2021)'s experiment here. Note, however, that their attested naturalness ratings seem to involve contributing factors (e.g., Locality effects, ambiguity), and their formalization of Morphological Parallelism (see (119)) actually merges two dimensions of parallelism: morphological and semantic parallelism. Hence, although their study is quite informative in showing how "Morphological Parallelism" constraints processing of stripping in Persian, it is less clear whether this is driven by purely matching morphological forms (-ra marking), or by semantic factors (i.e., specificity, as denoted by -ra marking). The present study, thus, aims to offer a more fine-grained evaluation of Parallelism as a processing constraint, as will be discussed in the next section.

Furthermore, the aforementioned constraints (i.e., Locality and Parallelism) have been mostly tested under ellipsis/sluicing in English. As Rasekhi & Harris (2021) also points out, how these factors are operationalized cross-linguistically remains unclear for the most part. I thus turn to a typologically different language, Turkish, to explore how these factors constrain the processing of sluicing and sluicing-like sentences.

5.4   The Present Study: Processing of Sluicing(-like) Constructions

No prior study has investigated Locality and Parallelism constraints in regular sluicing in comparison with sentences that are minimally different from sluicing and silent – yet involve no ellipsis. The present study aims to do this. Turkish provides us a good testing environment for two reasons. First, recall that Turkish exhibits a sluicing-like construction that involves a pro-form and no ellipsis, which is referred as pseudosluicing. Compare once again an English-type regular sluicing sentence (122a) with pseudosluicing (122b) in Turkish.

(122)   a. Ali birin-**i**   ara-dı ama kim-**i**₁   bil-mi-yor-um.

   Ali someone-**Acc** call-Pst but who-**Acc** know-Neg-Prs-1sg

   'Ali called someone, but I don't know who.'

   b. Ali birin-**i**   ara-dı ama   kim   bil-mi-yor-um.

   Ali someone-**Acc** call-Pst but *pro* who.Cop know-Neg-Prs-1sg

   'Ali called someone, but I don't know who (that/(s)he was).'

Notice that the pseudosluicing construction (122b) violates the Morphological Parallelism constraint, which requires similarity between the antecedent and the *wh*-phrase along semantic and "morphological" dimensions (see Section 5.3.2). Because the *wh*-word *kim* "who" in pseudosluicing exhibits case mismatch with the correlate *birini* "someone.Acc", it may incur processing difficulty. This is unlike the *wh*-word *kimi* "who.Acc" in regular sluicing (122a), which satisfies the parallelism.

Also, as implicated by word orders in (122), Turkish is an SOV language. Therefore, the parser processes the *wh*-word in a sluice *before* the main verb in

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sentences with the canonical SOV word order, unlike sluicing in English where the *wh*-word is processed after the verb. Therefore, in Turkish, any potential effects of Locality and Parallelism can be found in real-time (i) when the overall sentence meaning resolves as regular sluicing or pseudosluicing at the sentence-final verb, and/or (ii) at an earlier point in time during processing (e.g., at the *wh*-phrase). In other words, one could better evaluate at what temporal location in a sluice these two constraints are operationalized by looking into sluicing and sluicing-like constructions in Turkish. The earliest temporal location where effects of Locality and Parallelism could be detected is at the *wh*-phrase (e.g., *kimi* "who.Acc" vs *kim* (caseless) "who"), and these effects could also be detected at the downstream main verb position (e.g., *bilmiyorum* "know.neg.I").

Taking advantage of these properties of Turkish, I designed a reading time study to explore, first, how Locality and Parallelism guide the parser in processing of sluicing/ellipsis cross-linguistically, and second, whether these constraints are peculiar to sluicing/ellipsis. A secondary goal of the present study was to explore to what extent morphological (and/or structural) parallelism constraint(s) will affect processing in sluicing(-like) environments, particularly when semantic parallelism (e.g., *specificity*) is controlled for.

5.4.1 Methods

5.4.1.1 Design and Materials

A 3 (Sluice Type) x 2 (Position) within-subjects self-paced reading time study was conducted. Stimuli involved complex Turkish sentences conjoined by ama "but", where the first conjunct (i.e., the clause before "but) involved an indefinite NP

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antecedent either in subject position (i.e., NP_{subj}) or in object position (i.e., NP_{obj}). Hence, Position factor had two levels: NP$_{subj}$ and NP$_{obj}$, as illustrated in (123), where the indefinite NPs were bolded.

(123)   *Antecedent Clauses across NP$_{subj}$ and NP$_{obj}$ conditions*

a. **NP$_{subj}$**: **Bir öğrencinin** Aliyi çağırdığını duydum,

A student.Gen Ali.Acc called   heard

'I heard a student called Ali,

b. **NP$_{obj}$**: Alinin **bir öğrenciyi** çağırdığını duydum,

Ali.Gen **a student.Acc**   called   heard

'I heard Ali called a student, …

Sluice Type factor was manifested in the second conjunct, as shown in Table 9. This was the clause that proceeds "but", which I will refer to as the *sluice part* of the sentences. Three levels of the Sluice Type factor involved Regular Sluicing, Pseudosluicing and No Sluice conditions. The only difference between Regular Sluicing and Pseudosluicing conditions was the existence of a matching case marking on the remnant (see bolded remnants in Table 9), which manifested as genitive case marking with NP$_{subj}$ and accusative marking with NP$_{obj}$. No Sluice conditions involved a matching *wh*-phrase (akin to Regular Sluicing), yet a pronounced form of the embedded verb of a potential sluice (i.e., *çağırdığını* "called" in Table 9), hence, no ellipsis. Each stimulus ended with a post-verbal adverb (e.g., *aslında* "actually") to control for the sentence wrap-up effect.

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Table 9: Sample stimuli showing the *sluice part* across Sluice Type and Position. *Wh-*remnants are bolded, critical regions are shaded.

Sluice Type	Position	Sample Stimuli: Sluice Part
No Sluice	NP_subj	ama **hangi öğrencinin** çağırdığını bilmiyorum aslında. but **which student.Gen** called not.know actually '…, but I don't actually know which student called (him).'
	NP_obj	ama **hangi öğrenciyi** çağırdığını bilmiyorum aslında. but **which student.Acc** called not.know actually '…, but I don't actually know which student (he) called.'
Regular Sluicing	NP_subj	ama **hangi öğrencinin** Ø bilmiyorum aslında. but **which student.Gen** not.know actually '…, but I don't actually know which student.'
	NP_obj	ama **hangi öğrenciyi** Ø bilmiyorum aslında. but **which student.Acc** not.know actually '…, but I don't actually know which student.'
Pseudo sluicing	NP_subj	ama **hangi öğrenci** Ø bilmiyorum aslında. but **which student** not.know actually '… but I don't actually know which student (that was).'
	NP_obj	ama **hangi öğrenci** Ø bilmiyorum aslında. but **which student** not.know actually '… but I don't actually know which student (that was).'

Focusing first on the antecedent clauses (as shown in (123)), notice that these were bi-clausal Turkish sentences. In these sentences, the indefinite NP correlate was marked with genitive case when it was in the subject position (i.e., NP_subj conditions), and marked with accusative case when it was the object (i.e., NP_obj conditions). The stimuli involved embedded antecedent clauses due to two reasons: (i) to ensure that

the sluice did not end up being ambiguous (e.g., between regular sluicing and pseudosluicing), and (ii) to control for the specificity of the NP antecedent.

First, recall that case connectivity is the hallmark of ellipsis-involving regular sluicing in Turkish. The underlying structure of a sluice involves a *pro*-form (and no ellipsis) when the remnant and the indefinite antecedent do *not* bear matching cases, hence, pseudosluicing. Note further that nominative marking is null in Turkish. In simple (i.e., mono-clausal) sentences where an NP antecedent (e.g., *bir öğrenci* "a student") is the subject, it needs to be marked with nominative case. With a null/nominative marked antecedent-remnant pairing, it thus becomes indistinguishable whether the sluice in the second conjunct involves ellipsis (i.e., regular sluicing) or a *pro*-form (i.e., pseudosluicing). This is shown in (124).

(124)   *Bir öğrenci*   Ali-yi   çağırdı, ama [*hangi öğrenci₁*   Ali-yi *t₁*
        A student.Nom Ali-Acc called   but   which student.Nom Ali-Acc
        çağırdı] / [*hangi öğrenci*]   bilmiyorum.
        called] / [*pro* which student.Cop] not.know.1sg
        'A student called Ali, but I don't know which student (called Ali/that
        was).'

To prevent such ambiguity due to nominative marking, the stimuli involved only embedded subject NP antecedents that are overtly marked with genitive case (e.g., *bir öğrencinin* "a student.Gen"). See a sample regular sluicing and pseudosluicing minimal pair (125) with a subject NP antecedent.

(125)   a. REGULAR SLUICING (genitive marked NP_{subj} antecedent, matching remnant)

*Bir öğrenci-**nin*** Ali-yi   çağırdığın-ı   duydum,   ama *hangi*
*A   student-**Gen*** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but *which*
*öğrenci-**nin*** bilmiyorum   aslında.
*student-**Gen*** know.Neg.Prs.1sg actually
'I heard a student called Ali, but I don't actually know which student.'

b. PSEUDOSLUICING (genitive marked NP_{subj} antecedent, mismatching remnant)

*Bir öğrenci-**nin*** Ali-yi   çağırdığın-ı   duydum,   ama *hangi*
*A   student-**Gen*** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but *which*
öğrenci bilmiyorum   aslında.
student know.Neg.Prs.1sg actually
'I heard a student called Ali, but I don't actually know which student (that is).'

Notice further that genitive marking on embedded subject denotes specificity in Turkish (e.g., Kornfilt, 2009). To have comparable object antecedents, the stimuli involved accusative marked object correlates that are unambiguously specific (e.g., Enç, 1991). A regular sluicing sentence and a comparable pseudosluicing with an object NP antecedent are illustrated in (126).

(126)   a. REGULAR SLUICING (accusative marked NP_{obj} antecedent, matching remnant)

Ali-nin *bir öğrenci-yi* çağırdığın-ı   duydum,   ama *hangi*
Ali-Gen a *student-Acc* call.Nmlz.3sg-Acc hear.Pst.1sg but *which*

öğrenci-yi bilmiyorum   aslında.
student-Acc know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student.'

b. PSEUDOSLUICING (accusative marked NP_{obj} antecedent, mismatching remnant)

Ali-nin *bir öğrenci-yi* çağırdığın-ı   duydum,   ama *hangi*
Ali-Gen a *student-Acc* call.Nmlz.3sg-Acc hear.Pst.1sg but *which*

öğrenci bilmiyorum   aslında.
student know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student (that is).'

Corresponding to the third level (i.e., No Sluice) of the Sluice Type factor, an additional condition was added. These sentences were also minimally different from Regular sluicing sentences such that the verb was pronounced, rather than elided. See sample No Sluice sentences in (127a-b), which illustrate embedded interrogative counterparts of (125a) and (126a) respectively.

(127)   a. NO SLUICE (genitive marked NP_{subj} antecedent, matching remnant)

*Bir öğrenci-**nin*** Ali-yi   çağırdığın-ı   duydum,   ama *hangi*

*A   student-**Gen*** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but *which*

*öğrenci-**nin*** çağırdığın-ı   bilmiyorum   aslında.

*student-**Gen*** call.Nmlz.3sg-Acc know.Neg.Prs.1sg actually

'I heard a student called Ali, but I don't actually know which student called (him).'

b. NO SLUICE (accusative marked NP_{obj} antecedent, matching remnant)

Ali-nin *bir öğrenci-**yi*** çağırdığın-ı   duydum,   ama *hangi*

Ali-Gen a   *student-**Acc*** call.Nmlz.3sg-Acc hear.Pst.1sg but *which*

*öğrenci-**yi*** çağırdığın-ı   bilmiyorum   aslında.

*student-**Acc*** call.Nmlz.3sg-Acc know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student (he) called.'

In the stimuli, all *wh*-phrases had an NP restrictor/complement (e.g., "student" in "which student"). Note further that embedded verbs in the antecedent clauses across all conditions were reversible transitive verbs (e.g., call, see, criticize, etc.) that appeared only with their core arguments (e.g., a subject and an object). Having reversible verbs helped to control for any effects of a particular NPs' being inherently more plausible as the subject or object argument of a verb. Also, all subject and object arguments involved animate NPs to control for any potential effects of animacy.

Following the 3 (Sluice Type) x 2 (Position) design, twenty-four critical item sets in total were created and put in a Latin square design (see Appendix D for the complete list of the stimuli). Twelve filler sentences were added to each Latin square list in a pseudo-randomized fashion. Filler sentences were complex sentences in Turkish that involved embedding (but not nominalized embedded clauses, unlike the critical items). They appeared either with nominative or accusative marking on the embedded subjects, and with or without person agreement on the embedded verb. See a sample filler in (128).

(128)   Burcu   sen(i)   akşam bize   gelecek(sin)   sanıyordu
         Burcu.Nom you.Nom(Acc) night   us.Dat come.Fut(2sg) was.thinking
         galiba.
         probably
         'Burcu was probably thinking you would come to our place tonight.'

A yes/no comprehension question was presented after each sentence in the experiment (including the fillers) to ensure that participants would pay attention to the task. These would also provide offline measures (e.g., response times to the questions and accuracy rates) to further evaluate the effects of Locality and Parallelism on the critical sentences. Correct responses to the comprehension questions were counterbalanced. In total, half of the questions required "yes", and the other half required "no" as a correct answer.

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5.4.1.2 Participants

Seventy-four native speakers of Turkish volunteered to participate in the experiment. Before the experiment, participants read and accepted an online disclaimer approved by the University of Delaware Human Subjects Review Board. Eight participants were excluded because their accuracy rate was below 75%.

5.4.1.3 Procedure

The experiment was created and conducted on the online software PCIbex farm (Zehr & Schwarz, 2018). Participants were instructed to be seated in front of a computer, to stay away from distractions before starting the experiment, and to complete the task in one uninterrupted session. In the beginning of the experiment, participants were instructed to read sentences presented on a computer screen word by word, and to answer a yes/no comprehension question after each sentence. There were three practice trials at the beginning. The stimuli were presented in a non-moving window paradigm as Reading times (RTs) were being recorded. Participants pressed a computer key for the next word to be presented. Comprehension questions were presented in full. Responses to the comprehension questions, and the response times were recorded as well. No feedback was given. The experiment took approximately twenty-five minutes to complete.

5.4.2 Predictions

There are two sets of predictions one can evaluate in the present study: predictions regarding (i) the Locality bias, and (ii) the Parallelism constraint(s).

First and possibly more straightforward set of predictions concerns the evaluation of Locality constraint. If Locality bias is a constraint under ellipsis as proposed (e.g., Frazier & Clifton, 1998; Harris, 2015), it will be operationalized in

Regular sluicing conditions in the current study, but not in Pseudosluicing or in No Sluice conditions because the latter two do not involve ellipsis. Another possibility is for Locality to be a more general processing constraint that applies whenever a dependency is formed between an antecedent (e.g., an indefinite NP in the antecedent clause, which corresponds to the correlate in sluicing) and a *wh*-phrase (e.g., *Which N* form, which corresponds to the *wh*-remnant in sluicing). This second possibility is more compatible with the distance-based dependency formation theories (i.e., Dependency Locality Theory – DLT), as suggested in Gibson (1998, 2000). DLT basically argues that difficulty associated with processing a dependency formation between two linguistic elements increases as a function of the number of intervening discourse referents between those two linguistic elements. Accordingly, an object bias will be predicted in sluicing(-like) environments as there are fewer intervening referents between an object NP antecedent (i.e., an object correlate) and a *wh*-phrase (i.e., remnant), compared with a dependency formed between a subject NP antecedent and a *wh*-phrase (see (129)). This is because an object NP becomes an intervenor in the latter, thus, having a subject NP as an antecedent in sluicing settings becomes costlier compared with having an object antecedent.

(129) NP_{subj} ....NP_{obj}......, but which N.....

This framework (DLT), hence, predicts a Locality bias across all conditions in the present study as they all involve forming a dependency relation between an indefinite NP antecedent and a subsequent *Which N* form, independent of how the overall sentence meaning resolves (e.g., ellipsis or not).

Second set of predictions are related to the Parallelism constraint(s).

Morphological Parallelism constraint, as proposed by Rasekhi & Harris (2021),

requires similarity between the antecedent and the *wh*-phrase "along semantic and

morphological dimensions" (see Section 5.3.2). Although such a Morphological

Parallelism constraint merges parallelism at semantic and morphological levels, notice

that comparing processing of regular sluicing and pseudosluicing in Turkish, as in the

present study, paves the way for an evaluation of a more fine-grained understanding of

parallelism at three dimensions (e.g., morphological, semantic, and structural). I

therefore split parallelism constraints into three categories and list the (mis)matching

status of each dimension separately in regular sluicing and pseudosluicing, as shown

in Table 10.

Table 10: A summary of how Semantic, Morphological and Structural Parallelism
apply across regular sluicing and pseudosluicing in Turkish in the present
study.

Parallelism Constraints	*Which N* in Regular Sluicing	*Which N* in Pseudosluicing
Semantic Parallelism	match	match
Morphological Parallelism	match	mismatch
Structural Parallelism	match	mismatch

According to Table 10, there is a semantic match in regular sluicing and

pseudosluicing: in both constructions, antecedent-*wh*-phrase pairings are interpreted as

referring to one specific/unique individual within the discourse. The present study

warrants the semantic match in regular sluicing via the use of specific antecedent-

specific remnant pairings. Recall that accusative marking on objects and genitive marking on embedded subjects in Turkish both denote specificity. Therefore, indefinite antecedents that bear either of these cases, as well as remnants that bear the same case as their antecedents, are specific in regular sluicing conditions. This makes them similar along a semantic dimension. Notice that pseudosluicing meets the semantic parallelism as well, and this is via interpretation of an E-type subject pronoun (e.g., *pro*), which has a uniqueness presupposition (see Section 5.2). Hence, *pro* in pseudosluicing picks up the unique individual determined by the antecedent clause as its referent (i.e., a *specific* student as denoted by the antecedent). To exemplify, the meaning of *wh*-phrases in both (130a) and (130b) resolve as "the particular (unique/specific) student that Ali called".

(130)   a. Ali-nin *bir öğrenci-yi*   çağırdığın-ı   duydum,   ama *hangi*
         Ali-Gen a *student-Acc* call.Nmlz.3sg-Acc hear.Pst.1sg but *which*
         öğrenci-yi   bilmiyorum   aslında.
         student-Acc know.Neg.Prs.1sg actually
         'I heard Ali called a student, but I don't actually know which student.'

        b. Ali-nin *bir öğrenci-yi*   çağırdığın-ı   duydum,   ama *hangi*
         Ali-Gen a *student-Acc* call.Nmlz.3sg-Acc hear.Pst.1sg but *which*
         öğrenci bilmiyorum   aslında.
         student know.Neg.Prs.1sg actually
         'I heard Ali called a student, but I don't actually know which student (that is).'

However, the (mis)matching status of the *wh*-phrase and the antecedent differs at the morpho-syntactic level in regular sluicing (130a) versus pseudosluicing (130b): pseudosluicing involves a caseless *wh*-phrase and an underlying copular clause, so it violates both Morphological and Structural Parallelism constraints. This is unlike regular sluicing which involves a *wh*-phrase that has the same case marking as its antecedent NP, and a structurally parallel yet unpronounced clause underlyingly.

