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Weight effects and variation in word order
in Icelandic and Faroese

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Abstract

The theoretical aim of this project is to get a better understanding of the so called weight effects illustrated in examples like the following (? = a questionable example, * = a bad example, ** = an even worse example; brackets enclose the relevant constituents):

- (1) a. *María las [bókina um Línu langsokk og sjóræningjana]*
Mary read [book.DET about Pippi Longstocking and pirates.DET]
[fyrir börnin].
[to children.DET]
'Mary read the book about Pippi Longstocking and the pirates to the children.'
- b. *María las [fyrir börnin]*
Mary read [to children.DET]
[bókina um Línu langsokk og sjóræningjana].
[book.DET about Pippi Longstocking and pirates.DET]
'Mary read to the children the book about Pippi Longstocking and the pirates.'
- c. *María las [bókina] [fyrir börnin]/ *[fyrir börnin] [bókina].*
Mary read [book.DET] [to children.DET] [to children.DET] [book.DET]
'Mary read the book to the children.'
- d. *María las [hana] [fyrir börnin]/ **[fyrir börnin] [hana].*
Mary red [it] [to children.DET] [to children.DET] [it]
'Mary red it to the children.'

In (1b) the “heavy” direct object of the verb has been shifted to a right-peripheral position after the prepositional phrase (PP) and the outcome is a natural word order. As (1c) shows, this shift (usually referred to as “Heavy NP Shift” or HNPS for short) is much worse if the object is lighter or shorter and it is completely impossible if it is an unstressed pronoun as in (1d).

Weight effects of a similar kind have been observed in a number of languages and in various constructions. The sentences in example (1) are in Icelandic but HNPS is also a similar and a well-known construction in English. Weight effects are also found, for instance, in English and Icelandic particle verb constructions. While most speakers can say sentences (2a), where an NP precedes a particle and (2b), where the same NP follows the particle, an unstressed pronominal object like *it* cannot follow the particle, like in (2c) whereas a heavy NP usually does (2d).

- (2) a. Ég skrifaði [heimilisfangið] [niður].
I wrote [address.DET] [down]
'I wrote the address down.'
- b. Ég skrifaði [niður] [heimilisfangið].
I wrote [down] [address.DET]
'I wrote down the address.'
- c. **Ég skrifaði [niður] [það].
**I wrote [down] [it]
'I wrote it down.'
- d. ?Ég skrifaði [heimilisfangið sem þú gafst mér] [niður].
?I wrote [address.DET that you gave me] [down]
'I wrote down the address that you gave me.'

Something similar is apparently also true of the so-called Object Shift in Icelandic:

- (3) a. Ég las [aldrei] [bókina sem þú gafst mér á jólunum í fyrra].
I read [never] [book.DET that you gave me at Christmas in last-year]
'I never read the book that you gave me for Christmas last year.'
- b. ?*Ég las [bókina sem þú gafst mér á jólunum í fyrra] [aldrei].
I read [book.DET that you gave me at Christmas in last-year] [never]
'I never read the book that you gave me for Christmas last year.'
- c. Ég las [aldrei] [þessa bók] / [þessa bók] [aldrei].
I read [never] [this book]/ [this book] [never]
'I never read this book.'
- d. Ég las *[aldrei] [hana] / [hana] [aldrei].¹
I read [never] [it] [it] [never]
'I never read it.'

The default position of the object in Icelandic is shown in (3a), where the object follows the sentential adverb *aldrei* 'never'. As (3b) suggests, the heavy object can only marginally shift to the left across *aldrei*, whereas the variants in (3c) show that this shift is natural, but not necessary, if the object is a

¹ Like in particle verb constructions, an unstressed pronominal object must always precede the negation (and is said to have undergone Pronominal Object Shift, which is obligatory in Icelandic).

definite non-heavy NP. But as shown in (3d), an unstressed pronominal object must shift across the sentential adverb and cannot be left in situ.

The theoretical question is then what is it that makes these constituents heavy. Although weight effects in word order have been known to linguists at least since Behagel (1909), they tend to disagree as to what the relevant concept of weight is. Here are some possibilities that have been suggested in the literature:

- Weight can be defined morphologically and/or phonologically: It is simply the **number of words** in the relevant constituents that plays a role.
- The **syntactic makeup** of the constituents plays a role. Phrases that contain embedded clauses are intrinsically more “heavy” than phrases that do not.
- It is not only the weight of the “movable” constituent that plays a role but also the weight of the constituent that it shifts over (e.g. the PP in (1)). So **relative weight** is important.

More proposals about the nature of linguistic weight can be found in the linguistic literature, as reviewed to some extent in Chapter 2 of this thesis. In addition, it has been argued that constructions within a given language may vary with respect to the role of different weight predictors– and languages may also differ in this respect.

The effects of these different weight predictors have not been systematically compared to each other across more than one syntactic construction and it has also never been investigated whether various potential weight factors have different roles in two closely related languages (most previous studies have focused on a single syntactic construction in one language and one research method). The goal of this thesis was to test the definitions of weight mentioned above, among other notions of weight effects across various syntactic constructions in Icelandic and Faroese, including Heavy NP Shift (HNPS), Full NP Object Shift (OS) and Particle Shift (PS). A study of this kind, where weight effects in various syntactic constructions in two different languages, has not been done before. The study used mixed methods, comparing spoken and written production data from language production tasks and an extensive corpus study, along with speaker evaluations from acceptability experiments. These methods were combined to provide a clearer image of weight effects and variation in word order in Icelandic and Faroese than has previously been done.

Since the potential heaviness factors under consideration belong to different levels of the language, namely morphology/phonology, syntax and discourse, experiments and surveys of the kind proposed should shed light on the interaction between these different levels, which is part of the theoretical impact of this thesis. Because the surveys included a relatively large number of speakers, the results

provide us with new information about possible variation within and across closely related languages. In addition, this research adds to our descriptive knowledge of Icelandic and Faroese.

The main results of this study show that different weight predictors, including number of words and syllables, syntactic complexity, measured by whether the NP includes a relative clause or not, and even prosodic weight factors, such as stress at the phrase level, can affect word order in various syntactic constructions in Icelandic and Faroese, although the effects are in some instances less clear in Faroese. The results show that these weight predictors do not affect syntactic constructions to the same degree. For instance, prosodic weight factors and complexity can have stronger weight effects than other weight predictors in some syntactic constructions. The results also show that weight effects are more extensive than has previously been considered, in the sense that heaviness attracts long or complex constituents to the left edge of the sentence via leftward movement such as Left Dislocation (LD), unlike what is generally assumed in the literature.

Finally, the results show that different weight predictors affect syntactic constructions to a varying degree in language production, i.e., in written and spoken language, and in speakers' evaluations. For example, the number of words the shiftable constituent includes and the relative length of the shifted constituent vs the string of words it shifts over, proved to be important on all levels, in speakers' evaluations and in language production but relative weight and syntactic complexity are more important in language production than in acceptability evaluations. These results show that weight effects have more effect on speakers' production planning than the recipients' parsing of written language. This has not been demonstrated before by an extensive study such as this one.

Ágrip

Markmið þessarar rannsóknar er að kanna eðli svokallaðra þyngdaráhrifa í setningum á borð við þessar (? = vafasöm setning, * = ótæk setning, ** = enn verri setning, hornklofar afmarka þá setningarliði sem eru til skoðunar):

- (1) a. María las [bókina um Línu langsokk og sjóræningjana] [fyrir börnin].
b. María las [fyrir börnin] [bókina um Línu langsokk og sjóræningjana].
c. María las [bókina] [fyrir börnin]/ *[fyrir börnin] [bókina].
d. María las [hana] [fyrir börnin]/ **[fyrir börnin] [hana].

Dæmi af þessu tagi sýna að þungt andlag eins og [bókina um Línu langsokk og sjóræningjana] má hafa á eftir forsetningarlið eins og [fyrir börnin] og er þá sagt að andlagið hafi færst með færslu þungs nafnliðar. Dæmi (1c) sýnir að léttari andlög eins og [bókina] fara illa í þessari stöðu og sé andlagið áherslulaust fornafn eins og [hana] er sú orðaröð alveg ótæk.

Þyngdaráhrif af þessu tagi má finna í ýmsum tungumálum og ólíkum setningagerðum, t.a.m. í agnarsagnasamböndum í ensku og íslensku. Flestum íslenskum málhöfum þykja setningar (2a) og (2b) eðlilegar en fæstir myndu samþykkja setningu (2c) þar sem áherslulaust persónufornafn kemur á eftir sagnarögninni *niður*. Ef andlagið er þungt fer hins vegar betur að hafa það aftast í setningunni en á eftir sagnarögninni (2d).

- (2) a. Ég skrifaði [heimilisfangið] [niður].
b. Ég skrifaði [niður] [heimilisfangið].
c. **Ég skrifaði niður [það].
d. ?Ég skrifaði [heimilisfangið sem þú gafst mér] niður.

Það sama virðist eiga við um svokallað andlagsstökk í íslensku:

- (3) a. Ég las [aldrei] [bókina sem þú gafst mér á jólunum í fyrra].
b. ?*Ég las [bókina sem þú gafst mér á jólunum í fyrra] [aldrei].
c. Ég las [aldrei] [þessa bók]/[þessa bók] [aldrei].
d. Ég las **[aldrei] [hana]/[hana] [aldrei].

Grundvallarstaða andlagsins í íslensku sést í (3a) þar sem andlagið kemur á eftir setningaratviksorðinu *aldrei*. Eins og (3b) gefur til kynna er erfitt að færa þunga andlagið til vinstri yfir neitunina en dæmin í (3c) sýna að þessi orðaröð er eðlileg, þó ekki nauðsynleg, ef andlagið er

ákveðinn, léttur nafnliður. Eins og (3d) sýnir verður áherslulaust persónufornafn alltaf að færast til vinstri með andlagsstökki enda getur það ekki staðið á upprunastað.

Fræðilega spurningin er þá hvað það er sem gerir setningarliði þunga. Þótt þyngdaráhrif hafi lengi verið þekkt fyrirbæri, a.m.k. síðan Behagel skrifaði um þau (1909), eru málfræðingar ekki á einu máli um það hvernig best sé að skilgreina þyngd. Hér eru nokkur dæmi sem hafa verið gefin í fræðilegri umfjöllun um þyngd:

- Þyngd liða ræðst af orðafjölda. Það er **orðafjöldi** innan viðkomandi liðar sem skiptir máli.
- **Setningafræðileg gerð** liðarins (svokallað „flækjustig“) skiptir máli. Liðir sem innihalda tilvísunarsetningu eru í eðli sínu þyngri en liðir sem ekki gera það.
- Það er ekki aðeins þyngd færanlega liðarins sem skiptir máli, heldur einnig þyngd liðarins sem hann færir yfir. **Hlutfallsleg þyngd** viðkomandi liða skiptir máli.

Fleiri skilgreiningar á eðli málfræðilegrar þyngdar er að finna í fræðilegri umfjöllun um þyngdaráhrif og verða þeim helstu gerð skil í öðrum kafla þessarar ritgerðar. Því hefur einnig verið haldið fram að þyngdaráhrif geti verið mismunandi eftir setningagerðum og jafnvel tungumálum.

Hins vegar hafa áhrif þessara þátta ekki verið borin skipulega saman og ekki hefur verið skoðað hvort áhrifin geti verið mismunandi eftir tungumálum (fyrri rannsóknir hafa flestar miðað við eina setningagerð, eitt tungumál og eina rannsóknaraðferð) en það er gert í þessari ritgerð. Í ritgerðinni eru ofangreindar kenningar og fleiri prófaðar og skýringargildi þeirra kannað fyrir ýmsar setningagerðir í íslensku og færeysku, þ.m.t. í setningum með færslu þungs nafnliðar, andlagsstökki og agnarsagnasamböndum. Samanburðarrannsókn af þessu tagi, sem ber saman þyngdaráhrif í ólíkum setningagerðum í tveimur tungumálum, hefur ekki verið gerð áður. Í rannsókninni eru notaðar blandaðar rannsóknaraðferðir þar sem töluð og rituð málöggn úr málframköllunarprófum og málheildum, ásamt mati málhafa á setningagerðum úr dómaprófum, eru borin saman til þess að fá skýrari mynd af þyngdaráhrifum á orðaröð í íslensku og færeysku en áður hefur verið gert.

Þar sem þyngdaráhrif tilheyra ólíkum sviðum tungumálsins, þ.e.a.s. orðhlutum/hljóðkerfi, setningagerð og merkingu liða, varpar þessi rannsókn nýju ljósi á samspil þessara ólíku sviða og felst vísindalegt gildi hennar m.a. í þessu. Þýði málhafa sem taka þátt í rannsókninni er ansi stórt og niðurstöðurnar munu þess vegna veita nýjar upplýsingar um möguleg tilbrigði innan og á milli tveggja náskyldra tungumála. Þar að auki mun rannsóknin bæta miklu við við málfræðilega lýsingu íslensku og færeysku.

Niðurstöður rannsóknarinnar sýna að ólíkir þyngdarþættir, þ.m.t. orðafjöldi, flækjustig liða, hlutfallsleg þyngd og jafnvel hljóðkerfislegir þættir á borð við setningaráherslu, geta allir haft áhrif á

orðaröð í ýmsum setningagerðum í íslensku og færeysku, þótt áhrifin séu í sumum tilvikum óljósari í færeysku. Niðurstöðurnar sýna að ólíkir þyngdarþættir hafa mismikil áhrif á setningagerðirnar, t.a.m. geta hljóðkerfisleg þyngd og flækjustig haft meira vægi en orðafjöldi liða í ákveðnum setningagerðum. Niðurstöðurnar leiða einnig í ljós að þyngdaráhrif eru víðtækari en áður var talið, þar eð þau ná einnig til liða sem færast á vinstri kant setninga, ólíkt því sem almennt hefur verið talið.

Að lokum sýna niðurstöðurnar að ólíkir þyngdarþættir hafa mismikil áhrif á setningagerðir eftir því hvort þeir koma fyrir í málframleiðslu, þ.e.a.s. töluðu og rituðu máli, eða í mati málhafa á setningagerðum: t.a.m. reyndust orðafjöldi og hlutfallsleg þyngd mikilvægir þættir í dómum málhafa og í málframleiðslu en hlutfallsleg þyngd og flækjustig hafa enn meira vægi í málframleiðslu. Þessar niðurstöður benda til þess að þyngdaráhrif almennt séu mikilvægari fyrir framleiðsluferli mælanda en upplýsingaúrvinnslu viðtakanda á rituðu máli, en ekki hefur verið sýnt fram á þetta áður með svo ítarlegri rannsókn.

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1. Introduction

1.1. Weight effects and word order

Weight effects in word order have been known to linguists at least since Behagel (1909:139) described a “rhythmical tendency” in languages to go “from shorter to longer elements” (later described by Quirk et al. (1972) as the “principle of end-weight”). These effects are manifested in word order alternations such as Heavy NP Shift³ (henceforth HNPS, see Kimball 1973 and much later work), as demonstrated in (1.1a).

- (1.1) a. Mary read [the book] [to the children].
b. ??Mary read [to the children] [the book].

In traditional English word order, a direct object NP tends to immediately follow the verb, as demonstrated in example (1.1a). Most English speakers would readily accept the sentence in (1a), whereas few would accept the word order in (1b), in which the vP-modifying prepositional phrase (PP) immediately follows the verb, and the direct object NP is at the rightmost end of the clause. In (1.2b), the heavy⁴ direct object of the verb has been shifted to a right-peripheral position after the prepositional phrase (PP) and the outcome is a natural word order.⁵

- (1.2) a. Mary read [the book about Pippi Longstocking and the pirates] [to the children].
b. Mary read [to the children] [the book about Pippi Longstocking and the pirates].

Normally this would be explained by saying that the NP in sentence (1.2b) has undergone HNPS which has been described as a movement⁶ of “heavy” NPs to the rightmost position of the clause. Icelandic word order is similar in this respect (see Thráinsson 1979, Rögnvaldsson 1984 and much later work). In (1.3b) the heavy direct object of the verb, shown in situ in example (1.3a), has been shifted to a right-peripheral position after the PP and the outcome is good, whereas (1.3c) shows

³ This construction is most commonly known as Heavy NP Shift, although it is sometimes referred to as Heavy DP Shift in keeping with some current theories of syntax, following Abney (1987) and subsequent work. In this thesis the term Heavy NP Shift, or HNPS, will be used as it is the most common in the literature.

⁴ Although the main goal of this study is to define the concept of weight or “heaviness”, I will describe the constituents in question as “heavy” to be consistent with the literature.

⁵ The judgments of the acceptability of the sentences in this paper are my own, unless stated otherwise.

⁶ The syntactic structures that are the topic of research in this thesis will not be described from a formal theoretical point of view, but as variation of word order in surface structure, as will be discussed in Section 1.3 of this chapter. Variation in these structures is commonly referred to as NP shift, NP movement or NP displacement, so these terms will be used frequently in this thesis, as is convenient and consistent with the literature.

that this shift is much worse if the object is lighter or shorter and it is completely impossible if the direct object is an unstressed pronoun as in (1.3d).⁷

- (1.3) a. *María las [bókina um Línu Langsokk og sjóræningjana]*
 Maria read [book.DET about Pippi Longstocking and pirates.DET]
 [fyrir börnin].
 [for children. DET]
 ‘Maria read the book about Pippi Longstocking and the pirates to the children.’
- b. *María las [fyrir börnin]*
 Maria read [for children.DET]
 [bókina um Línu Langsokk og sjóræningjana]
 [book.DET about Pippi Longstocking and pirates.DET]
 ‘Maria read to the children the book about Pippi Longstocking and the pirates.’
- c. ??/**María las [fyrir börnin] [bókina].*
 Maria read [for children.DET] [book.DET]
 ‘Maria read the book to the children.’
- d. ***María las [fyrir börnin] [hana].*
 Maria read [for children.DET] [her]
 ‘Maria read it to the children.’

Weight effects of a similar kind have been observed in a number of languages and in various constructions, for instance in English particle verb constructions (Svenonius 1996a:51–54). While most speakers can either say (1.4a) and (1.4b) an unstressed pronominal object like *it* cannot follow the particle (1.4c) whereas a heavy NP is more natural in that position than preceding the particle, as is evident in examples (1.4d) and (1.4e).

- (1.4) a. I wrote [the information] [down].
 b. I wrote [down] [the information].
 c. *I wrote [down] [it].
 d. ?I wrote [all the information that you gave me] [down].
 e. I wrote [down] [all the information that you gave me].

Something similar is apparently also true of the so-called Object Shift (see Holmberg 1986 and much later work) in Icelandic, as demonstrated in example (1.5):

⁷ Object pronouns tend to be unstressed in Icelandic.

- (1.5) a. Ég las [aldrei] [bókina sem þú gafst mér á jólunum í fyrra].
 I read [never] [book.DET that you gave me for Christmas in last-year]
 ‘I never read the book you gave me for Christmas last year.’
- b. ?*Ég las [bókina sem þú gafst mér á jólunum í fyrra] [aldrei].
 I read [book.DET that you gave me for Christmas in last-year] [never]
 ‘I never read the book you gave me for Xmas last year.’
- c. Ég las [aldrei] [þessa bók] / [þessa bók] [aldrei].
 I read [never] [this book] / [this book] [never].
 ‘I never read this book’
- d. Ég las *[aldrei] [hana] / [hana] [aldrei].
 I read [never] [her] / [her] [never]
 ‘I never read it’

The default position of the object in Icelandic is shown in (1.5a), where the object follows the sentential adverb *aldrei* ‘never’. As (1.5b) suggests, the heavy object can only marginally shift to the left across *aldrei*, whereas the variants in (1.5c) show that this shift is natural, but not necessary, if the object is a definite non-heavy NP. But as shown in (1.5d), an unstressed pronominal object has to shift across the sentential adverb and cannot be left in the default object position (or in situ).

The notion of weight has proved a difficult concept to define, and linguists have suggested various possibilities to describe it, including the following (see references cited in Chapter 2 where these definitions will be discussed in more detail):

- Weight can be defined morphologically and/or phonologically: It is simply the number of words or syllables in the relevant constituents that plays a role.
- The syntactic complexity of the constituents (to the extent it can be measured in an objective way, e.g., by counting syntactic nodes) plays a role (see Wasow & Arnold 2005 and discussion of syntactic complexity in Section 2.1.1). Phrases that contain embedded clauses are intrinsically heavier than phrases that do not.
- It is not only the weight of the movable constituent that plays a role but also the weight of the string of words that it shifts over. So relative weight is important.
- Discourse phenomena like old vs new information play a role: old information tends to come early in the sentence but new information late. Hence unstressed pronouns (arguably old information par excellence) may shift to the left but not to the right.

More proposals about the nature of linguistic weight can be found in the linguistic literature, as reviewed to some extent in Chapter 2. In addition, it has been argued that constructions within a given language may vary with respect to the role of different weight features (see Grafmiller & Shih 2011, Shih et al. 2015 and Shih 2016) – and languages may also differ in this respect (see e.g., Yamashita & Chang 2001). Not all languages are necessarily sensitive to weight effects in the same way, although empirical evidence is lacking. This study will address the issue by comparing potential weight effects on word order in two closely related languages, Icelandic and Faroese.

The main purpose of this project is to explore the concept of weight, i.e., to find out which factors contribute to it:

- Is it determined by the length of the shifted constituent and if so, how is that length measured?
- If length is the determining factor; is it the absolute length of the shifted constituent itself alone or is the relative weight of the string of words that it shifts over also important?
- Is weight defined by the syntactic complexity of the constituents, i.e., does an embedded clause make the constituent intrinsically heavier than length alone?
- Is weight determined by a single weight predictor or are weight effects driven by the interaction of some of the aforementioned factors?
- Do weight effects impact word order in all weight-sensitive structures in the same way, i.e., if the aforementioned factors are weight predictors for HNPS, do they affect other structures such as e.g., Particle Shift and Object Shift in the same way?
- Can closely related languages differ with respect to weight effects?

The empirical approach to this aim is to perform a detailed study of selected syntactic constructions in Icelandic and Faroese, and the effects of weight on variation in word order in these two languages. These two languages were chosen because they are very closely related and similar in many ways, but they have been described as different when it comes to syntactic structures that are sensitive to weight, as will be outlined below. As illustrated above and further discussed in Chapter 2, there have been many suggestions as to how to define the nature of heaviness. My intention is to test some of these hypotheses to a fuller extent than has been done before.

1.2. Defining weight effects

In previous literature on weight effects the main focus has typically been on HNPS and how heaviness affects that particular construction in one language, most commonly English, as will be further reviewed in Chapter 2. It is therefore a natural starting point for this study to examine HNPS in Icelandic and provide a thorough description of the construction both synchronically and diachronically, based on empirical data from experiments and the Icelandic Parsed Historical Corpus (IcePaHC) (Wallenberg et al. 2011).⁸ The study will consider various weight predictors, as have been discussed in this chapter, that potentially affect this structure. In this study, it will also be considered whether different grammatical categories, shifted subjects vs shifted direct objects behave differently. It has been argued that HNPS affects NPs with various grammatical structures differently in Icelandic and Faroese, as more fully discussed in Chapter 2 and considering such a difference could provide a clearer image of how weight effects work and where they have effect. HNPS has never been described in such detail in Icelandic before, so this starting point will provide a solid background for the next steps of this study and for future research.

The next step is to study weight effects in other syntactic constructions that have been described as weight sensitive, namely Particle Shift (PS) (see Rögnvaldsson 1982 and much later work on Particle Shift in Icelandic) (cf. (1.6)) and Object Shift (OS) (1.5).

- (1.6) a. ?Jón tók [pakkann sem mamma hans sendi honum um jólin] [upp].
Jon took [package.DET that mum his sent him around Christmas] [up]
'Jon opened the package that his mum sent him for Christmas.'
- b. Jón tók [upp] [pakkann sem mamma hans sendi honum um jólin].
Jon took [up] [package.DET that mum his sent him around Christmas]
'Jon opened the package that his mum sent him for Christmas.'
- c. Jón tók [pakkann] [upp].
Jon took [package.DET][up]
'Jon opened the package.'
- d. Jón tók [upp] [pakkann].
Jon took [up] [package.DET]
'Jon opened the package.'

⁸ While the empirical data is the main source of information for this study, I also rely on my own language intuition and what has previously been described in the linguistic literature.

e. Jón tók [hann] [upp].
 Jon took [him] [up]
 ‘Jon opened it.’

f. *Jón tók [upp] [hann].
 Jon took [up] [him]
 ‘Jon opened it.’

The particle construction in (1.6) appears to be affected by heaviness in a similar way to the HNPS example in (1.3). The outcome in (1.6b), where the heavy object appears at the end of the clause, is more natural than the outcome in (1.6a) where it immediately follows the verb and is followed by the particle.⁹ The fact that sentences (1.6c) and (1.6d) work equally well suggests that it is the length or “heaviness” of the NP in (1.6a) that makes it less acceptable than (1.6b). If the NP is an unstressed pronoun it has to immediately follow the verb, as shown in examples (1.6e–f). Something similar is apparently also true of Object Shift in Icelandic, as shown in (1.5). These particular constructions were chosen for the study for the following reasons:¹⁰

- All three of these structures arguably exist in Icelandic and Faroese, which means that they provide a good platform to compare syntactic structures in two closely related languages.
- They have all been argued to be sensitive to weight, as will be further discussed in Chapter 2.
- They all share similar features, i.e., they present variation options in the order of constituents, which is potentially weight sensitive.

This study will provide a thorough description of weight effects on word order and variation in Icelandic and Faroese and hopefully contribute to a deeper understanding of the concept of weight in language in general. The study will systematically compare various weight factors in different constructions in two closely related languages by conducting a series of experiments: acceptability surveys and production experiments, consulting a relatively large number of speakers in each language. By comparing the results from acceptability and production

⁹ There are different opinions in the literature as to what Particle Shift really is; where the NP originates from and whether it moves left or right or whether it moves at all (see Johnson 1991, Collins and Thráinsson 1996, Svenonius 1994, 1996a,b). As mentioned before and further discussed in Section 1.3, this study focuses on the potential effects of weight on the position of constituents in surface structure and will not try to answer that question. In this thesis, Particle Shift (PS) will be used to refer to a rightward movement of the object in sentences like (1.6b) and (1.6d) where the NP ends up at the end of the clause, similar to HNPS.

¹⁰ There are more constructions that are likely to be sensitive to weight effects, including Subject Extraposition (It is likely that this is the same phenomenon.) and Extraposition of Relative Clauses (Evidence has been found that this is the same phenomenon.). These constructions are very similar to HNPS and were not included in this study.

experiments to results from corpora studies the project will give a more complete description of the effects of weight on variation in word order in these two languages.

The goal of this project is not to define the nature of these shifts, i.e., whether they are triggered by syntax, information structure or prosody, but to study the effects of weight on the positioning of syntactic constituents in surface structure where there is more than one option available. I will look for evidence for the role of heaviness in terms of the number of words (1.3) (also considering and controlling for a possible effect of the number of syllables, (1.7)), syntactic complexity (1.8), relative weight of constituents (cf. (1.9) and (1.10)) and other potential weight factors will be considered, including prosodic heaviness, as will be discussed in Chapters 3 and 4, and the grammatical role of the relevant constituents (subject vs object), as briefly discussed before and further addressed in Chapters 3–5.

- (1.7) a. María keypti [handa mér] [bjór].
Maria bought [for me] [beer]
'Maria bought me a beer.'
- b. María keypti [handa mér] [banana].
Maria bought [for me] [banana]
'Maria bought me a banana.'

In example (1.7) we have two sentences that are similar in meaning and structure. In both sentences, the PP, which immediately follows the verb, consists of two words, a preposition and an object, and the NP consists of a single noun. The difference between the sentences is the number of syllables within the PP and the NP: In (1.7a) the PP consists of three syllables and the NP has only one. In (1.7b) the PP is the same as in (1.7a) but the NP consists of three syllables. The question is then whether the NP in (1.7b) is heavier than the NP in (1.7a) when the only difference between them is the number of syllables they consist of.

In example (1.8) the PP and NP is equally long in both sentences in regard to number of words and syllables. The difference is that the NP in (1.8b) includes a relative clause, whereas the NP in (1.8a) does not. As discussed in Chapter 2.1. it has been argued that the complexity of the NP is important, or even more important than its length in number of words, when it comes to its positioning in the clause (Chomsky 1955/1975, Ross 1967, Kimball 1973).

- (1.8) a. Ég hitti [um daginn] [mann með alskegg].
I met [around day.DET] [man with full beard]
'I met the other day a man with a full beard.'

- b. Ég hitti [um daginn] [mann sem hjólar].
 I met [around day.DET] [man that cycles]
 ‘I met the other day a man that cycles.’

It has also been argued that it is not only the length of the NP itself that affects its position in a clause but that the length of the constituent it moves over also plays a role. According to Stallings & MacDonald (2011) NPs are more likely to appear at the end of the clause when they are relatively longer than the neighbouring constituent, like in example (1.9b), than in sentences such as (1.9a) and (1.10a), where they are equally long, or in (1.10b) where the NP is relatively shorter (see further discussion in Chapter 2).

- (1.9) a. Ólöf las [fyrir krakkana] [skemmtilega bók].
 Olof read [for kids.DET] [entertaining book]
 ‘Olof read to the kids an entertaining book.’

- b. Ólöf las [fyrir krakkana]
 Olof read [for kids.DET]
 [skemmtilega bók um riddara og dreka].
 [entertaining book about knights and dragons]
 ‘Olof read to the kids an entertaining book about knights and dragons.’

- (1.10) a. Ólöf las [fyrir alla krakkana á leikskólanum]
 Olof read [for all kids.DET in playschool.DET]
 [skemmtilega bók um riddara og dreka].
 [entertaining book about knights and dragons]
 ‘Olof read to all the kids in the playschool an entertaining book about knights and dragons.’

- b. Ólöf las [fyrir alla krakkana á leikskólanum] [skemmtilega bók].
 Olof read [for all kids.DET in playschool.DET] [entertaining book]
 ‘Olof read to all the kids in the playschool an entertaining book.’

As demonstrated by the examples presented here and further discussed in Chapter 2, linguists have proposed many ways to define the notion of heaviness. The goal of this study is to further explore it and its impact on the variation in word order within these syntactic structures by systematically comparing several definitions of weight effects in two closely related languages. The results should add to our knowledge of understudied aspects of Icelandic and Faroese and at the same time shed light on the nature and role of heaviness and weight effects in languages in general and linguistic theory.

While this study approaches the subject in more complex ways than has been done before, it was of course not possible to consider all potential definitions of heaviness that have been defined in the literature. Although prosodic weight will be touched upon in Chapters 3–4 in the context of HNPS, it was not possible to explore in detail how stress and prosodic structure affects the way speakers evaluate and produce these syntactic structures. Other definitions of heaviness have been proposed in the literature, which could also not be included in this study, including discourse factors, such as old and new information (which may affect word order independently from heaviness, as argued by Ingason & Sigurðsson 2017). Peter Svenonius (1996a) found that this factor affected the way Norwegian speakers reacted to sentences with particle structures, such as in (1.11) and (1.12) (Svenonius 1996a:55). His study revealed that when the presence of the object is not presupposed, like in (1.11), Norwegian speakers prefer the structure in (1.11b), where the object follows the particle. When the presence of the object is assumed known, like in (1.12), no such preference is revealed, and speakers find sentences (1.12a–b) equally good.

(1.11) a. Jeg blåser [ballonger] [opp]. (Nor)
 I blow [balloons] [up]
 ‘I am blowing balloons up’

b. Jeg blåser [opp] [ballonger].
 I blow [up] [balloons]
 ‘I am blowing up balloons.’

(1.12) a. Jeg blåser [ballongene] [opp]. (Nor)
 I blow [balloons.DET] [up]
 ‘I am blowing the balloons up.’

b. Jeg blåser [opp] [ballongene].
 I blow [up] [balloons.DET]
 ‘I am blowing the balloons up.’

Svenonius adds that the speakers’ preference for the NP-particle structure is stronger if the NP is epithetic, i.e., the NP refers back to a name or a title previously mentioned, like in example (1.13). The (>) symbol shows that (1.13a) is the preferred outcome.

(1.13) Q: How will **Ingrid and Turid** get here?
 a. > Vi skal plukke [jentene] [opp]. (Nor)
 we shall pick [girls.DET][up]
 ‘We shall pick the girls up.’

- b. Vi skal plukke [opp] [jentene].
 we shall pick [up] [girls.DET]
 ‘We shall pick up the girls.’

However, the preferences are reversed for definite NPs if the particle-verb is old information and the NP is new information (Svenonius 1996a:56). The (>) symbol shows that (1.14b) is the preferred outcome:

(1.14) Q: Who have you picked up?

- a. Vi har plukket [jentene] [opp]. (Nor)
 we have picked [girls.DET] [up]
 ‘We have picked the girls up.’
- b. > Vi har plukket [opp] [jentene].
 we have picked [up] [girls.DET]
 ‘We have picked up the girls.’

The importance of discourse factors and their interaction with heaviness are disputed in the literature, as will be addressed in Chapter 2, but it was not possible to include information structure particularly as a test factor in this project. A study of discourse factors and their potential effect on the syntactic structures described here would be very complex on its own, although very interesting, and therefore it will be left for future research.

1.3. Optionality and movement

As pointed out above, the syntactic structures that are the topic of research in this thesis will not be described from a formal theoretical point of view, but as variation of word order in surface structure, as will be touched upon later in this chapter. The movement described in this thesis will also sometimes be referred to as optional although it can often be demonstrated that the two variations that are connected with these shifts are not entirely equal, and the shift is therefore not entirely optional, but perhaps probabilistic or subject to conditions. It has also been maintained in the literature that optional movement cannot exist in grammar and that shifting only occurs as a “last resort” if it cannot be avoided (Chomsky 1995). This matter will not be addressed specifically in this thesis, so terms like optional movement will only be used descriptively.

It is also possible to study weight effects in the structures described here, regardless of which direction the shift moves in; whether it is rightward or leftward movement, or whether it is even considered a shift or not. The operations described in this thesis will often be referred to as rightward

or leftward movement, as is generally done in the literature, but it does not really make a difference for this type of study whether the movement is to the right or to the left or how the constituents in question land where they are. For this study it is perhaps most natural to consider weight effects as important for the outcome, or for the word order in surface structure, rather than the direction of the movement. For convenience's sake, HNPS and PS will be referred to as rightward movement and they will be compared to structures that will be referred to as leftward movement, such as OS and Left Dislocation as well, as will be touched upon in Chapter 4.

1.4. Road map

The chapters of this thesis are laid out as follows: Chapter 2 presents a more thorough introduction to the three syntactic structures described in this chapter, and an overview of the present state of knowledge on the nature of linguistic weight how it potentially affects variation in word order in the two main Insular Scandinavian languages: Icelandic, and Faroese. Chapter 3 explores absolute and relative weight effects in HNPS in modern Icelandic based on **acceptability** surveys conducted in 2017 and 2020. This chapter also investigates the potential effects of prosody as a weight predictor. The chapter then addresses the question of length vs complexity in three syntactic structures in Icelandic, HNPS, OS and PS, based on the results of a series of acceptability studies conducted in 2020 and 2021. Chapter 4 explores weight effects and variation in word order in three syntactic structures in Icelandic, HNPS, OS and PS, in language production, presenting results from a language **production** experiment and an extensive corpus study. Chapter 5 describes a study of the three syntactic structures, HNPS, OS and PS, and selected weight factors in Faroese, based on data from acceptability surveys and production experiments. Chapter 6 presents a summary of the results, described in previous chapters, the implications of this study and concluding remarks.

2. Weight effects and word order

As briefly described in the preceding chapter, the goal of this study is to compare various definitions of heaviness based on evidence from three syntactic structures, HNPS, OS and PS, that exist in Icelandic and Faroese. This chapter presents an overview of the current state of knowledge of definitions of weight and the three weight-sensitive structures.

2.1. Definitions of heaviness

Various proposals have been made about the notion of heaviness and nature of linguistic weight. Linguists have suggested various ways to explain what weight is and disagree on which weight factors are most important, e.g., the number of words or syllables, syntactic complexity, or information structure. This section takes a closer look at these proposals and the difference and similarities between them.

2.1.1. *Length and complexity*

Linguistic weight, particularly in the context of HNPS, has received extensive attention in linguistic literature and the nature of weight has long been disputed. Quirk et al. (1972:1395) described a Heavy NP as “a long and complex phrase” that may possibly occur at the end of certain clause types, that do not involve an *it*-substitution, like in (2.1).

- (2.1) a. They pronounced [guilty] [every one of the accused].
b. He had called [an idiot] [the man on whose judgment he now had to rely].

Some of the literature considers complexity the main definition of heaviness, rather than length, or the number of words an NP consists of (Chomsky 1955/1975, Ross 1967, Kimball 1973), as will be discussed later in this section. It has been questioned whether complexity is really distinguishable from length. In order for an NP to be considered complex it usually needs to contain many words (see Hawkins 1994, Wasow & Arnold 2005) but the question of length vs complexity is debated in the literature, as will be addressed more fully in this section.

If the number of words is important to NP-weight, it is not unreasonable to assume that the number of syllables an NP contains is also important. McDonald et al. (1993) studied this potential effect on HNPS in English and reported that word-internal length does not have any effect. They suggested that information about word length is not available during utterance planning (see also Bock & Levelt 1994 and Stallings et al. 1998). While this is an interesting finding, it does not exclude the possibility

that word length may affect the way speakers process and evaluate sentences of this type when they read them or hear them. That raises the question of whether acceptability surveys and production experiments show the same outcome for weight effects, which is one of the main research questions of this study.

Chomsky (1955/1975) and Ross (1967:51–56) suggested that the syntactic complexity of the NP is more important than the sheer length of the shifted NP. Ross (1967:51–56) referred to HNPS as “Complex NP Shift”, describing it as a rule that allows complex NPs to move to the end of a sentence, as in (2.2c) (see also Kimball 1973:26-27 and Quirk et al. 1972). Ross described sentence (2.2b) as ungrammatical and attributed its ungrammaticality to the lack of the NP’s [the fire] complexity.

- (2.2) a. He attributed [the fire] [to a short circuit].
b. *He attributed [to a short circuit] [the fire].
c. He attributed [to a short circuit] [the fire which destroyed most of my factory].

Ross used the same definition as Chomsky (1955/1975) who, when explaining the position of objects in particle constructions, in examples (2.3a-d), argued that it is “apparently not the length in words of the object that determines the naturalness of the transformation, but, rather, in some sense, its complexity.” (Chomsky 1975:477)

- (2.3) a. They brought in [all the leaders of the riot].
b. They brought [all the leaders of the riot] in.
c. They brought in [the man I saw].
d. ?They brought [the man I saw] in.

Chomsky suggested that the sentence in example (2.3b) was somehow more “natural” than the sentence in (2.3d) on the basis that the NP [the man I saw], although shorter than [all the leaders of the riot] is more complex. Both Ross and Chomsky used the notion of “complexity” without offering any definition of how this complexity is measured, e.g., whether the NP needs to include a subordinate clause to be considered complex. Another issue, as Wasow & Arnold (2005) thoroughly discussed and criticised, is that when Chomsky and others deemed a sentence such as (2.2b) as ungrammatical, they based this judgment solely on their own intuition, which they expect their readers and other native speakers to share with them. The issue with this approach is that it assumes that all speakers have the same language intuition and perceive the grammar of their language in the same way. Studies on variation in grammar have shown that this is not always true: the grammars of different speakers

vary and what one speaker finds perfectly acceptable, another speaker may find completely unacceptable (e.g., Thráinsson et al. (eds.) 2013, 2015 and references cited there).

If the shifted NP in the example Ross uses in (2.2c) is “more complex” than the shifted NP in (2.2b) because it contains a subordinate clause, it is still by no means obvious from this example that complexity is the appropriate measure of heaviness, as the shifted NP in (2.2c) is also considerably longer than the movable NP in (2.2a,b). If the sentence in example (2.2c) is better than the one in (2.2b), then it is impossible to determine whether that is because the shifted NP is long or complex, or for any other reason. A better way to demonstrate that one factor is more important than the other is by comparing NPs of equal length but of different complexity. Wasow & Arnold (2005) conducted a corpus study on verb-particle constructions and Dative Alternation (*The girl gave milk to the cat* vs *The girl gave the cat milk*) in English. They found that although all complex direct object NPs occurred after the particle in the verb-particle construction, the behaviour of the complex NPs was still predictable by length alone. They found that almost all NPs longer than four words were found following the particle and that almost no NPs shorter than five words are complex.

2.1.2. Phonological weight

Zec & Inkelas (1990:376–377) proposed a syntax-prosodic account and argued that HNPS was for the benefit of prosodic structure and that in order for an NP to be dislocated it needs to consist of at least two “phonological phrases” as shown in (2.4b). Their suggestion was that the heavy NP shifts because it creates a better prosodic structure than leaving the NP in situ. According to their definition the example in (2.4a) is unacceptable because the relevant NP forms only one phonological phrase (marked with brackets and ϕ) and not an intonational phrase.

- (2.4) a. *Mark showed to John [(some letters) ϕ] ϕ .
 b. Mark showed to John [[[some letters) ϕ] ϕ [(from Paris) ϕ] ϕ]]_{IP}.

The NP in (2.4b) may consist of two phonological phrases but obviously it also consists of four words. Although Zec & Inkelas describe HNPS as being prosodically conditioned, their analysis is still focused on the length of the NP and a minimal number of elements that it includes (other accounts of phonological approaches to object placement and end-weight includes Anttila et al. 2010, Benor & Levy 2006, McDonald et al. 1993, Selkirk 1984, Ryan 2019). This is the same issue as with Chomsky’s and Ross’s examples: they propose a certain factor as the measure of heaviness but fail to clearly distinguish one factor from another.

Phonological weight is not one of the major weight predictors that was included in this study from the beginning but, as a result of an unexpected outcome from one of the HNPS pilot studies, so-called “prosodic heaviness” was included as a factor for a certain type of HNPS structure throughout the study, as will be described in detail in Chapters 3–5. This will be readdressed in the research questions, which will be laid out later in this chapter.

2.1.3. *Old and new: The role of information structure*

While there is some evidence that discourse factors, like old vs new information, influence object position in particle constructions (cf. Svenonius 1996a,b, see also Thráinsson 2007:144), it has also been argued that this cannot be the whole story (Ingason 2011, 2015). Taylor & Pintzuk (2012a,b) have studied the influence of weight and information structure on object position in Old English.¹¹ Their results showed that while object position is predominantly dependent on discourse/performance factors in VAux clauses, where the main verb precedes the auxiliary verb (2.5), in AuxV clauses, where the auxiliary verb precedes the main verb (2.6), object position is partly dependent on discourse factors and partly fixed syntactically (Taylor & Pintzuk 2012a:32).

(2.5) ac þæt halige godspell hæfð oferswiðod
 but the holy gospel has surpassed
 [swylcera gedwolena andgit] [foroft]
 [such heretics understanding] [very-often]
 ‘but the holy gospel has very often surpassed the understanding of such heretics.’
 (coalive,+ALS_[Christmas]:7.7)

(2.6) þeah ðe heo secgan cunne [sum ðincg] [þurh deofol]
 although she tell may-be-able-to [some thing] [through devil]
 ‘although she may be able to tell something through the devil.’
 (coalive,+ALS_[Auguries]:124.3586)

They argued that there need to be two ways to derive postverbal objects, one which involves discourse/performance factors and one which does not, and that these two derivations are associated with verb order, and that although information structure may affect object position, weight effects have a separate effect that should be studied independently (Taylor & Pintzuk 2012a:47). The conclusion is that it is not necessarily just one factor or the other that affects object position; each factor may affect word order independently, as other studies have also found.

¹¹ See also Arnold et al. 2000.

2.1.4. Graded measures

Based on a corpus analysis of HNPS in English, Wasow (1997:102) concluded that no single definition of weight in the literature covers all cases of HNPS. He found that graded measures of weight, e.g., counting words or syntactic nodes, are a more successful way to account for constituent ordering than categorical measures (which he refers to as “all or nothing” measures, e.g., only accounting for the number of phonological phrases (see Wasow 1997:85)). He suggested that none of the graded measuring units (words, nodes etc.) is better than the other at predicting weight effects, i.e., they all work equally well. Szmrecsányi (2004) came to a similar conclusion comparing three measures, word count, node count and an index of syntactic complexity: that all these weight predictors and the potential interaction between them is important (see also Bresnan et al. 2007).

Ingason (2011, 2015:247–252) studied the effects of weight on relative clause extraposition where he argued that syntactic complexity and the informational content of a relative clause cannot be the only measure of heaviness, using the following examples:

- (2.7) a. People [who sing about the paradise city
 where the grass is green and the girls are pretty] are cool.
 b. People are cool [who sing about the paradise city
 where the grass is green and the girls are pretty].
- (2.8) a. People [who sing lalalalalalalalala] are cool.
 b. People are cool [who sing lalalalalalalalala].

Ingason considered (2.7b) and (2.8b) equally good and argued that a syntactic complexity measure would incorrectly predict that the relative clause in example (2.8) is light as it only contains two clause-internal words (although of course it could be argued that the word ‘lalalalalalalalala’ may be divided into several smaller words, like ‘lala lala lala lala la’), as opposed to the relative clause in example (2.7) which is syntactically complex, since it contains an embedded clause. This effect also extends to NPs that consist of only one long word. An NP that consists of one very long word, e.g., ‘supercalifragilisticexpialidocious’ or ‘lalalalalalalalala’ behaves in the same way as any other heavy constituent in regard to word order. Ingason suggested that the weight of the clause in example (2.8) would be easier to explain if measured by prosodic complexity (the number of lexical stresses it contains) and maintained that although heaviness makes Extraposition more likely, it should not be measured by binary variables such as fixed length or new vs old information (see also Ingason & MacKenzie 2011).

Grafmiller & Shih (2011) studied the effects of various weight measures on constituent ordering in Genitive (2.9) and Dative (2.10) construction alternations in spoken American English.

- (2.9) a. The car's wheel.
 b. The wheel of the car.

- (2.10) a. Give the dog the bone.
 b. Give the bone to the dog.

They studied five measures of weight as predictors for word order alternations in constructions of this kind: the number of syntactic nodes, words, lexical stresses, syllables, and discourse-new referents in the constituents of genitive and dative constructions. They found that for both constructions, syntactic node count was a highly predictive weight measure. The other weight measures, however, proved to be unequally reliable predictors across the two constructions. For the Genitive construction, they found primary stresses to be a reliable predictor, while counting words and discourse-new referents was more reliable for the Dative constructions. They suggested that each of the measures they tested makes a distinct contribution to the choice of each construction, concluding that weight effects in general cannot be reduced to a single measure (see also Shih 2016 and Shih et al. 2015).

2.1.5. Relative weight

A number of researchers have suggested that for HNPS it is not only the length of the NP that is important, but also the length of the string of words that the NP shifts over. Based on the results from a small text corpus analysis, Hawkins (1994) suggested that NPs rarely shift across a PP unless they exceed the PP in length by at least four words. Wasow (1997) and Wasow & Arnold (2005) reported similar results from corpus analyses and acceptability tests. Stallings & MacDonald (2011) performed production experiments with HNPS and found that speakers were much more likely to shift the NP if it exceeded the PP in length by at least five words, like in examples (2.11a) and (2.11b), than when the length difference between them was smaller (2.11c) or none at all (2.11d).

- (2.11) a. The radio listeners accepted [without doubt]
 [the whole story about the defects in the new Mazda].

 b. The radio listeners accepted [without any doubt or concern]
 [the whole story about the defects in the new Mazda].

- c. The radio listeners accepted [without doubt or any bit of concern]
[the whole story about the defects in the new Mazda].
- d. The radio listeners accepted [without doubt or any bit of concern]
[the whole story on the recent defects].

They found that as the difference between the length of the NP and the PP increased, shifting rates also increased and that when there was no difference between the two, shifting almost never occurred.¹²

2.1.6. Lightness

Nomi Erteschik-Shir (2007:150–151) has argued that objects undergoing Object Shift tend to be relatively “light”. For that reason, most speakers would not have a problem accepting sentence (2.12b), where the NP [bókina] immediately follows the verb, rather than the negational adverb *ekki*. In (2.13b) the NP is much heavier, and the outcome is questionable.

- (2.12) a. Jón las [ekki] [bókina].
Jon read [not] [book.DET]
‘Jon did not read the book.’
- b. Jón las [bókina] [ekki].
Jon read [book.DET] [not]
‘Jon did not read the book.’
- (2.13) a. Ég sá [ekki] [ráðherrann sem allir eru að kvarta yfir]
I saw [not] [minister.DET that all are to complain over]
‘I did not see the minister that everyone is complaining about.’
- b. ??Ég sá [ráðherrann sem allir eru að kvarta yfir] [ekki]
I saw [minister.DET that all are to complain over] [not]
‘I did not see the minister that everyone is complaining about.’

What remains to be investigated is whether the heaviness of the adverbial string the NP shifts over plays a role, e.g., if more adverbs are added to the adverbial string, like in (2.14b).

¹² See Indriðadóttir (2017) and Indriðadóttir & Jónsson (2016) for discussion on relative weight effects in Icelandic and Faroese.

- (2.14) a. Jón las [alveg áreiðanlega ekki] [bókina].
 Jon read [most certainly not] [book.DET]
 ‘Jon did most certainly not read the book.’
- b. Jón las [bókina] [alveg áreiðanlega ekki].
 Jon read [book.DET] [most certainly not]
 ‘Jon did most certainly not read the book.’

If relative weight plays a role in HNPS structures, in the way the studies mentioned above suggest, it is not unreasonable to think that it might play a role in OS structures as well, i.e., that light objects might shift more easily when the adverbial string is heavy, like in (2.14b), and that shifted heavier objects might also be less awkward when they are followed by a longer adverbial string.

The overview provided in this section has shown that various suggestions have been made as to how to define weight effects. Many have come to the same conclusion, that weight effects cannot be reduced to a single measure and that more than one weight predictor, and the potential interaction between various weight predictors, can be important in each situation. This provides reason for an empirical study which compares several weight predictors and different syntactic structures, which is one of the main objectives of this study.

2.2. Variation in word order in Insular Scandinavian

Icelandic and Faroese have often been paired together as Insular Scandinavian languages (ISc) against the Mainland Scandinavian languages (MSc), Danish, Norwegian and Swedish. The insular languages are generally considered to be different from the Mainland Scandinavian languages, while quite similar to each other in regard to syntax and morphology (Holmberg & Platzack 1995). This section provides a brief overview of the syntactic structures that will be the focus of this thesis and what linguists have said about them in Icelandic and Faroese.

2.2.1. *Heavy NP Shift*

There has been some debate about the nature and even the very existence of the constructions under investigation in Scandinavian. Holmberg & Platzack (1995) described variation between Mainland Scandinavian languages (MSc), Danish, Norwegian and Swedish, and Insular Scandinavian languages (ISc), Icelandic and Faroese. They proposed that in ISc it is possible to shift subjects with HNPS, whereas it is not possible in MSc due to the lack of morphological case in MSc, according to Holmberg and Platzack (1995). It is generally considered in the literature that Icelandic allows HNPS in sentences with subject NPs and direct object NPs (Rögnvaldsson 1982:78–79, Thráinsson

2007:361–8), as demonstrated in (2.15) and (2.16). Example (2.15a) shows a long direct object NP in situ, following the verb and preceding a PP. The same long NP is shown at the end of the clause in (2.15b) and the outcome is good.

- (2.15) a. Ég bakaði [brauð með ólífum og sólþurrkuðum tómötum] [í gær].
 I baked [bread with olives and sundried tomatoes] [yesterday]
 ‘I baked bread with olives and sundried tomatoes yesterday.’
- b. Ég bakaði [í gær] [brauð með ólífum og sólþurrkuðum tómötum].
 I baked [yesterday] [bread with olives and sundried tomatoes]
 ‘I baked bread with olives and sundried tomatoes yesterday.’

Sentence (2.16a) shows a heavy subject NP at the beginning of a clause, followed by the main verb then a PP and at the end of the clause is a temporal AdvP ‘annually’. In (2.16b) the AdvP has been topicalised to the front of the clause and the subject still precedes the PP, which is at the end of the clause. In (2.16c) the subject has been moved to the end of the clause, over the PP.

- (2.16) a. [Mörghundruð erlendir hlauparar] hlaupa
 [Several.hundred foreign runners] run
 [í Reykjavíkumaraþoninu] [árlega].
 [in Reykjavik.marathon.DET] [annually]
 ‘Several hundred foreign runners run in the Reykjavik marathon every year.’
- b. [Árlega] hlaupa [mörghundruð erlendir hlauparar]
 [Annually] run [several.hundred foreign runners]
 [í Reykjavíkumaraþoninu].
 [in Reykjavikmarathon.DET]
 ‘Every year several hundred foreign runners run in the Reykjavik marathon.’
- c. [Árlega] hlaupa [í Reykjavíkumaraþoninu]
 [Annually] run [in Reykjavikmarathon.DET]
 [mörghundruð erlendir hlauparar].
 [several.hundred foreign runners]
 ‘Every year several hundred foreign runners run in the Reykjavik marathon.’

Eiríkur Rögnvaldsson (1982) demonstrated that HNPS works just as well for subjects and direct objects in Icelandic, unlike what had usually been considered for English. He referred to the debate between Postal (1974:83) who maintained that subjects cannot undergo HNPS in English and Bresnan (1976:486–87), who argued against him, using, amongst others, the following examples:

- (2.17) a. [An entire army of ants] climbed over my windowsill every day.
 b. Over my windowsill climbed [an entire army of ants] every day.
 c. Over my windowsill climbed every day [an entire army of ants].

Postal (1977:141–152) contended that some of the examples Bresnan used involved a *there*-insertion (and subsequently a *there*-deletion) which would mean that the NP is not a real subject and used the following examples to argue against the shiftability of subjects in English:

- (2.18) a. [All of the men who recovered from mononucleosis] are happy.
 b *__ Are happy [all of the men who recovered from mononucleosis].

Rögnvaldsson (1982:78–79) argued that the real reason why (2.18b) does not work very well is not because the subject is questionable but that the verb can usually not appear at the beginning of the clause, and used the following examples to demonstrate that sentences of this type can be amended in many ways and that subjects can undergo HNPS in Icelandic, as long as they fulfil certain requirements. (2.19a) shows a heavy subject NP at the beginning of the clause and (2.19b) shows a comparable example to the one Postal used in (2.18b), where the verb appears at the beginning of the clause (Rögnvaldsson 1982:79¹³). Example (2.19b) is bad, just like (2.18b) whereas (2.19c) has been amended by inserting *það* (e. ‘there’) before the verb and in (2.18d) the small word *þá* (e. ‘then’) has been inserted after the verb, making the sentence more acceptable.¹⁴

- (2.19) a. [Strákurinn sem barnaði Maríu í fyrra] er flúinn.
 [boy.DET who impregnated Maria in last-year] is escaped
 ‘The boy who impregnated Maria last year has run away.’
 b. *__ Er flúinn [strákurinn sem barnaði Maríu í fyrra].
 is escaped [boy.DET who impregnated Maria in last-year]
 ‘The boy who impregnated Maria last year has run away.’
 c. Það er flúinn [strákurinn sem barnaði Maríu í fyrra].
 there is escaped [boy.DET who impregnated Maria in last-year]
 ‘The boy who impregnated Maria last year has run away.’
 d. Er þá flúinn [strákurinn sem barnaði Maríu í fyrra].
 is then escaped [boy.DET who impregnated Maria in last-year]
 ‘The boy who impregnated Maria last year has run away then.’

¹³ Rögnvaldsson’s judgment.

¹⁴ This sentence structure only works if it has been preceded by some context, as noted in the same reference (Rögnvaldsson 1982:12–19).

Rögnvaldson's conclusion was that there is no reason to doubt that subjects can undergo HNPS in Icelandic (and English as well), and it will be assumed in this study that this is true. It is possible however that the grammatical role of the NP can have some effect on its shiftability in HNPS, as there appear to be some limitations on when subjects can shift and that might affect the way speakers evaluate sentences with HNPS word order and perhaps how frequently they are produced.¹⁵ This will be factored into the experiments described in the next few chapters.

2.2.2. Heavy NP Shift in Faroese

While the Insular Scandinavian languages are considered to be very similar in many syntactic aspects, it is not clear whether the same conditions apply to HNPS in Faroese and in Icelandic.¹⁶ Vikner (1995:201) maintained that HNPS cannot work in sentences with subject NPs in Faroese (see also Barnes 1992:26–27), based on the following example:

- (2.20) *at tað hevur etið [hetta súreplið] [onkur drongur frá Danmark].
 that there has eaten [this apple] [some boy from Denmark]
 '...that there has eaten this apple some boy from Denmark.'

This one sentence can hardly demonstrate anything about HNPS in Faroese because the sentence might be considered unacceptable for other reasons. This sentence has both a transitive expletive and a direct object and the literature agrees that sentences with this structure are rarely accepted by speakers (see Thráinsson et al. 2012:240–241). Thráinsson et al. (2012:240–241) found that in order for most Faroese speakers to accept sentences with subjects at the rightmost end of the clause, the subject must be “very heavy”, as they demonstrated in (2.21b) (Thráinsson et al. 2012:240):

- (2.21) a. Í fjør komu [nakrir málfrøðingar úr Íslandi] [til Havnar].
 In last-year came [some linguists from Iceland] [to Torshavn]
 'Last year came some linguists from Iceland to Torshavn.'
- b. Í fjør komu [til Havnar] [nakrir málfrøðingar úr Íslandi].
 In last-year came [to Torshavn] [some linguists from Iceland]
 'Last year came to Torshavn some linguists from Iceland.'

¹⁵ See Indriðadóttir (2017) and Indriðadóttir & Jónsson (2016) on heavy subjects and direct objects in Icelandic and Faroese.

¹⁶ See also Angantýsson (2011) on similarities and differences in Icelandic and Faroese syntax.

Thráinsson et al. did not offer an explanation of what makes an NP heavy or even “very heavy”, although presumably they were referring to the number of words the NP contains but suggested that HNPS with shifted subjects is more restricted in Faroese than in Icelandic. There seems to be enough reason to question whether shifted subjects are accepted and/or produced in Faroese, which would present a potential difference in the way HNPS is manifested in these two closely related languages. For this reason, grammatical roles, i.e., subject vs direct object, will be included as factors in the experiments described in the next few chapters.¹⁷ If HNPS is not the same in Icelandic and Faroese, it is logical to consider whether the same applies to other comparable structures. If direct objects can undergo HNPS in both languages, it is interesting to see if heaviness affects the position of objects in a sentence in these two languages in general, e.g., in Object Shift and Particle shift, not only in the HNPS word order.

2.2.3. *Object Shift*

In Icelandic, as demonstrated in example (2.22), a verbal object can either follow (2.22a) or precede (2.22b) a clause-medial adverb, including negation such as *ekki* ‘not’ or *aldrei* ‘never’.

- (2.22) a. Nemandinn las [ekki] [bækurnar].
 student.DET read [not] [article.DET]
 ‘The student did not read the books.’
- b. Nemandinn las [bækurnar] [ekki]
 student.DET read [article.DET] [not]
 ‘The student did not read the books.’

When the object precedes the adverb, like in (2.22b), it is said that it has undergone Object Shift (OS) (see Holmberg 1986 and much later work). Holmberg first described Icelandic Object Shift within the generative framework in 1986. He observed that an object can only move with OS across clause-medial adverbs when the verb is finite, like in (2.22), or when it arguably moves out of VP. If the verb does not move, like in (2.23), the object can only remain in situ.

¹⁷ It is worth mentioning that indirect objects can also undergo HNPS in Icelandic but this structure is more restricted and less common than HNPS with subjects and direct objects (see Jónsson 2020 and also Rögnvaldsson 1982:133–135, Zaenen, Maling & Thráinsson 1985, Holmberg 1991, Holmberg & Platzack 1995:185–214, Ottósson 1991, 1993, Collins & Thráinsson 1996, Dehé 2004, and Ussery 2017, 2018). It was decided to leave indirect objects and HNPS in Icelandic and Faroese for future research.

(2.23) a. Nemandinn hefur [ekki] lesið [bækurnar].
 student.DET has [not] read [books.DET]
 ‘The student has not read the books.’

b. *Nemandinn hefur [bækurnar] [ekki] lesið.
 student.DET has [books.DET] [not] read
 ‘The student has not read the books.’

The sentence in (2.22b) is an example of Full NP Object Shift (NPOS) which is only known to exist in Icelandic and arguably in Faroese (see Thráinsson 2013 and 2001) as further discussed in Section 2.2.4. As indicated by the term, Full NP Object Shift affects full NPs, unlike Pronominal Object Shift (Pronominal OS) which only affects pronouns, as shown in (2.24).

(2.24) a. *Nemandinn las [ekki] [þær].
 Student.DET read [not] [them]
 ‘The student did not read them.’

b. Nemandinn las [þær] [ekki].
 Student.DET read [them] [not]
 ‘The student did not read them.’

NPOS has been described as optional movement in Icelandic (see e.g., Holmberg 1986, Jónsson 1996, Vikner 2005), whereas unstressed pronouns obligatorily undergo OS, as illustrated in (2.24). Stressed pronouns may appear on either side of the clause-medial adverbs, as shown in (2.25) and (2.26).

(2.25) a. Nemandinn las [ekki] [ÞÆR] (en hann las ýmislegt annað).
 b. Nemandinn las [ÞÆR] [ekki] (en hann las ýmislegt annað).
 Student.DET read not them/them not (but they read many other things)
 ‘The student did not read them (but they read many other things).’

(2.26) a. Ég þekki [ekki] [HANN] (en ég þekki systur hans).
 b. Ég þekki [HANN] [ekki] (en ég þekki systur hans).
 I know not him/him not (but I know his sister)
 ‘I do not know him (but I know his sister).’

Pronominal OS exists in all the Scandinavian languages, although it is not obligatory in all of them, e.g., in Swedish, where it is optional (signified by %), as shown in (2.27) (Thráinsson 2001:150). Some Scandinavian dialects appear to have no OS at all (see Thráinsson 2013 and references there).

- (2.27) a. Studenten læste [dem] [ikke]. (Da)
 b. *Studenten læste ikke [dem].
 c. Næmingurinn las [tær] [ikki]. (Fa)
 d. *Næmingurinn las [ikki] [tær].
 e. %Studenten läste [dem] [inte]. (Sw)
 f. %Studenten läste [inte] [dem].
 Student.DET read them not/not them
 ‘The student did not read them.’

It has been generally assumed in the literature that Modern Icelandic is the only Scandinavian language that allows full NPOS, as demonstrated in (2.28) (Thráinsson 2001:150). Thráinsson (2013) challenged that view and maintained that Faroese also allows the structure, although within much stricter conditions, as will be further discussed below.

- (2.28) a. Studenten læste [ikke] [bøgerne]. (Da)
 b. *Studenten læste [bøgerne] [ikke].
 c. Næmingurinn las [ikki] [bøkurnar]. (Fa)
 d. ??Næmingurinn las [bøkurnar] [ikki].
 e. Studenten läste [inte] [böckerna]. (Sw)
 f. *Studenten läste [böckerna] [inte].

Icelandic is also the only Scandinavian language that allows stressed, modified, and conjoined pronouns to undergo OS (Thráinsson 2001:150, Holmberg & Platzack 1995:162):

- (2.29) a. Hún sá [mig]/[MIG]/[mig og þig]/[þennan á hjólinu] [ekki]. (Ice)
 b. Hun så [meg]/[*MEG]/[*meg og deg]/[*ham på sykkelen] [ikke]. (No)
 she saw me/ME/me and you/him on the bike not
 ‘She did not see me/me and you/him on the bike.’

What can be gathered from this brief overview and is generally agreed upon in the literature is that there are specific rules about the placement of definite pronouns that apply to all Scandinavian languages, with the exception of a few dialects. Pronominal OS in Scandinavian dialects will be discussed further below.

It has been consistently demonstrated in the literature that objects that undergo OS usually present old information in one way or other. As mentioned in Section 2.1.6., it has also been argued that objects that undergo OS tend to be light, as we have seen in previous examples, and that heavy objects typically do not shift (Erteschik-Shir 2007:150–151), as was demonstrated in example (2.13) above

and repeated here as (2.30) (see also Andréasson 2010 and 2013, Erteschik-Shir 2005, Erteschik-Shir and Josefsson 2018, Erteschik-Shir, Josefsson and Köhnlein 2021 and Larsson (to appear)).

- (2.30) a. Ég sá [ekki] [ráðherrann sem allir eru að kvarta yfir].
 I saw [not] [minister.DET that all are complain over]
 ‘I did not see the minister that everybody is complaining about.’
- b. ??Ég sá [ráðherrann sem allir eru að kvarta yfir] [ekki].
 I saw [minister.DET that all are complain over] [not]
 ‘I did not see the minister that everybody is complaining about.’

Judging by these examples it seems reasonable to assume that OS is sensitive to weight effects but there are several factors that need to be considered, e.g., the effects of relative heaviness between the object and sentence adverb, as mentioned in section 2.1.6 (2.31).

- (2.31) a. Ég sá [alveg áreiðanlega ekki]
 I saw [most definitely not]
 [ráðherrann sem allir eru að kvarta yfir].
 [minister.DET that all are complain over]
 ‘I did most definitely not see the minister that everybody is complaining about.’
- b. ?Ég sá [ráðherrann sem allir eru að kvarta yfir]
 I saw [minister.DET that all are complain over]
 [alveg áreiðanlega ekki].
 [most definitely not]
 ‘I did most definitely not see the minister that everybody is complaining about.’

If relative heaviness is a factor for OS, sentence (2.31b) should be, at least, more acceptable to some speakers than sentence (2.30b) as the relative length difference between the stacked adverbial string. i.e., where two adverbs have been stacked upon the main adverbial negation, and the object is now smaller than in (2.30b).

Another factor that needs to be considered is the potential relative weight effects of intervening constituents, e.g., indirect objects. As shown in (2.32b), the indirect object can move on its own, but it is also possible for both objects to undergo OS, as in (2.32c) (Collins & Thráinsson 1996).

- (2.32) a. Églánaði [aldrei] [Maríu] [þessar bækur].
 I lent [never] [Maria] [these books]
 b. Églánaði [Maríu] [aldrei] [þessar bækur].
 I lent [Maria] [never] [these books]
 c. Ég lánaði [Maríu] [þessar bækur] [aldrei].
 I lent [Maria] [these books] [never]
 ‘I never lent these books to Maria.’

It would be very interesting to see if the relative heaviness of the two objects and the negation affects the word order in sentences such as (2.32a–c). The effects of relative weight on double object verbs and OS have never been studied and in fact, the effects of heaviness on NPOS are empirically completely unexplored, but that will be reserved for future research.

