Bilingualism and Contact-Induced Language Change

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Bilingualism and Contact-Induced Language Change

Exploring variation in the Frisian verbal complex

Liefke Reitsma

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Exploring variation in the Frisian verbal complex

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Change is the only constant

πάντα χωρεῖ καὶ οὐδὲν μένει

Heraclitus (535 BC - 475 BC)

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Ph.D. thesis Liefke Reitsma

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Thanks! Bedankt! Tankewol! Obrigada!

Chapter 1

Introduction

1.1 Why this thesis?
1.2 Historical and linguistic context
1.3 Interference Frisian
1.4 Thesis outline

1.1 Why this thesis?

In the late nineties, when I attended university in Groningen and met Frisian peers again after being raised outside of the province of Fryslân, but with Frisian as our family language, it struck me that my Frisian was different. While I enjoyed classes on historical linguistics, language variation, theoretical linguistics, bilingualism and language acquisition, I was particularly intrigued by one phenomenon. Out of sheer personal curiosity but also from a scientific, linguistic viewpoint I started paying attention to the way people varied verb orders and forms in the verb complex in Frisian and Dutch. At first, I thought that Frisian had only one possible 'right' order in the verbal complex, whereas Dutch had various possibilities in different types of clusters. Also, it appeared that Dutch had different verb orders with the same meaning. Speaking with my Frisian peers, I learned quickly that Frisian might also have that possibility, which is demonstrated in (1) below.

(1) FRISIAN *Hy seit dat er it boek <lêzen hat>/*?<hat lêzen>*
DUTCH *Hij zegt dat 'ie het boek <gelezen heeft>/<heeft gelezen>*
He says that he the book <read has> /<has read>
'He says he read the book'

The variation in the verbal complex is interesting for different reasons. First of all, it can be seen as very inefficient to have two ways to express the exact same thing. When there is no difference in meaning, it is often the case that different variants are used in different linguistic or social contexts. Many linguists have investigated the possibilities in the Dutch verb cluster (see chapters 3 and 5), and Frisian verb clusters also have received some attention from linguists (Ytsma 1995, De Haan 1996b). Studies into Frisian verb clusters have been relatively restricted in size, however, and have mainly been focused on clusters existing of two verbs, or on only one type of tripartite cluster. Also, different methodologies have been used in past studies, which makes comparison difficult. A larger, empirical study would be necessary to fill the gap in our knowledge about the variation in the Frisian verbal complex.

A second reason why the variation in the Frisian complex is interesting, is the fact that variation seems to be increasing. This could be an indication of language change. A study into the variation in the Frisian verbal complex could be a chance to examine syntactic change in progress. Questions that arise are: how widespread is variation in the Frisian verbal complex, is it bound by certain linguistic or social 'rules'? And also: what does Dutch have to do with it? Are speakers of Frisian copying variation from Dutch? Do variants occur in similar conditions? Is variation bound by the same 'rules'? And, if these things are true, why does it happen? Is it because of widespread bilingualism? Because of poor acquisition of Frisian? Or because of the relatively high social status of Dutch compared to Frisian?

This thesis presents an empirical study of the variation in the Frisian verbal complex as an example of an ongoing process of language change. It sheds light on the process of language change from different viewpoints. Variationist sociolinguistics, contact linguistics and (bilingual) language acquisition theories are integrated into a holistic approach of the developments in the Frisian verbal complex. As such, it contributes to the knowledge about (Frisian) verb clusters in particular and to the knowledge about processes of language variation and change in general. It provides new data and creates a clearer picture of the (im)possibilities in the Frisian verbal complex and the social and linguistic factors involved. The thesis further contributes to our knowledge of the relationship between time, age and language change as it combines an apparent time study (different age groups at the same time) with a trend study (similar age groups at different points in time). By including an acceptability judgment task as well as a verb cluster elicitation task it also demonstrates the value of different data sources, i.e. between language perception data and spoken language data.

This study is limited to verb clusters of two and three verbs existing of combinations of auxiliary verbs with main verbs, both infinitival and participial clusters. The subjects all have Frisian as their mother tongue and lived in the province of Fryslân at the time of the study.

1.2 Historical and linguistic context

Since 1813 Fryslân is a province of the Kingdom of the Netherlands. Within linguistics the branch of Frisian that is spoken in the province of Fryslân is indicated as West Frisian (with East and North Frisian being spoken in the North-

West of Germany). In this study we will refer to West Frisian, the language spoken in the province of Fryslân, as Frisian. The linguistic map of the province of Fryslân is determined by three main Frisian varieties, i.e. *Klaaifrysk*, or Clay Frisian, *Wâldfrysk*, or Wood Frisian, and *Súdwesthoeksk*, literally the dialect of the 'South-West corner' of the province. Apart from these main Frisian dialects there is a group of dialects that is referred to as Town Frisian (resulting from contact with or a shift to Dutch), and there are two Low Saxon varieties spoken in the area. For more details on the classification and characteristics of these varieties see Bloemhoff et al. (2013). The geographical distribution of these different dialect groups is shown on the map below.

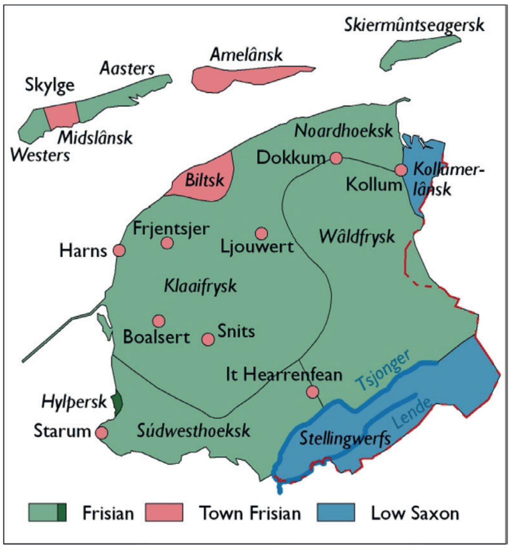

Figure 1.1 Language varieties in the province of Fryslân, according to Bloemhoff et al. (2013)

In the nineteenth century, Frisian was considered to have less status than the Dutch-based Town Frisian varieties in the larger Frisian towns. In the following century, Town Frisian gradually became a low-prestige, mainly lower-class vernacular that was used increasingly less widely (Bloemhoff et al. 2013).

Since the middle of the twentieth century a series of changes in legislation and political measures concerning the role of Frisian in education, in politics and in jurisdiction have been effectuated. This led to the present situation in which the use of Frisian in many domains is not only possible but also widely accepted (Vogl, 2002). More or less simultaneously with the legal and political emancipation of

Frisian, Dutch media became much more prominent, and the industrialization led to increased socio-economic mobility, and a more prominent role for Dutch in the occupational domain (De Haan 1997). Also, participation in the (Dutch) national educational system increased to roughly 100% in the course of the twentieth century. Contact with Dutch intensified substantially. Nevertheless, Frisian has also been recognized as a regional language under part III of the European Charter for Regional or Minority Languages (together with Limburgish and Lower Saxon) and the Province has stimulated the teaching of Frisian.

The Frisian language has obtained presence on all levels of education, but its presence remains marginal in most cases (Gorter & Van der Meer, 2008). The developments over the last decades have not been as remarkable as in other minority language regions: the position of Frisian in education is rather weak compared to for example Welsh, Irish and Catalan, although the point of departure is relatively favorable in terms of the proportion of speakers in society (Gorter & Van der Meer, 2008). This has led to the present situation that the legal position of Frisian in the province of Fryslân is, in theory, equal to the position of Dutch in the province. In the wider context of the Netherlands, however, Frisian has the status of a minority language, or as Bloemhoff et al. put it, “compared to Dutch, the use of Frisian is functionally severely limited.” (Bloemhoff et al. 2013, pp. 722-723). According to them, Dutch has a strong position in all domains and is functionally dominant. They argue that the relation between the Frisian and Dutch language can be characterized as one of *unbalanced bilingualism*.

Gorter (2001) also claims that there is no (longer a) strict ‘division of functions’ between Frisian and Dutch. Dutch has entered the intimate spheres of the home, family and neighborhood, and at the same time Frisian is more present than before in some of the ‘higher’ domains (education, media and public administration). He argues that self-aware speakers of Frisian may find themselves in a situation of *competing bilingualism* (Gorter 2001).

1.3 Interference Frisian

The unbalanced relationship between Dutch and Frisian in many domains and the situation of competing bilingualism may also have an impact on the minority language itself, i.e. on Frisian. A handful of studies on the transfer of Dutch into Frisian have appeared since the second half of the last century. Whereas Sjölin (1976) was mainly about code switching and lexical transfer, Breuker (1993, 2001) and De Haan (1997) mention changes in all language domains. It is beyond our scope to give an extensive overview of all of the phenomena that could be attributed to influence of (or contact with) Dutch. By way of illustration, a limited number of examples will be given here (see also Breuker 1997, 2001, De Haan 1995, 1997).

In accordance with what is customary in the literature, and notwithstanding the static view on language it suggests, the non-Standard Frisian or 'Dutchified' examples will be denoted as "Interference Frisian" (IF) here. Both Standard Dutch (DU) and Standard Frisian (FR) examples will be given as well, in order to make it easier to track possible Dutch influence.

Lexical transfer from Dutch to Frisian is ample, such as the replacement of content words like in example (2), and lexico-functional borrowings like in example (3).

(2)	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	kaai	sleutel	sleutel	*key*
	slim	erg	erch	*badly*
	rane	smelten	smelte	*to melt*

(3)	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	oant	tot	tot	*(un)till*
	har/him	zich	sich	*herself/himself*
	wa	wie	wy	*who*

Phonological changes include changes in the sound inventory of Frisian. Both partial and full adaptation to Dutch vowels or consonants has been reported (Breuker 2001). Example (4), from De Haan (1997), demonstrates that the [I] before nasals is often replaced by its Dutch counterpart [ɛ],

(4)	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	stim [stIm]	stem [stɛm]	[stɛm]	*voice*
	him [hIm]	hem [hɛm]	[hɛm]	*him*

These changes seem driven by the lexicon (or surface oriented), as we do not find them where Dutch still has its [I]. Also, the change from [I] to [ɛ] does not affect the phoneme inventory of Frisian, since both [I] and [ɛ] remain part of this inventory. Breuker (2001) also gives some examples of transfer that does affect the phoneme inventory of Frisian, like the monophthongization of some diphthongs.

Morphological changes are relatively frequent in language contact, specifically changes in the inflectional morphology (cf. Van Coetsem 1988, 2000). In Dutchified Frisian, the diminutive suffix *-ke* is in certain contexts replaced by the suffix *-tsje*, which resembles Dutch *-tje* (with identical pronunciation). Such is shown in example (5).

(5)	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	sigaar-ke	sigaar-tje	sigaar-tsje	*small cigar*
	boer-ke	boer-tje	boer-tsje	*small farmer*

These changes concern internal changes to variants that are closer to Dutch or that appear like Dutch (cf. Feitsma 1971). Hence, these changes never occur in contexts where Dutch does not have the corresponding *-tje* suffix. This was confirmed in Van Balen et al. (2015). The diminutive for tree, *beamke*, for example, has not taken the *-tje* suffix. In Dutch the diminutive for tree also does not display that suffix: *boompje*. Note that the transfer of the Dutch suffix *-pje*, which does not exist in Frisian, has not been reported so far. This is presumably related to the fact that -pje does not feature in the Frisian array of diminutive allomorphs, unlike t(s)je.

Another example of morphological change is the replacement of strong verbs by verbs with a weak conjugation, as shown in example (6).

(6)	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	dekke	dekken	dekke	*cover (infinitive)*
	diek/duts	dekte	dekte	*covered (past tense)*
	dutsen	gedekt	dekt	*covered (participle)*

The verb 'strekke', s*tretch* shows the identical development. Another point at which Frisian seems to Dutchify is determiner selection: de-nouns (non-neuter) become it-nouns (neuter) and vice versa.

(7)

	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	it wang	de wang	de wang	*cheek*
	de bosk	het bos	it bosk	*forest*

Semantic changes in Frisian have been reported as well. Some words exist both in Frisian and in Dutch, that is, they have the same phonological form, but their meanings differ. The meanings of those Frisian words tend to change towards the Dutch meaning (Breuker, 1997).

(8)

	FRISIAN	DUTCH	INTERFERENCE FRISIAN	
	loft vs. lucht	both: lucht	both: lucht	*sky vs. air*
	pleats vs. buorkerij	both: boerderij	both: buorkerij	*farmhouse (building) vs. farm (business)*

Summarizing, on all levels of the language changes have been reported. Structural borrowing, causing **grammatical or syntactic changes**, is said to be rare (Winford 2005, Thomason & Kaufman 1988, Thomason 2010). Nevertheless, in Frisian changes at the level of the syntax have been reported as well (De Haan 1990, 1995, 1996a, 1997, Breuker 1993, 1997, 2001). One of these concerns the sentence final verbal complex, as demonstrated in (9) and (10) below for clusters of two and three verbs respectively.

(9) FR hy soe it boek lêze wolle
he would (Fin) the book read (Inf) want (Inf)
DU hij zou het boek willen lezen
he would (Fin) the book want (Inf) read (Inf)
IF hy soe it boek wolle lêze
he should (Fin) the book want (Inf) read (Inf)
'he would want to read the book'

(10) FR omdat er it boek lêze (3) wolle (2) soe (1)
because he the book read (Inf) want (Inf) should (Fin)
DU omdat hij het boek zou (1) willen (2) lezen (3)
because he the book should (Fin) want (Inf) read (Inf)
IF omdat er it boek soe (1) wolle (2) lêze (3)
because he the book should (Fin) want (Inf) read (Inf)
'because he would want to read the book'

In the examples above the Interference Frisian (IF) sentence is identical to Dutch with regard to the verbal complex. But, as noted by De Haan (1996a), not all changes are directly towards structures similar to Standard Dutch: (10) might as well occur as (11).

(11) FR *omdat er it boek soe lêze wolle
because he the book should (Fin) read (Inf) want (Inf)
DU *omdat hij het boek zou lezen willen
because he the book should (Fin) read (Inf) want (Inf)
IF omdat er it boek soe lêze wolle
because he the book should (Fin) read (Inf) want (Inf)
'because he would want to read the book'

This example demonstrates that verb clusters that are grammatical in neither Standard Frisian nor Standard Dutch are reported in IF as well. From a theoretical perspective this is an interesting case: is it possible to 'borrow' a construction from a language when this construction does not appear in that language? A different take on this example would be to assume borrowing of (part of) the underlying grammatical rules of Dutch (11), resulting in a deviating surface form like IF (11). One such approach concerns Koeneman and Postma (2006), although they also suggest that not language contact but incomplete acquisition might cause constructions like IF (11). More data on the frequency of this type of constructions is necessary to make fundamental claims about (the implications of) their appearance, however.

The example in (11) also raises some interesting topics that evolve in the study of Frisian verb clusters. The desirability of an interdisciplinary approach, taking into account insights from fields like sociolinguistics, contact linguistics, and language acquisition studies is evident. This study will undertake such a holistic approach to the developments in the Frisian verbal complex. In the next section it is described how this is done.

1.4 Thesis outline

This thesis is an in-depth study into the developments in the Frisian verbal complex. In this introduction, **chapter 1**, a short description of the aims of this study was given, as well as some historical and linguistic context. Also, it was shown that Frisian has undergone changes in many linguistic domains.

Chapter 2 takes a dive in what linguistic theory says about language variation and change. Three different theoretical approaches to language change will be described: the variationist sociolinguistic approach, the contact linguistic approach and a language acquisition approach.

The subject of this study, the verbal complex of Frisian is introduced in more detail in **chapter 3**, also comparing the (Standard) Frisian clusters to those in Standard Dutch.

Chapter 4 describes the context of the Frisian verbal complex with regard to the linguistic theories elaborated upon in chapter 2. It reviews the sociopolitical context, the favorable conditions for language change and it describes what is known about the transmission of Frisian from parents to their children and the simultaneous acquisition of Frisian and Dutch.

In **chapter 5** an overview is given of previous studies on variation in Frisian and Dutch verb clusters and the factors involved. This chapter demonstrates the lack of empirical data for Frisian. At the same time it indicates the factors that play a role in the variation in the verbal complex in Dutch, providing some direction for the study of variation in the Frisian verbal complex.

Chapter 6 elaborates the research questions of this study and its design. It contains a description of the methodology used the subjects participating in this study. The chapter also elaborates the procedures and data collection with regard to the data on language proficiency, language use and language attitude.

The findings of the acceptability judgment task are described in **chapter 7**. An overview is given of the findings per condition, i.e. for two-verb clusters and three-verb clusters and per verb cluster type, and in relation to the different variables investigated in this study. This part of the study contains an apparent time as well as real time comparison.

In **chapter 8** the findings of the verb cluster elicitation task are elaborated. The findings are presented as distributed over the different age groups. Besides, the individual variation is demonstrated.

Chapter 9 contains the results of the study and aims at answering the research questions as posed in chapter 6. It also contains a discussion of these results, i.e. the variation encountered and the role of social and llinguistic factors. The chapter ends with a summary of some additional findings among others reagarding the differences between elicitation data and judgment data. The term 'paradox of the norm' is coined in this chapter and finally the question wether the variation in the Frisian verbal complex can be seen as a case of contact-induced language change is discussed.

In the final chapter of this study, **chapter 10**, its conclusions are drawn up. Also, some recommendations are given as well as suggestions for future research.

Chapter 2

Theoretical Approaches to Language Change

2.1 Introduction
2.2 Language variation and change
2.3 Language contact and change
2.4 Bilingualism, language acquisition and change
2.5 Conclusion

2.1 Introduction

How can we study the variation and changes that are reported in the Frisian verbal complex? In this chapter we will discuss three different frameworks, or theories, that offer some tools and insights for the study of language change.