Regarding the predictions about processing regular sluicing versus pseudosluicing, the overall picture that emerges from Table 10 predicts that processing of regular sluicing should be easier compared to pseudosluicing because the former meets the requirements of the parallelism constraints at all three listed dimensions. This prediction, however, will hold if all dimensions of parallelism are equally strong processing constraints in sluicing(-like) environments. Alternatively, meeting the Parallelism requirement at one dimension (e.g., semantic match) may as well be sufficient to render the others (e.g., morphological and structural match) violable constraints provided that there are enough cues for the human parser to resolve the meaning successfully. This view, then, predicts no substantial differences in the processing of regular and pseudosluicing within the context of the present study. Which sets of predictions will be met is to be seen.

5.4.3 Results

I report the results of sixty-six participants. The accuracy rate for comprehension questions was 91.2%. 138 critical trials that generated incorrect responses were eliminated from the reading times and response times analyses. Plus, 8 trials were excluded due to experimenter error. This left 1438 correct trials in total for the analysis. Each trial involved five regions in the sluice part where the reading times

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were evaluated to explore the real-time processing of sluicing and sluicing-like constructions. I will present the reading times results momentarily. I next turn to response times and accuracy results as offline measures.

5.4.3.1 Reading Times Analyses

There were two main regions of interest, both in the sluice part of the sentences. See Table 11 for an illustration, where antecedent NPs (i.e., "a student") and NP restrictors/ complements of *wh*-phrases (e.g., "student" in "which student") are bolded. The schema in (a) represents the antecedent clause, and (b) shows the second conjunct (involving a sluice or not), where regions of interests are shaded.

Table 11: Representation of the first conjunct (antecedent clause in (a)) and the second conjunct (sluice in (b)) of the critical stimuli. Indefinite antecedent NPs (in (a)) and the (mis)matching *wh*-phrases (in (b)) are bolded. Critical regions in the Sluice are shaded.

a. ANTECEDENT CLAUSE

| NP_{subj}: | **Bir öğrencinin** Aliyi çağırdığını duydum, ... |
| | **A student.Gen** Ali.Acc called heard |

| NP_{obj}: | Alinin **bir öğrenciyi** çağırdığını duydum, ... |
| | Ali.Gen **a student.Acc** called heard |

b. SLUICE

| NP_{subj}: | … ama **hangi öğrenci(nin)** bilmiyorum aslında. |
| | but **which student(Gen)** not.know actually |

| NP_{obj}: | … ama **hangi öğrenci(yi)** bilmiyorum aslında. |
| | but **which student(Acc)** not.know actually |

Regarding the online processing of sluicing and sluicing-like constructions in the present study, I focus on the RTs at the second conjunct shown in (b) (i.e., "sluice" part in Table 11) as this was where effects of processing constraints (e.g., Parallelism and Locality) were predicted to be observed. First critical region was the NP complement of the *wh*-word (i.e., "student" in "which student"). Notice that sentences were ambiguous up to this point. They started to be partially disambiguated at the NP complement of the *wh*-word: Pseudosluicing condition involved caseless NP complements, whereas Regular and No Sluice conditions involved an NP complement that had the same case marking as the indefinite NP antecedent (i.e., "a student") in the first conjunct. Therefore, the NP complement region was the earliest point in the stimuli where potential effects of Parallelism (e.g., case (mis)match)) and Locality (i.e., object) bias were predicted to be observed. Second critical region was the main verb region. At this point, the overall sentence meaning unambiguously resolved as regular sluicing (involving ellipsis), pseudosluicing (no ellipsis) or as a no-ellipsis/no-sluicing involving, pronounced embedded questions (as in No Sluice conditions). Effects of Parallelism (e.g., structural (mis)match), as well as Locality (i.e., object) bias could potentially be reflected in the RTs at the Verb region too. See "Predictions" in Section 5.4.2 for a more in-depth discussion of these predictions.

The reading times data was analyzed at each region in the Sluice to evaluate the real-time processing of sluicing(-like) sentences in Turkish. Before the analyses, an outlier replacement procedure was applied. For each condition, mean reading times and standard deviations were calculated within every region. Trials that generated reading times (RTs) 2.5SD above the mean were replaced by 2.5SD plus mean RT for the relevant region per condition. This process affected approximately 1.6 % of the

data in each region. Mean RT results at the pre-critical (e.g., at "but" and at "which"), at the critical (e.g., at "student(Gen/Acc)" - NP and at "not.know"- Verb) and at the spillover (e.g., at "actually"- Adverb) regions are shown in Table 12.

Table 12: Mean reading times (in milliseconds) per region per condition in the sluice. RTs are presented at the pre-critical regions ("but" and "which"), critical regions ("NP" and "Verb"), and at the spillover region ("Adverb") respectively.

Factors		Regions				
Sluice Type	Position	but	which	NP	Verb	Adverb
No Sluice	NP$_{subj}$	534	435	451	514	496
	NP$_{obj}$	531	422	426	502	506
Regular Sluicing	NP$_{subj}$	534	420	433	487	483
	NP$_{obj}$	557	435	431	526	502
Pseudosluicing	NP$_{subj}$	523	434	443	509	508
	NP$_{obj}$	531	416	399	493	492

Recall that the two regions of interest correspond to the NP complement region (i.e., "NP" in Table 12) and the Main Verb region (i.e., "Verb"). Figure 8 illustrates region-by-region mean reading times per condition in the sluice part of the test sentences (e.g., as in *but which student not.know actually* "I don't actually know which student."). NP$_{subj}$ conditions were represented with grey dashed lines, and NP$_{obj}$ with the black dashed lines in Figure 8. At the boxed critical NP complement region, mean reading times exhibit a trend where object conditions were read faster compared

to subject conditions in No Sluice (426 ms vs 451 ms) and Pseudosluicing conditions (399 ms vs 443 ms). This pattern did not appear in Regular sluicing conditions, where there was not a notable difference between RTs to the object versus subject antecedents (431 ms vs 433 ms). In the subsequent critical Verb region, NP_{obj} conditions were read slightly faster than NP_{subj} conditions in No Sluice (502 ms vs 514 ms) and Pseudosluicing (493 ms vs 509 ms), but this pattern was reversed in Regular sluicing, where NP_{subj} elicited faster RTs compared to NP_{obj} (487 ms vs 526 ms).

A. No Sluice conditions
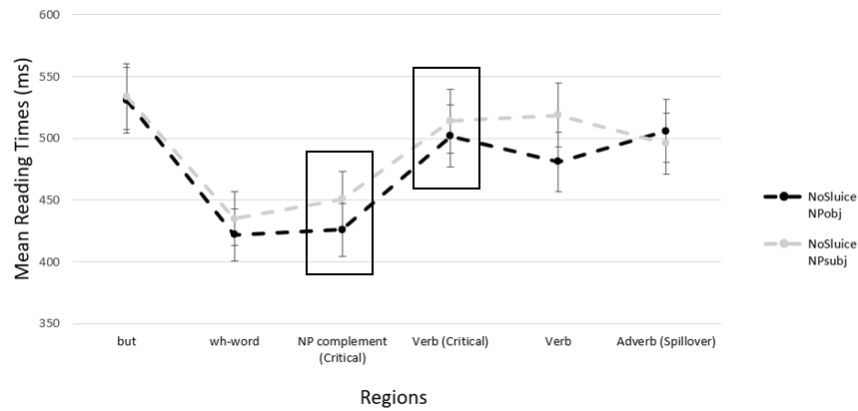
B. Regular Sluicing conditions
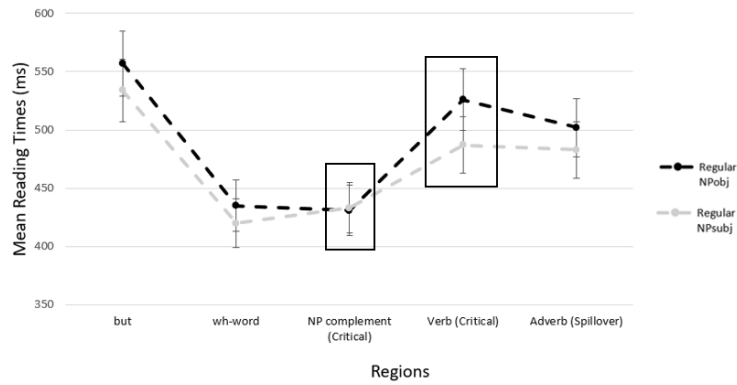
C: Pseudosluicing conditions
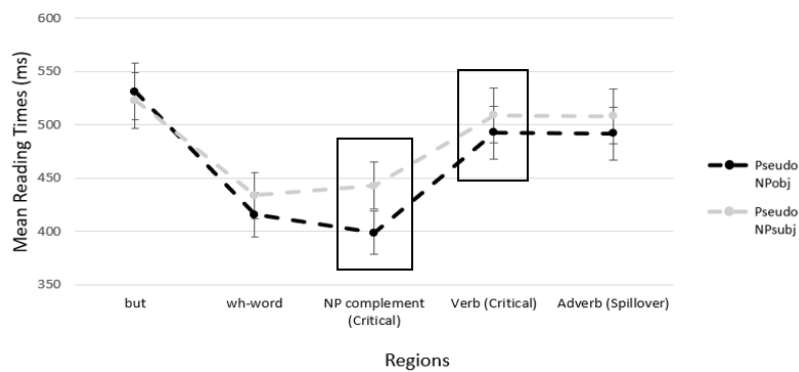
Figure 8: Mean reading times per region by condition in the second conjunct: A - No Sluice, B - Regular Sluicing, C - Pseudosluicing. Boxed regions correspond to the critical NP complements. Error bars indicate the 95% confidence intervals.

At every region, mean reading times were log-transformed and analyzed by fitting a mixed-effects linear regression model with crossed random effects for participants and items (Baayen et al., 2008). For the analysis, Position predictor was sum coded: NP_{obj} were given a value of -1/2, and NP_{subj} were 1/2. The results of this would be useful in evaluating the Locality bias (e.g., NP_{obj} was more local than NP_{subj}). Three levels of the Sluice Type predictor were coded with Helmert Contrasts, in accordance with the questions of interest in the experiment. The first coefficient *case* contrasted RTs of sentences in Pseudosluicing conditions (coefficient: 2/3) with Regular sluicing and No Sluice pooled (coefficient: -1/3 for Regular sluicing conditions; -1/3 for No Sluice conditions). The aim was to detect any potential effects of Parallelism, particularly regarding case (mis)match at the critical NP region. The second coefficient *match* contrasted Regular Sluicing (coefficient: -1/2) with No Sluice condition (coefficient: +1/2 for No Sluice; 0 for Pseudosluicing condition). The effect of match was not predicted to be significant because NP complements both in Regular Sluicing and No Sluice conditions bear a matching case marking (e.g., Genitive case in NP_{subj} conditions, and Accusative in NP_{obj} conditions).

The analysis at each region was conducted in *R* using the *lme4* package (R 3.4.4: Bates, Mächler, et al., 2015). For every region, the maximal random effects structure that converged was simplified by dismissing random slopes that did not significantly improve the model. I report the results of the most parsimonious regression models in the analyses (Bates, Kliegl, et al., 2015).

I start with reporting the analysis of the log-transformed RTs at the first pre-critical region in the sluice part, which corresponded to the conjunction "but". As more complex regression models did not converge here, I report the results of the

simplest model involving just the random intercepts for participants and items. As expected, the analysis at this region revealed no significant effects or interactions (all ps >.3).

Moving on to the *wh*-word region (i.e., "which"), the most parsimonious model was found to be the simplest regression model with random intercepts for participants and items. The results showed a marginal effect of Position (425 ms vs 430 ms; $\beta = 0.02$, $SE = 0.01$, $t = 1.8$, $p = .08$) such that *wh*-words in NP_{obj} conditions were read faster than the ones in NP_{subj} conditions, indicating a trending pattern regarding the effect of Locality. All other main effects and interactions were found to be insignificant (all ps >.3).

Recall that the next region, the NP complement of the *wh*-word (e.g., "student" in "which student"), was the first region of interest. The analysis of the log-transformed RTs in this region would particularly show if there was an effect of case (mis)match on processing, as well as the effect of Locality. The simplest mixed-effects linear regression model, which involved just the random intercepts for participants and items, was once again the most parsimonious model for this region. Results of this analysis are presented in Table 13.

Table 13: Results of the linear-mixed effects regression model on the log-transformed reading times (RTs) at the critical NP complement region.

EFFECT	β	*SE*	*t*	*p*
Intercept)	5.99	0.04	144	<.0001
Position	0.05	0.01	3.57	<.001
(NP$_{subj}$ vs NP$_{obj}$)				
case	-0.03	0.02	-1.69	.09
(Pseudo vs No Sluice and Regular)				
match	-0.002	0.02	-0.13	.9
(Regular vs No Sluice)				
Position X *case*	0.06	0.03	1.76	.08
Position X *match*	0.05	0.04	1.41	.2

Results show that Position was a significant predictor: NP complement of the *wh*-word (e.g., "student" in "which student") was read significantly faster when the sentences involved and indefinite NP antecedent (e.g., "a student") in object position, compared with the sentences involving indefinite subject NP antecedents (419 ms vs 442 ms; $\beta = 0.05$, $SE = 0.01$, $t = 3.57$, $p < .001$). This indicates a Locality bias across all conditions. Regarding the effect of *case*, NP complements that were not case marked (e.g., "(which) student" in Pseudosluicing conditions) were found to be read faster compared with the NP complements that had a matching case with the indefinite NP antecedent (e.g., "(which) student+Acc/Gen" in Regular and No sluice conditions pooled). However, this effect did not reach the levels of statistical significance ($\beta = -0.03$, $SE = 0.02$, $t = -1.69$, $p = .09$). The interaction of *case* with Position was also found to be marginal ($\beta = 0.06$, $SE = 0.03$, $t = 1.76$, $p = .08$). As predicted, the main effect of *match* and its interaction with Position was not found to be significant (both *p*s >.2).

The subsequent Verb region (e.g., *bilmiyorum* "I.don't.know") was the second region of interest. Notice once again that main verb was read in a downstream position in these sentences, after the *wh*-remnant, because Turkish is a head-final language with an SOV canonical word order. The most parsimonious regression model for the Verb region corresponded to the simplest model involving the random intercepts for participants and items, but not the slopes. Results showed no significant effects or interactions at this region (all *p*s > .3).

Alternatively, a potential effect could be detected at the spillover adverb region (e.g., "actually"). I thus conducted an analysis on the spillover region, once again, by fitting the log-transformed reading times at this region with a linear-mixed effects regression model. The simplest model (more complex models did not converge) involving the intercepts for participants and items were evaluated. This analysis too revealed no significant results (all *p*s > .2).

Overall, reading times analyses showed that the effect of Position (e.g., the grammatical role of the antecedent NP "a student" as subject versus object) was significant at the NP complement region only. The effect of Parallelism (e.g., case (mis)match on the complement NP (i.e., "student" in "which student")) was trending, but not significant in this region. I next turn to the analyses of the offline measures: response times to the comprehension questions and the accuracy.

5.4.3.2   Response Times Analysis

Response times data too underwent an outlier replacement procedure first. Outliers were detected by calculating the mean response times and the standard deviations for each condition. Response times that were 2.5SD above the mean of each condition were replaced by 2.5SD plus mean for that condition. This affected roughly

0.7 % of the data at every condition. See Figure 9 for mean response times per condition. Notice that the same pattern emerges across all conditions: response times were faster in NP_{obj} conditions, compared with NP_{subj}.
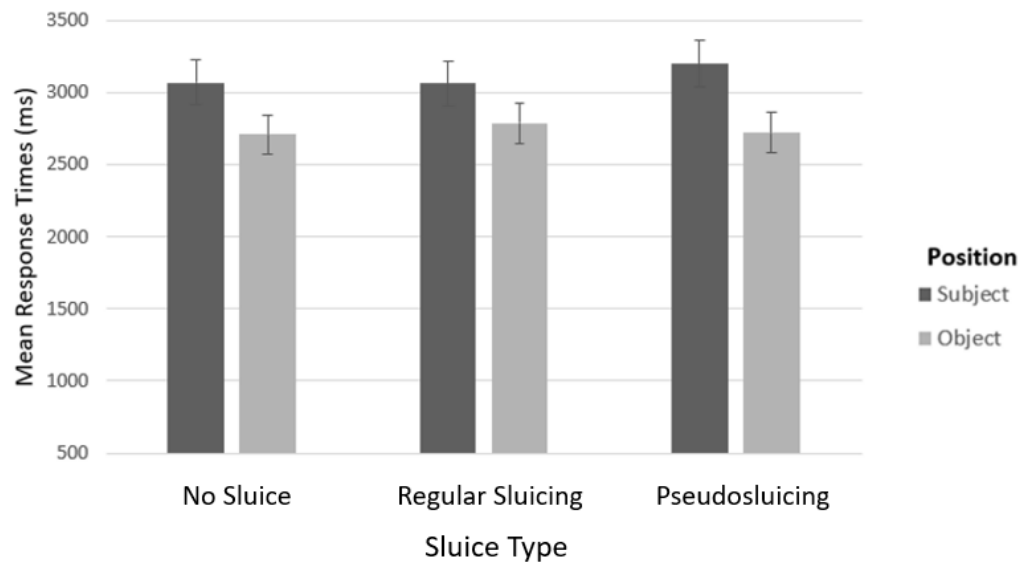
Figure 9: Mean response times (shown in milliseconds) to the comprehension questions by condition. Error bars represent the confidence interval (95%).

Similar to the reading times analyses, response times were log-transformed and fitted a mixed-effects linear regression model with crossed random effects for participants and items (Baayen et al., 2008), and analyzed in *R* using the *lme4* package (R 3.4.4: Bates, Mächler, et al., 2015). I report the results of the most parsimonious mixed-effects linear regression model, which involved random slopes for Position for participants and for items, and their intercepts. See Table 14 for the results of this analysis.

Table 14: Results of the linear-mixed effects regression model on the Response Times to comprehension questions.

EFFECT	β	SE	t	p
(Intercept)	7.9	0.05	155.6	<.0001
Position (NP$_{subj}$ vs NP$_{obj}$)	0.13	0.04	3.53	.002
case (Pseudo vs No Sluice and Regular)	0.02	0.02	1.21	.2
match (Regular vs No Sluice)	-0.004	0.02	0.22	.8
Position X *case*	0.03	0.03	0.82	.4
Position X *match*	0.04	0.04	1.05	.3

Results indicate a significant effect of Position: participants were faster at responding to the questions pertaining to the sentences in NP$_{obj}$ conditions compared with NP$_{subj}$ conditions (2738 ms vs 3108 ms; $\beta = 0.13$, $SE = 0.04$, $t = 3.53$, $p < .0001$). This subject-object contrast (i.e., Locality bias) holds across all sluice types (e.g., No Sluice, Regular Sluicing and Pseudosluicing) as there was no other significant main effects or interactions found (e.g., all ps > .1).