As described above, NPOS is a structure that is not found in the Mainland Scandinavian languages but exists in Modern Icelandic, as opposed to Pronominal OS which is common to most Scandinavian dialects. The literature does not agree on where Faroese falls on this spectrum, as will be discussed in the next section.

2.2.4. NPOS in Faroese

As mentioned above, it has been maintained in the literature that Icelandic is the only modern Scandinavian language that allows OS of full NPs (Holmberg & Platzack 1995:168–171, Thráinsson 2007:66–72). This is also a matter of debate. In his article from 2013, Thráinsson demonstrated that full NPOS is also acceptable by some Faroese speakers, but it appears to be more restricted than in modern Icelandic, particularly by context and by the complexity of the structure. He found that sentences with ‘Complex Object Shift’, as exemplified by Holmberg (1986:222–223) in example (2.33), were more generally accepted by Faroese speakers than sentences with ‘simple Object Shift’.

- (2.33) Þeir telja allir [hann/Harald vera heimskan].
 They consider all [him/Harald be.INF stupid]
 ‘They all consider him/Harald to be stupid.’

In sentence (2.33) the personal pronoun *hann* and the proper name *Harald* are the subject argument of the infinitive clause, but the accusative case is distributed by the verb *telja* in the matrix clause, which makes them similar to objects. Holmberg (1986:222–223) argued that NPs of this kind can undergo a kind of OS or Complex OS (in this case, across the matrix quantifier *allir*) and that similarly to regular OS, it is optional with full NPs, like in (2.34b) but obligatory with unstressed pronouns (2.35).

- (2.34) a. Þeir telja allir [Harald vera heimskan].
 They consider all [Harald be.INF stupid]
 ‘They all consider Harald to be stupid.’
- b. Þeir telja Harald allir [___ vera heimskan].
 They consider Harald all [be.INF stupid]
 ‘They all consider Harald to be stupid.’
- (2.35) a. ??Þeir telja allir [hann vera heimskan].
 They consider all [him be.INF stupid]
 ‘They all consider him to be stupid.’
- b. Þeir telja hann allir [___ vera heimskan].
 They consider him all [be.INF stupid]
 ‘They all consider him to be stupid.’

Thráinsson (2013) found that Faroese speakers very rarely accepted sentences with NPOS, where the object had not been presented in previous context, like in (2.36) (Thráinsson 2013:156), but considerably more frequently agreed to sentences such as (2.37) (Thráinsson 2013:174), with Complex OS, where the object is presupposed from previous context.

- (2.36) */??Jens hjálpti [Zakaris] [aldri].
 Jens helped [Zakaris] [never]
 ‘Jens never helped Zakaris.’
- (2.37) Tóra sigur, at hon leggur dent á javnstøðu,
 Tora says that she puts emphasis on equality
 ‘Tora says that she emphasises equality,
 men hon letur [sonin] altíð [_vaska upp],
 but she makes [son.DEF] always [wash.INF up]
 ongantíð dóttрина.
 never daughter.DEF
 but she always makes the son wash up, never the daughter.’

Thráinsson concluded that full NPOS is an exceptional option for Faroese speakers, although it is not an integral part of their grammar, whereas it is for Icelandic speakers. While it is unlikely that simple NPOS sentences are as freely accepted or produced by Faroese speakers as they are by Icelandic speakers, it is still interesting to make the comparison with a more extensive empirical study than has been done before, and to explore whether weight effects apply to this structure in any way in Icelandic

and/or Faroese, as this has never been investigated before. It is not unreasonable to think that other syntactic structures that these languages have in common might also differ between them in some respects. In any case, that is a question worth investigating.

We have now seen two constructions that arguably exist in both Icelandic and Faroese but differ between the two languages. The third main construction that will be focused on, Particle Shift (PS) has not been compared particularly between these two languages before, but it is generally considered to be similar in various languages, such as Icelandic vs English and the MSc languages. It is also interesting in this context as it shares certain similarities with both HNPS and OS, as will be discussed in the next section.

2.2.5. Particle Shift

Particle Shift is, in many ways, similar to Object Shift, which is shown in (2.38) for comparison, in regard to the distribution of verbal complements. A full NP object in PS may either precede or follow the particle, but an unstressed pronominal object can only precede it, as shown in (2.39) (Rögnvaldsson 1982).

- (2.38) a. Pétur las [ekki] [bókina]
 Peter read [not] [book.DET]
 ‘Peter did not read the book.’
- b. Pétur las [bókina] [ekki]
 Peter read [book.DET] [not]
 ‘Peter did not read the book.’
- c. *Pétur las [ekki] [hana].
 Peter read [not] [her]
 ‘Peter did not read it.’
- d. Pétur las [hana] [ekki].
 Peter read [her] [not]
 ‘Peter did not read it.’

As examples (2.38a–b) show, the direct object [bókina] can appear before or after the negation whereas the unstressed personal pronoun object [hana] can only appear before the negation, as shown in examples (2.38c–d). The same pattern applies for object placement in the particle construction as shown in examples (2.39). The full NP [pakkað] can precede or follow the

particle, as shown in (2.39a–b) but the unstressed pronominal object [hann] cannot follow the particle like in (2.39c), it is only natural when it precedes the particle, like in (2.39d).

- (2.39) a. Pétur tók [upp] [pakkann].
 Peter took [up] [parcel.DET]
 ‘Peter picked up the parcel.’¹⁸
- b. Pétur tók [pakkann] [upp].
 Peter took [parcel.DET] [up]
 ‘Peter picked the parcel up.’
- c. *Pétur tók [upp] [hann].
 Peter took [up] [him]
 ‘Peter picked it up.’
- d. Pétur tók [hann] [upp].
 Peter took [him] [up]
 ‘Peter picked it up.’

While HNPS is considered by most to be a form of rightward movement (although alternative analyses have been proposed, e.g., by Larson 1988, Rochemont & Culicover 1997, Kayne 1998, Mimura 2009 and see also Overfelt 2015 and Wallenberg 2015) and Object Shift is generally considered to be leftward movement, there is debate as to how to classify PS, as it is not as clear whether the NP’s original position is following the verb or the particle, at the end of the clause.

Johnson (1991) considered the similarities of OS and PS an indication of OS existing in English. Collins and Thráinsson (1996:430) observed (see also Thráinsson 2007:96–98) that OS only occurs if the main verb moves out of vP, which does not apply to PS as shown in (2.40).

- (2.40) a. Pétur hefur [ekki] lesið [bókina].
 Peter has [not] read [book.DET]
 ‘Peter has not read the book.’
- b. *Pétur hefur lesið [bókina] [ekki].
 Peter has read [book.DET] [not]
 ‘Peter has not read the book.’

¹⁸ It is worth noting that the verb + particle construction *taka upp* is ambiguous in Icelandic so the sentence in (2.39) can also mean “Peter opened the parcel”. There are several other verb+particle constructions like this in Icelandic and there is nothing that suggests that the different meanings affect the placement of the object, so that was not considered as a factor in this study.

- c. Pétur hefur tekið [upp] [pakkann].
 Peter has taken [up] [parcel.DET]
 ‘Peter has picked up the parcel.’
- d. Pétur hefur tekið [pakkann] [upp].
 Peter has taken [parcel.DET] [up]
 ‘Peter has picked the parcel up’

This suggests that, although similar, PS and OS are not quite the same. Ross (1967:47–51) compares PS to HNPS as he considers it to be sensitive to heaviness. Ross assumes that the original position of the NP is following the particle, like in (2.39a), and that the particle can move to the right with so-called “Particle Movement”, while according to other accounts, it is the object that moves and not the particle (see Thráinsson 2007:141 and also Svenonius 1994, 1996a,b and Johnson, 1991 for alternative analyses). Ross describes this movement as optional, except for when the NP is a pronoun, in which case Particle Movement is obligatory (as shown in 2.39c–d) and when the NP is heavy, Particle Movement is not possible. Interestingly, Ross uses examples from Chomsky (see Ross’s citation pp. 48–49) of what the latter considers to be a possible and impossible form of Particle Movement, shown in (2.41).

- (2.41) a. I called [almost all of the men from Boston] [up].
 b. *I called [the man you met] [up].

Ross says that Chomsky and himself share the intuition that (2.41a) is acceptable because the NP is only long, but not complex, whereas the complex NP in (2.41b) is unacceptable in this position. This is similar to Ross’s and Chomsky’s description of “Complex NP Shift”, which was described in Section 2.2.1. of this chapter. Ross proceeds to acknowledge that there are some speakers that may find (2.41b) perfectly acceptable and even better than (2.41a) (see also Gries 1999, 2002 and 2003 and Dehé 2002, 2004 and 2005 for overview of alternation in particle verb structure in English and the Germanic languages).¹⁹

Thráinsson (1979:28–29) argued that heaviness also affects PS in Icelandic, using the following examples:

¹⁹ Ross then goes on to define what he believes makes an NP heavy or complex, which will not be discussed in further detail here (see Ross 1967:49–51).

- (2.42) a. Þeir færðu [til] [alla bílana].
 They moved [to] [all cars.DET]
 ‘They moved around all the cars.’
- b. Þeir færðu [alla bílana] [til].
 They moved [all cars.DET] [to]
 ‘They moved all the cars around.’
- (2.43) a. Þeir færðu [til] [alla stóru skápana]
 They moved [to] [all large wardrobes.DET]
 ‘They moved around all the large wardrobes
 sem Jón hafði flutt með sér heim frá Ameríku]
 which Jon had moved with himself home from America]
 which Jon had moved with himself home from America.’
- b. *Þeir færðu [alla stóru skápana]
 They moved [all large wardrobes.DET]
 ‘They moved all the large wardrobes
 sem Jón hafði flutt með sér heim frá Ameríku] [til].
 which Jon had moved with himself home from America] [to]
 which Jon had moved with himself home from America around.’

Whether sentences (2.41b) and (2.43b) are ungrammatical or not is something that not all speakers will agree upon but these examples provide good reason to assume that weight effects, whether they involve the length or the syntactic structure of the NP, may influence the way speakers evaluate and produce sentences with particle constructions, which is the topic of interest for this study.

2.2.6. Particle Shift in Faroese

Like in Icelandic and English, unstressed pronomial objects must precede the particle in Faroese particle constructions, according to Thráinsson et al. (2012:247–248). Full NP objects can either precede or follow the particle, similarly to Icelandic, although definite objects tend to precede it, as shown in example (2.44) from Thráinsson et al. (2012:247):

- (2.44) a. Hann gjørdi [upp] [snørið/*tað].
 He made [up] [fishing.line.DET/it]
 ‘He wound up the fishing line/it.’
- b. Hann gjørdi [snørið/tað] [upp].
 He made [fishing.line.DET/it] [up]
 ‘He wound the fishing line/it up.’

Svenonius (1996b:15–16) maintains that NP positioning in particle constructions is more restricted in Faroese and closer to Danish in this sense, where the NP always precedes the particle and Particle Shift does not occur, although there is more optionality in Faroese than in Danish, which he illustrates in examples (2.45), taken from Sandøy (1976).^{20,21}

- (2.45) a. Teir vinda [ʔopp] [reint flagg] [opp].²²
 they wrang [up] [clean flag] [up]
 ‘They hoisted a white sail.’
- b. Eg gloymdi at siga [ʔfram] [hesi dømini] [fram].
 I forgot to say [forth] [these examples] [forth]
 ‘I forgot to mention these examples.’
- c. Hann mátti skjóta [*frá] [bátin] [frá].
 he must move [from] [boat.DET] [from]
 ‘He had to move the boat around.’

Judging by these examples, it seems that PS is more restricted in Faroese than in Icelandic, but the examples are few and they were originally only evaluated by three informants. It could be that there is more variation between speakers in this sense, which can only be found out by asking a relatively large number of speakers, as will be done in this study. Considering that the conditions of Particle Shift in Faroese are not clear, it is also interesting to see if weight effects apply to this structure.

The three syntactic structures that will be the main focus of this study have now been described for both languages within the context of this study. One more syntactic structure, Left Dislocation (LD) will be included in this chapter and briefly described in the next section. LD became part of the corpus study in the Icelandic Parsed Historical Corpus (IcePaHC) described in Chapter 4 as an attempt to answer the question as to whether heaviness is only associated with the right edge of the clause, as manifested in HNPS and PS, or whether heaviness can also draw constituents to the left edge.

²⁰ Unlike Ross, Svenonius refers to the particle-NP order as Particle Shift. As was discussed in Chapter 1, it is not important for this study whether the NP’s original position is before or after the particle but in the following chapters Particle Shift will be used to refer to sentences where the object immediately follows the particle.

²¹ See also Larsson & Lundquist 2022.

²² Some things must have been lost in the transfer between Sandøy’s original work and Svenonius’s interpretation. In the original example in (2.45a) the particle is [upp], which is the correct form in Faroese, the form [opp] is only in Svenonius’s version. The translations of (2.45a) and (2.45b) are also questionable and should rather be, respectively: ‘They wound up a white flag.’ and ‘He had to push the boat away (from the shore).’ This does not mean that Svenonius’s interpretation of the examples and predictions about word order in Faroese is wrong.

2.2.7. Left Dislocation

Thráinsson (1979:61ff., 2007:357–359) described Left Dislocation (LD) as a construction in Icelandic, where a targeted constituent (*presturinn*) appears on the left edge of the clause and is resumed within the clause by a co-referential pronoun (*hann*), like in (2.46c). In LD the targeted constituent has usually been introduced in the preceding discourse and its discourse function can be described as a reintroduction of a discourse topic or theme. For this reason, the targeted constituent is usually definite (Thráinsson 2007:358):

- (2.46) a. María sá prest í bænum í gær.
Mary saw priest in-town.DET in-yesterday
‘Mary saw a priest downtown yesterday.’
- b. *[Prestur], María sá [hann] í bænum í gær.
[priest] Mary saw [him] in-town.DET in-yesterday
‘A priest, Mary saw him downtown yesterday.’
- c. [Presturinn], María sá [hann] í bænum í gær.
[priest.DET] Mary saw [him] in-town.DET in-yesterday
‘The priest, Mary saw him downtown yesterday.’

The Left-Dislocated constituent is normally in the nominative case but the pronominal copy in situ carries the appropriate case. This construction is characterised by a distinct intonation-break, or ‘comma-intonation’ (Thráinsson 2007:358). Subjects, direct objects, and indirect objects can undergo LD (see Thráinsson 1979:61ff., 2007:357–359 for an extensive description of LD in Icelandic).

Potential weight effects on left dislocation were included in this thesis as an extension from an ongoing study I have been working on with Anton Karl Ingason since 2019 (see Indriðadóttir & Ingason 2019a,b) where we focus on heavy constituents on the left edge in Icelandic sentence structure. For our study, we searched the Icelandic Parsed Historical Corpus (IcePaHC) for Left-Dislocated subjects and direct objects, providing empirical evidence that shows that heaviness draws phrases to both edges of a clause, not just the right edge as is generally assumed in the literature.

Left Dislocation was only included in the corpus study on Icelandic. Currently, there is only one parsed historical corpus for the Faroese language, The Faroese Parsed Historical Corpus (FarPaHC) (Ingason et al. 2012), which consists of 53.000 words in three texts from the 19th and 20th century. The corpus is very small compared to The Icelandic Parsed Historical Corpus, which consists of 1,002,390 words in texts from every century between the 12th and the 21st centuries inclusive. For this reason, no comparable corpus study could be done for Faroese in this

project but that will hopefully change. Further study of potential weight effects on left dislocation in Faroese will be left for future research.

2.3. Discussion

Based on existing research, it seems that weight cannot be measured by a single category, such as the number of syllables, word count or syntactic complexity. It is possible however that the effects of these factors vary, based on the kind of sentence structure they apply to each time. As Wasow (1997:86) pointed out, an NP does not have to be long or complex at all, nor does it have to be new information to be placed at the end of the clause, cf. example (2.47), which is the beginning of a comment made by David Israel, following a lecture on free will.

(2.47) Ignore [completely] [free will].

If word and node count are both important when it comes to long NPs at the end of a clause, the question remains: what if the NP is not long or complex at all? It could be that prosodic factors (syllables and stress) and information structure have a greater effect when it comes to short NPs. In this respect it is also very important to consider the effects of relative weight in a broader concept, i.e., can an NP that consists only of one or two syllables be heavier than the string of words it moves over? If it can, the heaviness of the NP can surely not be measured in words and nodes: other weight factors must be at work, or the positioning of the constituent is determined by something other than heaviness.

The question of whether NPs need to be syntactically complex or just long in order to be considered heavy is difficult to answer as the definitions can overlap one another. A complex NP is always going to include more than one or two words and so it is not obvious how to distinguish length and complexity from one another, as Wasow & Arnold (2005) found. This study will attempt to answer this question by comparing minimal pairs of sentences with shiftable NPs of the same length, half of which include a relative clause and half do not, as described in Chapters 3 and 4. The same difficulties appear when counting the prosodic elements, e.g., number of lexical stresses, within an NP, as noted by Grafmiller & Shih (2011), as there is a high correlation between the number of lexical stresses and word count, which may mask the effects of both weight predictors, although this is of course not always the case (see discussion in section 2.1.4).

Apart from the possibility of the effects of various weight predictors overlapping, the idea of “counting” elements is interesting in itself. Syntax generally does not like to count words, so if weight

is measured by a particular number of elements within a NP, it suggests that weight might not be determined by syntax at all, but rather that the placement of light and heavy constituents is checked in Phonetic Form (PF) from surface structure. If, however, it is the complexity of the constituent and not the number of words or syllables it contains that affects its placement in the sentence, then it is more likely that weight effects operate for parsing and production planning, to ameliorate some processing difficulties of deeply embedded structure. This makes the question of length vs complexity an interesting topic to pursue empirically, as this study does. If either one is truly a ruling factor in weight effects and word order, then surely that will be revealed in an experiment which consults a relatively large number of speakers, or ruled out if it is not.

As discussed in this chapter, linguists have suggested various ways to explain what weight is and disagree on which weight factors are most important, e.g., the number of words, phonological words or syllables or syntactic complexity. As pointed out above, those who have studied weight and its effect on word order have, in most cases, focused on just one language and often on only one syntactic construction, e.g., HNPS or OS. Furthermore, much of what has been said in the literature about weight effects has been based on introspective intuition. However, it is possible that weight factors affect word order in different ways across languages, i.e., in one language the most important weight factor could be the number of words, whereas syntactic complexity might be more important in a different language. This could also apply to different constructions that are potentially sensitive to weight. The most important factor for HNPS is not necessarily the most important weight factor for OS or PS and sometimes the movement may not be because of weight effects at all.

In order to answer some of these questions about weight and improve on the work that already exists, my approach will be the following, as already outlined:

1. I will systematically compare a few definitions of weight, including the number of words and syllables, relative weight, and syntactic complexity, and how they potentially affect the same syntactic constructions (HNPS, PS and OS) in two languages.
2. I will study these selected constructions and the weight factors that potentially affect them in a more detailed way than has been done before: by conducting various kinds of acceptability and production experiments and comparing the results with text examples from corpora studies.

2.4. Research questions and methodology

Although intuition is of course important in this kind of research, it is also very important to study constructions of this kind and the notion of weight by consulting a large number of speakers and conducting various kinds of experiments, focusing on speakers' judgment and production. By doing so and by comparing the results with data from corpora studies I intend to answer the following questions:

- Which notion of weight (number of words and syllables, relative weight, syntactic complexity, prosodic heaviness) may best account for the weight effects attested in Heavy NP Shift (HNPS), Object Shift (OS) and Particle Shift (PS)?
- Does the same notion of weight affect these constructions in the same way within one language, i.e., Icelandic or Faroese?
- Are these constructions affected in the same way by the same weight factors in both languages?

In the following subsections I will describe the methodology used for each of the experiments that were used in this study, the acceptability surveys, the production experiments, and the corpus study, although the details of each experiment will be reserved for each respective chapter.

2.4.1. *Acceptability experiments*

Acceptability data, or judgement data, play a very important role in linguistic research. Acceptability experiments are the only form of linguistic study where speakers are asked directly to evaluate utterances based on their own language intuition. What makes acceptability data special is that they distinguish between possible and impossible utterances that have not necessarily been produced naturally (Schütze & Sprouse 2013:4). This approach provides important evidence for acceptability over corpora studies and spontaneous usage data for two main reasons: Spontaneous usage data are likely to include production errors, such as slips of the tongue, which speakers will judge as ill-formed or unacceptable utterances. Appearance in a corpus is not necessarily evidence for its acceptability (Schütze 2009). Furthermore, an utterance is not necessarily ungrammatical because it does not appear in a corpus (see e.g., Thráinsson 2013 and his observations on Object Shift in Icelandic, and Schütze 2009).

One of the main criticisms of acceptability studies is that, while they provide reliable information about acceptability judgments, linguists (particularly generative linguists) tend to rely too much on them and the data can never be fully dependable as speakers, in order to report their

perception of what is acceptable, must be aware of language as an object of attention and evaluation, i.e., metalinguistic awareness (Schütze & Sprouse 2013:28). However, as Schütze & Sprouse argue, reported perceptions of acceptability (just like other types of reported perceptions) tend to be systemic in ways that can lead to falsifiable theories about cross-linguistic variation, language acquisition and language processing (Schütze & Sprouse 2013:28-29). Furthermore, acceptability experiments are often the only way to study syntactic structures that rarely occur in spontaneous usage data (Schütze 1997:2) and data collected from acceptability experiments is considered highly stable, when collected with the appropriate methods (see Cowart 1997:1–14). Acceptability studies provide a platform for linguists to focus on speakers’ underlying knowledge of language outside of the context of communication (Schütze 1997). Acceptability data is also crucial in smaller language communities, such as the Faroe Islands, where only one small corpus is available (Schütze & Sprouse 2013:4).

The first series of experiments, described in Chapter 3, were acceptability surveys, near identical ones for Icelandic and Faroese speakers, where sentences with the constructions of interest were evaluated. The surveys tested a large number of participants, between 70 and 100 speakers for each survey. The surveys were conducted online via Google Drive. The test sentences were presented in a randomised order, interspersed with filler sentences. Speakers were asked to read sentences and evaluate them based on their own language intuition. Before taking the survey, the participants were given instructions not to judge the sentences according to what they have been taught in school is “good” or “bad” language but to base their judgement on what they themselves could or could not say.

The test sentences in the acceptability surveys were presented in a randomised order, interspersed with filler sentences at a 1:2 or 1:3 ratio. The filler sentences that were used for the surveys included a wide range of structure so that a few of them were sentences that should, by all accounts, be accepted by most speakers and a few of them should be rejected by most speakers. In the series of surveys that were conducted in 2017, participants were given three options to choose from as they rated the sentences, as shown first in Icelandic and then Faroese in (2.48).²³

- (2.48) a. Já = Eðlileg setning. Svona get ég vel sagt.
 Ja = Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.
 ‘Yes = Normal sentence. I could easily say that.’
- b. ? = Vafasöm setning. Svona gæti ég líklega ekki sagt.
 ? = Ivasamur setningur. Soleiðis hevði eg neyvan sagt.
 ‘? = Questionable sentence. I would probably not say that.’

²³ For the full instructions for the acceptability surveys in Icelandic and Faroese, see Appendix A.

- c. Nei = Óeðlileg setning. Svona get ég ekki sagt.
 Nei = Ómöguligur setningur. Soleiðis hevði eg ikki sagt.
 ‘No = Abnormal sentence. I would not say that.’

The three-point scale that was used in this survey was modelled after the method used in the the project *Variation in Icelandic Syntax* (ed. by Thráinsson et al. 2013, 2015; see also Thráinsson et al. 2017). In the series of surveys conducted in 2020, the three-point scale was replaced by a five-point likert scale, as shown first in Icelandic and then in Faroese in (2.49), in order to capture more nuances in the participants’ evaluations.²⁴

- (2.49) a. 5 = Eðlileg setning. Svona get ég vel sagt.
 Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.
 ‘Normal sentence. I could easily say that.’
- b. 1 = Óeðlileg setning. Svona get ég alls ekki sagt.
 Ómöguligur setningur. Soleiðis hevði eg ikki sagt.
 ‘Abnormal sentence. I would not say that.’

A five-point scale was chosen, as it is a universally common method for collecting data in questionnaires with multiple items, it gives participants more options in their evaluation, without being overwhelming, like a larger scale can be, and it is convenient for mixed effect analyses, which were used in this study.

2.4.2. Production experiments

While acceptability surveys provide important evidence about speakers’ underlying knowledge of language and comprehension mechanisms, production experiments complement them by adding information about the frequency of the structures in question in spontaneous, or semi-spontaneous usage data and the underlying processing mechanisms. Using different methods to test the same grammatical phenomena gives a more detailed description of them. If the same tendencies consistently come up in various types of experiments, they will give a more detailed description of the grammatical constructions in question and which factors potentially affect them, such as weight factors, in this instance (Schütze 2016:192–193).

The benefit of production experiments is that, unlike corpora studies, production experiments provide a controlled environment where the test stimuli are manipulated for a limited number of

²⁴ For the full instructions for the acceptability surveys in Icelandic and Faroese, see Appendix A.

factors and others are held constant. The production experiments were designed in a similar way to Stallings & MacDonald's experiment on English (2011). Testing the same sentences in acceptability and production experiments will give a broader perspective on weight effects in Icelandic and Faroese, as the way speakers perceive particular sentence structures in their language does not necessarily reflect how likely they are to produce them, or which processes affect their choices of structure during production planning.

The production experiments were conducted in August through October 2019 in Iceland and the Faroe Islands. 20 speakers from each country (40 in all) participated in the experiments. The age frame was limited to 20–40 years and the ratio of male and female participants was balanced. The test sentences were presented in a semi-randomised order, interspersed with filler sentences at a 1:3 ratio. Some of the filler sentences had a fixed word order, while others offered two possibilities of structure, like the test stimuli. The experiment was created in PsychoPy (Peirce et al. 2019).

2.4.3. Corpus study

The results of the experiments will be complemented by a study of similar constructions in the Icelandic Parsed Historical Corpus (IcePaHC, http://www.linguist.is/icelandic_treebank), a syntactically parsed historical corpus. As described earlier in this chapter, searching corpora has been proved a successful way to study potentially weight sensitive structures, such as HNPS (e.g., Hawkins 1994, Wasow 1997, Wasow & Arnold 2005, Grafmiller & Shih 2011). A corpus study complements production experiments and acceptability surveys well as it provides a natural sample of utterances. A systematic search in a syntactically parsed corpus will not only provide insight into the potential effects of different weight factors on word order in the constructions in written and spoken language, but it will also provide a clearer picture of their frequency in Icelandic.

As discussed above, there is only one parsed historical corpus for the Faroese language, The Faroese Parsed Historical Corpus (FarPaHC) (Ingason et al. 2012), which consists of 53.000 words in three texts from the 19th and 20th century. The corpus is very small compared to The Icelandic Parsed Historical Corpus, which consists of 1,002,390 words in texts from every century between the 12th and the 21st centuries inclusive. For this reason, no comparable corpus study could be done for Faroese in this project but this will hopefully change.

Comparing the results from two different types of experiments, acceptability surveys and a production task, with evidence from corpus studies will give a fuller picture of how these constructions work in these two languages and which factors affect them, as corpus data may present evidence of their frequency and context and can be used as inspiration for test sentences in the experiments. However, corpus data on its own can also be problematic as there may be several factors

that could make it unreliable (e.g., whether the speaker is a native speaker, under which linguistic circumstances the sentence was produced and whether the produced sentence is truly consistent with the speakers' underlying knowledge of grammar (Schütze 2009)). It is therefore important to thoroughly analyze the corpus data and compare them with results based on live speakers' intuition and performance. By comparing the results from acceptability and production experiments to results from corpus studies, the project will give a more complete description of the effects of weight on variation in word order in Icelandic and Faroese.

According to many researchers, any conclusion based on a single kind of experiment is questionable (see e.g., Chaudron 1983 and Carden & Dieterich 1981). According to Schütze (2016), the results of any single kind of task, no matter how reliable they are, are questionable because of the many potential intervening factors that may affect them (see Schütze 2016:168–179). It is important to choose the appropriate experimental tasks for any given study as different methods provide different information about the construction in question, which also means that approaching the study with more than one experiment will provide a fuller picture of the subject (see Thráinsson et al. 2017:9–10, Thráinsson 2017:19–52, Thráinsson et al. 2013:19–42). If the same results show up reliably across a variation of tasks and studies, they will provide a better representation of speakers' fundamental underlying knowledge of language (Schütze 2016:192–193).

2.4.4. Data processing

For all statistical analyses I used R (R Core Team 2021), including the lme4-package (Bates et al. 2015) and the ggplot2-package (Wickham 2016). For the production experiment I used PsychoPy (Peirce et al. 2019) and prosodic analysis was done in Praat (Boersma & Weenink 2018).

3. Weight effects and movement in Icelandic

This chapter explores HNPS in modern Icelandic and definitions of weight, based on a series of acceptability surveys that were conducted in the years 2017, 2020 and 2021. The surveys tested various definitions of weight, including absolute and relative weight, prosodic heaviness and the complexity of the shiftable NP, in HNPS and other potentially weight sensitive syntactic structures. The surveys were designed to answer the following research questions:

- If length is a determining weight factor; is it the absolute length of the shifted constituent itself alone or is the relative weight of the string of words it shifts over also important?
- Is the length of the relevant constituents (measured in the number of words) the only determining weight factor or can stress (or prosodic structure) also play a role?
- Is weight defined by the syntactic complexity of the constituents, i.e., does an embedded clause make the constituent intrinsically heavier than length alone?

The chapter is laid out as follows: In Section 3.1. the research methods behind the surveys are described in detail, including the design of the test sentences, the layout and procedure of the surveys, the participants and the processing of the data collected with the survey. Section 3.2. presents the results of the survey, where we first describe the effects of absolute and relative weight of the relevant constituents in terms of their length and then consider the effects of prosodic structure. We then move on to exploring the effects of length vs the syntactic complexity of the shiftable NP in weight sensitive constructions. In Section 3.3. the results and their analysis are summarised with concluding remarks.

3.1. Research methods

The results presented in this chapter are based on data collected in a series of three acceptability surveys that were conducted in March 2017, January 2020, and April 2021. The results of the surveys will be laid out and thoroughly discussed in Sections 3.2. and 3.3. This section describes the experiments in detail: the design of the test sentences, layout of the survey, procedure and data processing. The individual surveys will be referred to as the HNPS survey (which tested absolute and relative weight effects in HNPS, the Complexity survey (the Complexity survey tested length and complexity in sentences with OS and HNPS) and the PS survey (the PS survey tested length and complexity in PS). All three surveys were designed in a similar way, as will be described in the next few sections, although they varied slightly in regards to test sentences and the weight factors that were tested in each of them.

3.1.1. HNPS stimuli – absolute vs relative length

In the HNPS survey, speakers evaluated 30 test sentences, as will be laid out in Section 3.2. All of the test sentences included an NP that had been shifted with HNPS over a verb-modifying PP. As discussed in Chapter 2, HNPS is rarely accepted in transitive expletive sentences and the same is true of sentences where the subject has been shifted over a direct object (see Thráinsson et al. 2012:240–241). So expletive constructions and sentences where the subject-NP had shifted over a direct object were not included in the test. In half the test sentences, the shifted NP was a direct object, like in example (3.1a) and in the other half, the shifted NP was a subject (3.1b).

- (3.1) a. Sigríður les [á morgnana]
 Sigríður reads [in mornings.DET]
 [ýmiss konar nýleg tímarit um tísku].
 [various recent magazines about fashion]
 ‘Sigríður reads various recent magazines about fashion in the morning.’
- b. Í fyrra komu [til bæjarins] [nokkrir litlir leikhópar]
 In last-year came [to town.DET] [few small acting groups]
 frá öðrum löndum].
 from other countries]
 ‘Last year came to town a few small acting groups from other countries.’

The sentences were constructed according to a formula where the length of the NP and the PP was controlled, as displayed in (3.2). The NPs were all constructed in a similar way so that they included a noun, adjectives and/or a PP. None of the NPs included subordinate clauses as the main focus of this survey was heaviness measured in length in number of words. The following model was used to control the length of the phrases in the test sentences:

- (3.2) a. NP: 6 words PP: 2 words
 b. NP: 2 words PP: 6 words
 c. NP: 6 words PP: 6 words
 d. NP: 2 words PP: 2 words

If the heaviness of an NP is measured by the number of words it contains, it would seem reasonable to assume that a six-word NP is heavy and a two-word NP is not (see e.g., Hawkins 1994).

Not only the number of words per phrase was controlled but also the number of syllables per word and per phrase, e.g., if the phrase consisted of six words, it could only have twelve syllables in it

altogether and each word could consist of maximum three syllables. The same rules applied for two-word phrases, which could altogether consist of only four syllables.²⁵ In the sentences that had a length difference between the two phrases, the difference was always four words. According to Hawkins (1994), as mentioned in Chapter 2, NPs rarely shift unless they exceed the nearest word string in length by at least four words. If this is the case in Icelandic, it would be expected that the sentence in (3.3a), where the NP consists of six words and the PP is only two words, would be the optimal example for HNPS out of the test sentences, whereas sentence in (3.3b), where the length difference is the other way around, should be the least likely to be accepted.

- (3.3) a. Við skoðuðum [á safninu]
 We observed [at museum.DET]
 [fágætar gamlar stytur úr hvítum steini].
 [rare old statues from white stone]
 ‘We observed rare old statues made of white stone at the museum.’
- b. Ég las [fyrir síðasta próf í sögu Evrópu]
 I read [for last exam in history Europe]
 [margar bækur].
 [many books]
 ‘I read many books for the last exam in European history.’

The sentences in (3.4a–b) are examples of the test sentences that have equally long NPs and PPs. It is reasonable to assume that most speakers should accept sentence (3.4a), where the NP and PP each consists of six words, seeing as the NP is indisputably heavy. If relative heaviness is more important than pure absolute heaviness, speakers may not evaluate (3.4a) equally well as the sentence in (3.3a).

- (3.4) a. Listmálarinn málaði [á gamla veggum í úthverfum bæjarins]
 artist.DET painted [on old walls in suburbs town]
 [stórar og fallegar myndir af tunglinu].
 [large and beautiful pictures of moon.DET]
 ‘The artist painted large and beautiful pictures of the moon
 on old walls in the town’s suburbs.’

²⁵A small pilot study was performed before this survey was created, where the syllable structure was controlled more than in the experiments that followed. In the pilot study, heavy consonant clusters were avoided in order to make the syllables maximally similar in structure, as syllables with a complex onset or coda might be intrinsically heavier than simple CV-syllables. The pilot study tested minimal pairs of this kind with complex and simple syllable structure, but the word-internal syllable structure revealed no significant impact on the results. In the following surveys, including this one, only the number of syllables (and words) within the NP/PP was controlled, as described in this section, whereas word-internal syllable structure was not controlled specifically.

- b. Ég geymi [fyrir börnin] [nokkrar kökur].
 I keep [for children.DET][some cakes]
 ‘I will keep some cakes for the children.’

By all accounts, speakers should not readily accept the sentence in (3.4b). Here the NP itself is only two words and the PP it moves over is equally long. If the results are consistent with the literature cited in Chapter 2 (e.g., Stallings & McDonald 2011, Hawkins 1994, Wasow 1997, Zec & Inkelas 1990) then the sentence in (3.3b) is not optimal for HNPS and should be rejected by most speakers.

Before this experiment, a series of pilot studies was conducted to design test sentences for both the acceptability experiment and the production experiment that followed, which will be described in detail in Chapter 4. In the pilot production experiment some speakers moved even very short NPs to the end of the clause, across an equally long PP. These instances only occurred in a sentence like (3.5a) but not in a sentence like (3.5b).

- (3.5) a. Ég keypti [fyrir ykkur] [nokkrar bækur].
 I bought [for you] [some books]
 ‘I bought some books for you.’
- b. *Mamma keypti [handa Sigga] [nýjar buxur].
 Mum bought [for Siggi] [new trousers]
 ‘Mum bought some new trousers for Siggi.’

Upon closer inspection it appeared that these incidents were connected to the internal structure of the PP. Participants would only move short NPs when the PP included a pronoun complement, like in example (3.5a) but never when the PP included a full NP complement, like in (3.5b).²⁶ This unexpected result led to the working hypothesis that the PP [fyrir ykkur] in (3.5a), which contains a preposition and a personal pronoun, bears no stress in this position, and therefore the NP at the end, which carries the nuclear stress in the sentence, is prosodically heavier than the PP. This hypothesis is further illustrated in example (3.6–4.8)

Consider the two variants in (3.6): with the object in situ (3.6a) or with a shifted object (3.6b):

- (3.6) a. Ég keypti [nokkrar bækur] [fyrir ykkur].
 I bought [some books] [for you]
 ‘I bought some books for you.’

²⁶ This effect had not been foreseen in the pilot test and therefore the difference in the construction of the PPs was coincidental. In the acceptability experiment, the construction of the PPs and their internal complements was controlled, as described in this chapter.

- b. Ég keypti [fyrir ykkur] [nokkrar bækur].
 I bought [for you] [some books]
 ‘I bought some books for you.’

Sentence (3.6a), where the object NP is followed by the PP, has two possible prosodic realizations, as shown in (3.7):²⁷

- (3.7) a. Ég keypti [nokkrar bækur] [fyrir ykkur].
 (x) (x) (x x)
 b. Ég keypti [nokkrar bækur][fyrir ykkur].
 (x) (x) (x x) (x)

In the prosodic realisation in (3.7a) the PP at the end has no stress, as the pronoun complement is unstressed and so is the preposition. By default, functional elements like prepositions and pronouns do not carry stress unless they are in a stress position, e.g., focus or contrast position, or they must be stressed for syntactic reasons. Sentence (3.7b) shows the pronoun complement in the PP with stress under such circumstances, e.g. in a contrast position (*I bought a few books for you, not for your parents*).²⁸ In (3.7a), the PP does not form an individual stress-bearing phonological phrase (p-phrase), but merges into a larger p-phrase with the object NP in front of it.²⁹ It is possible, as will be demonstrated in this chapter, for the object NP to appear at the end of the clause but the prosodic structure of the object NP and PP strongly affect the shiftability of the object NP. Consider the two variants in (3.8):

- (3.8) a. Ég keypti [fyrir ykkur] [nokkrar bækur].
 (x) (x) (x x)
 b. *Ég keypti [fyrir ykkur] [nokkrar bækur].
 (x) (x) (x x) (x x)

In this instance the PP has to be unstressed in order for the object NP, which carries nuclear stress, to shift (3.8a). The realisation in (3.8b), where the PP complement is stress-bearing, should not be

²⁷ The brackets underneath the sentences represent so-called phonological phrases (see Selkirk 1986 and much later work) and the x-s mark the stress carried by individual words within these phrases.

²⁸ The prosodic realisations of this sentence type were tested in the production experiments which will be described in Chapter 4. See Chapter 4 for a more detailed illustration of the prosodic structures described in this chapter.

²⁹ The ideas about prosodic heaviness presented in this thesis are based on the theoretical framework that exists in standard literature on prosodic phrasing and the syntax-prosody interface, including Elfner 2018, Frota 2012, Truckenbrodt 1999, 2007, Selkirk 1986, 2011 and Dehé 2008 specifically for work on Icelandic.

acceptable at all. The variant in (3.8b) would be an example where the object NP is not heavy enough to undergo HNPS. In the variant in (3.8a) the object NP is not long but it is prosodically heavier than the PP it shifts over. If relative weight effects are important, and in this instance, a stronger weight predictor than length alone, the variant in (3.8a) should be acceptable to at least some speakers because the object NP is relatively heavier than the PP from a prosodic perspective.³⁰ This indicates that prosodic stress could be a weight predictor, at least in situations where other weight predictors, like length measured by number of words, do not apply. This seems to be the case here and therefore prosodic weight, measured by stress at phrase level, was included in this part of the survey and also in the production experiment in Chapter 4.

3.1.2. Complexity vs length

This section describes the test stimuli that were used in the Complexity survey, which tested absolute and relative weight effects vs the complexity of the syntactic makeup of the shiftable NP in two constructions: HNPS and OS. In this survey, the same weight predictors were tested on the OS stimuli as for the HNPS stimuli described in the previous section: absolute and relative weight. The survey also included sentences with OS and HNPS word order where the complexity of the NP, i.e., whether it includes a relative clause or not, was included as the main weight predictor. The same methods were applied in this experiment as in the HNPS survey but they were adapted for OS as this structure differs from HNPS in two fundamental ways: In OS, which is classified as a leftward-movement structure, the NP moves away from the edge and into the middle of the clause. Furthermore, while it is usually long or complex NPs that undergo HNPS, it has been argued that NPs that undergo OS are not heavy, i.e. not very long or complex, as discussed in Chapter 2. The length and structure of the NPs for these test sentences were designed with these differences in mind.

In this survey, speakers evaluated 27 test sentences: 15 for OS and 12 for HNPS. All of the OS sentences included an NP that was situated to the left of a clausal negation. All the

³⁰ It could also be argued that HNPS is possible here because of the information structure of the sentence. The PP complement in (3.8) is a personal pronoun, which typically present old information, whereas the shifted NP presents new information. There is a known tendency for syntactic constituents that present old or given information to appear earlier in the sentence than constituents that present new information (see Prince 1981 for definitions of old and new information). This tendency for new information to appear at the right edge is manifested in Icelandic e.g., in exceptions from the Definiteness Restriction, which prohibits definite NPs from acting as late subjects in existential sentences with the dummy *það* (e. *there*) unless the subject presents new information, as argued by Jónsson (2005:457–458) (see also Eythórsson 2008, Indriðadóttir 2014, Sigurðsson & Ingason 2019). If HNPS is possible in (3.8) because it serves the purpose of placing old information closer to the left edge, then that should also apply to other types of PP complements that present old information, like definite nouns or proper names (??*Ég keypti [fyrir Maríu] [nokkrar bækur]*, e. ‘I bought [for *Maria*] [some books]’). As the results of this study show, this is not the case, and so it is more likely that phrasal stress is at work in this sentence structure, as will be argued in Chapter 4.

sentences included a subject and a main verb, followed by the NP and the negation at the end of the clause, like in example (3.9).

- (3.9) a. Ég þekki [manninn] [ekki].
 I know [man.DET] [not]
 ‘I do not know the man.’
- b. Óli las [blaðið] [ekki].
 Oli read [paper.DET] [not]
 ‘Oli did not read the paper.’

Two weight factors were tested in the OS sentences, as mentioned in the previous section: Relative weight effects and length vs complexity. In order to test this structure for relative weight effects, a length model was used, similar to the one used in the previous survey for HNPS. The model in (3.10) shows how the length of the constituents was controlled in the OS sentences:

- (3.10) a. NP: 3/4 words³¹ Negation: 1 word
 b. NP: 1 word Negation: 1 word
 c. NP: 3/4 words Negation: 3 words
 d. NP: 1 words Negation: 3 words

As discussed in Chapter 2, it is generally considered that in order to undergo OS, the NP needs to be short. The most commonly used examples of OS in the literature are similar to the ones in (3.9a–b), where a single word with a definite article is moved across a simple negation. It is therefore reasonable to expect that sentences of length category (3.10b) should be accepted by most speakers. If relative length is also important for OS, sentences of the type (3.10d) should be considered at least equally good or even better than (3.10b). If the NP has to be short to undergo OS, fewer speakers should accept sentences of the type (3.10c), illustrated in (3.10a), where both the NP and the negation are long and the same should apply to sentence type (3.10a), illustrated in (3.11c), where the long NP has been moved over a short negation, especially if relative weight is an influencing factor.

³¹ As discussed later in this section, some of the OS sentences that included long NPs had complex structure, i.e., the NP included a relative clause. These sentences included 4 words instead of three, one of which was the relative complementiser “sem” (e. *that*).

In order to test the length of the NP against the negation it was decided to create a stacked clausal negation, where the negation was amplified by two modifiers (*most certainly not*).³² A sentential negation in Icelandic can be a single two-syllable word “ekki” (e. *not*), which is the negation that was used in all the sentences in the survey or “aldrei” (e. *never*). An example of a stacked negation used in the survey is in example (3.11), where (3.11a) includes a long NP and a long negation and (3.11b) includes a single word NP and a long negation. Example (3.11.c) includes a long NP and a simple negation.

- (3.11) a. Við færðum [stóru amerísku skápana] [alveg áreiðanlega ekki].
 We moved [large American wardrobes.DET] [most certainly not]
 ‘We most certainly did not move the large American wardrobes.’
- b. Óli þekkir [manninn] [alveg ábyggilega ekki]
 Oli knows [man.DET] [most definitely not]
 ‘Oli most definitely does not know the man.’
- c. Ég las [rosalega löngu greinina] [ekki].
 I read [tremendously long article.DET] [not]
 ‘I did not read the tremendously long article.’

The second test factor for the OS sentences was the complexity of the NP. Along with the 12 sentences that were designed to fit the length model in (3.10), three sentences for each length category, there were three extra sentences of the type (3.10a) where the NP contained a relative clause (3.12).

- (3.12) a. Ég keypti [aðventukransinn sem var brotinn] [ekki]
 I bought [advent wreath.DET which was broken] [not]
 ‘I did not buy the advent wreath that was broken.’
- b. Börnin borðuðu [terturnar sem brögðuðust illa] [ekki]
 Children.DET ate [cakes.DET which tasted bad] [not]
 ‘The children did not eat the cakes that tasted bad.’

³² There are not many reliable constituency tests for a sentential negation but the main arguments for the constituency of the AdvP [alveg ábyggilega ekki] are that i) it hangs together semantically as the two adverbs (*alveg ábyggilega*) modify the negation (*ekki*) and ii) the AdvP can stand alone as an answer to a question: *Þekkir Óli manninn?* (e. ‘Does Óli know the man?’) – *Alveg ábyggilega ekki* (e. ‘Most certainly not’). It is possible to topicalise the whole phrase, but the outcome is questionable (*?Alveg ábyggilega ekki þekkir Óli manninn.*) but there are general restrictions on moving a negation and a sentence with a topicalised simple negation is only acceptable in a certain formal/rhetorical speech style (*?Ekki þekkir Óli manninn.*).

After much consideration, it was decided that the complex NPs would have to include four words instead of three, while remaining the same number of syllables as the non-complex NPs. The NPs are therefore equally long, measured in the number of syllables. There were several reasons for this.

The NPs in all the sentences needed to have the same number of syllables as the negation they were paired off with. The longest possible negation used in order to test length effects was the type shown in (3.11a–b): “alveg áreiðanlega/ábyggilega ekki”, consisting of three words and 9 syllables. It was easy to come up with non-complex NPs that included the same number of words and syllables, but the complex NPs were problematic in this sense. One of the three words in the NP had to be the relative complementiser “sem”, leaving only two words in the NP that would have to divide the remaining 8 syllables between them. That would perhaps not be such a big problem in a different sentence type (the complex NPs in the PS test sentences included only 3 words, 2 lexical words and the relative particle, and 8 syllables and those sentences turned out fine, as discussed further in Section 3.1.3). In this sentence type it turned out to be impossible as it meant that the only possible structure for the NP was noun-particle-verb, as illustrated in example (3.13). This structure, with an active verb in front of the negation, invites ambiguity into the speakers’ interpretation of the sentence, as illustrated in example (3.13).

- (3.13) a. Við sáum [varðhundana sem valhoppuðu] [ekki].
 We saw [guard dogs.DET that galloped] [not]
 ‘We did not see the guard dogs that galloped.’
- b. Við sáum [varðhundana sem valhoppuðu ekki].
 We saw [guard dogs.DET that galloped not]
 ‘We saw the guard dogs that did not gallop.’

Participants could have interpreted the sentence as (3.13b) where the negation is part of the relative clause, rather than negating the main clause, which would seriously affect the outcome of the survey. In order to maintain balance between the stacked negation and the NP, it was decided to include the relative complementiser as an extra word, but the NPs and negation would still be equally long, measured in the number of syllables.

Complexity was also tested as a potential weight factor for HNPS in this survey. The survey tested 12 HNPS sentences where the NP was significantly longer than the PP it followed, i.e., the NP consisted of six words (12 syllables) and the PP consisted of two words (3 syllables). Half the test sentences included complex NPs, in the sense of Chomsky and Ross, i.e., NPs that contain a relative clause, and the other half had “simple” NPs that did not include a relative clause. The 6 sentences

with the simple NPs were borrowed from the previous survey, that was described in Chapter 4. As before, half the sentences had a subject-NP at the end of the clause and half had an object-NP. The six new sentences were designed to be as similar as possible to the original ones, with the complexity of the NP as the only separating factor. Examples of the test sentences are displayed in (3.14), where the simple-NP sentences (3.14a–b) are repeated from (3.1) in the previous section.

- (3.14)
- a. Sigríður les [á morgnana]
 Sigríður reads [in mornings.DET]
 [ýmiss konar nýleg tímarit um tísku].
 [various recent magazines about fashion]
 ‘Sigríður reads various recent magazines about fashion in the morning.’
 - b. Í fyrra komu [til bæjarins] [nokkrir litlir leikhópar]
 In last year came [to town.DET][few small acting groups
 frá öðrum löndum].
 from other countries]
 ‘Last year a few small acting groups from other countries came to town.’
 - c. Margrét málaði [fyrir safnið]
 Margret painted [for museum.DET]
 [myndir sem öllum þóttu afar fallegar].
 [paintings which everyone considered very beautiful]
 ‘Margret painted paintings that everyone considered very beautiful for the museum.’
 - d. Á morgun mæta [í útvarpið] [menn sem ferðast]
 Tomorrow come in [toradio.DET] [men that travel
 eingöngu á þríhjóli].
 exclusively on tricycle]
 ‘Tomorrow, some men who travel exclusively by tricycle
 will come to the radio station.’

As the Complexity survey focused on more than one syntactic structure, the two structures acted partially as fillers for each other. As previously mentioned, the survey included 12 HNPS sentences and 15 OS sentences, interspersed with 35 actual filler sentences.

3.1.3. *Weight effects in Particle Shift*

The surveys conducted in 2020 and 2021 were a series that were designed in a very similar way, as a continuing study. This section describes the test sentences designed for the PS survey, which tested the same weight effects as described in the previous section in one more syntactic structure, Particle Shift.

This survey was designed slightly differently to the previous two surveys as there is a slight but fundamental difference between the PS structure and the other two structures tested in this study, HNPS and OS. As was discussed in Chapter 2, there are varying opinions in the literature as to whether the two possible word orders in verb-particle structures are in free variation or not. As was addressed in Chapters 1 and 2, it is not the focus of this study which direction the constituents in question move to but, it is generally considered that structures such as HNPS and OS do not represent the basic word order in the languages that are studied here and therefore it is not unreasonable to say that these structures are an alternative to the basic word order, as illustrated in examples (3.15a) and (3.16a).

(3.15) a. Óli las [ekki] [blaðið]
 Oli read [not] [paper.DET]
 ‘Oli did not read the paper.’

b. Óli las [blaðið] [ekki]
 Oli read [paper.DET] [not]
 ‘Oli did not read the paper.’

(3.16) a. Sigríður keypti [fallega nýja íbúð] [í fyrra].
 Sigridur bought [beautiful new apartment] [in last year]
 ‘Sigridur bought a beautiful new apartment last year.’

b. Sigríður keypti [í fyrra] [fallega nýja íbúð].
 Sigridur bought [in last year] [beautiful new apartment]
 ‘Sigridur bought a beautiful new apartment last year.’

In verb-particle constructions it is not as obvious whether the NPs original position is between the verb and the particle (3.17a) or after the particle, at the end of the clause (3.17b).

(3.17) a. Við færðum [bækurnar] [til].
 we moved [books.DET] [to]
 ‘We moved the books around.’

b. Við færðum [til] [bækurnar].
 we moved [to] [books.DET]
 ‘We moved the books around.’

For the survey only three particle structures were tested in order to control as many elements as possible and keep the sentences similar to one another. The structures that were chosen are relatively common in modern Icelandic and include a 1–2 syllable particle, as illustrated in (3.18).

- (3.18) a. henda út
throw out
'throw out'
- b. setja niður
put down
'put down/plant'
- c. taka upp
take up
'take up/pick up/dig up/unwrap'

Along with the two test factors that were used in the previous survey, length vs complexity, the word order itself was included as a factor. This survey included 24 test sentences, in half of them the NP followed the verb, like in (3.19a) and in the other half the NP followed the particle, like in (3.19b). The test sentences were interspersed with 38 filler sentences.

- (3.19) a. Við hentum [hundunum] [út].
We threw [dogs.DET] [out]
'We threw the dogs out.'
- b. Við hentum [út] [hundunum]
We threw [out] [dogs.DET]
'We threw out the dogs.'

Like in the previous two surveys, length vs complexity was tested as a potential weight factor. Half the test sentences had a complex NP, which included a subordinate clause, like in example (3.20) and the other half had a non-complex NP which did not include a subordinate clause (3.21).

- (3.20) a. Börnin settu [niður] [krókusana sem ilmuðu].
Children.DET put [down] [crocuses.DET that smelled-good]
'The children planted the crocuses that smelled good.'
- b. Börnin settu [krókusana sem ilmuðu] [niður].
Children.DET put [crocuses.DET which smelled good] [down]
'The children planted the crocuses that smelled good.'
- (3.21) a. Strákarnir settu [niður] [fallegu gulu rófum].
Boys.DET put [down] [beautiful yellow swedes]
'The boys planted the beautiful yellow swedes.'

- b. Strákarnir settu [fallegu gulu rófunar] [niður].
 Boys.DET put [beautiful yellow swedes] [down]
 ‘The boys planted the beautiful yellow swedes.’

Finally, to test the factor of length, the sentences were constructed according to a formula where the length of the NP was controlled, as displayed in (3.22). Unlike the previous two surveys, which tested the same factor in HNPS and OS, the length of the “other constituent”, in this case the particle, could not be manipulated, as a particle generally consists of only one word. For the sake of consistency, it was decided to include only 1–2 syllable particles and NPs, simple and complex, of two length categories.

- (3.22) a. NP: 6 words Particle: 1 word
 b. NP: 3 words Particle: 1 word

These length categories were chosen as three words is the lowest number of words an NP with a subordinate clause can include. It was decided, for this survey, to include complexity as a factor through all levels of the stimuli so this was the perfect number for a shorter NP. The six-word NP has already been used throughout the other experiments for HNPS as a long NP, so it made sense to maintain consistency with that in this instance as well. The number of syllables was also controlled at the phrase level. All six-word NPs consisted of 19 syllables and the three-word NPs consisted of 8 syllables altogether.

If length is an important weight factor for Particle Shift, then it would be safe to expect sentences like (3.23a), that include a six-word NP, to receive a higher score than sentences like (3.23b), where the NP consists of only three words.

- (3.23) a. Unga konan las [upp] [löngu sorglegusöguna um týndu drengina].
 Young woman.DET read [up] [long sad story about lost boys.DET]
 ‘The young woman read out the sad story about the lost boys.’
 b. Ritarinn las [upp] [rosalega langa listann].
 Secretary.DET read [up] [very long list]
 ‘The secretary read out the very long list.’

If complexity is an important weight factor for Particle Shift, then a sentence with a complex NP, like the ones in (3.24) should be better received than a non-complex NP, like the ones in (3.25).

- (3.24) a. Börnin settu [niður] [krókusana sem ilmuðu].
 Children.DET put [down] [crocuses.DET that smelled-good]
 ‘The children planted the crocuses that smelled good.’
- b. Kennarinn las [upp] [nöfn nemendanna sem voru á listasafninu].
 Teacher.DET read [up] [names students.DET that were at art museum.DET]
 ‘The teacher read out the names of the students that were at the art museum.’
- (3.25) a. Strákarnir settu [niður] [fallegu gulu rófurarnar].
 Boys.DET put [down] [beautiful yellow swedes]
 ‘The boys planted the beautiful yellow swedes.’
- b. Unga konan las [upp] [löngu sorglegu söguna um týndu drengina].
 Young woman.DET read [up] [long sad story about lost boys.DET]
 ‘The young woman read out the sad story about the lost boys.’

How these factors potentially interact with each other should be revealed when the mixed effects are compared in a logistic regression model in Section 3.2.

3.1.4. *Participants and procedure*

443 speakers participated in the HNPS survey, 23 of which were excluded due to incomplete answers or because they had obviously misunderstood the instructions for the survey. Out of the remaining 420 speakers, 79 identified as men, 350 as women and one as genderqueer. Participants were given four age groups to choose from, but no participant chose the youngest group, aged 18 and younger. 54 participants were aged 18–30 during the time of the study, 177 speakers were aged 31–50 and 189 were over 50.

The test sentences were presented in a randomised order, interspersed with filler sentences. As mentioned before, the survey consisted of 34 test sentences and 96 filler sentences. The filler sentences included a wide range of structure so that a few of them were sentences that should, by all accounts, be accepted by most speakers and a few of them should be rejected by most speakers. The surveys were conducted online where speakers were asked to read sentences and evaluate them based on their own language intuition.³³ They were asked not to judge the sentences according to what they had been taught is “good” or “bad” language but to base their judgement on how they think they use the language themselves. Participants were given three options to choose from as they rated the sentences, as discussed in Section 2.4.1.

³³ For the full instructions for the acceptability surveys see Appendix A.

- (3.26) a. Já = Eðlileg setning. Svona get ég vel sagt.
 ‘Yes = Normal sentence. I could easily say that.’
- b. ? = Vafasöm setning. Svona gæti ég líklega ekki sagt.
 ‘? = Questionable sentence. I would probably not say that.’
- c. Nei = Óeðlileg setning. Svona get ég ekki sagt.
 ‘No = Abnormal sentence. I would not say that.’

As discussed in Section 2.4.1, the three options that were used in this survey were modelled after the method used in the project *Variation in Icelandic Syntax* (ed. by Thráinsson et al. 2013, 2015; see also Thráinsson et al. 2017). During the analysis, the responses were classified as binary (acceptable vs unacceptable) and the middle option was excluded. This was done to simplify the analysis as a multinomial logistic regression is more complicated to interpret than a binomial logistic regression (in fact, a multinomial logistic regression involves several binomial analyses). Analysing the three options as a scale was not considered a good option, as a Likert scale task usually consists of at least five points (like in some other surveys described in this thesis) or seven points and, according to the literature, three points are generally not considered to be strong enough to provide reliable results (see e.g., Schütze & Sprouse 2013 and Sprouse & Almeida 2017 and references cited there). Tables 1–4 in Section 3.2.1 show the test sentences and the positive and negative percentage rate of the remainder of the responses, after the middle option was removed, as further discussed below.

Overall, 1383 speakers participated in the Complexity survey, 38 of which were excluded due to incomplete answers or because they had obviously misunderstood the instructions for the survey. Out of the remaining 1345 speakers, 277 identified as men, 1064 identified as women and 4 identified as genderqueer. Participants were given four age groups to choose from, but no participant chose the youngest group, aged 18 and younger. At the time of the survey, 295 speakers were aged 18–30, 444 were aged 31–50 and 606 were over 50.

203 speakers participated in the PS survey, 9 of which were excluded due to incomplete answers or because they had obviously misunderstood the instructions for the survey. Out of the remaining 194 speakers, 54 identified as men and 140 as women. Participants were given four age groups to choose from, but no participant chose the youngest group, aged 18 and younger. 13 participants were aged 18–30 during the time of the study, 57 speakers were aged 31–50 and 124 were over 50. In this series of surveys, participants were asked to rate the sentences on a five-point likert scale, where 5 means the sentence is perfectly acceptable and 1 means the sentence is ungrammatical, as shown in example (3.27).

- (3.27) a. 5 = Eðlileg setning. Svona get ég vel sagt.
 ‘Normal sentence. I could easily say that.’
- b. 1 = Óeðlileg setning. Svona get ég alls ekki sagt.
 ‘Abnormal sentence. I would not say that.’

The results from the series of acceptability surveys will be presented in the next few sections, starting with the effects of absolute and relative weight of the relevant constituents in terms of their length and then we consider the effects of prosodic structure. We then move on to exploring the effects of length vs the syntactic makeup of the shiftable NP in weight sensitive constructions.

3.2. Results

This section presents the results from the acceptability surveys, starting with Section 3.2.1, which focusses on the effects of absolute and relative length on HNPS and then moving on to Section 3.2.2, where we consider the effects of prosodic structure. Section 3.2.3 compares length and complexity as weight predictors in weight sensitive constructions.

3.2.1. *Absolute and relative length in HNPS*

We will start by examining the acceptance rates for all the test sentences in each length category, long and short subjects and direct objects, that have been shifted across long and short PPs, as defined in (3.2) in the previous section. Figure 1 shows the mean rates of positive responses for each length category.³⁴

³⁴ The 2+2 length category here only represents the original test sentences that include normally stressed PPs with full NP complements. The 2+2 sentences with “light PPs” were excluded from this graph as they were designed with additional factors and are not comparable to the other test sentences. Those sentences will be examined closer in Section 3.2.2.

Figure 1 – Positive responses for HNPS sentences within each length category.

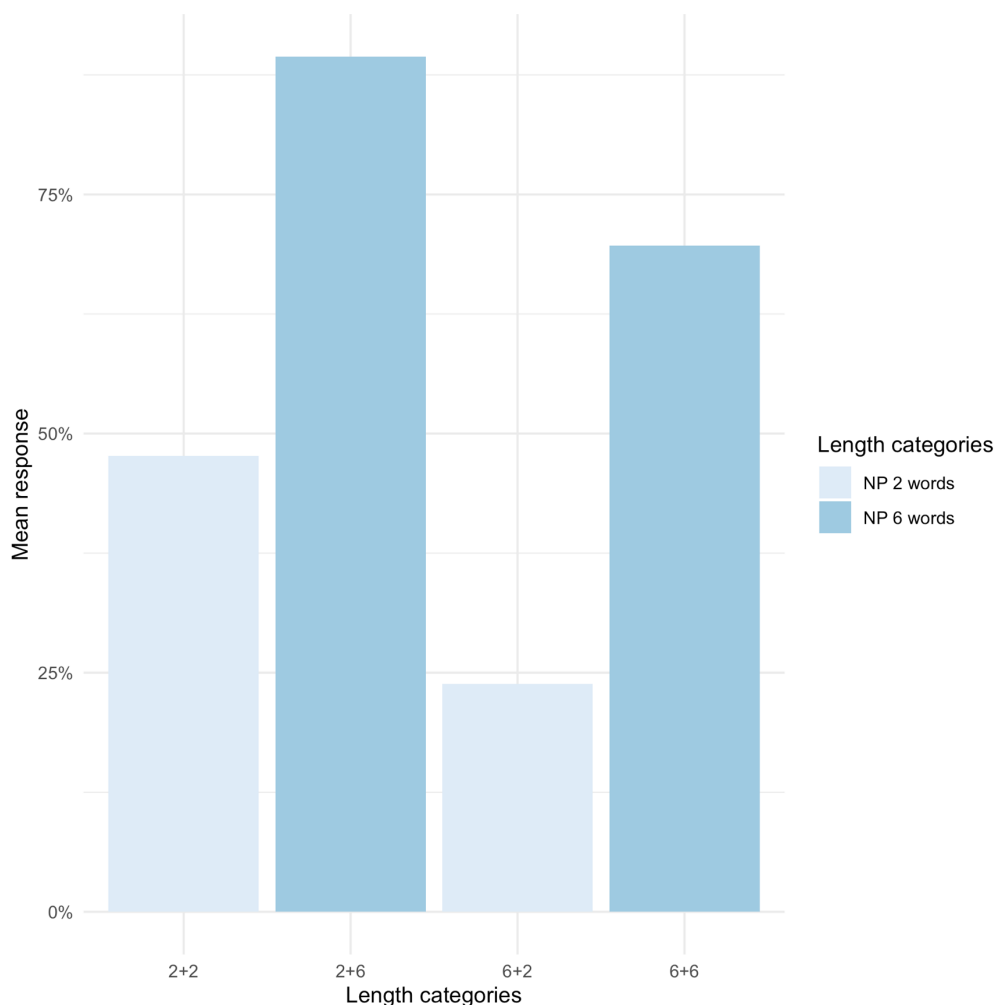


Figure 1 shows clearly that the most preferred sentence type in the survey is length category (3.2a) where the NP consists of six words and the PP is shorter, consisting of only two words. The sentence types, where the NP and the PP are equally long, are both relatively well received, although the sentences of length category (3.2c), where the NP and PP are both long, have a much higher acceptance rate than sentence type (3.2d), where the NP and PP are both short. As predicted, sentences of the type (3.2b), where the NP at the end of the clause only consists of two words and the PP between the verb and the NP consists of six words, are only fully accepted by less than 25% of the participants. The results shown in Figure 1 support the hypothesis that for HNPS in Icelandic, it is important that the NP is long, but it is even better if the word string it shifts across is short.

The test sentences and the response rates from the 420 speakers are presented in Tables 1–4. Each table shows the test sentences for each length category with subject- and direct object-NPs. The columns display the percentage of speakers that rated the sentences fully acceptable or not acceptable

at all. As discussed in Section 3.1.4, the middle option was removed from the analysis and so the numbers presented in Tables 1–4 and the figures in this section show the positive and negative percentage rate of the remainder of the responses, after the middle option was removed.³⁵ The highest percentage in each row is displayed in bold. Table 1 presents the acceptance rates for sentences with equally long two-word NPs and two-word PPs by 420 speakers.

Table 1 – HNPS stimuli with 2-word NPs and 2-word PPs.

Subject PP 2 NP 2	Yes	No
a. Í sumar koma [á námskeiðið] [margir krakkar].	21%	79%
b. Seinast mættu [á bjórkvöldið] [þrír nemendur].	50,16%	49,84%
c. Um síðustu helgi flaug [til Marokkó] [gamall vinur].	22%	78%
Direct Object PP 2 NP 2	Yes	No
d. Ég geymi [fyrir börnin] [nokkrar kökur].	47,3%	52,7%
e. Mamma keypti [handa Sigga] [nýjar buxur].	43%	57%
f. Ólafur skrifaði [í gær] [nokkur bréf].	49,1%	50,9%

The first thing that stands out about the test sentences in Table 1 is that, in most cases, more speakers rejected them than accepted them. On closer inspection, for some of the sentences, the ratings are relatively evenly distributed, showing a large divide in speakers' acceptance. That can at least be said about sentences (1b) and (1f) where the number of speakers that deemed these sentences completely unacceptable is almost equal to the ones who thought they were fully acceptable, and the ratings for sentences (1d) and (1e) are also not that far apart. The most distinctive difference in the distribution of ratings is for sentences (1a) and (1c) which were rejected by over sixty percent of all participants. The distribution of ratings for the sentences with six-word NPs and six-word PPs was a bit different, as we see in Table 2.