The first angle that will be taken is that of variationist sociolinguistics (section 2.2). Subsequently some insights from contact linguistics will be discussed (section 2.3), alongside theories on (bilingual) language acquisition and language development from a dynamic systems theory perspective (section 2.4). The chapter will be concluded with a short resume of the relevance of these theoretical frameweorks for the study of the developments in the Frisian verbal complex and vice versa (section 2.5).

2.2 Language variation and change

The study of language in its social context is usually referred to as sociolinguistics. The kind of sociolinguistics that studies language variation and change quantitatively is usually called variationist sociolinguistics. The variationist approach grew out of the work of Weinreich and his students Labov and Herzog (Weinreich et al. 1968). One underlying assumption of this paradigm is that change in language is always preceded by variation:

"Not all variability and heterogeneity in language structure involves language change; but all change involves variability and heterogeneity" (Weinreich et al. 1968 pp. 188).

Variationist sociolinguistics essentially studies the interplay between variation, social meaning and the evolution and development of the linguistic system itself (Tagliamonte 2006). Both the social context and the linguistic system can give rise to (the increment of) language change. This is demonstrated eminently by Labov in his books on the principles of linguistic change (Labov 1994, 2001, 2010). His work demonstrates that language change is not only interesting from a historical linguistic perspective and that language change is taking place as we speak. The books demonstrate the influence of internal, social, and cognitive and cultural factors, respectively. The mechanisms of change, the constraints on change, and the ways in which change is embedded in the larger linguistic system are discussed. Factors like social class, neighborhood, ethnicity, sex, and social networks are considered to understand the relationship between linguistic change and the social reality the speakers are in. Throughout the years this approach has formulated certain principles about language change, it for instance delineates the leaders of linguistic change as women of the upper working class with a high density of interaction within their neighborhoods and a high proportion of weak ties outside of it (Labov 1994, 2001). These women can be distinguished from others by their general pattern of deviation from established norms of conformity.

Language variation occurs when one abstract linguistic variable is realized by two or more specific linguistic variants. In a scenario of language change the stage of variation is normally preceded by a stage in which one linguistic variable can be realized by one specific variant, and often enough it is also followed by a stage where the linguistic variable can be realized by only one variant. Example (12) below demonstrates the case of do-insertion in English, which is now obligatory in yes-no questions (Ellegård 1953, in Kroch 1989).

(12)	Stage I	One variant:	Wrote you this letter?
	Stage II	Variation:	Wrote you this letter?
			& Did you write this letter?
	Stage III	One variant:	Did you write this letter?

The empirical study of language variation over time yields a lot of data: frequencies of different linguistic variants and their relation with (other) linguistic variables and social variables. This may lead to valuable insights in the process of language change.

Variationist sociolinguistics is the study of diachronic language change (such as the example of do-insertion in English above) as well as change in progress (synchronic language change). The variation in Dutch two-verb clusters (cf. example (1) in the previous chapter) has been analyzed from the diachronic point of view (see e.g. Coussé 2008, Coupé 2015) and, more recently, also synchronically (Olthof et al. 2017). Both studies will be discussed more elaborately in chapter 5. It is often assumed that the variation found in contemporary verb cluster ordering in Frisian (cf. examples (9-11) of the previous chapter) is a stage of language change in progress (e.g. Koeneman & Postma 2006). However, the social conditioning of the change, the stages of the change, or the role of language acquisition have never been subject to scrutiny.

Diachronic studies generally feature texts, corpora or previously gathered data as the subject of study. The analysis of historical data can reveal the trajectory of language change by showing the rise of incoming variants and the decrease and/or loss of older ones. Note that not all changes 'complete' to the extinction of the previous or oldest variant. Sometimes two or more variants coexist over a longer period of time. There are also cases in which the change proceeds at a much slower rate, and cases in which the change is reverted (Blake & Josey 2003, as referred to in Sankoff 2006, and see also Labov 1994 about reversed changes). Coussé & De Sutter (2012) show the developments in order variation in Dutch two-verb clusters in governmental texts from the 13th to the 18th century (see the graph below). At the end of the 15th century the 1-2 order is almost extinct, but somehow the change is reverted and the 1-2 order is steadily gaining ground at the expense of the 2-1 order.

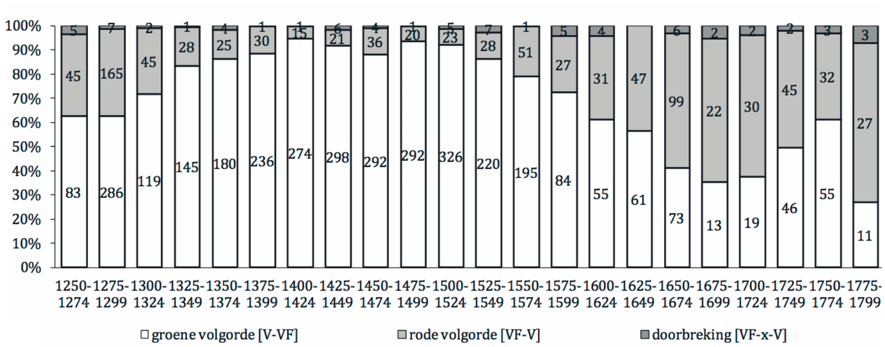

Figure 2.1 Distribution of verb clusters in the 2-1 order (indicated as 'groene volgorde [V-VF]'), the 1-2 order (indicated as 'rode volgorde [VF-V]') and the 1-2 order with an intervening element (indicated as 'doorbreking [VF-x-V]') in governmental texts from the 13th century to the end of the 18th century (Coussé & De Sutter 2012).

Note that there are also many cases in which variation is more or less stable. Features that are variable but stable include those that correlate with social factors and/or differentiate styles, as well as those that cue levels of formality or processing effects (Tagliamonte 2011). One could argue that a distribution like the one in figure 2.1 above with variation over a relatively long period of time might also be seen as a case of stable variation, but more recent data would be needed to say anything conclusive.

2.2.1 Real time and apparent time

In order to investigate these different patterns of change, different approaches exist. Both longitudinal (real time) studies as well as apparent time studies are used in variationist sociolinguistics. Real time investigations may take decades, whether they are panel or trend studies. In panel studies the same subjects are interviewed periodically. For example, at age 20 in 1970, at age 40 in 1990 and at age 60 in the year 2010. This type of study can reveal acquisition patterns as well as age grading or patterns of language attrition and loss. Panel studies are the only way to discover how individual speakers of different ages are involved in language change (Sankoff 2006).

In a trend method study a comparable subject group is tested at different moments in time. For example, 20-year-olds are interviewed in 1970, another group of 20-year-olds in 1990 and a third group in 2010. The trend method can reveal change over time as well as (other) intergenerational differences. Trend studies are often seen as the most reliable method for confirming language change (Sankoff 2006).

In apparent time studies subjects of different ages are interviewed at one point in time. For example, a group of 20-year-olds, 40-year-olds and 60-year-olds are all interviewed in the year 2010. The differences between age groups are usually interpreted as language change over time, but it can also indicate (other) intergenerational differences. The table below shows how synchronic data can be interpreted in different ways.

Synchronic Pattern	**Interpretation**	**Individual**	**Community**
Flat	1. Stability	stable	stable
Monotonic slope with age	2. Age grading	unstable	stable
Monotonic slope with age	3. Generational change [= “apparent time” interpretation]	stable	unstable
Flat	4. Communal change	unstable	unstable

Table 2.2 Patterns of change in the individual and the community (Sankoff, 2008).

A flat pattern can indicate stability, but it can also indicate communal change, with the community as a whole changing its language in the same way at the same time. A monotonic slope, increasing or decreasing with age, can indicate both age grading, with each generation using a certain variant more (or less) with age, as well as generational change (the so-called 'apparent time interpretation'), with younger generations using increasingly more of the changing variant than older ones (Sankoff 2008). Without confirmation from a diachronic or real time study it is not possible to distinguish age grading from generational change, i.e. a synchronic or apparent time study alone cannot give a reliable answer to the question whether language change is taking place.

Sankoff (2006) gives an overview of language change studies with an apparent time as well as a real time component: real time studies always confirmed the change, sometimes with effects of age grading as well (Sankoff 2006). Note that studies that combine both approaches are relatively few, and in most cases concern phonetic or morpho-phonological changes (Tagliamonte & D'Arcy 2009 do study morpho-syntactic/semantic change). Combined results show that in panel studies people show less changes from their earlier selves than does the community over the same time, as measured by a trend study, i.e. adults do participate in change, but not all of them. If speakers continue to participate in an ongoing change during their adult lives, then apparent time even underestimates the rate of change (Tagliamonte & D'Arcy 2009). Even when adults participate in language change, the apparent time method remains an 'excellent surrogate for real time evidence' (Bailey 2004, p. 329). It is a powerful conceptual tool for the identification of language change in progress (Sankoff 2006, and see also Tagliamonte & D'Arcy 2009 and references therein). Nevertheless, a combination of apparent time and real time is preferred.

2.2.2 Social factors

Both from diachronic and synchronic research it is known that variants often show regular patterns of variability conditioned by linguistic and/or social factors. Chambers (2004) claims that age is "the social attribute that is the primary correlate of language change" (which is why apparent time studies are so powerful in detecting it), along with social class and sex. In general, it is assumed that younger, female speakers are the most progressive agents in language change, i.e. younger women advance language change (cf. Romaine 1984 pp.113; Labov 1990 pp.206; Chambers 1995 pp. 102-103). Consequently older, male, speakers often show more conservative patterns in situations of language change. Note that in stable situations the roles are often reversed: women display more conservative patterns (close to the linguistic norm or standard), whereas men use more non-standard forms (cf. Labov 1990, Chambers 2004).

In studies of the Frisian verbal complex, age differences have been reported. Ytsma (1995) and Wolf (1996) found significant differences between children and their parents with regard to the ordering of the verbs in Frisian two-verb clusters. However, it was shown that the children showed large individual differences. One group showed hardly any inversion patterns and another group was almost consistently inverting their verb clusters (cf. Reitsma 2003). De Haan (1995) also found differences between different age groups. No significant differences between the sexes were found with regard to verb ordering in the Frisian verbal complex (cf. Meekma 1989, Ytsma 1995, De Haan 1990). Tagliamonte & D'Arcy (2009) make some critical remarks on assumed male-female differences. While they confirm that females are ahead of males in the process of language change, with regard to the patterns of the change they "can say only that there is no absolute contrast between male and female with respect to the apparent-time trajectory of change" (Tagliamonte & D'Arcy 2009, pp. 100).

With regard to social class, early sociolinguistic studies showed that certain variants were used more frequently by classes with the highest status and less frequently by the lowest status classes and at intermediate frequencies by the classes in between (Tagliamonte 2011). When a linguistic variable has a clear standard vs. non-standard social evaluation it is sure to be aligned with the prevailing social hierarchy in the community, whatever that might be. Where social class is a relevant social category, linguistic variables will correlate with it (Tagliamonte 2011). Educational level may be the closest estimate of social class in the province of Fryslân. Nevertheless, no effects of social class or educational level have been reported for the variation in Frisian so far. This is in line with findings of Stanford & Preston (2009) that many indigenous minority languages do not have clear socioeconomic class distinctions or that distinctions emerge in different ways.

it is also relevant to mention the fact that the province of Fryslân is a bilingual (or multilingual) community. The description of a bilingual community involves more social parameters than that of a monolingual one (Sankoff 2004). The field that tries to incorporate bilingualism and language change theoretically is contact linguistics. The next section is a review of the most important contact linguistic approaches relevant for the study of the developments in the Frisian verbal complex.

2.3 Language contact and change

Sometimes language internal factors like simplification and efficiency are suggested as a driver of language change, or technological developments (e.g. language used in texting or on social media). Besides, contact with (speakers of) a different language or dialect, i.e. language contact, is often identified as a driver of language change, as in the case of recent changes in Frisian. Whether and how languages change in situations of language contact depends on many different factors, as will be reviewed below. A broad range of phenomena associated with multilingual communities, are studied in contact linguistics including strategies used by bilinguals, outcomes of language contact, including changes in an existing language, as well as the creation of new languages such as mixed languages (pidgins and creoles), (imperfect) second language acquisition, and the social context of language contact and macro-level outcomes such as language shift, attrition, and death (Winford 2003, Ravindranath 2015).

Here, the focus will lie on what contact linguistic studies reveal about the process of contact-induced language change and the predictive power for its outcome. Contrary to the variationist sociolinguistic paradigm individual variation and social factors like age and sex are not at the core of the discipline. Rather, (individual) linguistic variation is seen as the result of the (contact) situation in the language community. The socio-political context of the contact is, however, central to the discipline: the relationship between the two (or more) languages in a community, their social status or prestige, including its effects on the individuals in that community and their (linguistic) behavior.

2.3.1 The socio-political context

In order to determine whether contact between two or more languages typically leads to language change, the current and historical relationship between the languages in contact needs to be investigated, as well as some other facts about the language community. Those facts include information of the type ‘who speaks what language to whom, and when’, which provides the socio-cultural context for considerations of variation in multilingual communities (Fishman 1965). These different social contexts are usually called (language) domains. Fishman (1965) lists nine domains of language use:

- the family;
- the playground and street;
- the school;
- the church;
- literature;
- the press;
- the military;
- the courts *and*
- the government administration.

In a similar way, Fasold (1984) uses language functions and lists eight language functions: official, nationalist, group, educational wider communication, international, school, subject, and religious. A similar set of functions has been used to create the Graded Intergenerational Disruption Scale (GIDS) and Expanded GIDS (Lewis & Simons, 2010). Nowadays, social media and online communication are understandably seen as an analyzable domain of language use as well (Hinrichs 2006a,b).

The domains of use or functions of the different languages are largely determined by the duration of contact, the type of contact relationship between the languages and the number and distribution of speakers (Ravindranath 2015). Other language external factors that can accelerate the process of language change are mobility and urbanization. These factors can change the way we deal with language, but they can also promote contact with (speakers of) different dialects, or different languages. In some cases, it is not quite clear from the social context which is the socially dominant language, for example when fluency in two or more languages is the norm. The sociopolitical context of Frisian is analyzed with the considerations above in mind in section 2.5.

2.3.2 Two transfer types

One of the dominating questions in the field of contact linguistics concerns the relative importance of external (e.g. social, or socio-political) factors as opposed to internal (i.e. linguistic) factors. To illustrate this, the work of Thomason & Kaufman (1988) and Thomason (2010), in which more weight is given to social and socio-political factors, will be compared to that of Van Coetsem (1988, 2000) and Winford (2003, 2005, 2010) for whom linguistic dominance is the prevailing factor in situations of language contact.

Both Thomason & Kaufman (1988) and Van Coetsem (1988, 2000) distinguish two types of transfer. The term transfer will be used here for all kinds of linguistic elements and from any language to any other language, i.e. no specific element and no specific direction. Thomason & Kaufman (1988) distinguish *borrowing* from *interference*. Borrowing broadly refers to “the incorporation of foreign features into a group’s native language by speakers of that language”. Borrowing often goes from a socially dominant or prestigious language into a subordinate language in a situation of language maintenance. Interference refers to the incorporation of linguistic elements of a subordinate (but primary) language into a (socially) dominant, second language. Interference is associated with language shift (Thomason & Kaufman 1988, Thomason 2010).

The two transfer types that Van Coetsem distinguishes are *borrowing* and *imposition* (Van Coetsem 1988, 1995, 2000). The notions of *agentivity* and *linguistic dominance* are central to his approach. Agentivity refers to the agent who is executing the change. Linguistic dominance is based on “the greater proficiency that a speaker has in one language as compared to another language” (Van Coetsem 1995: 70). The linguistically dominant language is therefore not necessarily the first or native language or the language used most. Thus, Van Coetsem distinguishes two transfer types based on the linguistic dominance of its agent. When the agent is more proficient in the recipient language (recipient language agentivity) the resulting transfer type is called *borrowing*. On the other hand, when the agent is more proficient in the source language (source language agentivity) the transfer type is *imposition*. Note that the direction of transfer is always from a source language to a recipient language.

An important difference between an approach that takes social or socio-political dominance as the point of reference for language change in comparison to one that takes linguistic dominance as the point of reference is the following. By and large the prestige and social dominance of language A over language B should hold for the entire community. This implies that the same contact-induced changes should be found in the entire community. The individual linguistic proficiency in language A and B however, may vary within the population. This implies that some individuals or subgroups of the population may employ more contact-induced change than others.

2.3.3 The stability gradient of language

Both Thomason and Kaufman (1988) and Van Coetsem (1988, 2000) agree that some elements may be transferred more easily than others. Thomason and Kaufman use a 'scale of borrowability' to explain the differences in outcomes: less stable domains (like the lexicon) are borrowed more easily, whereas more stable domains (grammar) are borrowed less. Van Coetsem proposes a 'stability gradient' to account for the differences in linguistic outcome between the process of borrowing and that of imposition (Van Coetsem 1988). In his terms, language components or subcomponents differ in their degree of stability, that is, certain parts of language are more stable or more cohesive than others. Roughly, phonology and grammar are considered to be more stable domains, whereas vocabulary is considered to be less stable (ib. 1988). In both types of transfer the agent tends to preserve the more stable domains of his or her linguistically dominant language. Thus, borrowing concerns mainly less stable elements, like for example vocabulary, whereas more stable domains, like for example articulatory habits or syntax, are affected by imposition (Van Coetsem 1988, 2000).

Winford (2005, 2010) notes that differences in stability may appear within language components as well (Winford 2005, 2010). Within vocabulary, this holds for example for content words (unstable) vs. function words (stable) and the same holds for inflectional (stable) vs. derivational (unstable) morphology (Winford 2005, 2010, and see also Van Bree 1990, 1994; Hoekstra 2000; Van Coetsem 2000). The stability gradient of language (or scale of borrowability) can be used to predict the outcome of language contact, but it is also used to identify the transfer type on the basis of the result. Both Thomason & Kaufman (1988) and Van Coetsem (1988, 2000) would attribute a case of lexical transfer to *borrowing*.