5.4.3.3 Accuracy Analysis

Out of 1576 critical trials in total, 138 trials generated inaccurate responses to the comprehension questions. The mean accuracy rate was 91.2%, and descriptively, there seemed to be no obvious differences regarding accuracy rates across conditions. See Table 15 for mean accuracy rates for each condition.

Table 15: Mean accuracy rates by condition (shown in percentages).

Condition	Mean Accuracy (%)
No Sluice-NP$_{obj}$	93
No Sluice-NP$_{subj}$	91
Regular Sluicing- NP$_{obj}$	91
Regular Sluicing- NP$_{subj}$	92
Pseudosluicing- NP$_{obj}$	91
Pseudosluicing- NP$_{subj}$	90

For analysis, the accuracy data was fitted with a logistic mixed effects regression model with crossed random effects for participants and items (Baayen et al., 2008). As in the reading times analyses, Position was sum coded and Sluice Type was coded with the Helmert contrast. The analysis was conducted in *R* using the *lme4* package (R 3.4.4: Bates, Mächler, et al., 2015). I report the results of the most parsimonious model (Bates, Kliegl, et al., 2015), which corresponded to the simplest model with intercepts for participants and items. Unlike the response times, no significant effect of Position was found here ($\beta = 0.005$, $SE = 0.19$, $z = 0.03$, $p = 1$). There were no other significant effects or interactions observed (all ps > .3).

5.4.4 Discussion

Findings of the current study suggest that Locality (object) bias is a robust processing constraint in comprehending both sluicing and sluicing-like constructions in Turkish. Comprehenders processed sentences involving a dependency formation between an indefinite object antecedent and a *wh*-phrase easier, compared to forming a

dependency with a subject antecedent. Critically, attesting the effects of Locality in sentences involving regular sluicing, pseudosluicing and also in embedded interrogatives suggests that Locality bias is not peculiar to ellipsis/sluicing. Rather, Locality should be a more general processing constraint that regulates (anaphoric) dependency formation between an antecedent and a *wh*-phrase (e.g., two linguistic elements whose meanings co-vary). This finding is most naturally explained by the assumptions of the Dependency Locality Theory – DLT (e.g., Gibson, 1998, 2000). Forming a dependency relation with an object antecedent is less costly because there are no intervening referential NPs. This is unlike subject antecedent-*wh*-phrase pairings where a referential object NP intervenes, hence, causes processing difficulty.

Importantly, the effects of Locality are attested with both offline and online measures in the present study. First, comprehenders were faster at responding to the comprehension questions in NP_{obj} conditions in comparison to NP_{subj} conditions. Second, the NP complement (i.e., restrictor) of the *wh*-word (e.g., "student" in "which student") was read faster when the antecedent NP (e.g., "a student") was in the object position, compared to the subject position (regardless of case match-mismatch). Notice once again that Locality is found to be a constraint that regulates processing of not only ellipsis (i.e., regular sluicing), but also pseudosluicing and embedded interrogatives – neither of these constructions involve ellipsis.

Notably, the effect of Locality is detected at the earliest possible point during real-time processing of sluicing(-like) sentences. This corresponds to where the NP restrictor/complement of the *wh*-phrase is read, and before the overall sentence meaning resolves as involving ellipsis or not. The lack of Locality effect on processing the verb at a downstream position, where the sentence type disambiguates -resolves

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fully- further suggests that Locality bias may not be construction-specific. It seems more likely that Locality bias under ellipsis reflects a more general sentence processing constraint. This is a new finding in sluicing(-like) environments, which needs to be addressed further in future research to evaluate if it holds cross-linguistically.

Recall that the second processing constraint I explore is Parallelism, more specifically, how morphological and/or structural match versus mismatch affect processing of sluicing and sluicing-like sentences in Turkish. Critically, and different from prior work (e.g., Rasekhi & Harris, 2021), all types of constructions presented in the second conjunct/sluice part exhibit semantic match in the present study. This indeed offers an opportunity to evaluate whether morphological and/or structural parallelism are strong processing constraints. The findings point that they are not since there is found to be no facilitatory effect of morphological and/or structural match in processing of regular sluicing, in comparison to mismatch in pseudosluicing. This may seem unexpected, considering the attested effects of Parallelism in processing ellipsis (e.g., Dickey & Bunger, 2011; Frazier & Clifton, 1998; Rasekhi & Harris, 2021).

One explanation for the unattested effects of violating Morphological (and/or Structural) Parallelism in the present study is the following: Satisfying one dimension of parallelism may be sufficient, particularly when the upcoming dependency formation is predictable: it is cued by a specific NP antecedent and a fully specified remnant- with an NP restrictor "student"- in the current study. Specific NP antecedent-*wh*-phrase pairings incur processing costs because these are semantically rich linguistic forms. Semantic richness increases complexity and causes difficulty in anaphor processing elsewhere (e.g., Almor, 1999). According to the Informational

Load Hypothesis of Almor (1999), increasing the complexity/ informational load of an anaphor needs to be justified such that it should (i) help identify the antecedent, or (ii) add new information about the antecedent, or both.

In the present study, having specific antecedents (e.g., *a (certain) Noun*) and having an NP restrictor on the upcoming *wh*-word (e.g., *Which Noun*, rather than, for instance, *What* or *Who*) will induce an informationally loaded dependency formation between the antecedent and the *wh*-phrase. Plus having case marking on the *wh*-restrictor (e.g., "student" in "which student" in regular sluicing), for the sake of obeying Morphological Parallelism (i.e., case match), may lead to additional processing costs that could not be *justified*. Morphological Parallelism would not indeed aid in forming an already predictable dependency relation between the antecedent and the *wh*-phrase in the context of the present study. Nor does it add new information about the antecedent NP. Therefore, it is conceivable to assume that processing constraints, such as Morphological Parallelism, can be violated for the sake of having an informationally less loaded (i.e., easier-to-process) dependency formation, particularly when there is no ambiguity in the linguistic input regarding the dependency formation (e.g., unlike in Rasekhi & Harris, 2021). Hence, the current findings offer new insights on how different levels of Parallelism (semantic, morphological, and structural) can be operationalized in sentence processing. Whether or not semantic parallelism may indeed override morphological/structural parallelism in similar linguistic settings in other languages calls for further research.

Chapter 6

CONCLUDING REMARKS

This dissertation contributes to the study of sluicing and of the nature of the well-attested constraints in language. such as island constraints, as well as Locality and Parallelism constraints that guide the human parser during processing of sluicing. This dissertation work also exemplifies how various experimental methods and tasks (e.g., forced choice, acceptability ratings, self-paced reading) could be implemented in the study of sluicing/ellipsis. I summarize below the key takeaways based on the findings and suggest potential paths the future work could take.

On the topic of sluicing, this dissertation provides the first systematic investigation of what may be the ellipsis source, or silent structure under sluicing. Results (of a three alternative forced choice study) indicate that the ellipsis source could be syntactically non-isomorphic to its antecedent clause in regular sluicing, but crucially, not in contrast sluicing, supporting the *evasion* view (e.g., Barros et al., 2014; Merchant, 2001).

Furthermore, this dissertation identifies an acceptability penalty under contrast sluicing, which was not previously recognized (Chapter 3, Experiment 1). In an effort to understand its sources, contextual manipulations are implemented (Chapter 3, Experiment 2 and the acceptability study reported in Chapter 4). Discourse-level manipulations that are targeted to decrease the processing complexity of contrast sluicing are found to improve the acceptability. This paves the way for future studies to explore potential factors that may contribute to the acceptability of contrast sluicing.

Regarding island constraints, this dissertation is the first that experimentally evaluates the differential island effects under sluicing, focusing on subject islands in English. In parallel to the informal observations made by the structural accounts (Barros et al., 2014; Merchant, 2001, 2008; Ross, 1969), subject island effect is found to be an active constraint in contrast sluicing, but *not* in regular sluicing (Chapter 3). Additionally, Chapter 3 reveals that subject island effect is attenuated in contrast sluicing environments. The key factor that increases acceptability is repeated exposure. This replicates the findings of prior work (Chaves & Dery, 2019; Francom, 2009; Hofmeister & Sag, 2010; Snyder, 2000) in a novel linguistic setting, and supports the *functional view* to subject islands (e.g., Chaves, 2013 ;Chaves & Dery, 2014 ; Deane, 1991). Whether other types of islands show similar patterns under sluicing is an exciting direction for future research.

In processing, interpreting an upcoming *wh*-phrase (e.g., remnant in sluicing) in relation to a linearly closer argument – object NP antecedent (e.g., Frazier & Clifton, 1998) is found to be *not* contingent upon applying ellipsis or not. Present work attests Locality (object) bias in regular sluicing involving ellipsis, as well as in pseudosluicing and in embedded pronounced interrogatives in Turkish – the latter two do not involve ellipsis. In real-time processing, Locality bias is first attested at the time where an anaphoric dependency is formed. This novel finding suggests that Locality constraints processing beyond ellipsis and regarding how an anaphoric dependency is formed in language. What may be the contributing effects of *linear distance* and/or *focus* on the application of Locality can be tested in future research by taking advantage of scrambling in Turkish.

Concerning the effects of Parallelism (e.g., Carlson, 2001), current findings suggest that satisfying semantic parallelism provides sufficient cues for the parser to resolve a dependency between an indefinite antecedent and a *wh*-phrase in Turkish. This calls for future research that addresses how different levels of Parallelism are operationalized cross-linguistically during processing of sluicing(-like) sentences.

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Appendix A

ITEM SETS FOR THE 3AFC EXPERIMENT (CHAPTER 2)

CRITICAL ITEM SETS:

1. **Regular-Subj:** A car amazed Kate, but the dealer doesn't recall which car…

   a. …that was.

   b. …amazed Kate.

   c. …driving fast.

   Regular-Obj: Kate loved a car, but the dealer doesn't recall which car…

   a. …that was.

   b. …Kate loved.

   c. …driving fast.

   Contrast-Subj: The Volkswagen Beetle amazed Kate, but the dealer doesn't recall which other car…

   a. …that was.

   b. …amazed Kate.

   c. …driving fast

Contrast-Obj: Kate loved the Volkswagen Beetle, but the dealer doesn't recall which other car.

a. …that was.

b. …Kate loved.

c. …driving fast.

2. **Regular-Subj:** A health condition weakened Betty, but I don't remember which health condition…

a. …weakened Betty.

b. …the doctor sneezed.

c. … that was.

Regular-Obj: Betty overcame a health condition, but I don't remember which health condition…

a. …Betty overcame.

b. …the doctor sneezed.

c. …that was.

Contrast-Subj: Rheumatoid arthritis weakened Betty, but I don't remember which other health condition…

a. …weakened Betty.

b. …the doctor sneezed.

c. …that was.

Contrast-Obj: Betty overcame rheumatoid arthritis, but I don't remember which other health condition…

a. …Betty overcame.

b. …the doctor sneezed.

c. …that was.

3. **Regular-Subj:** A match disappointed the fans, but the reporter didn't specify which match…

a. …the playoffs watching.

b. …that was.

c. …disappointed the fans.

Regular-Obj: The fans disliked a match, but the reporter didn't specify which match…

a. …the playoffs watching.

b. …that was.

c. …the fans disliked.

Contrast-Subj: The Clippers vs Nuggets disappointed the fans, but the reporter didn't specify which other match…

a. …the playoffs watching.

b. …that was.

c. …disappointed the fans.

Contrast-Obj: The fans disliked the Clippers vs Nuggets, but the reporter didn't specify which other match...

a. …the playoffs watching.

b. …that was.

c. …the fans disliked.

4. **Regular-Subj:** A class worried Robert, but I don't know which class…

a. …given the assignment.

b. …worried Robert.

c. …that was.

Regular-Obj: Robert failed a class, but I don't know which class…

a. …given the assignment.

b. …Robert failed.

c. …that was.

Contrast-Subj: Advanced Physics worried Robert, but I don't know which other class…

a. …given the assignment.

b. …worried Robert.

c. …that was.

Contrast-Obj: Robert failed Advanced Physics, but I don't know which other class…

a. …given the assignment.

b. …Robert failed.

c. …that was.

5. **Regular-Subj:** A building fascinated Jane, but her husband forgot which building…

a. …that was.

b. …staying long.

c. …fascinated Jane.

Regular-Obj: Jane admired a building, but her husband forgot which building…

a. …that was.

b. …staying long.

c. …Jane admired.

Contrast-Subj: The Westminster Abbey fascinated Jane, but her husband forgot which other building…

a. …that was.

b. …staying long.

c. …fascinated Jane.

Contrast-Obj: Jane admired the Westminster Abbey, but her husband forgot which other building…

    a. …that was.

    b. …staying long.

    c. …Jane admired.

6. **Regular-Subj:** A student worries the instructor, but nobody can guess which student…

    a. …worries the instructor.

    b. …that is.

    c. …the exam passing.

Regular-Obj: The instructor doubts a student, but nobody can guess which student…

    a. …the instructor doubts.

    b. …that is.

    c. …the exam passing.

Contrast-Subj: Abby worries the instructor, but nobody can guess which other student …

    a. …worries the instructor.

    b. …that is.

    c. …the exam passing.

Contrast-Obj: The instructor doubts Abby, but nobody can guess which other student…

a. …the instructor doubts.

b. …that is.

c. …the exam passing.

7. **Regular-Subj:** A beer delights Liz, but the bartender doesn't remember which beer…

a. …that is.

b. …delights Liz.

c. …fast malting.

Regular-Obj: Liz likes a beer, but the bartender doesn't remember which beer…

a. …that is.

b. …Liz likes.

c. …fast malting.

Contrast-Subj: Guinness Blonde delights Liz, but the bartender doesn't remember which other beer…

a. …that is.

b. … delights Liz.

c. …fast malting.

Contrast-Obj: Liz likes Guinness Blonde, but the bartender doesn't remember which other beer…

a. …that is.

b. … Liz likes.

c. …fast malting.

8. **Regular-Subj:** A celebrity impressed Sarah, but we can't remember which celebrity…

a. …impressed Sarah.

b. …the statue resembling.

c. …that was.

Regular-Obj: Sarah adored a celebrity, but we can't remember which celebrity…

a. …Sarah adored.

b. …the statue resembling.

c. …that was.

Contrast-Subj: Emma Watson impressed Sarah, but we can't remember which other celebrity…

a. … impressed Sarah.

b. …the statue resembling.

c. …that was.

Contrast-Obj: Sarah adored Emma Watson, but we can't remember which other celebrity…

a. …Sarah adored.

b. …the statue resembling.

c. …that was.

9. **Regular-Subj:** A TV series upset the reviewer, but Megan forgot which TV series…

a. …must everyone.

b. …that was.

c. …upset the reviewer.

Regular-Obj: The reviewer criticized a TV series, but Megan forgot which TV series…

a. …must everyone.

b. …that was.

c. …the reviewer criticized.

Contrast-Subj: Game of Thrones upset the reviewer, but Megan forgot which other TV series…

a. …must everyone.

b. …that was.

c. … upset the reviewer.

Contrast-Obj: The reviewer criticized Game of Thrones, but Megan forgot which other TV series…

a. …must everyone.

b. …that was.

c. … the reviewer criticized.

10. **Regular-Subj:** A superhero amazed Mike, but his mother cannot recall which superhero…

a. …the fun were.

b. …amazed Mike.

c. …that was.

Regular-Obj: Mike loved a superhero, but his mother cannot recall which superhero…

a. …the fun were.

b. …Mike loved.

c. …that was.

Contrast-Subj: Captain America amazed Mike, but his mother cannot recall which other superhero…

a. …the fun were.

b. …amazed Mike.

c. …that was.

Contrast-Obj: Mike loved Captain America, but his mother cannot recall which other superhero…

a. …the fun were.

b. …Mike loved.

c. …that was.

11. **Regular-Subj:** A professor criticized the students, but the department secretary didn't reveal which professor…

a. …that was.

b. …sabbatical went.

c. …criticized the students.

Regular-Obj: The students criticized a professor, but the department secretary didn't reveal which professor…

a. …that was.

b. …sabbatical went.

c. …the students criticized.

Contrast-Subj: Dr. Anderson criticized the students, but the department secretary didn't reveal which other professor…

a. …that was.

b. …sabbatical went.

c. …criticized students.

Contrast-Obj: The students criticized Dr. Anderson, but the department secretary didn't reveal which other professor…

a. …that was.

b. …sabbatical went.

c. …students criticized.

12. **Regular-Subj:** A committee bothered the administration, but nobody understood which committee…

a. …bothered the administration.

b. …that was.

c. …were suing.

Regular-Obj: The administration resented a committee, but nobody understood which committee…

a. …the administration resented.

b. …that was.

c. …were suing.

Contrast-Subj: The Diversity Committee bothered the administration, but nobody understood which other committee…

a. …bothered the administration.

b. …that was.

c. …were suing.

Contrast-Obj: The administration resented the Diversity Committee, but nobody understood which other committee …

a. …the administration resented.

b. …that was.

c. …were suing.

13. **Regular-Subj:** A movie fascinated Amanda, but her friend cannot remember which movie…

a. …that was.

b. …fascinated Amanda.

c. …ate popcorn.

Regular-Obj: Amanda enjoyed a movie, but her friend cannot remember which movie…

a. …that was.

b. …Amanda enjoyed.

c. …ate popcorn.

Contrast-Subj: Mission Impossible fascinated Amanda, but her friend cannot remember which other movie…

a. …that was.

b. …fascinated Amanda.

c. …ate popcorn.

Contrast-Obj: Amanda enjoyed Mission Impossible, but her friend cannot remember which other movie…

a. …that was.

b. …Amanda enjoyed.

c. …ate popcorn.

14. **Regular-Subj:** An airline criticized travel bans, but this article doesn't explain which airline…

a. …criticized travel bans.

b. …that was.

c. ...fainted the passenger.

Regular-Obj: Travel bans displeased an airline, but this article doesn't explain which airline…

a. …travel bans displeased.

b. …that was.

c. ...fainted the passenger.

Contrast-Subj: Lufthansa criticized travel bans, but this article doesn't explain which other airline…

a. …criticized travel bans.

b. …that was.

c. …fainted the passenger.

Contrast-Obj: Travel bans displeased Lufthansa, but this article doesn't explain which other airline…

a. …travel bans displeased.

b. …that was.

c. ...fainted the passenger.

15. **Regular-Subj:** A vegetable sickens Emma, but her new boyfriend doesn't know which vegetable…

a. …eating raw.

b. …sickens Emma.

c. …that is.

Regular-Obj: Emma dislikes a vegetable, but her new boyfriend doesn't know which vegetable…

a. …eating raw.

b. …Emma dislikes.

c. …that is.

Contrast-Subj: Cabbage sickens Emma, but her new boyfriend doesn't know which other vegetable…

a. …eating raw.

b. …sickens Emma.

c. …that is.

Contrast-Obj: Emma dislikes cabbage, but her new boyfriend doesn't know which other vegetable…

a. …eating raw.

b. …Emma dislikes.

c. …that is.

16. **Regular-Subj:** A contestant irritated the jury, but I forgot which contestant…

a. …cried the audience.

b. …that was.

c. …irritated the jury.

Regular-Obj: The jury disliked a contestant, but I forgot which contestant…

a. …cried the audience.

b. …that was.

c. …the jury disliked.