³⁵ In most of the length categories the neutral middle option was selected more rarely than the yes vs no options and the percentage was low, rarely higher than 25%, but more often lower. This is another reason for why it was decided to remove the middle option for the analysis. There were length categories where the middle option was used more frequently, as will be addressed in this section.

Table 2 – HNPS stimuli with 6-word NPs and 6-word PPs.

Subject PP 6 NP 6	Yes	No
a. Árlega fara [til heitra suðlægra landa í Evrópu] [sjö til átta hundruð íslenskir ferðamenn].	57%	43%
b. Í fyrra leituðu [til félags íslenskra nema í útlöndum] [um sjötíu nemendur úr fimmtán skólum].	73%	27%
c. Í síðustu viku mættu [á opna fundinn fyrir unga höfunda] [bæði virkir nemendur og starfandi skáld].	83%	17%
Direct Object PP 6 NP 6	Yes	No
d. Ég eldaði [fyrir nokkra góða vini úr vinnunni] [heilt læri með fallegum rauðum paprikum].	46,4%	53,6%
e. Foreldraráð keypti [fyrir alla krakkana í tíunda bekk] [margar dýrar bækur og nýjar spjaldtölvur].	50,8%	49,2%
f. Listmálarinn málaði [á gamla vegg í úthverfum bæjarins] [stórar og fallegar myndir af tunglinu].	86%	14%

The responses for this category are generally more positive, while still divided. All the sentences, except (2d) received more positive rates than negative but the distribution is rather equal between sentences (2a), (2d) and (2e), whereas sentences (2b), (2c) and (2f) were accepted by the majority of the participants. The results do not indicate that Icelandic speakers prefer shifted direct objects to subjects.³⁶ This is confirmed by the results presented in Table 3 where we see the acceptance rates for sentences with six-word NPs and two-word PPs.

³⁶ In this length category, more speakers chose the neutral middle option, as shown in the table here. This table shows that the original responses were more scattered than Table 2 shows, which suggests that this length category deserves more future research, as further discussed in footnote 37.

Subject PP 6 NP 6	Yes	No	?
a. Árlega fara [til heitra suðlægra landa í Evrópu] [sjö til átta hundruð íslenskir ferðamenn].	25,4%	20%	54,6%
b. Í fyrra leituðu [til félags íslenskra nema í útlöndum] [um sjötíu nemendur úr fimmtán skólum].	57,9%	22,2%	19,9%
c. Í síðustu viku mættu [á opna fundinn fyrir unga höfunda] [bæði virkir nemendur og starfandi skáld].	52,6%	10,7%	36,7%
Direct Object PP 6 NP 6	Yes	No	?
d. Ég eldaði [fyrir nokkra góða vini úr vinnunni] [heilt læri með fallegum rauðum paprikum].	26,3%	31,6%	42,1%
e. Foreldraráð keypti [fyrir alla krakkana í tíunda bekk] [margar dýrar bækur og nýjar spjaldtölvur].	21,1%	21,2%	57,6%
f. Listmálarinn málaði [á gamla vegg í úthverfum bæjarins] [stórar og fallegar myndir af tunglinu].	63,2%	10,5%	26,3%

Table 3 – HNPS stimuli with 6-word NPs and 2-word PPs.

Subject PP 2 NP 6	Yes	No
a. Um helgina keppa [á mótinu] [ungir iðkendur frá Ármanni og Gróttu].	90%	10%
b. Í fyrra komu [til bæjarins] [nokkrir litlir leikhópar frá öðrum löndum].	86%	14%
c. Venjulega mæta [á fundina] [nokkur hundruð ungar konur úr hverfinu].	98%	2%
Direct Object PP 2 NP 6	Yes	No
d. Sigríður les [á morgnana] [ýmiss konar nýleg tímarit um tísku].	88%	12%
e. Við skoðuðum [á safninu] [fágætar gamlar stytur úr hvítum steini].	87%	13%
f. Þjófarnir stálu [frá Ólöfu] [gömlum fallegum úrum og dýru skarti].	86%	14%

All the sentences with two-word PPs and six-word NPs were accepted by the majority of the participants and none of them were completely rejected by more than fourteen percent. The numbers shown in Table 3 are very consistent, showing that this length category is considered acceptable by most speakers. The results from the last category of sentences, where the PP consists of six words and the NP consist only of two words were not quite as consistent, as we can see in Table 4.

Table 4 – HNPS stimuli with 2-word NPs and 6-word PPs.

Subject vs Direct Object PP 6 NP 2	Yes	No
a. Á vorin synda [á litlu tjörninni í gamla miðbænum] [hvítir svanir].	36%	64%
b. Á laugardaginn mættu [á árlega samkomu kvenna í listum] [margar konur].	8%	92%
c. Í fyrra fóru [á spennandi námskeið um vistvæna hugsun] [nokkrir nemar].	0%	100%
Direct Object PP 6 NP 2	Yes	No
d. Siggí eldaði [fyrir nokkra gamla vini úr skólanum] [þykkar steikur].	21%	79%
e. Ólöf keypti [handa öllum fjórum litlu frænkum sínum] [fallega skó].	45,9%	54,1%
f. Ég las [fyrir síðasta próf í sögu Evrópu] [margar bækur].	17%	83%

Although the majority of the sentences was not found fully acceptable by most speakers, some of them were accepted to a higher degree than was expected. Sentences (4b), (4c), (4d) and (4f) in Table 4 were found fully acceptable by very few speakers, in fact no speaker thought sentence (4c) was acceptable. Sentences (4a) and (4e) however had a much higher rating.³⁷

³⁷ In this length category, more speakers chose the neutral middle option, as shown in the table here. Although most of the highest numbers fall into the “unacceptable” column, a very high percentage of speakers marked the sentences as

A generalised linear mixed effects analysis of the relationship between relative heaviness, grammatical roles and prosodic heaviness was performed. The responses for all the test sentences were analysed, including the ones that were tested for the effects of prosodic stress, i.e., the sentences that included heavy and “light” PPs. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of NP length, PP length, prosodic stress, and grammatical roles, along with age and gender as potential social factors. As random effects, an intercept was included for participant and sentence, as shown in Figure 3.³⁸

A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where six models were compared to a null model, shown in the second row of Figure 2 as “no interaction”, which only had an intercept for the random effects, participant and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 2.³⁹

questionable, not rejecting them completely. Like we saw in footnote 36, the neutral middle option seems to be used more often in certain length categories, which shows that many speakers are not certain in how acceptable or unacceptable they find these sentence types. This is interesting in its own right and suggests that there is more nuance to be captured here, which would be easier to describe if the sentences were evaluated on a 5-point or 7-point Likert scale. This will not be pursued further in this thesis but deserves future research.

Subject vs Direct Object PP 6 NP 2	Yes	No	?
a. Á vorin synda [á litlu tjörninni í gamla miðbænum] [hvítir svanir].	26,3%	46,8%	26,8%
b. Á laugardaginn mættu [á árlega samkomu kvenna í listum] [margar konur].	5,5%	61,4%	33,1%
c. Í fyrra fóru [á spennandi námskeið um vistvæna hugsun] [nokkrir nemar].	0%	64,2%	35,8%
Direct Object PP 6 NP 2	Yes	No	?
d. Siggí eldaði [fyrir nokkra gamla vini úr skólanum] [þykkar steikur].	10,5%	41,8%	47,7%
e. Ólöf keypti [handa öllum fjórum litlu frænkum sínum] [fallega skó].	28,6%	34,6%	36,8%
f. Ég las [fyrir síðasta próf í sögu Evrópu] [margar bækur].	10,5%	52,6%	36,9%

³⁸ All reports of statistical analysis in this thesis are presented according to guidelines by Fruehwald (2018).

³⁹ The model comparison explores whether it is significantly better to analyse the data when certain factors are included. If the model significantly improves when a factor is added to it, like the first three factors do here, as shown in Figure 2, it means that said factor should be included when the data is further analysed. The factors that do not improve the model, like the last three factors in Figure 2, should not be explored further.

Figure 2 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	3	5668.3	5689.7	-2831.1	5662.3			
+ NP length	4	5661.7	5690.2	-2826.8	5653.7	8.6065	1	0.003
+ NP length: PP length	6	5648.3	5691.1	-2818.2	5636.3	17.3369	2	<.001
+ NP length: PP length:Stress	7	5637.0	5687.0	-2811.5	5623.0	13.2973	1	<.001
+ NP length:PP length:Stress: Grammatical role	12	5643.5	5729.1	-2809.7	5619.5	3.5419	5	0.617
+ NP length:PP length:Stress: Grammatical role: Gender	32	5674.2	5902.5	-2805.1	5610.2	9.3008	20	0.979
+ NP length:PP length:Stress: Grammatical role:Gender:Age	72	5711.2	6225.0	-2783.6	5567.2	42.9283	40	0.346

The LRT revealed, as illustrated in Figure 2, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP length was included. The fixed effect of PP length further improved the model, and the fixed effect of phrasal stress (heavy vs light PPs) improved it again significantly.⁴⁰ The fixed effect of grammatical role (subjects vs objects) did not significantly improve the model, which means that this factor did not have a significant effect on the participants' evaluation of the sentences and it was not included in the final version of the model, which is illustrated in a simplified layout in Figure 3. Neither of the two social factors, gender, or age, improved the model so they were also not included in the final version of the model.⁴¹

The final version of the model that was tested further is the one shown in the fifth row in Figure 2, including the fixed effects of NP length, PP length and stress and an intercept for the two random effects: participant and sentence. Figure 3 presents a simplified layout of the model that was used for the analysis (the factors are detailed further in Table 5 below).

⁴⁰ The fixed factor of *Stress* is based on the hypothesis that participants perceived the PP as either stressed or stress-free, as was discussed earlier in this chapter. The participants read the test sentences from a screen and did not hear them pronounced so they could only judge the prosodic structure they themselves assigned to the sentences. This factor was tested again in the production experiment described in Chapter 4 to further explore this potential effect.

⁴¹ The last test model, which included all the fixed effects, including the two social factors, failed to converge, which means the results are unreliable and cannot be reported.

Figure 3 – Layout for the Generalised Linear Mixed Model.

Responses ~ NP length * PP length * Stress + (1 participant) + (1 sentence)
--

Table 5 presents the summary of the estimated model fixed effects. The analysis confirmed that participants strongly preferred HNPS sentences where the shifted NP was long (6 words) over sentences with 2-word NPs, while also significantly disliking long PPs (6 words) before a shifted NP over short PPs (2 words) in the same position. As shown in the last line of the model summary, there is some interaction between the two effects, which shows that the response towards sentences with long NPs was slightly less positive if the PP was also long (this effect is not significant but worth mentioning). The prosodic structure of the PP in short sentences (stressed vs unstressed PP) had a very significant impact, showing speakers' strong preference for unstressed PPs in sentences with 2-word NPs, as further discussed in Section 3.2.2.⁴²

Table 5 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-0.8903	0.6667	-1.335	0.181
NP length	5.0946	0.9261	5.501	<.001
6 words				
PP length 6 words	-2.3067	0.9249	-2.494	0.012
No stress PP	3.8152	0.9206	4.144	<.001
NP length 6	-0.5058	1.3069	-0.387	0.698
words: PPlength				
6 words				

The analysis, displayed in Table 5, confirms what was shown in Tables 1–4 and can be summarised here. According to the results described in this section, the following is true about length in HNPS in Icelandic:

⁴² Again, this is based on the hypothesis that speakers perceive the PPs as stressed or unstressed, according to their internal structure, as will be explored further in Chapter 4.

- The absolute length of the NP is important, i.e. it is important that the NP is long.
- It is just as important, or more important, that the PP that stands between the verb and the NP is not long.

The results therefore confirm that length is a determining weight factor for HNPS and that although the absolute length of the shifted constituent itself alone is important, the relative length of the string of words it shifts over is more important. This effect is further illustrated in Figure 4, which shows the interaction between the length of the NP and the length of the PP in the HNPS sentences and the speakers' positive response towards them.

Figure 4 – Relative length effects in HNPS in Icelandic.

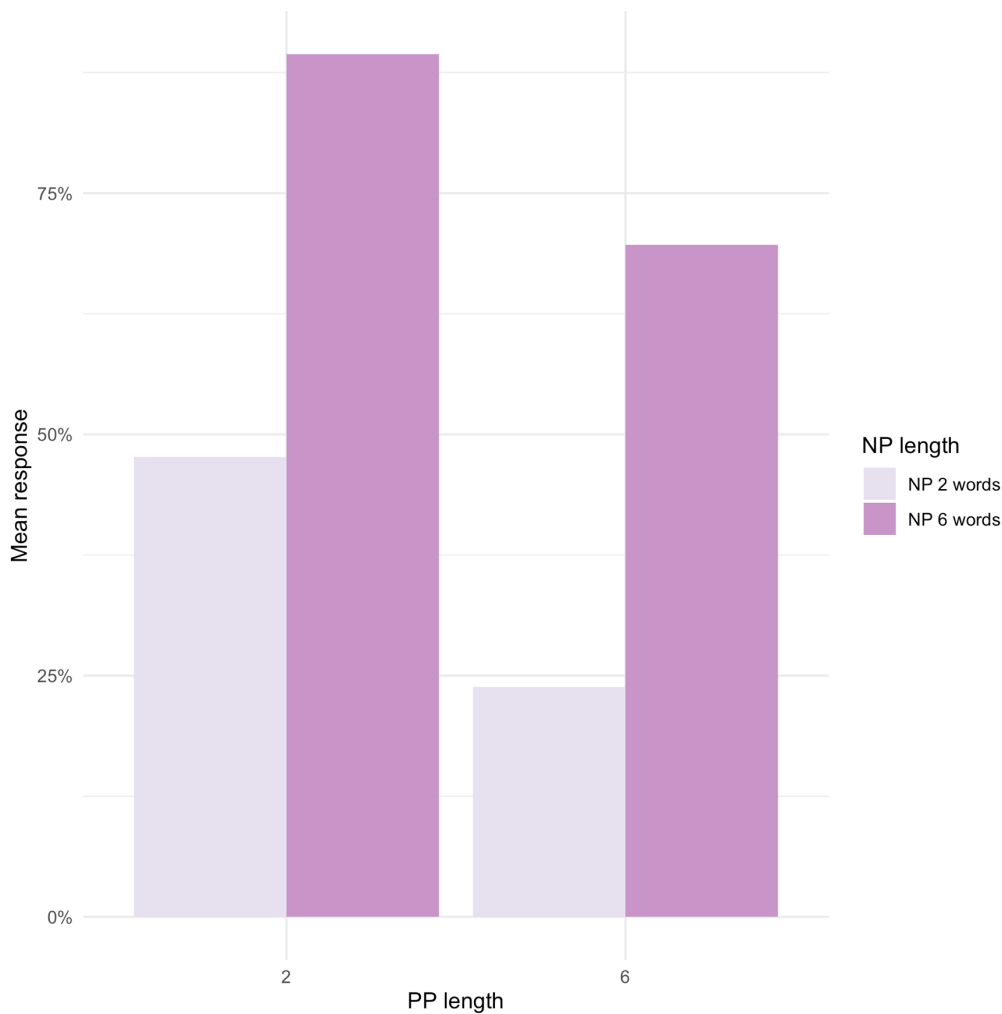


Figure 4 shows that long NPs (the dark-coloured bars) are much better received than short NPs (the light-coloured bars). It also shows clearly that long NPs receive a more positive response when the PP that stands before it is short. This figure also shows that if the NP is short, approximately 50%

of speakers accept it at the end of the clause if the PP that stands between the NP and the verb is also short. In the cases where the PP is longer than the NP, fewer than 25% of speakers accept the sentences as acceptable. This gives reason to take a closer look at HNPS with short NPs as it seems that NPs may not need to be long at all in order to undergo HNPS, at least not to about 50% of speakers, although most speakers prefer the NP to be longer. Short NPs in HNPS will be the focus of the next subsection, where we take a closer look at short NPs and prosodic weight effects in HNPS.

As illustrated in Figure 2, when fitting the generalised linear mixed model for the analysis, the fixed effect of grammatical roles did not improve the model, meaning that this factor had no significant impact on the participants' responses. Figure 5 confirms the analysis.

Figure 5 – Shifted subjects vs shifted objects in HNPS in Icelandic.

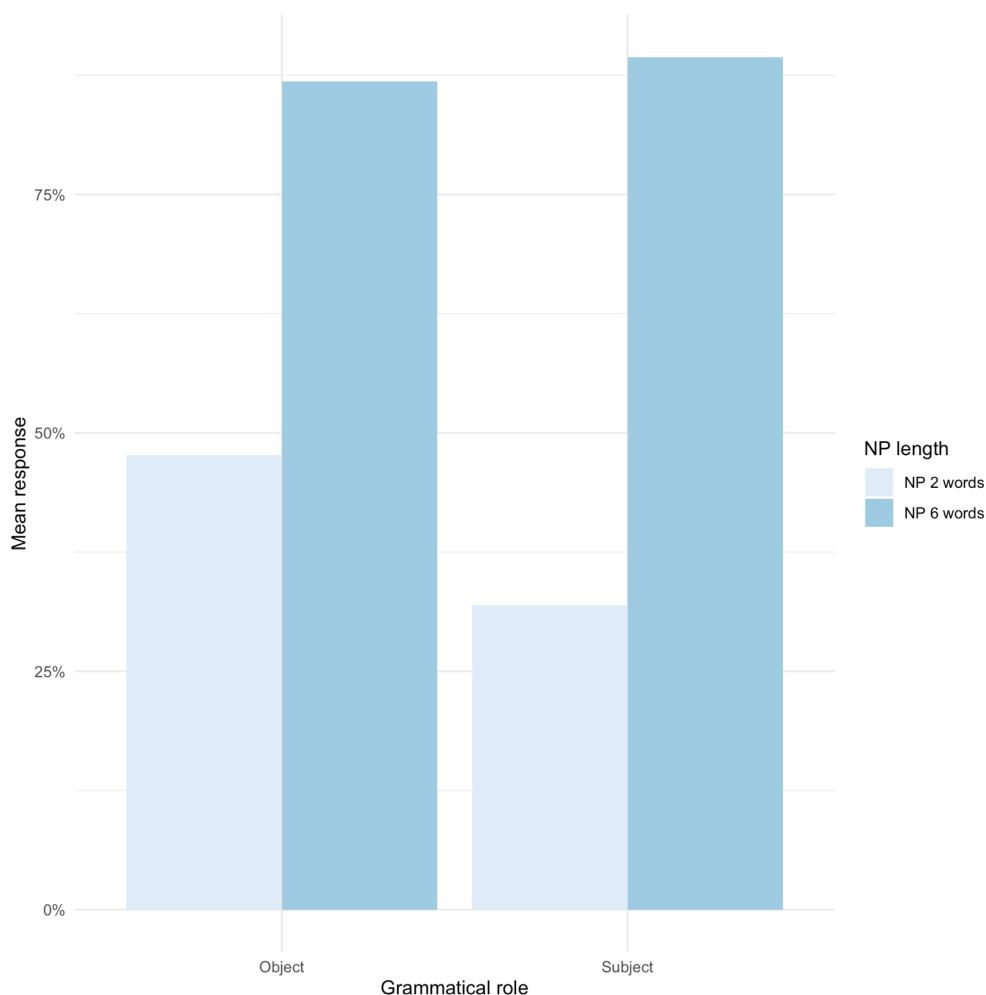


Figure 5 reflects the results that were shown in Tables 1–4 and confirm that, for Icelandic speakers, it is not important at all whether the NP in HNPS is a subject or a direct object. For sentences with long NPs at the end (the dark-coloured bars), the acceptance rates are almost equal between object-

NPs and subject-NPs. For sentences with short NPs at the end (the light-coloured bars) the object-NPs were slightly better received than the subjects but, again, the analysis showed that this is not a significant effect. These results are important for two major reasons:

- The results remove all doubt about whether subjects are “equally good” as objects are in HNPS in Icelandic. Both sentences with subject-NPs and object-NPs were generally well received in the survey, as illustrated in Figure 5.
- The results also show that for some speakers, subject-NPs can undergo HNPS even if they are not long at all. The literature has consistently maintained that subjects can only move to the end with HNPS if they are long or complex and, while that appears to be true for most speakers, these results show a clear inter-speaker variation that should not be dismissed.

What remains to be seen is whether the evaluations from the survey reflect the way this structure appears in actual language production, which will be the focus of Chapter 4.

3.2.2. *Prosodic weight effects in HNPS*

This section focuses on prosodic heaviness and HNPS with short NPs. The six test sentences, three with object-NPs and three with subject-NPs, that included a two-word NP and a two-word PP have already been laid out in the previous section in comparison to the sentences in the other length categories, as described in (3.2), but are displayed in Tables 6–7 as well, for convenience’s sakes. In these sentences the PP included a full NP complement, as described in Section 3.1.1. These test sentences also served as minimal pairs against another set of six test sentences, three with object-NPs and three with subject-NPs, that also had short NPs and a PP that included a pronoun complement. The PP with the pronoun complement would normally be unstressed in this position, and therefore the NP at the end, which would carry the nuclear stress in the sentence, would be prosodically heavier than the PP, i.e., even though they are not heavy in the sense that they are long, or include many words, the stress-structure of the sentence makes them prosodically heavier than the PP that stands between them and the verb. Table 6 presents sentences with short subject NPs, first the ones with fully stressed PPs, followed by the sentences with unstressed PPs. Table 7 is laid out in the same way but with short object-NPs. The highest percentage of responses for each sentence is in bold.

Table 6 – HNPS stimuli with stressed and unstressed PPs and short, shifted subject-NPs in Icelandic.

Stressed PP	Yes	No
a. Í sumar koma [á námskeiðið] [margir krakkar].	21%	79%
b. Seinast mættu [á bjórkvöldið] [þrír nemendur].	50,16%	49,84%
c. Um síðustu helgi flaug [til Marokkó] [gamall vinur].	22%	78%
Unstressed PP	Yes	No
a. Á seinasta misseri leituðu [til ykkar] [margir nemar].	63%	37%
b. Um helgina voru [hjá okkur] [hressir krakkar].	80%	20%
c. Í fyrra komu [til okkar] [góðir gestir].	94%	6%

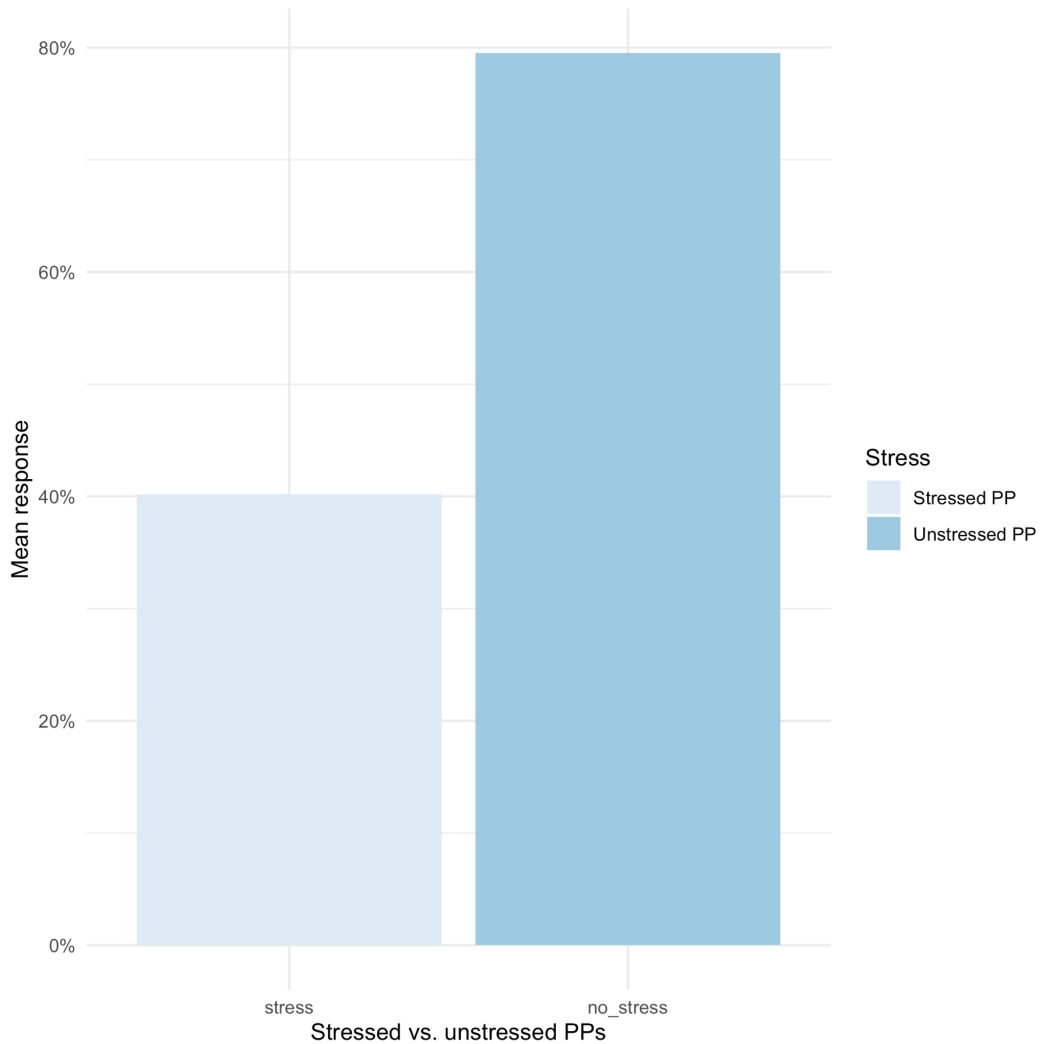
While the majority of participants rejected the stressed-PP sentences, the majority accepted the unstressed-PP sentences as fully acceptable, as is displayed in Tables 6–7. The significant effect of stress (or lack of it) that was found in the generalised linear mixed model analysis described in 3.2.1., is reflected in these results and so is the absence of significant impact of the NP’s grammatical role.

Table 7 – HNPS stimuli with stressed and unstressed PPs with short, shifted object-NPs in Icelandic.

Stressed PP	Yes	No
a. Ég geymi [fyrir börnin] [nokkrar kökur].	47,3%	52,7%
b. Mamma keypti [handa Sigga] [nýjar buxur].	43%	57%
c. Ólafur skrifaði [í gær] [nokkur bréf].	49,1%	50,9%
Unstressed PP	Yes	No
d. María bakaði [fyrir okkur] [góða köku].	75%	25%
e. Jón samdi [fyrir okkur] [eina vísu].	86%	14%
f. Ég keypti [fyrir ykkur] [nokkrar bækur].	79%	21%

Figure 6 further illustrates the effect, presenting the average positive response towards all the short HNPS sentences displayed in Tables 6–7 and showing clearly that the prosodic structure of the PP is very important for this sentence structure. When the PP is unstressed, approximately 80% of the responses is positive, whereas the average positive response for the sentences with stressed PPs, or PPs with full NP compliments, is around 40%.

Figure 6 – Short NPs and stressed vs unstressed PPs in HNPS in Icelandic.



The hypothesis that was described in Section 3.1.1. assumes that the prosodic weight effects, shown clearly in the results, are in fact a manifestation of relative weight effects, which have been the main focus of this chapter, measured in length. In this instance, length is not available as a measurement for heaviness, as both the NP and the PP are arguably short. As the unstressed PP has no prosodic weight, it attaches to the nearest prosodic phrase that stands before it, whether the PP is at the end of the clause or between the verb and the NP:

- (3.28) a. (Jón) (samdi) ([eina vísu] [fyrir okkur]).
 b. (Jón) (samdi [fyrir okkur]) ([eina vísu]).

The NP is therefore prosodically heavier than the PP, regardless of its position, making it possible for the short object-NP to undergo HNPS, whereas no such effect is found in the sentences with fully stressed PPs:

- (3.29) a. (Mamma) (keypti) ([nýjar buxur]) ([handa Sigga]).
b.?(Mamma) (keypti) ([handa Sigga]) ([nýjar buxur]).

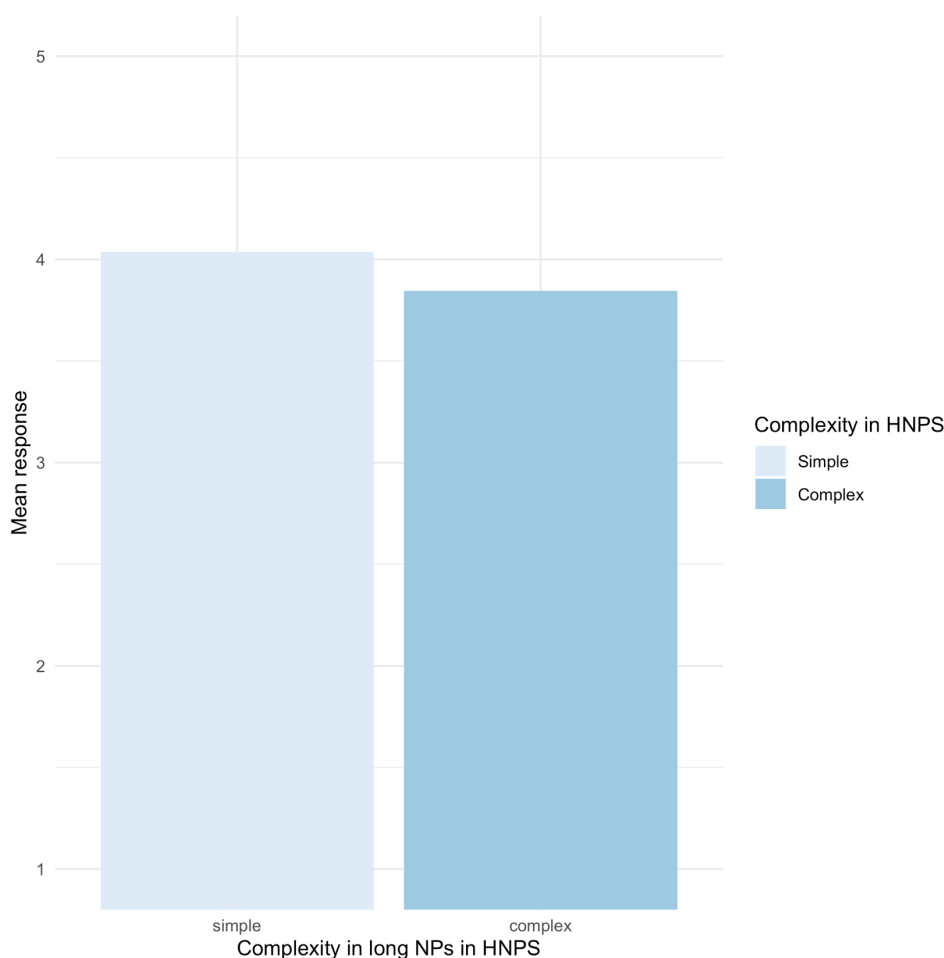
It is difficult to prove a hypothesis about prosodic structure and prosodic weight effects, using only data from an acceptability survey. A judgment task cannot provide information about how speakers hear the sentences in their heads when they evaluate them. It can only be assumed that this is the way the participants, or at least the majority of them, has assigned stress to these sentences. To test this hypothesis further it is necessary to examine these sentences in production and analyse the prosodic realisation of the structure in question and that will be the main focus of Chapter 4. In the next few sections we explore the potential effects of length vs complexity in various syntactic structures, based on results from the surveys conducted in 2020 and 2021.

3.2.3. *Complexity in Heavy NP Shift*

First we will look at the acceptance rates for the test sentences where the two potential weight factors, length vs complexity, were compared. Figure 7 shows the mean rates of positive responses for NPs that were long but simple and NPs that were equally long and complex.⁴³ Figure 7 shows that there is almost no difference between the ratings of HNPS sentences with complex and simple NPs. Both sentence types get a high mean score of around 4 points out of 5. The HNPS sentences with simple NPs are rated slightly higher but the difference does not turn out to be significant, as will be shown in the linear mixed model later in this section.

⁴³ The results presented in Figure 7 and other charts in this subsection are from the acceptability surveys conducted in 2020 and 2021. In these surveys the responses were collected on a 5-point likert scale, which is why the mean response rate presented in the charts is on the scale of 1–5, unlike the previous subsection where mean rates presented in the charts represented the percentage of speakers that accepted or rejected the test stimuli.

Figure 7 – Length vs Complexity in HNPS in Icelandic.



The test sentences and the response rates from the 194 speakers are presented in Tables 8–9. Table 8 shows the test sentences with simple and complex direct object-NPs and Table 9 shows the test sentences with simple and complex subject-NPs. The first column on the right shows the mean rate that each sentence received on the scale of 1–5 and the last column shows the standard deviation.

Table 8 – HNPS stimuli with simple and complex direct-object NPs in Icelandic.

Direct-object NP simple	Mean	SD
a. Sigríður les [á morgnana] [ýmiss konar nýleg tímarit um tísku].	3.78	1.25
b. Við skoðuðum [á safninu] [fágætar gamlar styttur úr hvítum steini].	3.93	1.25
c. Þjófarnir stálu [frá Ólöfu] [fallegum gömlum úrum og dýru skarti].	4.08	1.20
Direct-object NP complex		
d. Ég las [fyrir börnin] [bók sem fjallar um brjálaða sjóræningja].	4.13	1.20
e. Margrét málaði [fyrir safnið] [myndir sem öllum þóttu afar fallegar].	3.74	1.30
f. Við söfnuðum [í hrúguna] [laufblöðum sem höfðu fallið á jörðina].	3.84	1.32

In this survey, like in all the experiments, it was decided to continue testing HNPS sentences with shifted subjects and direct objects, to maintain consistency between the results. Tables 8–9 show that the mean rates for these two categories of test sentences are very similar, with the lowest mean rate of 3.65 and the highest mean rate of 4.33.

Table 9 – HNPS stimuli with simple and complex subject NPs in Icelandic.

Subject NP simple	Mean	SD
a. Um helgina keppa [á mótinu] [ungir iðkendur frá Ármanni og Gróttu].	4.08	1.19
b. Í fyrra komu [til bæjarins] [nokkrir litlir leikhópar frá öðrum löndum].	4.33	1.02
c. Venjulega mæta [á fundina] [nokkur hundruð ungar konur úr hverfinu].	4.00	1.26
Subject NP complex		
d. Á morgun mæta [í útvarpið] [karlar sem ferðast eingöngu á þríhjóli].	4.02	1.22
e. Í fyrra sungu [í keppninni] [krakkar sem æfa í gamla söngskólanum].	3.65	1.35
f. Í sumar fljúga [til Þýskalands] [flugvélar sem voru framleiddar á Spáni].	3.66	1.36

The difference between sentences with complex and simple mean rates, as shown in Tables 8-9, is also very little, as reflected in Figure 7.

A linear mixed effects analysis of the relationship between grammatical roles and complexity was performed. A linear mixed effects model was fit with the linear responses as the outcome variable, with fixed effects of grammatical roles and complexity, along with age and gender as potential social factors. As random effects, an intercept was included for participant and sentence. A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where four models were compared to a null model, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 8.

Figure 8 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	4	47798	47829	-23895	47790			
+ Complexity	5	47797	47836	-23894	47787	3.1295	1	0.076
+ Complexity:	7	47798	47852	-23892	47784	3.2563	2	0.196
Grammatical role								
+ Complexity:	15	47798	47913	-23884	47768	15.9341	8	0.043
Grammatical								
role:Gender								
+ Complexity:	39	47814	48114	-23868	47736	31.9866	24	0.127
Grammatical								
role:Gender:Age								

The LRT revealed, as illustrated in Figure 8, that the fit of the linear mixed model did not improve significantly when the fixed effect of complexity was included, nor did the fixed effect of grammatical role improve it. These results are not surprising as they reflect what we saw in Figure 7 and Tables 8–9. Grammatical roles did not influence the results in the first experiment either so it would be unexpected if they had an effect in this experiment. The model did significantly improve when the fixed effect of gender was included but a further investigation of the model revealed that while the responses from participants that identify as women were significantly more negative than from participants of other genders ($t=-2.693$, $p=.007$) the gender effect did not interact with any other fixed effect. This will be discussed later in this section. The fixed effect of age did not significantly improve the model either, which means that none of the effects are significant, and they do not give reason to build a final model or investigate further.

The overall conclusion from this experiment (which confirms the results of the previous survey) is that HNPS structures are generally well received by Icelandic speakers, regardless of whether the NP is a subject or object and the complexity of the NP is also not important, at least not when speakers read and evaluate the quality of sentences. Complexity did prove to play a significant role in HNPS in the experiments described in Chapter 4, which suggests that complexity might be an important factor in language production but not as important for processing information from written language, as will be further discussed in Chapter 4. This underlines the importance of using more than one method when testing grammatical phenomena, as they do not always test exactly the same thing, but together they provide a clearer picture than a single experiment would do.

3.2.4. Weight effects in Object Shift

This section presents the results from the HNPS survey, where two weight predictors were tested for Full NP Object Shift (see discussion on Object Shift in Chapter 2): absolute and relative weight measured by number of words and syllables and the complexity of the NP. Similar methods were used to design the test sentences for the HNPS surveys, as was described previously in this chapter. Figure 9 presents the mean rates of positive responses for each length category, as described in Section 5.1. Here we see how speakers evaluated test sentences based on the length of the NP vs the length of the negation on the scale of 1–5.

Figure 9 – Positive responses to OS stimuli of different length categories.

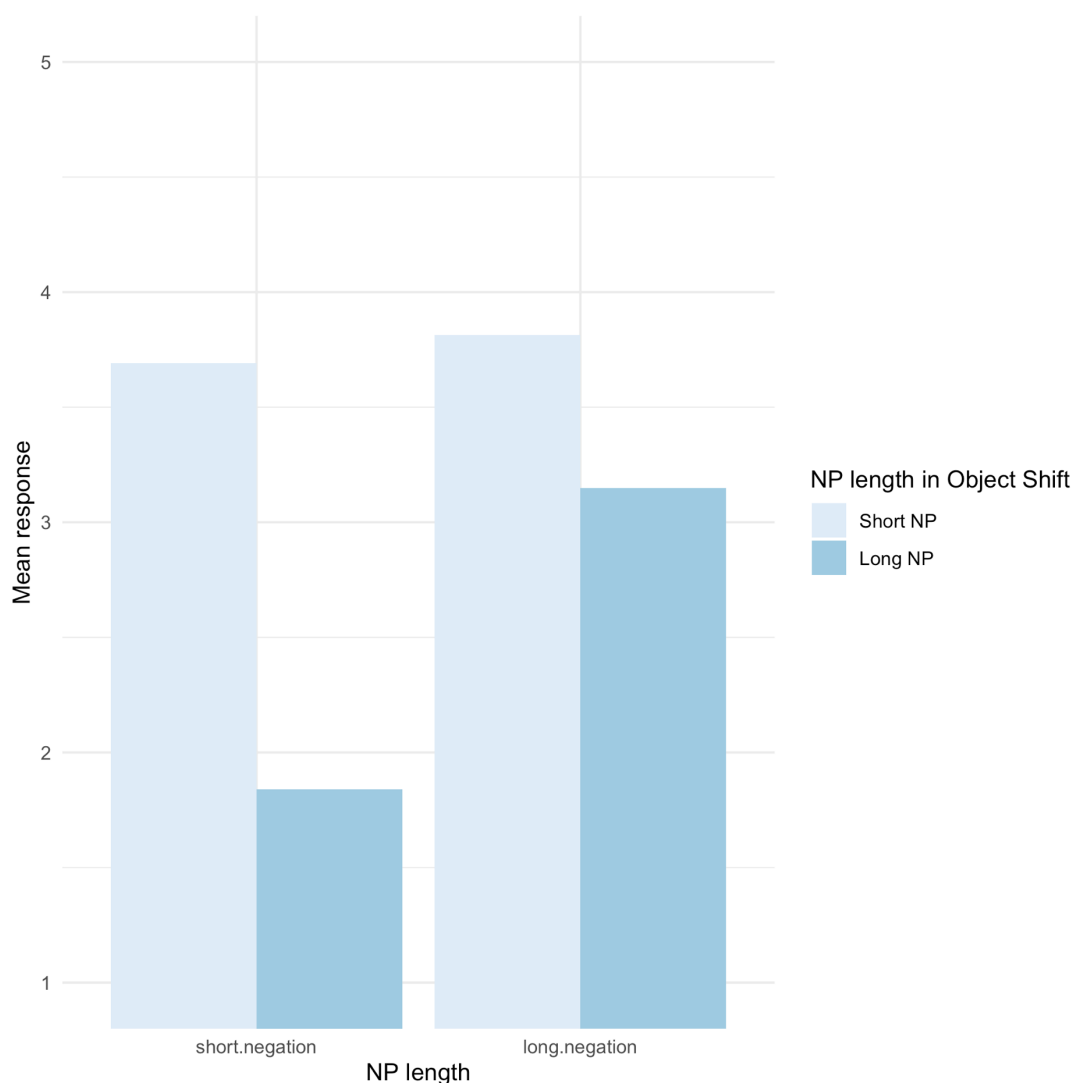


Figure 9 shows that the absolute length of the NP is clearly important as short NPs (the light blue bars) get a much better reception than the long NPs (presented by the dark bars). There is a visible difference between the reception of sentences with long and short negation, which indicates that

relative length might also be important, but a linear mixed effects analysis revealed that the effect was not significant, as discussed below. Tables 10-11 show the test sentences by the different length categories. The first column on the right shows the mean rate that each sentence received on the scale of 1-5 and the last column shows the standard deviation.

Table 10 – OS stimuli with a short negation and NP of various length in Icelandic.

Category 1: Short NP - Simple Negation	Mean	SD
a. Óli las [blaðið] [ekki].	3.12	1.59
b. Sigga man [ljóðið] [ekki].	3.36	1.50
c. Ég þekki [manninn] [ekki].	4.58	0.90
Category 2: Long NP – Simple Negation		
d. Við sáum [ógeðslega ljótu myndina] [ekki].	2.07	1.28
e. Ég las [rosalega löngu greinina] [ekki].	2.04	1.26
f. Ólöf borðaði [alla girnilegu ostana] [ekki].	1.40	0.80

Table 10 shows that the length of the NP is very important for basic OS structure with a simple negation. The first three sentences, which have a short, single word, two-syllable NP following the verb and preceding a simple, equally long negation, were positively received by most speakers, whereas the second three sentences, that also have a simple negation but a long NP, got very negative reviews, with the mean response rate that suggests that many speakers found them close to being unacceptable. These results support the hypothesis that an NP needs to be light to undergo OS. The next question then is whether the length of the negation has any effect on the responses, which is what we see in Table 11.

Table 11 – OS stimuli with a long negation and NP of various length in Icelandic.

Category 3: Short NP – Long Negation	Mean	SD
a. Gunna las [bréfið] [alveg áreiðanlega ekki].	3.76	1.39
b. Ég fékk [pakkann] [alveg ábyggilega ekki].	3.53	1.46
c. Óli þekkir [manninn] [alveg áreiðanlega ekki].	4.14	1.23
Category 4: Long NP – Long Negation		
d. Við færðum [stóru amerísku skápana] [alveg ábyggilega ekki].	2.91	1.48
e. Hann man [löngu leiðinlegu söguna] [alveg ábyggilega ekki].	3.37	1.40
f. Jón hitti [gömlu furðulegu konuna] [alveg áreiðanlega ekki].	3.15	1.47

The first three sentences in Table 11 include a short, single word, two-syllable NP following the verb and preceding a long, “stacked” negation. The mean response rate is quite similar to the first three sentences in Table 10 which means that although this sentence type was generally well received, the stacked negation does not seem to have improved the structure (which should be reflected in higher ratings). It has, however, greatly improved the structure with long NPs, as we see in the last three rows of Table 11. There we have sentences with a long NP and equally long, stacked negation. The mean rates for these sentences are much higher than we saw in Table 10, which suggests that some speakers do accept heavy NPs in OS word order, unlike what has previously been considered, as long as the adverb/negation that follows the NP is also long.

Finally, Table 12 shows the sentences with complex NPs preceding a simple, short negation. The mean reception rates for these sentences are very low and close to the lowest point, which suggests that most speakers found them to be unacceptable.

Table 12 – OS stimuli with a short negation and a complex NP in Icelandic.

Category 5: Complex NP – Short Negation	Mean	SD
a. Magni sá [púðluhundana sem tóku þátt] [ekki].	1.19	0.63
b. Ég keypti [aðventukransinn sem var brotinn] [ekki].	1.12	0.45
c. Börnin borðuðu [terturnar sem brögðuðust illa] [ekki].	1.24	0.74

Although difficult to tell, as the rates for the comparable sentences in Category 2, where the NP was longer than the negation but did not include a subordinate clause, were generally quite low, the rates seem to be even lower for the sentences in Table 12.

A linear mixed effects analysis of the relationship between length and complexity in OS structures was performed. A linear mixed effects model was fit with the linear responses as the outcome variable, with fixed effects of the length of the NP, the length of the negation, and complexity, along with age and gender as potential social factors. As random effects, an intercept was included for participant and sentence. A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where three models were compared to a null model, which only had an intercept for the random effects, participant, and sentence⁴⁴. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 10.

⁴⁴ Two more models were compared where the two social factors, age, and gender, were also tested. Neither of the social factors produced effects that were significant after correcting for multiple comparisons, so they were not considered further.

Figure 10 – Model comparison in LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	4	60670	60702	-30331	60662			
+ NP length	5	60660	60699	-30325	60650	12.6126	1	<.001
+ NP length:Negation length	7	60646	60702	-30316	60632	17.3579	2	<.001
+ NP length: Negation length:Complexity	8	60644	60707	-30314	60628	4.4681	1	0.034

The LRT revealed, as illustrated in Figure 10, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP length was included. The fixed effect of Negation length further improved the model, and the fixed effect of complexity improved it again significantly. The final version of the model that was used for the analysis is illustrated in a simplified layout in Figure 11.

Figure 11 – Layout for the Generalised Linear Mixed Model.

Responses ~ NP length * Negation length * Complexity +
(1|participant) + (1|sentence)

Table 13 shows the summary of the estimated model fixed effects. The analysis confirmed that participants strongly dispreferred OS sentences where the NP was long, but the effect of negation length somewhat levelled this effect out, as seen in the last row of Table 13 where we see a significant interaction between NP length and negation length. Negation length on its own however had no significant impact as shown in the third row of Table 13.

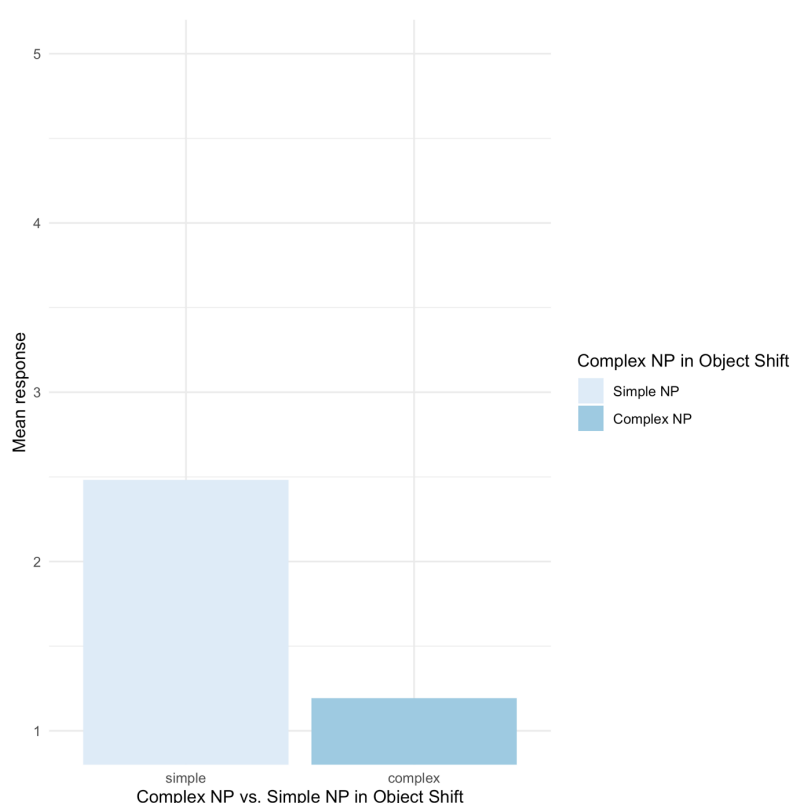
Table 13 – Estimated model fixed effects.

	Estimate	Std. error	t value	p
Intercept	3.6905	0.2471	14.932	<.001
Long NP	-18508	0.3485	-5.311	<.001
Long Negation	0.1242	0.3485	0.356	0.729
Complex NP	-0.6501	0.3485	-1.865	0.091
Long NP: Long Negation	1.1854	0.4928	2.405	0.036

The analysis reflects the mean responses that were shown in Tables 10–11: Speakers strongly prefer short NPs in OS over long NPs, which they find close to unacceptable or fully unacceptable in this structure. However, if the negation is also long, speakers do not dislike long NPs in OS as much as they dislike them when the negation is short. The fact that the length of the negation on its own has no effect on the speakers' evaluations means that there is no detectable effect of relative weight effects. If there were, the sentences in category 3 (Table 11) should have been significantly better received than any other sentence type and, while they did get very high ratings, no significant effect of that kind was detected.

Finally, the fixed effect of complexity did not show up as fully significant in the analysis, but it still revealed a measurable trend that is close enough to be significant that it is worth mentioning. As reflected in the analysis in Table 13 and Tables 10–12, speakers did respond more negatively to complex NPs in OS. Figure 12 illustrates this effect in detail where speakers' mean response rates to sentences with long NPs, complex and non-complex, are compared. Short NPs were excluded from this comparison as none of them were complex.

Figure 12 – Complex and simple NPs in Object Shift in Icelandic.



As Figure 12 shows and was also reflected in Tables 10–12, the sentences with complex direct object NPs received a lower response rate than any other sentence type. The mean response rate for simple long NPs, however, is lower than 2,5 on a scale of 1–5 points, which means that speakers really did not like them either and found them closer to unacceptable than acceptable. That is likely the reason why the effect of complexity is not fully significant, although visible in the results.

Out of all the syntactic structures that feature in this study, Object Shift is most likely the most difficult one to test for weight effects. The ideal OS structure has a short NP, which leaves little flexibility for testing NPs of various length and factors such as complexity are also difficult to test. The NP, arguably, needs to include at least three words to include a relative clause and it seems that even a three-word NP is too long for regular OS. There are potentially other ways of including complexity in short NPs, but it would then probably have to be measured in hidden features on the syntax-morphology interface, which will not be looked into here. The results of this study showed that long NPs are more acceptable to speakers if the negation is also long, which potentially opens a window of opportunity to explore the effects of complexity further, e.g., in sentences where the NP and negation both include three words, and half the NPs are simple, and half are complex. Ideally, the complexity factor should be tested across various length categories to get a clearer image of which

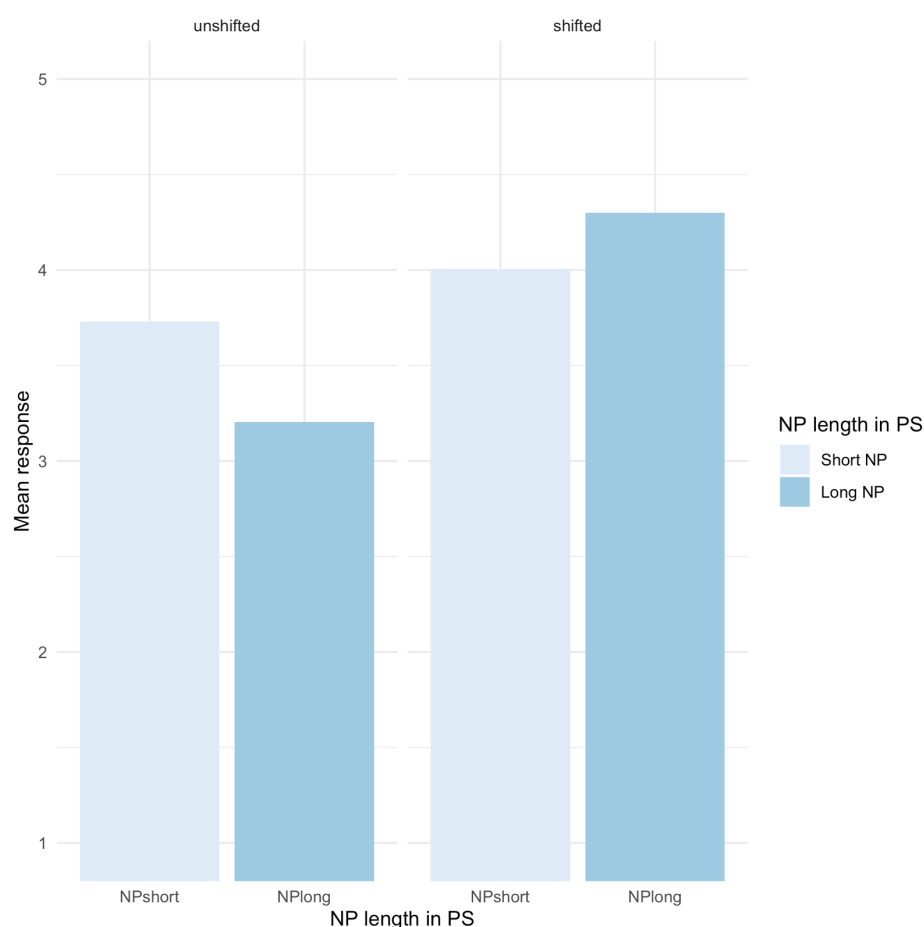
one is more important for the speakers' evaluations. This was attempted in the next section which describes the results from the last survey, where length and complexity were tested as factors for Particle Shift.

3.2.5. *Weight effects in Particle Shift*

This section presents the results where sentences with particle constructions, or Particle Shift, were tested for potential effects of heaviness, measured by number of words and syllables and the complexity of the NP. This survey was slightly different from the previous ones described in this chapter: As discussed in Chapter 2, it is debatable where the NP in PS is originally situated in basic word order (see e.g., Ross 1967, Thráinsson 2007:141 and also Svenonius 1994, 1996a,b and Johnson 1991). As this study does not have a clear preconception of its placement, the position of the NP, before or after the particle, was also included as a factor. To maintain consistency in the statistical processing of the survey data, it was decided to refer to NPs at the end of the clause as “shifted”, and the concept of Particle Shift is treated similarly to Heavy NP Shift in this thesis, i.e., an NP that is moved to the right across another element, in this instance the particle. Furthermore, in this survey, complexity was tested in both longer and shorter NPs, so it was maintained as a factor through all of the survey. The previous two surveys have already shown that complexity does play a role against length alone in weight effects and in this survey, it was decided to test these two factors further against each other and their interaction with NP positioning. If one weight effect is more important than the other, the results from survey should show that, at least for Particle Shift, and for weight effects in general.

Figure 13 presents the mean rates of responses for NP length and NP positioning on a five-point likert scale. Here we see how speakers evaluated test sentences based on the length of the NP and whether the NP appeared before the particle or after. The dark bars represent long NPs (6 words), and the light bars represent short NPs. The two bars on the right show positive responses for NPs at the end of the clause and the two bars on the left represent NPs that appeared before the particle.

Figure 13 – NP length by position in Particle Structures in Icelandic.



It appears from this chart that speakers generally prefer NPs at the end of the clause (shifted) in this structure. Although the difference in mean ratings between NP positions is not that big, it seems that sentences where the NP appears before the particle are slightly less popular, especially if the NP is long. Tables 14–15 show PS sentences with shorter (3 words) and longer (6 words) simple NPs preceding or following a particle. The first column on the right shows the mean rate that each sentence received on the scale of 1–5 and the last column shows the standard deviation.

Table 14 – PS stimuli with simple three-word NPs following or preceding a particle in Icelandic.

Three-word simple NP following a particle	Mean	SD
a. Strákarnir settu [niður] [fallegu gulu rófurarnar].	4.36	1.20
b. Ritarinn las [upp] [rosalega langa listann].	3.24	1.46
c. Margrét henti [út] [gamla bröndotta kettinum].	4.10	1.33
Three-word simple NP followed by a particle		
d. Skáldið las [langa leiðinlega ljóðið] [upp].	3.61	1.39
e. Agnes henti [vesalings gamla hundinum] [út].	4.73	0.61
f. Við settum [allar rauðu kartöflurnar] [niður].	4.31	1.16

Table 15 – PS stimuli with simple six-word NPs following or preceding a particle in Icelandic.

Six-word simple NP following a particle	Mean	SD
a. Afi setti [niður] [fínu rauðu rófumar og þroskuðu laukana].	4.37	1.14
b. Dyravörðurinn henti [út] [háværu fullu nemendunum með falska gítarinn].	3.82	1.34
c. Unga konan las [upp] [löngu sorglegu söguna um týndu drengina].	4.48	0.97
Six-word simple NP followed by a particle		
d. Ferðalangurinn las [löngu fróðlegu frásögnina um undur Japans] [upp].	2.60	1.34
e. Kaupmaðurinn henti [aumingja gömlu konunni með skrautlega hattinn] [út].	4.30	1.05
f. Krakkarnir settu [allt dásamlega grænmetið og fallegu blómin] [niður].	3.76	1.28

As Tables 14–15 show, there is no striking difference in the ratings for 3-word and 6-word NPs, whether they precede or follow the particle. These rates indicate that NP length might not be a significant weight predictor for PS, despite what Figure 13 shows.

Tables 16–17 show PS sentences with the same length of NPs, three words and 6 words, preceding or following a particle, but these NPs all include a relative clause.

Table 16 – PS stimuli with complex three-word NPs following or preceding a particle in Icelandic.

Three-word complex NP following a particle	Mean	SD
a. Dyravörðurinn henti [út] [fyllibyttunni sem ældi].	4.20	1.18
b. Börnin settu [niður] [krókusana sem ilmuðu].	3.89	1.27
c. Kennarinn las [upp] [nemendurna sem dúxuðu].	4.22	1.24
Three-word complex NP followed by a particle		
d. Við hentum [nemendunum sem svindluðu] [út].	3.89	1.28
e. Árni las [keppendurna sem sigruðu] [upp].	2.32	1.37
f. Ég setti [kartöflurnar sem spíruðu] [niður].	3.48	1.42

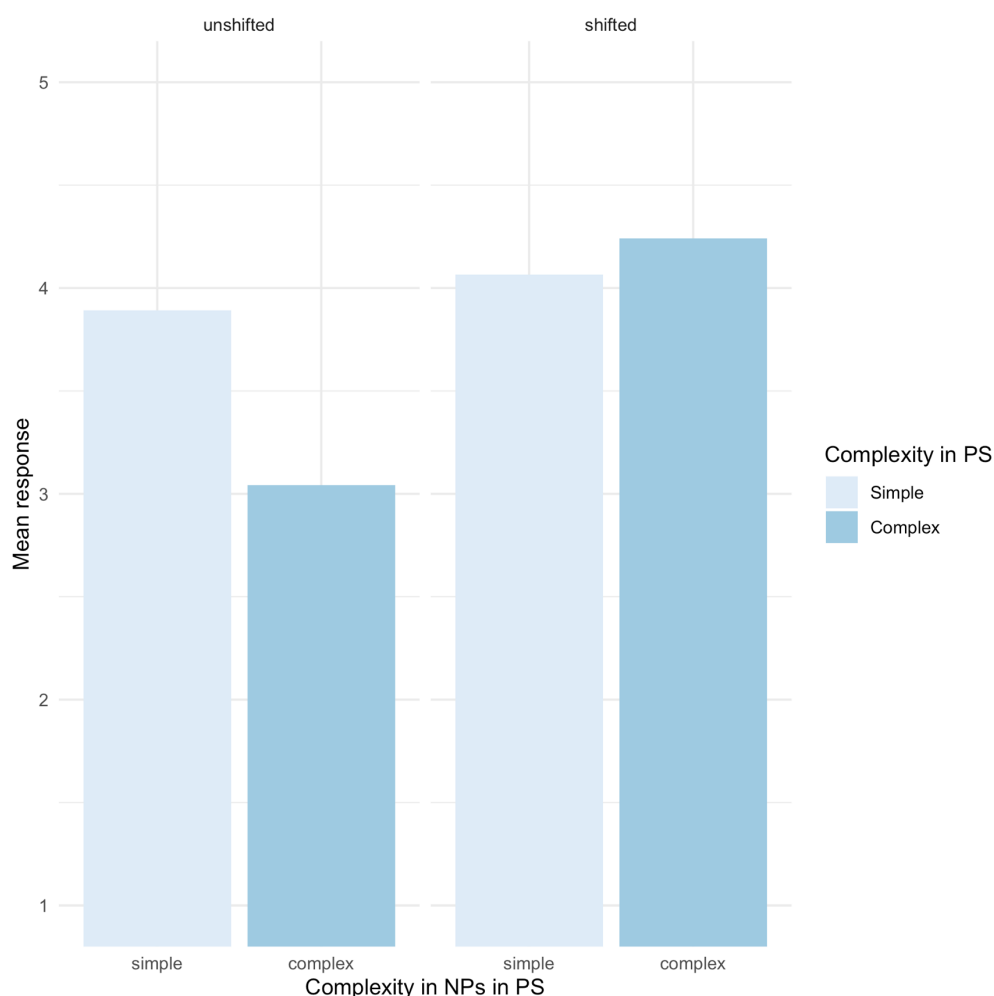
Table 17 – PS stimuli with complex three-word NPs following or preceding a particle in Icelandic.

Six-word complex NP following a particle	Mean	SD
a. Leigusalinn henti [út] [leigjendunum sem höfðu ekki borgað leiguna].	4.27	1.21
b. Bóndinn setti [niður] [gulrætur sem kanínurnar í garðinum átu].	4.19	1.22
c. Kennarinn las [upp] [nöfn nemendanna sem voru á listasafninu].	4.64	0.77
Six-word complex NP followed by a particle		
d. Þjálfararnir hentu [óþekku krökkunum sem stálust í sundlaugina] [út].	3.37	1.39
e. Fréttamaðurinn las [nöfn förnarlambanna sem dóu í snjóflóðinu] [upp].	2.38	1.27
f. Mamma setti [laukana sem urðu að fallegum túlípönum] [niður].	2.78	1.40

It seems that for both length categories in Tables 16 and 17, that the sentences where a complex NP precedes the particle get a lower rating than the ones where the complex NP is at the end of the clause, but particularly when the NP is also long, as shown in Table 17. The effect we see in Figure 13, where it appears that long NPs before a particle are unpopular, is driven by the sentences with long complex NPs, indicating that it is complexity but not length that makes the sentences bad.

Figure 14 presents the mean rates of positive responses for NP complexity by positioning. Here we see how speakers evaluated test sentences based on the complexity of the NP and whether the NP appeared before the particle or after. The dark bars represent complex NPs, and the light bars represent simple NPs. The two bars on the right show positive responses for NPs at the end of the clause and the two bars on the left represent NPs that appeared before the particle. Figure 14 shows a very similar trend as Figure 13 showed.

Figure 14 – Complexity as a weight factor in Particle Shift in Icelandic.



Speakers seem to generally prefer NPs at the end of the clause in this structure, but it seems that sentences where the complex NP appears before the particle are much less popular than any other sentence type.

To test these two factors against each other a Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where three models were compared to a null model, which only had an intercept for the random effects, participant, and sentence.⁴⁵ The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 15.

⁴⁵ Two more models were compared where the two social factors, age, and gender, were also tested. Neither of the social factors produced results that were robust to multiple comparison corrections, so they were not considered further.

Figure 15 – Model comparison in LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	4	14325	14351	-7158.4	14317			
+ NP position	5	14320	14352	-7155.0	14310	6.8591	1	0.008
+ NPposition: Complexity	7	14317	14362	-7151.3	14303	7.3427	2	0.025
+ NPposition: Complexity:NP length	11	14320	14391	-7148.9	14298	4.8724	4	0.300

The LRT revealed, as illustrated in Figure 15, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP positioning was included. The fixed effect of complexity further improved the model, whereas the fixed effect of NP length did not improve the model. This suggests that it is in fact complexity that significantly affects speakers' evaluations of PS structures, but NP length does not seem to be a weight predictor for this structure at all, at least not when it comes to evaluating sentences. The final version of the model that was used for the analysis is illustrated in a simplified layout in Figure 16.

Figure 16 – Layout for the Generalised Linear Mixed Model.

Responses ~ NP position * Complexity + (1 participant) + (1 sentence)
--

Table 18 presents the summary of the estimated model fixed effects. The analysis shows that NP positioning has no effect on its own, but complexity has a significant negative impact on the responses, which means that complex NPs in general are not as well received in PS structures. There is also an interaction between NP positioning and complexity which has a positive impact, and that shows that while complex NPs are generally unpopular in this structure, speakers find them better if they are at the end of the clause, rather than between the verb and the participle.

Table 18 – Estimated model fixed effects.

	Estimate	Std. error	t value	p
Intercept	3.8909	0.2327	16.723	<.001
NP shifted	0.1744	0.3225	0.541	0.594
Complexity	-0.8479	0.3225	-2.692	0.016
Shifted NP: Complexity	1.0232	0.4561	2.243	0.036

These results are very interesting because they show clearly that complexity is a weight predictor, at least for PS structures, which we were not able to show indisputably in the previous survey for HNPS and OS. The results from the OS survey, which was described in the previous section, showed a trend where speakers responded more negatively to complex NPs in OS than to simple NPs, but the effect was not fully significant. In this survey, the effect of complexity as a weight predictor is not only significant, but it seems to be more important than NP length. The next chapter takes a closer look at the weight predictors described in this chapter but in language production.

3.3. Summary and conclusion

This chapter has explored various weight effects in Icelandic based on data from two acceptability surveys, focusing on answering three major research questions, which are repeated here:

- If length is a determining weight factor; is it the absolute length of the shifted constituent itself alone or is the relative weight of the string of words that it shifts over also important?
- Is the length of the relevant constituents (measured in the number of words) the only determining weight factor or can stress (or prosodic structure) also play a role?
- Is weight defined by the syntactic complexity of the constituents, i.e., does an embedded clause make the constituent intrinsically heavier than length alone?

Based on the responses from the acceptability survey, it has been demonstrated that length and complexity are both determining weight factors in Icelandic, but they do not apply in the same way across different syntactic structures. The results from the HNPS survey showed that while the absolute length of the shifted constituent itself alone is very important, the relative weight of the

string of words it shifts over is more important. Absolute length proved to also be important in OS, whereas relative weight effects were not detected for this structure. Unlike the other two structures, NP length had no significant effect on how speakers evaluated PS sentences. Complexity revealed no significant effect as a weight factor on HNPS but it proved to be an important weight predictor for PS, unlike NP length, and the same applies to OS, although the effect was not fully significant.