In the attribution of transfer of more stable elements, like phonology and syntax, the approaches differ. When there is transfer of more stable elements, Van Coetsem (1988, 2000) will assume that imposition took place (where the agent is more proficient in the source language). In the case of language shift Thomason (2010) and Thomason & Kaufman (1988) will attribute the transfer of more stable elements to interference through shift. In the case of language maintenance however, they will assume heavy borrowing, which is constrained only to certain types of contact. Borrowing of more stable domains, or structural borrowing, they argue, can happen in heavy cases of borrowing:

- when preceded by heavy lexical borrowing;
- when languages are typologically very similar *or*
- in cases of widespread bilingualism (Thomason & Kaufman 1988).

In section 2.5 it will be shown that all of these conditions apply to the Frisian-Dutch contact situation. Winford (2003, 2005) also argues that structural borrowing is not common and he shows that cases formerly marked as 'structural borrowing' can often be reinterpreted as cases of indirect borrowing or as cases in which both borrowing and imposition took or take place, in which case the structural changes will be attributed to imposition. Both Winford (2005) and King (2000) assume that extensive bilingualism is the most important condition for these rare situations. In the following, final, section of this chapter, therefore, the central theories of bilingualism and language acquisition relevant to the situation at hand in Fryslân will be reviewed.

2.4 Bilingualism, language acquisition and change

Language acquisition also plays a role in language development. In particular, bilingual acquisition is often seen as a source for borrowing, code switching, interference, and for language change. In this section a dynamic systems (DST) model in which language acquisition plays a role in language change will be briefly discussed. Consecutively, some scenarios of bilingual language acquisition and their possible consequences for language development will be outlined.

2.4.1 Language acquisition as a phase in language change

In generative linguistics language acquisition is sometimes seen as the primary locus of language change. If generation after generation of children would successfully acquire the grammar of their parents, then languages would never change with time (the assumption being that once a 'grammar' is acquired it does not change anymore). Language change then has to be attributed to 'transmission failure' (Meisel 2011) or 'misconvergence' (Niyogi & Berwick 1997). This could be caused by a physical or mental condition that prevents accurate acquisition. These possibilities will not be discussed here. It could also be caused by ambiguity in the input e.g. sloppy language, unclear pronunciation or very low frequency, which leads the child to somehow misinterpret the input it receives.

Niyogi & Berwick (1997) demonstrate how language change follows logically from specific assumptions about grammatical theories and learning paradigms. The result is a dynamical systems model of language change. In Niyogi & Berwick (2009) they elaborate on this and come up with a population-based language acquisition model, based on social learning. The three central components of the models they present are the primary linguistic data (PLD), the learning algorithm, and the target grammar(s). They argue that a learning algorithm that is based on social learning fits the evolutionary dynamics of language learning, since it accommodates cases of stable language populations as well as mixtures of more than one language, and rapid language change (Niyogi & Berwick 2009).

A key point in their model, diverging from earlier, more generative acquisition models, is that the input the child receives (or the PLD) is diffuse, i.e. there is variation in the input (Niyogi & Berwick 2009). Input comes from 'the population' instead of from primary caretakers alone. Niyogi & Berwick claim that they can explicitly calculate how language will evolve over generational time as learners acquire their language(s) from the PLD given by each previous generation (Niyogi & Berwick 1997). The question then remains as to what kind of variation is present in the input.

The models presented by Niyogi & Berwick are a step forward from models that disregard any variation in the input. They are an elegant way to deal with the evolution of language. Nevertheless, some questions remain unanswered. One example is the definition of the language community to be taken into account, i.e. the size of the 'population' that generates the PLD. For example, would it mean that two children born in the same street, or the same neighborhood (or town, or province) who are part of the same 'population' receive the same PLD, and would that generate the same outcome? How would this work in a bilingual community like the province of Fryslân? But more fundamentally, their model assumes that when a language is acquired, it does not change anymore.

Longitudinal studies by Kerswill (1994, 1996, and Kerswill & Williams 2000) indicate that children do acquire the language of their primary caretakers. His Milton Keynes studies show that children until the age of 4 use the same patterns as their primary caretakers. Changes with regard to the language of the primary caretakers occur after the age of 4 and are most prominent during adolescence. This phenomenon is referred to as a peak in incrementation, where the speed of the change increases very steeply (Tagliamonte 2011, 2016, Sankoff 2006). Tagliamonte (2011) also demonstrates that change may even continue after that period. In particular new lexical items are adopted easily by speakers of any age (cf. Kerswill 1996). This also corroborates more recent DST approaches: language acquisition should be replaced with language development. Not only because it indicates that there is no (fixed) end point, but also because it continues after adolescence (De Bot et al. 2012). Also, acquisition and attrition are both part of development.

Therefore, it seems premature to assume that language acquisition is the primary locus of language change. Meisel (2011) also argues that children are extraordinarily successful in the acquisition of language. Changing frequencies in use or exposure to data containing ambiguous or even contradictory evidence are unlikely to suffice as causes (Meisel 2011). The question is whether the same holds for language acquisition in multilingual settings. Studying contemporary bilingualism might contribute to an explanation of diachronic change. In the next section some scenarios of multilingual language acquisition will be discussed.

2.4.2 Bilingual language acquisition

In language acquisition studies, a difference is assumed between first and second language acquisition, depending on the age of onset of the acquisition process. When the child is regularly exposed to two languages before a certain age, simultaneous acquisition of both languages will take place. The age before which the child has to receive input from the second language is subject of discussion in the literature. De Houwer (2009) differentiates between bilingual first language acquisition, when there is input of both languages from birth onwards, and early second language acquisition, when regular input from a second language starts before the age of five. Deuchar and Quay (2000) use the term bilingual acquisition with children who are regularly exposed to two languages from birth, or at least in the first year of life, others draw the line at the child's third birthday (MacLaughlin 1995). After a certain age, we no longer speak of simultaneous acquisition, but of successive or sequential acquisition instead. Assuming that in the case of Frisian, all children receive Dutch input from a relatively low age onwards, we will disregard the case of successive acquisition here. Also, while acknowledging the important differences between simultaneous and successive acquisition, Yip & Matthews (2007) view these as the extremes of a continuum, rather than as a dichotomy.

Simultaneous acquisition of two languages typically leads to a kind of grammatical knowledge in each language, which is qualitatively not different from that of the respective monolinguals (Meisel 2011). Even in settings where one language is 'weaker' than the other, Meisel (2011) argues, there is no convincing evidence of structural change (or in his words 'reanalysis'). To him, incomplete acquisition (also: interrupted, incremental acquisition) seems the only scenario left in which bilingual acquisition can be linked to language change. Montrul (2008) on the other hand, claims that cases where one language is weaker than the other are the cases where incomplete acquisition takes place: "In minority-language speaking children, the weaker language very often lags behind with respect to the language of other fluent bilingual or monolingual children of the same age and cognitive development." (Montrul 2008, p. 120). She claims that attrition and incomplete acquisition occur in specific grammatical areas due to reduced input and use, possibly leading to a state of permanent incomplete acquisition or fossilization (Montrul 2008).

What seems hard to prove is whether there is incomplete acquisition because one of the languages is weaker than the other, or whether one of the languages is weaker because of incomplete acquisition. Also, where Meisel (2011) refers to a 'weaker' language he seems to refer to the language that is weaker in a bilingual person, whereas Montrul (2008) seems to refer to the language that is also weaker in the community (the minority or heritage language). This difference seems identical to the difference between Van Coetsem's linguistic dominance versus social dominance (Van Coetsem 1988, 2005).

Larsen-Freeman (2006) also refers to these different levels in her critical review of the concept of fossilization (Larsen-Freeman 2006). She claims that language, like other naturally occurring systems, is dynamic, constantly evolving, and self-organizing. This also holds for the use and development of language within an individual. If language is a dynamic system, then variability of performance and indeterminacy of speakers' intuitions would naturally follow because this view holds that there is no static standard to which all speakers subscribe. Or, as Larsen-Freeman puts it:

"Variability, volatility, unpredictability, indeterminacy and selectivity of interlanguage performance […] are serious problems only if one subscribes to a particular view of language – a view of monolithic, homogeneous, idealized, static end-state competence, where language acquisition is seen to be a process of conformity to uniformity" (Larsen-Freeman 2006).

From this point of view, parallels between theories of language acquisition and language change are no surprise, as they are both forms of language development. In this regard it is interesting to note that the factors that Montrul (2008) claims to lead or contribute to incomplete acquisition, i.e. input properties like insufficient or variable exposure as well as learner-related factors like age of acquisition, individual differences in working memory, affect, and motivation, are comparable to the factors that are involved in language change according to variationist sociolinguists and contact linguists. Meisel (2011) also links incomplete acquisition to sustained input from second language learners (non-native speakers), or a delay in the onset of acquisition. He states that successive acquisition of bilingualism "plays a crucial role as a source of grammatical change. In order for such changes to happen, however, grammar-internal and language-external factors may have to concur" (Meisel 2011). Whether these scenarios are indeed plausible ones to have occurred in the history of different languages and to have persisted long enough to cause such effects remains to be seen. Meisel (2011) suggests that they are much less likely than is commonly assumed in historical linguistics and argues for a closer cooperation between various subfields of developmental linguistics to produce deeper insights into the mechanisms of linguistic development.

2.5 Conclusion

In this chapter insights from contact linguistics, variationist sociolinguistics, language acquisition studies and dynamic systems theory have been considered. These may all contribute to the understanding of the developments that are taking place in the verbal complex in Frisian. A number of theoretical questions can be addressed with a study of Frisian verbal complex changes, most importantly, the Frisian verbal complex gives the unique opportunity to study language change in a syntactic/structural phenomenon, which is regarded as less vulnerable to change, in a bilingual minority community.

Many of the factors that play a role in (bilingual) language acquisition are comparable to the factors that are involved in language change according to variationist sociolinguists and contact linguists. From the dynamic systems theory point of view this is expected, as they are both forms of language development. Meisel (2011) argues for a closer cooperation between various subfields of developmental linguistics to produce deeper insights into the mechanisms of linguistic development. This is one of the aims of the current study.

The variationist approach seems very suitable to study linguistic variation in language contact situations, although such studies are comparatively rare (Léglise & Chamoreau 2013). For the empirical study of the variation in Frisian, and in the verbal complex in particular, variationist sociolinguistics offers a good framework. Smith (1980) conducted one of the first apparent time variationist studies of Frisian. He investigated the linguistic variation in Terherne, a rural bilingual village at the border of one of the Frisian lakes (and hence attractive for (Dutch) tourists). His aim was to describe the existing variation and to link this to demographic and social variables and to language attitudes. He concluded that Frisian played a central role in the life of this rural Frisian community, but he also saw 'a major degree of displacement of Frisian by Dutch' (Smith 1980, pp. 277).

Until now, three studies have been published that consider language variation within the Frisian speaking community with empirical (rather than introspective) data: Feitsma et al. (1987), Bezooijen (2009) and Nota et al. (2017). Feitsma et al. (1987) concerns an apparent time study of sandhi phenomena which did not find signs of convergence between Frisian and Dutch, but rather indications of divergence for some of the phonetic variables. Bezooijen (2009) examined variation and change in the pronunciation of (r) in Frisian and did not find use of the Dutch variant. Nota et al. (2017) did find sex and age differences in the realization of intonation contours in 40 Frisian speakers.

One of the first issues regarding the developments in the Frisian verbal complex is a lack of a large coherent set of data. Some of the existing studies on the developments in the Frisian verbal complex contain elements of the variationist approach like an apparent time set-up or the comparison of social versus linguistic variables (e.g. Ytsma 1995, De Haan 1996b, Wolf 1996, Meyer & Weerman 2016). Nevertheless, they are often relatively small in size, or they consider only two-verb clusters, or only participial verb clusters. Some contain social variables, others do not. Also, different methodologies are used, which makes comparison of the findings difficult. A first goal of a study into the variation in the Frisian verbal complex should therefore be to gather more data and to do so more systematically. Variationist sociolinguistics provides some powerful methodologies to reach that goal. An apparent time study could provide a clearer picture of the developments in the Frisian verbal complex. Preferably in combination with a real time study in order to be able to distinguish intergenerational change from age grading (cf. Sankoff 2008).

Studying variation and the social and linguistic factors involved in different types of contact situations is necessary to determine whether there is a causal relationship between contact and change and which social and/or linguistic variables will be the 'winning' variables. This may effectively predict the linguistic outcome of language contact. A study of the variation in the Frisian verbal complex could contribute to this discussion. Also, it would be one of few studies of syntactic change in a variationist approach.

Some social factors that might play a role in the developments in Frisian were identified in this chapter. It is remarkable that previous studies into the variation in the Frisian verbal complex have not considered (many) social factors. Factors to be included should be at the least age and sex (cf. section 2.2.2). Language proficiency, language use, educational level and attitude should be included as well. Regional differences or the degree of urbanization could also play a role. The social context, to be discussed in chapter 4, might provide us with some indications of which variables would be most interesting to investigate besides the 'classic' sociolinguistic variables. The exact linguistic factors to be taken into account should be determined after a more thorough investigation of the linguistic landscape of the verbal complex in Frisian and Dutch, which will follow in chapters 3 and 5.

Chapter 3

Comparing Frisian and Dutch Verb Clusters

3.1 Introduction
3.2 Comparing Frisian and Dutch two-verb clusters
3.3 Ordering patterns in constructions with three verbs
3.4 Conclusion

3.1 Introduction

This chapter presents an overview of the characteristics of a number of verbal constructions in Frisian and Dutch. An extensive comparison between Frisian and Dutch will enable us to investigate whether Frisian is undergoing 'Dutchification'.

In Frisian as well as in Dutch main verbs accompanied by auxiliary verbs or restructuring verbs like modals appear in one group in sentence final position, as in many West Germanic languages. This so-called verb cluster shows up in matrix clauses as well as embedded clauses, but in matrix clauses the finite verb is in Verb Second (V2) position and therefore not part of the cluster. This is shown in examples (13) and (14) with the verbs underlined. As it is not entirely clear whether or how the verb in V2 position influences the (ordering) possibilities in the sentence final verb cluster, this study will focus on the verbal complex in embedded clauses.

(13) MATRIX CLAUSES
FR hy <u>soe</u> it boek <u>lêze wolle</u>
he would (Fin) the book read (Inf) want (Inf)
DU hij <u>zou</u> het boek <u>willen lezen</u>
he would (Fin) the book want (Inf) read (Inf)
'he would want to read the book'

(14) EMBEDDED CLAUSES
FR omdat er it boek <u>lêze wolle soe</u>
because he the book read (Inf) want (Inf) would (Fin)
DU omdat hij het boek <u>zou willen lezen</u>
because he the book would (Fin) want (Inf) read (Inf)
'because he would want to read the book'

The examples above also demonstrate different word orders in the verb cluster between Frisian and Dutch in both matrix clauses as well as embedded clauses. Many languages with verb clusters have some degree of word order variation in these multiple verb constructions, for example German (also Swiss German, Austrian German), Afrikaans and West Flemish. Dutch verb clusters have been studied quite extensively in theoretical linguistics (Evers 1975; Den Besten & Edmondson 1981; Haegeman & van Riemsdijk 1986; Zwart 1996; Barbiers &

Bennis 2010). For Frisian -with regard to the relative size of the language- the same holds (De Haan 1992a, 1996b; Koeneman & Postma 2006; Hoekstra & Versloot 2016). The ordering possibilities of the verbs within the verb cluster, the presence or absence of variation (optionality) and the presence or absence of the Infinitivus Pro Participio (IPP) effect have been at the core of these studies as this is where languages differ and/or where theoretical explanations differ. An extensive overview of the differences and similarities in verb clusters across the West Germanic languages, and different theoretical accounts is provided by Wurmbrand (2006).

A second branch of studies investigates the variation within the verb cluster either diachronically or synchronically (Stroop 1970, 2009; De Haan 1995, 1996b, 1997; Ytsma 1995; Reitsma 2003; Koeneman & Postma 2006; Coussé et al. 2008; Hoekstra 2010b; Meyer & Weerman 2016; Bloem 2016). Variation in ordering possibilities in two-verb constructions is particularly well studied. Pauwels (1953) and Stroop (1970) were among the first to study variation in Dutch verb clusters. Many studies use Stroop's terminology describing the order in example (3) below as a descending order and that in example (4) as an ascending order (Stroop, 1970). This refers to the idea that the finite auxiliary is the verb that is highest in the syntactic tree, while the main verb is the lowest, most deeply embedded verb: *[zou [willen [lezen]]]*, [would [want [read]]]. Stroop (1970) numbered the verbs accordingly: example (15) shows a 2-1 order where 2 is the main verb, whereas example (16) has the 1-2 order.

(15)	DU		omdat Jan het boek gelezen (2) heeft (1)
			because he the book read (Part) has (Fin)
	FR		omdat Jan it boek lêzen (2) hat (1)
			because he the book read (Part) has (Fin)
			'because he read the book'

(16)	DU		omdat Jan het boek heeft (1) gelezen (2)
			because he the book has (Fin) read (Part)
	FR	*	omdat hy it boek hat (1) lêzen (2)
			because he the book has (Fin) read (Part)
			'because he read the book'

The descending (2-1) and ascending (1-2) order are also referred to as green and red order, respectively, where the colors refer to the color of the orders on the maps in Pauwels (1953). The numbering has the advantage that larger clusters can be described as well, e.g. a 1-2-3 cluster where 3 is the main verb, or even a 4-3-2-1 cluster where 4 is the main verb. Also, in clusters of more than two verbs, there are more possibilities than strictly ascending and descending orders, e.g. 3-1-2 where 3 is the main verb. But see Hoekstra & Versloot (2016) for some remarks on the numbering of larger clusters in this way. For lack of a better alternative, this study will follow the numbering convention as set out above.