Contrast-Subj: Ken Jennings irritated the jury, but I forgot which other contestant…

a. …cried the audience.

b. …that was.

c. …irritated the jury.

Contrast-Obj: The jury disliked Ken Jennings, but I forgot which other contestant…

a. …cried the audience.

b. …that was.

c. …the jury disliked.

FILLERS:

17. Alice watched Mathew at the competition, but she can't remember where…

    a. …Mathew performed.

    b. …competing Alice.

    c. …that was.

18. Sally used to see her friends regularly, but she doesn't know why…

    a. …they stopped meeting.

    a. …that was.

    b. …went dinner.

19. Students have an important assignment, but nobody remembers when…

    a. …that is.

    b. …the deadline is.

    c. …given the homework.

20. Mary had invited Greg for dinner, but she doesn't know why…

    a. …Greg didn't show up.

    b. …that was.

    c. …brought Greg wine.

21. The doctor prescribed a medicine to Laura, but Laura doesn't remember when…

    a. …that was.

    b. …the pills finished.

c. …took the pills.

22. Maggie always finds good bargains, but her friends don't know where…

    a. …shopping sales.

    b. …Maggie shops.

    c. …that is.

23. A school trip is coming up, but parents still don't know when…

    a. …arriving the bus.

    b. …that is.

    c. …the students are leaving.

24. Ava visited Paris last week, but we don't know when…

    a. …the trip was planned.

    b. …that was.

    c. …traveled Ava.

Appendix B

ITEM SETS FOR THE ACCEPTABILITY RATING EXPERIMENTS (CHAPTER 3)

EXPERIMENT 1 (Section 3.4)

CRITICAL ITEM SETS:

1. **Regular-CNP$_{obj}$**: Kate instantly loved the color of a car, but her friend doesn't recall which car.

   Regular-CNP$_{subj}$: The color of a car instantly amazed Kate, but her friend doesn't recall which car.

   Contrast-CNP$_{obj}$: Kate instantly loved the color of the Volkswagen Beetle, but her friend doesn't recall which other car.

   Contrast-CNP$_{subj}$: The color of the Volkswagen Beetle instantly amazed Kate, but her friend doesn't recall which other car.

   NoSluice-CNP$_{obj}$: Kate instantly loved the color of a car, but her friend doesn't recall the rest of the day.

   NoSluice- CNP$_{subj}$: The color of a car instantly amazed Kate, but her friend doesn't recall the rest of the day.

2. **Regular-CNP$_{obj}$**: My aunt was undergoing the approved treatment of a health condition, but I don't remember which health condition.

   Regular-CNP$_{subj}$: The approved treatment of a health condition weakened my aunt's immune system, but I don't remember which health condition.

Contrast-CNP_{obj}: My aunt was undergoing the approved treatment of rheumatoid arthritis, but I don't remember which other health condition.

Contrast-CNP_{subj}: The approved treatment of rheumatoid arthritis weakened my aunt's immune system, but I don't remember which other health condition.

NoSluice-CNP_{obj}: My aunt was undergoing the approved treatment of a health condition, but I don't remember her doctor.

NoSluice- CNP_{subj}: The approved treatment of a health condition weakened my aunt's immune system, but I don't remember her doctor.

3. **Regular-CNP_{obj}**: The producer initially disliked the cover of a song, but Jack didn't understand which song.

   Regular-CNP_{subj}: The cover of a song initially upset the producer, but Jack didn't understand which song.

   Contrast-CNP_{obj}: The producer initially disliked the cover of Back in Black, but Jack didn't understand which other song.

   Contrast-CNP_{subj}: The cover of Back in Black initially upset the producer, but Jack didn't understand which other song.

   NoSluice-CNP_{obj}: The producer initially disliked the cover of a song, but Jack didn't understand the criticism.

   NoSluice- CNP_{subj}: The cover of a song initially upset the producer, but Jack didn't understand the criticism.

4. **Regular-CNP_{obj}**: The university will sue the head of a department, but the lawyers won't announce which department.

Regular-CNP_subj: The head of a department will sue the university, but the lawyers won't announce which department.

Contrast-CNP_obj: The university will sue the head of Biology, but the lawyers won't announce which other department.

Contrast-CNP_subj: The head of Biology will sue the university, but the lawyers won't announce which other department.

NoSluice-CNP_obj: The university will sue the head of a department, but the lawyers won't announce the details.

NoSluice- CNP_subj: The head of a department will sue the university, but the lawyers won't announce the details.

5. **Regular-CNP_obj**: Liz likes the taste of a beer, but the bartender doesn't remember which beer.

Regular-CNP_subj: The taste of a beer delights Liz, but the bartender doesn't remember which beer.

Contrast-CNP_obj: Liz likes the taste of Guinness Blonde, but the bartender doesn't remember which other beer.

Contrast-CNP_subj: The taste of Guinness Blonde delights Liz, but the bartender doesn't remember which other beer.

NoSluice-CNP_obj: Liz likes the taste of a beer, but the bartender doesn't remember her favorite glass.

NoSluice- CNP_subj: The taste of a beer delights Liz, but the bartender doesn't remember her favorite glass.

6. **Regular-CNP_{obj}**: People trusted the portrayal of a company, but the polls didn't reveal which company.

   Regular-CNP_{subj}: The portrayal of a company influenced people's perception, but the polls didn't reveal which company.

   Contrast-CNP_{obj}: People trusted the portrayal of Amazon, but the polls didn't reveal which other company.

   Contrast-CNP_{subj}: The portrayal of Amazon influenced people's perception, but the polls didn't reveal which other company.

   NoSluice-CNP_{obj}: People trusted the portrayal of a company, but the polls didn't reveal the market share.

   NoSluice- CNP_{subj}: The portrayal of a company influenced people's perception, but the polls didn't reveal the market share.

7. **Regular-CNP_{obj}**: Jane admired the design of a hotel, but her husband is unsure about which hotel.

   Regular-CNP_{subj}: The design of a hotel mesmerized Jane, but her husband is unsure about which hotel.

   Contrast-CNP_{obj}: Jane admired the design of the Ritz-Carlton, but her husband is unsure about which other hotel.

   Contrast-CNP_{subj}: The design of the Ritz-Carlton mesmerized Jane, but her husband is unsure about which other hotel.

   NoSluice-CNP_{obj}: Jane admired the design of a hotel, but her husband is unsure about the complimentary breakfast.

NoSluice- CNP_{subj}: The design of a hotel mesmerized Jane, but her husband is unsure about the complimentary breakfast.

8. **Regular-CNP_{obj}**: Steve adored the statue of a celebrity in the wax museum, but we can't remember which celebrity.

   Regular-CNP_{subj}: The statue of a celebrity impressed Steve in the wax museum, but we can't remember which celebrity.

   Contrast-CNP_{obj}: Steve adored the statue of John Lennon in the wax museum, but we can't remember which other celebrity.

   Contrast-CNP_{subj}: The statue of John Lennon impressed Steve in the wax museum, but we can't remember which other celebrity.

   NoSluice-CNP_{obj}: Steve adored the statue of a celebrity in the wax museum, but we can't remember his exact wording.

   NoSluice- CNP_{subj}: The statue of a celebrity impressed Steve in the wax museum, but we can't remember his exact wording.

9. **Regular-CNP_{obj}**: The fans got disappointed with the ending of a match last year, but the reporter didn't remember which match.

   Regular-CNP_{subj}: The ending of a match upset the fans last year, but the reporter didn't remember which match.

   Contrast-CNP_{obj}: The fans got disappointed with the ending of Clippers vs Nuggets last year, but the reporter didn't remember which other match.

   Contrast-CNP_{subj}: The ending of Clippers vs Nuggets upset the fans last year, but the reporter didn't remember which other match.

NoSluice-CNP_{obj}: The fans got disappointed with the ending of a match last year, but the reporter didn't remember the worst player.

NoSluice- CNP_{subj}: The ending of a match upset the fans last year, but the reporter didn't remember the worst player.

10. **Regular-CNP_{obj}**: Freshman medical students marveled at the shape of a virus, but the professor couldn't understand which virus.

Regular-CNP_{subj}: The shape of a virus surprised freshman medical students, but the professor couldn't understand which virus.

Contrast-CNP_{obj}: Freshman medical students marveled at the shape of Escherichia virus T4, but the professor couldn't understand which other virus.

Contrast-CNP_{subj}: The shape of Escherichia virus T4 surprised freshman medical students, but the professor couldn't understand which other virus.

NoSluice-CNP_{obj}: Freshman medical students marveled at the shape of a virus, but the professor couldn't understand their excitement.

NoSluice- CNP_{subj}: The shape of a virus surprised freshman medical students, but the professor couldn't understand their excitement.

11. **Regular-CNP_{obj}**: Many prospective students found the ranking of a university impressive this year, but their parents were not sure which university.

Regular-CNP_{subj}: The ranking of a university attracted many prospective students this year, but their parents were not sure which university.

Contrast-CNP_{obj}: Many prospective students found the ranking of University of Delaware impressive this year, but their parents were not sure which other university.

Contrast-CNP_{subj}: The ranking of University of Delaware attracted many prospective students this year, but their parents were not sure which other university.

NoSluice-CNP_{obj}: Many prospective students found the ranking of a university impressive this year, but their parents were not sure about the tuition.

NoSluice- CNP_{subj}: The ranking of a university attracted many prospective students this year, but their parents were not sure about the tuition.

12. **Regular-CNP_{obj}**: The dollar's strength often parallels the value of a stock, but people can never guess which stock.

    Regular-CNP_{subj}: The value of a stock often parallels the dollar's strength, but people can never guess which stock.

    Contrast-CNP_{obj}: The dollar's strength often parallels the value of Microsoft Corporation, but people can never guess which other stock.

    Contrast-CNP_{subj}: The value of Microsoft Corporation often parallels the dollar's strength, but people can never guess which other stock.

    NoSluice-CNP_{obj}: The dollar's strength often parallels the value of a stock, but people can never guess market fluctuations.

    NoSluice- CNP_{subj}: The value of a stock often parallels the dollar's strength, but people can never guess market fluctuations.

13. **Regular-CNP_{obj}**: The reviewer harshly criticized the finale of a TV series, but Megan forgot which TV series.

   Regular-CNP_{subj}: The finale of a TV series really upset the reviewer, but Megan forgot which TV series.

   Contrast-CNP_{obj}: The reviewer harshly criticized the finale of Game of Thrones, but Megan forgot which other TV series.

   Contrast-CNP_{subj}: The finale of Game of Thrones really upset the reviewer, but Megan forgot which other TV series.

   NoSluice-CNP_{obj}: The reviewer harshly criticized the finale of a TV series, but Megan forgot his main critique.

   NoSluice- CNP_{subj}: The finale of a TV series really upset the reviewer, but Megan forgot his main critique.

14. **Regular-CNP_{obj}**: Many shoppers exploited the sale event of a brand this year, but the marketing team doesn't know which brand.

   Regular-CNP_{subj}: The sale event of a brand excited many shoppers this year, but the marketing team doesn't know which brand.

   Contrast-CNP_{obj}: Many shoppers exploited the sale event of Sony this year, but the marketing team doesn't know which other brand.

   Contrast-CNP_{subj}: The sale event of Sony excited many shoppers this year, but the marketing team doesn't know which other brand.

   NoSluice-CNP_{obj}: Many shoppers exploited the sale event of a brand this year, but the marketing team doesn't know about buyers' expectations.

NoSluice- CNP_{subj}: The sale event of a brand excited many shoppers this year, but the marketing team doesn't know about buyers' expectations.

15. **Regular-CNP_{obj}**: Megan's children used to love the costume of a superhero, but she cannot recall which superhero.

Regular-CNP_{subj}: The costume of a superhero used to amaze Megan's children, but she cannot recall which superhero.

Contrast-CNP_{obj}: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Contrast-CNP_{subj}: The costume of Captain America used to amaze Megan's children, but she cannot recall which other superhero.

NoSluice-CNP_{obj}: Megan's children used to love the costume of a superhero, but she cannot recall the popular villain.

NoSluice- CNP_{subj}: The costume of a superhero used to amaze Megan's children, but she cannot recall the popular villain.

16. **Regular-CNP_{obj}**: The undergraduates are criticizing the assistant of a professor a lot, but the department's secretary wouldn't reveal which professor.

Regular-CNP_{subj}: The assistant of a professor is criticizing the undergraduates a lot, but the department's secretary wouldn't reveal which professor.

Contrast-CNP_{obj}: The undergraduates are criticizing the assistant of Dr. Anderson a lot, but the department's secretary wouldn't reveal which other professor.

Contrast-CNP_{subj}: The assistant of Dr. Anderson is criticizing the undergraduates a lot, but the department's secretary wouldn't reveal which other professor.

NoSluice-CNP_{obj}: The undergraduates are criticizing the assistant of a professor a lot, but the department's secretary wouldn't reveal any names.

NoSluice- CNP_{subj}: The assistant of a professor is criticizing the undergraduates a lot, but the department's secretary wouldn't reveal any names.

17. **Regular-CNP_{obj}**: Many readers appreciated the movie adaptation of a book, but the critic didn't specify which book.

Regular-CNP_{subj}: The movie adaptation of a book gained many readers' appreciation, but the critic didn't specify which book.

Contrast-CNP_{obj}: Many readers appreciated the movie adaptation of Little Women, but the critic didn't specify which other book.

Contrast-CNP_{subj}: The movie adaptation of Little Women gained many readers' appreciation, but the critic didn't specify which other book.

NoSluice-CNP_{obj}: Many readers appreciated the movie adaptation of a book, but the critic didn't specify the best character.

NoSluice- CNP_{subj}: The movie adaptation of a book gained many readers' appreciation, but the critic didn't specify the best character.

18. **Regular-CNP_{obj}**: The American Idol judges disliked the performance of a song, but I forgot which song.

Regular-CNP_{subj}: The performance of a song irritated the American Idol judges, but I forgot which song.

Contrast-CNP_{obj}: The American Idol judges disliked the performance of Imagine, but I forgot which other song.

Contrast-CNP_{subj}: The performance of Imagine irritated the American Idol judges, but I forgot which other song.

NoSluice-CNP_{obj}: The American Idol judges disliked the performance of a song, but I forgot their harshest criticism.

NoSluice- CNP_{subj}: The performance of a song irritated the American Idol judges, but I forgot their harshest criticism.

19. **Regular-CNP_{obj}**: The administration resented the report of a committee, but nobody understood which committee.

Regular-CNP_{subj}: The report of a committee bothered the administration, but nobody understood which committee.

Contrast-CNP_{obj}: The administration resented the report of Diversity Committee, but nobody understood which other committee.

Contrast-CNP_{subj}: The report of Diversity Committee bothered the administration, but nobody understood which other committee.

NoSluice-CNP_{obj}: The administration resented the report of a committee, but nobody understood the reaction.

NoSluice- CNP_{subj}: The report of a committee bothered the administration, but nobody understood the reaction.

20. **Regular-CNP_{obj}**: Amanda enjoys the soundtrack of a movie, but her boyfriend cannot remember which movie.

Regular-CNP_{subj}: The soundtrack of a movie fascinates Amanda, but her boyfriend cannot remember which movie.

Contrast-CNP_{obj}: Amanda enjoys the soundtrack of Amélie, but her boyfriend cannot remember which other movie.

Contrast-CNP_{subj}: The soundtrack of Amélie fascinates Amanda, but her boyfriend cannot remember which other movie.

NoSluice-CNP_{obj}: Amanda enjoys the soundtrack of a movie, but her boyfriend cannot remember the composer.

NoSluice- CNP_{subj}: The soundtrack of a movie fascinates Amanda, but her boyfriend cannot remember the composer.

21. **Regular-CNP_{obj}**: Extended shifts apparently displeased the crew of an airline, but this article doesn't explain which airline.

Regular-CNP_{subj}: The crew of an airline apparently complained about extended shifts, but this article doesn't explain which airline.

Contrast-CNP_{obj}: Extended shifts apparently displeased the crew of Lufthansa, but this article doesn't explain which other airline.

Contrast-CNP_{subj}: The crew of Lufthansa apparently complained about extended shifts, but this article doesn't explain which other airline.

NoSluice-CNP_{obj}: Extended shifts apparently displeased the crew of an airline, but this article doesn't explain the working conditions.

NoSluice- CNP_{subj}: The crew of an airline apparently complained about extended shifts, but this article doesn't explain the working conditions.

22. **Regular-CNP_{obj}**: The vice president occasionally meets with the Governor of a state, but the reporter couldn't discover which state.

 Regular-CNP_{subj}: The Governor of a state occasionally meets with the vice president, but the reporter couldn't discover which state.

 Contrast-CNP_{obj}: The vice president occasionally meets with the Governor of California, but the reporter couldn't discover which other state.

 Contrast-CNP_{subj}: The Governor of California occasionally meets with the vice president, but the reporter couldn't discover which other state.

 NoSluice-CNP_{obj}: The vice president occasionally meets with the Governor of a state, but the reporter couldn't discover their agenda.

 NoSluice- CNP_{subj}: The Governor of a state occasionally meets with the vice president, but the reporter couldn't discover their agenda.

23. **Regular-CNP_{obj}**: The article's content allegedly disturbed the editor of a newspaper, but Alex couldn't find out which newspaper.

 Regular-CNP_{subj}: The editor of a newspaper allegedly disfavored the article's content, but Alex couldn't find out which newspaper.

 Contrast-CNP_{obj}: The article's content allegedly disturbed the editor of New York Times, but Alex couldn't find out which other newspaper.

 Contrast-CNP_{subj}: The editor of New York Times allegedly disfavored the article's content, but Alex couldn't find out which other newspaper.

NoSluice-CNP_{obj}: The article's content allegedly disturbed the editor of a newspaper, but Alex couldn't find out a common ground.

NoSluice- CNP_{subj}: The editor of a newspaper allegedly disfavored the article's content, but Alex couldn't find out a common ground.

24. **Regular-CNP_{obj}**: The unrest in the Middle East might influence the price of an imported good, but economists don't know which imported good.

Regular-CNP_{subj}: The price of an imported good might reflect the unrest in the Middle East, but economists don't know which imported good.

Contrast-CNP_{obj}: The unrest in the Middle East might influence the price of oil, but economists don't know which other imported good.

Contrast-CNP_{subj}: The price of oil might reflect the unrest in the Middle East, but economists don't know which other imported good.

NoSluice-CNP_{obj}: The unrest in the Middle East might influence the price of an imported good, but economists don't know for sure.

NoSluice- CNP_{subj}: The price of an imported good might reflect the unrest in the Middle East, but economists don't know for sure.

FILLERS:

25. John bought a new smart TV yesterday, but he doesn't know how it works exactly.

26. Alice observed a dancer at the competition, but she can't remember when she went there.

27. The manager criticized a barista for his work, but he failed to explain why he was unhappy about the work.

28. The gardener was digging a hole, but we couldn't see how he planted the flower.

29. Anne paired with a classmate yesterday, but she can't remember when they must complete the task.

30. George is hiding a secret document, but Lianne couldn't guess where she should be searching.

31. The engineer approved a project site yesterday, but he didn't clarify where the workers would start the construction.