The results showed that, in general, long PPs are always bad when they are in the middle of a HNPS sentence. The fact that much fewer speakers accept sentences where the NP at the end is short and the PP in the middle is long is consistent with the notions of relative weight effects: the string of words between the verb and the shifted constituent needs to be shorter (or at least not longer). The poor reception this sentence type got in the survey might also suggest that relative weight effects are not only about the heaviness of the NP, or, in some cases, it might not be about the NP at all. It is also worth considering that the PP could be too long to comfortably sit in the middle of the sentence and the short NP at the end underlines that issue for most speakers. When the NP at the end of the clause is also long, the length of the PP is not as noticeable, and the sentences are better received. This leaves the following question that needs to be addressed:

- Are weight effects about moving heavy constituents to the end of the clause, or are they about not having heavy constituents in the middle of a clause?

If the latter is true, it would indicate that relative weight effects serve a purpose of a greater effect of end-weight, which is really about not having long or complex constituents in the middle of a clause. If this is the case, it is also worth asking if end-weight is only associated with the right edge of the clause. If end-weight is really about not having heavy constituents in the middle, then it is not unreasonable to assume that heavy constituents can also move to the left edge. This question will be addressed in Chapter 4 where we will look at other potentially weight-sensitive structures, including both rightward and leftward movement.

Last but not least, the results presented in this chapter revealed that NPs do not need to be long at all to undergo HNPS and that relative weight can be measured by other means than length, i.e. by prosodic structure. In this chapter it was argued that an NP can undergo HNPS even if it is not long but it needs to be prosodically heavier than the string of words it moves over. Based on the results presented in this chapter, a description of weight effects and word order in Icelandic can be summarised in a few points as follows:

- Absolute length is a measurement of weight in Icelandic. Speakers prefer long NPs at the edge of the clause but short NPs can be placed in the middle which supports the general hypothesis that heavy constituents are attracted to the edge of the clause and lighter constituents are more desirable in the middle of it.
- Although absolute length is important, relative length is more important.
- If the shiftable constituent is not particularly long or there is no clear difference in length between the shiftable constituent and the constituent it moves over, prosodic weight may become important.
- Complexity, measured by whether the NP includes a relative clause or not, is a determining weight predictor for Icelandic, at least in some syntactic constructions.

Of course, these results only speak of which weight predictors are important for speakers when parsing written sentences. In order to get a clearer picture of weight effects in Icelandic, it is necessary to also try other methods to see which weight predictors potentially affect production planning. Prosodic weight effects cannot only be tested in an acceptability experiment, so the same or similar stimuli need to be tested in production so that the prosodic realisation of this structure can be analysed. This will be one of the main focus points of Chapter 4, where we examine data from an extensive corpus study and a production experiment to explore weight effects and movement in production.

4. Weight effects in language production

Chapter 3 explored various definitions of weight effects in Heavy NP Shift (HNPS), Object Shift (OS) and Particle Shift (PS) in acceptability surveys, where speakers were shown sentences with these structures, out of context, and asked to evaluate them based on their own language intuition. Acceptability data, or judgement data, plays a very important role in linguistic research, as it provides information about possible and impossible utterances that have not necessarily been produced naturally (Schütze & Sprouse 2013:4). This approach provides crucial evidence for grammaticality, but it does not tell the whole story. Studying similar structures in acceptability surveys and production data provides a broader perspective on the speakers' underlying knowledge of them, as the way that speakers perceive particular sentence structure in their language does not necessarily reflect how frequently they produce them or which factors, such as weight effects, contribute to them in production planning. This chapter takes a look at weight effects from a different perspective, in production data that was collected in two studies: An extensive corpus study in the Icelandic Parsed Historical Corpus (IcePaHC), where HNPS, PS and one other structure, Left Dislocation (LD), were the focus point, as described in Section 4.1. and a production experiment where all three main structures, HNPS, PS and OS were produced by speakers in a semi-spontaneous speech task, as will be described in Section 4.2.⁴⁶

The experiment tested several potential weight factors, including NP length, relative weight effects, complexity, grammatical roles and prosodic heaviness, mainly in HNPS. Effects of NP length and relative weight were also tested in PS and OS structures. As discussed in Chapter 2, we have seen that heavy constituents tend to be moved to the right edge of the clause, whereas light constituents can be moved to the left, or into the middle of the clause, e.g., with Object Shift. A question that remains to be addressed is whether heaviness is only connected to the right edge of the clause, or whether heavy constituents can also be moved to the left edge. For this reason, leftward movement was included in the corpus study, as will be discussed in further detail in Section 4.1. The main goal of this chapter may be summarised in the following research questions:

- Do we find evidence for the same weight effects in language production data as we find in acceptability judgments? If not, what does that tell us about the nature of weight effects?
- Does heaviness only draw constituents to the right edge of the clause, or can it also move them to the left?

⁴⁶ Unfortunately there are very few examples of OS in the Icelandic Parsed Historical Corpus, like Thráinsson previously discovered in his study (2013). This structure could therefore not be included in the corpus study.

This chapter will attempt to answer the two main research questions, based on the results from the two studies described above, providing a broad perspective on weight effects in production, beginning with weight effects in written language from a historical perspective in Section 4.1, followed by semi-spontaneous production data in a Modern Icelandic production experiment, which will be described in Section 4.2. Section 4.3. presents a brief summary and concluding words.

4.1. Heaviness in the Icelandic Parsed Historical Corpus

This section describes a corpus study that was done in the Icelandic Parsed Historical Corpus (IcePaHC) (Wallenberg et al. 2011), where various potential weight predictors were explored in three different syntactic structures: HNPS and PS, where the heavy constituent is arguably moved to the right edge of the clause,⁴⁷ and Left Dislocation, where NPs are moved to the left edge of the clause. Section 4.1. is laid out as follows: Heavy NP Shift with shifted direct objects and subjects are the focus of Sections 4.1.1. and 4.1.2., Particle Shift is the focus of Section 4.1.3. and Section 4.1.4. addresses the question of heaviness on the left edge, in Left Dislocation. Section 4.1.5. briefly summarises the results from the corpus study and provides a few concluding words.

4.1.1. Direct Objects in HNPS

The first search in IcePaHC was for sentence structures with shifted and unshifted direct-object-NPs (object NPs henceforth).⁴⁸ The search was defined to look for sentences that reflect basic word order, with object NPs that immediately follow the verb, followed by a PP at the end of the clause (an example of the sentence structure is given in (4.1a)), and object NPs that appear at the end of the clause with a PP between the verb and the object (4.1b).⁴⁹

- (4.1) a. Hann bauð þeim að halda
 He offered them to maintain
 [ástúð og samþykki] [sín á milli]
 [affection and agreement] [themselves in between].
 ‘He offered them to maintain affection and agreement between themselves.’
 (ID 1210.THORLAKUR.REL-SAG,.147)⁵⁰

⁴⁷ As previously discussed, there is disagreement as to what type of structure PS is (see e.g., Ross 1967, Thráinsson 2007:141 and also Svenonius 1994, 1996a,b and Johnson 1991), but it has been treated as a structure sensitive to rightward movement in this study, comparable to HNPS.

⁴⁸ Each corpus query that was used in this section is laid out in Appendix B.

⁴⁹ As discussed in Chapter 2, HNPS structures do not always include a PP. The NP can shift over various strings of words and a PP is just one of the more common options. It was decided to use the same elements for each sentence structure throughout all the experiments to maintain consistency between the results.

⁵⁰ It should be noted that it is possible to interpret [ástúð og samþykki] and [sín á milli] as one constituent.

- b. Er nú það ráðs tekið að menn bera [í kirkju]
 is now that resort taken that men carry [to church]
 [gripi sína og allt það er laust var].
 [livestock theirs and all that which free was]
 ‘Now men resort to taking to church their livestock and all their goods.’
 (ID 1250.STURLUNGA.NAR-SAG,443.1944)

For the search, the NP was defined by its structure: whether it is a full NP or a pronominal NP. This was done to prevent results with a false length difference, as single-pronoun-NPs are unlikely to shift with HNPS. The complexity of the NP was also extracted in the search, i.e., whether it includes a relative clause or not. The search extracted NPs that include a relative clause, regardless of its internal structure, i.e., whether the relative clause targets a subject or an object position. The NP in example (4.2) includes a relative clause that targets a direct object position. The NP in (4.3) includes a relative clause that targets a subject position, and the subject head of the NP is a pronoun.

- (4.2) Og fékk honum [til varðveislu]
 and gave him [to safekeeping]
 [spjót gott er hann átti].
 [spear good that he owned]
 ‘...and gave him a good spear that he owned for safekeeping.’
 (ID 1250.STURLUNGA.NAR-SAG,416.858)

- (4.3) Maklega kallast postular ljós
 Deservedly are called apostles light
 því að kenningar þeirra lýstu [of allan heim]
 because doctrines theirs lit [of all world]
 [þá er áður voru í villumyrkri].
 [those that before were in aberration-darkness]
 ‘Deservedly, apostles are called light, as their doctrines lit up, around the whole world, those who before were in the darkness of aberration.’
 (ID 1150.HOMILIUBOK.REL-SER,,302)

For the analysis of the results in this chapter it was decided not to divide relative clauses into smaller categories, by whether they target subject or object positions, so any NP that includes a relative clause is considered complex in this section.⁵¹ The aim of this search was to answer the following questions:

⁵¹ It would be very interesting to take a closer look at what makes an NP complex and whether different types of relative clauses have the same effect on the positioning of NPs in sentences. It was not possible to pursue this question for this project so it will be left for future research.

- Are direct object NPs that appear at the end of the clause longer than direct object NPs that immediately follow the verb?
- Is there variation in the length of the PP based on where it appears in the clause?
- Does the internal structure of the object NP affect its position in the sentence? Does it matter if the object is a full NP or a pronominal NP?
- Does the complexity of the object NP affect its position in the sentence? Does it matter if the object NP includes a relative clause or not?

The search gave 5043 results, including 1154 examples where the object NP had been shifted to the end of the clause, such as example (4.1b). A Mann-Whitney U test showed a significant length difference between object NPs at the end of the clause (average length: 4.86, middle value: 3) vs object NPs in situ (average length: 2.16, middle value: 2), ($U = 3060863$, $p < .001$). This length difference is illustrated in Figure 17.

Figure 17 – NP length in HNPS: Length distribution of shifted and unshifted direct object NPs.

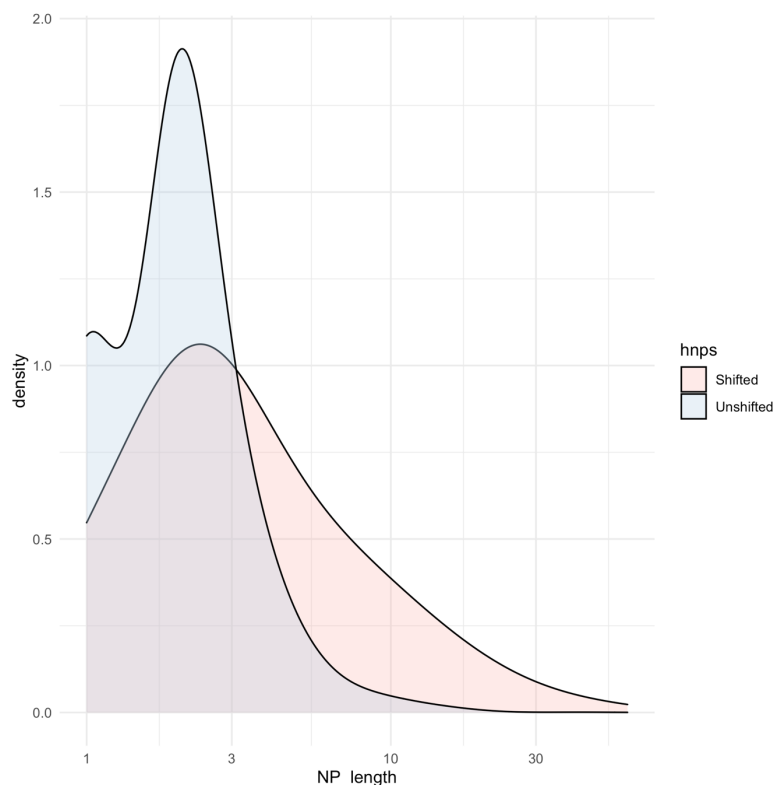
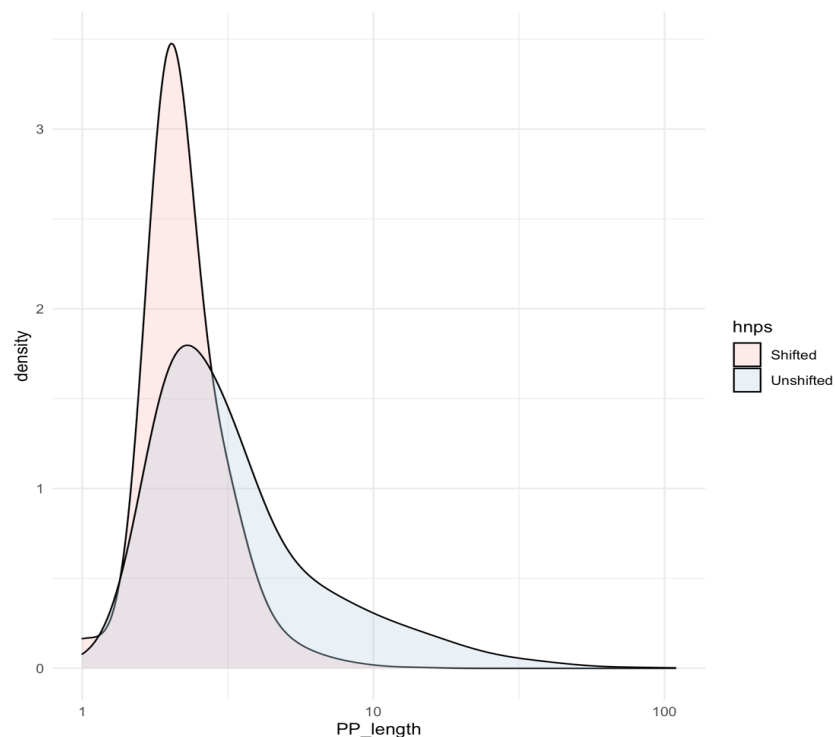


Figure 17 shows the length of the NP, measured by number of words, based on its position in the sentence. The blue curve represents the length distribution of unshifted object NPs, and the pink curve shows the length distribution of shifted object NPs. As Figure 17 shows, most NPs, regardless of their

position in the sentence, include between 2–5 words. The blue curve shows that many unshifted object NPs consist of only 1–2 words, but few shifted object NPs consist of such few words. Furthermore, the blue curve shows that unshifted object NPs can consist of up to 10 words or even more, although they rarely do. The pink curve shows that it is much more common for shifted object NPs to consist of up to 10 words or more, and they can be considerably longer than the unshifted NPs.⁵² Figure 18 shows the length distribution for the PPs in the same examples.

Figure 18 – PP length in HNPS: Length distribution of PPs that precede or follow direct object NPs.



As illustrated in Figure 18 there is a significant length difference between PPs, based on whether the object NP has been shifted (average length of the PP: 2.34, middle value: 2) or remained in situ (average length: 4.6, middle value: 3), ($U = 1347040$, $p < .001$). The pink curve shows that when the object NP immediately follows the verb, the PP can be much longer than when the object NP has been shifted to the end of the clause with HNPS. These results show that not only are NPs that have undergone HNPS significantly longer than NPs in situ, but that the length of the PP in this structure is also important. If the NP has undergone HNPS and is found at the end of the clause, the PP is significantly shorter than when the NP remains in situ and the PP follows it. This supports the working hypothesis of this thesis for HNPS in Icelandic, that while the length of the NP alone may be important for HNPS, the length of

⁵² As Figures 17 and 18 show, some of the constituents are extremely long. As the curve shows, those examples are only few and the general distribution looks normal. The examples were reviewed before the analysis and they all fit the criteria of the search, so it was decided not to manually remove any examples, as the odd, long ones do not significantly affect the results.

the string of words it moves over is also important. The length distribution of the PP vs the NP also indicates that HNPS is not just about moving heavy elements to the right edge of the clause, but that it is about not having heavy elements in the middle, as will be addressed again later in this chapter. The next step in the analysis is a closer examination of the structure of the NP.

A generalised linear mixed effects analysis of the relationship between the NP type (full NP vs pronoun) and the complexity level of the NP (including a relative clause or not) for whether the NP is shifted with HNPS or not, was performed, as well as for the length of the NP. Although it has already been shown with the U tests above that there is a significant connection between the length of the NP and the PP respectively and the positioning of the constituents in the sentence, it is worth including length as a factor in the model for a more robust analysis and to see if there is any interaction between length and other factors.⁵³ A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of NP type, complexity and NP length. As random effects, an intercept was included for text ID, which refers to the speaker/writer of each particular text that was included in the search results. A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where three models were compared to a null model, shown in the second row of Figure 19 as “no interaction”, which only had an intercept for the random effect, text ID. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 19.

Figure 19 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	5386.8	5399.9	-2691.4	5382.8			
+ NP type	3	5379.2	5398.7	-2686.6	5373.2	9.6653	1	0.001
+ NP type: Complexity	5	5185.8	5218.4	-2587.8	5175.8	197.3856	2	<.001
+NP type: Complexity: NP length	9	4782.7	4841.5	-	4764.7	411.0518	4	<.001
				2382.4				

⁵³ A fourth model was tried which included four fixed effects: NP type, complexity, NP length and PP length but that model failed to converge, so the outcome is unreliable. A similar model to the one shown in Figure 20 was run, where PP length was included as a fixed effect, along with NP type and complexity but NP length was excluded. The model converged and confirmed that PP length has a negative effect on its positioning in the sentence, i.e., that a long PP is significantly less likely to appear before a shifted NP than at the end of the clause, following the NP ($z=-14.255$, $p=>.000$). This model did not show any significant interaction between PP length and other fixed effects, so NP length was considered a better fixed effect and the model shown in Figure 20 was chosen as the most robust model.

The LRT revealed, as illustrated in Figure 19, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP type was included, and the fixed effect of complexity further improved the model significantly. The model further improved when the fixed effect of NP length was included and so the final version of the model that was tested further included the fixed effects of NP type, complexity and NP length and an intercept for text ID as a random effect. Figure 20 presents a simplified layout of the model that was used for the analysis.

Figure 20 – Layout for the Generalised Linear Mixed Model.

HNPS ~ NP type * Complexity * NP length + (1 text ID)
--

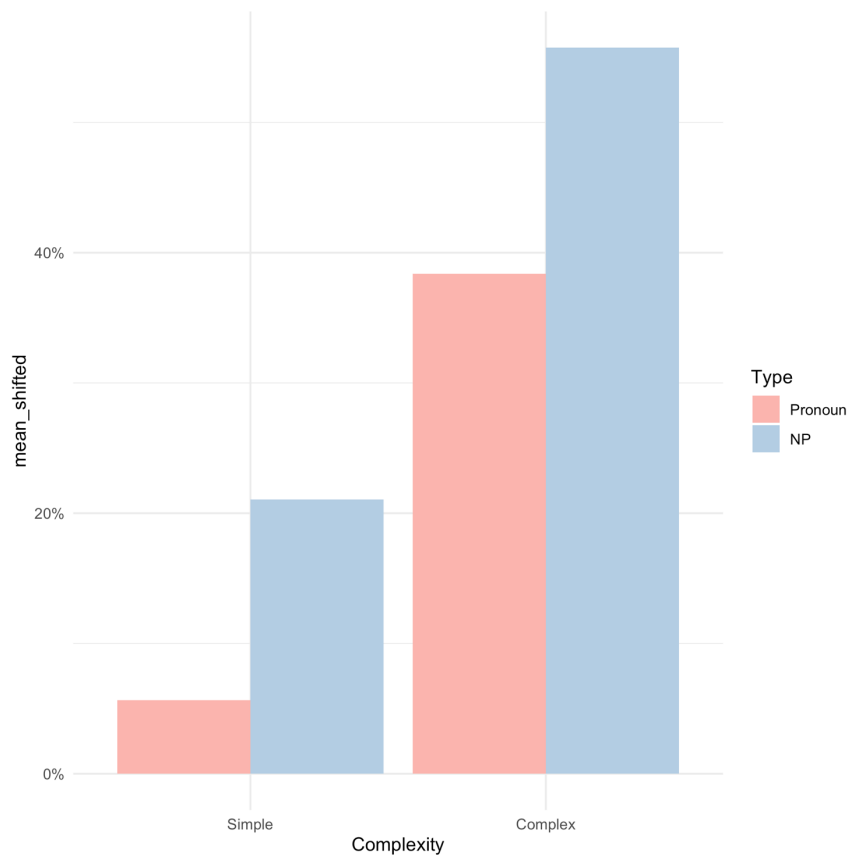
Table 19 presents the summary of the estimated model fixed effects. The analysis shows that pronominal NPs are less likely to shift with HNPS. If the NP is complex, i.e., includes a relative clause, it is significantly much more likely to be found at the end of the clause, than NPs that do not include a relative clause. The fourth row of Table 19 shows that long NPs are also significantly more likely to be found at the end of the clause than short NPs.

Table 19 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-2.17544	0.08689	-25.037	<.001
Pronoun	-1.29149	0.47460	-2.721	0.006
Complex NP	0.87018	0.25067	3.471	<.001
NP length	0.35065	0.02612	13.426	<.001
Pronoun: Complex NP	-0.69206	0.85149	-0.813	0.416
Pronoun: NP length	-0.14968	0.11801	-1.268	0.204
Complex NP: NP length	-0.13564	0.04135	-3.280	0.001
Pronoun: Complex NP: NP length	0.67713	0.19361	3.497	>.001

Individually, neither complexity nor NP length have a significant interaction with the NP type (pronoun vs noun), but the last two rows of Table 19 show positive interactions between all three effects: Complex NPs are more likely to be found at the end of the clause as the length of the NP goes up and pronominal NPs are significantly more likely to be found at the end of the clause if they are long and complex. Figure 21 shows complex NPs in sentences with shifted NPs in HNPS, divided by the type of the NP.

Figure 21 – Mean rate of shifted simple and complex direct object NPs by NP type.



As Figure 21 shows, pronouns that are heads of non-complex NPs rarely appear at the end of the clause, whereas complex pronominal NPs often do, although they do not shift as frequently as complex full NPs. Full NPs that do not include a relative clause, shift less frequently than full complex NPs. Figure 21 shows complexity as an isolated weight effect, but the picture becomes clearer in Figure 22, which shows the interaction between all three effects: NP type, NP length and complexity, in sentences with shifted object NPs in HNPS. The left side of the chart in Figure 22 shows the

distribution of pronominal NPs by length and complexity and the right side shows full NPs by the same factors. The pink dots refer to simple NPs and the blue dots represent complex NPs.⁵⁴

Figure 22 – Mean rate of shifted object NPs in HNPS by NP type, NP length and complexity.

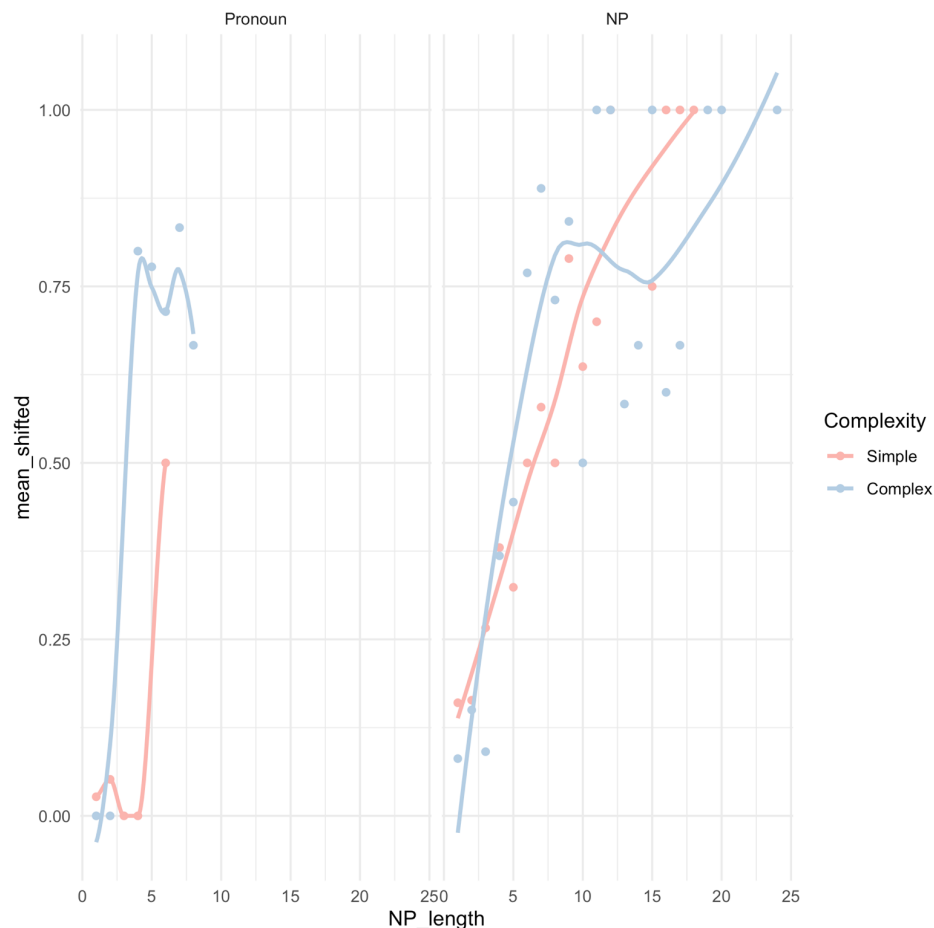


Figure 22 shows again that pronoun-head NPs are much more likely to shift if they are complex. Full NPs, both simple and complex, are more likely to be shifted as they get longer but there is a visible interaction between NP length and complexity for all types of NPs where complex NPs are more commonly shifted as length goes up (although long, simple NPs are also shifted). Figures 21 and 22 show that NPs found at the end of the clause are much more likely to include a relative clause than NPs in situ, which indicates that for HNPS, at least in written language, complexity is more important as a weight factor than length alone. The next section continues to explore these effects on HNPS, but for shifted subjects.

⁵⁴ For the visual presentation of this chart, data points that refer to only one or two samples were filtered out. This was done to make the chart more legible.

4.1.2. Subjects in HNPS

This section presents results from a search for sentence structures with shifted and unshifted subject NPs. The search was defined to look for sentences that reflect basic word order, with subject NPs at the beginning of the clause and a PP at the end of the clause (4.4a), and subject NPs that have been shifted to the end of the clause with a PP between the VP and the subject (4.4b).

(4.4) a. [Sá inn sami] mun koma [í enda heims],
[He DET same] will come [in end world]
að dæma of allt mannkyn.
to judge over all mankind
'The one and the same shall come at the end of the world and judge all mankind.'
(ID 1150.HOMILIUBOK.REL-SER,.395)

b. Og er hún hafði þess lengi beðið komu niður
And when she had it long waited came down
[á hennar handarbak] [þrír blóðdropar].
[on her back of the hand] [three blood drops]
'And when she had long awaited it,
there came down on the back of her hand three drops of blood.'
(ID 1475.AEVINTYRI.NAR-REL,.593)

Like in the previous search, the NP was defined by its structure: whether it is a full NP or a pronominal NP, to prevent results with a false length difference. Like before, the complexity of the NP was also extracted in the search, i.e., whether the NP includes a relative clause or not.⁵⁵ The examples in (4.5) and (4.6) both have complex NPs that include relative clauses.

(4.5) Í helli þessum bjó [í fyrndinni]
In cave this lived [in antiquity]
[tröllkarl einn er Móðólfur hét].
[trollman one that Modolfur was-named]
'In this cave, in antiquity, lived a trollman named Móðólfur.'
(ID 1675.MODARS.NAR-FIC,.359)

⁵⁵ Like before, complexity is defined by whether the NP includes a relative clause or not and the internal structure of the relative clause was not considered.

(4.6) og með almáttugs Guðs miskunn fló inn
 and with almighty God mercy flowed in
 [í hennar hjarta] [það sem byskupinn talaði]
 [inher heart] [that that bishop.DET spoke]
 svo að tárin féllu niður um kinnarnar.
 so that tears.DET fell down about cheeks.DET
 ‘And with God’s almighty mercy, that which the bishop spoke flowed into her heart
 so that tears fell down her cheeks.’
 (ID 1475.AEVINTYRI.NAR-REL,.720)

The shifted subject in (4.5) is a full complex NP, whereas the shifted subject in (4.6) is a pronominal NP that also includes a relative clause. The analysis of shifted object NPs in the last section showed interaction between NP type and complexity so the same will be considered in this search. The goal of this search was to answer the following questions:

- Are subject NPs that appear at the end of the clause longer than subject NPs in situ?
- Is the subject NP more likely to shift across a short string of words than a long one? Does relative weight matter?
- Does the internal structure of the NP affect its position in the sentence? Does it matter if the subject is a full NP or a pronominal NP?
- Does the complexity of the subject NP affect its position in the sentence? Does it matter if the subject NP includes a relative clause or not?

The search yielded 4470 results, 88 of which had the subject NP at the end of the clause.⁵⁶ Relatively, those are much fewer examples than the object NP search gave, which suggests that subject NPs shift less frequently than object NPs. Of course, the search conditions were strict, and this is only one type of sentence structure where subjects can potentially move, but the same can be said about the search for shifted direct objects. At least it is safe to say that in this type of sentence structure, subjects are much less likely to shift to the end of the clause than direct objects. This subject will be addressed again later in this chapter but for now we will take a closer look at these results.

A Mann-Whitney U test shows a significant length difference between subject NPs that have been shifted to the end of the clause (average length: 5.74, middle value: 3) and subject NPs in situ (average length: 2.54, middle value: 2), i.e., shifted subjects tend to be much longer than subjects in situ ($U = 992541$, $p < .001$). This length difference is demonstrated in Figure 23.

⁵⁶ It was decided to include only this type of subject shift in the search, similar to the other experiments described in this thesis. A study of weight effects and different types of subject shift will be left for future research.

Figure 23 – NP length in HNPS: Length distribution of shifted and unshifted subject NPs.

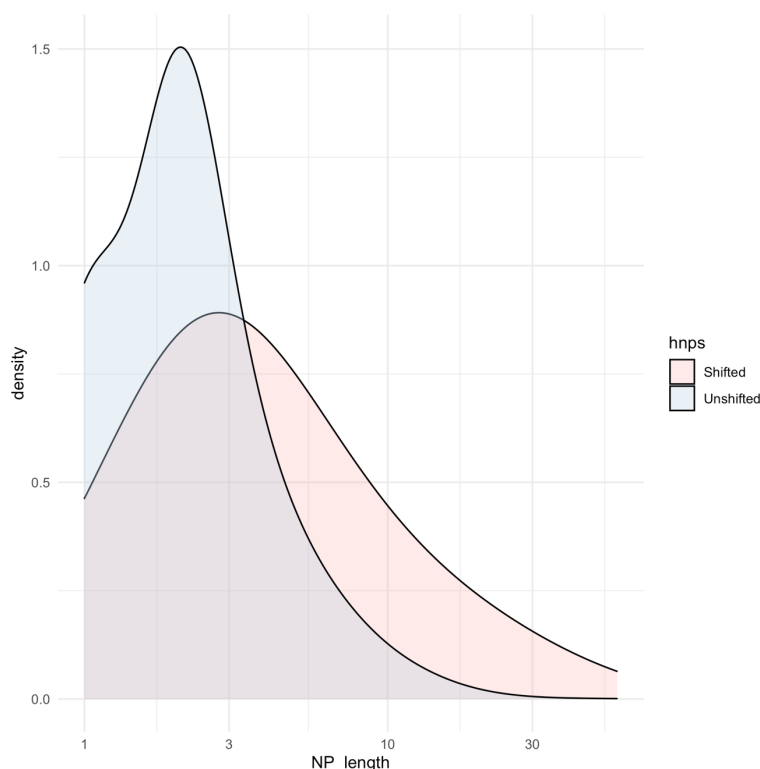


Figure 23 shows the length of the subject NP based on its position in the sentence. The blue curve shows the length distribution of subject NPs that appear in situ, at the beginning of the clause, and the pink curve shows the length distribution of subject NPs that appear at the end of the clause, following a PP, such as example (4.4b). The length difference we see in Figure 23 is quite similar to the length difference between shifted and unshifted object NPs in Figure 17 in the previous section. This suggests that whether NPs are subjects or direct objects, they tend to be much longer if they have undergone HNPS, although the shifted subject NPs are, on average, much longer than the shifted object NPs. Figure 23 shows that most NPs consist of between 2 and 5 words, whether they have been shifted or not. The unshifted subject NPs can be long, consisting of even 10 words or more but, as the curve shows, that is rarely the case. The pink curve shows a wider distribution of shifted subject NPs that tend to be significantly longer than the unshifted NPs. Figure 24 shows the length distribution of PPs with shifted and unshifted subjects in the same sentences.

Figure 24 – PP length in HNPS: Length distribution of PPs that precede or follow subject NPs.

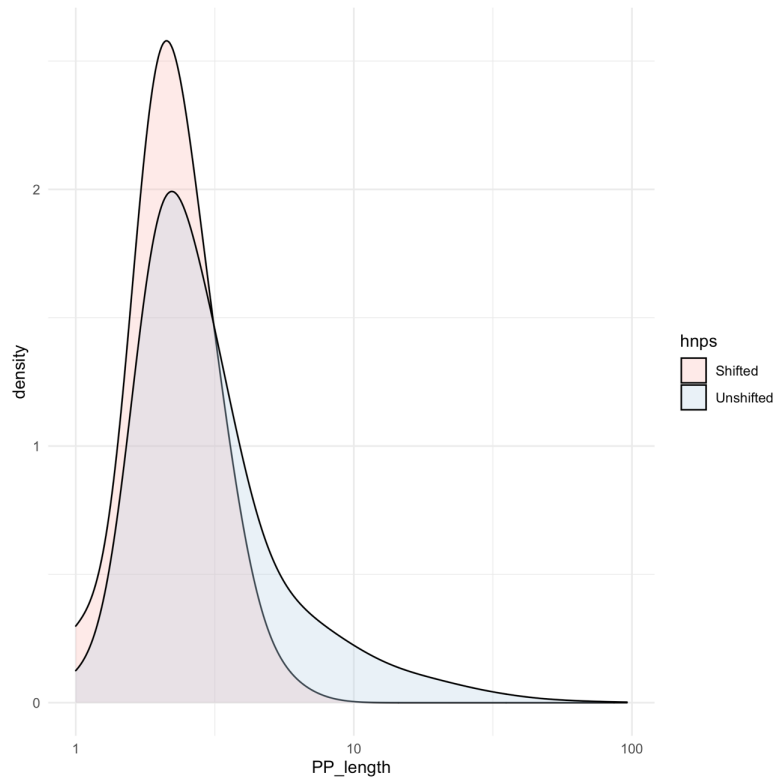


Figure 24 shows a similar pattern to the one we saw with the object NPs in the previous section. There is a significant length difference between PPs, based on whether the subject NP has been shifted (average length: 2.31, middle value: 2) or remained in situ (average length: 3.96, middle value: 3), ($U = 505131$, $p < .001$).

The pink curve shows that when the subject NP is in situ, the PP can be much longer than when the subject NP has been shifted to the end of the clause with HNPS. These results are similar to the previous ones, where object NPs were tested and confirm the previous analysis that not only are NPs that have undergone HNPS significantly longer than NPs in situ, but that the length of the PP in this structure is also important. When the subject NP is in situ, the PP, which is at the end of the clause, tends to be longer. When the NP has been shifted to the end of the clause, the PP is in the middle of the clause, and tends to be shorter. This suggests that HNPS is just as much about having heavy elements at the end of the clause as it is about not having heavy elements in the middle of it, and that relative weight effects are very important for HNPS in produced Icelandic, at least in its written form, which is similar to the effect that was revealed in the acceptability surveys described in the previous chapter. The fact that the results for direct object and subject NPs are so similar, supports the results from the acceptability survey described in the previous chapter:

- Icelandic speakers accept HNPS sentences with shifted direct objects and subjects in an equal manner.
- The same weight factors apply to shifted NPs in HNPS, whether they are subjects or direct objects.

Although the same rules seem to apply to subjects and direct objects, the corpus search revealed that HNPS with shifted subjects occurs much less frequently than with object NPs. Why subjects shift less frequently will not be answered in this thesis, but the results nonetheless show the importance of using mixed research methods to study sentence structure. While the results from the corpus study strongly reflect the results from the acceptability survey, they also show that just because speakers accept both sentence types as equally acceptable, that does not mean they produce them equally. The final step in the analysis is a closer examination of the structure of the NP and the potential interaction of NP length, NP type and complexity level on the frequency of HNPS.

A generalised linear mixed effects analysis of the relationship between the NP type (full NP vs pronoun), NP length and the complexity level of the NP (including a relative clause or not) for whether the NP is shifted with HNPS or not, was performed. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of NP type, NP length and complexity.⁵⁷ As random effects, an intercept was included for text ID, which refers to the speaker/writer of each particular text that was included in the search results. A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where three models were compared to a null model, shown in the second row of Figure 25 as “no interaction”, which only had an intercept for text ID as a random effect. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 25.

Figure 25 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	2352.0	2364.8	-1173.98	2348.0			
+ NP type	3	2325.2	2344.4	-1159.61	2319.2	28.737	1	<.001
+ NP type: Complexity	5	2268.8	2300.8	-1129.39	2258.8	60.432	2	<.001
+ NP type: Complexity: NP length	9	2117.2	2174.9	-1049.61	2099.2	159.565	4	<.001

⁵⁷ Like in the object NP model, a fourth model was tried which included four fixed effects: NP type, complexity, NP length and PP length but that model failed to converge, so the outcome is unreliable. NP length was considered a better fixed effect by comparison and the model shown in Figure 26 was chosen as the most robust model.

The LRT revealed, as illustrated in Figure 25, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP type was included, and the fixed effect of complexity further improved the model significantly. The model improved significantly again when the fixed effect of NP length was included. Figure 26 presents a simplified layout of the model that was used for the analysis.

Figure 26 – Layout for the Generalised Linear Mixed Model.

HNPS ~ NP type * Complexity * NP length + (1 text ID)
--

The final version of the model, as shown in Figure 26, that was tested further, included all three fixed effects, NP type, complexity and NP length, and an intercept for text ID as a random effect. Table 20 presents the summary of the estimated model fixed effects:

Table 20 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-3.29797	0.15927	-20.707	<.001
Pronoun	-3.60977	1.10938	-3.254	0.001
Complex NP	0.69063	0.31569	2.188	0.028
NP length	0.24152	0.02522	9.578	<.001
Pronoun: Complex NP	4.11568	1.35260	3.043	0.002
Pronoun: NP length	-0.15309	0.17185	0.891	0.373
Complex NP: NP length	-0.11229	0.03672	-3.058	0.002
Pronoun: Complex NP: NP length	-0.21991	0.20525	-1.071	0.283

The analysis, as displayed in Table 20 shows a very similar pattern to the analysis of the object NP data. Subject pronominal NPs are significantly less likely to shift with HNPS, than full subject NPs.

If the NP is complex, i.e., includes a relative clause, it is significantly much more likely to be found at the end of the clause, than NPs that do not include a relative clause, and the same goes for long NPs. Similar to the object NPs, if a pronominal NP also includes a relative clause, the negative effect of the pronoun head is levelled out and the NP is significantly more likely to undergo HNPS, as is shown by the interaction of NP type and complexity in the fifth row of the analysis in Table 20 and there is also a positive interaction between complexity and NP length as shown in the seventh row. The interaction of NP type and complexity in subject HNPS is further displayed in Figure 27.

Figure 27 – Shifted subject NPs by type and complexity.

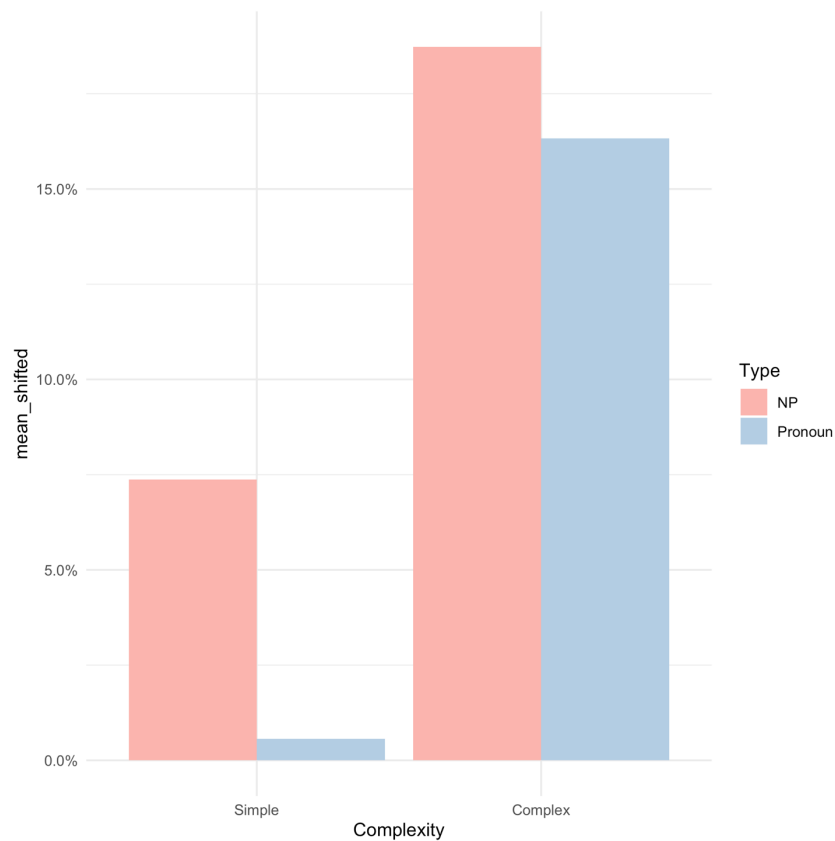
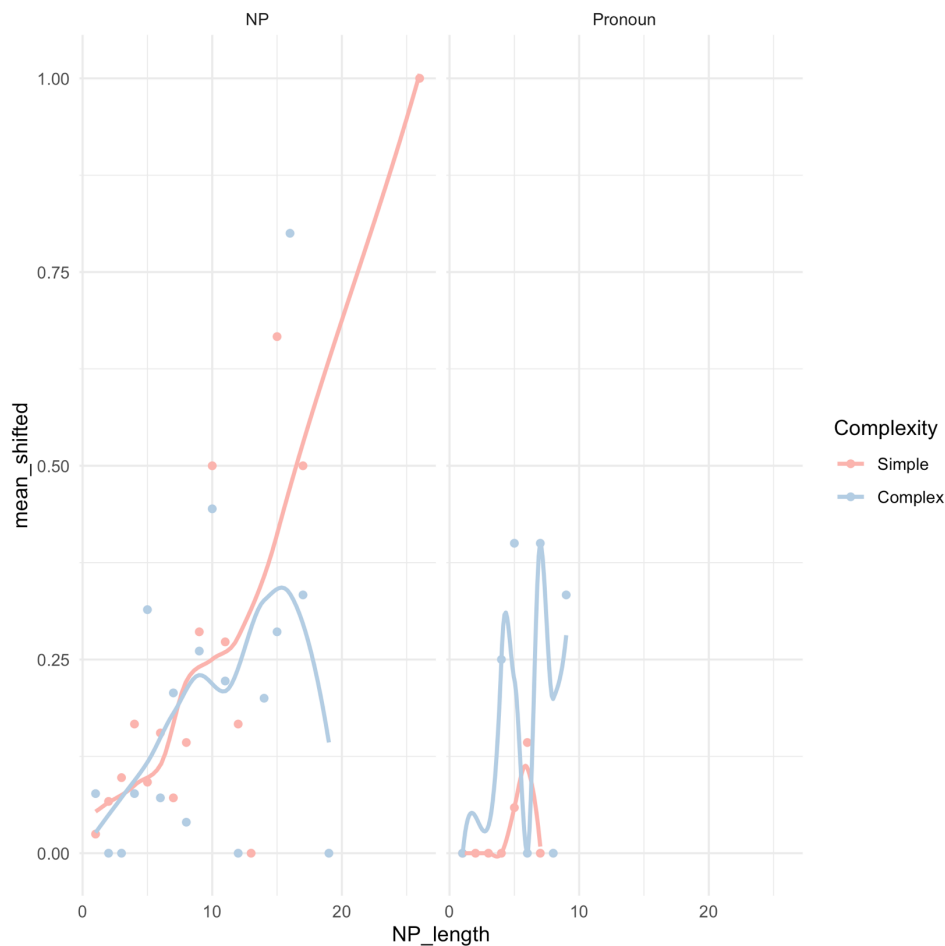


Figure 27 shows that if the subject NP is a simple pronoun, it never, or almost never, appears at the end of the clause, whereas complex pronominal NPs often do, although they do not shift as frequently as complex full NPs. Figure 27 also shows that most subject NPs found at the end of the clause are complex, whether the NP is pronominal or a full NP. This is the same effect that was revealed in the object NP analysis and suggests that complexity is more important as a weight factor for HNPS than length alone, at least in written language. Figure 28 shows the interaction between all three factors: NP length, complexity, and NP type. The right side of the chart shows the distribution of pronominal

NPs by length and complexity and the left side shows full NPs by the same factors. The pink dots refer to simple NPs and the blue dots represent complex NPs.⁵⁸

Figure 28 – The effects of NP type, NP length and complexity on shifted subjects with HNPS.



As Figure 28 shows, most shifted pronoun-head NPs are complex and there is a visible interaction between NP length and complexity. As length goes up, the NP is more likely to be complex. For full NPs, simple and complex NPs shift universally up to a certain limit but as length goes up, complex NPs become less likely to shift. The chart shows clearly that subjects, long or short, are not as frequently shifted as direct objects, if we compare Figure 28 with Figure 22 in the last section, but the same weight effects come through here as for the more commonly shifted direct objects. The next question is whether the same weight factors apply to other weight sensitive structures, including Particle Shift, as will be described in the next section.

⁵⁸ For the visual presentation of this chart, points that refer to only one or two samples were filtered out. This was done to make the chart more legible.

4.1.3 Weight effects in Particle Shift

In this section a search was made for sentences that include particle structures, where the object NP appears either between the verb and the particle, such as example (4.7a), or following the particle, at the end of the clause (4.7b).

(4.7) a. Prestur kom [engu orði] [upp] fyrir fögnuði.

Priest came [no word] [up] for joy

‘The priest did not get one word out for joy.’

(ID 1908.OFUREFLI.NAR-FIC,.1146)

b. Tók Sturla þá [upp]

Took Sturla then [up]

[stein er Kolbeins menn höfðu kastað í gerðið].

[stone that Kolbeinn’s men had thrown in hedge.DET]

‘Sturla then picked up a stone that Kolbeinn’s men had thrown in the hedge.’

(ID 1250.STURLUNGA.NAR-SAG,418.941)

As was mentioned in Chapter 2, there are varying opinions on whether the object NP is in situ when it precedes the particle, like in example (4.7a) or at the end of the clause, like in (4.7b) (see e.g., Ross 1967, Thráinsson 2007:141 and also Svenonius 1994, 1996a,b and Johnson 1991). To simplify comparison with HNPS structures, the term “shifted NP” will be used here to refer to sentences like (4.7b), where the NP follows the particle. The search gave 775 results and in 401 of those results the object NP appeared at the end of the clause, following the particle. Like before, the length of the object NP was extracted in the search and whether the NP includes a relative clause or not. A Mann-Whitney U test shows a significant length difference between object NPs that appear between the verb and the particle (average length: 1.16, middle value: 1) and object NPs that appear at the end of the clause (average length: 2.62, middle value: 2), following the particle ($U = 109348$, $p < .001$). The length difference is illustrated in Figure 29.

Figure 29 – Length distribution of object NPs in Particle Shift.

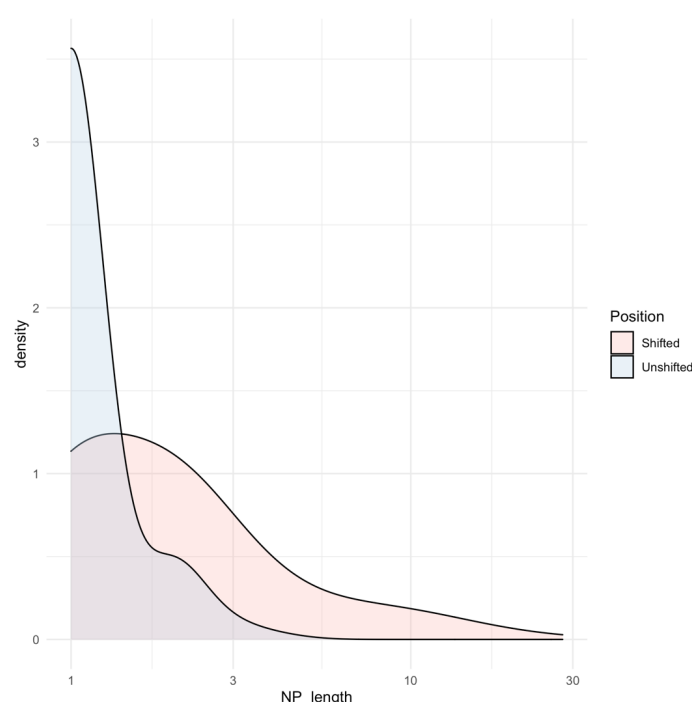


Figure 29 shows the length distribution of the object NP based on its positioning in the sentence and the length difference is quite striking. The blue curve shows that most object NPs that appear between the verb and the particle are between 1–2 words and never exceed the length of 4–5 words. The object NPs at the end of the clause are rarely this short. The pink curve shows that the majority of these shifted NPs consist of between 1–5 words, but some can also be very long, consisting of up to 30 words.

A generalised linear mixed effects analysis of the relationship between the length and complexity (including a relative clause or not) of the object NP and its positioning in the sentence was performed. A generalised linear mixed effects model was fit with the binary responses, shifted vs unshifted, as the outcome variable, with NP length and complexity as fixed effects. As a random effect, an intercept was included for text ID, which refers to the speaker/writer of each particular text that was included in the search results. The model is displayed in Figure 30.

Figure 30 – LRT model comparison.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	1062.00	1071.30	-529.00	1058.00			
+ NP length	3	883.62	897.58	-438.81	877.62	180.379	1	<.001
+ NP length: Complexity	5	876.58	899.84	-433.29	866.58	11.041	2	0.004

The LRT revealed that the generalised linear mixed effects model is improved significantly when the fixed effect of NP length is added to it and is improved again when the fixed effect of complexity is added to it, as shown in Figure 30. The final version of the model included both fixed effects, NP length and complexity, and the random effect of text ID, as illustrated in a simplified way in Figure 31.

Figure 31 – Layout for the Generalised Linear Mixed Model.

Particle shift ~ NP length * Complexity (1 text ID)
--

Table 21 presents the summary of the estimated model fixed effects. The analysis, as displayed in Table 21 shows that NP length has a very strong effect: as NP length goes up, the NP is much more likely to follow the particle than precede it. Complexity does not have a significant effect here, nor does it have a significant interaction with NP length.

Table 21 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-2.2280	0.2577	-8.664	<.001
NP length	1.6207	0.1771	9.150	<.001
Complex NP	-2.2638	1.8877	-1.199	0.230
NP length: Complex NP	-0.1011	0.6340	-0.160	0.873

This is illustrated more clearly in Figure 32, which shows that when NP length is low, complex NPs are less frequently shifted than simple NPs, but as length gets higher, NPs are shifted universally, whether they are simple or complex.⁵⁹

⁵⁹ For the visual presentation of this chart, points that refer to only one or two samples were filtered out. This was done to make the chart more legible.

Figure 32 – Simple and complex object NPs in Particle Shift.

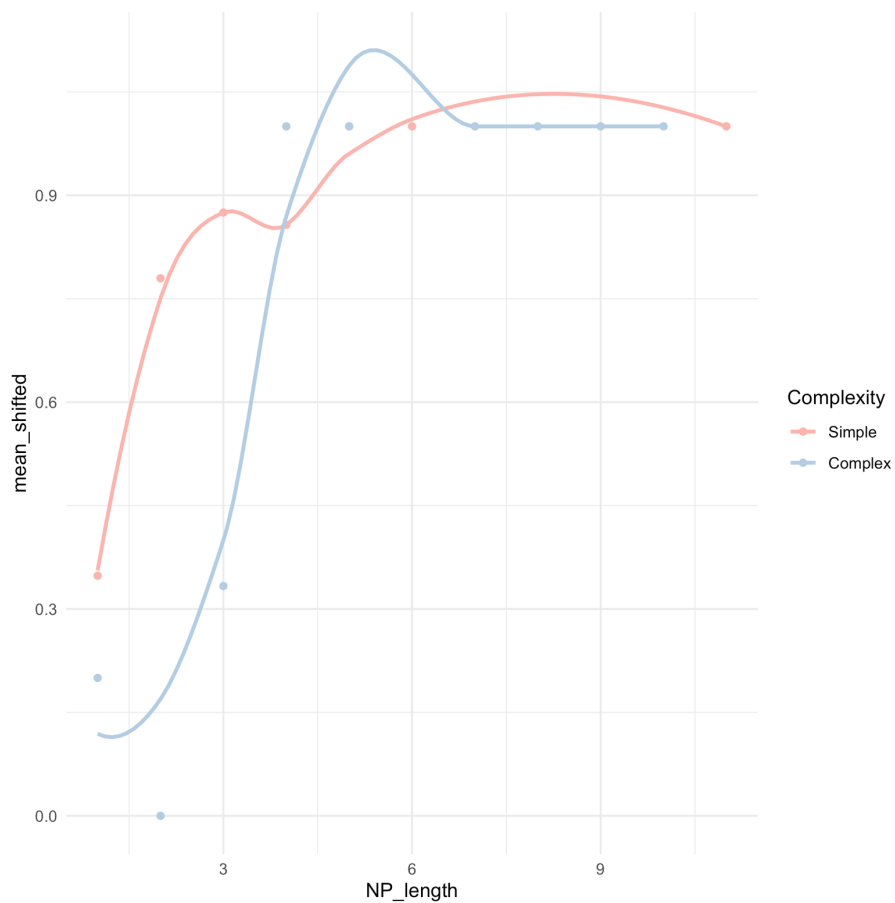


Figure 32 shows that when NP length is lower, complex NPs are less often shifted, but as length gets higher, simple, and complex NPs are universally shifted. This suggests that for PS, length and complexity are equally important weight factors and one does not outrank the other, unlike what we saw in HNPS. One issue with this study is that as the NPs at the end of the clause tend to be both long and complex, it is not clear whether one weight factor is more important than the other, especially because the number of results that include a shifted constituent tends to be so much smaller than the number of results where the constituent is in situ. If the number of results was higher, it would be possible to do a more detailed analysis, where the relationship between each factor is considered. This issue has been described before in similar corpus studies (see Wasow & Arnold 2005 and the works they cite). The results therefore give reason to pursue this question a bit further to see if one weight factor can outweigh the other. This was done in the HNPS part of the production experiment, where several factors were tested in a relatively large number of test sentences and analysed in one model, as described in Section 4.2.

4.1.4. Heaviness on the left edge

Before moving on to spoken language, there is one final research question that was asked in the beginning of this section and needs to be addressed:

- Does heaviness only draw constituents to the right edge of the clause, or can it also move them to the left?

One of the main conclusions that has been repeated throughout this section is that syntactic structures such as HNPS and PS are not just about moving heavy constituents to the right edge of the clause, but they are used to move heavy constituents out of the middle of the clause. This is reflected in the fact that not only the length of the shifted NP is important but, e.g., in HNPS, the PP that the NP shifts over is significantly shorter than the PP that stands at the end of the clause. If shifting heavy constituents is about moving them out of the middle, it is not unreasonable to ask if they must move to the right edge of the clause. In this section we take a look at weight effects on the left edge, by exploring potential weight factors in Left Dislocation.

As discussed in Section 2.2.7, Thráinsson (1979:61ff., 2007:357–359) described Left Dislocation (LD) in Icelandic as a construction, where a targeted constituent is placed at left edge of the clause and is resumed by a pronoun within the sentence.⁶⁰ The Left-Dislocated constituent is normally in the nominative case but the pronominal copy in situ carries the appropriate case, as shown in (4.8).

The corpus experiment described in this section is an extension from an ongoing study I have been working on with Anton Karl Ingason since 2019 (see Indriðadóttir & Ingason 2019a,b) where we focus on heavy constituents on the left edge in Icelandic sentence structure. For our study, we searched Icelandic Parsed Historical Corpus (IcePaHC) for examples of Left-Dislocated Subjects and Direct Objects and Topicalised Direct and Indirect Objects, providing empirical evidence that shows that heaviness draws phrases to both edges of a clause, not just the right edge as is generally assumed in the literature. This section includes a part of that study, the search for Left-Dislocated subjects and direct objects, where the average length of the moved constituents vs the average length of

⁶⁰ Thráinsson (1979:61ff.) argued that LD is maybe not a form of movement, but that Left-dislocated constituents are base generated on the left edge (or merged, rather than moved according to later minimalist definitions). Thráinsson argued that there is a difference between operations like LD and Topicalisation, including the fact that Topicalisation triggers subject-verb inversion (*Hann hefur aldrei lesið þessa bók.* [He has never read this book.] > *Þessa bók hefur hann aldrei lesið.* [This book has he never read.] vs *Þessa bók, hann hefur aldrei lesið hana.* [This book, he has never read it.]) This, he argued, may suggest that Left-dislocated constituents are higher up in the structure than Topicalised constituents. Whether LD is a type of movement or not will not be argued in this study but it will be referred to as movement comparable to HNPS, solely based on the fact that they both involve heavy constituents on the edge, as will be discussed later in this section and touched upon again in Chapter 6.

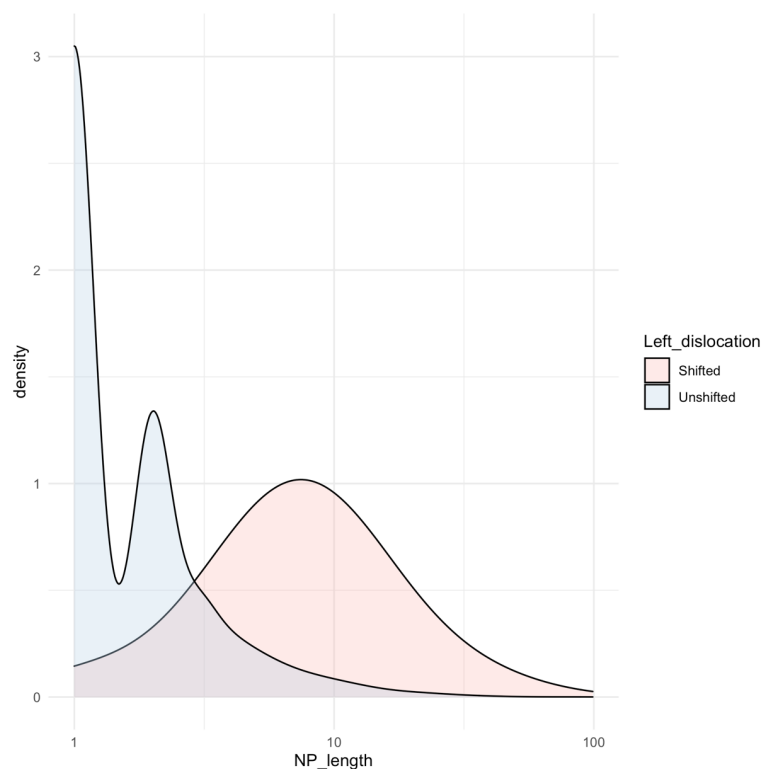
constituents left in situ in each case compared.⁶¹ The aim of this study is to answer the final research question of this section and to demonstrate that heavy syntactic constituents are drawn to both edges of the clause, not only to the right edge, as previously considered in the literature.

The first search was for subject NPs moved by Left Dislocation vs subject NPs in situ. The search gave 34191 examples, 193 of which had Left-Dislocated subjects, such as example (4.8).

- (4.8) en [fiskarnir sem þar inni lifa], [þeir]eru þó ekki saltir.
 but fish.DET that there inside life, [they]are though not salty
 ‘But the fish that live in there are not salty.’
 (ID 1720.VIDALIN.REL-SER,.53)

As before the length of the subject NP was extracted from the search. A Mann-Whitney U test showed a significant length difference between subject NPs in situ (average length: 2, middle value: 1) and Left-Dislocated subject NPs (average length: 9,6, middle value: 8), ($U = 5954804$, $p < .001$). The length difference between Left-Dislocated subjects and subjects in situ is illustrated in Figure 33.

Figure 33 – Length distribution of shifted and unshifted subject NPs in Left Dislocation.



⁶¹ The next logical step would be to see if LD is affected by different weight predictors, e.g., complexity vs length, which was tested in the other constructions described in this section. That was not possible to do at this time but testing LD for any weight effects is interesting on its own as that has never been done before. It was decided to only test for the potential effects of NP length for this study and to leave complexity and other potential weight effects to future studies.

Figure 33 shows the length distribution of unshifted subjects (the blue curve) and subjects that have been shifted to the left with Left Dislocation (the pink curve). The results show that Left-Dislocated subject NPs on average are not only considerably longer than subject NPs in situ, as measured by number of words, but they also tend to be very long in general.

For the experiment we also searched for Left-Dislocated direct objects such as example (4.9). The length of the object NP was extracted from the search, like the previous one. The search revealed 25005 examples with moved constituents and constituents left in situ, 28 of which had Left-Dislocated direct objects, such as in example (4.9)

- (4.9) [þau orð eg tala til yðar]
 those words.acc I speak to you
 [þau] tala eg ei af sjálfum mér.
 [they] speak I not from self me
 ‘The words I speak to you, I speak not from myself’
 (ID 1593.EINTAL.REL-OTH,.1039)

Similar to the Left Dislocated subjects, the results revealed a significant difference in the average length of left dislocated direct objects (average length: 8, middle value: 7) and direct objects in situ (average length: 2.57, middle value: 1) (Mann-Whitney U test: $U = 614480$, $p < 0.001$). These search results confirm what we saw with the LD subjects and suggest that both Left-dislocated subjects and direct objects tend to be very long and, on average, considerably longer than NPs in situ. The length distribution of shifted and unshifted object NPs in LD is shown in Figure 34.

Figure 34 – Shifted and unshifted Direct Objects in Left Dislocation.

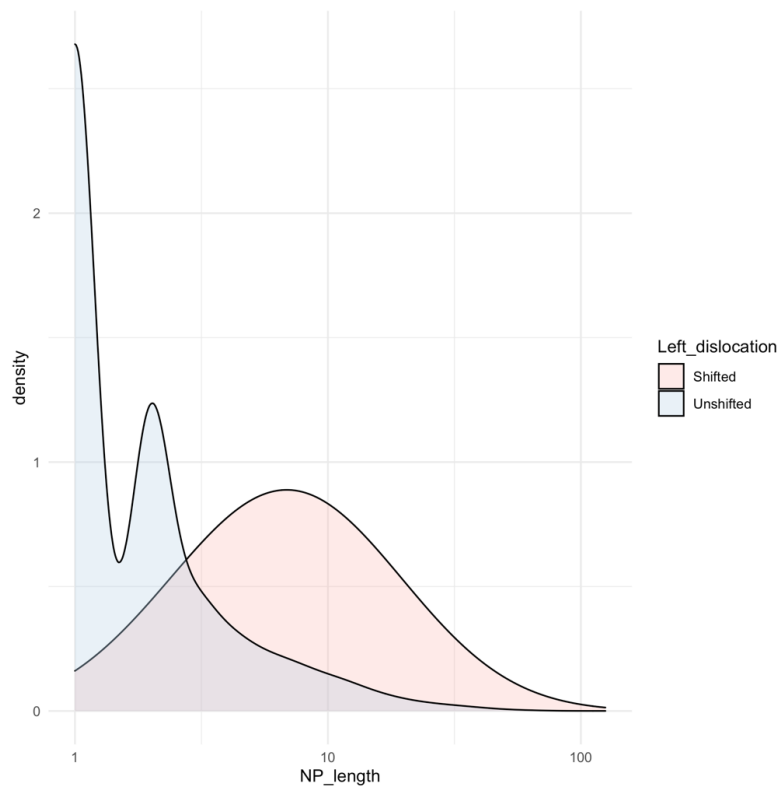


Figure 34 shows the length distribution of unshifted direct objects (the blue curve) and direct objects that have been moved to the left by LD (the pink curve). While most of the shifted direct objects consist of around ten words or more, the majority of the object NPs in situ consist of 1–2 words and a significant amount consists of 3–4 words. The results are very similar to the results from the subject search and show that Left-Dislocated direct object NPs are, on average, very long and tend to be much longer than direct object NPs in situ. The results from this experiment suggest that very long NPs, both subjects and direct objects, are more likely to be moved out of the main clause by Left Dislocation, than short NPs. The results also support what has been maintained earlier in this chapter, which is that moving constituents, with the structures that have been described in this study, is not just about moving heavy constituents to the right edge of the clause, but mainly about moving heavy constituents out of the middle of the clause.

In Indriðadóttir & Ingason 2019a,b, we also looked at direct objects and indirect objects that have been moved to the left edge with Topicalisation. We found that topicalised indirect objects follow the same pattern, although the average length difference is much smaller, whereas Topicalised direct objects are significantly shorter by average number of words than direct objects in situ. From our results we drew the conclusions that leftward movement, in particular Left Dislocation, is used to move heavy elements to the left edge of the sentence, similarly to rightward movement and that heavy

elements that are already on the right edge, of the sentence, such as direct objects, do not need to undergo leftward movement, as they are already on an edge. This may also apply to shifted subjects, as the corpus study showed that subjects are less frequently moved with HNPS than direct objects. It could be that heavy constituents that are already on the left edge, which subjects tend to be, are less likely to be moved all the way to the right edge, even though the outcome is perfectly acceptable as we saw in the previous chapter.

It has similarly been argued that while heavy clause subjects do not sit well in the beginning of the clause, like in (4.10a), they are even worse when they follow the verb in a yes/no question, like in (4.10b). The fact that the clause subject is better in (4.10c) when it has been moved to the right edge by Extraposition provides further support for the notion that heavy constituents are better placed at the edge of the clause than in the middle of it (see Thráinsson 1979:155ff. and Rögnvaldsson 1982).