In this chapter the sentence final verb cluster of Dutch and (Standard) Frisian will be compared. First, two-verb clusters with different verb types will be discussed (section 3.2). Subsequently, three different types of three-verb clusters will be investigated (section 3.3). In the next chapter the variation in the Dutch verbal complex will be investigated more closely, as well as some recent developments in the verbal complex in Frisian.

3.2 Comparing Frisian and Dutch two-verb clusters

As was demonstrated by examples (1)-(4), Frisian and Dutch have different characteristics regarding the verbal complex. This section aims to summarize the differences and similarities between Dutch and Frisian in a number of different types of verbal constructions. The following two- and three-verb constructions will be discussed here.

VERBAL CONSTRUCTIONS IN THIS STUDY

- Finite auxiliary + participial main verb: AP construction
- Finite restructuring verb + infinitival main verb: RI construction
- Finite restructuring verb + infinitival auxiliary + participial main verb: RAP construction
- Finite restructuring verb + infinitival restructuring verb + infinitival main verb: RRI construction
- Finite auxiliary + participial restructuring verb + infinitival main verb: ARI construction

The last construction is also referred to as the IPP construction, as the second verb (the participial modal) appears as an infinitival modal in these constructions in some of the Germanic languages (see section 3.3 below). Before proceeding to the discussion of the different constructions in Frisian and Dutch, the verbs that are used in the different constructions are introduced below.

The following verbs are considered as auxiliaries in this study.

AUXILIARY VERBS

- Auxiliaries of time *wêze (FR), zijn (DU)* and *hawwe (FR), hebben (DU)* ‘to have’
- Copular verbs *wêze (FR), zijn (DU)* ‘to be’ and *wurde (FR), worden (DU)* ‘to be’
- The passive auxiliary *wurde (FR), worden (DU)* ‘to be’

De Sutter (2005) and Bloem (2016) use the same categorization in their studies of Dutch two-verb clusters. These auxiliary verbs all select a past participle and are used in participial two- and three-verb constructions and in the IPP construction (AP, RAP and ARI constructions).

Restructuring verbs are verbs that can take an infinitive or *te* (to) + an infinitive as their complement. In the table ‘grades of restructuring’ (from Wurmbrand 2006) it is shown that modals normally belong to the verbs that take an infinitive as their complement in the West Germanic languages. In Frisian and Dutch they do too.

Type of verb	Grade of restructuring	Degree of restructuring
Modal verbs	Generally among restructuring predicates	Highest
Aspectual verbs	Generally among restructuring predicates	
Motion verbs	Generally among restructuring predicates	
Causatives	Generally among restructuring predicates	
try, manage, dare	Some degree of restructuring (some languages)	
(Other) irrealis, implicative verbs	Minimal degree of restructuring (some languages)	
Propositional verbs	Generally not among restructuring predicates	
Factive verbs	Generally not among restructuring predicates	Lowest

Table 3.1 The grades of restructuring (from: Wurmbrand 2006)

In this study the group of verbs that is investigated is somewhat larger than the actual group of modal verbs. The verbs studied here are the restructuring verbs that select a bare infinitive in both Frisian and Dutch. This led to the exclusion of some verbs that take a bare infinitive in Dutch, but a *te* + infinitive in Frisian. Of the remaining group of restructuring verbs, the following are subject of this study.

RESTRUCTURING VERBS SUBJECT OF THIS STUDY

- Modal verbs: *kinne, wolle, moatte, meie, sille* (FR) *kunnen, willen, moeten, mogen, zullen* (DU), to can, to want, to must, to may, to shall
- Causal auxiliary *litte* (FR), *laten* (DU), to let
- Non-auxiliary grouping verbs selecting a bare infinitive
    - Perception verbs *sjen, hearre* (FR) *zien, horen* (DU), to see, to hear
    - The aspectual verb *bliuwe* (FR) *blijven* (DU), to stay

All of these verbs take an infinitival main verb and are used in infinitival two-and three-verb clusters and in the IPP construction (RI, RRI, ARI). Verbs that take a *te* + infinitive (to + infinitive) as their complement in both Frisian and Dutch, like for example the modal *hoege* (FR) *(be)hoeven* (DU), to need to, are not part of this study. The verb *gean* (FR), *gaan* (DU), to go, behaves similarly to the verb *bliuwe*, but was left out of this study for reasons of economy.

3.2.1 Ordering patterns in infinitival and participial clusters

In this section two-verb constructions with a finite auxiliary and a participial main verb will be discussed, as well as infinitival two-verb constructions with a main verb and a finite verb of the verb types listed in above. The first will also be called participial clusters or AP-clusters (auxiliary-participle) and the latter infinitival clusters or RI-clusters (restructuring verb-infinitive). There are some differences between participial and infinitival constructions, which will be discussed in this section.

Participial two-verb clusters

Participial two-verb clusters consist of a finite auxiliary and a participial main verb, shortly AP clusters. A participial cluster can be generated with the auxiliaries of time *wêze* (FR), *zijn* (DU) ‘to be’ or *hawwe* (FR), *hebben* (DU) ‘to have’, depending on the lexical main verb. This phenomenon is referred to as ergativity (see Burzio 1986). In (17) some examples with 'to be' are shown.

(17)	FR	omdat sy oer de sleat **sprongen (2) is (1)**	(*is sprongen)
		because she over the ditch jumped (Part) is (3P-sg)	
	DU	omdat zij over de sloot **gesprongen (2) is (1)**	
		because she over the ditch jumped (Part) is (3P-sg)	
	DU	omdat zij over de sloot **is (1) gesprongen (2)**	
		because she over the ditch is (3P-sg) jumped (Part)	
		'because she jumped over the ditch'	

In Dutch the auxiliary can either precede or follow its lexical verb. Corresponding to the numbers on the verbs these orders are called 1-2 and 2-1, respectively. In (Standard) Frisian the auxiliary has to follow the lexical verb. The highest (selecting) verb always appears at the rightmost edge of the sentence, i.e. Frisian has the 2-1 order. In (18) some examples with 'to have' are shown.

(18)	FR	omdat er it boek **lêzen (2) hat (1)**	(*hat lêzen)
		because he the book read (Part) has (3P-sg)	
	DU	omdat hij het boek **gelezen (2) heeft (1)**	
		because he the book read (Part) has (3P-sg)	
	DU	omdat hij het boek **heeft (1) gelezen (2)**	
		because he the book has (3P-sg) read (Part)	
		'because he (has) read the book'	

These examples show the same pattern as those in (17) with 'to be': Dutch either 2-1 or 1-2, Frisian strictly 2-1.

In both Frisian and Dutch, the passive verb *wurde* (FR), *worden* (DU) 'to become' also takes a participle as its complement. Examples are shown in (19) below.

(19)	FR	omdat Marijke troch Jan **tute (2) waard (1)**	(*waard tute)
		because Mary by John kissed (Part) was (3P-sg)	
	DU	omdat Marie door Jan **gekust (2) werd (1)**	
		because Mary by John kissed (Part) was (3P-sg)	
	DU	omdat Marie door Jan **werd (1) gekust (2)**	
		because Mary by John was (3P-sg) kissed (Part)	
		'because Mary was kissed by John'	

In these clusters the same ordering possibilities as in the other participial clusters are observed. Dutch has optionality, whereas Frisian only allows 2-1. In written, more formal Dutch a preference for 1-2 has been reported for participial two-verb clusters (Arfs 2007). De Sutter et al. (2005) and Stroop (2009) on the other hand, find a clear preference for 2-1 in these clusters in more informal, spoken Dutch. Whatever the preference is, at least it is clear that both orders are acceptable in Dutch: both in more formal and informal situations, in written and spoken language both orders are reported.

Infinitival two-verb clusters

Infinitival two-verb clusters consist of a finite restructuring verb and an infinitival main verb: RV (fin) - V Main (inf), shortly RI clusters. In (20) and (21) examples with modal verbs like *wolle* (FR), *willen* (DU) 'to want' and *moatte* (FR), *moeten* (DU) 'to must' are given.

(20)	FR	omdat hy dêr sitte (2) wol (1)	(*wol sitte)
		because he there sit (Inf) wants (3P-sg)	
	DU	omdat hij daar wil (1) zitten (2)	
		because he there wants (3P-sg) sit (Inf)	
	DU	omdat hij daar zitten (2) wil (1)	
		because he there sit (Inf) wants (3P-sg)	
		'because he wants to sit there'	

(21)	FR	omdat Sytse syn húswurk dwaan (2) moat (1)	(*moat dwaan)
		because Sytse his homework do (Inf) must (3P-sg)	
	DU	omdat Sytse zijn huiswerk moet (1) doen (2)	
		because Sytse his homework must (3P-sg) do (Inf)	
	DU	omdat Sytse zijn huiswerk doen (2) moet (1)	
		because Sytse his homework do (Inf) must (3P-sg)	
		'because Sytse has to do his homework'	

These examples demonstrate that Frisian and Dutch again have different orders. Like in participial clusters, Dutch has optionality in clusters of a modal and an infinitive. In these clusters however, there is a clear preference for 1-2 in Dutch. Frisian has the 2-1 order in clusters of a modal and an infinitive: the 1-2 order is ungrammatical in Standard Frisian. These order and form restrictions not only hold for *wolle (FR), willen (DU),* want and *moatte* (FR)*, moeten (DU),* must, but also for the modals can, may, and shall (*kinne, meie, sille* in Frisian, *kunnen, mogen, zullen* in Dutch).

In (22)-(25) some examples with the causal auxiliary *litte* (FR), *laten* (DU), to let, perception verbs *sjen, hearre* (FR) *zien, horen* (DU), to see, to hear, and the verb *bliuwe* (FR) *blijven* (DU), to stay are given.

(22)	FR	Omdat er it boek op tafel lizze (2) liet (1)	(*liet lizze)
		Because he the book on table lie (Inf) let (3P-sg)	
	DU	Omdat hij het boek op tafel liet (1) liggen (2)	
		Because he the book on table let (3P-sg) lie (Inf)	
		'Because he left the book on the table'	
(23)	FR	Omdat sy de buorlju dúdlik praten (2) hearde (1)	(*hearde praten)
		Because she the neighbors clearly talk (Inf) heard (3P-sg)	
	DU	Omdat zij de buren duidelijk hoorde (1) praten (2)	
		Because she the neighbors clearly heard (3P-sg) talk (Inf)	
		'Because she clearly heard the neighbors talk'	
(24)	FR	Omdat Nynke him yn it park fytsen (2) seach (1)	(*seach fytsen)
		Because Nynke him in the park bike (Inf) saw (3P-sg)	
	DU	Omdat Nynke hem in het park zag (1) fietsen (2)	
		Because Nynke him in the park saw (3P-sg) bike (Inf)	
		'Because Nynke saw him biking in the park'	
(25)	FR	Omdat hy op it bêste plak sitten (2) bliuwt (1)	(*bliuwt sitten)
		Because he on the best place sit (Inf) stays (3P-sg)	
	DU	Omdat hy op de beste plaats blijft (1) zitten (2)	
		Because he on the best place stays (3P-sg) sit (Inf)	
		'Because he remains seated at the best place'	

In these cases Dutch has a strong preference for 1-2 as well, whereas in Standard Frisian only 2-1 is acceptable. In a recent study on the acquisition of two-verb clusters in Dutch children, a preference for 1-2 has been reported for both infinitival and participial clusters (Meyer & Weerman, 2016). Nevertheless, there is agreement on the presence and acceptability of the 2-1 order in adult Dutch verb clusters, in particular in participial constructions.

Apart from the order, there is another difference between Frisian and Dutch in these constructions. In Dutch infinitives (and in plurals as well) the verb final *-n* may be omitted due to a (optional) phonetic rule of n-deletion. Frisian however has two different types of infinitives, one ending in *-e* and one ending in *-en*. Their distribution is determined morpho-syntactically (for a detailed account of this phenomenon see De Haan 1986, or its translation in English in Visser et al. 2010). As a consequence, some of the restructuring verbs listed above select an infinitive in *-en*, in particular the perception verbs and the verb *bliuwe*, to stay, i.e. the non-auxiliary grouping verbs. Therefore, the examples in (11), (12) and (13) all contain an infinitive in *-en*: *praten, fytsen* and *sitten*, talk, bike and sit, respectively. Deletion of the *-n*, resulting in *prate, fytse* and *sitte*, would make these examples ungrammatical in Standard Frisian.

Resuming, in two-verb clusters Frisian and Dutch have deviating order preferences. In clusters with an auxiliary and a participle, Dutch allows both 1-2 and 2-1, whereas (Standard) Frisian only allows 2-1. In clusters with a restructuring verb and an infinitive, the same order preferences are displayed, albeit Dutch has a strong preference for 1-2 in these clusters. Schematically this is shown in table 1.

Cluster type	**Dutch**	**Frisian**
AP clusters **V Aux (fin) - V Main (part)**	1-2, 2-1	2-1
RI clusters **RV (fin) - V Main (inf)**	1-2 (2-1)	2-1

Table 3.2 Ordering possibilities in Standard Frisian and Dutch two-verb clusters

Also, Dutch has optionality, whereas Standard Frisian has strictly descending orders, and finally, Dutch has a phonetic and Frisian a morpho-syntactic distribution of endings in *-e* versus *-en*.

3.3 Ordering patterns in constructions with three verbs

In constructions with three verbs there are many more ordering possibilities and thus a higher chance of variation. With two verbs there are only two (2! = 2x1) ordering possibilities, 1-2 and 2-1, but three elements can generate six (3! = 3x2x1) logical orders. In the numbering convention used in this study these are: 1-2-3 (strictly ascending), 3-2-1 (strictly descending), 1-3-2, 3-1-2, 2-1-3 and 2-3-1. It seems that not all of these possibilities are used to the same extent. Orders beginning with the second verb (i.e. the verb numbered 2 in a three-verb construction) are rare or even impossible in many languages, like Frisian and Dutch. This has been documented by among others Barbiers (2005), Wurmbrand (2006) and Zwart (1996).

This section investigates three different constructions of three verbs in Standard Frisian and Dutch (see Wurmbrand (2006) for an overview of the possibilities in other West Germanic languages). Both participial as well as infinitival two-verb clusters can be combined with a finite restructuring verb, creating a cluster of three verbs. This means that the participle and the infinitive remain the deepest embedded verbs, respectively: RV (fin) - V Aux (inf) - V Main (part), shortly RAP clusters, and RV (fin) - RV (inf) - V Main (inf), or RRI clusters. Clusters of an auxiliary verb and a participial main verb cannot be combined with another auxiliary verb, but clusters with a restructuring verb and an infinitival main verb can: V Aux (fin) – RV (inf/part) - V Main (inf), shortly ARI cluster. This results in the construction in which the *Infinitivus pro Participio* effect (or IPP effect) can show up: the restructuring verb appears as a participle or as an infinitive. These three different three-verb constructions (RAP, RRI and ARI/IPP constructions) will be discussed in this section. Again, the comparison between the Standard varieties of Dutch and Frisian will be leading.

RAP clusters: RV (fin) - V Aux (inf) - V Main (part)

Clusters containing a finite restructuring verb, an infinitival auxiliary and a participial main verb are an extension of the AP two-verb clusters. In Dutch AP clusters ordering is flexible whereas Standard Frisian has a restricted 2-1 order. When AP clusters are combined with another verb, different ordering possibilities appear. Note that these constructions can only be formed with modals, not with other types of restructuring verbs. Example (26) demonstrates this for the modal *sille* (FR), *zullen* (DU) 'to will'.

(26)	FR	dat ik dat koekje net opiten (3) hawwe (2) soe (1)
		that I that cookie not eaten (Part) have (Inf) would (3P-sg)
	DU	dat ik dat koekje niet zou (1) hebben (2) opgegeten (3)

that I that cookie not would (3P-sg) have (Inf) eaten (Part)
DU dat ik dat koekje niet opgegeten (3) zou (1) hebben (2)
that I that cookie not eaten (Part) would (3P-sg) have (Inf)
DU dat ik dat koekje niet zou (1) opgegeten (3) hebben (2)
that I that cookie not would (3P-sg) eaten (Part) have (Inf)
DU dat ik dat koekje niet opgegeten (3) hebben (2) zou (1)
that I that cookie not eaten (Part) have (Inf) would (3P-sg)
'that I wouldn't have eaten that cookie'

In Frisian, only the 3-2-1 order is possible, in Dutch all combinations except those starting with the middle verb are possible. The large number of possibilities is not dependent on the type of the modal that is used. This is illustrated in example (27) with *moatte* (FR), *moeten* (DU) 'to have to'.

(27) FR omdat hy ek fiif jier yn Snits wenne (3) hawwe (2) moat (1)
because he also five years in Snits lived (Part) have (Inf) must (3sg)
DU omdat hij ook vijf jaar in Sneek moet (1) hebben (2) gewoond (3)
because he also five years in Sneek must (3sg) have (Inf) lived (Part)
DU omdat hij ook vijf jaar in Sneek gewoond (3) moet (1) hebben (2)
because he also five years in Sneek lived (Part) must (3sg) have (Inf)
DU omdat hij ook vijf jaar in Sneek moet (1) gewoond (3) hebben (2)
because he also five years in Sneek must (3sg) lived (Part) have (Inf)
DU omdat hij ook vijf jaar in Sneek gewoond (3) hebben (2) moet (1)
because he also five years in Sneek lived (Part) have (Inf) must (3sg)
'because he also must have lived in Sneek for five years'

In both cases Frisian only allows the 3-2-1 order, whereas Dutch allows four different orders: 1-2-3, 3-2-1, 1-3-2, 3-1-2. According to Evers (2001) the large number of possibilities in this type of cluster (in Dutch) is due to some property of the participle, which allows it to appear in different positions in the verb cluster. He calls the participle a 'cluster creeper'.