32. Dumbledore praised a wizard for winning the house cup, but the wizard didn't reveal how he succeeded.

33. Sally used to see her friends regularly on Saturdays, but she forgot why they stopped meeting.

34. Joanna destroyed a complaint about, but the employee didn't even know why was he reported the manager.

35. The audience was going to cry an actor, but it is not certain how everyone got so upset the play the actress.

36. The children were blinking a cat, but they didn't realize where the cat arrived the garden.

37. Olivier sneezed a doctor later, but he didn't know how the nurses would practitioners react.

38. Jim a cake baked, but he falsely remembers when the guests that day would arrive later.

39. The board a day appointed, but the members forgot why month they would meet again.

40. The pirates sank a boat the ship, but the news didn't mention how the crew were rescued the captain.

41. Elaine's cat last night chasing endlessly a toy, but she didn't understand why the cat got no reason mad so.

42. Jimmy fell himself a ladder incautiously, but her mother couldn't realize where was he trying to repaired.

43. Jack wanted to hire a clown to celebrate their son's birthday, but his wife was not happy about his idea.

44. The receptionist seemed to be anxiously welcoming a couple at noon, but the woman and man were fine.

45. Alex is expecting to see an important client later next week, but he might not be convincing enough.

46. The famous car manufacturer hopes to release a new model soon, but the sales might not go up as expected.

47. The instructor was planning to give an assignment yesterday, but students didn't understand the content yet.

48. Josh desires to adopt a cat now, but he was actually quite fond of dogs as a child.

49. The waiter had always convinced Charles to order a burger, but he went for chicken wings last night.

50. Jeff managed to see an exotic animal in the National Aquarium, but he failed to take a photo.

51. Bill decided to visit a neighbor to chat, but nobody was at home that night.

52. The policeman appears to yell a demonstrator a protestor, but she is able to stay the street extremely calm.

53. My neighbor's child always tries to cry a babysitter, but she seems quite patient otherwise her mother.

54. George persuaded a motorbike to arrive me last year, but he couldn't ride on the way back the motorbike.

55. The tree hesitated a flower to bloom last March, but it did not survive the leaves long.

56. Mike yesterday proved to hear a client the rumor, but he surprisingly spreading didn't like.

57. The economic crisis is likely to suffer from a country most, but the experts shockingly were hopeful.

58. Katie on time believed to have left possibly a party, but her friends pretended lovingly.

59. Lucy promised to have home driven a relative, but Jack gave instead a ride the granddad.

60. Trevor seemed to be a friend asking out constantly Abby, but Abby missed their together chances.

EXPERIMENT 2 (Section 3.5)

CRITICAL ITEM SETS:

1. *Sam and Kate visited various auctions last Saturday. They checked a lot of products for sale and Kate was in her element. She wanted to look at everything. Sam was very confused afterwards.*

    Context- CNP$_{obj}$: Kate loved the color of the Volkswagen Beetle, but Sam doesn't recall which other car.

    Context- CNP$_{subj}$: The color of the Volkswagen Beetle amazed Kate, but Sam doesn't recall which other car.

    NoContext- CNP$_{obj}$: Kate loved the color of the Volkswagen Beetle, but Sam doesn't recall which other car.

    NoContext- CNP$_{subj}$: The color of the Volkswagen Beetle amazed Kate, but Sam doesn't recall which other car.

2. *Jack plays in an amateur music band where they mostly play from 70s and 80s repertoires. They recently decided to make a music album. They made a demo recording. They worked very diligently on it. Jack arranged a meeting with a producer but couldn't follow everything the producer said.*

    Context- CNP$_{obj}$: The producer disliked the cover of Back in Black, but Jack didn't understand which other song.

    Context- CNP$_{subj}$: The cover of Back in Black upset the producer, but Jack didn't understand which other song.

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NoContext- CNP$_{obj}$: The producer disliked the cover of Back in Black, but Jack didn't understand which other song.

NoContext- CNP$_{subj}$: The cover of Back in Black upset the producer, but Jack didn't understand which other song.

3. *Caitlyn has just started at one of the long-established, top universities on the East Coast. The university has so far encouraged a lot of cutting-edge research. According to rumor, however, there has been some tension going on lately, which has been unpleasant. Not all details are confirmed yet.*

   Context- CNP$_{obj}$: The university will sue the chair of Biology, but the lawyers won't announce which other department.

   Context- CNP$_{subj}$: The chair of Biology will sue the university, but the lawyers won't announce which other department.

   NoContext- CNP$_{obj}$: The university will sue the chair of Biology, but the lawyers won't announce which other department.

   NoContext- CNP$_{subj}$: The chair of Biology will sue the university, but the lawyers won't announce which other department.

4. *A research team from the top Business School does an annual market survey. The team works very hard on it. Some of the results are made public, but not in very much detail.*

   Context- CNP$_{obj}$: People trust the portrayal of Amazon, but it is never clear which other company.

Context- CNP_{subj}: The portrayal of Amazon influences people's perception, but it is never clear which other company.

NoContext- CNP_{obj}: People trust the portrayal of **Amazon**, but it is never clear **which other company**.

NoContext- CNP_{subj}: The portrayal of **Amazon** influences people's perception, but it is never clear **which other company**.

5. *Jane and her husband travel a lot. They mostly stay at least two nights wherever they go. Finding accommodation is tricky for them. Her husband cares about cleanliness. Jane has other priorities. Her husband can never remember the details.*

   Context- CNP_{obj}: Jane admires the design of the Ritz-Carlton, but her husband is unsure about which other hotel.

   Context- CNP_{subj}: The design of the Ritz-Carlton mesmerizes Jane, but her husband is unsure about which other hotel.

   NoContext- CNP_{obj}: Jane admires the design of the Ritz-Carlton, but her husband is unsure about which other hotel.

   NoContext- CNP_{subj}: The design of the Ritz-Carlton mesmerizes Jane, but her husband is unsure about which other hotel.

6. *Steve and his friend, Carol, went to New York City on Saturday. They spent a lot of time in the famous wax museum, Madam Tussauds New York. Carol lost*

interest after an hour and stopped paying attention. Steve was lost in

admiration. He kept taking selfies. It got very irritating. Afterwards, a friend

asked Carol about the day, but Carol had forgotten some details.

Context- CNP_{obj}: Steve adored the statue of John Lennon in the wax museum,

but Carol can't remember which other celebrity.

Context- CNP_{subj}: The statue of John Lennon impressed Steve in the wax

museum, but Carol can't remember which other celebrity.

NoContext- CNP_{obj}: Steve adored the statue of John Lennon in the wax

museum, but Carol can't remember which other celebrity.

NoContext- CNP_{subj}: The statue of John Lennon impressed Steve in the wax

museum, but Carol can't remember which other celebrity.

7. *A young reporter on a sports channel was mentioning the unforgettable*

moments of the last NBA season. There had been a lot going on this year. The

reporter wanted to talk more, but he occasionally mixed things up.

Context- CNP_{obj}: The fans were disappointed with the ending of Clippers vs

Nuggets last year, but the reporter couldn't remember which other match.

Context- CNP_{subj}: The ending of Clippers vs Nuggets upset the fans last year,

but the reporter couldn't remember which other match.

NoContext- CNP_{obj}: The fans were disappointed with the ending of Clippers

vs Nuggets last year, but the reporter couldn't remember which other match.

NoContext- CNP_subj: The ending of Clippers vs Nuggets upset the fans last year, but the reporter couldn't remember which other match.

8. *The teaching assistant was telling her supervisor about her first class with freshman medical students in the lab. She mentioned students' reactions to their first hands-on experience. They were talking on the phone, and the connection was unstable.*

   Context- CNP_obj: Freshman medical students marveled at the shape of Escherichia T4, but the professor couldn't understand which other virus.

   Context- CNP_subj: The shape of Escherichia T4 surprised freshman medical students, but the professor couldn't understand which other virus.

   NoContext- CNP_obj: Freshman medical students marveled at the shape of Escherichia T4, but the professor couldn't understand which other virus.

   NoContext- CNP_subj: The shape of Escherichia T4 surprised freshman medical students, but the professor couldn't understand which other virus.

9. *A finance expert recently posted a video online. He explains the basics of investing for beginners. He suggests investing smartly and checking the strength of the dollar in the market regularly. Having watched the video, Greg wanted to show off to his friend, but struggled to remember the details.*

   Context- CNP_obj: The dollar's strength often parallels the value of Microsoft Corporation, but Greg couldn't remember which other stock.

Context- CNP_{subj}: The value of Microsoft Corporation often parallels the dollar's strength, but Greg couldn't remember which other stock.

NoContext- CNP_{obj}: The dollar's strength often parallels the value of Microsoft Corporation, but Greg couldn't remember which other stock.

NoContext- CNP_{subj}: The value of Microsoft Corporation often parallels the dollar's strength, but Greg couldn't remember which other stock.

10. *Teresa is a student at a Cinematography Department. One of her instructors challenges them a lot by assigning review articles and giving them a quiz every week. The last review was very difficult. Teresa wasn't able to do well in the quiz this time.*

Context- CNP_{obj}: The reviewer harshly criticized the finale of Game of Thrones, but Teresa forgot which other TV series.

Context- CNP_{subj}: The finale of Game of Thrones really upset the reviewer, but Teresa forgot which other TV series.

NoContext- CNP_{obj}: The reviewer harshly criticized the finale of Game of Thrones, but Teresa forgot which other TV series.

NoContext- CNP_{subj}: The finale of Game of Thrones really upset the reviewer, but Teresa forgot which other TV series.

11. *Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. They were allowed to eat a little more chocolate and candy*

than at other times. Due to old age, Megan unfortunately forgets the details of
such lovely memories now.

Context- CNP_{obj}: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Context- CNP_{subj}: The costume of Captain America used to amaze Megan's children, but she cannot recall which other superhero.

NoContext- CNP_{obj}: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

NoContext- CNP_{subj}: The costume of Captain America used to amaze Megan's children, but she cannot recall which other superhero.

12. *Jeffrey and Mary were watching the last episode of American Idol when the baby started crying. Mary had to leave and feed her. She was not happy about it as she missed most of the show. When she returned, she wanted to learn what happened.*

Context- CNP_{obj} The American Idol judges disliked the performance of Imagine, but Jeffrey forgot which other song.

Context- CNP_{subj}: The performance of Imagine irritated the American Idol judges, but Jeffrey forgot which other song.

NoContext- CNP_{obj}: The American Idol judges disliked the performance of Imagine, but Jeffrey forgot which other song.

NoContext- CNP_{subj}: The performance of Imagine irritated the American Idol judges, but Jeffrey forgot which other song.

13. *Amanda's 30th birthday was coming up, and her friends wanted to prepare a surprise party for her. They secretly decorated her apartment while she was at work. They also prepared a slide show with their photos together and wanted to add some background music. The last part turned out to be challenging.*
    Context- CNP_{obj}: Amanda enjoys the soundtrack of Amélie, but her friends cannot remember which other movie.
    Context- CNP_{subj}: The soundtrack of Amélie fascinates Amanda, but her friends cannot remember which other movie.

    NoContext- CNP_{obj}: Amanda enjoys the soundtrack of Amélie, but her friends cannot remember which other movie.
    NoContext- CNP_{subj}: The soundtrack of Amélie fascinates Amanda, but her friends cannot remember which other movie.

14. *Angie is a flight attendant. She quit her previous job because of poor working conditions. She heard that some companies treat their employees very well, but she is being careful to do a lot of research in looking for a new job. She just read an article today, but it was somewhat unclear.*
    Context- CNP_{obj}: Extended shifts apparently displease the crew of Lufthansa, but the article doesn't explain which other airline.

Context- CNP_{subj}: The crew of Lufthansa apparently complain about extended shifts, but the article doesn't explain which other airline.

NoContext- CNP_{obj}: Extended shifts apparently displease the crew of Lufthansa, but the article doesn't explain which other airline.

NoContext- CNP_{subj}: The crew of Lufthansa apparently complain about extended shifts, but the article doesn't explain which other airline.

15. *Recently, there have been occasional meetings in the White House, involving the Vice President. The meetings were not made public. An ambitious reporter, however, tried very hard to learn more.*

Context- CNP_{obj}: The vice president occasionally meets with the Governor of California, but the reporter couldn't discover which other state.

Context- CNP_{subj}: The Governor of California occasionally meets with the vice president, but the reporter couldn't discover which other state.

NoContext- CNP_{obj}: The vice president occasionally meets with the Governor of California, but the reporter couldn't discover which other state.

NoContext- CNP_{subj}: The Governor of California occasionally meets with the vice president, but the reporter couldn't discover which other state.

16. *Market fluctuations are predicted in the second half of the year, because of recent developments across the world. According to economists, these events*

might affect commerce between countries. Economists cannot be certain,

however.

Context- CNP$_{obj}$: The unrest in the Middle East might influence the price of oil, but economists aren't sure which other imported good.

Context- CNP$_{subj}$: The price of oil might reflect the unrest in the Middle East, but economists aren't sure which other imported good.

NoContext- CNP$_{obj}$: The unrest in the Middle East might influence the price of oil, but economists aren't sure which other imported good.

NoContext- CNP$_{subj}$: The price of oil might reflect the unrest in the Middle East, but economists aren't sure which other imported good.

FILLERS:

17. *Alice has a friend, Mathew, who has been an amateur dancer for almost five years. He is quite good at Latin dances such as Salsa and Bachata. A few weeks ago, Mathew joined a dance competition. Although Alice was among the audience to support Mathew, she was distracted and couldn't pay much attention to his performance.*

Alice watched Mathew at the competition, but she can't remember how he performed.

18. *There is a new engineer appointed to a project by Smith Constructions. He is hardworking and has worked at local companies before. However, he doesn't have much experience in working with a big team. This already started causing some issues between the engineer and the workers.*

The engineer approved a project site yesterday, but he didn't clarify where the workers would start the construction.

19. *There was quite a spectacular scene at Hogwarts tonight. Dumbledore proudly announced the winner of the House Cup. He also encouraged the winner to give a speech about his tricks in the winning performance. The expectations were not met, however.*

Dumbledore praised a wizard for winning the house cup, but the wizard didn't reveal how he succeeded.

Comprehension Question: Who announced the winner of the House Cup?

A: Snape

B: Dumbledore

C: Flitwick

20. *Sally and her friends used to get together every Saturday. They would go out for a long brunch at a restaurant like the Cheesecake Factory or Turning Point, and then they would go window-shopping at a nearby mall. Often they would end the day at a spa. Sally suddenly realized that she does not see her friends anymore.*

Sally used to see her friends regularly on Saturdays, but she forgot why they stopped meeting.

Comprehension Question: Where did Sally and her friends go at the end of the day?

A: a cafe

B: a park

C: a spa

21. *The performances by the leading actor and actress at the play last night were unbelievable. The audience felt every emotion and were totally enthralled. The story was very sad though, and some people got too emotional.*

The audience was going to cry an actor, but it is not certain why everyone got so upset the play the actress.

22. *Nick was babysitting his neighbor's child yesterday to make some extra money. They had a delicious breakfast that included the child's favorites like chocolate pancakes and banana splits. The weather was beautiful, so he let the child play in the garden for an hour while he was keeping an eye on him.*

The child was blinking a cat the garden, but Nick didn't realize where arrived the cat.

Comprehension Question: Where was the child playing when Nick was keeping an eye on him?

A: In the basement

B: In the garden

C: In the kitchen

23. *The board was announced to have another meeting towards the end of the month. The news was very surprising for the long-term members like Mr. Jackson and Ms. Plum because the board normally meets only once each month. The reason for the second call for the meeting was also explained, but it didn't catch people's attention.*

The board a day appointed, but the members forgot why month they would meet again.

24. *Jimmy visits his mother every Sunday to check on her and her needs. He came last Sunday too. After having a cup of coffee and a lovely chat with his mother,*

he took some tools, like a hammer and a screwdriver, and grabbed a ladder. He started checking the house to see if there was anything that needed fixing. Jimmy fell himself the ladder incautiously, but her mother couldn't realize where was he trying to repaired.

25. *Jack and his wife are a very happy couple. However, they almost always disagree when it comes to making a decision about their son, Danny. They cannot agree on even the simplest things, like haircuts or outfits for Danny. They had such a moment last week when they were planning Danny's birthday.* Jack wanted to hire a clown to celebrate Danny's birthday, but his wife was not happy about his idea.

26. *A well-known company that produces luxury vehicles has been experiencing difficulties lately. Their sales team has so far offered a few suggestions to increase sales and their market share. The company is hoping that releasing a new model will help.* The famous car manufacturer hopes to release a new model soon, but the sales might not go up as expected.

Comprehension Question: What does the famous company produce?

A: Luxury food

B: Luxury carpets

C: Luxury vehicles

27. *Charles is a regular at a pub in his neighborhood. He goes there for dinner and some drinks, especially on Wednesdays and Fridays. He has a very good relationship with the waitress there. When Charles cannot decide what to eat or drink, he mostly trusts the waitress's suggestions.*

The waitress had always convinced Charles to order a burger, but he went for chicken wings last night.

28. *Jeff is a very smart kid who is extremely interested in animals. His mother takes him to zoos and aquariums all the time. They went to the National Aquarium together yesterday, but it was really crowded.*

Jeff managed to see an exotic fish in the National Aquarium, but he failed to take a photo.

29. *George enjoys riding a motorbike, and he actually owns a few, like a Harley-Davidson Iron 883 and a Benelli 302S. He always talks about the excitement of riding a motorbike, and tries to convince his friends to join him in this experience. He was really insistent last week.*

George persuaded a motorbike to arrive him last week, but he couldn't ride on the way back the motorbike.

Comprehension Question: Which motorbike does George own?

A: a Harley-Davidson Iron 883

B: a KTM 390 Adventure

C: a BMW R18 Classic

30. *Mike works in the IT department of a very prestigious international company. He overheard a conversation with a private client on his way to the coffee machine yesterday. Fortunately, he kept what he heard to himself and chose not to gossip even with his closest friends at work, such as Travis or Hector.*
Mike yesterday proved to hear a client the rumor, but he surprisingly spreading didn't like.

31. *Katie and her friends wanted to go to a party last night. She promised her mother to come back home by midnight, and her friends assured her that they would make sure that she arrives no later than 12am. That's how her mother allowed Katie to go to the party.*
Katie on time believed to have left possibly a party, but her friends pretended lovingly.

32. *Trevor was in love with Abby when they were in high school. He spent his senior year trying to charm Abby; nonetheless, he had to go to the prom alone. Since then, nobody from the high school had heard about them until last week.*
Trevor seemed to be a constantly friend asking out Abby, but Abby together missed their chances.

Appendix C

ITEM SETS FOR THE ACCEPTABILITY RATING EXPERIMENT (CHAPTER 4)

CRITICAL ITEM SETS {Neutral Context / Informative Context}

1. *Sam and Kate visited various auctions last Saturday. They checked a lot of products for sale and {Kate was in her element. She wanted to look at everything. / Kate was interested in the cars, especially what color each car was. She was particularly impressed with a Volkswagen Beetle and a Mini Cooper.} Sam was very confused afterwards.*
   Object: Kate loved the color of the Volkswagen Beetle, but Sam doesn't recall which other car.
   Subject: The color of the Volkswagen Beetle amazed Kate, but Sam doesn't recall which other car.