- (4.10) a. ?[Að tunglið sé úr osti] er mjög ólíklegt.
 [That moon.DET is of cheese] is very unlikely
 ‘It is very unlikely that the moon is made of cheese.’
- b. ?? Er [að tunglið sé úr osti] mjög ólíklegt?
 Is [that moon.DET is of cheese] very unlikely
 ‘Is it very unlikely that the moon is made out of cheese?’
- c. Er mjög ólíklegt [að tunglið sé úr osti]?
 Is very unlikely [that moon.DET is of cheese]
 ‘Is it very unlikely that the moon is made out of cheese?’

As we saw in this section, it is perfectly acceptable to move heavy subjects that are on the left edge further left with LD. This could be a categorical difference between types of movement like LD and HNPS, because LD arguably moves the constituent out of the clause (see Thráinsson 1979:61ff. and the discussion previously in this section), unlike HNPS, and a resumptive pronoun takes its place inside the clause. If the constituent is a heavy subject on the left edge, it may still be easier for speakers to plan them if they move them out of the main clause, get them out of the way, higher up in the structure, before moving on to the structure of the main clause. In Indriðadóttir & Ingason 2019a,b, we argued that moving heavy elements to the edge can facilitate parsing in cases where speakers need to recover from a deeply embedded structure in the middle of a clause and this is a plausible explanation for why heavy subjects that are already on the left edge can move further to the left with

LD. Of course, this is only a small empirical study, and these effects need to be studied in more detail in experiments, considering other variables to paint a clearer picture of how similar heaviness-driven leftward movement is to heaviness-driven rightward movement. If LD is categorically different from operations like HNPS and Topicalisation (and maybe not a type of movement at all), then that could be an argument for weight effects not operating on a syntactic level, but rather in Phonetic Form, as was mentioned in Section 2.3 and will be discussed again in Chapter 6. This thesis will not look further into leftward movement and the study described here is still ongoing, as was mentioned in the beginning of this section, but the results are both interesting and relevant to the thesis and were therefore worth mentioning here.

So far, in this chapter, we have looked at variations of three different syntactic structures in the Icelandic Parsed Historical Corpus: Heavy NP Shift, Particle Shift and Left Dislocation. The results have shown that NP length, measured by number of words, is an important weight predictor for all these structures and seems to apply across both leftward and rightward movement. The results for the first two structures revealed that the complexity of the NP is also an important weight predictor, at least as important as NP length, although that needs to be investigated further in a production experiment, which will be described in the next section.

It was interesting to see that in the search for shifted subjects and direct objects in HNPS, there were much fewer examples of shifted subjects than there were of shifted direct objects in the treebank, while the results from the acceptability surveys, described in the previous chapter, showed that Icelandic speakers evaluate these structures as equally good. This difference underlines the importance of testing grammatical structure with more than one method. The fact that a type of sentence structure rarely appears in a corpus does not have to say anything about whether speakers find it acceptable or not, as Thráinsson (2013) discussed in regards to Object Shift in IcePaHC. The fact that speakers find some structure perfectly acceptable or unacceptable says little about how common it is in written or spoken language.

Although there are much fewer examples of shifted subjects than direct objects in HNPS, the results showed exactly the same trend, which is that most shifted NPs include a relative clause, regardless of how they are structured otherwise, i.e. whether they are a full NP or a pronominal NP. The results from this search also support the hypothesis that relative weight effects are very important for HNPS in Icelandic. If the NP is at the end of the clause, it can be much longer than an NP in situ, regardless of whether it is a subject or a direct object, and the PP it moves across is generally short. An NP in situ is generally shorter than an NP that has been shifted and in that case, the PP at the end of the clause can be considerably longer than a PP in the middle of the clause. This suggests that HNPS is not necessarily about moving heavy NPs, but that it is just one way for speakers to move

heavy constituents out of the middle of the clause and to an edge. While the PS study showed similar results in regards to the importance of NP length and complexity, it is not easily comparable to HNPS in this way as the constituent the NP shifts over, the particle, is always short. The most interesting structure to compare with HNPS for relative weight effects is Object Shift, which was not possible to study in the Icelandic Parsed Historical Corpus, due to how rarely this structure appears in the corpus. This will therefore be one of the main objectives of the next section, which describes the final experiment of this study, the production experiment.

4.2. Weight effects and movement in a production experiment

This section presents the results from the production experiment that was conducted in Reykjavik, Iceland, in the fall of 2019. The experiment described in this chapter mainly focusses on Heavy NP Shift (HNPS) and several potential weight factors that have come up in the previous experiments and may affect it in production, including NP length, relative weight effects, complexity, grammatical roles, and prosodic heaviness. The other two structures, Particle Shift (PS) and Object Shift (OS), were also tested for the effects of NP length and relative weight in the production experiment. The goal of the experiment is to answer the following question:

- Do we find the same weight effects in language production in Modern Icelandic as we find in Modern Icelandic acceptability judgments?
- Do we find the same weight effects in language production in Modern Icelandic as we find in historical production data?
- If not, what does that tell us about weight effects?

This section is laid out as follows: Sections 4.2.1. and 4.2.2. describe the the experiment in detail: the design of the test sentences, layout of the survey, procedure, and data processing. Sections 4.2.3. and 4.2.4. present the results of the experiment.

4.2.1. *Test sentences*

62 test sentences with HNPS, OS and PS were tested in the experiment, as exemplified below. The sentences for each structure were designed by formulas which control for the potential weight factors that were included for each structure, as will be described in detail later in this section. As the experiment tested all three syntactic structures at once, the test sentences acted as filler sentences for each other, and 33 extra filler sentences were also included, so there were 95 sentences in the experiment altogether. The stimuli were designed to test the same weight factors as in the

acceptability surveys described in Chapter 3 and the corpus study described in the previous section. The stimuli were therefore designed in a similar way to the ones used in the acceptability surveys or, in some cases, the same test sentences were used.

Most of the test sentences, or 44 sentences in all, were designed to test for various forms of HNPS, as this structure had the largest number of test factors. The factors that were included for these stimuli were as follows:

- Relative weight effects, reflected in the length difference between the shifted NP and the PP.
- NP length, measured in number of words and syllables vs NP complexity, measured by whether the NP includes a relative clause or not.
- Prosodic heaviness, defined here as stress at the phrasal level.

Like before, in half the test sentences, the shifted NP was a subject, like in example (4.11) and in the other half, the shifted NP was a direct object (4.12).⁶² The test sentences appear here with both possible word orders (NP before PP or PP before NP) as they were not presented to speakers in a predetermined order, as discussed in the next section.

- (4.11) a. Í fyrra komu [til bæjarins]
 In last year came [to town.DET]
 [nokkrir litlir leikhópar frá öðrum löndum].
 [few small acting groups from other countries]
 ‘Last year a few small acting groups from other countries came to town.’
- b. Í fyrra komu [nokkrir litlir leikhópar frá öðrum löndum]
 In last year came [few small acting groups from other countries]
 [til bæjarins].
 [to town.DET]
 ‘Last year a few small acting groups from other countries came to town.’
- (4.12) a. Sigríður les [á morgnana]
 Sigríður reads in mornings.DET
 [ýmiss konar nýleg tímarit um tísku].
 various recent magazines about fashion
 ‘Sigridur reads various recent magazines about fashion in the morning.’

⁶² For the full list of stimuli for the production task see Appendix C.

- b. Sigríður les [ýmiss konar nýleg tímarit um tísku]
 Sigríður reads various recent magazines about fashion
 [á morgnana]
 in mornings.DET
 ‘Sigridur reads various recent magazines about fashion in the morning.’

Like in the acceptability survey, the test sentences were constructed in a similar way, where the length of the NP and the PP was controlled, as displayed in (4.13), but the construction of the NP varied based on which factor was being tested. The sentences in (4.11) and (4.12) have long NPs, which do not include a relative clause. NPs of this type were all constructed in a similar way so that they included a noun, adjectives and/or a PP. The sentences of this type with a shiftable subject NP were constructed in the same way: They all begin with PP or AdvP, similar to the one in (4.11) and a main verb, which is then followed by the subject NP and PP in a non-fixed order. The sentences where the shiftable NP is a direct object begin with a subject and main verb, like in (4.12), followed by a direct object NP and PP in a non-fixed order. Like before, expletive constructions and sentences where the subject NP had shifted over a direct object were not included in the test, as HNPS is rarely accepted in transitive expletive sentences and the same is true of sentences where the subject has been shifted over a direct object (see Thráinsson et al. 2012:240–241). The following model was used to control the length of the phrases in the test sentences:

- (4.13) a. NP: 6 words, PP: 2 words
 b. NP: 2 words, PP: 6 words
 c. NP: 6 words, PP: 6 words
 d. NP: 2 words, PP: 2 words
 e. NP: 1 word, PP: 2 words

This model was chosen to test the effects of relative weight between phrases in sentences with HNPS using ‘length by number of words’ as the measure of heaviness. The first four length categories (4.13a–d) are the same as were used in the acceptability surveys, examples of which are shown again in (4.14).

- (4.14) a. Við skoðuðum [á safninu]
 We observed [at museum.DET]
 [fágætar gamlar stytur úr hvítum steini].
 [rare old statues from white stone]
 ‘We observed some rare old statues made of white stone at the museum.’

- b. Ég las [fyrir síðasta próf í sögu Evrópu]
 I read [for last exam in history Europe]
 [margar bækur].
 [many books]
 ‘I read many books for the last exam in European history.’
- c. Listmálarinn málaði [á gamla veggum í úthverfum bæjarins]
 artist.DET painted [on old walls in suburbs town]
 [stórar og fallegar myndir af tunglinu].
 [large and beautiful pictures of moon.DET]
 ‘The artist painted large and beautiful pictures of the moon
 on old walls in the town’s suburbs.’
- d. Ég geymi [fyrir börnin] [nokkrar kökur].
 I keep [for children.DET] [some cakes]
 ‘I will keep some cakes for the children.’

The last length category (4.13e) was specifically added to test the potential effects of prosodic weight, as will be discussed later in this section. As before, not only the number of words per phrase was controlled but also the number of syllables per word and per phrase, e.g., if the phrase consisted of six words, it could only have twelve syllables in it altogether and each word could consist of maximum three syllables. The same rules applied for two-word phrases, which could altogether consist of only four syllables.

Two more factors tested in the HNPS sentences: the complexity of the NP vs its length alone and prosodic heaviness as a weight factor. The results from the corpus study, which was described in the previous section, showed that length and complexity are both important weight factors, but the corpus results did not provide a clear answer as to whether one of those factors is more important than the other. To test NP length vs complexity specifically, six sentences were included in the list of test sentences, in the length category (4.13a), with a six-word NP and a two-word PP: three with shifted direct objects (such as (4.15)) and three with shifted subjects (such as (4.16)).

- (4.15) Margrét málaði [fyrir safnið]
 Margret painted [for museum.DET]
 [myndir sem öllum þóttu afar fallegar].
 [paintings which everyone considered very beautiful]
 ‘Margret painted for the museum paintings that everyone considered very beautiful.’

- (4.16) Á morgun mæta [í útvarpið] [menn sem ferðast
 Tomorrow come in [toradio.DET] [men that travel
 eingöngu á þríhjóli].
 exclusively on tricycle]
 ‘Tomorrow some men who travel exclusively by tricycle will come to the radio (station).’

Sentences of this type were also tested in the acceptability surveys, but NP complexity did not have a significant effect on the results in those experiments. This factor was tested again here to see if it has any effect on production.

The last factor that was tested for HNPS was prosodic weight. As was demonstrated and discussed in Chapter 2, even very short NPs can be moved to the end of the clause across a PP that is equally long in a sentence like (4.17a) but not in a sentence like (4.17b).

- (4.17) a. Ég keypti [fyrir ykkur] [nokkrar bækur].
 I bought [for you] [some books]
 ‘I bought some books for you.’
 b. ?Mamma keypti [handa Sigga] [nýjar buxur].
 Mum bought for Siggi new trousers
 ‘Mum bought some new trousers for Siggi.’

The hypothesis that was put forth in Chapter 2 was that the PP [fyrir ykkur] in (4.17a), which contains a preposition and a personal pronoun, bears no stress in this position, and therefore the shifted NP at the end, which carries the nuclear stress in the sentence, is prosodically heavier than the PP. That means that even though the NP is not long or complex it is relatively heavier than the PP from a prosodic perspective and therefore it can undergo HNPS, which short NPs would normally not be expected to do, like in example (4.16b). It is not possible to prove a hypothesis about prosodic structure and prosodic weight effects, using only data from an acceptability survey, or from a corpus study that only has written data, such as IcePaHC, which cannot provide the solid information about accent placement that data from a production experiment can. A judgment task cannot provide information about how speakers hear the sentences in their heads when they evaluate them. It can only be assumed that this is the way the participants, or at least the majority of them, has assigned stress to these sentences. To test this hypothesis further it is necessary to examine these sentences in production and analyse the prosodic realisation of the structure in question, as will be done later in this chapter.

Twelve of the original test sentences of the type (4.13d) were controlled for prosodic heaviness, where the PP and NP were equally long but in half the sentences the PP had a pronoun complement and in the other half the PP had a full noun complement, (like in example (4.17)). Along with the original twelve sentences, eight additional sentences were added (length category (4.13e), in which the PP exceeds the NP in length by number of words and syllables, as demonstrated in (4.18), where the shifted NP is a subject, and (4.19), where the shifted NP is a direct object.

(4.18) a. Í morgun söng [kór] [fyrir okkur].
 In morning sang [choir] [for us]
 ‘This morning a choir sang to us.’

b. Í morgun söng [fyrir okkur] [kór].
 In morning sang [for us] [choir]
 ‘This morning a choir sang to us.’

(4.19) a. Ég keypti [búr] [fyrir köttinn].
 I bought [cage] [for cat.DET]
 ‘I bought a cage for the cat.’

b. Ég keypti [fyrir köttinn] [búr].
 I bought [for cat.DET] [cage]
 ‘I bought a cage for the cat.’

This last category of stimuli was added to further test the hypothesis of prosodic heaviness as a weight predictor and to test it against NP length. In the case of short NPs, if prosodic weight is as important a weight factor as the number of words the NP consists of, it would be reasonable to assume that sentences such (4.18b) would be produced in the production experiment. The prosodic heaviness of the object NP in (4.18b) would then outweigh the lack of words/syllables in the NP vs the PP which contains more words and syllables but lacks prosodic heaviness. The idea is that a single syllable object NP that carries nuclear stress and makes up a prosodic word is relatively heavier than a two-word, four-syllable PP, that does not make a prosodic word on its own. In this case, the object NP could undergo HNPS, in a syntactic environment where it would normally not be expected.

All in all, there were 20 test sentences that were controlled for prosodic weight effects, including both length categories described above, and like in all the other HNPS test sentences, half of the sentences had shiftable object NPs half had shiftable subject NPs. These factors, as well as relative heaviness and complexity, were all controlled for in the HNPS sentences. For the other two structures, OS and PS, there were fewer test sentences and fewer control factors. These structures were tested

for NP length and relative weight effects to see if heaviness affects the position of objects in a sentence in general, not only in HNPS, and, as these structures only apply to verb objects and not to subjects, grammatical roles were not a factor for these structures either.

The OS test sentences were designed based on a length formula similar to the one that the HNPS sentences were based on. One of the main goals of this experiment was to test the potential effects of relative heaviness in full NP OS and in PS, as will be described in the next subsection. The OS test sentences were designed based on a length formula similar to the one used in the acceptability experiment described in Chapter 3, as shown in (4.20).

- (4.20) a. NP: 1 word, Neg: 1 word
 b. NP: 3 words, Neg: 3 words
 c. NP: 3 words, Neg: 1 word
 d. NP: 1 word, Neg: 3 words

Just like before, the number of syllables was also controlled for, so three words consist of nine syllables and one word consists of two syllables, as demonstrated in (4.21–24). There were twelve test sentences for OS in this experiment: three for each length category. In (4.21a) a single-noun NP is in situ, following a simple one-word negation. In (4.21b) the NP is shown in the OS word order. Similarly, (4.22a) shows a long three-word NP in situ, following a simple single-word negation, whereas in (4.22b) the long NP has undergone OS and precedes the short negation. In (4.23a) a long three-word NP follows an equally long negation and in (4.23b) the NP is shown in the OS word order, preceding the negation. In (4.24a) a short single-noun NP in situ, following a long negation and in (4.24b) we see the short NP preceding the long negation, having undergone OS.

- (4.21) a. Ég þekki [ekki] [manninn].
 I know [not] [man.DET]
 ‘I do not know the man.’
 b. Ég þekki [manninn] [ekki].
 I know [man.DET] [not]
 ‘I do not know the man.’
- (4.22) a. Ólöf borðaði [ekki] [alla gírnilegu ostana].
 Olof ate [not] [all delicious cheeses.DET]
 ‘Olof did not eat all the delicious cheeses.’

- b. Ólöf borðaði [alla girnilegu ostana] [ekki].
 Olof ate [all delicious cheeses.DET] [not]
 ‘Olof did not eat all the delicious cheeses.’

- (4.23) a. Við færðum [alveg ábyggilega ekki]
 We moved [most certainly not]
 [stóru amerísku skápana].
 [big American wardrobes.DET]
 ‘We did most certainly not move the big American wardrobes.’

- b. Við færðum [stóru amerísku skápana]
 We moved [big American wardrobes.DET]
 [alveg ábyggilega ekki].
 [most certainly not]
 ‘We did most certainly not move the big American wardrobes.’

- (4.24) a. Gunna las [alveg áreiðanlega ekki] [bréfið].
 Gunna read [most certainly not] [letter.DET]
 ‘Gunna did most certainly not read the letter.’

- b. Gunna las [bréfið] [alveg áreiðanlega ekki].
 Gunna read [letter.DET] [most certainly not]
 ‘Gunna did most certainly not read the letter.’

The number of words and syllables in this length model was based on the long negation used in (4.23–4.24), the same as in the acceptability survey. In order to keep control factors to a minimum, the OS sentences were all constructed in the same way; Subject followed by a verb and then an object NP and negation in a non-fixed order. The direct objects were all marked with a definite article, as NPOS is largely restricted to definite NPs.

Unlike HNPS, OS is normally classified as leftward movement: in basic word order a direct object would normally follow the negation, like in (4.21a) but it can also precede it, like in (4.21b), in which case it is said to have undergone Object Shift. If relative weight affects OS, it would therefore be reasonable to assume that OS is more common in a sentence like (4.24b), where the NP is relatively much shorter than the negation. That way the heavier element is at the edge and the lighter element is in the middle of the sentence. Sentence (4.22b) should then be the least likely to occur because there the object NP is relatively much longer than the negation and it is more natural for it to appear at the end. The acceptability survey, which was described in Chapter 2, showed that Icelandic speakers strongly prefer short NPs in OS over long NPs, which they find close to unacceptable or fully unacceptable in this structure. However, if the negation is also long, speakers do not dislike long

NPs in OS as much as they dislike them when the negation is short. The fact that the length of the negation on its own has no effect on the speakers' evaluations means that there is no detectable effect of relative weight effects in speakers' evaluations. That does not say that relative weight is not important in language production and this experiment should answer that question.

As discussed in Chapter 2, it is interesting to study and compare the effects of heaviness on HNPS and OS, because they are fundamentally different structures but have both been argued to be sensitive to weight effects. In this context it is natural to take a look at the third structure that has been compared to both of the previously discussed structures: PS or Particle Shift.

The PS sentences were structured in a similar way to the previous test sentences. The two elements the speakers were asked to put in order after the main verb were the object NP and the particle. It is not possible to test the effects of relative length on this structure in the same way as with the other syntactic structures, as particles cannot be stacked or extended to more than (arguably) two words. For this experiment, it was decided to test only two length categories, as shown in (4.25). There were six PC test sentences, three for each category.

- (4.25) a. NP: 1 word, Particle: 1 word
 b. NP: 3 words, Particle: 1 word

The syllable number for the object NPs was controlled like before (one word: two syllables, three words: eight syllables) but the particles consisted of either one or two syllables. The sentences were all constructed in the same way, with a subject followed by a verb and then an object NP and particle in a non-fixed order, as demonstrated in examples (4.26–27). All object NPs were marked with a definite article.

- (4.26) a. Jóna skrifaði [nafnið] [niður].
 Jona wrote [name.DET] [down]
 ‘Jona wrote the name down.’

- b. Jóna skrifaði [niður] [nafnið].
 Jona wrote [down] [name.DET]
 ‘Jona wrote down the name.’

- (4.27) a. Við settum [allar rauðukartöflurnar] [niður].
 We put [all red potatoes.DET][down]
 ‘We put all the red potatoes down.’

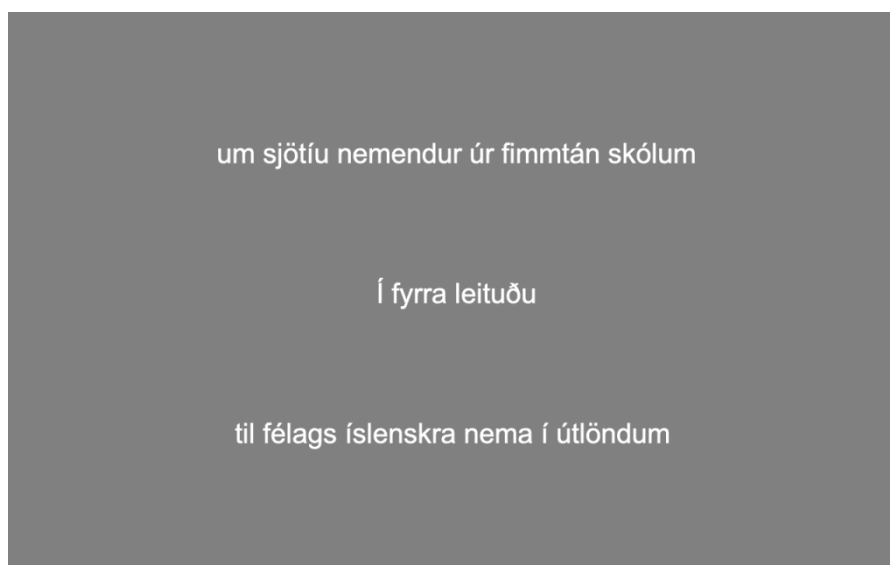
- b. Við settum [niður] [allar rauðu kartöflurnar].
We put [down] [all red potatoes.DET]
'We put all the red potatoes down.'

The acceptability survey showed that NP length might not be a significant weight predictor for PS so it will be interesting to see if it is important in language production.

4.2.2. Layout and procedure

The production experiment was designed in a similar way to Stallings & MacDonald's experiment on English (2011), where participants are asked to arrange sentence fragments. This is a known method in psycholinguistic research to test speakers' preference in constituent placement and other things, including default word order and stress patterns (recent studies include Dehé, Wochner & Einfeldt 2022, Reimer & Dimroth 2022, Gauza 2018, Dehé 2002). The experiment was created in PsychoPy (Peirce et al. 2019). The experiment was conducted in September through October 2019 in a soundproof room at the University of Iceland in Reykjavik. 20 speakers participated in the experiment, an equal number of men and women, aged 20 to 40 years. The experiment was disguised as a memory task, where participants were asked to read sentence fragments off a computer screen and memorise them. Each test sentence appeared on the screen in three parts, as demonstrated in Figure 35.

Figure 35 – An example of how a test sentence would appear for participants in the production experiment.



The beginning of the sentence always appeared in the middle of the screen and the other two parts above and below the beginning of the sentence in a randomised order, as shown in Figure 35. Participants were asked to always use the part that is in the middle as the beginning of the sentence. The speakers were given as much time as they wanted to memorise each sentence. Once they had memorised the sentence, they pressed a button, and the screen went blank for 10 seconds. Then a plus-sign appeared for one second as a prompt for the speakers to produce the utterance from memory, as naturally as they could. Once they had produced the utterance, they pressed the button again and a new sentence appeared on the screen. All produced utterances were recorded and transcribed and scored for the syntactic structure of the sentence: shifted NP or NP in situ. Selected utterances were annotated in PRAAT, as will be discussed later in Section 4.3.1.

Utterances were excluded when the participant failed to produce a whole sentence, including an NP and a PP, or if the participant changed the sentence structure in a way that was not compatible with the conditions of the task (e.g., a participant might produce an utterance where a part of the NP had been moved to the right edge of the clause with extraposition, but HNPS had not occurred). Participants would sometimes slightly alter the words in the utterance they produced, i.e., replace one adjective with another, but they generally maintained the length of each constituent correctly. As long as the utterances fulfilled the conditions for length and structure, they were included in the analysis and participants were not rated for how accurately they remembered the exact words of the test sentence. A similar pattern was reported by Stallings & McDonald (2011) in the outcome of their study (see also Stallings et al. 1998). At the end of the task, the speakers filled out a short form, providing personal information that would be used for data processing, including exact age and gender.⁶³ Section 4.3. presents the results from the production experiment.

4.3. Results

This section presents the results from the production experiment and is laid out as follows: Section 4.3.1. presents the results for the HNPS test sentences, considering all relevant weight predictors: NP length, grammatical roles, complexity, and prosodic stress. Section 4.3.2. takes a look at the results for the PS and OS test sentences, with the focus on NP length and relative weight effects for these two structures in production. Section 4.3.3. provides a brief summary and concluding words.

⁶³ As mentioned earlier in this section, age and gender were controlled in the group and were not considered actual test factors. In the LRT model comparison described later in this section, exact age and gender were included as fixed factors but neither of them had a significant effect in any of the model comparisons, which is not surprising with such a small, controlled group of participants. It was also not expected that age or gender would have any effect on variation in these structures as there is nothing in the literature that speculates an effect like that.

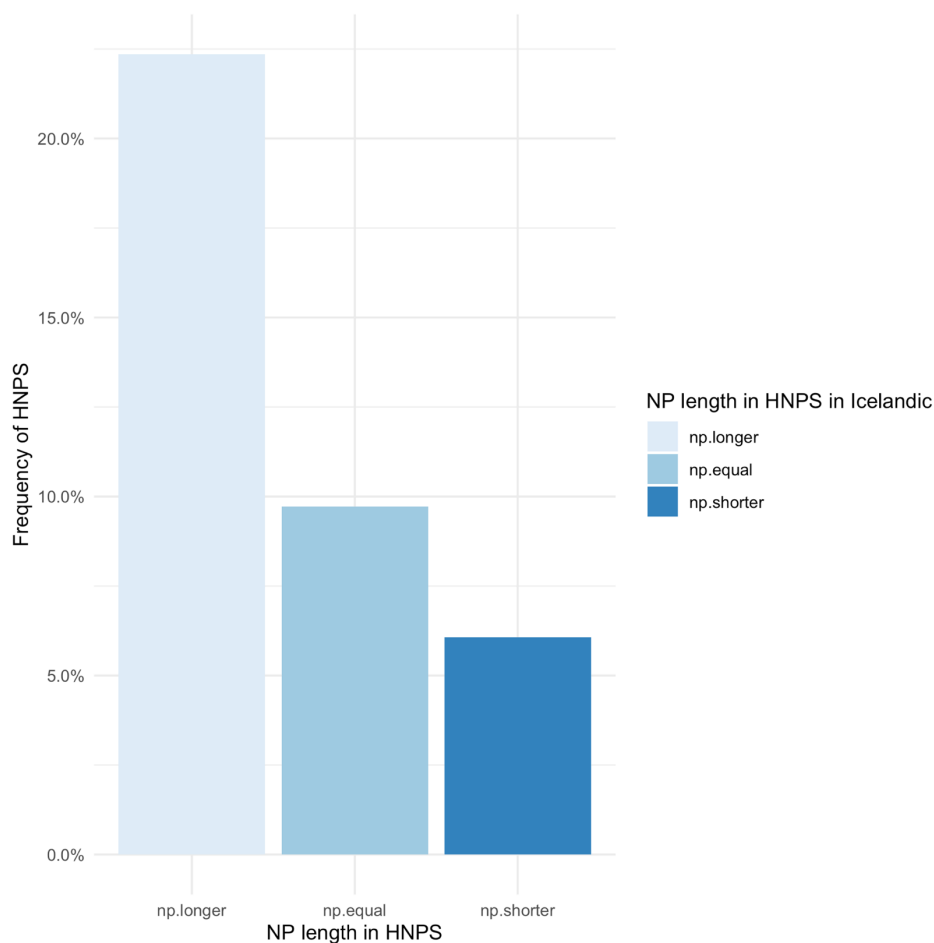
4.3.1. Weight effects in HNPS in production

This section examines the results for the HNPS test sentences. First, we take a look at how often the speakers produced sentences with HNPS by length category and then we take a closer look at the other potential factors: grammatical roles, complexity and, in the case of the short-NP sentences, the relationship between length and prosodic stress. Figure 36 shows the frequency of HNPS, i.e., how often a test sentence of this type was produced with the NP at the end of the clause, by the length of the NP. Here, the length categories have been collapsed into three new variables:

- NP equal = The NP and the PP are equally long.
- NP shorter = The NP is shorter than the PP.
- NP longer = the NP is longer than the PP.

This was done to simplify the layout of the results and the statistical analysis of the potential effects of relative length.

Figure 36 – Frequency of HNPS by relative NP length in the Icelandic production experiment.



As Figure 36 shows, sentences were most frequently produced with HNPS where the NP exceeded the PP in length: almost 25% of produced sentences of that type had the NP at the end of the clause, rather than following the PP.⁶⁴ In sentences where the NP and the PP are equally long, fewer than 10% were produced with HNPS. This includes the sentences where the NP consists of six words and the PP does as well, which suggests that in production, it is not enough that the NP is long, the relative length of the PP strongly affects the frequency of HNPS. In the instance of the NP being shorter than the PP, the NP was rarely moved to the end of the clause, or in around 6% of the produced sentences. Tables 22–29 show how frequently each test sentence was produced with the HNPS word order. Each table shows sentences with shifted subjects and objects by length category. Table 22 shows the frequency of shifted long non-complex subject and object NPs over short PPs.⁶⁵

Table 22 – HNPS in Icelandic in production: Frequency of shifted long non-complex NPs over short PPs.

Subject PP 2 NP 6	Shifted	Unshifted	NA
a. Um helgina keppa [á mótinu] [ungir iðkendur frá Ármanni og Gróttu].	1	17	2
b. Í fyrra komu [til bæjarins] [nokkrir litlir leikhópar frá öðrum löndum].	4	16	0
c. Venjulega mæta [á fundina] [nokkur hundruð ungar konur úr hverfinu].	2	18	0
Direct Object PP 2 NP 6			
d. Sigríður les [á morgnana] [ýmiss konar nýleg tímarit um tísku].	3	17	0
e. Við skoðuðum [á safninu] [fágætar gamlar styttur úr hvítum steini].	3	17	0
f. Þjófarnir stálu [frá Ólöfu] [fallegum gömlum úrum og dýru skarti].	2	18	0

As Table 22 shows, the non-complex long NPs were shifted across short PPs 1–4 times. All the sentences from this category were produced at least once with the HNPS word order. Table 23 shows sentences from the same length category but with complex NPs.

⁶⁴ 25% may seem like a low number but, as was discussed in Chapters 1 and 2, the structures tested in this study are not basic word order and there is nothing in the literature that suggests that HNPS is ever the default word order. The weight effects explored in this study may create an environment where the operations in question (HNPS, OS and PS) are more likely to occur than otherwise, but they will never make the operations necessary.

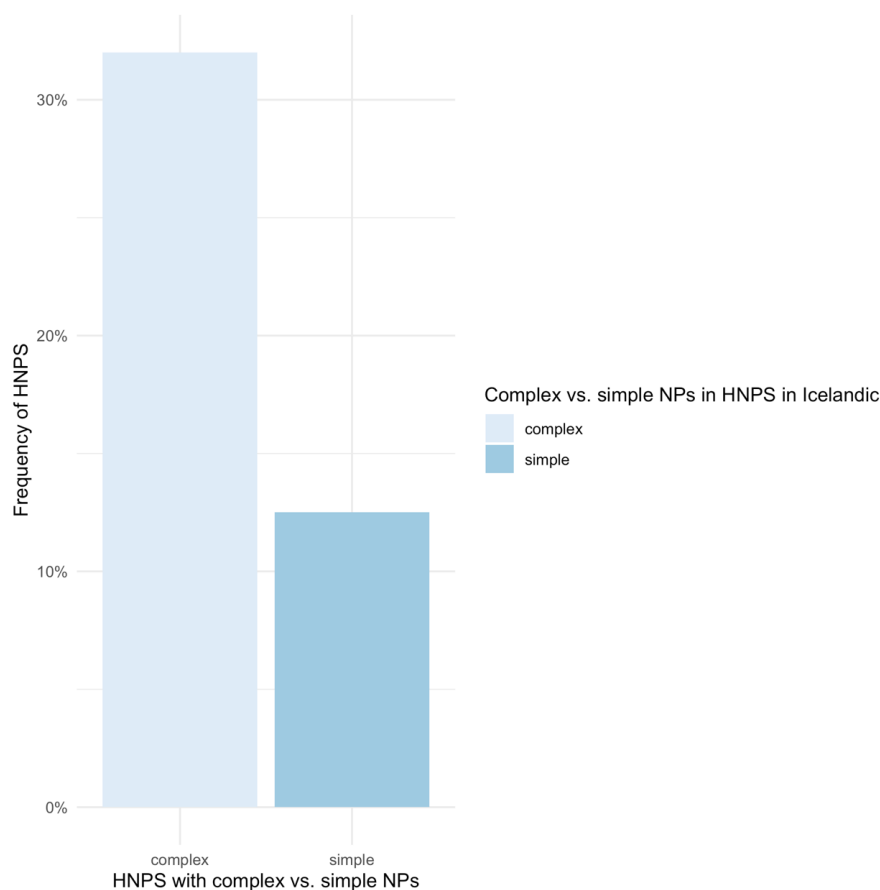
⁶⁵ There were 20 speakers in all that participated in the experiment, so if an NP was shifted 20 times, that would mean that the shifting frequency was 100%. The responses are displayed in Tables 22–29 in three columns: shifted, unshifted and NA (No Answer) for when the participant failed to produce a whole sentence, including an NP and a PP, or if the participant changed the sentence structure in a way that was not compatible with the conditions of the task.

Table 23 – HNPS in Icelandic in production: Frequency of shifted long complex NPs over short PPs.

Subject PP 2 NP 6	Shifted	Unshifted	NA
a. Á morgun mæta [í útvarpið] [karlar sem ferðast eingöngu á þríhjóli].	8	12	0
b. Í fyrra sungu [í keppninni] [krakkar sem æfa í gamla söngskólanum].	6	13	1
c. Í sumar fljúga [til Þýskalands] [flugvélar sem voru framleiddar á Spáni].	2	18	0
Direct Object PP 2 NP 6			
d. Ég las [fyrir börnin] [bók sem fjallar um brjálaða sjóræningja].	8	12	0
e. Margrét málaði [fyrir safnið] [myndir sem öllum þóttu afar fallegar].	6	14	0
f. Við söfnuðum [í hrúguna] [laufblöðum sem höfðu fallið á jörðina].	8	12	0

As Table 23 shows, sentences with complex long NPs were produced with the HNPS word order much more frequently than the comparable sentences with simple long NPs. This shows that the high percentage of shifted long NPs that we see in Figure 34 is mostly driven by the complex NPs. Figure 37 provides a clearer view of the difference.

Figure 37 – Frequency of HNPS with complex and simple Long NPs over short PPs in the Icelandic production experiment.



The long simple NPs, shown in Table 22, do shift more frequently than the equally long NPs that move across a long PP, as shown in Table 24 below.

Table 24 – HNPS in Icelandic in production: Frequency of shifted long NPs over long PPs.

Subject PP 6 NP 6	Shifted	Unshifted	NA
a. Árlega fara [til heitra suðlægra landa í Evrópu] [sjö til átta hundruð íslenskir ferðamenn].	0	20	0
b. Í fyrra leituðu [til félags íslenskra nema í útlöndum] [um sjötíu nemendur úr fimmtán skólum].	1	19	0
c. Í síðustu viku mættu [á opna fundinn fyrir unga höfunda] [bæði virkir nemendur og starfandi skáld].	2	18	0
Direct Object PP 6 NP 6			
d. Ég eldaði [fyrir nokkra góða vini úr vinnunni] [heilt læri með fallegum rauðum paprikum].	2	18	0
e. Foreldraráð keypti [fyrir alla krakkana í tíunda bekk] [margar dýrar bækur og nýjar spjaldtölvur].	3	17	0
f. Listmálarinn málaði [á gamla veggi í úthverfum bæjarins] [stórar og fallegar myndir af tunglinu].	2	18	0

These results show that relative weight effects are very important for HNPS in produced, spoken language, and they have now proved to be a very important weight factor across all levels of Icelandic. These results show, yet again, that it is not just the length of the NP that facilitates HNPS, it is also important that the string of words it moves over is relatively shorter. Table 25 shows the sentences where a short NP potentially moves across a long PP.

Table 25 – HNPS in Icelandic in production: Frequency of shifted short NPs over long PPs.

Subject PP 6 NP 2	Shifted	Unshifted	NA
a. Á vorin synda [á litlu tjörninni í gamla miðbænum] [hvítir svanir].	0	20	0
b. Á laugardaginn mættu [á árlega samkomu kvenna í listum] [margar konur].	0	20	0
c. Í fyrra fóru [á spennandi námskeið um vistvæna hugsun] [nokkrir nemar].	0	20	0
Direct Object PP 6 NP 2			
d. Siggí eldaði [fyrir nokkra gamla vini úr skólanum] [þykkar steikur].	1	19	0
e. Ólöf keypti [handað öllum fjórum litlu frænkum sínum] [fallega skó].	0	20	0
f. Ég las [fyrir síðasta próf í sögu Evrópu] [margar bækur].	0	20	0

As Table 25 shows, a short NP was only once shifted across a longer PP. It was expected that NPs would rarely shift in this length category and the results rhyme perfectly with what we saw in the acceptability experiments, but it is interesting to see that although the NP is short and relatively shorter than the PP, it can still undergo HNPS. It is one thing for

speakers to accept sentences of this kind in an acceptability survey, where we do not know how the speakers hear the sentence, but it is another thing to see a speaker assemble the sentence in this way and produce it with the short NP at the end of the clause.⁶⁶ This supports what has been maintained before in this thesis, that although short NPs rarely shift with HNPS, it can and does happen, meaning that NPs do not need to be long or heavy at all to undergo HNPS. Being long and heavy just makes them more likely to do so.

The next four tables show the frequency of HNPS in sentences where the NP is short, and the PP is also short, and the sentences are controlled for prosodic weight effects. Tables 26–27 show the test sentences where the NP is, as before, equally as long as the PP but this time both of them are short, consisting of only two words respectively. Table 26 shows the sentences where the PP has a full NP complement (and carries stress), and the NP is either a direct object or a subject. Table 27 shows comparable sentences with “light” PPs, where the PP has a pronoun complement and, arguably, carries no stress.

Table 26 – HNPS in Icelandic in production: Frequency of shifted short NPs over short PPs.

Subject PP 2 NP 2	Shifted	Unshifted	NA
a. Um síðustu helgi flaug [til Marokkó] [gamall vinur].	0	20	0
b. Seinast mættu [á bjórkvöldið] [þrír nemendur].	1	19	0
c. Í sumar koma [á námskeiðið] [margir krakkar].	0	20	0
Direct Object PP 2 NP 2			
d. Ólafur skrifaði [fyrir ritið] [nokkur bréf].	0	20	0
e. Mamma keypti [handa Óla] [nýjar buxur].	0	20	0
f. Við geymum [fyrir börnin] [nokkrar kökur].	0	20	0

⁶⁶ One would almost expect this one occurrence to be a mistake or that the speaker had struggled with remembering the sentence and therefore produced in this way. I went back into the recording to hear if the speaker hesitated or if there was anything abnormal about the way the sentence was produced but the speaker did not hesitate and pronounced the sentence with HNPS word order with confidence.

Table 27 – HNPS in Icelandic in production: Frequency of shifted short NPs over short "light" PPs.

Subject PP 2 NP 2	Shifted	Unshifted	NA
a. Á skrifstofunni bíða [eftir ykkur] [nokkrar stúlkur].	3	17	0
b. Á öskudaginn sungu [fyrir okkur] [kátir krakkar].	6	14	0
c. Um helgina voru [meðal okkar] [góðir gestir].	1	19	0
Direct Object PP 2 NP 2			
d. Kalli samdi [fyrir okkur] [eina vísu].	5	15	0
e. Sigga keypti [fyrir ykkur] [nokkrar bækur].	5	15	0
f. María bakaði [fyrir okkur] [góða köku].	4	16	0

As Tables 26–27 show, the difference is striking. For the sentences where the PP has a full, stressed, NP complement, the shiftable NP is only moved once.⁶⁷ This result would be expected as the NP is short and not very likely to move. In each sentence in Table 27, where the PP has a pronoun complement, the NP is moved at least once, and most are moved frequently, on a level comparative to the sentences in Tables 22–23. As the test sentences in Tables 26–27 are minimal pairs and the only difference between them is the structure of the PP, there is clearly a structural difference between them which can only be the prosodic structure of the PP. If the difference was categorical, i.e., if the presence of the pronoun called for a change in the word order, then the NP should shift every time and the alternative word order would be unacceptable, but that is not the case.⁶⁸ The stress pattern in the sentence is what allows for HNPS to take place in this instance, as will be argued further in the next section. For now, we take a look at the final length category in Tables 28–29, which tell a similar story.

⁶⁷ As Table 25 shows, there was one instance where a speaker moved a short NP across a fully stressed PP. This is an unusual word order that should not occur, and the prosodic structure of this utterance also sounded unusual, almost theatrical. Why the speaker planned the utterance in this way is unknown (although it is likely that the speaker was tired at this point and did not think about the quality of the utterance) but the prosodic structure suggests that it was a mistake.

⁶⁸ As mentioned in Chapter 3, the NP inside the PP is a pronoun which refers to something given/old information, whereas the shifted NP is indefinite and presents new information. If the information structure of the sentence was the reason for why HNPS is possible here, it would be expected that if the PP includes any NPs that represents old information (including definite nouns and proper names, like in the stimuli in Table 25) could trigger an indefinite NP to shift. As the results from this study show, this is not the case, and while it is impossible to separate the information status of the pronoun from its prosodic status in this instance (the pronoun refers to something given and is also not stress-bearing), it is more likely that prosody is at work here than information structure.

Table 28 – HNPS in Icelandic in production: Frequency of shifted short NPs over longer PPs.

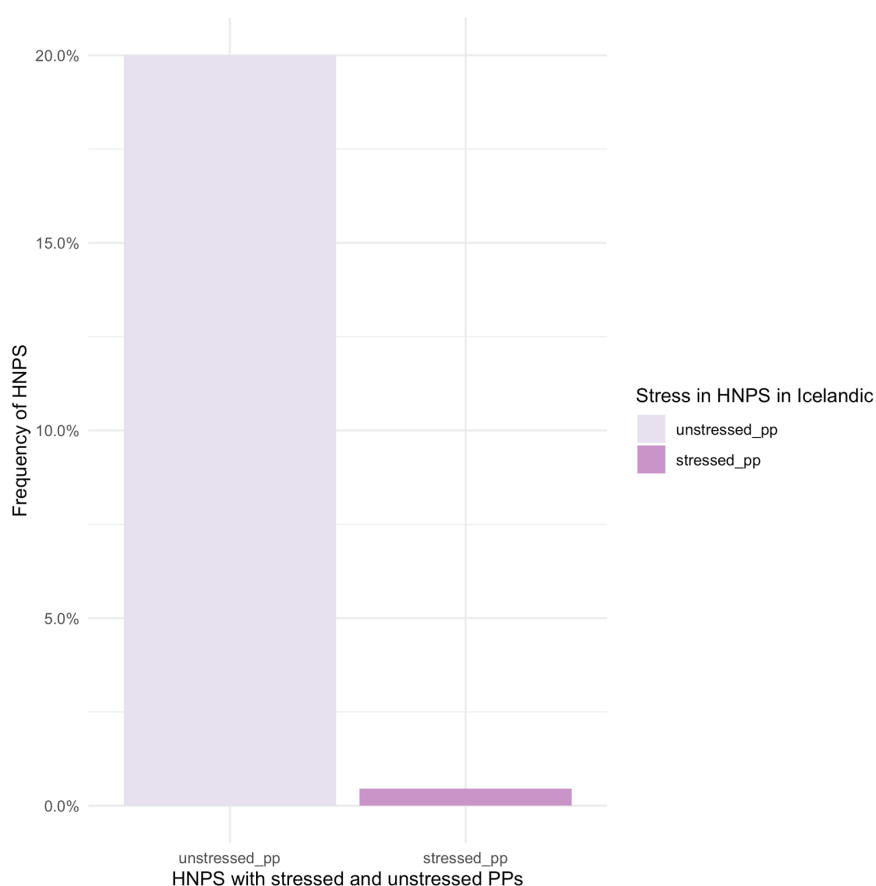
Subject PP 2 NP 1	Shifted	Unshifted	NA
a. Rétt áðan hlupu [yfir túnið] [börn].	0	20	0
b. Í morgun féll [á jörðina] [snjór].	0	20	0
Direct Object PP 2 NP 1			
c. Ég keypti [fyrir köttinn] [búr].	0	20	0
d. Sigríður eldaði [fyrir börnin] [graut].	0	20	0

Table 29 – HNPS in Icelandic in production: Frequency of shifted short NPs over longer "light" PPs.

Subject PP 2 NP 1	Shifted	Unshifted	NA
a. Í morgun söng [fyrir okkur] [kór].	4	16	0
b. Áðan keyrði [framhjá okkur] [bíll].	1	19	0
Direct Object PP 2 NP 1			
c. Símon orti [fyrir okkur] [ljóð].	7	13	0
d. Eiríkur bakaði [fyrir okkur] [brauð].	4	16	0

Tables 28–29 show the same pattern. Table 28 shows sentences where the PP has a full, stressed, NP complement and the NP is shorter than the PP, consisting of one single-syllable word. The NP is not moved once in this instance. Table 29 shows sentences with exactly the same structure, where the PP has a pronoun complement, and for each sentence the NP is moved at least once, and most are moved frequently. Figure 38 further illustrates the pattern shown in the tables.

Figure 38 – Frequency of HNPS with short NPs following stressed and unstressed PPs.

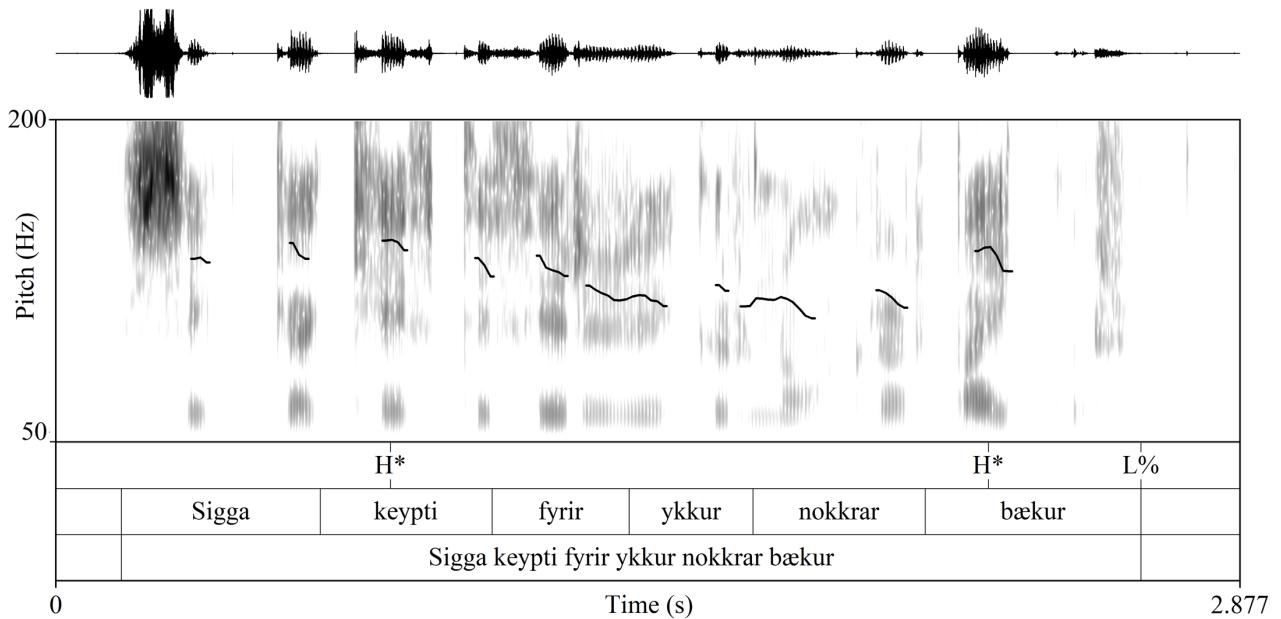


These results suggest that the prosodic “lightness” of the PP is more important than the number of lexical/morphological words or terminal element contained by each phrase.⁶⁹ The prosodic lightness of the PP creates an environment where the NP, even if it consists only of one single-syllable word, is relatively heavier than the PP, creating conditions where the very short NP can undergo HNPS – where it normally would not.⁷⁰ This is confirmed by the prosodic analysis of some of these utterances shown in Figures 39–41 where we see the prosodic realisation of selected test stimuli from the production experiment, as annotated in PRAAT. Annotation of intonational categories (pitch accents marking prenuclear and nuclear syllables, and utterance-final boundary tones) follows recent work on the intonation of Icelandic by Árnason (1998, 2005) and Dehé (2010, 2018).

⁶⁹ By default, functional elements like prepositions and pronouns do not carry stress unless they are in a stress position, e.g., focus or contrast position, or they must be stressed for syntactic reasons. While the first or second syllable within the functional element might be stronger for rhythmic reasons, that does not mean that it makes up a prosodic word (see Elfner 2018, Frota 2012, Truckenbrodt, 1999, 2007, Selkirk 1986, 2011 for standard work on prosodic phrasing and the syntax-prosody interface and Dehé 2008 specifically for Icelandic).

⁷⁰ If the object NP were a pronoun itself, (*Ég keypti [það] [fyrir ykkur]*, e. *I bought [it] [for you]*, HNPS would be impossible as the object pronoun is also not stress-bearing (as most often goes for personal pronoun objects in Icelandic, as mentioned in Chapter 2). So it is not the syllable count per se that matters but whether the constituent carries stress or not.

Figure 39 – Direct object moved across an unstressed PP.



In Figure 39 we see test sentence (4.28b) produced with HNPS word order. The NP appears at the end of the clause, following the PP. The utterance has only two points of phrasal stress: a prenuclear accent on the main verb and main accent on the NP at the end of the clause, but there is no pitch accent associated with the PP.

- (4.28) a. Sigga keypti [nokkrar bækur] [fyrir ykkur].
 Sigga bought [few books] [for you]
 ‘Sigga bought a few books for you.’
- b. Sigga keypti [fyrir ykkur] [nokkrar bækur].
 Sigga bought for you few books
 ‘Sigga bought a few books for you.’

Figures 40–41 show two realisations of the same sentence, one with a shifted subject NP and one with the subject NP in situ.

Figure 40 – Subject in situ followed by unstressed PP.

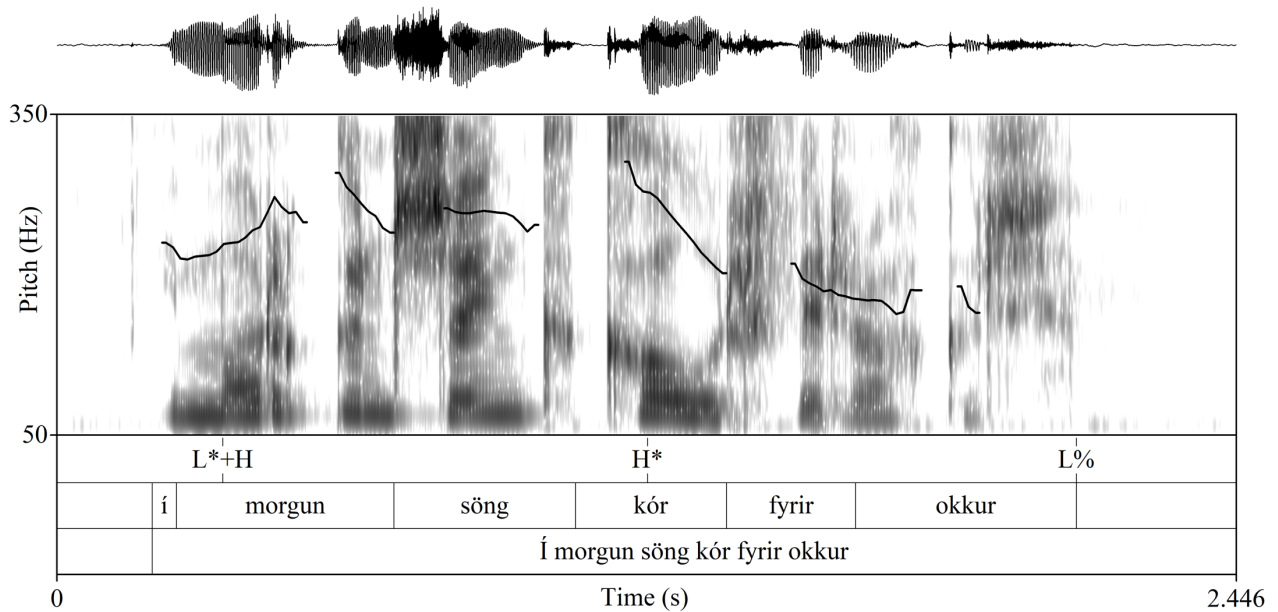
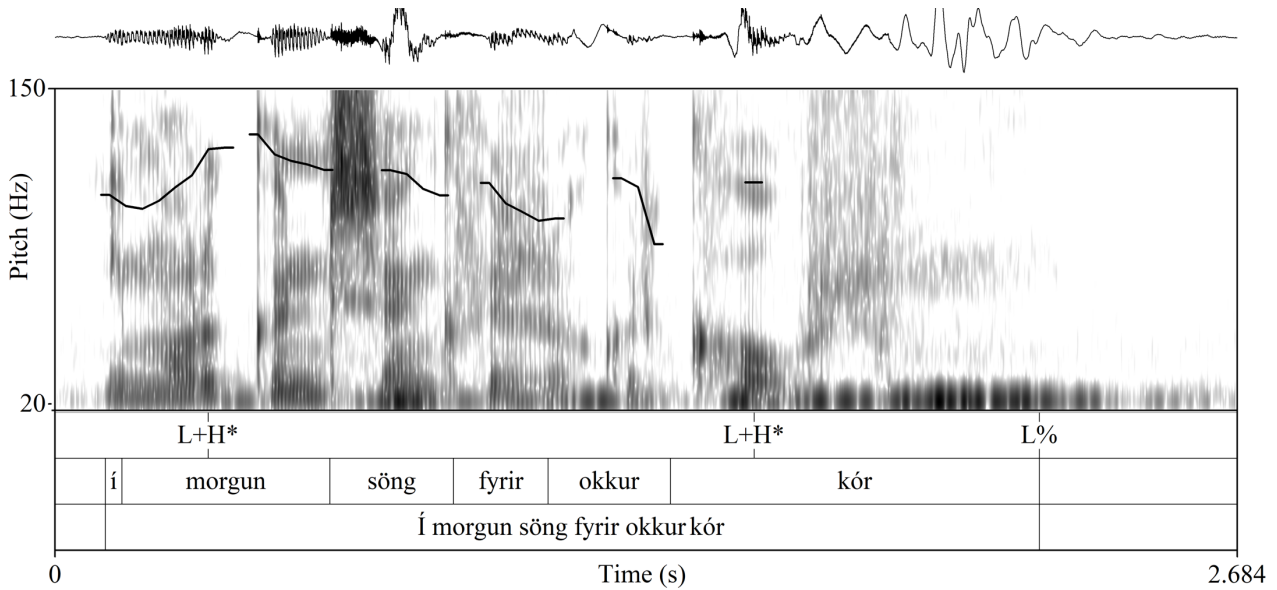


Figure 40 shows the prosodic realisation of sentence (4.29a) with the subject NP in situ, followed by the unstressed PP. HNPS has not occurred but the nuclear stress of the sentence is on the subject [kór] and the PP that follows has falling transition from H* to the low boundary and does not form an independent prosodic unit.

- (4.29) a. Í morgun söng [kór] [fyrir okkur]
 In morning sang choir for us
 'This morning sang a choir for us'
- b. Í morgun söng [fyrir okkur] [kór]
 In morning sang for us choir
 'This morning sang for us a choir'

Figure 41 shows the same sentence produced by another speaker with the HNPS word order in (4.29b).

Figure 41 – Subject shifted across an unstressed PP.



Like in Figure 40, the PP is unstressed in Figure 41, whereas the subject at the end of the clause carries the nuclear stress in the sentence. The prosodic patterns shown in the figures above fit the analysis that was laid out in Chapter 2 and is repeated here. The analysis assumes that when length is not available as a measurement for heaviness, as both the NP and the PP are arguably short, the importance of other weight predictors like prosodic weight can increase. As the unstressed PP in these examples has no prosodic weight, it attaches to the nearest prosodic phrase that stands before it, whether the PP is at the end of the clause or between the verb and the NP:

- (4.30) a. (Í morgun) (söng) ([kór] [fyrir okkur]).
 b. (Í morgun) (söng [fyrir okkur]) ([kór]).

The NP is therefore prosodically heavier than the PP, regardless of its position, making this structure a good candidate for HNPS, whereas this effect should not be found in the sentences with fully stressed PPs:

- (4.31) a. (Mamma) (keypti) ([nýjar buxur]) ([handa Óla]).
 b.?(Mamma) (keypti) ([handa Óla]) ([nýjar buxur]).

The prosodic realization of the utterances presented in Figures 37–39 strongly support the analysis given for the effects of prosodic heaviness and relative weight and confirms, yet again, that relative weight is a major word order predictor for Icelandic speakers. It also confirms that prosodic heaviness is a weight factor, at least for Icelandic.

We have now seen an overview of all the test sentences and the frequency of HNPS within each length category and the multiple factors that may have contributed to that. Finally, we will test the factors further and see which ones have a significant effect on the frequency of HNPS in the production experiment. A generalised linear mixed effects analysis of the relationship between relative heaviness, grammatical roles (subject vs object), NP complexity and prosodic weight effects was performed. The responses were classified as binary (NP shifted or NP in situ). A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of relative length (with the variables that were classified earlier: NP equal, NP longer and NP shorter), prosodic stress, NP complexity and grammatical roles, along with age and gender as a potential social factor.⁷¹ As random effects, an intercept was included for participant and sentence.

A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where four models were compared to a null model, shown in the second row of Figure 42 as “no interaction”, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 42.

Figure 42 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	585.63	595.18	-290.82	581.63			
+Relative NP length	4	551.76	570.86	-271.88	543.76	37.8729	2	<.001
+Relative NP length: Grammatical role	5	548.22	572.10	-269.11	538.22	5.5385	1	0.018
+Relative NP length: Grammatical role: Stress	7	483.96	517.40	-234.98	469.96	68.2549	2	<.001
+Relative NP length: Grammatical role: Stress:Complexity	8	468.27	506.48	-226.13	452.27	17.6990	1	<.001

⁷¹ Neither social factor improved the model in the LRT, so they were not pursued further.

The LRT revealed, as illustrated in Figure 42, that the fit of the generalised linear mixed model improved significantly when the fixed effect of relative NP length was included. The fixed effect of grammatical roles further improved the model, and the fixed effect of prosodic stress (heavy vs light PPs) improved it again significantly. The fixed effect of NP complexity also improved the model, so all the fixed effects that were tested in the experiment, apart from the social factors that did not improve the model, were included in the final version, which is shown in Figure 43.⁷²

Figure 43 – Layout for the Generalised Linear Mixed Model.

Responses ~ Relative NP length + Grammatical role + Stress + Complexity (1 participant) + (1 sentence)

Table 30 presents the summary of the estimated model fixed effects. The analysis shows that while the relative length of the NP alone does impact the frequency of HNPS (a longer NP improves the outcome and a shorter NP makes it worse), the effect is not fully significant.

Table 30 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-3.2579	0.5176	-6.294	<.001
NP longer	0.9143	0.4714	1.939	0.052
NP shorter	-0.6457	0.3529	-1.830	0.067
Subject NP	-0.6095	0.2518	-2.421	0.015
Stressed PP	-2.6477	1.0536	-2.513	0.012
Unstressed PP	1.8668	0.3932	4.747	<.001
Complex NP	1.5762	0.3871	4.072	<.001

⁷² During the LRT it was also tested whether the positioning of the NP and PP on the screen in the production task had any effect on the results. As described earlier in this section, the two constituents appeared either above or below the beginning of the sentence and the participants assembled the sentences in the way they found best before producing the utterance. The positioning of the constituents as a fixed effects did not improve the model, so it did not affect the results significantly and will not be looked into further.

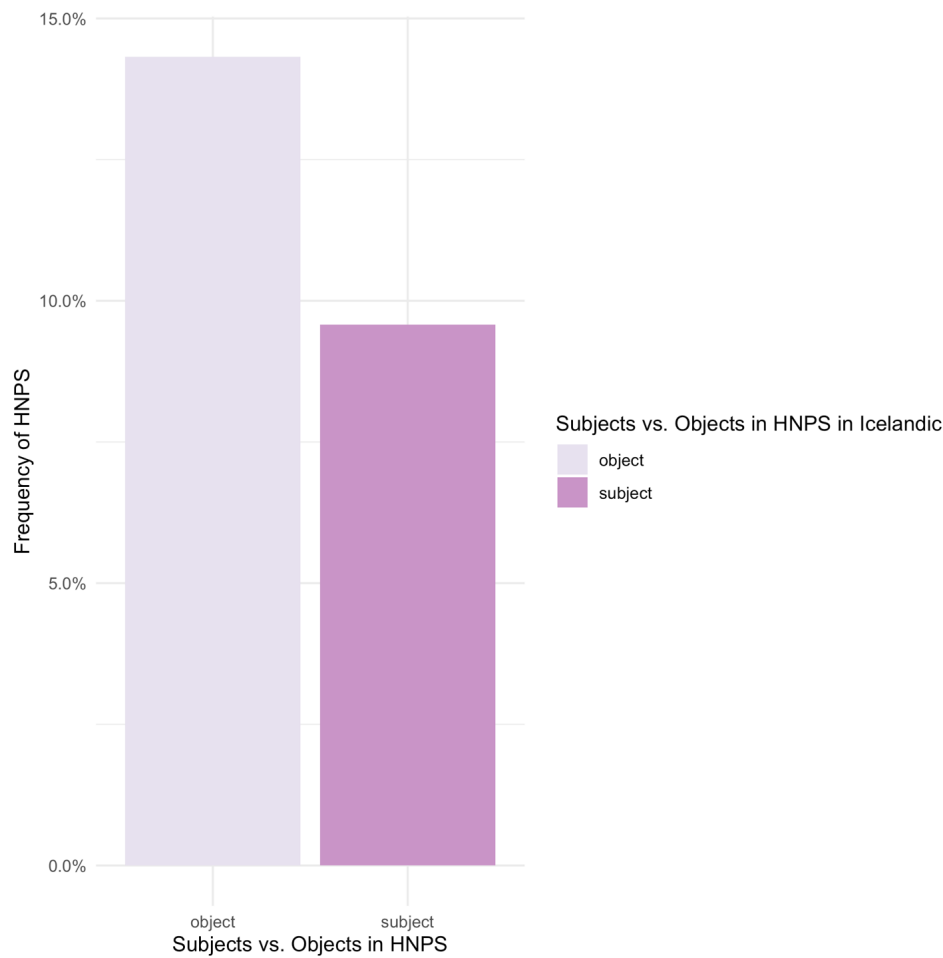
This is not so surprising, considering what we saw in the tables above. While the longer NPs did move more frequently than others, it was the added factor of complexity that really affected the results, as shown in the last line of the model analysis in Table 30. The effect of complexity has a fully significant impact on the frequency of HNPS, confirming that complexity is more important as a weight factor for this structure than NP length, as this effect has come through in every experiment where it has been tested.

Prosodic stress has a fully significant effect on the results in both directions: An unstressed PP improves the outcome significantly, whereas a fully stressed PP makes it significantly worse. The model analysis confirms what was shown in Tables 22–29 and can be summarised here. According to the results described in this section, the following is true about weight effects in language production in Icelandic, and confirms what the corpus studies showed earlier in this chapter:

- A shiftable NP that is long is more likely to move to the end of the clause with HNPS if the string of words it moves over is relatively shorter.
- While the length of the NP does affect the frequency of HNPS, a complex NP (that includes a relative clause) is more likely to move to the end of the clause with HNPS than a non-complex NP of the same length.
- While Icelandic speakers find sentences with shifted subjects and shifted direct objects equally acceptable, subject NPs are significantly less likely to undergo HNPS than direct objects.
- While long and/or complex NPs are more likely to undergo HNPS than short/non-complex NPs, an NP does not have to be long or complex at all to undergo HNPS.
- When length is not available as a measurement for heaviness the importance of other weight predictors, like prosodic weight, can increase.
- Prosodic heaviness is a weight predictor in Icelandic and prosodic heaviness can interact with relative weight effects, which are a major word order predictor for Icelandic.

Grammatical roles also have a significant effect in production as subject NPs are shifted significantly less frequently than object NPs. The effect of grammatical roles is illustrated in Figure 44, which shows the frequency of shifted subjects and direct objects across all length categories in the production experiment.

Figure 44 – Shifted subjects and direct objects in HNPS in Icelandic in production.



The next part of this experiment aimed to explore relative weight effects in OS and PS in production. These structures were tested in the acceptability studies, described in the previous chapter. The results showed that speakers significantly prefer short NPs in OS over long NPs, which they find close to unacceptable or fully unacceptable in this structure. However, if the negation is also long, speakers do not dislike long NPs in OS as much as they dislike them when the negation is short. The results also revealed that while NP complexity has a significant effect on how speakers evaluate PS structure, the length of the NP does not. The results did not show a significant effect of relative weight for either structure, but it is worth seeing if it does have an effect in production that is different to the way speakers evaluate the sentence structures, especially because length proved to be very important for PS in the corpus study and OS could not be included in that study. The final Section of this chapter will hopefully fill in the gaps and answer the question of whether the three structures are affected by weight effects in language production in the same way as they are in acceptability surveys and, if not, what does that tell us about weight effects?

4.3.2. Relative weight in OS and PS in production

The part of the production experiment described in this section explores relative weight effects in the two remaining structures, PS and OS, as discussed earlier in this chapter. Table 31 shows the frequency of PS where the direct object NP appeared at the end of the clause in the production experiment.