Stroop (2009) describes ordering possibilities in Netherlandic and Belgian Dutch with data from the *Corpus Gesproken Nederlands,* Corpus Spoken Dutch (furthermore: CGN). He argues that both Netherlandic and Belgian Dutch have an ascending order, but the place of the participle differs. In Netherlandic Dutch it comes in first (preferred in his data) or last position, in Belgian Dutch the participle is in the penultimate position (Stroop 2009). Stroop also finds this pattern in larger clusters, bearing in mind that the number of hits is inversely proportional with the number of verbs in the cluster.

Language area	Number of hits	1-2-3 order *zou worden gedaan*	1-3-2 order *zou gedaan worden*	3-1-2 order *gedaan zou worden*
Netherlands	233	21 (9 %)	8 (3%)	204 (88%)
Belgium	206	5 (3%)	153 (74%)	48 (23%)

Table 3.3 Order in Dutch MAP clusters in embedded clauses in the CGN (from: Stroop 2009)

Stroop does not find clusters with the 3-2-1 order in his data. Cornips (2009) however finds an acceptability rate of 21,3% for the 3-2-1 order in a grammaticality judgment task. This could be due to a difference in methodology, i.e. Stroop's corpus concerns spoken Dutch and Cornips' data are grammaticality judgments. The attested orders from the CGN could reflect speaker preferences and do not automatically entail the ungrammaticality of other orders. In the next chapter more attention will be devoted to regional variation in order preferences.

RRI clusters: RV (fin) - RV (inf) - V Main (inf)

When a two-verb RI clusters is combined with another restructuring verb, the result will be a cluster that contains a finite restructuring verb, an infinitival restructuring verb and a lexical infinitive, an RRI cluster. In the two-verb RI clusters Dutch showed a clear preference for the 1-2 order, whereas in Frisian the only possibility was the 2-1 order. In (28) and (29) below, the possibilities in RRI clusters with two restructuring verbs are demonstrated.

(28) FR dat de jonge wol mei de hûn boartsje (3) wolle (2) soe (1)
that the boy with the dog play (Inf) want (Inf) should (3sg)
DU dat de jongen wel met de hond zou (1) willen (2) spelen (3)
that the boy with the dog should (3sg) want (Inf) play (Inf)
DU ? dat de jongen wel met de hond spelen (3) zou (1) willen (2)
that the boy with the dog play (Inf) should (3sg) want (Inf)
DU ? dat de jongen wel met de hond zou (1) spelen (3) willen (2)
that the boy with the dog should (3sg) play (Inf) want (Inf)
DU ? dat de jongen wel met de hond spelen (3) willen (2) zou (1)
that the boy with the dog play (Inf) want (Inf) should (3sg)
'that the boy would want to play with the dog'

(29) FR dat dizze man yn ‘e trein sigaren roke (3) kinne (2) wol (1)
that this man in the train cigars smoke (Inf) can (Inf) wants (3sg)
DU dat deze man in de trein sigaren wil (1) kunnen (2) roken (3)
that this man in the train cigars wants (3sg) can (Inf) smoke (Inf)
DU ? dat deze man in de trein sigaren roken (3) wil (1) kunnen (2)
that this man in the train cigars smoke (Inf) wants (3sg) can (Inf)
DU ? dat deze man in de trein sigaren wil (1) roken (3) kunnen (2)
that this man in the train cigars wants (3sg) smoke (Inf) can (Inf)
DU ? dat deze man in de trein sigaren roken (3) kunnen (2) wil (1)
that this man in the train cigars smoke (Inf) can (Inf) wants (3sg)
‘that this man wants to be able to smoke cigars inside the train’

In these clusters Standard Frisian again allows for only one order, the strictly descending 3-2-1 order. Dutch shows a clear preference for the ascending 1-2-3 order. Cornips (2009) finds acceptance rates of 20,3% for the 3-1-2 order and 9,2% for the 1-3-2 order. In the *Algemene Nederlandse Spraakkunst* (General Grammar of Dutch, furthermore ANS) however, these orders are not categorized as grammatical orders in these type of clusters. Barbiers (2005) also reports acceptance and use of the 1-3-2 and 3-1-2 orders in various Dutch dialects, as well as the 3-2-1 order. In this study, it will be assumed that in Standard Dutch 1-2-3 is the preferred order and that 1-3-2, 3-1-2 and 3-2-1 are possibly used in some localities of the Dutch language area. Again, the 2-1-3 and 2-3-1 orders are ungrammatical in both languages. The distribution of endings in *-e* and *-en* follows the same pattern as in the two-verb clusters.

ARI-constructions: V Aux (fin) - RV (inf/part) - V Main (inf)

In constructions with a finite auxiliary, a participial restructuring verb and an infinitival main verb (ARI clusters) the so-called *Infinitivus pro Participio* effect can occur (henceforth: IPP effect). Various Germanic languages show this effect and in some of them it is obligatory. The result of IPP is that the second verb (the restructuring verb) shows infinitival morphology instead of participial morphology, cf. example (30) with a modal restructuring verb.

(30) DU Dat zij hen had <willen> <*gewild> uitnodigen
that she them had (3sg) <want (Inf)> <*wanted (Part)> invite (Inf)
‘that she had wanted to invite them’

This construction features a clear contrast between Frisian and Dutch. Both Frisian and Dutch display rigid ordering possibilities in this cluster type:

(31) FR omdat er in boek lêze (3) wollen (2) hie (1)
because he a book read (Inf) wanted (Part) had (3sg)
DU omdat hij een boek had (1) willen (2) lezen (3)
because he a book had (3sg) want (Inf) read (Inf)
'because he had wanted to read a book'

In Frisian 3-2-1 is the only possible order, whereas Dutch is restricted to 1-2-3. Also, Dutch obligatorily shows the IPP effect in this type of cluster, resulting in an infinitival restructuring verb. In Frisian on the other hand, the restructuring verb shows up as a participle.

If the second verb is not a regular modal but one of the perception verbs (see verbs listed in section 3.1), the same ordering restrictions hold.

(32) FR dat pake beppe in iel fangen (3) sjoen (2) hie (1)
that grandpa grandma an eel catch (Inf) seen (Part) had (3sg)
DU dat opa oma een paling had (1) zien (2) vangen (3)
that grandpa grandma an eel had (3sg) seen (Inf) catch (Inf)
'that grandpa saw grandma catch an eel'

Again, Frisian displays a strictly descending order, 3-2-1, and Dutch has 1-2-3 with the IPP effect. In these constructions, the ascending order is the only possibility in Standard Dutch. Wurmbrand (2006) offers a more elaborate discussion of the IPP effect in various West Germanic languages (and see also Coupé (2015) for a diachronic perspective on the development of IPP in Dutch verb clusters).

In table 3.4 the ordering possibilities of the three different three-verb constructions discussed in this section are shown together.

Cluster type	Dutch	Frisian
RAP clusters RV (fin) - V Aux (inf) - V Main (part)	1-2-3, 1-3-2, 3-1-2, 3-2-1	3-2-1
RRI clusters RV (fin) - RV (inf) - V Main (inf)	1-2-3 (1-3-2, 3-1-2, 3-2-1)	3-2-1
ARI/IPP clusters V Aux (fin) - RV (inf/part) - V Main (inf)	1-2-3 + IPP	3-2-1 (no IPP)

Table 3.4 Ordering possibilities in three-verb constructions in Standard Frisian and (Netherlandic) Dutch

3.4 Conclusion

In this chapter an overview was given of the differences and similarities between Frisian and Dutch two- and three-verb clusters. Table 3.5 below shows the ordering possibilities of the verb cluster types that are subject of this study.

Cluster type	Dutch	Frisian
AP clusters **V Aux (fin) - V Main (part)**	1-2, 2-1	2-1
RI clusters **RV (fin) - V Main (inf)**	1-2 (2-1)	2-1
RAP clusters RV (fin) - V Aux (inf) - V Main (part)	1-2-3, 1-3-2, 3-1-2, 3-2-1	3-2-1
RRI clusters RV (fin) - RV (inf) - V Main (inf)	1-2-3 (1-3-2, 3-1-2, 3-2-1)	3-2-1
ARI/IPP clusters V Aux (fin) - RV (inf/part) - V Main (inf)	1-2-3 + IPP	3-2-1 (no IPP)

Table 3.5 Ordering possibilities in Standard Frisian and (Netherlandic) Dutch two- and three-verb clusters

The table demonstrates that Standard Frisian has rigid ordering in all of the cluster types investigated, whereas Dutch shows optionality (variation) in some of the cluster types.

Besides the different ordering possibilities, the main differences between Standard Frisian and Standard Dutch in the verbal constructions under investigation involve the fact that Dutch allows variation/optionality (in the AP, RAP and possibly also in the RRI clusters), the presence (Dutch) versus absence

(Frisian) of the IPP effect (in ARI clusters) and the phonetic (Dutch) versus morpho-syntactic (Frisian) distribution of endings in *-e* and *-en*.

In this chapter the theoretical (im)possibilities in the verbal complex of Standard Dutch and Standard Frisian were compared. Chapter 5 will summarize the variation encountered in studies of written and spoken language, and for Dutch, the role that some factors play in the distribution of variation. But first, in the next chapter, more on the context in which the developments are taking place.

Chapter 4

The Frisian Verbal Complex in its Context

4.1 Introduction
4.2 The socio-political context of Frisian
4.3 Favorable conditions for structural language change
4.4 Bilingual acquisition of Frisian and Dutch
4.5 Conclusion

4.1 Introduction

The combination of methodologies and insights from the fields of study discussed in chapter 2 (i.e. variationist sociolinguistics, contact linguistics, and language acquisition studies) can contribute to the understanding of the changes that are taking place in Frisian. Also, the study of the developments in Frisian, and in particular the variation in the Frisian verbal complex, may contribute to outstanding issues in the different disciplines. In this chapter the context of the study will be laid out, and the political, social and bilingual make-up of the province of Fryslân will be reviewed.

4.2 The socio-political context of Frisian

In this study, the province of Fryslân will be taken as the social context, or the linguistic community. The province of Fryslân has 646.815 inhabitants (as per 31 May 2017, according to the CBS, the statistics bureau of the Dutch government). According to the most recent investigation of the Province, 55% of these inhabitants speak Frisian as their first language, i.e. with at least one of their parents (Provinsje Fryslân, 2015). The share of inhabitants with Frisian as their first language seems quite stable since the 1980's (the sharp decline between 1967 and 1980 could be caused by differences in methodology).

Year	Frisian	Dutch	Regional dialect/Other language
1967	71	13	16
1980	54,4	22,5	23,2
1994	54,8	28,0	17,2
2007	54,3	34,7	11,1
2011	53,6	35,8	10,5
2015	55,3	34,6	10,0

Table 4.1 First languages of the inhabitants of the province of Fryslân in percentages (Pietersen 1969, Gorter et al. 1984, Gorter & Jonkman 1995, Provinsje Fryslân 2007, 2011, 2015)

As age is one of the social variables that often correlate with language variation, it would be interesting to see whether the share of L1 speakers of Frisian varies between different age groups. The table below shows the share of L1 Frisian speakers for different age groups of the population of the province of Fryslân.

Age group	Frisian	Dutch	Regional dialect/Other language
18-29 year	53,4	40,9	5,7
30-49 year	55,9	37,3	6,7
50-64 year	54,4	32,9	12,6
65 and older	56,9	28,7	14,4
Total	*55,3*	*34,6*	*10,0*

Table 4.2 First languages of the inhabitants of the province of Fryslân per age group in percentages (Provinsje Fryslân, 2015)

The table demonstrates that the share of L1 speakers of Frisian decreases slightly with age. The number of inhabitants with Dutch as their L1 is higher in the youngest groups, whereas the number of speakers with a regional dialect (or other language) as L1 is lower.

Note that there are some geographical differences within the province regarding first language. The map below shows the percentage of inhabitants with Frisian as their first language per municipality.

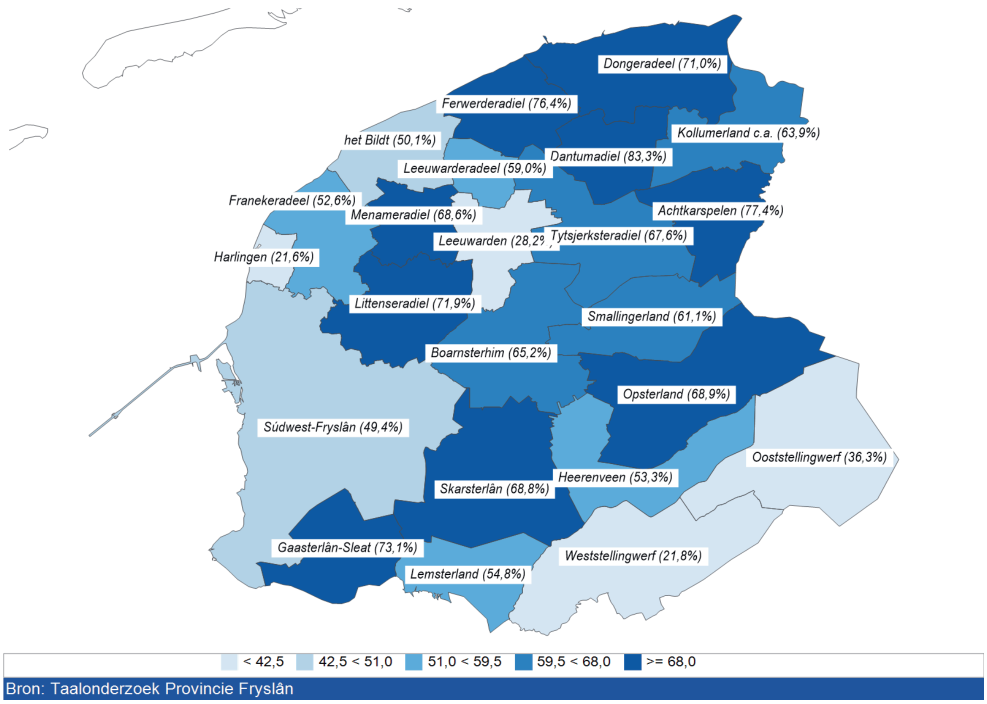

Figure 4.3 Percentage of Frisian L1 inhabitants per municipality (Provinsje Fryslân, 2011)

The map shows that in the North and East of the province the percentage of Frisian L1 speakers is higher than in the more urbanized and southern municipalities of the province, but overall only four municipalities have a share of Frisian L1 speakers that is substantially below 50%.

Nevertheless, the fact that Frisian is the first language of a considerable share of the population does not per se mean that their use of Frisian is highly frequent, nor does it mean that their proficiency in Frisian is very high. The graph below shows the development in self-reported proficiency in Frisian in understanding, speaking, reading and writing.

Domain	1967	1980	1994	2007	2011	2015
Understanding	90	85	85	84,2	84,6	85,1
Speaking	77	62	61	63,7	64	66,6
Reading	44	34	34	46,2	48,6	51,8
Writing	12	2	4	9,5	12,1	14,5

Table 4.4 Self-reported proficiency in Frisian of the inhabitants of the province of Fryslân. The percentage indicates the share of the population that claims to be *good* or *very good* at that particular domain (Pietersen 1969, Gorter et al. 1984, Gorter & Jonkman 1995, Provinsje Fryslân 2007, 2011, 2015)

As the differences between the different domains are considerable, it could be interesting to take language proficiency in different domains as a variable in this study. Breuker (1993, 2001) for example suggests that there are two groups of Frisian speakers. One of the groups mainly uses Frisian as a spoken language, the other also reads and writes Frisian. The first group is, according to Breuker, the group that has interference from Dutch in their Frisian, whereas the second group tries to avoid Dutchification in their Frisian and even propagates 'distancing', which means that Frisian words that resemble Dutch are avoided (Breuker, 1993, 2001). If such a dichotomy would be the case, writing proficiency might correlate with variation in the verbal complex. Jongbloed-Faber et al. (2016) for example, found an effect of writing skills on the use of Frisian on social media by teenagers.

The (frequency of) use of the language is another variable that might correlate with linguistic variation. Also, the use (or the lack of use) of Frisian in different social domains could reveal something about the status of the language. In some of the socio-linguistic surveys of Frisian the use of Frisian in different domains has been investigated. Data from 1995 are demonstrated in figure 4.5:

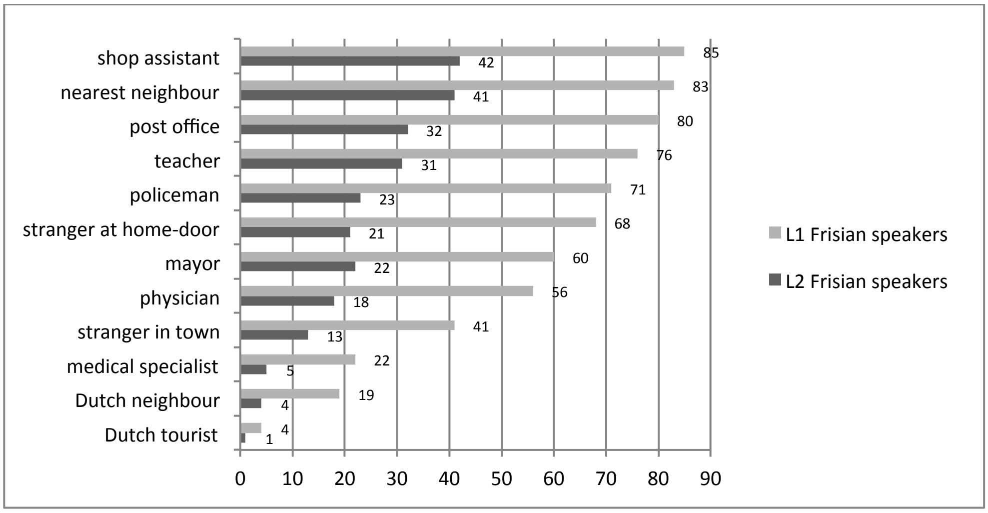

Figure 4.5 Use of Frisian in different situations by L1 and L2 Frisian speakers (from Gorter & Jonkman (1995))

Klinkenberg (2017) provides more recent data but only on some domains. Nevertheless, both Klinkenberg (2017) and Gorter & Jonkman (1995) seem to confirm the preference for Frisian in more 'domestic' or 'lower' domains. An interesting development is the use of Frisian on social media or online. Here as well the more informal channels, like WhatsApp, are preferred (Jongbloed-Faber et al. 2016). The use of Frisian in this new domain might increase the use of written Frisian, especially in teenagers (ibid.). In other words, it might be interesting to investigate whether the use of Frisian in different domains relates to linguistic variation.