2. *Jack plays in an amateur music band where they mostly play from 70s and 80s repertoires. They recently decided to make a music album. They made a demo recording. {They worked very diligently on it. / This included their most loved cover songs such as Back in Black and Bohemian Rapsody.} Jack arranged a meeting with a producer but couldn't follow everything the producer said.*
   Object: The producer disliked the cover of Back in Black, but Jack didn't understand which other song.

Subject: The cover of Back in Black upset the producer, but Jack didn't understand which other song.

3. *Caitlyn has just started at one of the long-established, top universities on the East Coast. The university has so far encouraged a lot of cutting-edge research. According to rumor, however, there has been some tension going on lately {, which has been unpleasant. / between the university and some department chairs; in particular, Biology and Chemistry.} Not all details are confirmed yet.*
Object: The university will sue the chair of Biology, but the lawyers won't announce which other department.
Subject: The chair of Biology will sue the university, but the lawyers won't announce which other department.

4. *A research team from the top Business School does an annual market survey. {The team works very hard on it. / The team asks random customers their opinions on big companies like Amazon and eBay. } Some of the results are made public, but not in very much detail.*
Object: People trust the portrayal of Amazon, but it is never clear which other company.
Subject: The portrayal of Amazon influences people's perception, but it is never clear which other company.

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5. *Jane and her husband travel a lot. They mostly stay at least two nights wherever they go. Finding accommodation is tricky for them. Her husband cares about cleanliness. {Jane has other priorities. / As an artist, Jane is mostly interested in architecture. She particularly loves staying at the Ritz-Carlton or the Conrad.} Her husband can never remember the details.*

   Object: Jane admires the design of the Ritz-Carlton, but her husband is unsure about which other hotel.

   Subject: The design of the Ritz-Carlton mesmerizes Jane, but her husband is unsure about which other hotel.

6. *Steve and his friend, Carol, went to New York City on Saturday. They spent a lot of time in the famous wax museum, Madam Tussauds New York. Carol lost interest after an hour and stopped paying attention. Steve was lost in admiration. He kept taking selfies. {It got very irritating. /, particularly with John Lennon and Mick Jagger.} Afterwards, a friend asked Carol about the day, but Carol had forgotten some details.*

   Object: Steve adored the statue of John Lennon in the wax museum, but Carol can't remember which other celebrity.

   Subject: The statue of John Lennon impressed Steve in the wax museum, but Carol can't remember which other celebrity.

7. *A young reporter on a sports channel was mentioning the unforgettable moments of the last NBA season. {There had been a lot going on this year./ Some games like the Clippers vs Nuggets and the Bucks vs Heat ended in a*

frustrating way for the supporters.} The reporter wanted to talk more, but he occasionally mixed things up.

Object: The fans were disappointed with the ending of Clippers vs Nuggets last year, but the reporter couldn't remember which other match.

Subject: The ending of Clippers vs Nuggets upset the fans last year, but the reporter couldn't remember which other match.

8. *The teaching assistant was telling her supervisor about her first class with freshman medical students in the lab. She mentioned students' reactions to {their first hands-on experience / viruses like Escherichia T4 and Adenoviridae.} They were talking on the phone, and the connection was unstable.*

Object: Freshman medical students marveled at the shape of Escherichia T4, but the professor couldn't understand which other virus.

Subject: The shape of Escherichia T4 surprised freshman medical students, but the professor couldn't understand which other virus.

9. *A finance expert recently posted a video online. He explains the basics of investing for beginners. He suggests investing {smartly and checking the strength of the dollar in the market regularly. / a stock like Microsoft Corporation or Ali Baba Group as they are mostly in line with the dollar's strength.} Having watched the video, Greg wanted to show off to his friend, but struggled to remember the details.*

Object: The dollar's strength often parallels the value of Microsoft Corporation, but Greg couldn't remember which other stock.

Subject: The value of Microsoft Corporation often parallels the dollar's strength, but Greg couldn't remember which other stock.

10. *Teresa is a student at a Cinematography Department. One of her instructors challenges them a lot by assigning review articles and giving them a quiz every week. {The last review was very difficult. / The last review was a criticism of plot endings in TV shows, especially in Lost and Game of Thrones.} Teresa wasn't able to do well in the quiz this time.*

Object: The reviewer harshly criticized the finale of Game of Thrones, but Teresa forgot which other TV series.

Subject: The finale of Game of Thrones really upset the reviewer, but Teresa forgot which other TV series.

11. *Megan has two children, Carl and Jo. Halloween was the best time of the year for them as kids. {They were allowed to eat a little more chocolate and candy than at other times. / They liked pretending to be superheroes, especially Captain America and Wonder Woman.} Due to old age, Megan unfortunately forgets the details of such lovely memories now.*

Object: Megan's children used to love the costume of Captain America, but she cannot recall which other superhero.

Subject: The costume of Captain America used to amaze Megan's children, but she cannot recall which other superhero.

12. *Jeffrey and Mary were watching the last episode of the American Idol when the baby started crying. Mary had to leave and feed her. {She was not happy about it as she missed most of the show. / She missed most of the drama, especially regarding some songs like Hotel California and Imagine.} When she returned, she wanted to learn what happened.*

Object: The American Idol judges disliked the performance of Imagine, but Jeffrey forgot which other song.

Subject: The performance of Imagine irritated the American Idol judges, but Jeffrey forgot which other song.

13. *Amanda's 30th birthday was coming up, and her friends wanted to prepare a surprise party for her. They secretly decorated her apartment when she was at work. They also prepared a slide show with their photos together and wanted to add some background music {for fun / from movies like Goodfellas or Amélie.} The last part turned out to be more challenging than expected.*

Object: Amanda enjoys the soundtrack of Amélie, but her friends cannot remember which other movie.

Subject: The soundtrack of Amélie fascinates Amanda, but her friends cannot remember which other movie.

14. *Angie is a flight attendant. She quit her previous job because of poor working conditions. {She heard that some companies treat their employees very well, / She heard that some companies like Lufthansa or Turkish Airlines treat their*

employees very well,} but she is being careful to do a lot of research in looking for a new job. She just read an article today, but it was somewhat unclear.

Object: Extended shifts apparently displease the crew of Lufthansa, but the article doesn't explain which other airline.

Subject: The crew of Lufthansa apparently complain about extended shifts, but the article doesn't explain which other airline.

15. *Recently, there have been occasional meetings {in the White House, involving the Vice President. / between the vice president and state representatives from California and Delaware.} The meetings were not made public. An ambitious reporter, however, tried very hard to learn more.*

Object: The vice president occasionally meets with the Governor of California, but the reporter couldn't discover which other state.

Subject: The Governor of California occasionally meets with the vice president, but the reporter couldn't discover which other state.

16. *Market fluctuations are predicted in the second half of the year, because of recent developments across the world. According to economists, these events might affect {commerce between countries. / goods from the Middle East like oil, and probably gold or steel.} Economists cannot be certain, however.*

Object: The unrest in the Middle East might influence the price of oil, but economists aren't sure which other imported good.

Subject: The price of oil might reflect the unrest in the Middle East, but economists aren't sure which other imported good.

FILLERS

17. *Alice has a friend, Mathew, who has been an amateur dancer for almost five years. He is quite good at Latin dances such as Salsa and Bachata. About a few weeks ago, Mathew joined a dance competition. Alice was among the audience to support him.*

Alice observed Mathew at the competition, but she can't remember when she went there.

18. *There is a new engineer appointed to a project by Smith Constructions. He is hardworking and has worked at local companies before. However, he doesn't have much experience in working with a big team. This already started causing some issues between the engineer and the workers.*

The engineer approved a project site yesterday, but he didn't clarify where the workers would start the construction.

19. *There was quite a spectacular scene at Hogwarts tonight. Dumbledore proudly announced the winner of the House Cup. He also encouraged the winner to give a speech about his tricks in the winning performance. The expectations were not met, however.*

Dumbledore praised a wizard for winning the house cup, but the wizard didn't reveal how he succeeded.

Comprehension Question: Who announced the winner of the House Cup?

A: Snape

B: Dumbledore

C: Flitwick

20. *Sally and her friends used to get together every Saturday. They would go out for a long brunch at a restaurant like the Cheesecake Factory or Turning Point, and then they would go window-shopping at a nearby mall. Often, they would end the day at a spa. Sally suddenly realized that she does not see her friends anymore.*

Sally used to see her friends regularly on Saturdays, but she forgot why they stopped meeting.

Comprehension Question: Where did Sally and her friends go at the end of the day?

A: a cafe

B: a park

C: a spa

21. *The performances by the leading actor and actress at the play last night were unbelievable. The audience felt every emotion and were totally enthralled. The story was very sad though, and some people got too emotional.*

The audience was going to cry an actor, but it is not certain how everyone got so upset the play the actress.

22. *Nick was babysitting his neighbor's child yesterday to make some extra money. They had a delicious breakfast that included the child's favorites like a chocolate pancake and banana splits. The weather was beautiful, so he let the child play in the garden for an hour while he was keeping an eye on him.*
The child was blinking a cat the garden, but Nick didn't realize where arrived the cat.

Comprehension Question: Where was the child playing when Nick was keeping an eye on him?
A: In the basement
B: In the garden
C: In the kitchen

23. *The board was announced to have another meeting towards the end of the month. The news was very surprising for the long-term members like Mr. Jackson and Ms. Plum because the board normally meets only once each month. The reason for the second call for the meeting was also explained, but it didn't catch people's attention.*
The board a day appointed, but the members forgot why month they would meet again.

24. *Jimmy visits his mother every Sunday to check on her and her needs. He came last Sunday too. After having a cup of coffee and a lovely chat with his mother,*

he took some tools, like a hammer and a screwdriver, and grabbed a ladder.
He started checking the house to see if there was anything that needed fixing.
Jimmy fell himself the ladder incautiously, but her mother couldn't realize
where was he trying to repaired.

25. *Jack and his wife are a very happy couple. However, they almost always*
disagree when it comes to making a decision about their son, Danny. They
cannot agree on even the simplest things%2C like haircuts or outfits for
Danny. They had such a moment last week when they were planning Danny's
birthday.

Jack wanted to hire a clown to celebrate Danny's birthday, but his wife was not
happy about his idea.

26. *A well-known company that produces luxury vehicles have been experiencing*
some difficulties lately. Their sales team has offered a few suggestions to
increase sales and their market share. The company is hoping that releasing a
new model will help.
The famous car manufacturer hopes to release a new model soon, but the sales
might not go up as expected.

Comprehension Question: What does the famous company produce?

A: Luxury food

B: Luxury carpets

C: Luxury vehicles

27. *Charles is a regular at a pub in his neighborhood. He goes there for dinner and some drinks, especially on Wednesdays and Fridays. He has a very good relationship with the waitress there. When Charles cannot decide what to eat or drink, he mostly trusts the waitress' suggestions.*

The waitress had always convinced Charles to order a burger, but he went for chicken wings last night.

28. *Jeff is a very smart kid who is extremely interested in animals. His mother takes him to zoos and aquariums all the time. They went to the National Aquarium together yesterday, but it was really crowded.*

Jeff managed to see an exotic fish in the National Aquarium, but he failed to take a photo.

29. *George enjoys riding a motorbike%2C and he actually owns a few, like a Harley-Davidson Iron 883 and a Benelli 302S. He always talks about the excitement of riding a motorbike and tries to convince his friends to join him in this experience. He was really insistent last week.*

George persuaded a motorbike to arrive him last week, but he couldn't ride on the way back the motorbike.

Comprehension Question: Which motorbike does George own?

A: a Harley-Davidson Iron 883

B: a KTM 390 Adventure

C: a BMW R18 Classic

30. *Mike works in the IT department of a very prestigious international company. He overheard a conversation with a private client on his way to the coffee machine yesterday. Fortunately, he kept what he heard to himself and chose not to gossip even with his closest friends at work, such as Travis or Hector.* Mike yesterday proved to hear a client the rumor, but he surprisingly spreading didn't like.

31. *Katie and her friends wanted to go to a party last night. She promised her mother to come back home by midnight, and her friends assured her that they would make sure that she arrives no later than 12am. That's how her mother allowed Katie to go to the party.*
Katie on time believed to have left possibly a party, but her friends pretended lovingly.

32. *Trevor was in love with Abby when they were in high school. He spent his senior year trying to charm Abby; nonetheless, he had to go to the prom alone. Since then, nobody from the high school had heard about them until last week.* Trevor seemed to be a constantly friend asking out Abby, but Abby together missed their chances.

ITEM SETS FOR THE SELF-PACED READING STUDY (CHAPTER 5)

CRITICAL ITEM SETS

1. NoSluice-Subject antecedent:

Bir öğrenci-**nin** Ali-yi   çağırdığın-ı   duydum,   ama hangi öğrenci-**nin**

A   student-**Gen** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but which student-**Gen**

çağırdığın-ı   bilmiyorum   aslında.

call.Nmlz.3sg-Acc know.Neg.Prs.1sg actually

'I heard a student called Ali, but I don't actually know which student called (him).'

   NoSluice-Object antecedent:

Ali-nin bir öğrenci-**yi** çağırdığın-ı   duydum,   ama hangi öğrenci-**yi**

Ali-Gen a student-**Acc** call.Nmlz.3sg-Acc hear.Pst.1sg but which student-**Acc**

çağırdığın-ı   bilmiyorum   aslında.

call.Nmlz.3sg-Acc know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student (he) called.'

   Regular Sluicing- Subject antecedent:

Bir öğrenci-**nin** Ali-yi   çağırdığın-ı   duydum,   ama hangi öğrenci-**nin**

A   student-**Gen** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but which student-**Gen**

bilmiyorum   aslında.

know.Neg.Prs.1sg actually

'I heard a student called Ali, but I don't actually know which student.'

Regular Sluicing- Object antecedent:

Ali-nin bir öğrenci-**yi** çağırdığın-ı   duydum,   ama hangi öğrenci-**yi**

Ali-Gen a student-**Acc** call.Nmlz.3sg-Acc hear.Pst.1sg but which student-**Acc**

bilmiyorum   aslında.

know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student.'

Pseudosluicing- Subject antecedent:

Bir öğrenci-**nin** Ali-yi   çağırdığın-ı   duydum,   ama hangi öğrenci

A   student-**Gen** Ali-Acc call.Nmlz.3sg-Acc hear.Pst.1sg but which student

bilmiyorum   aslında.

know.Neg.Prs.1sg actually

'I heard a student called Ali, but I don't actually know which student (that is).'

Pseudosluicing- Object antecedent:

Ali-nin bir öğrenci-**yi** çağırdığın-ı   duydum,   ama hangi öğrenci

Ali-Gen a student-**Acc** call.Nmlz.3sg-Acc hear.Pst.1sg but which student

bilmiyorum   aslında.

know.Neg.Prs.1sg actually

'I heard Ali called a student, but I don't actually know which student (that is).'

Subject:	Object:
Q: Ali'yi bir öğrenci mi çağırmış?	**Q:** Ali bir öğrenciyi mi çağırmış?
'Did a student call Ali?'	'Did Ali call a student?'

2. NoSluice-Subject:

Bir ünlünün Merve'yi tanıdığını duydum, ama hangi ünlünün tanıdığını

bilmiyorum doğrusu.

'I heard a celebrity knows Merve, but I don't actually know which celebrity knows

her.'

NoSluice-Object:

Merve'nin bir ünlüyü tanıdığını duydum, ama hangi ünlüyü tanıdığını bilmiyorum

doğrusu.

'I heard Merve knows a celebrity, but I don't actually know which celebrity she

knows.'

Regular-Subject:

Bir ünlünün Merve'yi tanıdığını duydum, ama hangi ünlünün bilmiyorum doğrusu.

'I heard a celebrity knows Merve, but I don't actually know which celebrity.'

Regular-Object:

Merve'nin bir ünlüyü tanıdığını duydum, ama hangi ünlüyü bilmiyorum doğrusu.

'I heard Merve knows a celebrity, but I don't actually know which celebrity.'

Pseudo-Subject:

Bir ünlünün Merve'yi tanıdığını duydum, ama hangi ünlü bilmiyorum doğrusu.

'I heard a celebrity knows Merve, but I don't actually know which celebrity (that is).'

Pseudo-Object:

Merve'nin bir ünlüyü tanıdığını duydum, ama hangi ünlü bilmiyorum doğrusu.

'I heard Merve knows a celebrity, but I don't actually know which celebrity (that is).'

Subject	Object
Q: Merveyi ünlü birisi mi tanıyormuş?	**Q:** Merve ünlü birisini mi tanıyormuş?
'Does a celebrity knows Merve?'	'Does Merve know a celebrity?'

3. NoSluice-Subject:

Bir futbolcunun Sergen'i eleştirdiğini duydum, ama hangi futbolcunun eleştirdiğini bilmiyorum tam olarak.

'I heard a footballer criticized Sergen, but I don't actually know which footballer criticized him.'

NoSluice-Object:

Sergen'in bir futbolcuyu eleştirdiğini duydum, ama hangi futbolcuyu eleştirdiğini bilmiyorum tam olarak.

'I heard Sergen criticized a footballer, but I don't actually know which footballer he criticized.'

Regular- Subject:

Bir futbolcunun Sergen'i eleştirdiğini duydum, ama hangi futbolcunun bilmiyorum tam olarak.

'I heard a footballer criticized Sergen, but I don't actually know which footballer.'

Regular-Object:

Sergen'in bir futbolcuyu eleştirdiğini duydum, ama hangi futbolcuyu bilmiyorum tam olarak.

'I heard Sergen criticized a footballer, but I don't actually know which footballer.'

Pseudo- Subject:

Bir futbolcunun Sergen'i eleştirdiğini duydum, ama hangi futbolcu bilmiyorum tam olarak.

'I heard a footballer criticized Sergen, but I don't actually know which footballer (that is).'

Pseudo-Object:

Sergen'in bir futbolcuyu eleştirdiğini duydum, ama hangi futbolcu bilmiyorum tam olarak.

'I heard Sergen criticized a footballer, but I don't actually know which footballer (that is).'

Subject	Object
Q: Sergen bir futbolcudan övgü mü toplamış?	**Q:** Bir futbolcu Sergen'den övgü mü toplamış?
'Did Sergen get praise from a footballer?'	'Did a footballer get praise from Sergen?'

4. NoSluice-Subject:

Bir yarışmacının Hadise'yi etkilediğini sandım, ama hangi yarışmacının etkilediğini bilmiyorum açıkçası.

'I thought a contestant amazed Hadise, but I don't actually know which contestant amazed her.'

NoSluice-Object:

Hadise'nin bir yarışmacıyı etkilediğini sandım, ama hangi yarışmacıyı etkilediğini bilmiyorum açıkçası.

'I thought Hadise amazed a contestant, but I don't actually know which contestant she amazed.'

Regular-Subject:

Bir yarışmacının Hadise'yi etkilediğini sandım, ama hangi yarışmacının bilmiyorum açıkçası.

'I thought a contestant amazed Hadise, but I don't actually know which contestant.'

Regular-Object:

Hadise'nin bir yarışmacıyı etkilediğini sandım, ama hangi yarışmacıyı bilmiyorum açıkçası.

'I thought Hadise amazed a contestant, but I don't actually know which contestant.'