Table 31 – Relative weight effects and frequency of PS in production.

PS with short NP	Shifted	Unshifted	NA
a. Jóna skrifaði [niður] [nafnið].	10	10	0
b. Sigga færði [til] [bílinn].	3	16	1
c. Ég tók [upp] [lagið].	8	12	0
PS with long NP			
d. Við settum [niður] [allar rauðu kartöflurnar].	16	3	1
e. Agnes henti [út] [vesalings gamla hundinum].	1	19	0
f. Skáldið las [upp] [langa leiðinlega ljóðið].	16	4	0

As Table 31 shows, the NP was moved to the end of the clause in all test sentences, although the frequency is unevenly distributed. The short NPs in sentences (31a) and (31c) are moved to the end by half the participants, whereas the NP in (31b) was moved by only three participants. The long NPs in sentences (31d) and (31f) were moved 16 times to the end of the clause, or 80% of the time. The long NP in (31e) was only moved once, which suggests that there might be other factors contributing to the structure of this sentence. Interestingly, sentence (31e) is the only PS sentence in the experiment that has a dative case direct object [vesalings gamla hundinum.DAT]. The case of the object was not controlled for in these particular sentences as dative and accusative objects are both common in particle structures and sentence (31e) with the PS word order was found to be fully acceptable by most speakers in the acceptability experiment, as described in Chapter 2. As this is the only obvious factor that distinguishes this one test sentence from the others, it is worth noting and should be considered for future studies.

A simple generalised linear mixed effects analysis of the relationship between the position of the object NP the complexity level of the shifted NP (including a relative clause or not) was performed. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with NP length as a fixed effect. As random effects, an intercept was included for participant and sentence. The model is displayed in Figure 45.

Figure 45 – Layout for the Generalised Linear Mixed Model.

Direct Object Position ~ NP length +
(1|participant) + (1|sentence)

The analysis revealed that NP length has a significant effect on the positioning of the object NP in Particle Structures ($z(df) = 2.201, p = 0.027$) The effects of NP length and frequency of PS is illustrated in Figure 46.

Figure 46 – NP length and frequency of PS in production.

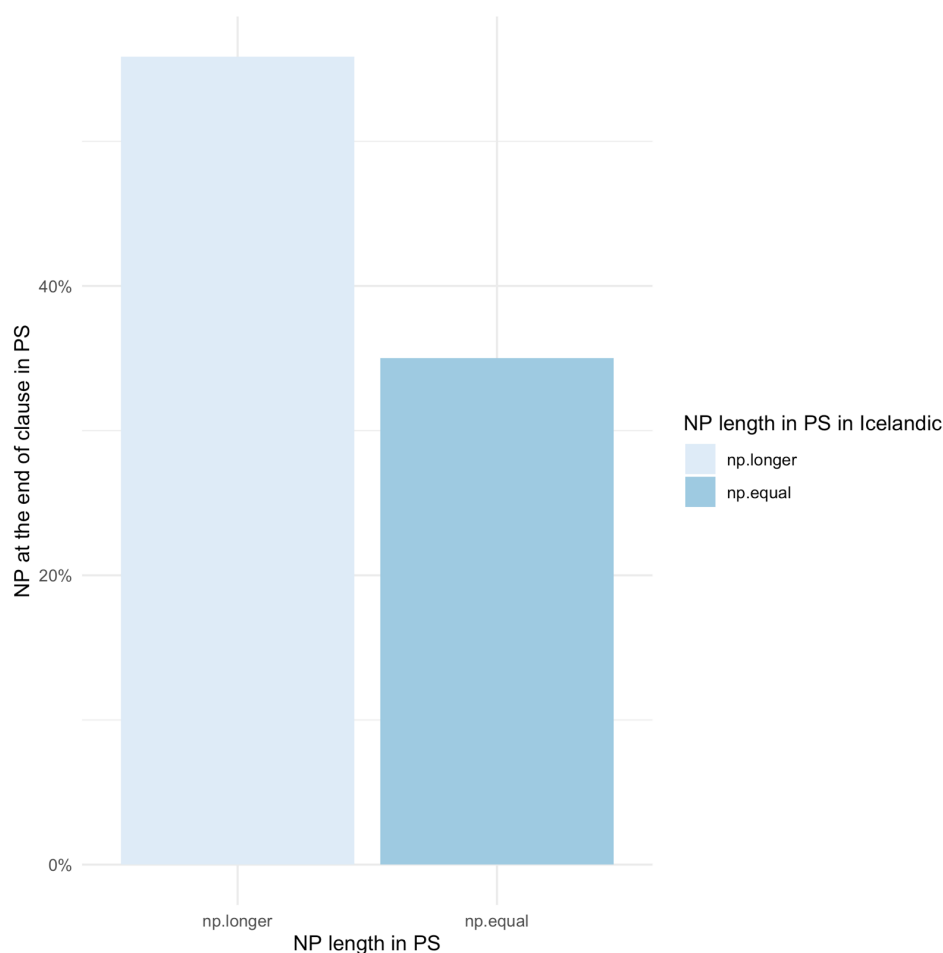


Figure 46 shows clearly that long direct object NPs are shifted more frequently to the end of the clause than NPs that are short and equally long as the particle they move across. It is very interesting to see this effect in the production experiment, where none of the the object NPs included a relative clause, showing clearly that the length of the NP alone is important for PS in Icelandic. These results show that we find the same weight effects in PS structures in production as in HNPS and in the

acceptability studies. The next step would be to design a production experiment that specifically tests the effects of length vs complexity in PS (and other syntactic structures), as will be discussed in Chapter 6, but this will be left for future research.

Finally, Tables 32–33 show the OS test stimuli and the frequency of utterances produced with OS word order. These are the same sentences that were tested in the acceptability experiment, as described in Chapter 3, now tested again in production for comparison. The sentences are all written out with the OS word order and the column on the right shows how frequently each sentence appeared with that word order.

Table 32 – OS stimuli with a short negation and NP by various length in production.

NP short	Shifted	Unshifted	NA
a. Óli las [blaðið] [ekki].	2	18	0
b. Sigga man [ljóðið] [ekki].	3	17	0
c. Ég þekki [manninn] [ekki].	12	8	0
NP long			
d. Við sáum [ógeðslega ljótu myndina] [ekki].	2	18	0
e. Ég las [rosalega löngu greinina] [ekki].	3	17	0
f. Ólöf borðaði [alla girnilegu ostana] [ekki].	0	20	0

Table 32 shows sentences with the short negation [ekki] and short and long object NPs. Apart from sentence (32c) where the NP was shifted 12 times with OS, the object NPs rarely shift at all, regardless of how long they are. There is nothing obvious about sentence (32c) that distinguishes it from the other test sentences but, interestingly, the NP in sentence (33f), which has the same NP [manninn] (*e. the man*) and verb [þekkja] (*e. to know*), was also shifted more frequently than others. This suggests that this particular verb+object combination may frequently occur in OS word order, regardless of weight effects, but that would need to be further looked into. Table 33 shows that NPs, long or short, frequently move with OS when the negation is long.

Table 33 – OS stimuli with a long negation and NP by various length in production.

NP long	Shifted	Unshifted	NA
a. Við færðum [stóru amerísku skápana] [alveg ábyggilega ekki].	8	12	0
b. Hann man [löngu leiðinlegu söguna] [alveg ábyggilega ekki].	4	16	0
c. Jón hitti [gömlu furðulegu konuna] [alveg áreiðanlega ekki].	9	11	0
NP short			
d. Gunna las [bréfið] [alveg áreiðanlega ekki].	8	12	0
e. Ég fékk [pakkann] [alveg ábyggilega ekki].	10	10	0
f. Óli þekkir [manninn] [alveg áreiðanlega ekki].	13	7	0

A generalised linear mixed effects analysis of the relationship between the length of the NP and, the length of the negation was performed. As random effects, an intercept was included for participant and sentence. The responses were classified as binary (NP shifted or NP in situ). A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of relative length. The social factors, age, and gender, did not have any significant effect on the model, like before, and are not included in the model comparison shown in Figure 47. As random effects, an intercept was included for participant and sentence.

A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where four models were compared to a null model, shown in the second row of Figure 47 as “no interaction”, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 47.

Figure 47 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	293.66	300.62	-144.83	289.66			
+ NP length	3	285.03	295.48	-139.52	279.03	10.627	1	0.001
+ NP length: Negation length	5	266.41	283.82	-128.21	256.41	22.619	2	<.001

The LRT revealed, as illustrated in Figure 47, that the fit of the generalised linear mixed model improved significantly when the fixed effect of NP length was included, and the fixed effect of negation length further improved the model significantly. Neither of the two social factors, gender, or age, improved the model so they were also not included in the final version of the model. The final version of the model that was tested further is shown in Figure 48, including the fixed effects of NP length and negation length and an intercept for the two random effects: participant and sentence.

Figure 48 – Layout for the Generalised Linear Mixed Model.

Responses ~ NP length * Negation length + (1 participant) + (1 sentence)

Table 34 presents the summary of the estimated model fixed effects. The analysis showed that OS occurred significantly more frequently when the shifted NP was short, than in sentences where the

NP is long. The length of the negation had an even stronger effect than the length of the NP as OS occurs significantly more frequently when the negation is long, as is reflected in Tables 32–33. As shown in the last line of the model summary, there is some interaction between the two effects, but it is statistically insignificant. The interaction shows that the significant effect of a short NP on OS frequency is slightly lessened by the effect of the long negation. This interaction suggests that while short NPs are better for OS than long ones, a long negation creates a better environment for OS than a short negation would, even when the NP is long, as is reflected in the numbers in Tables 32–33.

Table 34 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-2.7189	0.5394	-5.041	<.001
Short NP	1.6090	0.5681	2.832	0.004
Long Negation	1.9662	0.5633	3.490	<.001
Short NP: Long Negation	-0.7969	0.6953	-1.146	0.251

This is an interesting and important difference between the results of the acceptability survey and the production experiment. The length of the negation alone had no significant effect on how speakers evaluated OS structure in the same sentences that were tested here, but it did have a significant interaction with the length of the NP, making sentences with long NPs in OS word order better than if they had short NPs. In these results, the effect of the negation length is even stronger. While the overall effect is the same, i.e., that not only the length of the NP is important but also the length of the string of words it moves across, the effect is stronger in production.

The analysis shows the importance of the length of the NP and negation respectively, but the effects of relative weight are clearly illustrated in Figure 49, which shows the frequency of OS based on the relative length of the NP vs the negation. Here the length of the NP was defined by the same three variables as was done for HNPS in the previous section: NP longer than the negation, NP equal to the negation and NP shorter than the negation.

Figure 49 – Frequency of OS by relative length in production.

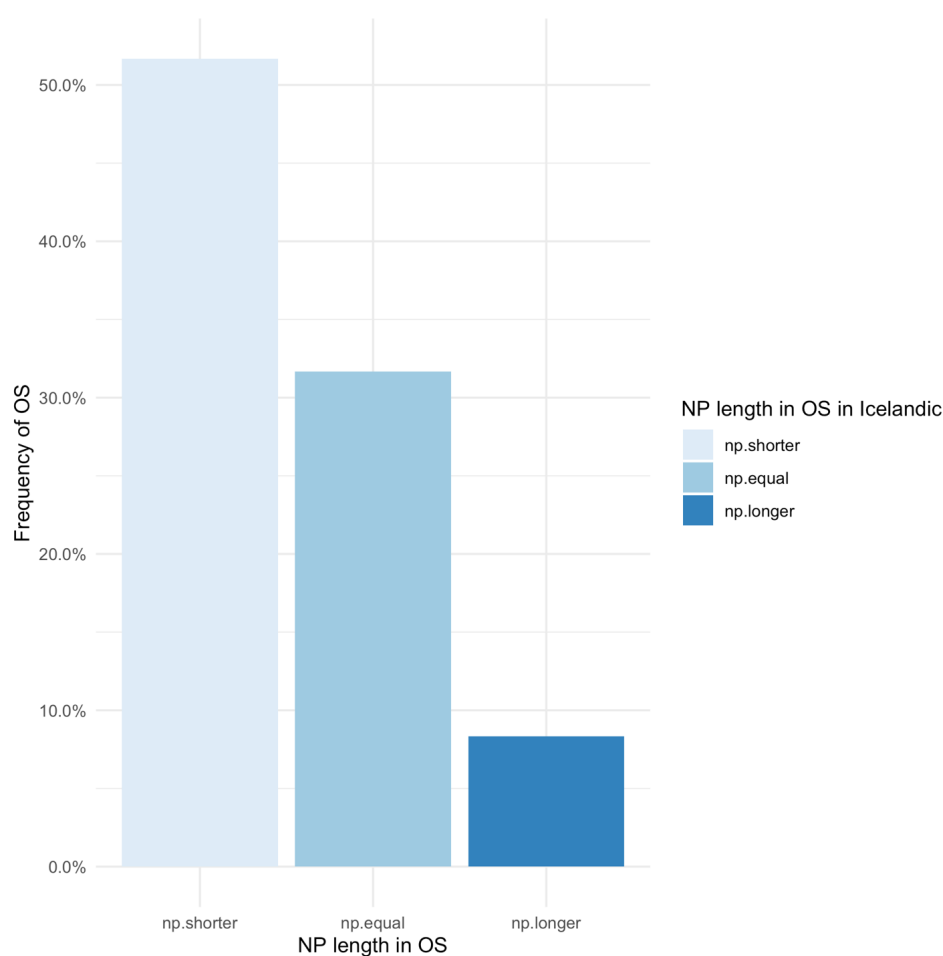


Figure 49 shows that OS occurred most frequently, or over 50% of the time, when the NP was shorter than the negation, around 30% of the time when the NP and negation were equally long and less than 10% of the time when the NP exceeded the negation in length. These results show a clear effect of the relative length of the NP vs the negation in the production experiment, which was not detected in the acceptability survey.

4.3.3. Summary and conclusion

The results of the production experiment and the corpus study, described previously in this chapter, show that most of the same weight effects that were detected in the acceptability surveys apply in language production as well, suggesting that their effect is pretty general. The results from these experiments compared suggest that weight effects are generally more important for production planning than for acceptability evaluation (at least when speakers evaluate written sentences), although it depends on the weight predictor, as some weight predictors seem to be more important than others, i.e., relative weight in this instance. Relative weight effects have shown up as the most

consistent weight predictor throughout all the experiments described in this study, including the acceptability survey, which suggests that this effect is not only important for production planning but is strongly connected to the structural quality and processing of weight-sensitive syntactic structures. Other weight predictors, such as syntactic complexity, seem to be mostly bound to production planning and not to be as important for parsing, at least not the parsing of written sentences.

The results show that weight predictors may affect syntactic structures differently in various situations and sometimes more than one weight predictor is at work at once. This is based on what information the speaker possesses in each instance, e.g., NP length is a strong weight predictor on its own but if the speaker has information about the complexity of the NP, that weight predictor has a stronger effect than the weight predictor of NP length and makes the shiftable constituent more likely to move, at least in production. The same can be said about situations where NP length is not available as a weight predictor, because the NP is not long. In that case prosodic heaviness, measured by phrasal stress, becomes more important, in agreement with the general principal of relative weight effects. Before reaching the final conclusions of this study, we will take a look at a smaller, but comparable study on weight effects and variation in word order in Faroese.

5. Weight effects and variation in word order in Faroese

The last two chapters described an extensive study of various definitions of weight effects in Icelandic, focusing mainly on evidence from three syntactic structures: Heavy NP Shift (HNPS), Object Shift (OS) and Particle Shift (PS). All three of these structures have been argued to exist in Icelandic and Faroese, which makes the two languages comparable in this sense. The results presented in the last two chapters have shown that all three structures in Icelandic are weight sensitive. The goal of this chapter is to investigate whether similar weight effects that we have seen in Icelandic also exist in its closely related neighbour, Faroese, and if the same weight predictors affect the three structures in both languages. If they do not, that should tell us something about how universal the concept of weight is and how different it can potentially be between two languages, even if they are closely related.

Testing these hypotheses about weight effects in the same manner on constructions in two closely related languages, Icelandic and Faroese, provides a new perspective on the matter, as previous studies have concentrated on studying weight effects in one language each and most of them focus on only one syntactic structure each time, as was discussed in Chapter 2. The main goal of this chapter is to provide a description of weight effects on word order and variation in Faroese, compared to what has been described in Icelandic in the previous chapters, and hopefully contribute to a deeper understanding of the concept of weight in language in general.

This chapter presents the results from a study of weight effects in Faroese, comparable to the Icelandic study, which is composed of three experiments: Two acceptability surveys and one production experiment.⁷³ The chapter is divided as follows: Sections 5.1 and 5.2 present the results from two acceptability surveys where various definitions of weight, including NP length, relative heaviness and prosodic heaviness were explored in the three syntactic structures in Faroese: HNPS, OS and PS. Sections 5.3–5.4 explore weight effects in production, presenting results from a production experiment similar to the Icelandic experiment described in Chapter 3. Section 5.5 presents a brief summary of the results and closing words.

⁷³ Unfortunately, it was not possible to conduct a corpus study for Faroese, as there is currently no parsed historical corpus for the Faroese language that would have provided comparable results to the ones described in Chapter 3, but that will hopefully change in the future.

5.1. Weight effects in Faroese judgement data

This section explores various definitions of weight in Faroese, based on evidence from three syntactic structures, HNPS, OS and PS. The results described in this section are from two acceptability experiments that were conducted in April 2017 and August 2020. The surveys were designed to answer four main research questions, the same ones that the Icelandic experiments described in Chapter 3 have answered:

- If length is a determining weight factor in Faroese; is it the absolute length of the shifted constituent itself alone or is the relative weight of the string of words that it shifts over also important?
- Is the length of the relevant constituents (measured in the number of words) the only determining weight factor or can stress (or prosodic structure) also play a role?
- Do these weight predictors affect HNPS the same way in Faroese and Icelandic and if not, what does that tell us about weight effects?
- Do we find similar weight effects in Faroese OS and PS as in Faroese HNPS?

The results of the surveys show that for Faroese speakers it is important that the NP is long and that while relative weight did show a vague effect in the Faroese results, it was not strong enough to be significant. Unlike what we saw in the Icelandic survey, grammatical roles proved to have a significant effect on how Faroese speakers evaluate sentences with HNPS word order, as they showed a clear preference for sentences with shifted direct objects over subjects in all length categories. Similar to the Icelandic survey, the results revealed that NPs do not need to be long at all to undergo HNPS but no effect of prosodic heaviness was detected in the Faroese results. Faroese speakers generally do not accept HNPS word order as readily as Icelandic speakers. Furthermore, OS word order is generally very poorly received by Faroese speakers and in PS, speakers strongly prefer the NP-particle word order, suggesting that there is much less variation in word order in these structures than in Icelandic.

The results presented in this chapter are based on data collected in acceptability surveys that were conducted online in April 2017, referred to as the Faroese HNPS survey, and August 2020, henceforth the Faroese Complexity survey. The two surveys were designed to explore the potential effects of absolute and relative length and the potential effects of prosodic heaviness in HNPS, just like the Icelandic acceptability experiments that were described in Chapter 3. The Faroese Complexity survey also explored the potential effects of absolute and relative length in OS and PS, similar to the Icelandic

acceptability experiment that was described in Chapter 3.⁷⁴ The results of the surveys will be laid out and thoroughly discussed in Section 5.2. This section describes the experiments in detail: the design of the test sentences, layout of the survey, procedure and data processing.

5.1.1. Test sentences

In the Faroese HNPS survey speakers evaluated 29 test sentences, as will be laid out in Section 5.2.⁷⁵ All of the test sentences included an NP that had been shifted with HNPS over a verb-modifying PP. Just like in the Icelandic experiment, described in Chapter 2, expletive constructions, and sentences where the subject-NP had shifted over a direct object were not included in the test. As discussed in Chapters 2 and 3, HNPS is rarely accepted in transitive expletive sentences and the same is true of sentences where the subject has been shifted over a direct object (see Thráinsson et al. 2012:240–241). In half the test sentences, the shifted NP was a direct object, like in example (5.1a) and in the other half, the shifted NP was a subject (5.1b).

- (5.1) a. Beinta lesur [um morgnarnar]
 Beinta reads in mornings.DET
 [øll mögulig stuttlig tíðarrit um móta].
 various recent magazines about fashion
 ‘Beinta reads in the mornings various recent magazines about fashion.’

- b. Í fjør komu [til Havnar]
 In last year came to Torshavn
 [nakrir kendir listamenn úr øðrum løndum].
 few famous artists from other countries
 ‘Last year came to Torshavn a few famous artists from other countries.’

The sentences were constructed according to the same formula as described for the Icelandic experiment in Chapter 2: a formula where the length of the NP and the PP was controlled, as displayed in (5.2). The NPs were all constructed in a similar way so that they included a noun, adjectives and/or a PP. None of the NPs included subordinate clauses as the main focus of this survey was heaviness

⁷⁴ This survey is smaller scale than the experiment described in Chapter 2, which tested all three constructions for the interaction of length and complexity. The pilot studies for the experiment described in this section compared the two weight factors and revealed that complexity had no detectable effect on the results and, as will be discussed in this section, the effects of weight predictors were limited overall, especially in PS, as there seems to be less variation in word order for these structures in Faroese than in Icelandic in general. It was decided then to only test the potential effects of relative heaviness in OS and to include a small pilot-level survey of the interaction of NP length and word order in PS.

⁷⁵ By mistake, one test sentence where a 2-word direct object is moved across a 2-word PP was omitted from the survey.

measured in length in number of words. The following model was used to control the length of the phrases in the test sentences:

- (5.2)
- | | |
|----------------|-------------|
| a. NP: 6 words | PP: 2 words |
| b. NP: 2 words | PP: 6 words |
| c. NP: 6 words | PP: 6 words |
| d. NP: 2 words | PP: 2 words |

Like in the Icelandic experiment, not only the number of words per phrase was controlled but also the number of syllables per word and per phrase, e.g., if the phrase consisted of six words, it could only have twelve syllables in it altogether and each word could consist of maximum three syllables. The same rules applied for two-word phrases, which could altogether consist of only four syllables. In the sentences that had a length difference between the two phrases, the difference was always four words. According to Hawkins (1994), as mentioned in Chapter 2, NPs rarely shift unless they exceed the nearest word string in length by at least four words. If this is the case in Faroese, it would be expected that the sentence in (5.3a), where the NP consists of six words and the PP is only two words, would be the optimal example for HNPS out of the test sentences, whereas sentence in (5.3b), where the length difference is the other way around, should be the least likely to be accepted.

- (5.3)
- a. Vit s  u [   savninum]
 We observed at museum.DET
 [avbera n  gvar myndir av gomlum kirkjum].
 very many pictures of old churches
 ‘We observed many pictures of old churches at the museum.’
- b. Turi   keypti [   l  tla n  ggja handlinum    mi  b  num]
 Turid bought in small new shop.DET in center.DET
 [n  ggjar sk  gvar].
 new shoes
 ‘Turid bought new shoes in the small new shop in the center.’

The sentences in (5.4a–b) are examples of the test sentences that have equally long NPs and PPs. It is reasonable to assume that most speakers should accept sentence (5.4a), where the NP and PP each consists of six words, seeing as the NP is indisputably heavy. If relative heaviness is more important than pure absolute heaviness in Faroese, like it is in Icelandic, speakers may not evaluate (5.4a) equally well as the sentence in (5.3a).

- (5.4) a. Listakonan málaði [á gamlar veggir í Tórshavnar kommunu]
 artist.DET painted on old walls in Torshavn district
 [stórar og vakrar málningar av mánanum].
 large and beautiful pictures of moon.DET
 ‘The artist painted large and beautiful pictures of the moon
 on old walls in the the Torshavn district.’
- b. Eg fjaldi [fyri Beintu] [nakrar kakur].
 I kept for Beinta some cakes
 ‘I kept some cakes for Beinta.’

In (5.4b) the NP itself is only two words and the PP it moves over is equally long. If the results are consistent with the literature cited in Chapter 2 (e.g., Stallings & McDonald 2011, Hawkins 1994, Wasow 1997, Zec & Inkelas 1990) then the sentence in (5.3b) is not ideal for HNPS and should be rejected by most speakers. The results from the Icelandic experiments described in Chapters 2 and 3 have shown that weight effects are not that simple, and that NPs do not need to be long or heavy at all to undergo HNPS. It will be interesting to see if the same applies in Faroese.

Like in the Icelandic experiments, sentences with short NPs were also tested for the potential effects of prosodic heaviness. The results from the Icelandic experiments described in Chapters 2 and 3 showed that prosodic heaviness has a strong weight effect in Icelandic, although conditioned to sentences like (5.5a). In (5.5a) the PP is unstressed, enabling the object NP, which carries the nuclear stress in the sentence, to undergo HNPS as it is relatively heavier than the PP from a prosodic perspective. HNPS should not occur in sentences like (5.5b), where the PP has a full NP complement and carries stress.⁷⁶

- (5.5) a. Ég keypti [fyri ykkur] [nokkrar bækur].
 I bought for you some books
 ‘I bought for you some books.’
- b. ??Mamma keypti [handa Sigga] [nýjar buxur].
 Mum bought for Siggi new trousers
 ‘Mum bought new trousers for Siggi.’

Prosodic heaviness was also included as a factor for the test stimuli in the Faroese experiment, as shown in example (5.6). Not much has been written about Faroese prosody but according to Árnason (2011) prosodic structure is rather similar in Icelandic and Faroese. That does not mean that prosodic

⁷⁶ Like we saw in Chapter 4, HNPS did occur once in the production experiment, but the outcome was unnatural. Sentences of this type were rarely accepted in the Icelandic acceptability experiment described in Chapter 3.

heaviness, defined here as stress at the phrase level, plays a similar role in these structures in Faroese, but it is very interesting to compare the two languages in this sense.⁷⁷

- (5.6) a. Jógvan yrkti [fyri okkum] [eina yrking].
 Jogvan composed for us one poem
 ‘Jogvan composed a poem for us.’
- b. Eg fjaldi [fyri Beintu] [nakrar kakur].
 I hid [from Beinta] [some cakes]
 ‘I hid some cakes from Beinta.’

In order to easily compare the results, the experiment was designed just like the Icelandic experiment, including the same factors, to explore the potential effects of absolute and relative length in HNPS, the potential effects of grammatical roles and prosodic heaviness.

In the Faroese Complexity survey speakers evaluated 30 test sentences: 24 for OS and 6 for PS. Like in the Icelandic experiment, all of the OS sentences included an NP that was situated to the left of a clausal negation. All the sentences included a subject and a main verb, followed by the NP and the negation at the end of the clause, like in example (5.7).

- (5.7) a. Eg kenni [manninn] [ikki].
 I know [man.DET] [not]
 ‘I do not know the man.’
- b. Óli las [blaðið] [ikki].
 Oli read [paper.DET] [not]
 ‘Oli did not read the paper.’

In order to test this structure for relative weight effects, a length model was used, similar to the one used in the Icelandic survey described in Chapter 3. The model in (5.8) shows how the length of the constituents was controlled in the OS sentences:

⁷⁷ It is worth remembering that the reason phrasal stress was included in the study in the first place was an unexpected outcome from an early pilot production test, suggesting that prosodic heaviness could be a weight predictor in Icelandic. This outcome was not found in a comparable pilot test for Faroese, but it was decided to include this potential weight predictor in the Faroese experiments nonetheless because the idea was to keep the experiments nearly identical, and it would be interesting to see if this effect did come through to some extent.

- (5.8) a. NP: 3 words Negation: 1 word
 b. NP: 1 word Negation: 1 word
 c. NP: 3 words Negation: 3 words
 d. NP: 1 words Negation: 3 words

The results from the Icelandic experiment supported what has been maintained in the literature, that in order to undergo OS, it is better for the NP to be short. The most commonly used examples of OS in the literature are similar to the ones in (5.8a–b), where a single word with a definite article is moved across a simple negation. It is therefore reasonable to expect that sentences of length category (5.8b) should be accepted by most speakers, if OS does in fact exist in modern Faroese in the same way as it does in Icelandic which, as was discussed in Chapter 2, is debatable. If relative length is also important for OS in Faroese, sentences of the type (5.8d) should be considered at least equally good or even better than (5.8b). If the NP has to be short to undergo OS, fewer speakers should accept sentences of the type (5.8c), illustrated in (5.9a), where both the NP and the negation are long and the same should apply to sentence type (5.8a), illustrated in (5.9c), where the long NP has been moved over a short negation, especially if relative weight is an influencing factor.

In order to test the length of the NP against the negation it was decided to create a “stacked clausal negation”, just like in the Icelandic experiment, where the negation “ikki” (e. *not*) was amplified by two modifiers (*most certainly not*). An example of a stacked negation used in the survey is in example (5.9), where (5.9a) includes a long NP and a long negation and (5.9b) includes a 1-word NP and a long negation. Example (5.9c) includes a long NP and a simple negation.

- (5.9) a. Hann minnist [hasa longu søguna] [so sanniliga ikki].
 He remembers [this long story.DET] [most certainly not]
 ‘He does most certainly not remember this long story.’
 b. Óli kennir [manninn] [so sanniliga ikki].
 Oli knows [man.DET] [most definitely not]
 ‘Oli does most definitely not know the man.’

The part of the survey that tested PS sentences was designed slightly differently. This part of the survey was treated more like a larger-scale pilot survey, as a small pilot study, that was conducted prior to this experiment, suggested that there is not much variation in the word order in this structure

in Faroese, unlike in Icelandic.⁷⁸ The survey included 6 test sentences, half of which had a long NP, consisting of three words, and the other half had a short NP which was equally as long as the particle, consisting of one word, as displayed in (5.10).

- (5.10) a. NP: 3 words Particle: 1 word
 b. NP: 1 words Particle: 1 word

The number of syllables was also controlled at phrase level. All three-word NPs consisted of 8 syllables and the one-word NPs consisted of 2 syllables altogether. (5.11) shows an example of the PS test sentences used in the survey.

- (5.11) a. Anna koyrdi [inn] [bilin]
 Anna drove [in] [car.DET]
 ‘Anna drove the car in.’
 b. Eg vaskaði [upp] [allar skitnu tallerkarnar]
 I washed [up] [all dirty plates.DET]
 ‘I washed up all the dirty plates.’

If length is an important weight factor for Particle Shift in Faroese, then it would be safe to expect sentences like (5.11b), that include a three-word NP, to receive a higher score than sentences like (5.11a), where the NP consists of only one word, like the particle it moves across.

5.1.2. *Participants and procedure*

112 speakers participated in the Faroese HNPS survey, 6 of which were excluded due to incomplete answers or because they had obviously misunderstood the instructions for the survey. Out of the remaining 106 speakers, 26 identified as men, 78 as women and two as genderqueer. Participants were given four age groups to choose from: Younger than 18, 18–30, 31–50, and over 50. One participant was younger than 18 during the time of the study, 21 participants were aged 18–30, 41 speakers were aged 31–50 and 43 were over 50.

⁷⁸ Before the survey was aired, three speakers were asked to evaluate the test sentences that were used in the survey and the results showed that the speakers almost always found the object-particle structure better or the only good option. It was then decided to include these sentences in the survey, rather than designing a whole new survey for PS sentences, which was done for Icelandic speakers, as described in Section 3.1.3 (following a similar pilot study that suggested much more variation in this word order in Icelandic).

The test sentences were presented in a randomised order, interspersed with filler sentences. As mentioned before, the survey consisted of 30 test sentences and 70 filler sentences. The filler sentences included a wide range of structure so that a few of them were sentences that should, by all accounts, be accepted by most speakers and a few of them should be rejected by most speakers. The surveys were conducted online where speakers were asked to read sentences and evaluate them based on their own language intuition.⁷⁹ Like in the comparable Icelandic experiment, participants were given three options to choose from as they rated the sentences but for the analysis, the middle option was removed and the answers were processed as binary options.

- (5.12) a. Ja = Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.
 ‘Yes = Normal sentence. I could easily say that.’
- b. ? = Ivasamur setningur. Soleiðis hevði eg neyvan sagt.
 ‘? = Questionable sentence. I would probably not say that.’
- c. Nei = Ómøguligur setningur. Soleiðis hevði eg ikki sagt.
 ‘No = Abnormal sentence. I would not say that.’

In the Faroese Complexity survey 185 speakers participated in the survey, 6 of which were excluded due to incomplete answers or because they had obviously misunderstood the instructions for the survey. Out of the remaining 179 speakers, 40 identified as men and 139 as women. Participants were given four age groups to choose from, but no participant chose the youngest group, aged younger than 18. 40 participants were aged 18–30 during the time of the study, 68 speakers were aged 31–50 and 71 were over 50.

The test sentences were presented in two different ways: The OS sentences all appeared with the OS word order, where participants were asked to rate the sentences on a five-point likert scale. The participants were given a five-point scale where 5 means the sentence is perfectly acceptable and 1 means the sentence is unacceptable, as shown in example (5.13).

- (5.13) a. 5 = Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.
 ‘Normal sentence. I could easily say that.’
- b. 1 = Ómøguligur setningur. Soleiðis hevði eg ikki sagt.
 ‘Abnormal sentence. I would not say that.’

⁷⁹ For the full instructions for the production task see Appendix C.

The sentences appeared in a randomised order that was different for each participant, interspersed with filler sentences. As mentioned above, the survey consisted of 24 test sentences for OS and 48 filler sentences. The filler sentences included a wide range of structure so that a few of them were sentences that should, by all accounts, be accepted by most speakers and a few of them should be rejected by most speakers.

The PS sentences were presented with two possible word orders and three response options, where speakers were asked to judge which word order is best or if they are both equally good, like in (5.14).

- (5.14) a. Eg vaskaði [allar skitnu tallerkarnar] [upp]
 I washed [all dirty plates.DET] [up]
 ‘I washed all the dirty plates up.’
- b. Eg vaskaði [upp] [allar skitnu tallerkarnar].
 I washed [up] [all dirty plates.DET]
 ‘I washed up all the dirty plates.’
- c. Sentences a) and b) are equally good.

This method was chosen because the pilot study suggested that the word order in (5.14a) is predominant in Faroese particle constructions, as discussed above, regardless of weight effects, and that there is little variation in this structure, unlike what has been described for the same structure in Icelandic, English and the other Scandinavian languages, as was discussed in Chapter 1, and supported by the results in Section 3.2.5. The goal of this part of the survey was to get a clearer idea about NP positioning in PS in Faroese and to see if NP length has any effect on it.

5.2. Results

This section presents the results from the two Faroese surveys, starting with Section 5.2.1. which explores the effects of absolute and relative length in HNPS in Faroese, also considering the prosodic structure and potential effects of grammatical roles. Absolute and relative weight effects are further explored in OS and PS in Faroese in Section 5.2.2.

5.2.1. Absolute and relative weight in HNPS in Faroese

We will start by examining the acceptance rates for the test sentences in each length category, as defined in (5.2) in the previous section. Figure 50 shows the mean rates of positive responses for each length category.⁸⁰

Figure 50 – Relative length in HNPS: Positive responses within each length category in Faroese.

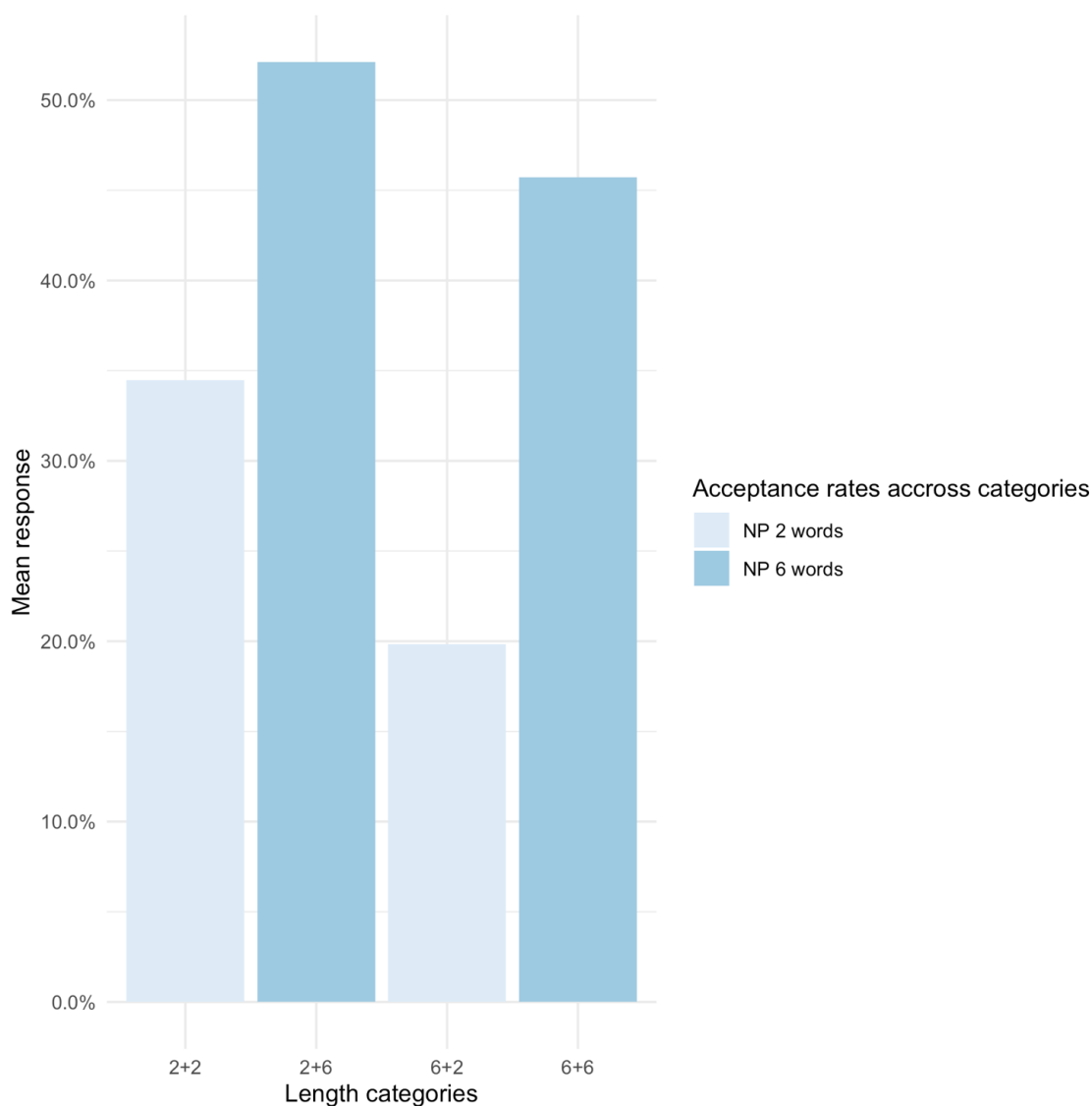


Figure 49 shows a similar trend as we saw in the Icelandic experiment (see Figure 1, Section 3.2.1, Chapter 3), although the acceptance rates are lower all around than in the Icelandic results. The most

⁸⁰ Like for the Icelandic results, as described in Section 3.1.2 in Chapter 3, the middle option was removed and the responses were processed with binomial logistic regression. In the Faroese data, like in the Icelandic data, the percentage of neutral responses was usually rather low, ranging from around 7 percent to 30 percent, but in some instances the distribution was quite even between the three options, as discussed below.

preferred sentence type in the Faroese survey is length category (5.2a) where the NP consists of six words and the PP is shorter, consisting of only two words. The same sentence type received the most positive response in the Icelandic survey, but the acceptance rate was much higher, or around 90%. The sentences of length category (5.2c), where the NP and PP are both long, are accepted as fully acceptable by nearly 50% of the participants, not far off the length category above, whereas sentence type (5.2d), where the NP and PP are both short, is accepted by just under 35% of the participants. Sentences of the type (5.2b), where the NP at the end of the clause only consists of two words and the PP between the verb and the NP consists of six words, are only fully accepted by less than 20% of the participants. The results shown in Figure 49 suggest that HNPS is generally not as well received as a syntactic structure in Faroese as it is in Icelandic but that similar weight effects apply, nonetheless. While it is important that the NP is long, it is even better if the word string it shifts across is short.

All test sentences and the response rates from the 106 speakers are presented in Tables 34–38. Each table shows the test sentences for each length category with subject- and direct object-NPs. The columns display the percentage of speakers that rated the sentences fully acceptable or not acceptable at all. The highest percentage in each row is displayed in bold. Table 35 presents the acceptance rates for sentences with equally long two-word NPs and two-word PPs by 106 speakers.

Most speakers completely rejected these sentences but there seems to be a difference in how speakers reacted to sentences with subject-NPs and direct-object-NPs. Almost all speakers found sentences (35a,b) completely unacceptable and very few rated them acceptable, whereas sentences (35c–e) got a more positive response and were rejected by fewer speakers. These results show a similar trend to the Icelandic results from Section 3.1.2 in Chapter 3, but it is clear that far fewer Faroese speakers find sentences of this kind acceptable.

Table 35 – HNPS stimuli with 2-word NPs and 2-word PPs in Faroese.

Subject PP 2 NP 2	Yes	No
a. Seinasta vikuskiftið flugu [til Danmarkar] [gamlir vinir].	1%	99%
b. Í summar fara [til Svøríkis] [nógvir dreingir].	5%	95%
c. Síðsta vetur vóru [í flokkinum] [tólv næmingar].	27%	73%
Direct Object PP 2 NP 2	Yes	No
d. Anna keypti [á útsølu] [nýggjar buksur].	21%	79%
e. Eg fjaldi [fyri Beintu] [nakrar kakur].	18%	82%

Table 36 shows sentences from the same length category as shown in Table 35 but here the PP has a pronoun complement, which would be unstressed in Icelandic. As the results in Chapters 3 and 4 showed, sentences of this type were relatively well received by Icelandic speakers and frequently occurred with HNPS word order in production. As Table 36 shows, this is not the case in Faroese.

Table 36 – HNPS stimuli with 2-word NPs and 2-word PPs with pronoun complements in Faroese.

Subject PP 2 NP 2	Yes	No
a. Eftir gøtuni runnu [móti okkum] [tríggir hundar].	15%	85%
b. Í gjár bíðaðu [eftir okkum] [fronsk miðlafólk].	13%	87%
c. Í morgun sang [fyri okkum] [eitt gentukór].	16%	84%
Direct Object PP 2 NP 2	Yes	No
c. Eg fann [fyri tykkum] [nakrar bøkur].	7%	93%
d. Høgni sang [fyri okkum] [tríggjar sangir].	30%	70%
f. Jógvan yrkti [fyri okkum] [eina yrking].	31%	69%

The rejection rate for these sentences seem to be quite similar to the rate shown in Table 35, which suggests that the prosodic structure that the Faroese speakers hear when they read these sentences is not similar to the one the Icelandic speakers hear, i.e., it is unlikely that the PP can be unstressed in this structure and therefore the NP is not relatively heavier than the PP.⁸¹ This will be readdressed later in this chapter. It is important to note straight away that while all the test sentences in Tables 35–36 were found unacceptable by more than half of the participants, and some by most participants, there is considerable variation in the evaluations, with sometimes half the participants finding the test sentence fully acceptable.

Table 37 presents acceptance rates for sentences with six-word NPs and six-word PPs. Here the rates are spread out a bit more evenly. Most of the highest numbers are in the “unacceptable” column but they are considerably lower than the ones in Tables 35–36 and far more speakers found the sentences acceptable. Like before, the Faroese speakers seem to prefer sentences with shifted direct objects over sentences with shifted subjects. It is interesting to see that the percentage of speakers

⁸¹ During the production experiment described in Section 4.3, a few of the Faroese participants were asked to read the sentences in Table 36 with the HNPS word order and asked if they could find a way to pronounce them so they sounded natural. None of the participants found the HNPS word order natural and they could not find a way, like by reducing stress on the PP, to make it sound better. As was further revealed in the production experiment, it seems that the prosodic structure of this sentence type is not comparable in Icelandic and Faroese and so prosodic weight does not affect HNPS in Faroese (which is, of course, not to say that similar effects could not apply in some other syntactic structure in Faroese).

that accepted sentences (37b,d,e) is quite similar to the percentage of speakers that completely rejected them. Compared to the way the Icelandic speakers responded to sentences of this kind, like we saw in Table 2 in Chapter 3, the responses from the Faroese speakers were more consistent.⁸²

Table 37 – HNPS stimuli with 6-word NPs and 6-word PPs in Faroese.

Subject PP 6 NP 6	Yes	No
a. Í fjør komu [á almenna ráðstevnu um nýggja tøkni] [umleið hálfvjerðs næmingar úr fimtan skúlum].	38%	62%
b. Í seinastu viku komu [á almennan fund fyri ungar høvundar] [bæði virknir limir og framfús listafólk].	43%	57%
c. Hvørt ár flúgva [til sólrikar strendur í heitu londunum] [átta til níggju túsund íslensk ferðafólk].	20%	80%
Direct Object PP 6 NP 6	Yes	No
d. Eg borðreiddi [fyri nøkrum góðum vinum úr skúlanum] [ræstan fisk við saltaðum spiki afturvið].	44%	56%
e. Foreldrin løsu [fyri øllum næmingum í fjórða flokki] [bókina um Hannibal og horvna hundin].	56%	44%
f. Listakonan málaði [á gamlar veggir í Tórshavnar kommunu] [stórar og vakrar málningar av mánanum].	34%	66%

A similar pattern appears in Table 38. Here we see the acceptance rates for sentences with six-word NPs and two-word PPs. In the Icelandic experiment, described in Chapter 3, sentences of this kind were found fully acceptable by the majority of the participants, as we saw in Table 3, and none of them were completely rejected by more than 14 percent. Those results strongly indicated that relative weight affects the way Icelandic speakers react to HNPS word order in general. The Faroese speakers do not seem to be so affected by this particular factor as there is much more variation in

⁸² For sentence (37b) the distribution of responses between the original three options was rather equal, as we see in this table here. Similar to the Icelandic data, this shows that some speakers are not certain in how acceptable or unacceptable they find these sentence types, which suggests that there is more nuance to be captured here. This will not be pursued further in this thesis but deserves future research.

Subject PP 6 NP 6	Yes	No	?
a. Í fjør komu [á almenna ráðstevnu um nýggja tøkni] [umleið hálfvjerðs næmingar úr fimtan skúlum].	17,9%	52,8%	29,2%
b. Í seinastu viku komu [á almennan fund fyri ungar høvundar] [bæði virknir limir og framfús listafólk].	30,2%	39,6%	30,2%
c. Hvørt ár flúgva [til sólrikar strendur í heitu londunum] [átta til níggju túsund íslensk ferðafólk].	16%	63,2%	20,8%
Direct Object PP 6 NP 6	Yes	No	?
d. Eg borðreiddi [fyri nøkrum góðum vinum úr skúlanum] [ræstan fisk við saltaðum spiki afturvið].	35,8%	46,2%	17,9%
e. Foreldrin løsu [fyri øllum næmingum í fjórða flokki] [bókina um Hannibal og horvna hundin].	45,3%	35,8%	18,9%
f. Listakonan málaði [á gamlar veggir í Tórshavnar kommunu] [stórar og vakrar málningar av mánanum].	25,5%	49,1%	25,5%

their responses. The acceptance rate in Table 38 for sentences with direct objects is visibly higher than the rate for sentences with subject-NPs, like we have seen in the previous tables.

Table 38 – HNPS stimuli with 6-word NPs and 2-word PPs in Faroese.

Subject PP 2 NP 6	Yes	No
a. Vanliga renna [um summarið] [nakrar hundrað ungar kvinnur í Havnini].	32%	68%
b. Um vikuskiftið spæla [í dystinum] [ung ítróttafólk úr Víkingi og TB].	14%	86%
c. Í fjør komu [til Havnar] [nakrir kendir listamenn úr øðrum londum].	38%	62%
Direct Object PP 2 NP 6	Yes	No
d. Beinta lesur [um morgnarnar] [øll møgulig stuttlig tíðarrit um móta].	54,3%	45,7%
e. Vit sóu [á savninum] [avbera nógvar myndir av gomlum kirkjum].	43%	57%
f. Tjóvarnir stjól [úr handlinum] [átta gomul lummaur og fyra armbond].	48,2%	51,8%

Finally, Table 39 presents the acceptance rates for sentences with two-word NPs and six-word PPs. The majority of the participants found these sentences unacceptable but clearly there are some speakers of Faroese that fully accept sentences of this kind. The difference between the acceptance rates for subject- and direct-object-sentences is not as visible in this category as in the previous ones, but considerably fewer speakers found the sentences with direct objects completely unacceptable, compared to the subject-sentences. More speakers marked them questionable, meaning that although they do not fully accept them, they also do not completely reject them.

Table 39 – HNPS stimuli with 2-word NPs and 6-word PPs in Faroese.

Subject vs Direct Object PP 6 NP 2	Yes	No
a. Í gjár vóru [á spennandi skeiði um føroyska mentan] [nógvir danir].	6%	94%
b. Um várið svimja [á lítlu tjørnini í gamla miðbýnum] [hvítir svanir].	17%	83%
c. Leygardagin vóru [á fundi um umstøður teirra lesandi] [tjúgu mannfólk].	11%	89%
Direct Object PP 6 NP 2	Yes	No
d. Turið keypti [í lítla nýggja handlinum í miðbýnum] [nýggjar skógvar].	16%	84%
e. Eg las [til seinastu royndina í donskum máli] [nógvar bækur].	19%	81%
f. Jógvan stjól [frá einum góðum gomlum íslenskum vini] [nógvan pening].	24%	76%

The results presented in Tables 35–39 suggest that grammatical roles significantly affect the way Faroese speakers evaluate HNPS word order. This effect is illustrated in Figure 51, where the mean positive response rates for sentences with shifted direct objects is compared with sentences with shifted subjects.

Figure 51 – Grammatical roles in HNPS in Faroese.

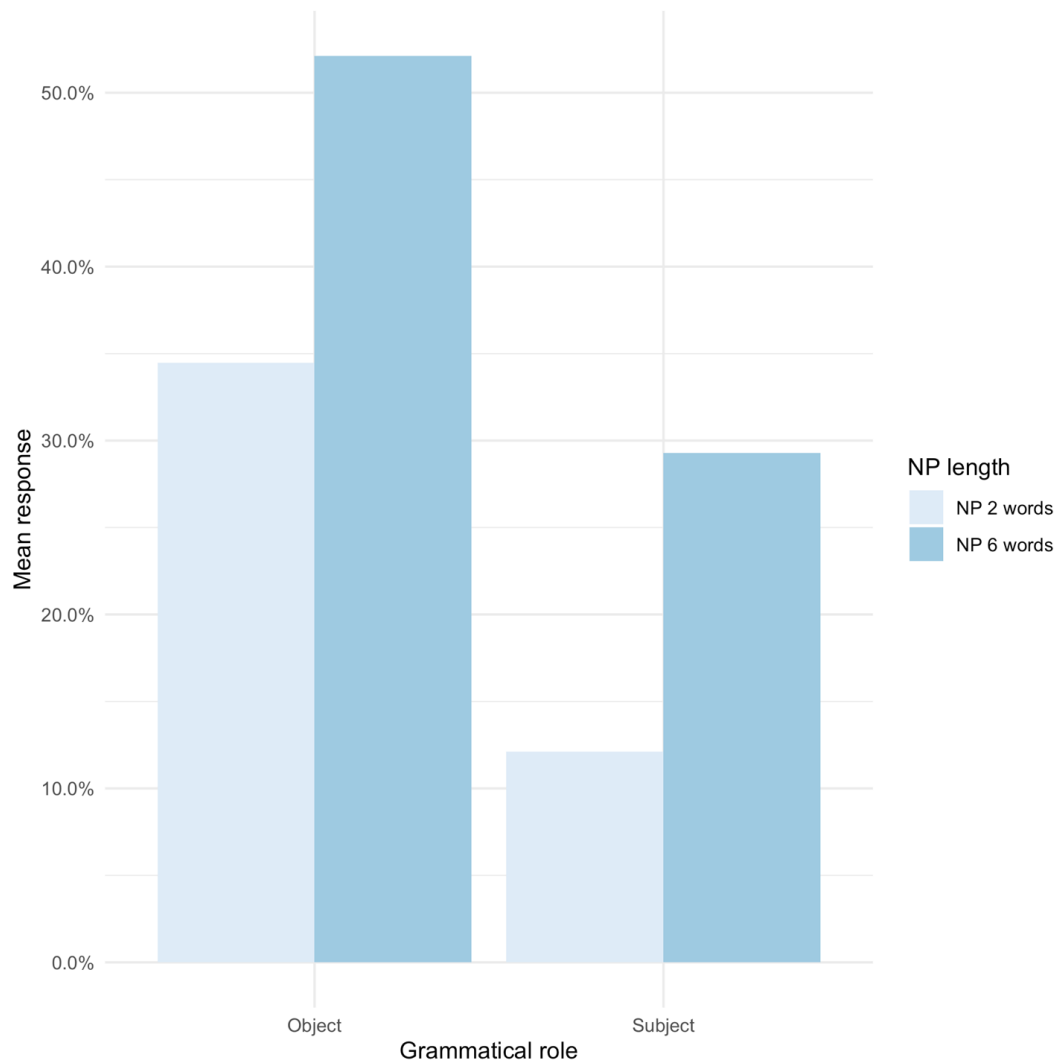


Figure 51 reflects the results that were shown in Tables 35–39 and shows that participants in the Faroese survey had a strong preference for shifted direct objects over shifted subjects. Longer NPs (the dark-coloured bars) are better received in both categories, just under 30% of the shifted subject sentences and over 50% of the shifted direct object sentences. Short, shifted subjects are poorly received and only found acceptable by just over 10% of the participants but short shifted NPs are much better received if they are direct objects, or by almost 35%, which is a better rate than the shifted long subjects received.

It is not clear from Figure 51 or Tables 35–39 whether relative weight has any significant effect on the speakers' evaluations. Figure 52 shows the interaction between the length of the NP and the length of the PP in the HNPS sentences and the speakers' positive response towards them.

Figure 52 – Relative length effects in HNPS in Faroese.

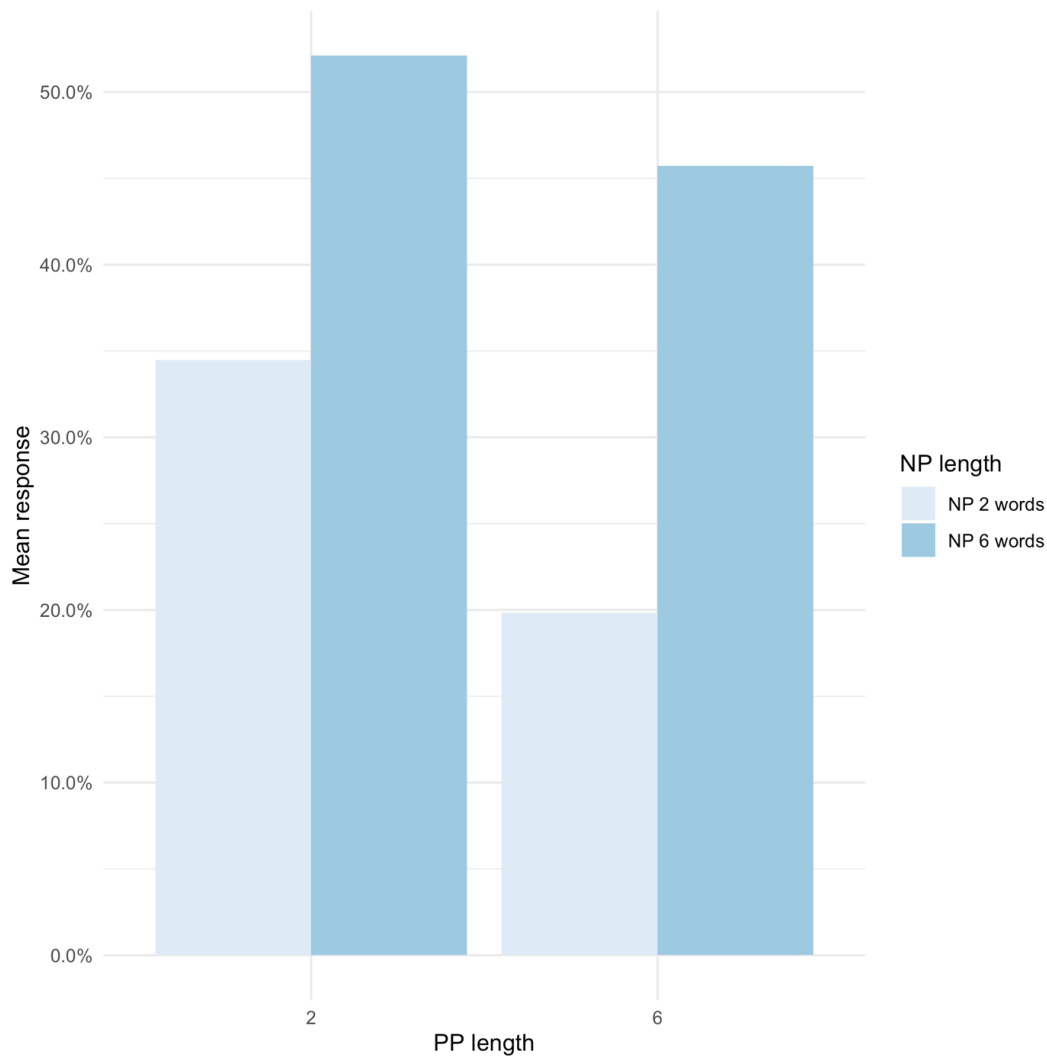


Figure 52 shows that long NPs (the dark-coloured bars) are generally better received than short NPs (the light-coloured bars). Like in the Icelandic results, the long NPs receive a more positive response when the PP that stands before it is short, suggesting that relative weight may have some effect but, unlike the Icelandic results, the difference is not that great, or only about 5%. This figure also shows that if the NP is short, just under 35% of speakers accept it at the end of the clause if the PP that stands between the NP and the verb is also short. In the cases where the PP is longer than the NP, fewer than 20% of speakers accept the sentences as acceptable. It will be interesting to see if relative weight has a significant effect in the generalised linear mixed effects analysis model that we will now take a look at.

A generalised linear mixed effects analysis of the relationship between relative heaviness, grammatical roles and prosodic heaviness was performed. The responses were classified as binary (acceptable vs unacceptable) and the middle option was excluded from the analysis, like before. The

responses for all the test sentences were analysed, including the ones that were tested for the effects of prosodic stress, i.e., the sentences that included PPs with full NP complements and pronoun complements. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of relative length (variables defined as NP longer, NP equal and NP shorter, in comparison with the PP), prosodic stress and grammatical roles, along with age and gender as potential social factors. As random effects, an intercept was included for participant and sentence.

A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where six models were compared to a null model, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 53.

Figure 53 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	3	1699.5	1717.1	-846.75	1693.5			
+ Relative length	5	1697.0	1726.3	-843.50	1687.0	6.4980	2	0.038
+ Relative length: Grammatical role	8	1695.1	1741.0	-839.07	1678.1	8.8656	3	0.031
+ Relative length: Grammatical role:Stress	10	1695.7	1753.2	-837.33	1675.7	3.4684	2	0.176
+ Relative length: Grammatical role:Stress: Gender	26	1709.4	1861.6	-828.70	1657.4	17.2637	16	0.368
+ Relative length: Grammatical role:Stress: Gender:Age	74	1745.3	2178.6	-798.66	1597.3	60.0834	48	0.113

The LRT revealed, as illustrated in Figure 53, that the fit of the generalised linear mixed model improved significantly when the fixed effect of relative length was included, and the fixed effect of grammatical roles further improved the model. The fixed effect of stress (prosodic weight effects) did not significantly improve the model, which means that this factor did not have a significant effect on the participants' evaluation of the sentences, and neither of the two social factors, gender, or age,

improved the model so they were also not included in the final version of the model.⁸³ Figure 54 presents a simplified layout of the model that was used for the analysis.

Figure 54 – Layout for the Generalised Linear Mixed Model.

Responses ~ Relative length * Grammatical roles + (1 participant) + (1 sentence)

Table 40 presents the summary of the estimated model fixed effects. The analysis shows that relative length does have an effect, but it is not fully significant. The estimate improves when the NP is longer than the PP but an NP that is shorter than the PP has a negative effect on the outcome. This reflects the relative weight effects shown in Figure 52, which was visible but not very strong. Shifted subjects have a significantly negative effect on the results, which shows that grammatical roles have a stronger impact for Faroese speakers than relative length.

Table 40 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-1.48883	0.51612	-2.885	0.003
NP longer	1.53696	0.87519	1.756	0.079
NP shorter	-0.96851	0.88575	-1.093	0.274
Subject NP	-1.53783	0.62990	-2.441	0.014
NP longer: Subject NP	-0.17923	1.24389	-0.144	0.885
NP shorter: Subject NP	0.06246	1.26118	0.050	0.960

The results from this survey are different from the Icelandic results that were described in Chapter 3 in a few aspects. As discussed in the previous chapter, it is important for Icelandic speakers that the NP that shifts is relatively longer than the PP it shifts over and that relative weight effects are very

⁸³ The last test model, which included all the fixed effects, including the two social factors, failed to converge and the results are therefore unreliable.

strong in HNPS in Icelandic. For Faroese speakers it seems to be important that the NP is long, as long NPs in general received more positive ratings than short NPs. Relative weight did show a vague effect in the Faroese results, which was not strong enough to be significant, suggesting that relative weight effects do apply in Faroese, but they are not strong enough to be detected. This could be because, as the results described in this section suggest, there is more variation in HNPS in Faroese than in Icelandic. The ratings were more evenly spread out across the scale in certain length categories than in the Icelandic survey. HNPS word order is not as generally accepted by Faroese speakers, making it more difficult to detect certain weight effects on the outcome.

The results from the Icelandic experiments described in the previous two chapters have shown that while subjects undergo HNPS less frequently in Icelandic than direct objects do, speakers are not affected by the different grammatical roles when they evaluate the acceptability of HNPS word order. Grammatical roles have a significant effect on how Faroese speakers evaluate similar sentences, as they showed a clear preference for sentences with shifted direct objects over subjects in all length categories. The effect of grammatical roles is quite clear but sentences with shifted subjects are still not flat out rejected by the majority of the Faroese speakers. This could have the same explanation, that because HNPS is generally not as well received in Faroese as it is in Icelandic, anything that makes the word order seem less natural, like the NP being a subject, would negatively affect the results.

What is also interesting is that there were a number of speakers of both languages that accepted sentences with short NPs that were shifted over either a longer PP or an equally long PP. That shows that for some speakers, the NP does not need to be longer than the PP or even to be long at all in order for it to shift, and this is true across both languages. The strong contrast between sentences with stressed and unstressed PPs that was revealed in the Icelandic survey, did not come through in the Faroese survey, suggesting that this type of prosodic structure that causes relative weight effects in Icelandic does not exist in this sentence type in Faroese. This does not have to mean that there is a categorical difference between the two languages in this aspect. While the stimuli in Icelandic and Faroese were designed to be nearly identical, the PP [*fyri okkum*], shown in (5.6a), has a bisyllabic preposition and a bisyllabic pronoun, so it is not impossible for it to have at least one stress position. The results from the Icelandic production experiment, as described in Section 4.2, showed that when an NP undergoes HNPS in a sentence of this type, the PP carries no stress. For this reason, the Faroese stimuli with potential prosodic weight effects were included in the production experiment, as described in Section 5.3, to see if any of the participant produces an utterance with HNPS word order, making it then possible to compare with the Icelandic results. Before we get to the production experiment, the next section takes a look at the potential effects of relative weight in two other syntactic structures in Faroese: Object Shift and Particle Shift.

5.2.2. Absolute and relative weight in OS and PS in Faroese

First, we take a look at how participants evaluated test sentences with Full NP Object Shift and the potential effects of relative weight on this structure. Figure 55 presents the mean distribution of ratings for each length category, as described in the previous section. Here we see how speakers evaluated test sentences based on the length of the NP vs the length of the negation on the scale of 1–5.

Figure 55 – Ratings within each length category in OS in Faroese.

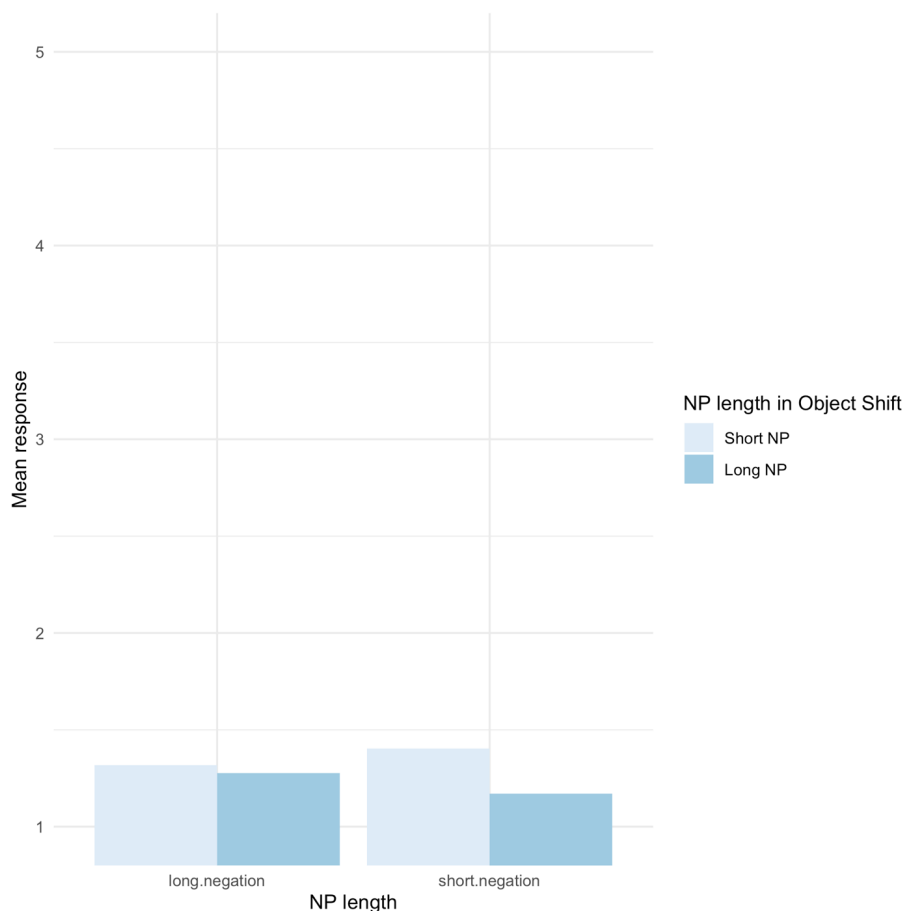


Figure 55 shows the mean distribution of ratings within each length category of OS in Faroese. There is very little difference between length categories in this chart. In the Icelandic study, the comparable results showed that the absolute length of the NP was very important as short NPs got a much better reception than the long NPs and there was a visible difference between the reception of sentences with long and short negation. Figure 55 shows that the OS sentences in all length categories got a very low average rating: none of them reach the average rating of two out of five. This suggests that the Faroese participants found most, or all of the test sentences nearly or fully unacceptable. Short NPs that have shifted across a short negation have the highest mark and long

NPs that have shifted across a short negation have the lowest rating, which suggests that relative weight may have some effect on the results, although it cannot be very strong. Tables 41–42 show the test sentences by different length categories and the mean response rate from the 179 participants for each of them. The first column on the right shows the mean rate that each sentence received on the scale of 1–5 and the last column shows the standard deviation. The first column on the right shows the mean rate that each sentence received on the scale of 1–5 and the last column shows the standard deviation.