Resuming, it would be interesting to investigate the effects of social variables like age, sex, language proficiency and language use in a study into variation and change in Frisian. Other sociolinguistic variables like educational level (instead of social class) and attitude might also be interesting, taking variationist sociolinguistic and contact linguistic work into consideration. Educational level has previously also been used as a variable in the sociolinguistic surveys (Gorter et al. 1984, Gorter & Jonkman 1995). The same surveys also provide data with regard to language attitude. More recently, the Frisian Institute for Social Research investigated the Frisian identity (Fries Sociaal Planbureau 2016). One of their findings concerns the strong link between the language and the Frisian identity. A difference was found between Frisian and Dutch speaking participants, which is in line with what Ytsma (1995) found, and, more recently Hilton & Gooskens (2013). He found that in general Dutch L1 speakers had a more negative attitude towards Frisian than Frisian L1 speakers do. He also found a link between linguistic behavior and language attitude held, but only in the results of Dutch L1 speakers. Dutch L1 speakers with a positive attitude towards Frisian scored significantly higher on self-reported oral and written command of Frisian than Dutch L1 speakers with a negative attitude towards Frisian. Jongbloed-Faber et al. (2016) also found an effect of attitude on the use of Frisian in Frisian L1 speakers. Teenagers with a positive attitude tend to use Frisian more often on social media or online (Jongbloed-Faber et al. 2016).

4.3 Favorable conditions for structural language change

A study of the developments in Frisian could contribute to discussions in contact linguistics by comparing the relative weight of social and linguistic factors in language contact and language change. Moreover, studying the developments in the Frisian verbal complex in particular might also contribute to the discussion on the prerequisites and peculiarities of grammatical or structural language change within contact linguistics and language acquisition studies.

One of the oft-mentioned favorable conditions (or prerequisites) for structural borrowing is extensive or ‘widespread bilingualism’ (Winford 2005, King 2000, Thomason & Kaufman 1988, Thomason 2010). In table 2.4 it was shown that 55,3% of the population of the province of Fryslân has Frisian as their mother tongue. It is safe to assume that all of these L1 speakers of Frisian are bilingual. Also, with almost 85% of the population understanding Frisian very well or well (Provinsje Fryslân, 2015) it can be concluded that a considerable amount of the 35% of the population that has Dutch as their mother tongue must be bilingual as well. Bilingualism is thus widespread.

Another favorable condition for structural change is a history of heavy lexical borrowing (Thomason & Kaufman 1988, Thomason 2010, see also section 2.3.3), i.e. when a lot of lexical transfer has already taken place, structural borrowing is more likely to occur. In chapter 1 some examples of different types of transfer from Dutch in so called Interference Frisian were given. In Breuker (2001, and references therein) a longer list of examples can be found. Lexical changes are so frequent that it can be safely concluded that heavy lexical borrowing has taken place. Also, variation and possibly language change seems to have happened in all linguistic domains, including more stable domains like syntax (cf. examples given in chapter 1). Regarding the stability gradient in language contact (see section 2.3.3), therefore, it seems that Frisian shows changes both in less stable domains and in stable domains.

One remaining issue in the literature on favorable conditions for structural change is the typological distance between the languages in contact. Thomason (2010) states that structural change is more likely "when the source language and the receiving language are very closely related, with essentially no typological distance separating them and largely shared lexicon and structural features". Heeringa (2004) found that, when compared to Standard Dutch, the Frisian dialects appeared to be most distant from Standard Dutch (but note that this is only compared to other dialects in The Netherlands and Flanders). Historically, Frisian is more closely related to English than to Dutch, but over the course of time Frisian has become less like English and more like Dutch (Gooskens & Heeringa 2004). In general, it can be stated that the typological distance between Frisian and Dutch is small (cf. Sjölin 1993), but that it is considerable in specific micro-domains of the sentence, such as for example the word order and morphological make-up of the verb cluster. Bloemhoff et al. (2013) consider the functional dominance of Dutch over Frisian, the very small linguistic distance between both languages, and lack of (acceptance of) a Frisian standard, important factors for interferences from Dutch in Frisian. But they also point at the mixing of Dutch and Frisian during the acquisition process and the unfinished acquisition of Frisian due to the weak position of the language in secondary socialization (education and work) (Bloemhoff et al. 2013). In the next section some studies on the acquisition of Frisian and Dutch will be discussed.

4.4 Bilingual acquisition of Frisian and Dutch

Compared to the many claims on the interrupted, incremental, abrupted or incomplete acquisition of Frisian (see for example Ytsma 1995, De Haan 1990, 1992b, Bloemhoff et al. 2013), there had not been much research on the bilingual acquisition of Frisian and Dutch in younger children until recently. Dijkstra (2013) and Bosma (2017), to be discussed in this section, offer some valuable insights in the bilingual acquisition of Frisian and Dutch.

4.4.1 Language transmission

On one aspect of language acquisition, namely the transmission of the Frisian language from one generation to the other, data are available from the language use surveys (Gorter et al. 1984, Gorter & Jonkman 1995, Provinsje Fryslân 2007, 2011 and 2015). This makes it possible to look at developments in the intergenerational transmission of the Frisian language. These data are shown in table 4.6.

Year	Frisian	Dutch	Regional dialect/Other language
1980	58	34	8
1994	53	39	7
2007	48	47	5
2011	48	48	5
2015	48	48	4

Table 4.6 Language spoken to children by their parents, in percentages (Gorter et al. 1984, Gorter & Jonkman 1995[1], Provinsje Fryslân 2007, 2011, 2015).

The table clearly demonstrates a decrease in the use of Frisian by parents, although it seems stable since 2007. The use of Dutch increased significantly since 1980. The use of other languages including regional dialects decreased. When we look at different age groups of parents in a more recent survey, the outlook for the transmission of Frisian could be better.

[1] In the 1994 study the question was asked differently. These data concern the first language of the child(ren).

[2] Frisian acquisition data from Bosma (personal communication) confirm Meyer et al.'s findings:

Age group	Frisian	Dutch	Regional dialect/Other language
18-29 year	52,0	43,7	4,3
30-49 year	46,7	51,0	2,4
50-64 year	46,1	49,3	4,7
65 and older	48,8	44,7	6,4
Total	*47,5*	*48,1*	*4,4*

Table 4.7 Language transmission according to age group in % of the inhabitants of Fryslân (Provinsje Fryslân 2015)

The table shows that the data for the youngest group deviate somewhat from those of the groups above. This is probably due to the size of the sample. Research from TNS NIPO (2004) showed an ‘underestimation’ in the use of Dutch and an ‘overestimation’ towards Frisian and other languages in potential parents compared to actual parents. Moreover, the picture that this TNS NIPO study reveals on the transmission of Frisian deviates substantially from the picture that arises from the surveys the Province administered. The table below shows the transmission of Frisian, Dutch, and other languages to children in Frisian, Dutch, and mixed couples.

	Parents speak with each other in			
	Frisian	Frisian/Dutch	Dutch	*Total*
Parents speak with children in	%	%	%	*%*
Frisian	90	20	5	*34*
Balanced Frisian/Dutch	4	20	11	*9*
Dutch	6	60	84	*54*
Other language	-	-	0	*2*
Total	*100*	*100*	*100*	*100*

Table 4.8 Language spoken between parents and language spoken with children, N=403 of which 208 with children younger than 13 years old and 195 participants younger than 36, without children (TNS NIPO 2004).

The table shows that most of the Frisian-speaking couples speak Frisian with their children, whereas most of the mixed and Dutch speaking couples speak Dutch with their children. Overall, this results in a clearly lower transmission rate for Frisian than in the surveys of the Province (34% strictly Frisian and 9% balanced Frisian-Dutch in the TNS NIPO study, as opposed to 48% Frisian in the 2015 provincial survey). If we look at the language spoken with the partner, we see that in the provincial survey (2015), the youngest age group goes more in the direction of the TNS NIPO (2004) numbers, with 42,5% speaking in Frisian with their partner, 53,3% in Dutch and 4,1% speaking in a different language with their partner (Provinsje Fryslân 2015). The language that is spoken with the partner is most often the same as the language spoken with the children.

Even when parents transmit the Frisian language, it does not mean that children also speak Frisian with their peers. In the TNS NIPO (2004) study data were also gathered on the language children speak with their friends, and at school. Their conclusion was that Frisian should be seen as a 'home language'. The difference between the group of children and their parents was substantial, with Frisian losing ground to Dutch. Table 4.9 below shows this for the language of interaction with friends. Whereas 53% of the parents born in Fryslân used to speak Frisian with their friends mostly or always, only 19% of the children speaks mostly or always Frisian with their friends. Children that speak Frisian at home do so in 35% of the cases, which still is a substantial decrease over one generation.

	Language child speaks at home				Language parents (born in Frl.) spoke w. friends
	Frisian	Frisian/Dutch	Dutch	**Total**	
Language child speaks w. friends	%	%	%	**%**	%
Always Frisian	16	2	0	**9**	42
Mostly Frisian	19	0	0	**10**	11
Balanced Frisian /Dutch	23	7	10	**16**	9
Mostly Dutch	17	29	11	**19**	9
Always Dutch	22	50	75	**40**	26
Other language	4	13	4	**7**	3
Total	100	100	100	**100**	100

Table 4.9 Language children are raised in and language they speak with their friends, compared to the language parents spoke with their friends (TNS NIPO 2004).

At school and around school, Frisian is spoken even less: 9% of the children speak mostly or always Frisian, 67% mostly or always Dutch, 16% speak Frisian and Dutch. Whereas of the parents born in Fryslân 31% spoke mostly or always Frisian at and around school, 53% mostly or always Dutch, and 16% Frisian and Dutch: again, a substantial decrease over one generation (TNS NIPO 2004).

4.4.2 Simultaneous acquisition of Frisian and Dutch

In the previous paragraph it was shown that the Frisian language is still transmitted from parents to their children, though the numbers are decreasing slightly and the use of Frisian with friends and at school seems to decrease. In this section some studies on the bilingual acquisition of Frisian and Dutch will be discussed.

It has often been claimed that the acquisition process of Frisian is influenced by (the omnipresence of) Dutch. As far back as 1976 Sjölin stated that "complete competence in Frisian is usually accomplished via Dutch" (Sjölin 1976, p. 11-12). Breuker (2001) argues that Frisian-Dutch bilinguals generally have a better, or at least more complete command of Dutch than of Frisian (Breuker 2001). One of the first studies into the acquisition of Frisian based on linguistic and social data was Ytsma (1995). Ytsma demonstrated the differences between the Frisian of children and their parents and also between L1- and L2-learners of Frisian (Ytsma 1995). On all six linguistic variables tested the Frisian L1 children scored significantly lower than their parents, according to the Standard Frisian norm. Ytsma also investigated whether age grading could play a role. He found that the scores of the 8th graders (11-12-year-olds) did not differ significantly from their scores 4,5 years later (Ytsma 1995).

In L2-acquirers of Frisian (i.e. Dutch L1 subjects) Ytsma also found an effect of age (with the older group outperforming the younger group), and in addition to that he found an effect of sex (girls outperforming boys), and of linguistic environment (children in a more Frisian environment scored higher). Concerning attitude Ytsma also found an effect in L2 acquisition of Frisian (i.e. in L1-Dutch children), but not in L1 acquisition (Ytsma 1995).

Ytsma interprets the significant differences between the Frisian L1 children and their parents as language change. The enlargement of the class of the diminutive suffix *-tsje* at the cost of the suffix *-ke*, is called an intralinguistic change by Ytsma, but with "a deeper cause […] in the external pressure of Dutch" (Ytsma 1995). With regard to the verbal complex, Ytsma suggests this is a case of stagnated language development, of interlinguistic change: "Apparently, Frisian children tend to apply Dutch grammar rules during the production of the verbal complex

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in their first language” (Ytsma 1995, p.108). De Haan (1990), however, argues strongly against the idea of the borrowing of grammatical rules, both with regard to the diminutive system as well as the verbal complex.

In terms of language acquisition, one could argue that in most of the cases Ytsma (1995) investigated the concept that the linguistic variable represents is acquired by the children: they use a Frisian diminutive suffix, only not the one that is correct in Standard Frisian. They produce a verbal complex with Frisian verbs, only not in the order or form that is correct in Standard Frisian.

Two more recent studies on the bilingual acquisition of Frisian and Dutch concern Dijkstra (2013) and Bosma (2017). Dijkstra (2013) investigated the role of input in the acquisition of Frisian and Dutch. She studied the influence of home language and outside home exposure on the development of both languages in young Frisian-Dutch bilingual children (from 2,5 to 4 years old). Dijkstra found that participants with Frisian as home language performed better on the three vocabulary measures of Frisian than their peers with Dutch as home language. In Dutch receptive vocabulary and number of different words, however, the Frisian home language participants performed similar to their Dutch home language peers. Only in Dutch productive vocabulary, the Dutch home language participants significantly outperformed their peers with Frisian as home language (Dijkstra 2013). Outside home exposure only played a role in the receptive vocabulary in both languages and was not important in productive vocabulary or number of different words, neither in Frisian, nor in Dutch. Overall, regarding vocabulary the home language was more important than the outside home exposure (Dijkstra 2013).

With regard to the development of morphosyntax, Dijkstra found that the Frisian home language participants produced significantly longer utterances in Frisian than their Dutch home language peers. In Dutch, both home language groups produced utterances that were equally long. Outside home exposure was not an important factor in morphosyntax (Dijkstra 2013). When comparing the proficiency in their second language, the children with Frisian as their home language outperformed their Dutch peers, and the difference increased over the sessions. Dijkstra (2013) sees this as a confirmation of e.g. Unsworth (2012), that speaking the L2 (or L2-output) might explain why one L2 is acquired more or faster than the other.

Whereas Dijkstra (2013) had two large groups of participants based on differences in input, Bosma (2017) looked at possible differences between simultaneous and early bilingualism (in subjects aged 5-7). She found that for the acquisition of Dutch inflectional morphology it did not matter whether the onset of acquisition of Dutch was from birth or starting at age 4, while for vocabulary it could be better to start a little bit later (Bosma 2017). The intensity of exposition to Dutch was a good predictor for both vocabulary and inflectional morphology. Also, the ability to use Frisian inflectional morphology correctly was a good predictor for the correct use of Dutch inflectional morphology (most probably caused by lexical overlap). Another interesting finding from Bosma (2017) concerns the typological distance between the languages to be acquired. Whereas in language contact studies it is assumed that a smaller typological distance promotes language change, Bosma (2017) found that in bilingual acquisition, similarities promote acquisition in some cases.

The picture that arises from Dijkstra (2013) and Bosma (2017) does not seem to justify the assumption that the developments in Frisian are caused by large scale interrupted or incremental acquisition. Rather, their findings seem to demonstrate that the simultaneous or early bilingual acquisition of Frisian and Dutch is comparable to other cases of simultaneous and early bilingual acquisition. Of course, individual cases may be exceptions to this.

4.5 Conclusion

Resuming, it seems that the conditions for structural change are present in the province of Fryslân. Given the differences between different parts of the province, the differences in proficiency and use of Frisian in daily life, and classical sociolinguistic patterns of change, it seems interesting to investigate the effect of such variables on the developments in the Frisian verbal complex. Social variables like age and sex, and external factors like language proficiency and language use will be taken into account in the current study.

Before translating this into research questions, the next chapter will take a closer look at some existing studies into variation in the verbal complex of Frisian and Dutch, their methodology and possible directions for our study.

Chapter 5

Variation in the Verbal Complex of Frisian and Dutch: State of Affairs

5.1 Introduction
5.2 Recent developments in the Frisian verbal complex
5.3 Variation in the Dutch verbal complex
5.4 Conclusion

5.1 Introduction

In this chapter the variation in the verbal complex of Frisian and Dutch will be investigated. Whereas (Standard) Frisian had little to no variation in the verbal complex, some recent developments indicate that both order and form in the Frisian verbal complex are subject to variation nowadays. This will be investigated in section 5.2. For Dutch many studies have appeared on the subject, in particular on the variation in clusters of two verbs (section 5.3). This is relevant for the study of Frisian as the variation in Frisian is often seen as the result of contact with Dutch. Moreover, the pattern of variation in Dutch could also give us some clues as to where we can expect variation in the Frisian verbal complex. The chapter will be concluded with some remaining questions regarding the variation in the Frisian verbal complex (section 5.4).

5.2 Recent developments in the Frisian verbal complex

In this section some more or less recent developments in the Frisian verbal complex will be discussed. As pointed out in chapter 2, in the course of the twentieth century linguists started mentioning changes in Frisian (presumably) under the influence of Dutch. Feitsma (1971) and Sjölin (1976) are among the first to publish about these changes. One of the changes that are mentioned concerns the rise of variation in the verbal complex. Early studies into changes in the verbal complex in Frisian are Jonkman (1984) and Eising et al. (1981). Jonkman (1984) found that 6 out of 12 students did not consequently produce Standard Frisian orders, whereas their parents did. Eising et al. reported 6% non-standard verb orders in 30-50-year-olds and 10% in 10-20-year-olds, whereas the 60-and-older group produced 100% Standard Frisian orders (Eising et al. 1981). Both Jonkman (1984) and Eising et al. (1981) are relatively small studies with subjects from one village, but more studies follow, discussing the phenomenon in more or less detail (De Haan 1986, 1992a, 1996b, 1997, Breuker 1993, 1997, Ytsma 1995, Wolf 1995a,b, 1996, Reitsma 2003, Koeneman & Postma 2006, Hoekstra & Versloot 2016). In this section the findings of these studies will be summarized.