Pseudo-Subject:

Bir yarışmacının Hadise'yi etkilediğini sandım, ama hangi yarışmacı bilmiyorum açıkçası.

'I thought a contestant amazed Hadise, but I don't actually know which contestant (that is).'

Pseudo-Object:

Hadise'nin bir yarışmacıyı etkilediğini sandım, ama hangi yarışmacı bilmiyorum açıkçası.

'I thought Hadise amazed a contestant, but I don't actually know which contestant (that is).'

Subject	Object
Q: Murat Boz'u mu bir yarışmacı etkilemiş?	**Q:** Murat Boz mu bir yarışmacıyı etkilemiş?
'Was that Murat Boz that a contestant amazed?'	'Was that Murat Boz that amazed a contestant?'

5. NoSluice-Subject:

Bir emlakçının Emir'i oyaladığını düşünüyorum, ama hangi emlakçının oyaladığını bilmiyorum tam olarak.

'I am thinking a realtor is delaying Emir, but I don't actually know which realtor is delaying him.'

NoSluice-Object:

Emir'in bir emlakçıyı oyaladığını düşünüyorum, ama hangi emlakçıyı oyaladığını bilmiyorum tam olarak.

'I am thinking Emir is delaying a realtor, but I don't actually know which realtor he is delaying.'

Regular-Subject:

Bir emlakçının Emir'i oyaladığını düşünüyorum, ama hangi emlakçının bilmiyorum tam olarak.

'I am thinking a realtor is delaying Emir, but I don't actually know which realtor.'

Regular-Object:

Emir'in bir emlakçıyı oyaladığını düşünüyorum, ama hangi emlakçıyı bilmiyorum tam olarak.

'I am thinking Emir is delaying a realtor, but I don't actually know which realtor.'

Pseudo-Subject:

Bir emlakçının Emir'i oyaladığını düşünüyorum, ama hangi emlakçı bilmiyorum tam olarak.

'I am thinking a realtor is delaying Emir, but I don't actually know which realtor (that is).'

Pseudo-Obj:

Emir'in bir emlakçıyı oyaladığını düşünüyorum, ama hangi emlakçı bilmiyorum tam olarak.

'I am thinking Emir is delaying a realtor, but I don't actually know which realtor (that is).'

Subject	Object
Q: Emir bir emlakçıdan mı haber bekliyormuş? 'Was Emir waiting to hear from a realtor?'	**Q:** Bir emlakçı mı Emir'den haber bekliyormuş? 'Was a realtor waiting to hear from Emir?'

6. NoSluice-Subject:

Bir politikacının Reha Muhtar'ı azarladığını hatırlıyorum, ama hangi politikacının azarladığını bilmiyorum açıkçası.

'I remember a politician scolded Reha Muhtar, but I don't actually know which politician scolded him.'

NoSluice-Object:

Reha Muhtar'ın bir politikacıyı azarladığını hatırlıyorum, ama hangi politikacıyı azarladığını bilmiyorum açıkçası.

'I remember Reha Muhtar scolded a politician, but I don't actually know which politician he scolded.'

Regular- Subject:

Bir politikacının Reha Muhtar'ı azarladığını hatırlıyorum, ama hangi politikacının bilmiyorum açıkçası.

'I remember a politician scolded Reha Muhtar, but I don't actually know which politician.'

Regular-Object:

Reha Muhtar'ın bir politikacıyı azarladığını hatırlıyorum, ama hangi politikacıyı bilmiyorum açıkçası.

'I remember Reha Muhtar scolded a politician, but I don't actually know which politician.'

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Bir politikacının Reha Muhtar'ı azarladığını hatırlıyorum, ama hangi politikacı bilmiyorum açıkçası.

'I remember a politician scolded Reha Muhtar, but I don't actually know which politician (that is).'

Pseudo-Object:

Reha Muhtar'ın bir politikacıyı azarladığını hatırlıyorum, ama hangi politikacı bilmiyorum açıkçası.

'I remember Reha Muhtar scolded a politician, but I don't actually know which politician (that is).'

Subject	Object
Q: Bir politikacı mı Reha Muhtar'ı azarlamış?	**Q:** Reha Muhtar mı bir politikacıyı azarlamış?
'Did a politician scold Reha Muhtar?'	'Did Reha Muhtar scold a politician?'

7. NoSluice-Subject:

Bir çalışanın Hasan'ı sömürdüğünü işittim, ama hangi çalışanın sömürdüğünü bilmiyorum doğrusu.

'I heard an employee is exploiting Hasan, but I don't actually know which employee is exploiting him.'

NoSluice-Object:

Hasan'ın bir çalışanı sömürdüğünü işittim, ama hangi çalışanı sömürdüğünü bilmiyorum doğrusu.

'I heard Hasan is exploiting an employee, but I don't actually know which employee he is exploiting.'

Regular-Subject:

Bir çalışanın Hasan'ı sömürdüğünü işittim, ama hangi çalışanın bilmiyorum doğrusu.

'I heard an employee is exploiting Hasan, but I don't actually know which employee.'

Regular-Object:

Hasan'ın bir çalışanı sömürdüğünü işittim, ama hangi çalışanı bilmiyorum doğrusu.

'I heard Hasan is exploiting an employee, but I don't actually know which employee.'

Pseudo-Subject:

Bir çalışanın Hasan'ı sömürdüğünü işittim, ama hangi çalışan bilmiyorum doğrusu.

'I heard an employee is exploiting Hasan, but I don't actually know which employee (that is).'

Pseudo-Object:

Hasan'ın bir çalışanı sömürdüğünü işittim, ama hangi çalışan bilmiyorum doğrusu.

'I heard Hasan is exploiting an employee, but I don't actually know which employee (that is).'

Subject	Object
Q: Hasan'ı mı bir çalışan sömürüyormuş?	**Q:** Hasan bir çalışanı mı sömürüyormuş?
'Is an employee exploiting Hasan?'	'Is Hasan exploiting an employee?'

8. NoSluice-Subject:

Bir komşunun Levent'i izlediğini anladım, ama hangi komşunun izlediğini bilmiyorum aslında.

'I understood a neighbour is watching Levent, but I don't actually know which neighbour is watching him.'

NoSluice-Object:

Levent'in bir komşuyu izlediğini anladım, ama hangi komşuyu izlediğini bilmiyorum aslında.

'I understood Levent is watching a neighbour, but I don't actually know which neighbour he is watching.'

Regular-Subject:

Bir komşunun Levent'i izlediğini anladım, ama hangi komşunun bilmiyorum aslında.

'I understood a neighbour is watching Levent, but I don't actually know which neighbour.'

Regular-Object:

Levent'in bir komşuyu izlediğini anladım, ama hangi komşuyu bilmiyorum aslında.

'I understood Levent is watching a neighbour, but I don't actually know which neighbour.'

Pseudo-Subject:

Bir komşunun Levent'i izlediğini anladım, ama hangi komşu bilmiyorum aslında.

'I understood a neighbour is watching Levent, but I don't actually know which neighbour (that is).'

Pseudo-Object:

Levent'in bir komşuyu izlediğini anladım, ama hangi komşu bilmiyorum aslında.

'I understood Levent is watching a neighbour, but I don't actually know which neighbour (that is).'

Subject	Object
Q: Bir komşu Osman'ı mı izliyormuş?	**Q:** Osman mı bir komşuyu izliyormuş?
'Is a neighbour watching Osman?'	'Is Osman watching a neighbour?'

9. NoSluice-Subject:

Bir profesörün bölüm başkanını övdüğünü işittim, ama hangi profesörün övdüğünü bilmiyorum açıkçası.

'I heard a professor praised the department head, but I don't actually know which professor praised (her/him).'

NoSluice-Object:

Bölüm başkanının bir profesörü övdüğünü işittim, ama hangi profesörü övdüğünü bilmiyorum açıkçası.

'I heard the department head praised a professor, but I don't actually know which professor (s/he) praised.'

Regular-Subject:

Bir profesörün bölüm başkanını övdüğünü işittim, ama hangi profesörün bilmiyorum açıkçası.

'I heard a professor praised the department head, but I don't actually know which professor.'

Regular-Object:

Bölüm başkanının bir profesörü övdüğünü işittim, ama hangi profesörü bilmiyorum açıkçası.

'I heard the department head praised a professor, but I don't actually know which professor.'

Pseudo-Subject:

Bir profesörün bölüm başkanını övdüğünü işittim, ama hangi profesör bilmiyorum açıkçası.

'I heard a professor praised the department head, but I don't actually know which professor praised (that is).'

Pseudo-Object:

Bölüm başkanının bir profesörü övdüğünü işittim, ama hangi profesör bilmiyorum açıkçası.

'I heard the department head praised a professor, but I don't actually know which professor (that is).'

Subject	Object
Q: Rektör mü bölüm başkanını övmüş? 'Did the rector praise the department head?'	**Q:** Bölüm başkanı rektörü mü övmüş? 'Did the department head praise the rector?'

10. NoSluice-Subject:

Bir öğretmenin okul müdürünü kınadığını işittim, ama hangi öğretmenin kınadığını bilmiyorum aslında.

'I heard a teacher criticized the head of the school, but I don't actually know which teacher criticized (her/him).'

NoSluice-Object:

Okul müdürünün bir öğretmeni kınadığını işittim, ama hangi öğretmeni kınadığını bilmiyorum aslında.

'I heard the head of the school criticized a teacher, but I don't actually know which teacher (s/he) criticized.'

Regular-Subject:

Bir öğretmenin okul müdürünü kınadığını işittim, ama hangi öğretmenin bilmiyorum aslında.

'I heard a teacher criticized the head of the school, but I don't actually know which teacher.'

Regular-Object:

Okul müdürünün bir öğretmeni kınadığını işittim, ama hangi öğretmeni bilmiyorum aslında.

'I heard the head of the school criticized a teacher, but I don't actually know which teacher.'

Pseudo-Subject:

Bir öğretmenin okul müdürünü kınadığını işittim, ama hangi öğretmen bilmiyorum aslında.

'I heard a teacher criticized the head of the school, but I don't actually know which teacher (that is).'

Pseudo-Object:

Okul müdürünün bir öğretmeni kınadığını işittim, ama hangi öğretmen bilmiyorum aslında.

'I heard the head of the school criticized a teacher, but I don't actually know which teacher (that is).'

Subj	Obj
Q: Bir öğretmen başka bir öğretmeni mi kınamış?	**Q:** Bir öğretmen başka bir öğretmeni mi kınamış?
'Did a teacher criticize another teacher?'	'Did a teacher criticize another teacher?'

11. NoSluice-Subject:

Bir yapımcının Pelin'i kullandığını sanıyorum, ama hangi yapımcının kullandığını bilmiyorum tam olarak.

'I suppose a producer is using Pelin, but I don't actually know which producer is using (her).'

NoSluice-Object:

Pelin'in bir yapımcıyı kullandığını sanıyorum, ama hangi yapımcıyı kullandığını bilmiyorum tam olarak.

'I suppose Pelin is using a producer, but I don't actually know which producer (she) is using.'

Regular-Subject:

Bir yapımcının Pelin'i kullandığını sanıyorum, ama hangi yapımcının bilmiyorum tam olarak.

'I suppose a producer is using Pelin, but I don't actually know which producer.'

Regular-Object:

Pelin'in bir yapımcıyı kullandığını sanıyorum, ama hangi yapımcıyı bilmiyorum tam olarak.

'I suppose Pelin is using a producer, but I don't actually know which producer.'

Pseudo-Subject:

Bir yapımcının Pelin'i kullandığını sanıyorum, ama hangi yapımcı bilmiyorum tam olarak.

'I suppose a producer is using Pelin, but I don't actually know which producer (that is).'

Pseudo-Object:

Pelin'in bir yapımcıyı kullandığını sanıyorum, ama hangi yapımcı bilmiyorum tam olarak.

'I suppose Pelin is using a producer, but I don't actually know which producer (that is).'

Subj	Obj
Q: Bir model mi Pelin'i kullanıyormuş?	**Q:** Pelin bir modeli mi kullanıyormuş?
'Is a model using Pelin?'	'Is Pelin using a model?'

12. NoSluice-Subject:

Bir hizmetlinin Ahmet'i üzdüğünü anlıyorum, ama hangi hizmetlinin üzdüğünü bilmiyorum doğrusu.

'I understand a janitor upset Ahmet, but I don't actually know which janitor upset (him).'

NoSluice-Object:

Ahmet'in bir hizmetliyi üzdüğünü anlıyorum, ama hangi hizmetliyi üzdüğünü bilmiyorum doğrusu.

'I understand Ahmet upset a janitor, but I don't actually know which janitor (he) upset.'

Regular-Subject:

Bir hizmetlinin Ahmet'i üzdüğünü anlıyorum, ama hangi hizmetlinin bilmiyorum doğrusu.

'I understand a janitor upset Ahmet, but I don't actually know which janitor.'

Regular-Object:

Ahmet'in bir hizmetliyi üzdüğünü anlıyorum, ama hangi hizmetliyi bilmiyorum doğrusu.

'I understand Ahmet upset a janitor, but I don't actually know which janitor.'

Pseudo-Subject:

Bir hizmetlinin Ahmet'i üzdüğünü anlıyorum, ama hangi hizmetli bilmiyorum doğrusu.

'I understand a janitor upset Ahmet, but I don't actually know which janitor (that is).'

Pseudo-Object:

Ahmet'in bir hizmetliyi üzdüğünü anlıyorum, ama hangi hizmetli bilmiyorum doğrusu.

'I understand Ahmet upset a janitor, but I don't actually know which janitor (that is).'

Subject	Object
Q: Ahmet'i bir hizmetli mi üzmüş?	**Q:** Ahmet bir hizmetliyi mi üzmüş?
'Did a janitor upset Ahmet?'	'Did Ahmet upset a janitor?'

13. NoSluice-Subject:

Bir kazazedenin patronu suçladığını düşünüyorum, ama hangi kazazedenin

suçladığını bilmiyorum açıkçası.

'I suppose a victim blamed the employer, but I don't actually know which victim

blaimed (her/him).'

   NoSluice-Object:

Patronun bir kazazedeyi suçladığını düşünüyorum, ama hangi kazazedeyi

suçladığını bilmiyorum açıkçası.

'I suppose the employer blamed a victim, but I don't actually know which victim

(s/he) blaimed.'

   Regular-Subject:

Bir kazazedenin patronu suçladığını düşünüyorum, ama hangi kazazedenin

bilmiyorum açıkçası.

'I suppose a victim blamed the employer, but I don't actually know which victim.'

   Regular-Object:

Patronun bir kazazedeyi suçladığını düşünüyorum, ama hangi kazazedeyi

bilmiyorum açıkçası.

'I suppose the employer blamed a victim, but I don't actually know which victim.'

Pseudo-Subject:

Bir kazazedenin patronu suçladığını düşünüyorum, ama hangi kazazede bilmiyorum açıkçası.

'I suppose a victim blamed the employer, but I don't actually know which victim (that is).'

Pseudo-Object:

Patronun bir kazazedeyi suçladığını düşünüyorum, ama hangi kazazede bilmiyorum açıkçası.

'I suppose the employer blamed a victim, but I don't actually know which victim (tha is).'

Subject	Object
Q: Bir yatırımcı mı patronu suçluyormuş? 'Did an investor blame the employer?'	**Q:** Patron bir yatırımcıyı mı suçluyormuş? 'Did the employer blame an investor?'

14. NoSluice-Subject:

Bir yetkilinin Emrah'ı uyardığını hatırlıyorum, ama hangi yetkilinin uyardığını bilmiyorum aslında.

'I remember an official warned Emrah, but I don't actually know which official warned (him).'

NoSluice-Object:

Emrah'ın bir yetkiliyi uyardığını hatırlıyorum, ama hangi yetkiliyi uyardığını bilmiyorum aslında.

'I remember Emrah warned an official, but I don't actually know which official (he) warned.'

Regular-Subject:

Bir yetkilinin Emrah'ı uyardığını hatırlıyorum, ama hangi yetkilinin bilmiyorum aslında.

'I remember an official warned Emrah, but I don't actually know which official.'

Regular-Object:

Emrah'ın bir yetkiliyi uyardığını hatırlıyorum, ama hangi yetkiliyi bilmiyorum aslında.

'I remember Emrah warned an official, but I don't actually know which official.'

Pseudo-Subject:

Bir yetkilinin Emrah'ı uyardığını hatırlıyorum, ama hangi yetkili bilmiyorum aslında.

'I remember an official warned Emrah, but I don't actually know which official (that is).'

Pseudo-Object:

Emrah'ın bir yetkiliyi uyardığını hatırlıyorum, ama hangi yetkili bilmiyorum aslında.

'I remember Emrah warned an official, but I don't actually know which official (that is).'

Subject	Object
Q: Emrah'ı bir yetkili mi uyarmış?	**Q:** Emrah mı bir yetkiliyi uyarmış?
'Did an official warn Emrah?'	'Did Emrah warn an official?'

15. NoSluice-Subject:

Bir davetlinin Deniz'i sevdiğini sanıyorum, ama hangi davetlinin sevdiğini bilmiyorum tam olarak.

'I suppose a guest likes Deniz, but I don't actually know which guest likes (her/him).'

NoSluice-Object:

Deniz'in bir davetliyi sevdiğini sanıyorum, ama hangi davetliyi sevdiğini bilmiyorum tam olarak.

'I suppose Deniz likes a guest, but I don't actually know which guest (s/he) likes.'

Regular-Subject:

Bir davetlinin Deniz'i sevdiğini sanıyorum, ama hangi davetlinin bilmiyorum tam olarak.

'I suppose a guest likes Deniz, but I don't actually know which guest.'

Regular-Object:

Deniz'in bir davetliyi sevdiğini sanıyorum, ama hangi davetliyi bilmiyorum tam olarak.

'I suppose Deniz likes a guest, but I don't actually know which guest.'

Pseudo-Subject:

Bir davetlinin Deniz'i sevdiğini sanıyorum, ama hangi davetli bilmiyorum tam olarak.

'I suppose a guest likes Deniz, but I don't actually know which guest (that is).'

Pseudo-Object:

Deniz'in bir davetliyi sevdiğini sanıyorum, ama hangi davetli bilmiyorum tam olarak.

'I suppose Deniz likes a guest, but I don't actually know which guest (that is).'

Subject	Object
Q: Bir davetli Deniz'den kötü elektrik mi almış?	**Q:** Deniz bir davetliden kötü elektrik mi almış?
'Does a guest get bad vibes from Deniz?'	'Does Deniz get bad vibes from a guest?'

16. NoSluice-Subject:

Bir sekreterin Okan Bey'i kırdığını düşünüyorum, ama hangi sekreterin kırdığını bilmiyorum doğrusu.

'I suppose a secretary offended Mr. Okan, but I don't actually know which secretary offended (him).'

NoSluice-Object:

Okan Bey'in bir sekreteri kırdığını düşünüyorum, ama hangi sekreteri kırdığını bilmiyorum doğrusu.

'I suppose Mr. Okan offended a secretary, but I don't actually know which secretary (he) offended.'

Regular-Subject:

Bir sekreterin Okan Bey'i kırdığını düşünüyorum, ama hangi sekreterin bilmiyorum doğrusu.