Table 41 – OS sentences with a short negation and NP by various length in Faroese.

Category 1: Short NP - Simple Negation	Mean	SD
a. Óli las [blaðið] [ikki].	1.16	0.53
b. Sigga minnist [sangi] [ikki].	1.41	0.89
c. Eg kenni [manninn] [ikki].	1.63	1.06
Category 2: Long NP – Simple Negation		
a. Vit sóu [hasar gomlu myndirnar] [ikki].	1.27	0.79
b. Eg las [hasa longu greinina] [ikki].	1.17	0.52
c. Óluva át [allar ræstu ostarnar] [ikki].	1.05	0.34

Table 41 shows the response rates for test sentences with a short negation and long and short NPs. All of the test sentences were rated very low, none of them over two, which suggests that the participants found all of the test sentences nearly or fully unacceptable. The sentences with short NPs seem to be rated slightly higher on average, which was reflected in Figure 55. Comparable test sentences in the Icelandic experiment, described in Chapter 3, were rated very differently and it was clear from those results that the length of the NP is very important for basic OS structure with a simple negation in Icelandic. There, the sentences with a short NP preceding a simple negation, were positively received by most speakers, whereas the second three sentences that had a long NP got very negative reviews, with the mean response rate that suggests that many speakers found them close to being unacceptable. The Icelandic results showed that OS is well received in general as a syntactic structure in Icelandic, but the NP needs to be short to undergo OS. The Faroese results suggest that it is better if the NP is short, but OS is generally not accepted. The next question then is whether the length of the negation has any effect on the responses, which is what we see in Table 42.

Table 42 – OS sentences with a long negation and NP by various length in Faroese.

Category 3: Short NP – Long Negation	Mean	SD
a. Gunna las [brævið] [so sanniliga ikki].	1.22	0.64
b. Eg fékk [pakkann] [so sanniliga ikki].	1.19	0.56
c. Óli kennir [manninn] [so sanniliga ikki].	1.53	0.98
Category 4: Long NP – Long Negation		
d. Hann minnst [hasa longu søguna] [so sanniliga ikki].	1.35	0.75
e. Vit flyta [hasar tungu taskurnar] [so sanniliga ikki].	1.23	0.60
f. Jón mætti [hinum gamla manninum] [so sanniliga ikki].	1.24	0.61

Table 42 shows sentences with long and short NPs preceding a long, stacked negation. The mean response rate is very similar to what we saw in Table 41 which suggests that the stacked negation does not improve the structure, except perhaps marginally for the long NPs. In the Icelandic experiment the long negation greatly improved the ratings for the long NPs, showing that long NPs can undergo OS in Icelandic but preferably the negation must also be long. This effect does not seem to come through in Faroese, as the OS structure in general is so poorly received.

A linear mixed effects model was fit with the linear responses as the outcome variable, with fixed effects of the length of the NP and the length of the negation, along with age and gender as potential social factors. As random effects, an intercept was included for participant and sentence. A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where three models were compared to a null model, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 56.

Figure 56 – Model comparison in LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	4	4641.8	4665.4	-2316.9	4633.8			
+ NP length	5	4638.4	4667.9	-2315.2	4628.4	5.3826	1	0.020
+ NP	7	4638.9	4680.1	-2312.4	4625.9	3.5606	2	0.168
length:Negation								
length								
+ NP length:	11	4645.8	4710.6	-2311.9	4623.8	1.0681	4	0.899
Negation								
length:Gender								
+ NP length:	27	4658.2	4817.4	-2302.1	4605.2	19.5645	16	0.240
Negation								
length:Gender:								
Age								

The LRT revealed, as illustrated in Figure 56, that the only fixed effect that significantly improved the fit of the linear mixed effects model was the fixed effect of NP length. This does not come as a surprise, judging by the lack of variation in the data shown in Figure 55 and Tables 41–42. The final version of the model that was used for the analysis is illustrated in a simplified layout in Figure 57.

Figure 57 – Layout for the Linear Mixed Model.

Responses ~ NP length + (1 participant) + (1 sentence)

The model includes only one fixed effect, so the summary of the estimated model fixed effects is also very simple. The analysis showed that a long NP has a significantly negative effect on the participants’ evaluations ($t=-2.405$, $p=0.031$). The analysis reflects the mean responses that were shown in Tables 41–42. The Faroese participants found most, or all of the test sentences nearly or fully unacceptable, which suggests that OS is generally not a fully acceptable syntactic structure in modern Faroese (or at least not this “standard” form of OS, (see Thráinsson 2013 for discussion of different types of Full NP Object Shift in Faroese). The fact that NP length does have a significant effect on the evaluations show that there are some levels of the acceptability of OS in Faroese: It is a bad structure in general, but it is even worse if the NP is long.

Finally, we take a look at NP positioning in PS in Faroese and the potential effects of NP length on this structure. Table 43 presents the responses from 179 Faroese speakers for PS sentences, focusing on NP length and NP positioning. Here we see how speakers evaluated test sentences based on the length of the NP. The participants were asked to evaluate which of the two possible word orders was better: direct object NP before or after the particle or, the third option: both word orders are equally good. The word order shown in Table 43 is the unshifted word order where the NP appears before the particle.

Table 43 – PS sentences with short and long NPs in Faroese.

PS with short NP	Unshifted	Equal	Shifted
a. Jóna skrivaði [navnið] [niður].	135	42	2
b. Anna koyrði [bilin] [inn].	170	5	4
c. Eg tók [lagið] [upp].	146	29	4
PS with long NP			
d. Eg vaskaði [allar skitnu tallerkarnar] [upp].	151	25	3
e. Sanna koyrði [neyðars ússaliga hundin] [út].	135	34	10
f. Eg skrivaði [allar hasar yrkingarnar] [niður].	131	46	2

Table 43 shows that most participants preferred the unshifted word order for all of the test sentences, which is the opposite effect to what the Icelandic experiment showed, where speakers generally preferred NPs at the end of the clause (shifted) in this structure. In the Icelandic experiment the difference between acceptance rates for NPs following or preceding the particle was not that great, reflecting more variation in word order than what Table 43 shows for Faroese. Figure 58 further illustrates the speakers' evaluations based on NP length and positioning in the clause.

Figure 58 – Positioning of long and short NPs in PS in Faroese.

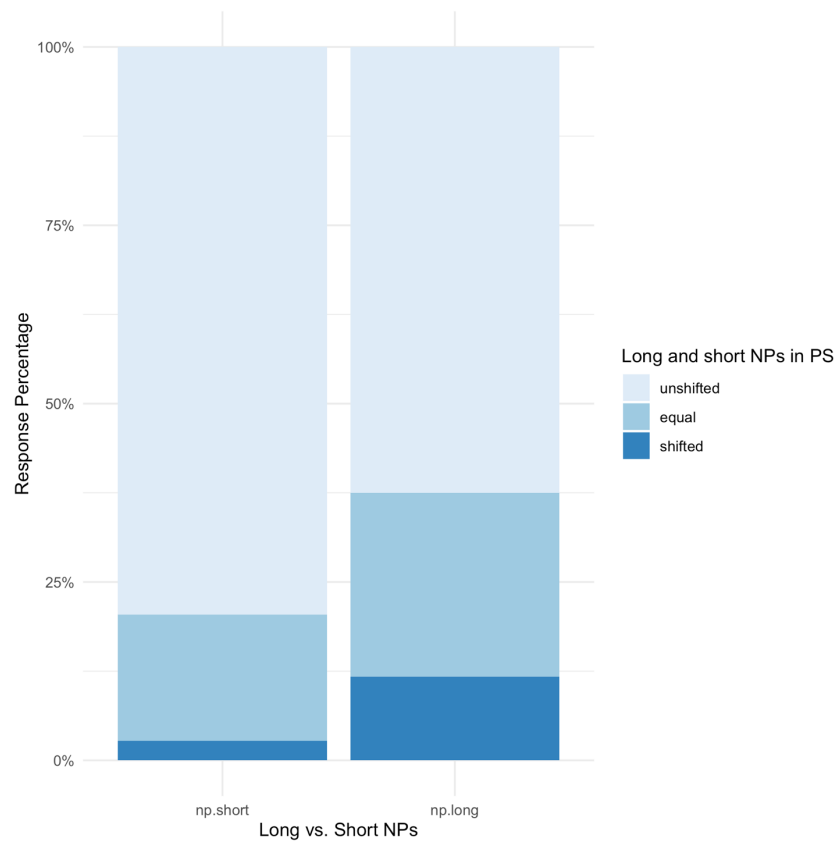


Figure 58 shows that, while the unshifted word order (NP preceding the particle) was selected as the best word order most of the time, the shifted word order was chosen more frequently when the NP was long, and the middle option, which means that both word orders are equally good, was also selected more frequently when the NP was long. This suggests that NP length does make it more acceptable for the NP to follow the particle, although it is a word order not commonly accepted by many.

A simple linear mixed effects analysis of the relationship between the position of the NP and NP length was performed. A linear mixed effects model was fit with the responses as the outcome variable, with NP length as a fixed effect. As random effects, an intercept was included for sentence and participant. The model is displayed in Figure 59.

Figure 59 – Layout for the Generalised Linear Mixed Model.

NP Position ~ NP length +
(1|sentence) + (1|participant)

The analysis revealed that NP length did not have a fully significant effect on the results, although there was a detectable trend ($t = 1.901$, $p = 0.083$).⁸⁴ It seems clear that there is much less variation in word order in PS and OS in Faroese than in Icelandic, which makes it impossible to detect significant weight effects in these structures. The results show that OS word order, where the NP precedes the negation, are very poorly received by Faroese speakers, whereas the speakers evaluation of the PS sentences revealed the opposite: speakers strongly preferred the NP-particle word order. Weight factors had very limited effect on the speakers evaluations, suggesting that these two structures are quite different in Faroese and that there is much less variation in word order in these structures than in Icelandic. The next step is to see if there is any difference between acceptability and production, like the Icelandic experiments showed.

5.3. Weight effects in production in Faroese

This last section presents the results from the production experiment that was conducted in the Faroe Islands in the summer of 2019. The experiment was designed in the same way as the production experiment for Icelandic speakers, described in Chapter 4. The main goal of the experiment, like in the Icelandic experiment, was to explore several potential weight factors including NP length, relative weight effects, complexity, grammatical roles, and prosodic heaviness. The results are mainly based on evidence from HNPS but effects of NP length and relative weight in production were also tested in OS and PS. The results presented in this chapter so far have shown that the three syntactic structures are not as commonly accepted by Faroese speakers as they are by Icelandic speakers, which makes it harder to detect which weight predictors affect the word order. The results so far have suggested that NP length and even relative length may affect these structures in Faroese but rarely to a significant

⁸⁴ A length effect of this size would only appear at the rate of 8.3% in a random sample if no such effect existed in the population. This means that although the trend is not fully significant (p-value of 0.05 or lower) it is very close to being significant as it is unlikely that the effect would occur by chance alone.

extent as they are not accepted at all by many speakers. The goal of the experiment described in this section is to compare the three structures in production in Faroese to the way speakers evaluate them, to see if they are affected by weight effects in language production in the same way as they are in acceptability surveys and to see if the results are in any way comparable to the results from the Icelandic production experiment, which was described in Chapter 4.

This section is laid out as follows: Sections 5.3.1. and 5.3.2. describe the the experiment in detail: the design of the test sentences, layout of the survey, procedure, and data processing. Section 5.3.3. presents the results of the experiment and Section 5.3.4. concludes.

5.3.1. Test sentences

60 test sentences with HNPS, OS and PS were tested in the experiment, as exemplified below. The sentences for each structure were designed by formulas which control for the potential weight factors that were included for each structure, as will be described in detail later in this section. As the experiment tested all three syntactic structures at once, the test sentences acted as filler sentences for each other, and 36 extra filler sentences were also included, so there were 96 sentences in the experiment altogether. The test sentences were designed to test the same factors as before, but in production, which means that the test sentences are similar to or, in some cases, the same sentences as were used in the acceptability surveys.

Most of the test sentences, or 42 sentences in all, were designed to test for various forms of HNPS, as this structure had the largest number of test factors. The factors that were included for these stimuli were as follows:

- Relative weight effects, reflected in the length difference between the shifted NP and the PP.
- NP length vs NP complexity.
- Prosodic heaviness.

Like before, in half the test sentences, the shifted NP was a subject, like in example (5.15) and in the other half, the shifted NP was a direct object (5.16). The test sentences appear here with both possible word orders (NP before PP or PP before NP) as they were not presented to speakers in a predetermined order.

- (5.15) a. Í fjør komu [til Havnar]
 In last year came to Torshavn
 [nakrir kendir listamenn úr øðrum løndum].
 few famous artists from other countries
 ‘Last year a few famous artists from other countries came to Torshavn.’
- b. Í fjør komu [nakrir kendir listamenn úr øðrum løndum]
 In last year came few famous artists from other countries
 [til Havnar].
 to Torshavn
 ‘Last year a few famous artists from other countries came to Torshavn.’
- (5.16) a. Beinta lesur [um morgnarnar]
 Beinta reads in mornings.DET
 [øll mögulig stuttlig tíðarrit um móta].
 various recent magazines about fashion
 ‘Beinta reads various recent magazines about fashion in the morning.’
- b. Beinta lesur [øll mögulig stuttlig tíðarrit um móta]
 Beinta reads various recent magazines about fashion
 [um morgnarnar].
 in mornings.DET
 ‘Beinta reads various recent magazines about fashion in the morning.’

Like in the acceptability survey and in the comparable Icelandic production experiment, the test sentences were constructed in a similar way, where the length of the NP and the PP was controlled but the construction of the NP varied based on which factor was being tested. The sentences in (5.15) and (5.16) have long NPs, which do not include a relative clause. NPs of this type were all constructed in a similar way so that they included a noun, adjectives and/or a PP. The sentences of this type with a shiftable subject NP were constructed in the same way: They all begin with PP or AdvP, similar to the one in (5.15) and a main verb, which is then followed by the subject NP and PP in a non-fixed order. The sentences where the shiftable NP is a direct object begin with a subject and main verb, like in (5.16), followed by a direct object NP and PP in a non-fixed order. Like before, expletive constructions and sentences where the subject NP had shifted over a direct object were not included in the test, as HNPS is rarely accepted in transitive expletive sentences and the same is true of sentences where the subject has been shifted over a direct object (see Thráinsson et al. 2012:240–241). The following model was used to control the length of the phrases in the test sentences:

- (5.17) a. NP: 6 words, PP: 2 words
 b. NP: 2 words, PP: 6 words
 c. NP: 6 words, PP: 6 words
 d. NP: 2 words, PP: 2 words
 e. NP: 1 word, PP: 2 words

Like in the previous experiments, not only the number of words per phrase was controlled but also the number of syllables per word and per phrase, e.g., if the phrase consisted of six words, it could only have twelve syllables in it altogether and each word could consist of maximum three syllables. The same rules applied for two-word phrases, which could altogether consist of only four syllables.

Two more factors were tested in the HNPS sentences, like in the Icelandic experiment: the complexity of the NP vs its length alone and prosodic heaviness as a weight factor. To test NP length vs complexity specifically, six sentences were included in the list of test sentences, with a six-word NP and a two-word PP: three with shifted direct objects (such as (5.18)) and three with shifted subjects (such as (5.19)).

- (5.18) Sigrun málaði [á loftinum]
 Sigrun painted [inattic.DET]
 [málningar sum hon ongantíð vísti nokrum]
 [paintings which she never showed anyone]
 ‘Sigrun painted paintings that she never showed anyone in the attic.’

- (5.19) Í morgin mæta [í skúlanum]
 Tomorrow come [into school.DET]
 [næmingar sum byrja sín fyrsta skúladag].
 [students who begin their first schoolday]
 ‘Tomorrow some students who will begin their first schoolday will come to school.’

The last factor that was tested for HNPS was prosodic weight. The results from the Icelandic experiments described in Chapters 2 and 3 showed that even very short NPs can be moved to the end of the clause across a PP that is equally long in a sentence like (5.20a) but not in a sentence like (5.20b).

- (5.20) a. Ég keypti [fyrir ykkur] [nokkrar bækur].
 I bought [for you] [some books]
 ‘I bought for you some books.’

- b. ??Mamma keypti [handa Sigga] [nýjar buxur].
 Mum bought [for Siggi] [new trousers]
 ‘Mum bought for Siggi new trousers.’

The results from the Icelandic experiments showed that this effect applies to sentences with a shiftable NP and a PP which contains a preposition and a personal pronoun and therefore bears no stress in this position, making the shifted NP at the end, which carries the nuclear stress in the sentence, prosodically heavier than the PP. That means that even though the NP is not long or complex it is relatively heavier than the PP from a prosodic perspective and therefore it can undergo HNPS, which short NPs would normally not be expected to do. Similar sentences were tested in the Faroese acceptability experiment, as described in Section 5.1. and the results suggested that prosodic heaviness is not a weight predictor in Faroese HNPS structure, like it is in Icelandic. As the experiments described in this thesis have shown, speakers’ evaluations do not always reflect language production so it is useful to examine these sentences in production as well and compare the results with the Icelandic experiment.

Twelve of the original test sentences were controlled for prosodic heaviness, where the PP and NP were equally long, consisting of two words, but in half the sentences the PP had a pronoun complement and in the other half the PP had a full noun complement, (like in example (5.21)).

- (5.21) a. Jógvan yrkti [fyri okkum] [eina yrking].
 Jogvan composed [for us] [one poem]
 ‘Jogvan composed for us a poem.’
- b. Eg fjalði [fyri Beintu] [nakrar kakur].
 I hid [from Beinta] [some cakes]
 ‘I hid some cakes from Beinta.’

Along with the original twelve sentences, eight additional sentences were added, in which the PP exceeds the NP in length by number of words and syllables (the NP consists of one single-syllable word against a two-word PP) as demonstrated in (5.22), where the shifted NP is a subject, and (5.23), where the shifted NP is a direct object.

- (5.22) a. Í morgun sungu [børn] [fyri okkum].
 In morning sang [children] [for us]
 ‘This morning some children sang to us.’

- b. Í morgun sungu [fyri okkum] [børn].
 In morning sang [for us] [children]
 ‘This morning some children sang to us.’

- (5.23) a. Jógvan bakaði [breyð] [til okkara].
 Jogvan baked [bread] [for us]
 ‘Jogvan baked some bread for us.’

- b. Jógvan bakaði [til okkara] [breyð].
 Jogvan baked [for us] [bread]
 ‘Jogvan baked some bread for us.’

The results from the Icelandic experiments showed that prosodic heaviness is a weight predictor in Icelandic and prosodic heaviness can interact with relative weight effects, which are a major word order predictor for Icelandic. In the Icelandic production experiment, speakers would frequently shift NPs like the ones in (5.22–5.23) to the end of the clause when the PP consisted of a preposition and a pronoun complement, like in these two examples, suggesting that when both the NP and PP are short, prosodic heaviness outweighs length as a weight predictor. The prosodic heaviness of the NPs in (5.22–5.23) would then outweigh the lack of words/syllables in the NP vs the PP which contains more words and syllables but lacks prosodic heaviness. This category of test sentences was included in the Faroese experiment, to see if the same effect does appear in Faroese.

All in all, there were 20 test sentences that were controlled for prosodic weight effects, including both length categories described above, and like in all the other HNPS test sentences, half of the sentences had shiftable direct object NPs and half had shiftable subject NPs. These factors, as well as relative heaviness and complexity, were all controlled for in the HNPS sentences. For the other two structures, OS and PS, there were fewer test sentences and fewer control factors, just like in the Icelandic experiment. These structures were tested for NP length and relative weight effects to see if heaviness affects the position of objects in a sentence in general, not only in HNPS, and, as these structures only apply to verb objects and not to subjects, grammatical roles were not a factor for these structures either.

Like in the Icelandic experiment, the OS test sentences were designed based on a length formula similar to the one that the HNPS sentences were based on. One of the main goals of this experiment was to test the potential effects of relative heaviness in full NP OS and in PS and compare the results described with the Icelandic experiment in Chapter 3. The OS test sentences were designed based on a length formula similar to the one used in the acceptability experiment described in Section 5.2, as shown in (5.24).

- (5.24) a. NP: 1 word, Neg: 1 word
 b. NP: 3 words, Neg: 3 words
 c. NP: 3 words, Neg: 1 word
 d. NP: 1 word, Neg: 3 words

Just like before, the number of syllables was also controlled for, so three words consist of nine syllables and one word consists of two syllables, as demonstrated in (5.25–5.26). There were twelve test sentences for OS in this experiment: three for each length category.

- (5.25) a. Eg kenni [manninn] [ikki].
 I know [man.DET] [not]
 ‘I do not know the man.’

- b. Eg kenni [ikki] [manninn].
 I know [not] [man.DET]
 ‘I do not know the man.’

- (5.26) a. Eg las [ikki] [hasa longu greinina].
 I read [not] [this long article.DET]
 ‘I did not read this long article.’

- b. Eg las [hasa longu greinina] [ikki].
 I read [this long article.DET] [not]
 ‘I did not read this long article.’

- (5.27) a. Hann minnist [hasa longu søguna] [so sanniliga ekki].
 He remembers [this long story.DET] [most certainly not]
 ‘He does most certainly not remember this long story.’

- b. Hann minnist [so sanniliga ekki] [hasa longu søguna].
 He remembers [most certainly not] [this long story.DET]
 ‘He does most certainly not remember this long story.’

- (5.28) a. Óli kennir [manninn] [so sanniliga ekki].
 Oli knows [man.DET] [most definitely not]
 ‘Oli does most definitely not know the man.’

- b. Óli kennir [so sanniliga ekki] [manninn].
 Oli knows [most definitely not] [man.DET]
 ‘Oli does most definitely not know the man.’

Like in the Icelandic experiment, the number of words and syllables in this length model was based on the long negation used in (5.27–5.28), the same as in the acceptability survey. The OS sentences were all constructed in the same way; Subject followed by a verb and then a direct object NP and negation in a non-fixed order. The direct objects were all marked with a definite article, as Full NP-OS is largely restricted to definite NPs.

The PS sentences were structured in a similar way to the OS test sentences. The two elements the speakers were asked to put in order after the main verb were the direct object NP and the particle. It is not possible to test the effects of relative length on this structure in the same way as with the other syntactic structures, as particles cannot be stacked or extended to more than (arguably) two words. Just like in the Icelandic production experiment, it was decided to test only two length categories, as shown in (5.29). There were six PS test sentences, three for each category.

- (5.29) a. NP: 1 word, Particle: 1 word
 b. NP: 3 words, Particle: 1 word

The syllable number for the direct object NPs was controlled like before (one word: two syllables, three words: eight syllables) but the particles consisted of either one or two syllables. The sentences were all constructed in the same way, with a subject followed by a verb and then a object NP and particle in a non-fixed order, as demonstrated in examples (5.30–31). All object NPs were marked with a definite article.

- (5.30) a. Anna koyrði [bilin] [inn].
 Anna drove [car.DET] [in]
 ‘Anna drove the car in.’

- b. Anna koyrði [inn] [bilin].
 Anna drove [in] [car.DET]
 ‘Anna drove the car in.’

- (5.31) a. Eg vaskaði [allar skitnu tallerkarnar] [upp].
 I washed [all dirty plates.DET] [up]
 ‘I washed all the dirty plates up.’

- b. Eg vaskaði [upp] [allar skitnu tallerkarnar].
 I washed [up] [all dirty plates.DET]
 ‘I washed all the dirty plates up.’

The acceptability survey described in Section 5.2 showed that NP length is a marginally significant weight predictor for PS so it will be interesting to see if it is important in language production.

5.3.2. Layout and procedure

The production experiment was designed in exactly the same way as the Icelandic experiment, as described in Chapter 4. The experiment was created in PsychoPy (Peirce et al. 2019). The experiment was conducted in August 2019 at the University of the Faroe Islands in Tórshavn and in Klaksvík and Viðareiði in the Faroe Islands. 20 speakers participated in the experiment, an equal number of men and women, aged 20 to 40 years. The experiment was disguised as a memory task, where participants were asked to read sentence fragments off a computer screen and memorise them. Each test sentence appeared on the screen in three parts, like in the Icelandic experiment, as described in Chapter 3. The beginning of the sentence always appeared in the middle of the screen and the other two parts above and below the beginning of the sentence in a randomised order. Participants were asked to always use the part that is in the middle as the beginning of the sentence.

Like in the Icelandic experiment, the speakers were given as much time as they wanted to memorise each sentence. Once they had memorised the sentence, they pressed a button, and the screen went blank for 10 seconds. Then a plus-sign appeared for one second as a prompter for the speakers to produce the utterance from memory, as naturally as they could. Once they had produced the utterance, they pressed the button again and a new sentence appeared on the screen. All produced utterances were recorded and transcribed and scored for the syntactic structure of the sentence: shifted NP or NP in situ.

Utterances were excluded when the participant failed to produce a whole sentence, including an NP and a PP, or if the participant changed the sentence structure in a way that was not compatible with the conditions of the task (e.g., a participant might produce an utterance where a part of the NP had been moved to the right edge of the clause with extraposition, but HNPS had not occurred). Participants would sometimes slightly alter the words in the utterance they produced, i.e., replace one adjective with another, but they generally maintained the length of each constituent correctly. As long as the utterances fulfilled the conditions for length and structure, they were included in the analysis and participants were not rated for how accurately they remembered the exact words of the test sentence. A similar pattern was reported by Stallings & McDonald (2011) in the outcome of their study (see also Stallings et al. 1998). At the end of the task, the speakers filled out a short form, providing personal information that would be used for data processing, including exact age and gender. Section 5.4. presents the results from the Faroese production experiment.

5.4. Results from the Faroese production experiment

This section presents the results from the production experiment and is laid out as follows: Section 5.4.1. presents the results for the HNPS test sentences, considering all relevant weight predictors: NP length, grammatical roles, complexity, and prosodic stress. Section 5.4.2. takes a look at the results for the PS and OS test sentences, with the focus on NP length and relative weight effects for these two structures in production.

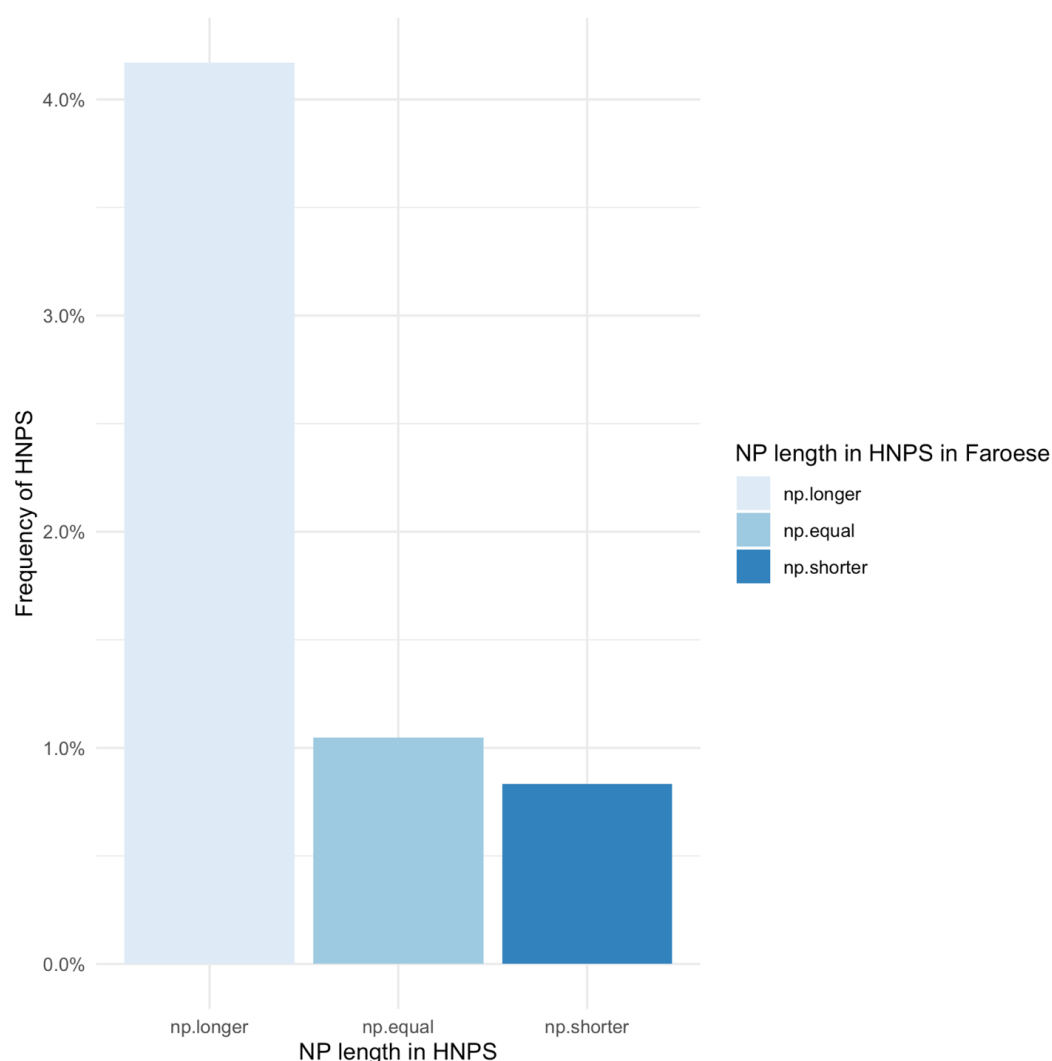
5.4.1. Weight effects and HNPS in production in Faroese

This section examines the results for the HNPS test sentences in the Faroese production experiment. Figure 60 shows the frequency of HNPS, i.e., how often a test sentence of this type was produced with the NP at the end of the clause, by the length of the NP. Here, the length categories have been collapsed into three new values, the same as were used in the analysis for the Icelandic experiment:

- NP equal = The NP and the PP are equally long.
- NP shorter = The NP is shorter than the PP.
- NP longer = the NP is longer than the PP.

This was done to simplify the layout of the results and the statistical analysis of the potential effects of relative length.

Figure 60 – Frequency of HNPS by relative NP length in production in Faroese.



As Figure 60 shows, the frequency of shifted NPs in the results is extremely low overall. Sentences were most frequently produced with HNPS word order when the NP exceeded the PP in length, but the outcome is only just over 4% of the produced utterances in this category. In sentences where the NP and the PP are equally long, just over 1% were produced with HNPS. In the instance of the NP being shorter than the PP, the NP was never moved to the end of the clause. Figure 60 shows a very similar trend in shifted NPs and relative weight effects as the Icelandic results described in Chapter 4. Unlike the Icelandic results, the frequency of shifted NPs is incredibly low but, as shown in Table 51 later in this Section, a significant connection between NP length and grammatical roles to the frequency of HNPS was found in this experiment. While it is difficult to compare the results of this experiment to the Icelandic production experiment, the results are still interesting on their own and worth talking about. Tables 44–51 show how frequently each test sentence was produced with the HNPS word order.

Each table shows sentences with shifted subjects and objects by length category. Table 44 shows the frequency of shifted long non-complex subject and direct object NPs over short PPs.⁸⁵

Table 44 – Frequency of shifted long non-complex direct object NPs over short PPs in production in Faroese.

Subject PP 2 NP 6	Shifted	Unshifted	NA
a. Vanliga renna [um summarið] [nakrar hundrað ungar kvinnur í Havnini].	0	18	2
b. Í fjør komu [til Havnar] [nakrir kendir listamenn úr øðrum londum].	0	20	0
Direct Object PP 2 NP 6			
c. Beinta lesur [um morgnarnar] [øll mógulig stuttlig tíðarrit um móta].	2	18	0
d. Vit sóu [á savninum] [avbera nógvar myndir av gomlum kirkjum].	1	19	0
e. Tjóvarnir stjólu [úr handlinum] [átta gomul lummaur og fyra armbond].	0	20	0

As Table 44 shows, the long NPs are very rarely shifted to the end of the clause but, like in the acceptability survey described in the previous section, grammatical roles seem to be important. While direct object NPs are rarely shifted, subject NPs are never shifted. The same is reflected in Table 45, which shows the frequency of shifted long complex subject and direct object NPs over short PPs.

Table 45 – Frequency of shifted long complex subject NPs over short PPs in production in Faroese.

Subject PP 2 NP 6	Shifted	Unshifted	NA
a. Í morgin mæta [í skúlanum] [næmingar sum byrja sín fyrsta skúladag].	0	20	0
b. Í gjár sungu [í kirkjunni] [børn sum eru í nýggja barnakórinum].	0	17	3
c. Í kvøld flúgva [til Danmarkar] [flogførini sum vóru umvæld í Vágum].	0	20	0
Direct Object PP 2 NP 6			
d. Eg las [fyri honum] [ein tíðindastubba sum eg hevði skrivað].	2	14	4
e. Sigrun málaði [á loftinum] [málningar sum hon ongantíð vísti nøkrum].	3	16	1
f. Eg legði [á hillina] [øll handklæðini sum dóttirin hevði keypt].	0	19	1

As Table 45 shows, sentences with complex long NPs were not produced with the HNPS word order much more frequently than the comparable sentences with simple long NPs. In the Icelandic

⁸⁵ By mistake, one test sentence where a 6-word subject is moved across a 2-word PP was omitted from the survey.

production experiment, long NPs were frequently shifted over short PPs, particularly long complex NPs, so the results are quite different in that sense. Like before, subject NPs are never shifted in the Faroese production experiment, which was not the case in the Icelandic experiment. Table 46 shows long NPs that shift across equally long PPs and the frequency of shifting is low like before, although a subject NP was moved to the edge of the clause by one speaker.

Table 46 – Frequency of shifted long NPs over long PPs in production in Faroese.

Subject PP 6 NP 6	Shifted	Unshifted	NA
a. Í fjør komu [á almenna ráðstevnu um nýggja tøkni] [umleið hálvfjerðs næmingar úr fimtan skúlum].	0	20	0
b. Í seinastu viku komu [á almennan fund fyri ungar høvundar] [bæði virknir limir og framfús listafólk].	1	17	2
c. Hvørt ár flúgva [til sólríkar strendur í heitu londunum] [átta til níggju túsund íslensk ferðafólk].	0	20	0
Direct Object PP 6 NP 6			
d. Eg borðreiddi [fyri nøkrum góðum vinum úr skúlanum] [ræstan fisk við saltaðum spiki afturvið].	2	16	2
e. Foreldrini lósu [fyri øllum næmingum í fjórða flokki] [bókina um Hannibal og horvna hundin].	1	19	0
f. Listakonan málaði [á gamlar veggir í Tórshavnar kommunu] [stórar og vakrar málningar av mánanum].	0	19	1

Table 47 shows the sentences where a short NP potentially moves across a long PP. A short NP was only once shifted across a longer PP, which is exactly the same as what happened in the Icelandic experiment for this length category. This could of course be a coincidence and one example can hardly tell us anything about HNPS in Faroese but it is still interesting to see that although the NP is short and relatively shorter than the PP, it can appear in this position.

Table 47 – Frequency of shifted short NPs over long PPs in production in Faroese.

Subject PP 6 NP 2	Shifted	Unshifted	NA
a. Í gjár vóru [á spennandi skeiði um føroyska mentan] [nógvir danir].	0	20	0
b. Um várið svimja [á lítlu tjørnini í gamla miðbýnum] [hvítir svanir].	0	19	1
c. Leygardagin vóru [á fundi um umstøður teirra lesandi] [tjúgu mannfólk].	0	20	0
Direct Object PP 6 NP 2			
d. Turið keypti [í lítla nýggja handlinum í miðbýnum] [nýggjar skógvar].	0	20	0
e. Eg las [til seinastu royndina í donskum máli] [nógvar bókur].	0	20	0
f. Jógvan stjól [frá einum góðum gomlum íslenskum vini] [nógvan pening].	1	19	0

These results show that relative weight effects do not come through in produced, spoken Faroese. The frequency rates for each category are just so small that it is impossible to detect any real effects. The next two Tables show where a short NP potentially moves across a short PP and the sentences are controlled for potential prosodic weight effects. Tables 48–49 show, indisputably, that prosodic heaviness is not a weight predictor in HNPS in Faroese.

Table 48 – Frequency of shifted short NPs over short PPs in production in Faroese.

Subject PP 2 NP 2	Shifted	Unshifted	NA
a. Seinasta vikuskiftið flugu [til Danmarkar] [gamlir vinir].	0	20	0
b. Í summar fara [til Svøríkis] [nógvir dreingir].	0	20	0
c. Síðsta vetur vóru [í flokkinum] [tólv næmingar]	0	20	0
Direct Object PP 2 NP 2			
d. Anna keypti [á útsølu] [nýggjar buksur].	0	20	0
e. Eg fjaldi [fyri Beintu] [nakrar kakur].	0	19	1

Table 49 – Frequency of shifted short NPs over short "light" PPs in production in Faroese.

Subject PP 2 NP 2	Shifted	Unshifted	NA
a. Eftir gøtuni runnu [móti okkum] [tríggir hundar].	0	19	1
b. Í gjár bíðaðu [eftir okkum] [fronsk miðlafólk].	0	20	0
c. Í morgun sang [fyri okkum] [eitt gentukór].	0	20	0
Direct Object PP 2 NP 2			
c. Eg fann [fyri tykkum] [nakrar bøkur].	0	19	1
d. Høgni sang [fyri okkum] [tríggjar sangir].	0	20	0
f. Jógvan yrkti [fyri okkum] [eina yrking].	0	20	0

Not once did a Faroese speaker move a short NP across an equally short PP. Judging by these results, short NPs never undergo HNPS in Faroese and nothing suggests that prosodic heaviness has any effect. If prosodic heaviness made HNPS more likely to occur in Faroese, like it does in similar sentences in Icelandic, it would be expected that at least a few HNPS utterances were produced in sentences with pronoun PPs, but this is not the case. Tables 50–51 show frequency rates for sentences where the NP is shorter than the PP, consisting of one single-syllable word and the outcome is the same. Table 50 shows the sentences with PPs that have full NP

complements and Table 51 shows the minimal pairs with pronoun complements. None of these test sentences were produced with HNPS word order.

Table 50 – Frequency of shifted short NPs over longer PPs in production in Faroese.

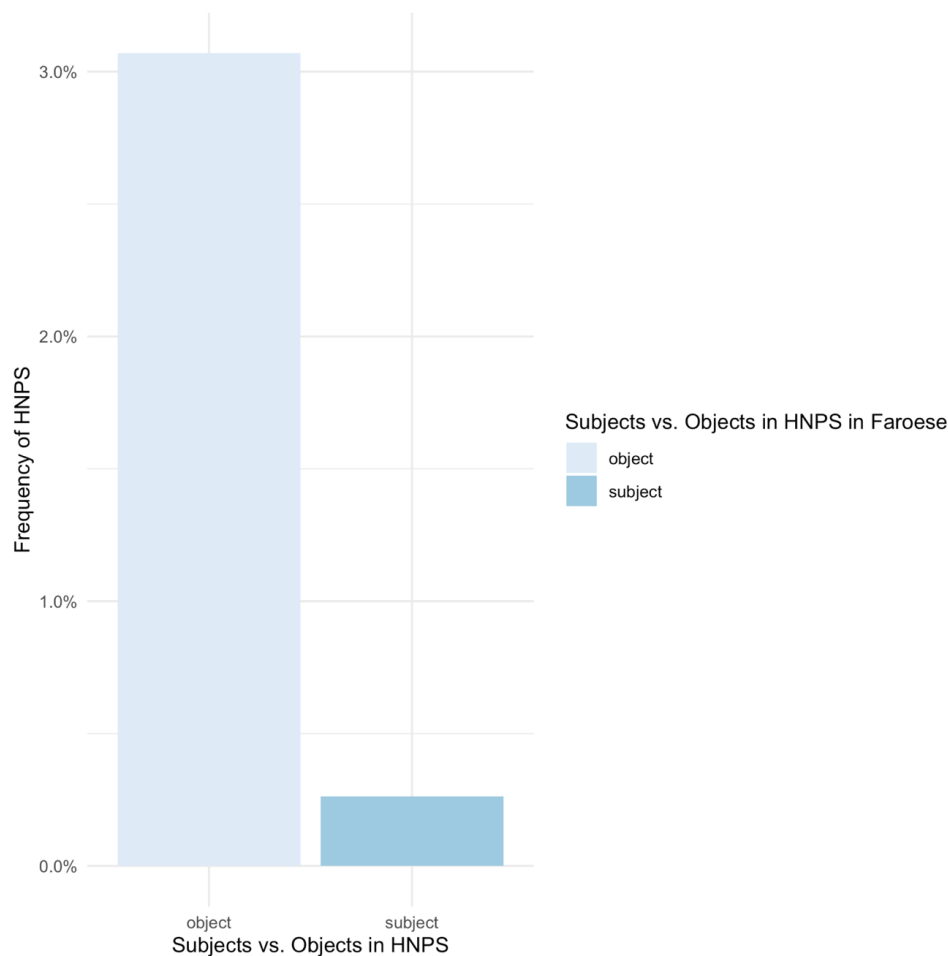
Subject PP 2 NP 1	Shifted	Unshifted	NA
a. Beint í áðni vassaðu [yvir áanna] [børn].	0	19	1
b. Í morgun lak [úr rørinum] [vatn].	0	19	1
Direct Object PP 2 NP 1			
c. Eg keypti [til kettuna] [mat].	0	20	0
d. Tóra kókaði [til børnini] [greyt].	0	20	0

Table 51 – Frequency of shifted short NPs over longer "light" PPs in production in Faroese.

Subject PP 2 NP 1	Shifted	Unshifted	NA
a. Í morgun sungu [fyri okkum] [børn].	0	20	0
b. Í dag komu [yvir okkum] [skýggj].	0	19	1
Direct Object PP 2 NP 1			
c. Símun spældi [fyri okkum] [løg].	0	20	0
d. Jógvan bakaði [til okkara] [breyð].	0	20	0

Tables 44–51 have shown that there was very little variation in word order in HNPS in the Faroese production experiment. The length of the NP does have some effect and grammatical roles seem to be important as well, as supported by the analysis in Table 52 below, whereas complexity and prosodic heaviness clearly have no effect at all. Figure 61 shows the frequency of shifted subject NPs vs shifted direct objects across all length categories in the experiment.

Figure 61 – Shifted subjects and direct objects in HNPS production in Faroese.



Although the frequency is generally low, direct objects were clearly shifted more often than subjects (which were almost never shifted), as Tables 44–48 showed. Now it is time to see if any of these effects are significant.

A generalised linear mixed effects analysis of the relationship between relative heaviness, grammatical roles (subject vs object), NP complexity and prosodic weight effects was performed. The responses were classified as binary (NP shifted or NP in situ). A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with fixed effects of relative length (with the variables that were classified earlier: NP equal, NP longer and NP shorter), prosodic stress, NP complexity and grammatical roles, along with age and gender as a potential social factor.⁸⁶ As random effects, an intercept was included for participant and sentence.

⁸⁶ Neither social factor improved the model in the LRT (in fact, the models failed to converge when these factors were included), so they were not pursued further.

A Likelihood Ratio Test (LRT) was performed to fit a model in a step-up procedure, where four models were compared to a null model, shown in the second row of Figure 62 as “no interaction”, which only had an intercept for the random effects, participant, and sentence. The test models were built up so that each model that was compared to the null model included an additional fixed factor, as illustrated in Figure 62.

Figure 62 – Model comparison with LRT.

model	Df	AIC	BIC	logLik	deviance	χ^2	χ^2 Df	p
no interaction	2	140.15	149.61	-68.077	136.15			
+ Relative NP length	4	135.07	153.99	-63.537	127.07	9.0800	2	0.010
+Relative NP length:	5	125.81	149.45	-57.904	115.81	11.2664	1	<.001
Grammatical role								
+Relative NP length	7	121.66	155.76	-53.832	107.66	8.1439	2	0.017
+Grammatical role								
+ Stress								
+ Relative NP length	8	122.96	160.79	-53.479	106.96	0.7057	1	0.400
+Grammatical role								
+								
Stress+Complexity								

The LRT revealed that the fit of the generalised linear mixed model improved significantly when the fixed effect of relative NP length was included, and the fixed effect of grammatical roles further improved the model. The fixed effect of prosodic stress (heavy vs light PPs) appeared to improve the fit of the model again significantly but on closer inspection the results were not robust to multiple comparison corrections. The fixed effect of NP complexity did not improve the fit of the model, so the fixed effects that were included in the final version were NP length and grammatical roles, which is shown in Figure 63.

Figure 63 – Layout for the Generalised Linear Mixed Model.

Responses ~ Relative NP length + Grammatical role (1 participant) + (1 sentence)

Table 52 presents the summary of the estimated model fixed effects. The analysis shows that the relative length of the NP alone does significantly impact the frequency of HNPS, even though the difference shown in the tables above is so little.

Table 52 – Estimated model fixed effects.

	Estimate	Std. error	z value	p
Intercept	-6,121	1.369	-5.471	<.001
NP equal	1.466	1.112	1.318	0.187
NP longer	2.460	1.083	2.271	0.023
Subject NP	-2.561	1.051	-2.436	0.014

Grammatical roles also have a significant effect on the results, which was to be expected. Table 52 shows that subject NPs are significantly less frequently shifted than direct object NPs, which is an effect that came through quite clearly in the tables above.

According to the results described in this section, the following weight effects could be found in the production study of HNPS in Faroese:

- HNPS rarely occurs in Faroese and there is little variation in word order in this structure.
- Despite the syntactic structure being rare, there are detectable weight factors that affect its frequency in production, that also affect this structure in Icelandic.
- Like in Icelandic, a shiftable NP that is long is more likely to move to the end of the clause with HNPS if the string of words it moves over is relatively shorter.
- Short NPs never undergo HNPS in Faroese, so it is important that the NP is long.
- Short NPs rarely or never undergo HNPS in Faroese if the string of words it moves over is relatively longer.
- Like in Icelandic, subject NPs are significantly less likely to undergo HNPS than direct objects. This effect is much stronger in Faroese than in Icelandic.
- Unlike Icelandic, prosodic heaviness and syntactic complexity are not significant weight predictors in HNPS in Faroese.

5.4.2. OS and PS in production in Faroese

The next part of this experiment aimed to explore relative weight effects in OS and PS in production in Faroese, which we will now take a look at. The OS test sentences are laid out in Tables 53–54.

Like before, the sentences are all written out with the OS word order and the column on the right shows how frequently each sentence was produced with that word order.

Table 53 – OS sentences with a short negation and NP by various length in production in Faroese.

NP short	Shifted	Unshifted	NA
a. Óli las [blaðið] [ikki].	0	20	0
b. Sigga minnist [sagin] [ikki].	1	19	0
c. Eg kenni [manninn] [ikki].	0	20	0
NP long			
a. Vit sú [hasar gomlu myndirnar] [ikki].	0	19	1
b. Eg las [hasa longu greinina] [ikki].	0	20	0
c. Óluva át [allar ræstu ostarnar] [ikki].	0	20	0

Table 54 – OS sentences with a long negation and NP by various length in production in Faroese.

NP short	Shifted	Unshifted	NA
a. Gunna las [brævið] [so sanniliga ikki].	1	19	0
b. Eg fékk [pakkann] [so sanniliga ikki].	0	19	1
c. Óli kennir [manninn] [so sanniliga ikki].	1	19	0
NP long			
d. Hann minnist [hasa longu søguna] [so sanniliga ikki].	0	19	1
e. Vit flyta [hasar tungu taskurnar] [so sanniliga ikki].	0	20	0
f. Jón møtti [hinum gamla manninum] [so sanniliga ikki].	0	20	0

Like before there is very little variation in the results. No test sentence was produced with the OS word order more than once. An OS utterance was produced only once with a short negation, as shown in Table 53, and twice with a long negation (both of these last cases involving a short NP), as shown in Table 54. Although the numbers are very low, this gives reason to see if relative weight has any significant effect here.

A simple generalised linear mixed effects analysis of the relationship between the position of the direct object NP the relative length of NP vs negation (longer NP, equal length NP, shorter NP) was performed. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with relative length as a fixed effect. As random effects, an intercept was included for participant and sentence. The model is displayed in Figure 64.

Figure 64 – Layout for the Generalised Linear Mixed Model.

Direct Object Position ~ Relative length + (1 participant) + (1 sentence)
--

The analysis revealed that relative length has no significant effect on the positioning of the direct object NP in Object Shift in production ($z=-0.010$, $p=0.992$). The results from the acceptability survey, described in the previous section, showed that a long NP had a significantly negative effect on the participants' evaluations, an effect that is not detected here. The comparable results from the Icelandic production experiment showed a strong effect of the relative heaviness of the NP vs the negation, even stronger than in the Icelandic acceptability experiment. The results from the Icelandic experiments suggested that relative length is more important for OS in production planning than it is in evaluations but there is such little variation in the Faroese experiment that no such effect could be detected.

Table 55 shows the frequency of PS where the direct object NP appeared at the end of the clause in the production experiment. The sentences are all written out with the NP following the particle and the column on the right shows how frequently each sentence was produced with that word order.

Table 55 – PS sentences with NPs by various length in production in Faroese.

PS with short NP	Shifted	Unshifted	NA
a. Jóna skrivaði [niður] [navnið].	0	20	0
b. Anna koyrði [inn] [bilin].	0	20	0
c. Eg tók [upp] [lagið].	0	20	0
PS with long NP			
d. Eg vaskaði [upp] [allar skitnu tallerkarnar].	1	18	1
e. Sanna koyrði [út] [neyðars ússaliga hundin].	0	20	0
f. Eg skrivaði [niður] [allar hasar yrkingarnar].	1	19	0

These numbers are again, very low, with only two PS word order utterances produced. A simple generalised linear mixed effects analysis of the relationship between the position of the direct object NP the length of NP was performed. A generalised linear mixed effects model was fit with the binary responses as the outcome variable, with NP length as a fixed effect. As random effects, an intercept was included for participant and sentence. The model is displayed in Figure 65.

Figure 65 – Layout for the Generalised Linear Mixed Model.

Direct Object Position ~ NP length + (1 participant) + (1 sentence)
--

The analysis revealed that NP length has no significant effect on the positioning of the direct object NP in Particle Shift in production ($z=-0.074$, $p=0.941$). The results from the acceptability survey, described in the previous section, revealed that NP length did not have a fully significant effect on

NP length, although there was a detectable trend. The results from the Icelandic experiments showed that NP length had no significant effect in the acceptability survey, but it turned out to be a very important effect in production, as the results from both the production experiment and the corpus study showed. Whatever trends appear to be in the results, as shown in Tables 53–55, they are simply not strong enough to be detected in the analysis, which is not surprising as there is very little variation in the responses and, as it appears, in these syntactic structures in Faroese. The acceptability survey, described in the previous section, did suggest that weight effects do apply to these structures, although those results were also not very strong. Since there is such little variation in word order in OS and PS in Faroese, it would require an experiment on a much larger scale to get a clearer image of potential weight effects in these structures and that will be left for future research.

5.5. Summary and conclusion

The main goal of this chapter was to provide a description of weight effects on word order and variation in Faroese, compared to what has been described in Icelandic in the previous chapters. Testing hypotheses about weight effects in the same manner on constructions in two closely related languages; Icelandic and Faroese, is important, as it provides a new perspective on weight effects in general, as previous studies have concentrated on studying weight effects in one language each and most of them focus on only one syntactic structure each time, as pointed out above.

It proved to be difficult compare results from identical studies in Faroese and Icelandic as the HNPS structure seems to be more restricted in Faroese than in Icelandic, which reflects what has been said in the literature and was discussed in Chapter 2, and the OS structure is even more restricted, which was also foreseen. On the other hand it was not as predictable that the evidence from the PS structure would be so different in the Faroese and Icelandic results. This is a very interesting result because, as discussed in Section 2.2.6, Faroese is often classified together with Icelandic in the literature in regard to word order in verb+particle structures, against the Mainland Scandinavian languages that are more restricted in this sense. The results described here suggest that Faroese has much more restricted word order in verb+particle structures than has been considered before and that while there is some variation here, Faroese is more similar to Danish, in which the NP object always precedes the particle, than to Icelandic where there NP can precede or follow the particle.

Despite the differences in the results it was possible to detect similar weight effects in Faroese as were found in Icelandic. The Icelandic results showed that HNPS is generally accepted by most speakers and frequently produced, whereas the Faroese results showed a much broader spectrum of variation in how speakers evaluate this structure. What many speakers finds perfectly

acceptable, other speakers find completely unacceptable. More and stronger weight effects were detected in the Icelandic results than in the Faroese results, but there were still some noticeable similarities and differences. Despite HNPS being a rare structure in Faroese, in comparison to Icelandic, there are detectable weight factors in speakers' evaluations and in production, that also affect this structure in Icelandic. Like in Icelandic, a shiftable NP that is long is more likely to move to the end of the clause with HNPS if the string of words it moves over is relatively shorter. Short NPs rarely, or never undergo HNPS in Faroese. So, there are detectable effects of absolute and relative heaviness in both languages, although they are much stronger in Icelandic, where the structure is more commonly used and accepted.

Grammatical roles proved to be an important difference between the two languages. Like in Icelandic, subject NPs are significantly less likely to undergo HNPS than direct objects, but this effect is much stronger in Faroese than in Icelandic and was also strongly reflected in speakers' evaluations. It has been maintained in the literature that subjects cannot undergo HNPS in Faroese at all but the results described in this chapter paint a slightly different picture. The results from the judgment experiment showed that many speakers found sentences with shifted subjects fully acceptable, which would not have been the case if this was an impossible word order in Faroese. In the production experiment, a subject was only shifted once, which is not enough to read into. It could suggest that Faroese speakers sometimes do shift subjects with HNPS, although very rarely, or it could simply have been a production error (perhaps the speaker got confused or made a mistake). One instance is not enough to say much about the matter, but it would be interesting to pursue this question in the future, e.g., when a larger Faroese corpus becomes available. If the reality is that although some Faroese speakers accept HNPS word order with shifted subjects, this structure occurs extremely rarely in spoken language, then this would not be the first time we see a pattern like that, as has been discussed in this thesis, regarding Object Shift in Icelandic.

The results described in this chapter show the importance of variation studies and reliable research methods for linguistic theory as it is impossible for one speaker to draw conclusions about a language's grammar based on their own intuition, as the next speaker's grammar might be completely different. If one was to talk to one or two Faroese speakers and ask them to evaluate the sentences that were tested in this study, their answers might not tell us anything about Faroese in general, contrary to what has often been assumed in the literature.

The results for Object Shift and Particle Shift showed very little variation in word order, both in evaluations and production in Faroese. The Icelandic results showed a much broader scale in the way speakers evaluated these structures and the effects of absolute and relative weight were detected for both structures in the surveys and particularly in the production experiment, whereas similar effects

were barely or not at all detected in the Faroese results. The fact that the results show clearly that these structures are much less commonly accepted and produced in Faroese than in Icelandic is interesting on its own. In order to get a clearer image of potential weight effects in these structures in Faroese, an experiment on a much larger scale would need to be conducted for Faroese and that will be reserved for future research.

6. Summary and implications

6.1. Summary

The main purpose of this project was to explore the concept of weight, i.e., to find out which factors contribute to it, by comparing potential weight effects on word order in several constructions in two closely related languages, Icelandic, and Faroese. The objectives of the study and the potential weight factors that were included in the experiments were summarised in Chapter 1 in the following research questions:

- Is heaviness determined by the length of the shifted constituent and if so, how is that length measured?
- If length is the determining factor; is it the absolute length of the shifted constituent itself alone or is the relative weight of the string of words that it shifts over also important?
- Is weight defined by the syntactic complexity of the constituents, i.e., does an embedded clause make the constituent intrinsically heavier than length alone?
- Is weight determined by a single weight predictor or are weight effects driven by the interaction of some of the aforementioned factors?
- Do weight effects impact word order in all weight-sensitive structures in the same way, i.e., if the aforementioned factors are weight predictors for HNPS, do they affect other structures such as e.g., Particle Shift and Object Shift in the same way?
- Can closely related languages differ with respect to weight effects?

These questions have been answered throughout this thesis based on a detailed empirical study of selected syntactic constructions in Icelandic and Faroese, and the effects of weight on variation in word order in these two languages.

The study described in this thesis was laid out as follows: Chapter 3 presented results from acceptability surveys, which explored several weight factors in modern Icelandic, including absolute and relative weight effects, the potential effects of prosody as a weight predictor and syntactic complexity. Chapter 4 further explored weight effects and variation in word order in language production, presenting results from a language production experiment and an extensive corpus study. Chapter 5 described a study of select weight factors and variation in word order in Faroese, based on data from acceptability surveys and production experiments. This chapter provides a brief summary of the thesis and discussion of the main results, ending with some concluding remarks and implications for future study.

6.2. Discussion

This section provides a brief summary of the main results and discussion of how they were affected by each weight predictor that was included in this study: NP length, relative weight effects, prosodic heaviness, and syntactic complexity. The weight effects are shown in Table 56, as they were tested for across the experiments described in this thesis. The table shows the various weight effects tested in this study in the three main sentence structures, HNPS, OS and PS, in acceptability surveys and production studies (including the corpus study in Icelandic) for both languages. The table shows when each weight factor had a significant effect in an experiment (✓) and when a nearly significant effect was detected (✓*). If the weight factor had no significant effect, the cell is left blank in the table and NA (Not Applicable) means that this effect was not tested in the experiment.

Table 56 – Weight effects across various experiments.

	HNPS				OS				PS			
	Icelandic		Faroese		Icelandic		Faroese		Icelandic		Faroese	
Weight effects	Acceptability	Production	Acceptability	Production	Acceptability	Production	Acceptability	Production	Acceptability	Production	Acceptability	Production
NP length	✓	✓	✓	✓	✓	✓	✓			✓	✓*	
Relative length	✓	✓	✓*			✓				✓	✓*	
Prosodic weight	✓	✓			NA	NA	NA	NA	NA	NA	NA	NA
Complexity		✓			✓*	NA		NA	✓	✓*	NA	NA

As Table 56 shows, NP length had a significant effect on all three syntactic structures in most of the experiments in both languages. Relative length had a significant effect on each structure in Icelandic but in Faroese, relative length was only detected as a nearly significant trend in the acceptability surveys for HNPS and PS. For PS, NP length and relative length were categorised as the same effect, as the length definitions were one-word NP and three-word NP against a one-word particle. For the other structures, relative length was measured as a factor separate from NP length alone. Prosodic weight was only tested in HNPS, and it had a significant effect in both the acceptability survey and production experiment for Icelandic but no effect for Faroese. Complexity was tested as a weight

factor for HNPS in the acceptability surveys and production experiments for both languages, but it only had a significant effect in production in Icelandic, as supported by both the production experiment and the corpus experiment. The effect was also found in the other two structures in Icelandic, according to the acceptability surveys (nearly significant for OS and significant for PS), and the corpus study revealed that when NP length is lower, complex NPs are less likely to undergo PS, but as length is increased, simple, and complex NPs are universally shifted, suggesting that PS, length, and complexity are equally important weight factors. The next few subsections discuss each weight effect in more detail.

6.2.1. NP length

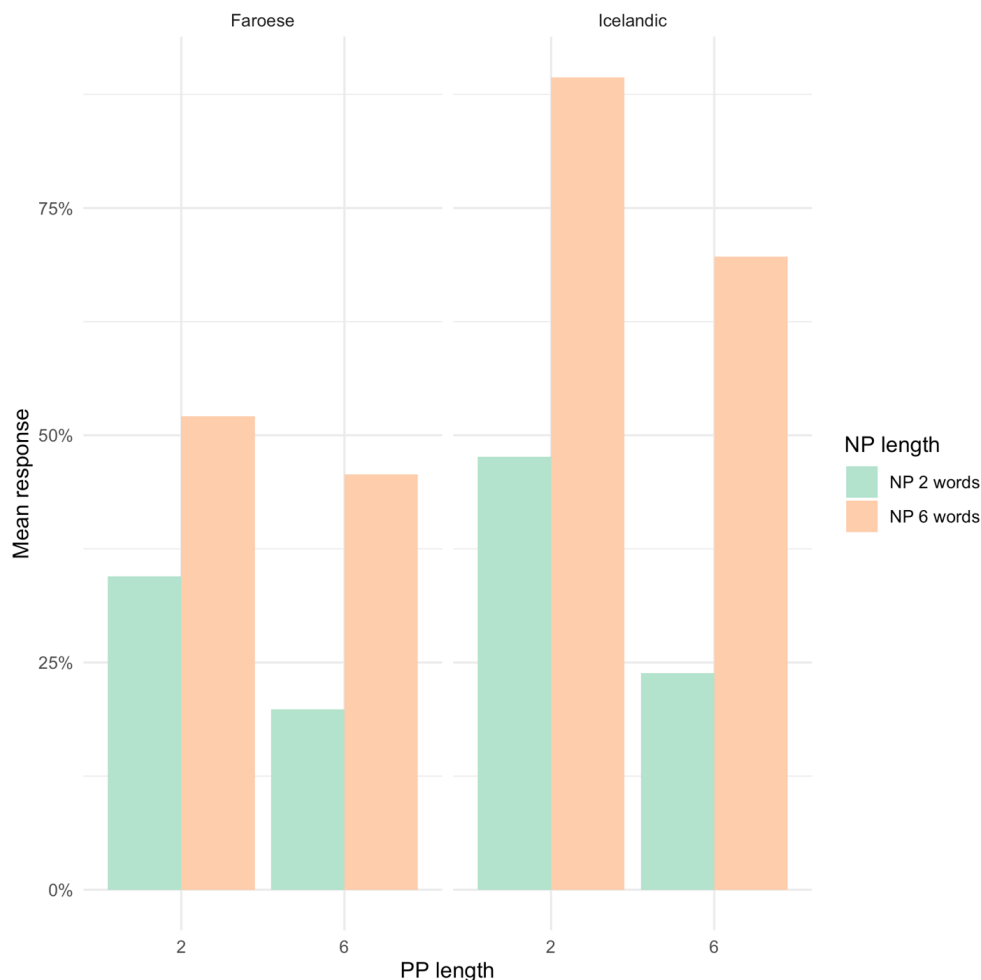
The results of this study have shown that NP length, as measured by number of words and syllables, is an important weight predictor for NP movement (or NP placement) in both Icelandic and Faroese. The acceptability studies, described in Chapters 3 and 5, showed that both Icelandic speakers and Faroese speakers respond better to long NPs at the right edge, rather than in the middle of the clause, whereas shorter NPs are more acceptable in the middle. This effect was found for NP movement in various syntactic structures. This effect is even stronger in language production, at least in Icelandic and up to some degree in Faroese, as was demonstrated in Chapter 4. The results from the production experiment showed that speakers are much more likely to move longer NPs to the right edge of the clause, unless affected by other weight predictors, such as prosodic heaviness, as will be addressed below. The corpus study showed that NPs that appear at the right edge of the clause in HNPS and PS structure, tend to be much longer than NPs that appear in the middle of the clause. Based on results from the corpus study, it was also argued that heaviness does not only draw heavy constituents to the right edge, but also to the left edge, e.g., by Left Dislocation.

6.2.2. Relative weight

The results of this study have shown, through all the experiments described in this thesis, that while the absolute length of the shifted constituent itself alone is very important, the relative weight of the string of words it shifts over is also very important, and often even more important than the length of the shifted NP. Relative weight effects have come through as a consistent weight predictor for NP movement throughout all the experiments described in this study for Icelandic on all levels, in how speakers evaluate the acceptability and the quality of sentence structure. Relative weight effects have also proved to be equally or even more important in production in various syntactic structures in Icelandic. The results show that relative weight effects are not only important for production planning

but that they are strongly connected to the acceptability and processing of weight-sensitive syntactic structures. This suggests that relative weight effects serve a purpose of a greater effect of end-weight, which is really about not having long or complex constituents in the middle of a clause, rather than moving heavy constituents to the edge. Relative weight did also show a vague effect in the Faroese results, which was not strong enough to be significant on all levels, but was still detectable. For example, Figure 66 shows the acceptance rates for HNPS sentences from the Icelandic and Faroese surveys, based on the length of the shifted NP vs the length of the shifted PP. These charts were shown individually in sections 3.2.1 and 5.2.1 respectively and they are repeated here for comparison.

Figure 66 – Relative weight effects in HNPS: Results from the Icelandic and Faroese acceptability surveys.



The charts show that a long, shifted NP receives a more positive response when the PP that stands before it is short, than when the PP is equally long. Although the effect of relative weight was not fully significant for Faroese in this survey, (but close, $z=1.756$, $p=0.079$), and sentences with HNPS

were generally much better received by Icelandic speakers than Faroese speakers, the charts show that the effect is very similar between the two languages. This suggests that relative weight effects are similar across languages, including languages like Faroese, where weight effects in general are not very strong.

6.2.3. *Prosodic heaviness*

While NP length has been established as an important weight predictor, a number of speakers of both languages accepted sentences with short NPs, that were shifted to the right edge of the clause. This shows that for some speakers, the NP does not need to be long at all in order for it to shift, and this is true across Icelandic and Faroese. In certain instances, where the NP is not long, the importance of other weight predictors can increase, such as prosodic heaviness, which was measured by stress on the phrasal level in this project. The results of this study have shown that prosodic heaviness is a significant weight predictor in Icelandic and prosodic heaviness can interact with relative weight effects, which are a major word order predictor for Icelandic. A shiftable NP can undergo HNPS even if it is not long or complex, but it needs to be prosodically heavier than the string of words it moves over. This pattern was revealed in both acceptability surveys and in language production in Icelandic, as described in Chapters 3 and 4, but the Faroese study revealed no such effect, suggesting that the prosodic structure of this sentence type is slightly different in Faroese: the PP might not ever appear without any stress, like in Icelandic (as discussed in Section 5.2.1, it is not impossible for a PP that has a bisyllabic preposition and a bisyllabic pronoun to have at least one stress position, even though functional elements do not tend to carry stress) and therefore prosodic weight does not effect the syntactic structure and HNPS cannot occur.