5.2.1 The rise of inversion in Frisian verb clusters

One of the first to assess developments in the Frisian verbal complex in an experimental way was Ytsma (1995). As part of a larger sociolinguistic investigation into the acquisition of Frisian as first and second language, he administered a written sentence completion task assessing the presence of Verb Raising in Frisian. Ytsma (1995) found 5% of responses in non-standard orders for parents, with 85% of the parents scoring 100% Standard Frisian orders. The children's scores are demonstrated in the table below.

Nr of SF orders (out of 8)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Nr of subjects (n=200)	5	13	36	32	33	31	16	15	19

Table 5.1 Scores 9-13-year-olds on written sentence completion task (n=200, L1=FR), mean=4.11 Standard Frisian orders (out of 8 items), SD=2.13 (from Ytsma, 1995).

Only 10% of the children attain a perfect score of 100% (8/8) Standard Frisian orders, some score 100% non-standard orders, and many kids are somewhere in between. The difference between the parents and their children is striking and concerns the largest difference between parents and children of the linguistic variables studied by Ytsma (other variables studied were breaking, diminutive formation, *-je* verb conjugation, and lexical knowledge). On the basis of these findings Ytsma assumes 'syntactic borrowing of part of the rules governing word order in the verbal complex' (Ytsma 1995 p. 108, contra De Haan 1990), arguing that a threshold level of language contact has been reached, accelerating change and causing a more stable domain like syntax to change. De Haan (1990, 1996a) puts some arguments forward against syntactic (or grammatical, structural) borrowing, arguing that all of the changes seen so far are based on surface forms of Dutch, and not on their underlying grammatical features.

Wolf (1995a,b, 1996) used the same written elicitation task as Ytsma (1995) in combination with an oral elicitation task and a grammaticality judgment task. He found differences between modal and participial clusters, with higher degrees of inversion in modal clusters. In IPP contexts - where Dutch would require an infinitive - he found inversion of the verbs without IPP, i.e. with a participle. With an average of around 30% of inverted orders Wolf concluded that inversion was a property of 'Interference Frisian'. In Reitsma (2003) it was demonstrated that

Wolf's data left some room for interpretation. There were large individual differences; with some subjects scoring 100% Standard Frisian clusters and others with (almost) exclusively inverted clusters. Other variables that could have caused these differences (like sex or level of education) had not been studied. Ytsma (1995) did investigate the influence of different social and psycholinguistic variables on variation in the different linguistic variables, but did not find a consistent effect in L1 Frisian subjects. For subjects with Dutch as their L1 he found a small effect of language environment and (parental) attitude towards Frisian in some of the linguistic variables. With regard to verb clusters Ytsma (1995) found a significant effect (.05 level) for age (8-9-year-olds versus 11-12-year-olds), but not for sex, language environment or the interactions of these. A problem with the data in Ytsma (1995), as pointed out by De Haan (1996b), is the fact that the sentence completion task did not contain verb clusters with finite verbs. All of the sentences were matrix clauses with a sentence final cluster of two verbs (cf. example (1) at the beginning of this chapter). Also, the sentence final cluster never consisted of more than two verbs. Wolf's oral elicitation task was set up in the same way, i.e. matrix clauses exclusively.

Data gathered by De Haan and Breuker in 1994 as a part of a larger dialect survey did contain a number of verb clusters in embedded clauses (De Haan 1996b). The survey was published in regional newspapers and contained 3 sentences with different verb clusters. One of the sentences contained a three-verb cluster with a *te*-infinitive, one contained an RI cluster and one contained an RAP cluster. 560 responses from the three main Frisian dialect areas were analyzed. It was found that the differences between men and women were inconsistent (i.e. in some cases men deviated more from Standard Frisian and in other cases women did). The difference between different age groups however did show a consistent pattern: younger subjects showed more deviations from the 'Frisian pattern of the verbal complex' (De Haan 1996b). Note that in contrast to what Ytsma (1995) found, i.e. more changes in verbal constructions than in other variables, De Haan found much less deviations in the attested verbal constructions than in a morphological variable from the same survey. In the verbal complexes, 37 out of 560 respondents were responsible for 48 deviations in 1680 sentences (De Haan 1996b). Of course, the respondents were (much) older than Ytsma's subjects were at the time. About 70% of the deviations found by De Haan (1996b) concern

Dutch patterns, but with such a small number of different sentences it is hard to draw any conclusions on preferences for certain orders over others.

The number of studies that take three-verb constructions into account is very small, in particular if we leave out those based on 'anecdotal evidence', i.e. those without a substantial amount of (experimental) data. There is one notable exception: Koeneman & Postma (2006) gathered data on constructions with a finite auxiliary, a participial (or infinitival) modal and an infinitival main verb, the so-called ARI-cluster. They investigated the IPP construction in Frisian by means of a grammaticality judgment task and found substantial variation. Figure 5.2 shows the acceptability judgments of 33 subjects aged 13-17 with Frisian as their first language (i.e. subjects speak Frisian with both parents).

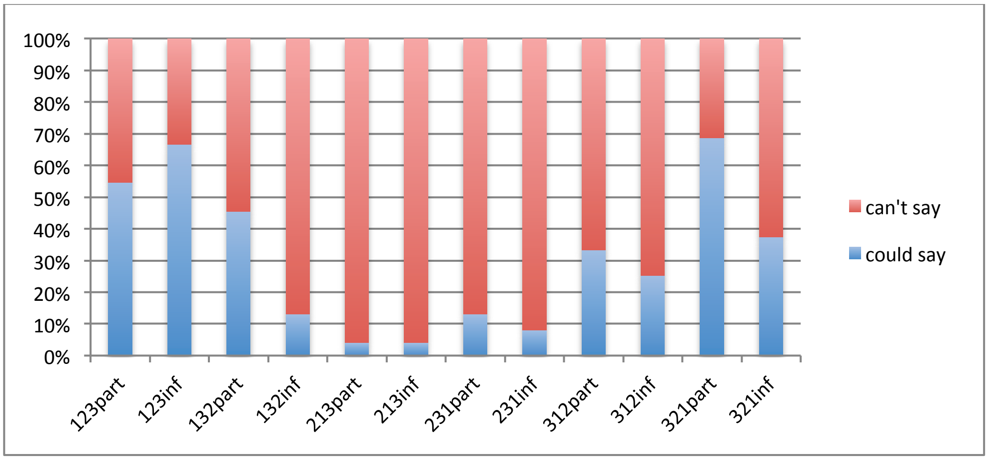

Figure 5.2 Acceptability judgments of different ARI clusters in 13-17-year-olds (n=33), from Koeneman & Postma (2006).

Apart from the orders starting with the second verb, all orders with a past participle as the second verb receive an acceptance rate above 30%. The orders with an infinitival that receive an acceptance rate above 30% are 1-2-3, the Standard Dutch order, and 3-2-1, the Standard Frisian order. The 3-1-2 order with an infinitival is accepted in 25% of the cases. De Haan (1997) had also noted that in ARI clusters the 3-1-2 order appeared besides the Standard Frisian 3-2-1 order. The acceptance rate of almost 40% for the 3-2-1 order with an infinitive however contradicts his claim that there is no IPP effect in this variety of Frisian if there is no inversion (De Haan 1997).

Chapter 5

Koeneman & Postma (2006) assume a change is underway from the Standard Frisian 3-2-1 order to the Dutch 1-2-3 order with the IPP effect. They call all other variants ‘hybrid’ constructions and their assumption is that hybrid clusters mark an intermediate stage in the transition from the Standard Frisian 3-2-1 order to the Dutch 1-2-3 (+ IPP) order. As their data are not presented at the individual level, it is not clear how large individual variation is nor whether there are patterns in the individual preferences. Hoekstra & Versloot (2016) analyzed the Koeneman & Postma data in a different way, calculating output frequencies of different verb orders based on (estimated) input frequencies, including Dutch input. In the case of ARI clusters, where both Standard Frisian and Dutch have rigid ordering, their theory provides a feasible explanation for the existence of ‘hybrid clusters’. On the other hand, for Frisian it is not entirely clear whether the input looks like Standard Frisian, i.e. whether the input is consistently ordered 3-2-1. Also, as demonstrated above, for other cluster types Dutch has optionality and it could depend very much on the speaker, region, etcetera, which orders show up in the input.

More recently, Meyer et al. (2015) investigated the acquisition of two-verb clusters in Frisian and Dutch of bilingual Frisian L1 children (n=29) and Dutch L1 monolingual children between 4 and 6 years old (n=102). Meyer et al. investigated participial and infinitival two-verb clusters in a sentence repetition task. They found that in Dutch, both Frisian and Dutch children show a clear preference for 1-2 orders, with slightly more conversion errors towards 2-1 and slightly fewer conversion errors towards 1-2 in younger Frisian children (4-year-olds). Frisian children also produce 1-2 orders in Frisian (Meyer et al. 2015). Besides that, younger children replaced Frisian verbs with Dutch verbs in otherwise Frisian utterances. Over all, 2-1 orders were much more often conversed towards 1-2 than vice versa. In participial clusters there were more conversions towards 2-1 than in modal clusters (Meyer et al. 2015). Both groups of children showed a preference for the 1-2 order and they showed identical development between age groups: first, a stage of 2-1, followed by a stage with a strong preference for 1-2 and finally almost exclusively 1-2 in modal clusters and a certain degree of variation between 1-2 and 2-1 in participial clusters.[2]

5.2.2 Morphological variation in the Frisian verbal complex

With regard to the morpho-syntactic distribution of endings (*-e* and *-en* in Standard Frisian versus optional *-n* deletion in Dutch): both Ytsma (1995) and Wolf (1996) reported non-Standard like use of *-e* and *-en* endings, but with no consistent pattern. In particular in IPP contexts some irregular verb forms seem to appear. Wolf (1996) links this issue to the existence of irregular morphology in some participles in Frisian (e.g. *sjoen,* seen, and *bleaun*, stayed) and the resemblance of some participles to infinitives (e.g. *litten*, let and *wollen*, wanted) and suggests a /0/-form. This has not been investigated further to my knowledge, but compare Merkuur et al. (2019).

On the one hand, it would be interesting to investigate this further. On the other hand, it was concluded that spoken data are a valuable source for the investigation of the developments in the Frisian verbal complex. It is difficult to distinguish between *-e* and *-en* forms in spoken data. Therefore, in the set-up of this study it has to be seen whether the distinction between verbs ending in *-e* and verbs ending in *-en* can be used as one of the variables in this study.

Summarizing, there are some interesting studies that demonstrate variation in the Frisian verbal complex. However, it is not clear how much variation there is between individuals. Also, most of the studies investigate only two-verb clusters or only one type of three-verb cluster. An overview of the variation in different verb cluster types is lacking and -as was demonstrated in chapter 2- not many of these studies pay attention to social factors. For a better understanding of the variation in the Frisian verbal complex it would be necessary to gather more data on different types of clusters and taking into account social as well as linguistic variables (cf. chapters 2 and 3). In order to gain more insight in the level and distribution of variation, group averages should be compared to individual variation.

[2] Frisian acquisition data from Bosma (personal communication) confirm Meyer et al.'s findings: Frisian children show the same acquisition pattern in two-verb clusters as Dutch children.

5.3 Variation in the Dutch verbal complex

In the chapter 3 it was shown that Standard Frisian has a strictly descending order in all of the verbal constructions investigated. Dutch shows variation between the different types of verbal complexes, but also within one verbal construction there can be different ordering possibilities. This variation has been investigated in a number of studies. Sometimes from a dialectological perspective, when the distribution of the different variants is studied on the basis of the geographical location of the subjects (Pauwels 1953, Stroop 1970, 2009). Others have looked at the distribution of the different ordering possibilities in different linguistic contexts (Coussé et al. 2008, De Sutter 2009, Bloem 2016, Bloem et al. 2017) or both (Cornips 2009; Barbiers & Bennis 2010; Coussé & De Sutter 2012).

These studies can clarify to a certain extent whether or not Dutch has true optionality in the different types of verbal complexes. When strict boundaries apply to the distribution of the orders optionality can be disregarded. These boundaries can be geographical, with one order spoken in a restricted geographical space to the exclusion of other orders, or they can be linguistic, regarding the type of verb or the linguistic context. When a clear division between the presence of certain orders in certain contexts is the case, without overlap, then optionality must be ruled out. If different orders appear in identical contexts, optionality has to be assumed.

5.3.1 Geographical distribution of variation

The study of two-verb clusters has received much more attention historically than the study of constructions with more than two verbs. Both constructions with a finite auxiliary and a past participle (AP constructions) and constructions with a finite modal and an infinitive (MI constructions) have been relatively well documented. The maps below are extracted from the DynaSAND corpus (Barbiers et al. 2006). The corpus is relatively recent, but it shows the preferences of older dialect speakers, so there is a possibility that the maps are slightly conservative (i.e. the preferences of younger speakers could deviate). One of the advantages of the corpus is the fact that it contains two- and three-verb constructions from the same speakers. Participants had to indicate how a certain phrase could be expressed in their local dialect, leaving room for more than one option per item.

The corpus thus shows the variation in ordering in the local dialects of the wider Dutch language area, i.e. The Netherlands and Belgium. For more information on the methodology of the SAND see Cornips & Jongenburger (2001).

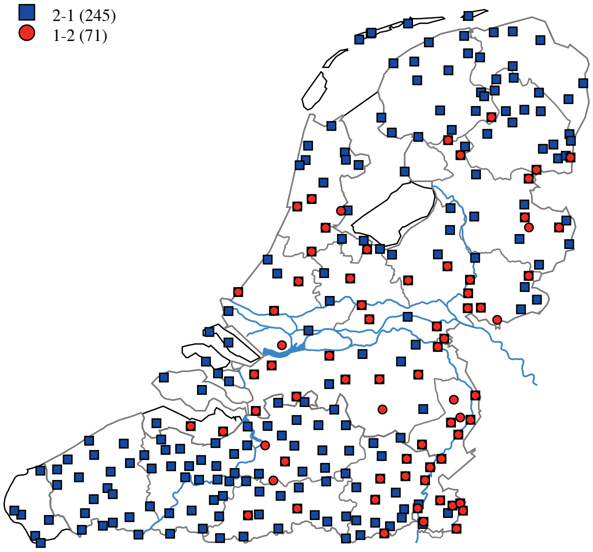

Figure 5.3 Distribution of *is gestorven* (1-2), is died, versus *gestorven is* (2-1), died is, 'has died', from the DynaSAND corpus.

The map in 5.3 shows the distribution of 2-1 and 1-2 orders in a two-verb AP cluster with a finite form of *zijn*, to be, and the past participle 'died'. The 2-1 order shows up in almost the entire area, with a possibility of 1-2 in the Eastern part of Belgium and The Netherlands and the middle part of The Netherlands. There is a small number of places where 1-2 is the only attested order.

The map in 5.4 shows the distribution of 2-1 and 1-2 orders in a two-verb AP cluster with a finite form of *hebben*, to have, and the past participle 'called'. The 2-1 order is dominant in both Belgium and The Netherlands. It would be tempting to attribute the differences with the map in 5.3 to the different auxiliaries, however, figure 5.5 below demonstrates that the same auxiliary *hebben,* 'have', can show a completely different distribution in combination with a different main verb, *vertellen,* 'to tell', in the case of the map in 5.5. The 2-1 order is dominant in the Northern and Southern part of the map, with 1-2 orders in the middle and East.

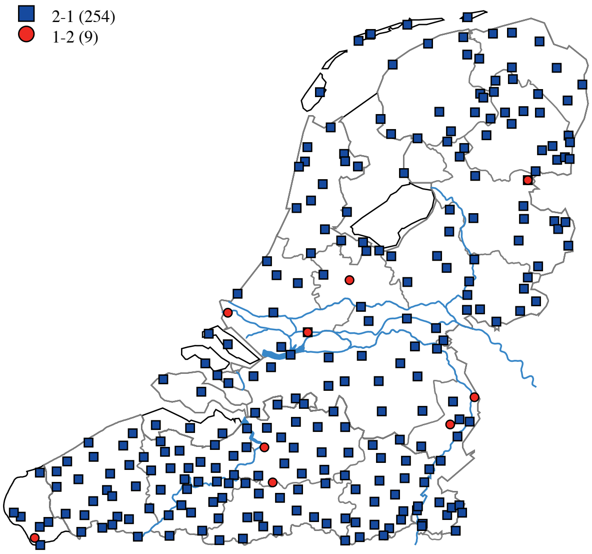

Figure 5.4 distribution of *hebben geroepen* (1-2), have called, versus *geroepen hebben* (2-1), called have, 'have called', from the DynaSAND corpus.

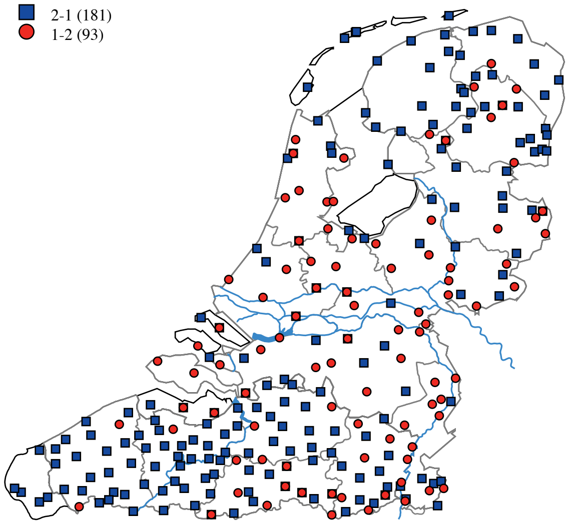

Figure 5.5 distribution of *heeft verteld* (1-2), has told, versus *verteld heeft* (2-1), told has, 'has told', from the DynaSAND corpus.