'I suppose a secretary offended Mr. Okan, but I don't actually know which secretary.'

Regular-Object:

Okan Bey'in bir sekreteri kırdığını düşünüyorum, ama hangi sekreteri bilmiyorum doğrusu.

'I suppose Mr. Okan offended a secretary, but I don't actually know which secretary.'

Pseudo-Subject:

Bir sekreterin Okan Bey'i kırdığını düşünüyorum, ama hangi sekreter bilmiyorum doğrusu.

'I suppose a secretary offended Mr. Okan, but I don't actually know which secretary (that is).'

Pseudo-Object:

Okan Bey'in bir sekreteri kırdığını düşünüyorum, ama hangi sekreter bilmiyorum doğrusu.

'I suppose Mr. Okan offended a secretary, but I don't actually know which secretary (that is).'

Subject	Object
Q: Bir proje müdürü mü Okan Bey'i kırmış? 'Did a project manager offend Mr. Okan?'	**Q:** Okan Bey bir proje müdürünü mü kırmış? 'Did Mr. Okan offend a project manager?'

17. NoSluice-Subject:

Bir hemşirenin Özgür'ü kaybettiğini anlıyorum, ama hangi hemşirenin kaybettiğini bilmiyorum aslında.

'I understand a nurse lost Özgür, but I don't actually know which nurse lost (him).'

NoSluice-Object:

Özgür'ün bir hemşireyi kaybettiğini anlıyorum, ama hangi hemşireyi kaybettiğini bilmiyorum aslında.

'I understand Özgür lost a nurse, but I don't actually know which nurse (he) lost.'

Regular-Subject:

Bir hemşirenin Özgür'ü kaybettiğini anlıyorum, ama hangi hemşirenin bilmiyorum aslında.

'I understand a nurse lost Özgür, but I don't actually know which nurse.'

Regular-Object:

Özgür'ün bir hemşireyi kaybettiğini anlıyorum, ama hangi hemşireyi bilmiyorum aslında.

'I understand Özgür lost a nurse, but I don't actually know which nurse.'

Pseudo-Subject:

Bir hemşirenin Özgür'ü kaybettiğini anlıyorum, ama hangi hemşire bilmiyorum aslında.

'I understand a nurse lost Özgür, but I don't actually know which nurse (that is).'

Pseudo-Object:

Özgür'ün bir hemşireyi kaybettiğini anlıyorum, ama hangi hemşire bilmiyorum aslında.

'I understand Özgür lost a nurse, but I don't actually know which nurse (that is).'

Subject	Object
Q: Bir hemşire Özgür'ü mü kaybetmiş?	**Q:** Özgür bir hemşireyi mi kaybetmiş?
'Did a nurse lose Özgür?'	'Did Özgür lose a nurse?'

18. NoSluice-Subject:

Bir görevlinin Buket'i avuttuğunu sanıyorum, ama hangi görevlinin avuttuğunu bilmiyorum tam olarak.

'I suppose an official relieved Buket, but I don't actually know which official relieved (her).'

NoSluice-Object:

Buket'in bir görevliyi avuttuğunu sanıyorum, ama hangi görevliyi avuttuğunu bilmiyorum tam olarak.

'I suppose Buket relieved an official, but I don't actually know which official (she) relieved.'

Regular-Subject:

Bir görevlinin Buket'i avuttuğunu sanıyorum, ama hangi görevlinin bilmiyorum tam olarak.

'I suppose an official relieved Buket, but I don't actually know which official.'

Regular-Object:

Buket'in bir görevliyi avuttuğunu sanıyorum, ama hangi görevliyi bilmiyorum tam olarak.

'I suppose Buket relieved an official, but I don't actually know which official.'

Pseudo-Subject:

Bir görevlinin Buket'i avuttuğunu sanıyorum, ama hangi görevli bilmiyorum tam olarak.

'I suppose an official relieved Buket, but I don't actually know which official (that is).'

Pseudo-Object:

Buket'in bir görevliyi avuttuğunu sanıyorum, ama hangi görevli bilmiyorum tam olarak.

'I suppose Buket relieved an official, but I don't actually know which official (that is).'

Subject	Object
Q: Buket'i bir görevli mi avutmuş?	**Q:** Buket bir görevliyi mi avutmuş?
'Did an official relieve Buket?'	'Did Buket relieve an official?'

19. NoSluice-Subject:

Bir garsonun Can'ı ittiğini duydum, ama hangi garsonun ittiğini bilmiyorum açıkçası.

'I heard a waiter pushed Can, but I don't actually know which waiter pushed (him).'

NoSluice-Object:

Can'ın bir garsonu ittiğini duydum, ama hangi garsonu ittiğini bilmiyorum açıkçası.

'I heard Can pushed a waiter, but I don't actually know which waiter (he) pushed.'

Regular-Subject:

Bir garsonun Can'ı ittiğini duydum, ama hangi garsonun bilmiyorum açıkçası.

'I heard a waiter pushed Can, but I don't actually know which waiter.'

Regular-Object:

Can'ın bir garsonu ittiğini duydum, ama hangi garsonu bilmiyorum açıkçası.

'I heard Can pushed a waiter, but I don't actually know which waiter.'

Pseudo-Subject:

Bir garsonun Can'ı ittiğini duydum, ama hangi garson bilmiyorum açıkçası.

'I heard a waiter pushed Can, but I don't actually know which waiter (that is).'

Pseudo-Object:

Can'ın bir garsonu ittiğini duydum, ama hangi garson bilmiyorum açıkçası.

'I heard Can pushed a waiter, but I don't actually know which waiter (that is).'

Subject	Object
Q: Can'ı bir kasiyer mi itmiş?	**Q:** Can bir kasiyeri mi itmiş?
'Did a cashier push Can?'	'Did Can push a cashier?'

20. NoSluice-Subject:

Bir stajyerin Fatma'yı sınadığını sanıyorum, ama hangi stajyerin sınadığını bilmiyorum tam olarak.

'I suppose an intern is testing Fatma, but I don't actually know which intern is testing (her).'

NoSluice-Object:

Fatma'nın bir stajyeri sınadığını sanıyorum, ama hangi stajyeri sınadığını bilmiyorum tam olarak.

'I suppose Fatma is testing an intern, but I don't actually know which intern (she) is testing.'

Regular-Subject:

Bir stajyerin Fatma'yı sınadığını sanıyorum, ama hangi stajyerin bilmiyorum tam olarak.

'I suppose an intern is testing Fatma, but I don't actually know which intern.'

Regular-Object:

Fatma'nın bir stajyeri sınadığını sanıyorum, ama hangi stajyeri bilmiyorum tam olarak.

'I suppose Fatma is testing an intern, but I don't actually know which intern.'

Pseudo-Subject:

Bir stajyerin Fatma'yı sınadığını sanıyorum, ama hangi stajyer bilmiyorum tam olarak.

'I suppose an intern is testing Fatma, but I don't actually know which intern (that is).'

Pseudo-Object:

Fatma'nın bir stajyeri sınadığını sanıyorum, ama hangi stajyer bilmiyorum tam olarak.

'I suppose Fatma is testing an intern, but I don't actually know which intern (that is).'

Subject	Object
Q: Bir stajyer mi Fatma'yı sınıyormuş?	**Q:** Fatma bir stajyeri mi sınıyormuş?
'Is an intern testing Fatma?'	'Is Fatma testing an intern?'

21. NoSluice-Subject:

Bir mühendisin Elon Musk'ı kıskandığını işittim, ama hangi mühendisin kıskandığını bilmiyorum açıkçası.

'I heard an engineer envies Elon Musk, but I don't actually know which engineer envies (him).'

NoSluice-Object:

Elon Musk'ın bir mühendisi kıskandığını işittim, ama hangi mühendisi kıskandığını bilmiyorum açıkçası.

'I heard Elon Musk envies an engineer, but I don't actually know which engineer (he) envies.'

Regular-Subject:

Bir mühendisin Elon Musk'ı kıskandığını işittim, ama hangi mühendisin bilmiyorum açıkçası.

'I heard an engineer envies Elon Musk, but I don't actually know which engineer.'

Regular-Object:

Elon Musk'ın bir mühendisi kıskandığını işittim, ama hangi mühendisi bilmiyorum açıkçası.

'I heard Elon Musk envies an engineer, but I don't actually know which engineer.'

Pseudo-Subject:

Bir mühendisin Elon Musk'ı kıskandığını işittim, ama hangi mühendis bilmiyorum açıkçası.

'I heard an engineer envies Elon Musk, but I don't actually know which engineer (that is).'

Pseudo-Object:

Elon Musk'ın bir mühendisi kıskandığını işittim, ama hangi mühendis bilmiyorum açıkçası.

'I heard Elon Musk envies an engineer, but I don't actually know which engineer (that is).'

Subject	Object
Q: Bir politikacı mı Elon Musk'ı kıskanıyormuş?	**Q:** Bir politikacıyı mı Elon Musk kıskanıyormuş?
'Does a politician envy Elon Musk?'	'Does Elon Musk envy a politician?'

22. NoSluice-Subject:

Bir arkadaşın Mesut'u özlediğini anlıyorum, ama hangi arkadaşın özlediğini bilmiyorum doğrusu.

'I understand a friend missed Mesut, but I don't actually know which friend missed (him).'

NoSluice-Object:

Mesut'un bir arkadaşı özlediğini anlıyorum, ama hangi arkadaşı özlediğini bilmiyorum doğrusu.

'I understand Mesut missed a friend, but I don't actually know which friend (he) missed.'

Regular-Subject:

Bir arkadaşın Mesut'u özlediğini anlıyorum, ama hangi arkadaşın bilmiyorum doğrusu.

'I understand a friend missed Mesut, but I don't actually know which friend.'

Regular-Object:

Mesut'un bir arkadaşı özlediğini anlıyorum, ama hangi arkadaşı bilmiyorum doğrusu.

'I understand Mesut missed a friend, but I don't actually know which friend.'

Pseudo-Subject:

Bir arkadaşın Mesut'u özlediğini anlıyorum, ama hangi arkadaş bilmiyorum doğrusu.

'I understand a friend missed Mesut, but I don't actually know which friend (that is).'

Pseudo-Object:

Mesut'un bir arkadaşı özlediğini anlıyorum, ama hangi arkadaş bilmiyorum doğrusu.

'I understand Mesut missed a friend, but I don't actually know which friend (that is).'

Subject	Object
Q: Bir arkadaş Mesut'u mu özlemiş?	**Q:** Mesut bir arkadaşı mı özlemiş?
'Did a friend miss Mesut?'	'Did Mesut miss a friend?'

23. NoSluice-Subject:

Bir gazetecinin cumhurbaşkanını aradığını işittim, ama hangi gazetecinin aradığını bilmiyorum aslında.

'I heard a reporter called the President, but I don't actually know which reporter called (him).'

NoSluice-Object:

Cumhurbaşkanının bir gazeteciyi aradığını işittim, ama hangi gazeteciyi aradığını

bilmiyorum aslında.

'I heard the President called a reporter, but I don't actually know which reporter

(he) called.'

Regular-Subject:

Bir gazetecinin cumhurbaşkanını aradığını işittim, ama hangi gazetecinin

bilmiyorum aslında.

'I heard a reporter called the President, but I don't actually know which reporter.'

Regular-Object:

Cumhurbaşkanının bir gazeteciyi aradığını işittim, ama hangi gazeteciyi

bilmiyorum aslında.

'I heard the President called a reporter, but I don't actually know which reporter,'

Pseudo-Subject:

Bir gazetecinin cumhurbaşkanını aradığını işittim, ama hangi gazeteci bilmiyorum

aslında.

'I heard a reporter called the President, but I don't actually know which reporter

(that is).'

Pseudo-Object:

Cumhurbaşkanının bir gazeteciyi aradığını işittim, ama hangi gazeteci bilmiyorum aslında.

'I heard the President called a reporter, but I don't actually know which reporter (that is).'

Subject	Object
Q: Cumhurbaşkanını bir gazeteci mi aramış?	**Q:** Cumhurbaşkanı bir gazeteciyi mi aramış?
'Did a reporter call the President?'	'Did the President call a reporter?'

24. NoSluice-Subject:

Bir büyükelçinin Merkel'i ağırladığını duydum, ama hangi büyükelçinin ağırladığını bilmiyorum doğrusu.

'I heard an ambassador hosted Merkel, but I don't actually know which ambassador hosted (her).'

NoSluice-Object:

Merkel'in bir büyükelçiyi ağırladığını duydum, ama hangi büyükelçiyi ağırladığını bilmiyorum doğrusu.

'I heard Merkel hosted an ambassador, but I don't actually know which ambassador (she) hosted.'

Regular-Subject:

Bir büyükelçinin Merkel'i ağırladığını duydum, ama hangi büyükelçinin bilmiyorum doğrusu.

'I heard an ambassador hosted Merkel, but I don't actually know which ambassador.'

Regular-Object:

Merkel'in bir büyükelçiyi ağırladığını duydum, ama hangi büyükelçiyi bilmiyorum doğrusu.

'I heard Merkel hosted an ambassador, but I don't actually know which ambassador.'

Pseudo-Subject:

Bir büyükelçinin Merkel'i ağırladığını duydum, ama hangi büyükelçinin bilmiyorum doğrusu.

'I heard an ambassador hosted Merkel, but I don't actually know which ambassador (that is).'

Pseudo-Object:

Merkel'in bir büyükelçiyi ağırladığını duydum, ama hangi büyükelçi bilmiyorum doğrusu.

'I heard Merkel hosted an ambassador, but I don't actually know which ambassador (that is).'

Subj	Obj
Q: Merkel'i bir bakan mı ağırlamış?	**Q:** Merkel bir bakanı mı ağırlamış?
'Did a minister host Merkel?'	'Did Merkel host a minister?'

FILLERS

25. Burcu   sen(i)   akşam bize gelecek(sin)   sanıyordu

Burcu.Nom you.Nom(Acc) night   us.Dat come.Fut(2sg) was.thinking

galiba.

probably

'Burcu was probably thinking you would come to our place tonight.'

Q: Senin bize geleceğini zanneden Melek miydi?

   'Was that Melek who was thinking that you would come to our place?'

26. Osman ben(i) bugün okuldan kaçacak(ım) sanıyordu muhtemelen.

'Osman was probably thinking I would skip school today.'

Q: Osman benim bugün okulu mu asacağımı düşünmüş?

   'Was that school that Osman thought I would skip today?'

27. Canan sen(i) yarın Ankara'ya gidecek(sin) sanıyordu anlaşılan.

'Canan was apparently thinking that you would go to Ankara tomorrow.'

Q: Canan senin yarın Ankara'ya mı gideceğini düşünmüş?

   'Was that Ankara that Canan thought you would go tomorrow?'

28. Murat ben(i) sabah ofise uğrayacak(ım) sanıyordu galiba.

'Murat was probably thinking I would come by the office in the morning.'

Q: Murat benim sabah ofise mi uğrayacağımı düşünmüş?

'Was that the office that Murat thought I would come by in the morning?'

29. Yeliz sen(i) yarın toplantıya katılacak(sın) sanıyordu anlaşılan.

'Yeliz was apparently thinking you would join the meeting tomorrow.'

Q: Senin yarın toplantıya katılacağını sanan İbrahim miydi?

'Did İbrahim think you would join the meeting tomorrow?'

30. Başak ben(i) karantinada Netflix'ten bıkacak(ım) sanıyordu muhtemelen.

'Başak was probably guessing that I would be fed up with Netflix during quarantene.'

Q: Başak benim Netflix'ten mi bıkacağımı düşünmüş?

'Was that Netflix that Başak thought I would be fed up with?

31. Cem Bey sen(i) yazın evden çıkacak(sın) sanıyordu anlaşılan.

'Mr. Cem was seemingly thinking you would vacate the house in summer.'

Q: Cem Bey yazın evi boşaltacağını mı zannediyordu?

'Was Mr. Cem thinking that the house would be vacated in summer?'

32. Sezer ben(i) gelecek ay ortaklıktan ayrılacak(ım) sanıyordu anlaşılan.

'Sezer was seemingly thinking I would leave the partnership next month.'

Q: Sezer beni kalıcı bir ortak olarak mı görüyordu?

'Was Sezer considering me as a permanent partner?'

33. Filiz sen(i) pazartesi Bolu'da kalacak(sın) sanıyordu galiba.

'Filiz was probably thinking you would stay in Bolu on Monday.'

Q: Filiz senin pazartesi Bolu'dan döneceğini mi düşünmüş?

'Did Filiz think that you would return from Bolu on Monday?'

34. Emre ben(i) dün gece köpekten korkacak(ım) sanıyordu muhtemelen.

'Emre was possibly assuming that I would be scared of the dog last night.'

Q: Benim dün gece köpekten korkacağımı sanan Bekir miydi?

'Did Bekir think that I would be scared of the dog last night?'

35. Hülya sen(i) o zamanlar salıncaktan düşecek(sin) sanıyordu anlaşılan.

'Hülya was apparently thinking you would fall off swings in those days.'

Q: Hülya senin salıncakta sallanman konusunda tedirgin miydi eskiden?

'Was Hülya nervous about you swinging in the past?'

36. Ezgi ben(i) ders arasında bahçeye koşacak(ım) sanıyordu muhtemelen.

'Ezgi was possibly assuming that I would run to the yard in the break.'

Q: Ezgi benim kantine mi koşacağımı düşünüyordu arada?

'Was Ezgi thinking that I would run to the canteen in the break?'

Appendix E

IRB/HUMAN SUBJECTS APPROVAL

UNIVERSITY OF DELAWARE

DATE: March 30, 2021

TO: Bilge Palaz
FROM: University of Delaware IRB

STUDY TITLE: [1714466-1] Comprehension of complex sentences
SUBMISSION TYPE: New Project

ACTION: APPROVED
EFFECTIVE DATE: March 30, 2021
NEXT REPORT DUE: March 29, 2022

REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category # (7)

Thank you for your New Project submission to the University of Delaware Institutional Review Board (UD IRB). The UD IRB has reviewed and APPROVED the proposed research and submitted documents via Expedited Review in compliance with the pertinent federal regulations.

As the Principal Investigator for this study, you are responsible for, and agree that:

- All research must be conducted in accordance with the protocol and all other study forms as approved in this submission. Any revisions to the approved study procedures or documents must be reviewed and approved by the IRB prior to their implementation. Please use the UD amendment form to request the review of any changes to approved study procedures or documents.

- Informed consent is a process that must allow prospective participants sufficient opportunity to discuss and consider whether to participate. IRB-approved and stamped consent documents must be used when enrolling participants and a written copy shall be given to the person signing the informed consent form.

- Unanticipated problems, serious adverse events involving risk to participants, and all non-compliance issues must be reported to this office in a timely fashion according with the UD requirements for reportable events. All sponsor reporting requirements must also be followed.

The UD IRB REQUIRES the submission of a PROGRESS REPORT DUE ON March 29, 2022. A continuing review/progress report form must be submitted to the UD IRB at least 45 days prior to the due date to allow for the review of that report.

If you have any questions, please contact the UD IRB Office at (302) 831-2137 or via email at hsrb-research@udel.edu. Please include the study title and reference number in all correspondence with this office.

INSTITUTIONAL REVIEW BOARD