6.2.4. *Complexity*

Syntactic complexity, which was defined in this study by whether the shiftable constituent includes a relative clause or not, was revealed to be a very important weight predictor in language production in Icelandic, even more important than NP length. The corpus study revealed that not only are shiftable NPs at the edge of the clause generally longer than constituents in situ, they also are likely to be syntactically complex. The effect of length vs complexity in the corpus study was not the same for all the structures. Direct objects were found to be more likely to shift if they were complex, than if they were only long, regardless of the type of NP it was, i.e., whether it was a full NP or a pronominal NP. For shifted subjects, complexity was revealed to be more important than length if the NP had a pronoun head but the opposite was true for full NPs: as length went up, complexity became

less important. The results for PS in the corpus study showed that both NP length and complexity were equally important: as NP length gets higher, simple and complex NPs are shifted universally. These results showed that NP length and complexity are both very important weight factors but were not conclusive as to whether one of those weight predictors outranks the other.

For this reason, complexity was tested again in the production experiment, in HNPS minimal pairs, where the NPs were equally long but half of them included a relative clause and the other half did not. The results from the production experiment showed that participants were significantly more likely to move complex constituents to the edge of the clause, than equally long non-complex constituents. These results showed that complexity is more important as a weight predictor in Icelandic than NP length. It is likely that complexity outranks NP length in processing because of the deeper embedding found in sentences with relative clauses.

Measuring the complexity of the NP by counting syntactic nodes is questionable, as has been demonstrated in the literature (see discussion in Section 2.1.1). If the simple and complex NPs include the same number of words, the number of syntactic nodes with binary branching would be the same anyway. However, it is possible that NPs that include relative clauses are heavier because the structure contains a long movement chain, where the speaker has to trace back from a gap in the structure to the object or subject that are the target of the relative clause. This would make the complex NP intrinsically heavier to process for the speaker, than an NP that does not include a relative clause. The results from the Icelandic acceptability survey revealed no significant effect of complexity as a weight factor, unlike NP length, which suggests that syntactic complexity is most important in language production planning, but not as important for parsing, at least not the parsing of written sentences.

Syntactic complexity was revealed not to be a significant weight predictor in Faroese, at least not in the structures that were tested in this study. The effect did not come through in the Faroese acceptability survey, just like in the Icelandic survey, so complexity is not an important weight predictor for Faroese speakers when parsing written sentences. The Faroese production experiment revealed no significant effect of complexity as a weight factor but, as was discussed in section 5.2, it is hard to make any assumptions about weight effects in production in Faroese at all, based on these results, as there was very little movement in them at all. There is only one parsed historical corpus for Faroese (FarPaHC) but it is a very small corpus. When that corpus has been expanded, it will be very interesting to explore potential effects of NP length vs complexity there.

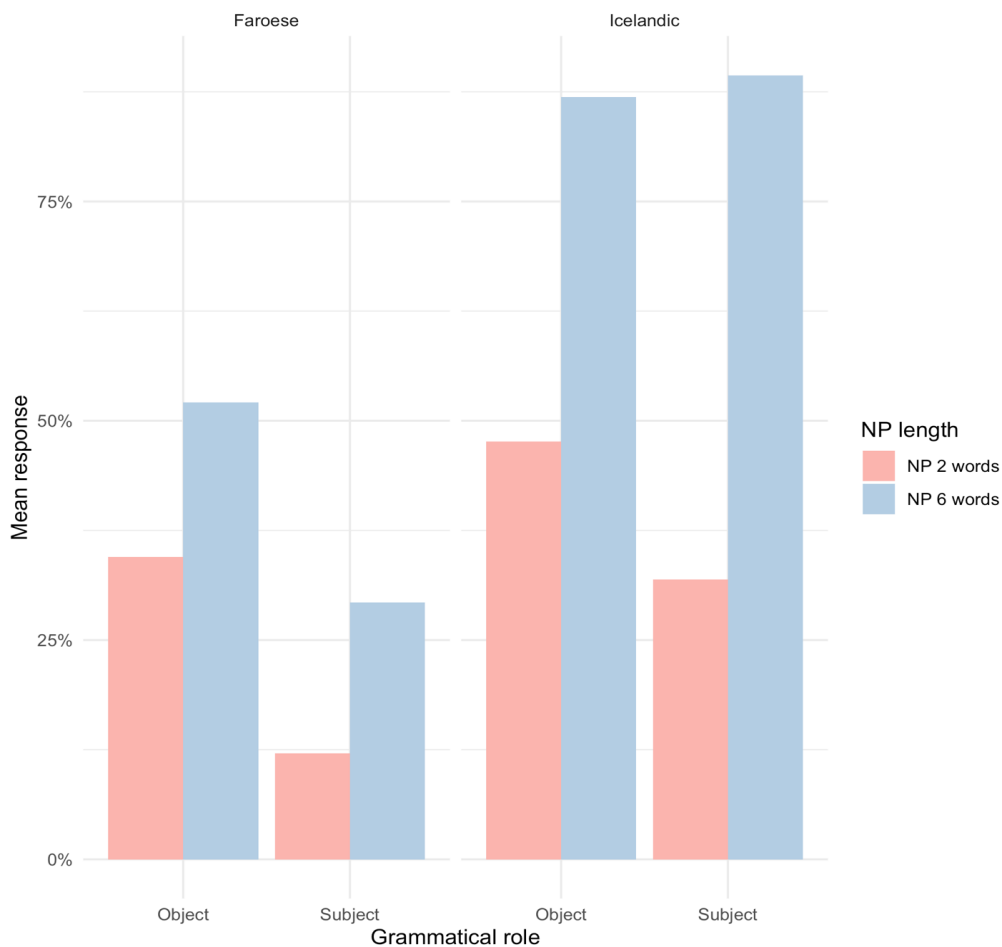
6.2.5. Further observations on weight effects

Although not part of the original research questions, some other interesting facts were revealed by this study. Grammatical roles were revealed to be unequally important to speakers of the two

languages. In Icelandic, subject NPs were revealed to be significantly less likely to undergo HNPS than direct objects in production, although the results of the acceptability survey showed no significant preference for direct objects over subjects in the speakers' evaluations. This effect was revealed to be much stronger in Faroese than in Icelandic, as Faroese speakers showed a clear preference for sentences with shifted direct objects over subjects.

While the effect of subjects vs objects was clear, sentences with shifted subjects were still considered fully acceptable by some Faroese speakers and subject shift did also occur in the production experiment, although rarely. It has been maintained in the literature that subjects cannot undergo HNPS in Faroese at all (see discussion in Section 2.2.2 and references cited there), but the results from these experiments have revealed that this is not true. Figure 66 shows the acceptance rates for HNPS sentences from the Icelandic and Faroese surveys, based on the grammatical role of the shifted NP. These charts were shown individually in Sections 3.2.1 and 5.2.1 respectively and they are repeated here for comparison.

Figure 67 – Grammatical roles of shifted NPs in HNPS: results from the Icelandic and Faroese acceptability surveys.



As Figure 66 shows, sentences with HNPS were generally much better received by Icelandic speakers than Faroese speakers, but the Faroese speakers showed a clear preference for shifted direct objects over shifted subjects – an effect that was not found in the Icelandic survey at all. Nonetheless, some Faroese speakers considered shifted subjects as fully acceptable, especially when the subject was a long NP.

As discussed in Section (4.3), it may not be surprising that subjects behave differently from objects in this sense. Subjects tend to appear early, or higher up, in the sentence because they receive their subject case from the IP-domain. At the same time, subjects are often the Topic of the sentence, which tends to be near the left edge of the clause, as the subject's Topic-hood is derived from the CP-domain (see Kossuth 1981 and much later work). To move the subject to the right edge of the clause goes against these two things, which could explain why subjects are less frequently moved than direct objects, as shown by the results of this study. There is a tendency to move a heavy NP to the right edge of the clause, as per the general principles of end weight, and direct objects are more easily moved that way, as they are not connected to the CP-domain like subjects tend to be. A heavy subject may also move to the right edge, as per the same general principles of end weight, but as this study has argued, heaviness draws constituents to both edges of the clause, and it is possible to keep the heavy subjects in CP on the left edge.

These ideas will not be pursued further here, as shifted subjects were not the main topic of this study, but the notion that some subjects are more likely to shift than others, as was discussed in Section 4.3 is interesting and will be left for future studies. However, as was discussed in Sections 2.2.1 and 4.3, the existing literature on HNPS has argued that subjects and objects can undergo HNPS in an equal manner in Icelandic, whereas the results of this study show that HNPS is more restricted, at least in language production, when the NP is a subject. This is new information about HNPS in Icelandic that can only be maintained if supported by robust empirical evidence, as this study has done. Furthermore, as was discussed in Sections 2.2.2, 3.3 and 4.3, previous literature does not agree on whether subjects can undergo HNPS in Faroese at all. The results of this study have shown that while shifted subjects are more restricted than shifted objects in Faroese, some speakers find that construction fully acceptable, especially if the subject is heavy. This supports the universality and importance of weight effects, as they can sometimes affect the positioning of a constituent in a sentence where it is very unlikely to move unless it is heavy.

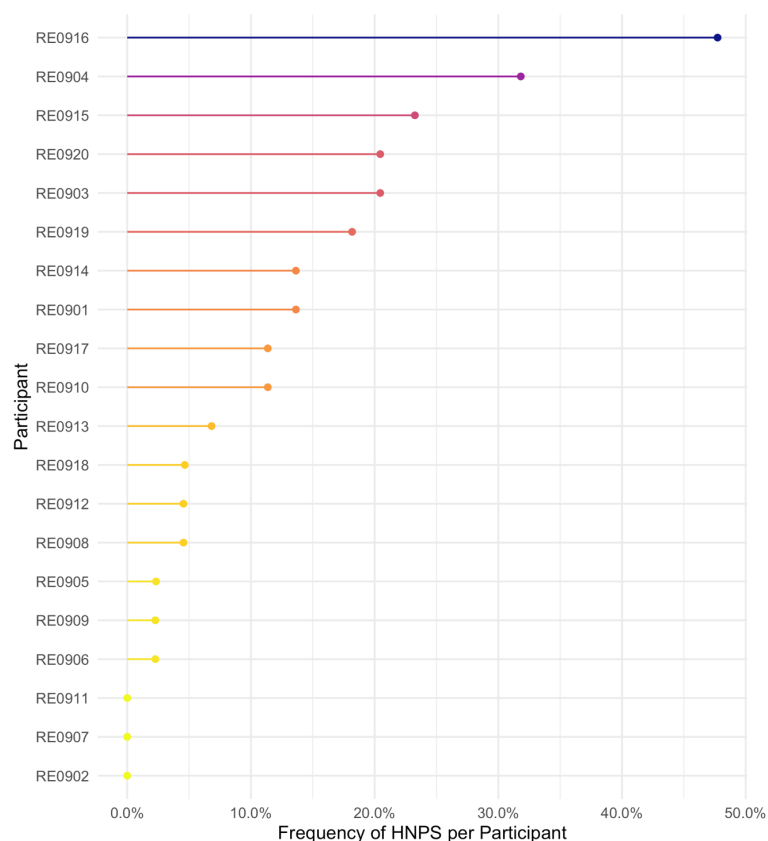
Finally, the results from the corpus study revealed that heaviness draws phrases to both edges of a clause, not just the right edge as is generally assumed in the literature. The results from the corpus study show that Left-Dislocated NPs, both subjects and direct objects, tend to be very long, and typically much longer than NPs in situ. The results also provide empirical evidence which shows that

NP movement is not just about moving heavy constituents to the right edge of the clause, but mainly about avoiding heavy constituents in the middle of the clause.⁸⁷

6.2. Some final observations for future research

The processing of the results from the language production experiment, described in Chapter 4, revealed an interesting pattern in how frequently individual participants produced utterances with shifted vs unshifted word order. It was revealed that while most participants produced shifted word order at least once, some speakers produced utterances with shifted word order significantly more frequently than others. This pattern is shown clearly in Figure 68, which illustrates the frequency of HNPS in production for each of the 20 participants in the Icelandic production experiment. The chart shows the frequency of HNPS word order per participant in sentences with both subject NPs and direct object NPs, irrespective of weight effects.

Figure 68 – Frequency of HNPS in production per speaker.



⁸⁷ This result is supported by the fact that heavy clause subjects are better when they have been extraposed to the right edge, as was shown in (4.10c) rather than when they appear at the beginning of the clause or, even worse, when they appear immediately after the verb (Thráinsson 1979:155ff. and Rögnvaldsson 1982).

While some participants used HNPS word order in 20–50% of their recorded utterances, several participants produced this word order in only 5–10% instances and some did not produce this word order once. It is interesting to see such a broad distribution in an experiment where test sentences were all controlled for several factors and presented without context. This pattern suggests that for some speakers, HNPS word order is equally natural as the basic word order in sentences of this kind, whereas other speakers rarely or never produce utterances with this structure.⁸⁸

This great difference between speakers shows how important it is to include a number of participants in an experiment, rather than asking only one or two informants or relying only on one speaker's intuition. If only speakers RE0902, RE0906, RE0907 and RE0911 had participated in the production experiment, the results would have suggested that HNPS is so rare in Icelandic that it almost never occurs, whereas if only speakers RE0904, RE0915, RE0916 and RE0920 had participated, the outcome would be that HNPS is rather common in Icelandic. Thráinsson referred to this as the “Forrest Gump Effect” (2017:21–28), meaning that if only one or two informants provide information about the linguistic phenomenon in question, it is impossible to know if those informants are fully representative of the relevant population. The frequency per speaker distribution in Figure 68 underlines this effect and also gives reason to investigate the individual differences further.

A similar pattern was detected in how frequently individual participants produced utterances with PS and OS, as shown in Figures 69–70.

⁸⁸ It would be interesting to break these results down further to see if some speakers are more sensitive to weight effects than other speakers and if there is a difference in how frequently speakers shift subjects vs direct objects on an individual level. It would require results from a much larger number of speakers to get any reliable information about that, so those questions will be left for future research.

Figure 69 – Frequency of PS in production per speaker.

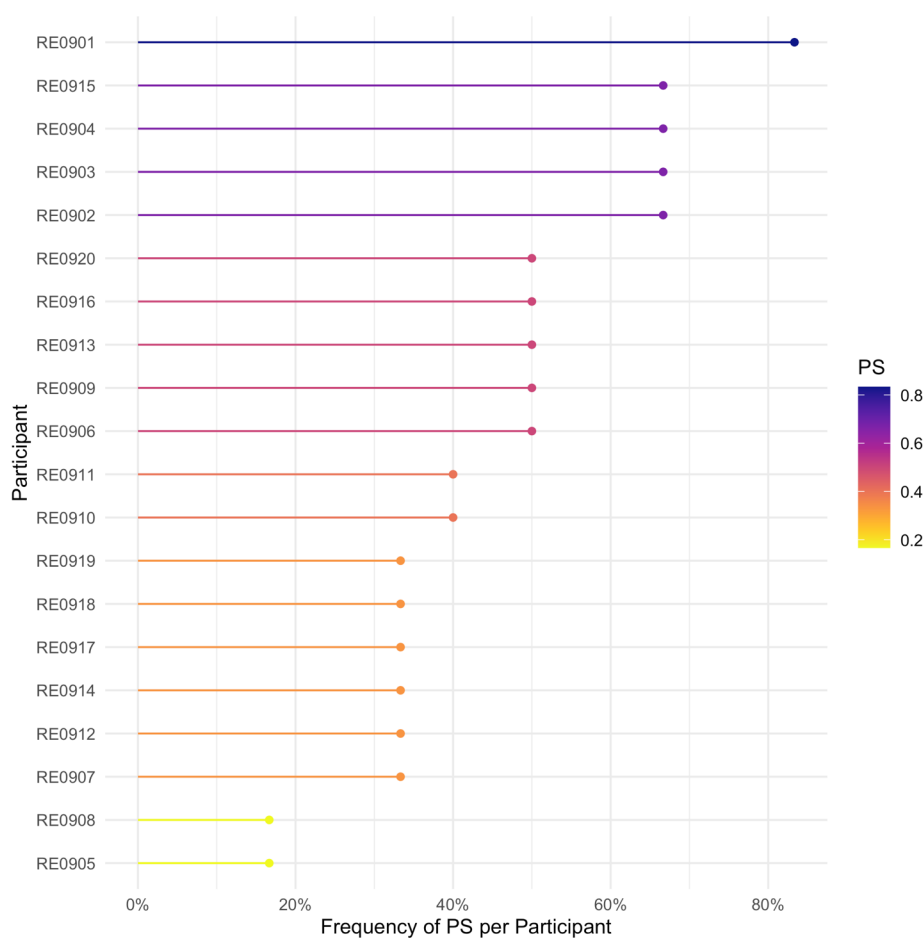
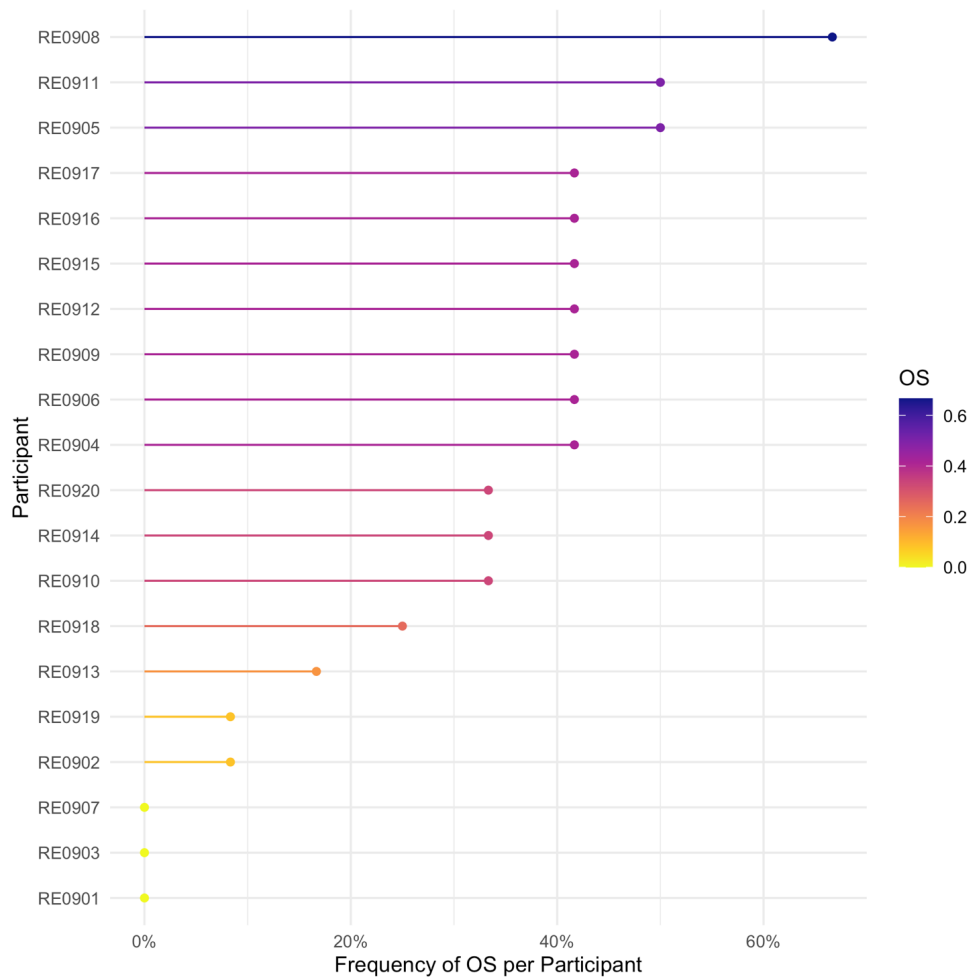


Figure 69 shows the frequency of PS word order produced by each participant, as it has been defined in this thesis, with the direct object NP at the end, following the particle. As Figure 69 shows, there is considerably less variation in particle structure in production than in HNPS, as was shown in Figure 68, but the range from top to bottom is still very wide, with some speakers producing PS in fewer than 20% of their utterances and others in 60-80%. Figure 70 shows a similar distribution for OS.

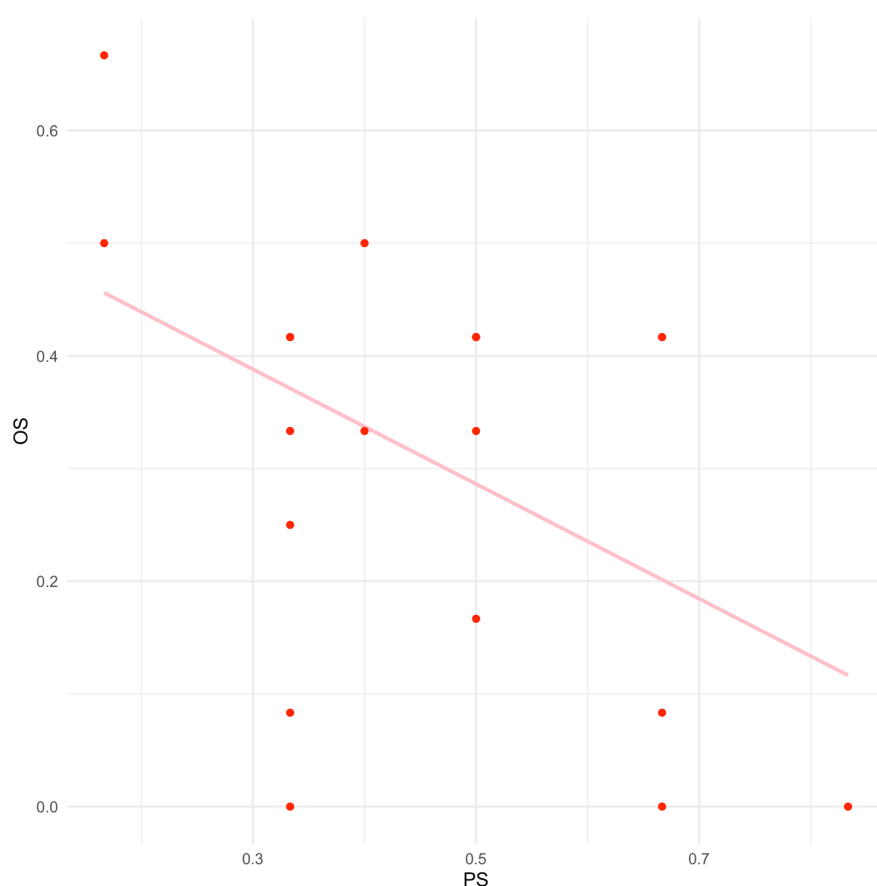
Figure 70 – Frequency of OS in production per speaker.



It is interesting in itself that some speakers are more likely to shift NPs than others, but it raises questions as to whether this applies only to individual structures for each speaker or whether it applies to NP movement in general, i.e., if a speaker frequently uses HNPS, is that same speaker also likely to use other shifts, such as OS or PS?

A simple correlation model was fit where the frequency of OS and PS in production per individual speaker was compared. The analysis revealed a significant correlation between the frequency of OS and PS word order in production ($t=-2.261$, $p=0.036$), as illustrated in Figure 71.

Figure 71 – Distribution of OS vs PS in production per speaker.



The chart in Figure 71 shows a negative correlation between particle structures where the NP is at the end of the clause and OS word order. This means that speakers who produced utterances with the OS word order more often than other speakers were also more likely to have the NP preceding the particle in particle structures, or less likely to have the NP at the end of the clause. This is an interesting finding on its own as it has been argued that PS is a type of leftward movement, rather than rightward movement like HNPS, and is therefore more similar to OS than HNPS (see discussion and references cited in section 2.2.5). In any case, a sentence where the direct object NP precedes the particle resembles OS word order in surface structure. A significant correlation was not found between the other structures in this experiment, i.e., PS vs HNPS or OS vs HNPS, but it would be interesting to investigate further potential correlation between different types of NP movement.

The results shown in this section suggest that some speakers move constituents more frequently than other speakers and that is something worth looking further into. The results described here show a correlation between two types of movement that have been described to be of similar nature, but a similar pattern could be found between other syntactic structures. E.g., is a speaker who frequently uses HNPS also likely to use Left Dislocation or is correlation only found between similar structures

like OS vs PS? What makes one speaker more likely to move syntactic constituents than the next speaker? One possible suggestion is that speakers that read and/or write a lot, or work with text in some way, are more used to variation in word order of this type (assuming that one or more of these structures are commonly found in organised text) and therefore more likely to move syntactic constituents than others. This is only speculation but if that were the case, it would maybe be possible to connect movement frequency to cognitive factors, such as processing memory or social factors, such as work, social class, and educational background. It would be very interesting to explore this possibility, but the experiments described in this thesis cannot provide any answers on this matter. A much larger experiment that tests more syntactic structures against each other but includes much fewer test factors than were included in this study, could answer these questions by mapping out speakers' "movement profile" against other factors, e.g., social factors that were not included in this survey. Social factors were not a big part of this study as it was not anticipated that they would influence the results, nor has that been suggested in the literature. All the experiments were controlled for the age and gender of the participants and these factors did not show any significant effect. In a larger experiment it would be possible to test for more detailed social variables, such as educational background, social and economic status, and place of residence/upbringing, to map into the speakers' profiles. None of these questions were the objective of the study described in this thesis and they cannot be answered here but will be left for future research.

6.3. Conclusions

As discussed in Chapter 5, it was difficult to compare results from identical studies in Icelandic and Faroese, as the results showed that the syntactic structures with shifted word order are more restricted in Faroese than in Icelandic. The Icelandic results revealed that multiple weight predictors may apply for the same structures in various situations and sometimes more than one weight predictor is at work at once. These effects were relatively easy to detect as variation in word order is common in these structures and generally well received by speakers. Much fewer Faroese speakers accept sentences with shifted word order and even fewer produce them and, therefore, there is less variation in the data to analyse. Nonetheless, similar weight effects were detected in Faroese as were found in Icelandic, particularly the effects of absolute and relative heaviness.

While weight effects seem to be similar in the two closely related languages, it is clear from these results that weight cannot be reduced to a single definition. Weight predictors do not apply in the same way on all levels, i.e., in production planning vs acceptability evaluations, and a single weight predictor is not always distinguishable from the next one, as they often seem to

interact with each other. The results of the experiments described in this thesis show that most of the same weight effects that are detected in speakers' evaluations apply in language production as well, suggesting that their effect is quite general.

The results from these experiments compared suggest that while weight effects are important in speakers' acceptability evaluation, they are more important in production planning. Some weight predictors are more important than others and therefore they have a strong effect across all types of experiments. NP length, measured by number of words, has proved to be an important weight predictor on all levels, but this is a weight predictor that can potentially mask other weight predictors, including lexical stresses. Relative weight effects have shown up as the most consistent weight predictor throughout all the experiments described in this study, including the acceptability surveys, showing that this effect is not only important for production planning but is strongly connected to the acceptability and processing of weight-sensitive syntactic structures. The results from these experiments have shown that the syntactic complexity of the NP, measured by whether it includes a relative clause or not, is an important weight predictor in production planning, but not as important when speakers evaluate the acceptability of sentences with HNPS word order. The results from the production experiment in particular have drawn out the importance of syntactic complexity as a weight predictor for production planning and processing. This does not exclude the possibility that syntactic complexity as a weight predictor is also important for parsing, but the experiments used in this study are not really suitable to answer that question.

The fact that both word count and prosodic heaviness, measured in phrasal stress, have been proved to be important weight predictors in both acceptability evaluations and production, suggests that weight effects are at least partly a surface phenomenon and operate in Phonetic Form rather than being syntactic in nature. However, the results have also shown that NP complexity, measured by whether it includes a relative clause or not, affects its placement in the sentence, which suggests that weight effects are very influential in production planning, for the benefit of the speaker: When the speaker is having difficulties processing a deeply embedded structure for production, weight effects can help the speaker ameliorate the situation. In a situation where syntax can produce two options for word order, like in the structures described in this thesis, the speaker is faced with two options in production and any kind of pressure that can push the speaker towards one of the two options may be considered at that stage. This pressure may factor in various aspects that are connected to the production and processing of different modules of the language. In this way, weight effects are (at least partly) a surface phenomenon, as pointed out above. They do not interfere with what syntax produces or what it does not produce

but they are connected to different levels of language because production and processing affect sentences in various ways. The results discussed in this thesis have shown that weight effects cannot be reduced to a single measure and that various weight predictors can interact. It is therefore not unreasonable to assume that weight effects do not serve a singular purpose.

The results described here show the importance of using reliable research methods and different types of experiments for linguistic theory. The weight factors that were the main object of this study were tested in different types of sentence structure with various methods. Each method provides a slightly different approach to explore how the linguistic phenomena in question are manifested in the language and speakers' knowledge and use of it. If the same results show up reliably across a variation of tasks and studies, it is much more likely that they represent a convergence of speakers' fundamental underlying knowledge of language. If a variation of tasks and studies provide different results, it is likely that the linguistic phenomena in question, in this case weight effects, do not apply in the same way across all levels of language, e.g., in production planning vs evaluation of acceptability. The experiments described in this thesis have provided robust empirical evidence of both kinds, offering a more detailed description of weight effects and variation in word order across different levels of language than a single type of task, focusing on only one language could ever do.

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Appendix A: Instructions and stimuli for the acceptability surveys

I. Icelandic acceptability survey 2017

Kæri þátttakandi!

Þakka þér fyrir að taka þátt í þessari könnun um íslenskt mál. Markmið þessarar könnunar er að skoða ýmis tilbrigði í íslenskri setningagerð. Í könnuninni er fyrst og fremst miðað við talmál og við biðjum þátttakendur að athuga:

- Það er ekki verið að kanna hvað þátttakendur telja að sé rangt eða rétt mál.
- Það er ekki verið að kanna hvað fólki hefur verið kennt að sé rétt og gott mál.
- Það er ekki verið að kanna hvað þátttakendur telja að sé góður stíll eða fari vel í ritmáli.
- Hér er verið að kanna hvað fólki finnst að það segi sjálft eða geti sagt.

Á næstu síðum sérðu setningar sem við biðjum þig að leggja mat á. Aftur ítrekum við að þú átt fyrst og fremst að miða við það sem þér finnst venjulegt mál. Sum dæmi í könnuninni eru kannski alveg ótæk að þínu mati, önnur alveg eðlileg og einhver eru kannski mitt á milli. Við biðjum þig að meta setninguna á eftirfarandi máta:

Já = Eðlileg setning. Svona get ég vel sagt.
? = Vafasöm setning. Svona gæti ég líklega ekki sagt.
Nei = Óeðlileg setning. Svona get ég ekki sagt.

Auk þess geturðu skrifað athugasemdir við setninguna ef þér finnst ástæða til þess (en það er ekki nauðsynlegt). Til dæmis ef þér finnst setningin eðlileg en kannski eru einhver orð í henni sem þú myndir ekki nota í daglegu tali. Hér sérðu dæmi um setningar sem gætu birst í könnuninni. Flestum íslenskum málhöfum finnst setning a) eðlilegt mál en fáir myndu sætta sig við setningu b):

- a. Ólafur var of seinn í vinnuna í dag, því bíllinn hans fór ekki í gang.
- b. Ólafur var of seinn í vinnuna í dag, því bíllinn sinn fór ekki í gang.

Eins og þú sérð munar oft litlu á setningunum svo þú verður að lesa þær vel til að geta metið þær. Mundu að við viljum vita hvað þér finnst í raun og veru. Þetta er ekki próf!

Á fyrstu síðunni biðjum við þátttakendur að svara nokkrum spurningum um persónuhagi sína, t.d. um aldur, kyn og búsetu. Þessar upplýsingar auðvelda okkur að vinna úr svörum þátttakenda og flokka þau t.d. eftir landshlutum og aldurshópum. Svör þátttakenda er ekki hægt að rekja til þeirra.

1. Í sumar koma á námskeiðið margir krakkar.
2. Seinast mættu á bjórkvöldið þrír nemendur.
3. Um síðustu helgi flaug til Marokkó gamall vinur.
4. Ég geymi fyrir börnin nokkrar kökur.
5. Mamma keypti handa Sigga nýjar buxur.
6. Ólafur skrifaði í gær nokkur bréf.
7. Árlega fara til heitra suðlægra landa í Evrópu sjö til átta hundruð íslenskir ferðamenn.
8. Í fyrra leituðu til félags íslenskra nema í útlöndum um sjötíu nemendur úr fimmtán skólum.
9. Í síðustu viku mættu á opna fundinn fyrir unga höfunda bæði virkir nemendur og starfandi skáld.
10. Ég eldaði fyrir nokkra góða vini úr vinnunni heilt læri með fallegum rauðum paprikum.
11. Foreldraráð keypti fyrir alla krakkana í tíunda bekk margar dýrar bækur og nýjar spjaldtölvur.
12. Listmálarinn málaði á gamla vegg í úthverfum bæjarins stórar og fallegar myndir af tunglinu.
13. Um helgina keppa á mótinu ungir iðkendur frá Ármanni og Gróttu.
14. Í fyrra komu til bæjarins nokkrir litlir leikhópar frá öðrum löndum.
15. Venjulega mæta á fundina nokkur hundruð ungar konur úr hverfinu.
16. Sigríður les á morgnana ýmiss konar nýleg tímarit um tísku.
17. Við skoðuðum á safninu fágætar gamlar styttur úr hvítum steini.
18. Þjófarnir stálu frá Ólöfu gömlum fallegum úrum og dýru skarti.
19. Á vorin synda á litlu tjörninni í gamla miðbænum hvítir svanir.
20. Á laugardaginn mættu á árlega samkomu kvenna í listum margar konur.
21. Í fyrra fóru á spennandi námskeið um vistvæna hugsun nokkrir nemar.
22. Siggí eldaði fyrir nokkra gamla vini úr skólanum þykkar steikur.
23. Ólöf keypti handa öllum fjórum litlu frænkum sínum fallega skó.
24. Ég las fyrir síðasta próf í sögu Evrópu margar bækur.
25. Í sumar koma á námskeiðið margir krakkar.
26. Seinast mættu á bjórkvöldið þrír nemendur.
27. Um síðustu helgi flaug til Marokkó gamall vinur.
28. Á seinasta misseri leituðu til ykkar margir nemar.
29. Um helgina voru hjá okkur hressir krakkar.
30. Í fyrra komu til okkar góðir gestir.
31. Ég geymi fyrir börnin nokkrar kökur.
32. Mamma keypti handa Sigga nýjar buxur.
33. Ólafur skrifaði í gær nokkur bréf.
34. María bakaði fyrir okkur góða köku.
35. Jón samdi fyrir okkur eina vísu.
36. Ég keypti fyrir ykkur nokkrar bækur.

II. Icelandic acceptability surveys 2020–2021

Kæri þátttakandi!

Þakka þér fyrir að taka þátt í þessari könnun um íslenskt mál. Vinsamlegast lestu leiðbeiningarnar vel áður en þú hefst handa. Markmið þessarar könnunar er að skoða ýmis tilbrigði í íslenskri setningagerð. Í könnuninni er fyrst og fremst miðað við talmál og við biðjum þátttakendur að athuga:

- Það er ekki verið að kanna hvað þátttakendur telja að sé rangt eða rétt mál.
- Það er ekki verið að kanna hvað fólki hefur verið kennt að sé rétt og gott mál.
- Það er ekki verið að kanna hvað þátttakendur telja að sé góður stíll eða fari vel í ritmáli.
- Það er verið að kanna hvað fólki finnst að það geti sjálft sagt.

Á næstu síðum sérðu setningar sem við biðjum þig að leggja mat á. Aftur ítrekum við að þú átt fyrst og fremst að miða við það sem þér finnst venjulegt mál. Sum dæmi í könnuninni eru kannski alveg ótæk að þínu mati, önnur alveg eðlileg og einhver eru kannski mitt á milli.

Mundu að þú átt fyrst og fremst að hugsa um setningagerðina, ekki hvort setningin er sönn eða hvort þér finnst líklegt að þú myndir segja hana. T.a.m. finnst flestum íslenskum málhöfum setningar (1a) og (1b) eðlilegar, þótt þeir þekki kannski enga Margréti og myndu frekar nota orðið „bíll“ en „bifreið“. Athugaðu einnig að setningarnar birtast án greinarmerkja.

(1a) Ég hef alltaf elskað Margréti

(1b) Ólafur lagði bifreiðinni

Við biðjum þig að meta setningarnar á skalanum 1-5 þar sem:

1 = Óeðlileg setning. Svona get ég alls ekki sagt.

5 = Eðlileg setning. Svona get ég vel sagt.

Hér sérðu dæmi um setningar sem gætu birst í könnuninni. Flestum íslenskum málhöfum finnst setning (2a) eðlilegt mál en fáir myndu sætta sig við setningu (2b):

(2a) Bíllinn hans fór ekki í gang í morgun

(2b) Bíllinn sinn fór ekki í gang í morgun

Eins og þú sérð munar oft litlu á setningunum svo þú verður að lesa þær vel til að geta metið þær. Mundu að við viljum vita hvað þér finnst í raun og veru. Þetta er ekki próf!

Í lok könnunarinnar biðjum við þátttakendur að svara nokkrum spurningum um aldur, kyn og menntun. Þessar upplýsingar auðvelda okkur að flokka og greina niðurstöður könnunarinnar. Svör þátttakenda er ekki hægt að rekja til þeirra.

1. Óli las blaðið ekki.
2. Sigga man ljóðið ekki.
3. Ég þekki manninn ekki.
4. Við sáum ógeðslega ljótu myndina ekki.
5. Ég las rosalega löngu greinina ekki.
6. Ólöf borðaði alla girnilegu ostana ekki.
7. Gunna las bréfið alveg áreiðanlega ekki.
8. Ég fékk pakkann alveg ábyggilega ekki.
9. Óli þekkir manninn alveg áreiðanlega ekki.
10. Við færðum stóru amerísku skápana alveg ábyggilega ekki.
11. Hann man löngu leiðinlegu söguna alveg ábyggilega ekki.
12. Jón hitti gömlu furðulegu konuna alveg áreiðanlega ekki.
13. Magni sá púðluhundana sem tóku þátt ekki.
14. Ég keypti aðventukransinn sem var brotinn ekki.
15. Börnin borðuðu terturnar sem brögðuðust illa ekki.
16. Sigríður les á morgnana ýmiss konar nýleg tímarit um tísku.
17. Við skoðuðum á safninu fágætar gamlar styttur úr hvítum steini.
18. Þjófarnir stálu frá Ólöfu fallegum gömlum úrum og dýru skarti.
19. Ég las fyrir börnin bók sem fjallar um brjálaða sjóræningja.
20. Margrét málaði fyrir safnið myndir sem öllum þóttu afar fallegar.
21. Við söfnuðum í hrúguna laufblöðum sem höfðu fallið á jörðina.
22. Við settum allar rauðu kartöflurnar niður.
23. Afi setti niður finu rauðu rófurnar og þroskuðu laukana.
24. Dyravörðurinn henti út háværu fullu nemendunum með falska gítarinn.
25. Unga konan las upp löngu sorglegu söguna um týndu drengina.
26. Ferðalangurinn las löngu fróðlegu frásögnina um undur Japans upp.
27. Kaupmaðurinn henti aumingja gömlu konunni með skrautlega hattinn út.
28. Krakkarnir settu allt dásamlega grænmetið og fallegu blómin niður.
29. Dyravörðurinn henti út fyllibyttunni sem ældi.
30. Börnin settu niður krókusana sem ilmuðu.
31. Við hentum nemendunum sem svindluðu út.
32. Árni las keppendurna sem sigruðu upp.
33. Ég setti kartöflurnar sem spíruðu niður.
34. Leigusaliinn henti út leigjendunum sem höfðu ekki borgað leiguna.
35. Bóndinn setti niður gulrætur sem kanínurnar í garðinum átu.
36. Kennarinn las upp nöfn nemendanna sem voru á listasafninu.
37. Þjálfararnir hentu óþekku krökkunum sem stálust í sundlaugina út.
38. Fréttamaðurinn las nöfn fórnarlambanna sem dóu í snjóflóðinu upp.
39. Mamma setti laukana sem urðu að fallegum túlípönum niður.
40. Leigusaliinn henti út leigjendunum sem höfðu ekki borgað leiguna.
41. Bóndinn setti niður gulrætur sem kanínurnar í garðinum átu.
42. Kennarinn las upp nöfn nemendanna sem voru á listasafninu.
43. Þjálfararnir hentu óþekku krökkunum sem stálust í sundlaugina út.
44. Fréttamaðurinn las nöfn fórnarlambanna sem dóu í snjóflóðinu upp.
45. Mamma setti laukana sem urðu að fallegum túlípönum niður.
46. Kennarinn las upp nemendurna sem dúxuðu.

III. Faroese acceptability survey 2017

Góði luttakari!

Túsund takk fyri at tú tímir at taka lut í hesi kanningini um føroyskt mál.

Endamálið við kanningini er at hyggja at ymiskum føroyskum setningsbygnaðum. Í kanningini er tað fyrst og fremst talumálið, sum vit eru áhugað í, og vit biðja luttakarar hava hetta í huga:

- Vit kanna ikki, hvat tú heldur vera rætt ella skeivt mál.
- Vit kanna ikki, hvat fólk hava lært at vera rætt og gott mál.
- Vit kanna ikki, hvat tú heldur vera góður málsligur stíllur ella hvat riggar væl í skriftmáli.
- Vit vilja vita, hvat tú heldur, at tú sjálv/ur hevði sagt ella hevði kunnað sagt.

Á teimum næstu síðunum fert tú at síggja setningar, sum tú skalt meta um. Vit endurtaka: tú skalt fyrst og fremst samanbera við tað, sum tú heldur vera vanligt mál. Tú heldur kanska nakrar av setningunum í kanningini vera fullkomiliga ómøguligar at siga, meðan aðrir kunnu vera púra vanligir, ella kanska onkrastaðni mitt ímillum hesi. Vit biðja teg um at meta um setningarnar á hendan hátt:

Ja = Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.

? = Ivasamur setningur. Soleiðis hevði eg neyvan sagt.

Nei = Ómøguligur setningur. Soleiðis hevði eg ikki sagt.

Til ber eisini at skriva viðmerkingar til setningarnar, um tú heldur tað vera neyðugt. Til dømis um tú ikki hevði brúkt okkurt orð í einum setningi, hóast setningurin annars tykist vera vanligur.

Niðanfyrri eru dømi um, hvussu setningar í kanningini kunnu síggja út. Flestir føroyingar halda setning (a) vera vanligt mál, men fáir høvdu góðtikið setning (b):

a. Hon spurdi teir, um teir ikki áttu bát.

b. Hon spurdi teir, um áttu teir ikki bát.

Sum tú sært, so er ofta lítil munur millum setningarnar, so tú mást lesa teir væl fyri at kunna meta um teir. Minst til, at vit vilja vita, hvat tú í roynd og veru heldur. Hetta er eingin próvtøka!

Á fyrstu síðuni biðja vit luttakararnar um at svara nøkrum spurningum um persónlig viðurskifti, t.d. aldur, kyn og hvar tey búgva. Hesar upplýsingarnar gera tað lættari hjá okkum at arbeiða við svarunum, sum tit geva okkum, og at flokka tey eftir t.d. landsluti og aldursbólki. Tað ber ikki til hjá nøkrum at finna út av, hvat hvør luttakari hevur svarað. Kanningin tekur 20-30 minuttir.

1. Seinasta vikuskiftið flugu til Danmarkar gamlir vinir.
2. Í summar fara til Svøríkis nógvir dreingir.
3. Síðsta vetur vóru í flokkinum tólv næmingar.
4. Anna keypti á útsölu nýggjar buksur.
5. Eg fjaldi fyri Beintu nakrar kakur.
6. Eftir gøtuni runnu móti okkum triggir hundar.
7. Í gjár bíðaðu eftir okkum fronsk miðlafólk.
8. Í morgun sang fyri okkum eitt gentukór.
9. Eg fann fyri tykkum nakrar bøkur.
10. Høgni sang fyri okkum triggjar sangir.
11. Jógvan yrkti fyri okkum eina yrking.
12. Í fjør komu á almenna ráðstevnu um nýggja tøkni umleið hálvfjerðs næmingar úr fimtan skúlum.
13. Í seinastu viku komu á almennan fund fyri ungar høvundar bæði virknir limir og framfús listafólk.
14. Hvørt ár flúgva til sólríkar strendur í heitu londunum átta til níggju túsund íslendsk ferðafólk.
15. Eg borðreiddi fyri nøkrum góðum vinum úr skúlanum ræstan fisk við saltaðum spiki afturvið.
16. Foreldrini lósu fyri øllum næmingum í fjórða flokki bókina um Hannibal og horvna hundin.
17. Listakonan málaði á gamlar veggir í Tórshavnar kommunu stórar og vakrar málningar av mánanum.
18. Vanliga renna um summarið nakrar hundrað ungar kvinnur í Havnini.
19. Um vikuskiftið spæla í dystinum ung ítróttafólk úr Víkingi og TB.
20. Í fjør komu til Havnar nakrir kendir listamenn úr øðrum londum.
21. Beinta lesur um morgnarnar øll møgulig stuttlig tíðarrit um móta.
22. Vít sóu á savninum avbera nógvar myndir av gomlum kirkjum.
23. Tjóvarnir stjólu úr handlinum átta gomul lummaur og fyra armbond.
24. Í gjár vóru á spennandi skeiði um føroyska mentan nógvir danir.
25. Um várið svimja á lítlu tjørnini í gamla miðbýnum hvítir svanir.
26. Leygardagin vóru á fundi um umstøður teirra lesandi tjúgu mannfólk.
27. Turið keypti í lítla nýggja handlinum í miðbýnum nýggjar skógvar.
28. Eg las til seinastu royndina í donskum máli nógvar bøkur.
29. Jógvan stjól frá einum góðum gomlum íslenskum vini nógvan pening.

IV. Faroese acceptability survey 2020

Góði luttakari!

Túsund takk fyri at tú tímir at taka lut í hesi kanningini um føroyskt mál. Vinarliga les vegleiðingina væl, áðrenn tú byrjar kanningina. Endamálið við kanningini er at hyggja at ymiskum tilbrigdum í føroyskum setningsbygnaði. Í kanningini er tað fyrst og fremst talumálið, sum vit eru áhugað í, og vit biðja luttakarar hava hetta í huga:

- Vit kanna ikki, hvat tú heldur vera rætt ella skeivt mál.
- Vit kanna ikki, hvat tú hevur lært vera rætt og gott mál.
- Vit kanna ikki, hvat tú heldur vera góður málsligur stíllur ella hvat riggar væl í skriftmáli.
- Vit vilja vita, hvat tú heldur, at tú sjálv/ur hevði sagt ella hevði kunnað sagt.

Á teimum næstu síðunum fert tú at síggja setningar, sum tú skalt meta um. Vit endurtaka: tú skalt fyrst og fremst samanbera við tað, sum tú heldur vera natúrligt mál.

Tú heldur kanska nakrar av setningunum í kanningini vera fullkomiliga ómøguligar at siga, meðan aðrir kunnu vera púra natúrligir ella kanska onkrastaðni mitt ímillum hesi.

Minst til, at tú fyrst og fremst eigur at hugsa um setningsbygnaðin. Tú skalt ikki meta setningin út frá, um hann er sannur, ella um tú heldur, at tú hevði kunnað sagt soleiðis. Til dømis halda flestir føroyingar setningar (1a) og (1b) vera natúrligar, hóast teir kanska ongan Jónsvein kenna og kanska heldur høvdu brúkt orðið “kreft” enn “krabbamein.” GG: Setningarnir hava einki punktum ella komma.

(1a) Eg havi altíð elskað Jónsvein

(1b) Margreta doyði av krabbameini

Kanningin er býtt sundur í tveir høvuðspartar:

1. Í fyrra partinum biðja vit teg meta um nakrar setningar. Hetta er stigin, tú skalt brúka:

1 = Ómøguligur setningur. Soleiðis hevði eg ikki sagt.

5 = Vanligur setningur. Soleiðis hevði eg væl kunnað sagt.

Her sært tú dømi um setningar, sum kunnu vera í kanningini. Flestir føroyingar halda, at setningur (2a) ljóðar natúrligur, men fáir høvdu góðtikið setning (2b):

(2a) Bilur hansara fór ikki í gongd í morgun

(2b) Bilur sín fór ikki í gongd í morgun

Sum tú sært, so er ofta lítil munur millum setningarnar, so tú mást lesa teir væl fyri at kunna meta um teir. Minst til, at vit vilja vita, hvat tú í roynd og veru heldur. Hetta er eingin próvtøka!

2. Í seinna partinum av kanningini vísa vit tær tvær útgávur av einum setningi og biðja teg velja tann setningin, sum tú heldur vera tann betra. Onkuntíð heldur tú bara ta einu útgávuna vera natúrliga, meðan tú aðrar tíðir heldur báðar útgávurnar vera natúrligar. Tí geva vit tær triggjar valmøguleikar hvørja ferð:

a) Okkum dāmði ikki pylsurnar

b) Okkum dāmdu ikki pylsurnar

a) og b) eru líka góðir

Tá kanningin er liðug, verður tú biðin um at svara nøkrum spurningum um persónlig viðurskifti, t.d. aldur, kyn og hvar tú býrt. Hesar upplýsingar gera tað lættari hjá okkum at arbeiða við svørinum, sum tú gevur okkum, og at flokka tey eftir t.d. landsluti og aldursbólki. Tað ber ikki til hjá nøkrum at finna út av, hvat hvør luttakari hevur svarað.

1. Óli las blaðið ekki.
2. Sigga minnst Sangin ekki.
3. Eg kenndi manninn ekki.
4. Vit sóu hasar gomlu myndirnar ekki.
5. Eg las hasa longu greinina ekki.
6. Óluva át allar ræstu ostarnar ekki.
7. Gunna las brævið so sanniliga ekki.
8. Eg fékk pakkann so sanniliga ekki.
9. Óli kennir manninn so sanniliga ekki.
10. Hann minnst hasa longu söguna so sanniliga ekki.
11. Vit flyta hasar tungu taskurnar so sanniliga ekki.
12. Jón mætti hinum gamla manninum so sanniliga ekki.
13. Jóna skrifaði navnið niður.
14. Anna koyrði bilin inn.
15. Eg tók lagið upp.
16. Eg vaskaði allar skitnu tallerkarnar upp.
17. Sanna koyrði neyðars ússaliga hundin út.
18. Eg skrifaði allar hasar yrkingarnar niður.

Appendix B: IcePaHC searches

I. HNPS: Search for direct objects in HNPS word order vs direct objects in situ

define:

finmv VB[PD][IS]

IP-(MAT|SUB|INF) idoms VB.*

hnps:1

VB.* sprec PP

PP sprec NP-OB1

hnps:0

VB.* sprec NP-OB1

NP-OB1 sprec PP

type:pro

NP-OB1 idoms PRO-.*

type:other

NP-OB1 idoms .*

rel:1

NP-OB1 idoms CP-REL

rel:0

NP-OB1 idoms .*-.*

meta:

node nodewords NP-OB1 PP

node nodestring NP-OB1 PP

node label VB.*

text century

II. HNPS: Search for subjects in HNPS word order vs subjects in situ

define:

finmv VB[PD][IS]

IP-(MAT|SUB|INF) idoms VB.*

NP-SBJ domswords> 0

hnps:1

VB.* sprec PP

PP sprec NP-SBJ

hnps:0

NP-SBJ sprec VB.*

VB.* sprec PP

type:pro

NP-SBJ idoms PRO-.*

type:other

NP-SBJ idoms .*

rel:1

NP-SBJ idoms CP-REL

rel:0

NP-SBJ idoms .*-.*

meta:

node nodewords NP-SBJ PP

node nodestring NP-SBJ PP

node label VB.*

text century

III. Particle Shift: Search for direct objects that precede or follow a particle

IP-(MAT|SUB) idoms NP-SBJ
NP-SBJ hassister NP-OB1
NP-SBJ domswords> 0
NP-OB1 domswords> 0

final: 1
VB.* sprec RP
RP sprec NP-OB1

final: 0
VB.* sprec NP-OB1
NP-OB1 sprec RP

rel:1
NP-OB1 idoms CP-REL

rel:0
NP-OB1 idoms .*-.*

meta:
node nodestring NP-OB1
node nodewords NP-OB1
node nodestring RP NP-OB1
node nodewords RP NP-OB1
node nodestring VB*
node nodewords VB*

IV. Left Dislocation: Search for left-dislocated subjects vs subjects in situ

IP-(MAT/SUB) idoms NP-SBJ.*
NP-SBJ.* domswords> 0

left:1
NP-SBJ.* haslabel NP-SBJ-RSP
NP-SBJ.* hassister NP-LFD

left:0
NP-SBJ.* haslabel NP-SBJ
NP-SBJ.* idoms N.*

meta:
node nodewords NP-SBJ.* NP-LFD
node nodestring NP-SBJ.* NP-LFD
text century
text genre

V. Left Dislocation: Search for left-dislocated direct objects vs direct objects in situ

```
IP-(MAT|SUB) idoms NP-OB1.*  
NP-OB1.* domswords> 0
```

```
left:1  
NP-OB1.* haslabel NP-OB1-RSP  
NP-OB1.* hassister NP-LFD
```

```
left:0  
NP-OB1.* haslabel NP-OB1  
NP-OB1.* idoms N.*
```

```
meta:  
node nodewords NP-OB1.* NP-LFD  
node nodestring NP-OB1.* NP-LFD  
text century  
text genre
```


Appendix C: Instructions and stimuli for the production tasks

I. Instructions and stimuli for the production task in Icelandic

Kærar þakkir fyrir að taka þátt í þessari könnun. Hér er verið að kanna ýmis tilbrigði í íslensku og tengsl milli máls og minnis. Í könnuninni er það fyrst og fremst talmál sem við höfum áhuga á og við biðjum þátttakendur að hafa eftirfarandi í huga:

- Það er ekki verið að kanna hvað þátttakendur telja að sé rangt eða rétt mál.
- Það er ekki verið að kanna hvað fólki hefur verið kennt að sé rétt og gott mál.
- Það er ekki verið að kanna hvað þátttakendur telja að sé góður stíll eða fari vel í ritmáli.
- Það er verið að kanna hvað fólki finnst að það segi sjálft eða geti sagt.

Nú færðu að sjá nokkrar setningar. Á skjánum birtist setning í þremur hlutum. Setningarhlutinn sem er í miðjunni er alltaf byrjunin á setningunni og hinir setningarhlutarnir birtast fyrir ofan og neðan. Þú átt að lesa setninguna í hljóði í þeirri röð sem þér finnst eðlilegust. Svo átt þú að leggja setninguna á minnið eins og þú settir hana saman. Þegar þú ert búin/n að leggja setninguna á minnið, verður skjárinn tómur í nokkrar sekúndur. Svo birtist plúsmerki á skjánum og þá átt þú að segja setninguna eins og þú manst hana.

Fyrst koma nokkrar æfingarsetningar.

Nú byrjar sjálf könnunin.

Ef þörf er á: Mundu að bíða eftir plúsmerkinu. Þú átt að lesa í hljóði. Þú mátt ekki segja setninguna fyrr en plúsmerkið birtist á skjánum. Ýttu á bilstöngina til að halda áfram. Leggðu setninguna á minnið. Þegar þú ert viss um að þú munir setninguna skaltu ýta á bilstöngina.

Nú er þessum hluta lokið. Að lokum biðjum við þig að fylla út þetta eyðublað. Upplýsingarnar verða aðeins notaðar við úrvinnslu gagnanna og það er ekki hægt að rekja þær til þátttakenda.

Þá er könnuninni lokið. Bestu þakkir fyrir hjálpina!

1. Um síðustu helgi flaug til Marokkó gamall vinur.
2. Seinast mættu á björkvöldið þrír nemendur.
3. Í sumar koma á námskeiðið margir krakkar.
4. Á skrifstofunni bíða eftir ykkur nokkrar stúlkur
5. Á öskudaginn sungu fyrir okkur kátir krakkar
6. Um helgina voru meðal okkar góðir gestir
7. Ólafur skrifaði fyrir ritið nokkur bréf.
8. Mamma keypti handa Óla nýjar buxur.
9. Við geymum fyrir börnin nokkrar kökur.
10. Kalli samdi fyrir okkur eina vísu.
11. Sigga keypti fyrir ykkur nokkrar bækur.
12. María bakaði fyrir okkur góða köku.
13. Rétt áðan hlupu yfir túnið börn
14. Í morgun féll á jörðina snjór
15. Í morgun söng fyrir okkur kór
16. Áðan keyrði framhjá okkur bíll
17. Ég keypti fyrir köttinn búr
18. Sigríður eldaði fyrir börnin graut
19. Símon orti fyrir okkur ljóð
20. Eiríkur bakaði fyrir okkur brauð
21. Árlega fara til heitra suðlægra landa í Evrópu sjö til átta hundruð íslenskir ferðamenn
22. Í fyrra leituðu til félags íslenskra nema í útlöndum um sjötíu nemendur úr fimmtán skólum
23. Í síðustu viku mættu á opna fundinn fyrir unga höfunda bæði virkir nemendur og starfandi skáld
24. Ég eldaði fyrir nokkra góða vini úr vinnunni heilt læri með fallegum rauðum paprikum
25. Foreldraráð keypti fyrir alla krakkana í tíunda bekk margar dýrar bækur og nýjar spjaldtölvur
26. Listmálarinn málaði á gamla vegg í úthverfum bæjarins stórar og fallegar myndir af tunglinu
27. Um helgina keppa á mótinu ungir iðkendur frá Ármanni og Gróttu.
28. Í fyrra komu til bæjarins nokkrir litlir leikhópar frá öðrum löndum.
29. Venjulega mæta á fundina nokkur hundruð ungar konur úr hverfinu.
30. Sigríður les á morgnana ýmiss konar nýleg tímarit um tísku.
31. Við skoðuðum á safninu fágætar gamlar styttur úr hvítum steini.
32. Þjófarnir stálu frá Ólöfu fallegum gömlum úrum og dýru skarti.
33. Á morgun mæta í útvarpið karlar sem ferðast eingöngu á þríhjól.
34. Í fyrra sungu í keppninni krakkar sem æfa í gamla söngskólanum
35. Í sumar fljúga til Þýskalands flugvélar sem voru framleiddar á Spáni
36. Ég las fyrir börnin bók sem fjallar um brjálaða sjóræningja
37. Margrét málaði fyrir safnið myndir sem öllum þóttu afar fallegar
38. Við söfnuðum í hrúguna laufblöðum sem höfðu fallið á jörðina
39. Á vorin synda á litlu tjörninni í gamla miðbænum hvítir svanir.
40. Á laugardaginn mættu á árlega samkomu kvenna í listum margar konur.
41. Í fyrra fóru á spennandi námskeið um vistvæna hugsun nokkrir nemar.
42. Siggi eldaði fyrir nokkra gamla vini úr skólanum þykkar steikur.
43. Ólöf keypti handa öllum fjórum litlu frænkum sínum fallega skó.

44. Ég las fyrir síðasta próf í sögu Evrópu margar bækur.
45. Jóna skrifaði nafnið niður
46. Sigga færði bílinn til
47. Ég tók lagið upp
48. Við settum allar rauðu kartöflurnar niður
49. Agnes henti vesalings gamla hundinum út
50. Skáldið las langa leiðinlega ljóðið upp
51. Óli las blaðið ekki
52. Sigga man ljóðið ekki
53. Ég þekki manninn ekki
54. Við sáum ekki ógeðslega ljótu myndina
55. Ég las ekki rosalega löngu greinina
56. Ólöf borðaði ekki alla girnilegu ostana
57. Við færðum alveg ábyggilega ekki stóru amerísku skápana
58. Hann man alveg ábyggilega ekki löngu leiðinlegu söguna
59. Jón hitti alveg áreiðanlega ekki gömlu furðulegu konuna
60. Gunna las bréfið alveg áreiðanlega ekki
61. Ég fékk pakkann alveg ábyggilega ekki
62. Óli þekkir manninn alveg áreiðanlega ekki

II. Instructions and stimuli for the production task in Faroese

Stóra takk fyri at tú tekur lut í kanningin. Vit kanna ymiskar setningsbygnaðir í føroyskum og sambandið millum málið og minnið. Í kanningin er tað fyrst og fremst talumálið, sum vit eru áhugað í, og vit biðja luttakarar hava hetta í huga:

- Vit kanna ikki, hvat tú heldur vera rætt ella skeivt mál.
- Vit kanna ikki, hvat fólk hava lært at vera rætt og gott mál.
Vit kanna ikki, hvat tú heldur vera góður málsligur stíllur ella hvat riggar væl í skriftmáli.
- Vit vilja vita, hvørjir setningsbygnaðir eru teir vanligastu í talumáli og hvussu tú sjálv/ur tosar.

Vit ætla at vísa tær nakrar setningar. Á skíggjan kemur ein setningur, sum er býttur sundur í trý. Mittasti setningsparturin er altíð byrjanin til setningin, og hinir setningspartarnir síggjast antin uppiyvir ella niðriundir hesum. Vit ætla at biðja teg um at lesa setningin innantanna og seta hann í ta røð, sum tú heldur vera vanligast. Síðani skalt tú minnast til hendan setningin við tí raðfylgju, sum tú hevur valt.

Tá tú hevur lagt tær setningin í geyma, verður skíggjin tómur í nøkur sekund. Síðani kemur eitt pluss á, og tá skalt tú siga setningin, soleiðis sum tú minnst hann.

Vit byrja við nøkrum venjingarsetningum...

Nú byrjar sjálv kanningin...

Um neyðugt: Minst til at biðja eftir plussinum. Tú skalt lesa innantanna. Tú mást ikki siga setningin, fyrrenn plussið kemur fram á skíggjanum. Trýst á millumrúm fyri at halda fram. Minst til setningin. Tá tú ert vís/ur í, at tú minnst setningin, skalt tú trýsta á millumrúm.

Nú er hesin parturin liðugur. At enda vilja vit biðja teg fylla hetta oyðublaðið út. Upplýsingarnar eru bara til at viðgerð av dátunum og tað ber ikki til at finna út av, hvør tú ert, út frá upplýsingunum.

So var kanningin liðug. Túsund takk fyri hjálpina!

1. Seinasta vikuskiftið flugu til Danmarkar gamlir vinir.
2. Í summar fara til Svøríkis nógvir dreingir.
3. Síðsta vetur vóru í flokkinum tólv næmingar.
4. Í gjár bíðaðu eftir okkum fronsk miðlafólk.
5. Í morgun sang fyri okkum eitt gentukór.
6. Eftir gøtuni runnu móti okkum triggir hundar.
7. Anna keypti á útsølu nýggjar buksur.
8. Ólavur skrivaði hendan dagin triggjar stílar.
9. Eg fjaldi fyri Beintu nakrar kakur.
10. Høgni sang fyri okkum triggjar sangir.
11. Jógvan yrkti fyri okkum eina yrking.
12. Eg fann fyri tykkum nakrar bókur.
13. Vanliga renna um summarið nakrar hundrað ungar kvinnur í Havnini.
14. Í fjør komu til Havnar nakrir kendir listamenn úr øðrum londum.
15. Beinta lesur um morgnarnar øll møgulig stuttlig tíðarrit um móta.
16. Vit sóu á savninum avbera nógvar myndir av gomlum kirkjum.
17. Tjóvarnir stjólu úr handlinum átta gomul lummaur og fyra armbond.
18. Í gjár vóru á spennandi skeiði um føroyska mentan nógvir danir.
19. Um várið svimja á lítlu tjørnini í gamla miðbýnum hvítir svanir.
20. Leygardagin vóru á fundi um umstøður teirra lesandi tjúgu mannfólk.
21. Turið keypti í lítla nýggja handlinum í miðbýnum nýggjar skógvar.
22. Eg las til seinastu royndina í donskum máli nógvar bókur.
23. Jógvan stjól frá einum góðum gomlum íslenskum vini nógvan pening.
24. Í fjør komu á almenna ráðstevnu um nýggja tækni umleið hálfvjerðs næmingar úr fimtan skúlum.
25. Í seinastu viku komu á almennan fund fyri ungar høvundar bæði virknir limir og framfús listafólk.
26. Hvørt ár flúgva til sólríkar strendur í heitu londunum átta til níggju túsund íslensk ferðafólk.
27. Eg borðreiddi fyri nøkrum góðum vinum úr skúlanum ræstan fisk við saltaðum spiki afturvið.
28. Foreldrini lósu fyri øllum næmingum í fjórða flokki bókina um Hannibal og horvna hundin.
29. Listakonan málaði á gamlar veggir í Tórshavnar kommunu stórar og vakrar málningar av mánanum.
30. Í morgin mæta í skúlanum næmingar sum byrja sín fyrsta skúladag.
31. Í gjár sungu í kirkjuni børn sum eru í nýggja barnakórinum.
32. Í kvøld flúgva til Danmarkar flogførini sum vóru umvæld í Vágum.
33. Eg las fyri honum ein tíðindastubba sum eg hevði skrivað.
34. Sigrun málaði á loftinum málningar sum hon ongantíð vísti nøkrum.
35. Eg legði á hillina øll handklæðini sum dóttirin hevði keypt.
36. Beint í áðni vassaðu yvir áanna børn.
37. Í morgun lak úr rørinum vatn.
38. Í morgun sungu fyri okkum børn.

39. Í dag komu yvir okkum skýggj.
40. Eg keypti til kettuna mat.
41. Tóra kókaði til børnini greyt.
42. Símun spældi fyri okkum lög.
43. Jógvan bakaði til okkara breyð.
44. Jóna skrivaði navnið niður.
45. Anna koyrði bilin inn.
46. Eg tók lagið upp.
47. Eg skrivaði allar hasar yrkingarnar niður.
48. Sanna koyrði neyðars ússaliga hundin út.
49. Eg vaskaði allar skitnu tallerkarnar upp.
50. Óli las blaðið ikki.
51. Sigga minnst sangin ikki.
52. Eg kenni mannin ikki.
53. Vit sóu ikki hasar gomlu myndirnar.
54. Eg las ikki hasa longu greinina.
55. Óluva át ikki allar ræstu ostarnar.
56. Vit flyta so sanniliga ikki hasar tungu taskurnar.
57. Hann minnst so sanniliga ikki hasa longu søguna.
58. Jón møtti so sanniliga ikki hinum gamla manninum.
59. Gunna las brævið so sanniliga ikki.
60. Eg fekk pakkan so sanniliga ikki.
61. Óli kennir mannin so sanniliga ikki.