The maps in 5.3-5.5 demonstrate that there is variation within AP clusters concerning the preferences for 2-1 or 1-2 orders, and also some optionality, i.e. when more than one order is possible in the same construction in the same locality. Most of the participants however show a preference for one order per construction.

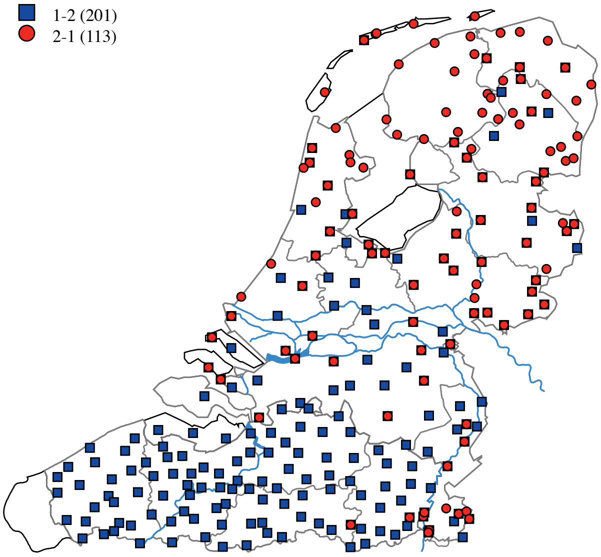

Figure 5.6 Distribution of *mag zien* (1-2), may see, versus *zien mag* (2-1), see may, ‘may see’, from the DynaSAND corpus.

The same holds for constructions with a finite modal and an infinitival main verb. The map in 5.6 (N.B. here the 1-2 orders are represented as blue squares and the 2-1 orders are represented by red diamonds!) shows a North-South division. In the North there is a preference for the 2-1 order, in the South the 1-2 order is dominant, in some places both orders are attested. Note that in Fryslân in both AP and MI clusters the 2-1 order is reported exclusively, which corresponds to what was stated on Frisian in section 3.1.

The picture that emerges from the maps on two-verb clusters is that variation is partly determined geographically and partly linguistically (i.e. different verb types, different lexical verbs combine with a different cluster order). Now, let’s take a look at the three-verb clusters from the DynaSAND corpus.

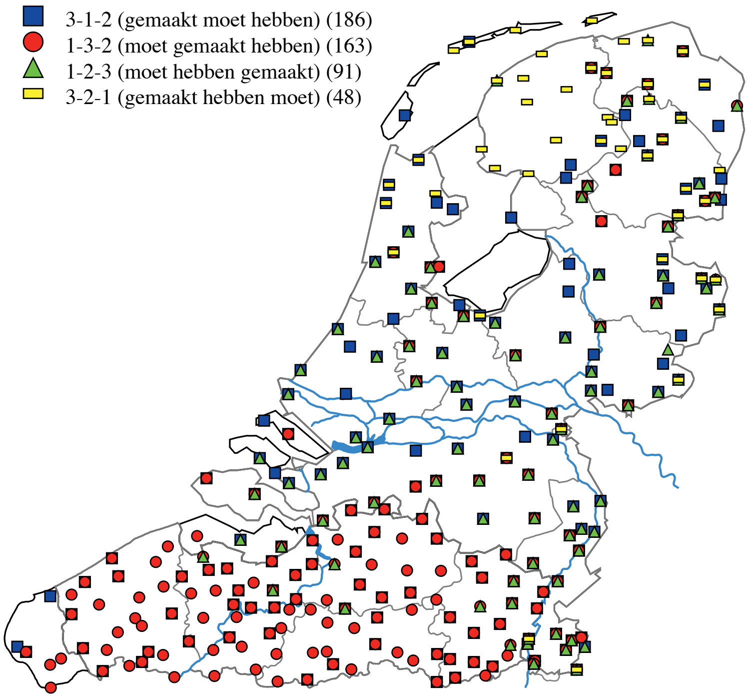

Figure 5.7 distribution of *moet hebben gemaakt* (1-2-3), 'must have made' and its ordering alternatives, from the DynaSAND corpus.

Again, the geographical variation that is shown on these maps does not represent ordering differences in Standard Dutch, but in the local dialects of the subjects. The map in 5.7 shows the ordering possibilities in three-verb clusters with a finite restructuring verb (in this case a modal), an infinitival auxiliary and a participial main verb (RAP clusters). The 3-1-2 order is found scattered through almost the entire language area, whereas the 1-3-2 order is mainly found in the South and the 3-2-1 order in the North/North-East, including in the province of Fryslân. The 1-2-3 order is found in the middle, from West to East. In many places more than one ordering is possible, which corresponds to what was mentioned in section 3.1, i.e. that the past participle is seen as a cluster creeper, being able to show up in different places in the verb cluster. Some localities allow even more than two different orders.

In clusters with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters), as demonstrated on the map in 5.8, there is less variation. Note that the most frequent order is always the one displayed with blue squares. On the map in 5.8 this is the 1-2-3 order. The 1-2-3 order seems quite dominant in this type of cluster: where optionality appears, it is mostly a combination of the 1-2-3 order with another order.

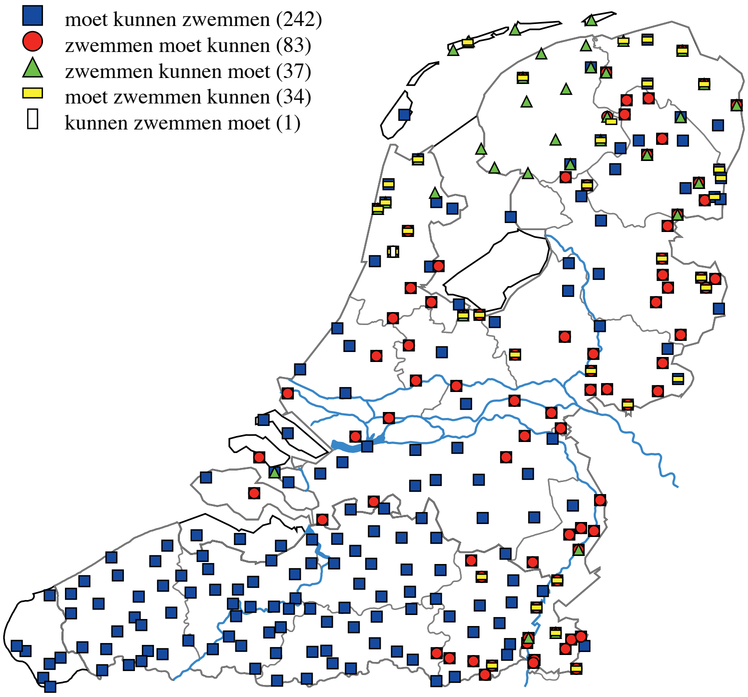

Figure 5.8 distribution of *moet kunnen zwemmen* (1-2-3), 'must can swim' and its ordering alternatives, from the DynaSAND corpus.

The 3-1-2 order appears mostly in the central and Eastern part of The Netherlands. In Fryslân the 3-2-1 order is dominant, and in the North (the area surrounding Fryslân) and South-East some 1-3-2 orders are attested as well. In The Netherlands optionality is quite common, in Belgium optionality exists mainly in the East.

The map in 5.8 shows the distribution of clusters with a finite auxiliary, a finite or infinitival modal (depending on the presence or absence of the IPP effect) and an infinitival main verb, the so-called ARI construction. This is the only map that shows variation in the Province of Fryslân, i.e. between the 3-2-1 order with a past participle and the 3-2-1 order with an infinitive. However, from a closer look at the data, it appears that an alternative form of the Frisian participle has been mistakenly taken for an infinitive. In the case of *kinne*, to can, the past participle can take the form of *kind*, but *kinnen* is also allowed. The infinitive is *kinne*, without the final *-n*. Listening to the audio files, it becomes clear that *roppe kinnen hie* has been confused with *roppe kinne hie.* It will be assumed here that for the Frisian area the 3-2-1 orders found are with a past participle, which is conform what was stated in section 3.1.2 (see also Hoekstra 2010).

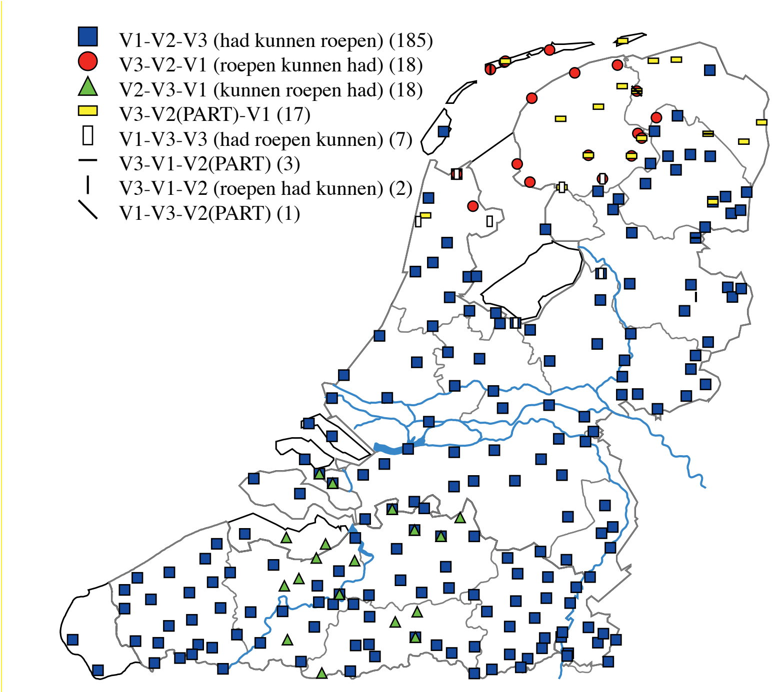

Figure 5.9 distribution of *had kunnen roepen* (1-2-3), 'had can call' and its ordering alternatives, from the DynaSAND corpus.

In the rest of the language area, the 1-2-3 order with the IPP effect, i.e. with the second verb realized as an infinitive, is dominant. There is little optionality in the ARI clusters, which again confirms what was stated in section 3.1.2. In the central Belgian area the 2-3-1 order shows up besides 1-2-3, whereas the orders starting with 2 are normally seen as ungrammatical. Barbiers & Bennis (2010) have come up with an interesting explanation for these facts in which they analyze some three-verb clusters as two-verb clusters with a nominalized verbal head or an adjectival or non-verbal participle. In doing so, they end up with only the strictly descending (3-2-1) and ascending (1-2-3) orders for the remaining three-verb clusters, very neatly spread along a dialect geographical border: 3-2-1 in the North, 1-2-3 in the rest of the language area (Barbiers & Bennis, 2010).

While recognizing the attractiveness of some aspects of their analysis, in this study all elements of the verbal complex will be considered verbs for now. Then, it is not possible to rule out optionality in the Dutch language area cf. the maps in 5.3-5.9. On the other hand, it also has to be acknowledged that the variation in the ordering possibilities seems to a certain extent geographically determined. Of course, these maps do not represent Standard Dutch, but the local dialects spoken in the different localities.

5.3.2 Linguistic factors determining the distribution of variation

In their work on Dutch two-verb clusters Coussé et al. (2008), De Sutter (2005, 2009), Bloem et al. (2014), Bloem (2016) and Bloem et al. (2017) reviewed a number of factors influencing the variation in ordering possibilities in corpora of written and/or spoken Dutch. Besides factors like the regional background of the speaker and the communication mode Coussé et al. (2008) focused on rhythmic factors like stress pattern, lexical semantics, and syntactic priming. De Sutter (2009) and Bloem et al. (2014) looked into the interplay of different factors and their association with different types of two-verb constructions in written Dutch. By and large they found the same effects: factors like the separability of the participle, syntactic persistence, the length of the middle field, inherence and main verb frequency promote 1-2 order. For the factors 'grammatical relation of extraposition to head' and 'information value' the preferences in De Sutter (2009) and Bloem et al. (2014) differed. For type of auxiliary both found effects. In general it can be stated that the auxiliary *hebben*, to have, (as opposed to *worden*, to become, and *zijn*, to be) and in particular modal auxiliaries had a (much) stronger preference for 1-2 orders (Bloem et al. 2014).

In a subsequent study Bloem (2016) investigated lexical preferences of the main verbs in auxiliary-participle two-verb constructions in a corpus of written Dutch. His study confirms that the adjectivity factor promotes 2-1 orders and separability of the main verb promotes 1-2. He also found that negative polarity of the main verb promotes 2-1 orders and that in many cases there is a lexical association of the main verb with either 1-2 or 2-1 orders.

What is interesting to notice, is that apparently, in many of these studies the urge is felt to indicate one of the orders as favorite, basic or default, easiest to process, underlying, etcetera. Bloem et al. (2017) and also Meyer and Weerman (2016) on the one hand arguing for 1-2 and De Sutter (2009) and for example Zuckerman (2001) arguing for 2-1. The results of these studies seem to be very much depending on the type of data investigated, and the difference between written and spoken language. The possibility exists that different individuals have different preferences. Reitsma (2003) showed that for a set of Frisian data: there were large individual differences, with a number of subjects preferring one order and a number of subjects preferring the other order. Taking a mean of a group with mixed preferences prevents us from seeing those individual differences. Cornips (2009) also shows this what she calls *ideolectal variability* for data from (regional) standard Dutch: different subjects have different combinations of possible orders. Bloem et al. (2014) also acknowledge the possibility of regional diversity and individual differences, which cannot be caught in averages.

It can be concluded from these studies that part of the order variation can be attributed to different linguistic factors. Nevertheless, a certain amount of variation in Dutch participial two-verb clusters remains. Also, it seems that at least a share of the Dutch speaking community has optionality in modal two-verb clusters as well.

5.3.3 Variation as an indicator of language change

Variation in Dutch verb cluster ordering could also be an indicator of ongoing language change (cf. chapter 2). Coussé & De Sutter (2012) studied the diachronic change in order preferences in written texts from the early Middle Ages until the end of the 20th century. They show a rise in the 2-1 order from the early Middle Ages, (almost) to the exclusion of the 1-2 order. In the 15th century and first half of the 16th century, the 2-1 order is dominant: some of the governmental texts from their corpus have no attestations of the 1-2 order for a couple of decades till up to two centuries. From the second half of the 16th century, the 1-2 order is (re) introduced and its rise continues until today. They argue that a process of language change is still ongoing, favoring the use of 1-2 orders in current-day Dutch. Coupé (2015) found similar developments in historical texts in three different dialects of the Netherlands, with a peak in 2-1 orders around 1400 and increasing percentages of 1-2 orders since then. She also links the increase in 1-2 orders to the increase in cluster size: the longer the verb cluster, the more often the finite verb comes first (Coupé 2015). Only clusters with a participle as the most deeply embedded verb do not always pattern like this (for more observations on other diachronic developments in Dutch verb clusters see Coupé (2015)).

Coussé & De Sutter (2012) also recognize the possibility that the 1-2 order has never been entirely excluded in spoken language, resulting in its reintroduction in the written language in the 16th century, thereby recognizing the possibility that this could also happen now, with the 1-2 order gaining ground in the written language and the 2-1 order remaining in use in spoken language. Stroop (2009) indeed found a large share of 2-1 orders (63%) in spoken Dutch from the CGN, but Olthof et al. (2017) managed to show the increase in use of 1-2 orders in data from the same corpus by splitting the data according to speaker age, cf. figure 5.10.

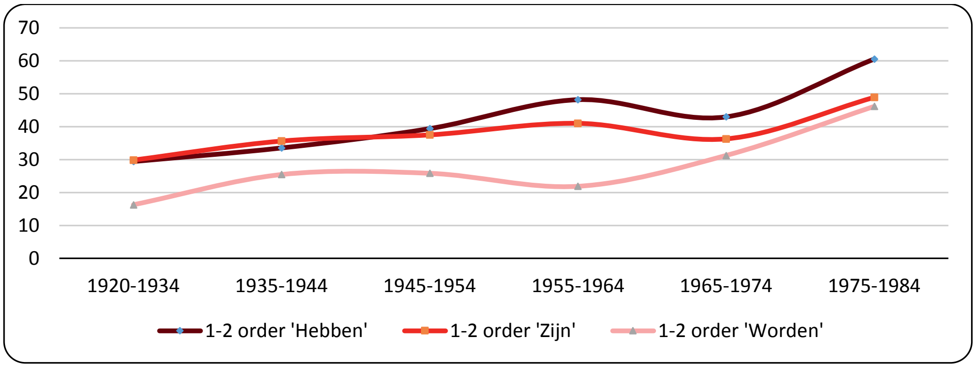

Figure 5.10 Percentage of 1-2 orders in AP clusters in subordinate clauses in informal spoken Dutch (from the CGN), according to year of birth and auxiliary type. From: Olthof et al. (2017).

A small investigation on the use of the different orders in Dutch two-verb clusters on the Internet in 2006 (when many of the studies discussed above had not been published yet) also indicated broad use of the 2-1 order (see the tables in Appendix I). A replication of the query in 2016 does not confirm the conclusion that 2-1 orders are decreasing across the board. The tables below show the number of hits and the percentage of 1-2 orders for a limited number of queries with comparable participial and infinitival clusters in 2006 and 2016.

Entries AP **Aux (Fin) + V main (Part)**	**Year**	**2-1 order**	**1-2 order**	**% 1-2 order**
niet gezien heb (2-1) vs niet heb gezien (1-2)	2006	55100	27300	33,1
	2016	84800	58300	40,7
niet gehoord heb (2-1) vs niet heb gehoord (1-2)	2006	914	627	40,7
	2016	13400	19200	58,9
niet gelopen heb (2-1) vs niet heb gelopen (1-2)	2006	169	319	65,4
	2016	6750	5710	45,9

Table 5.11 Number of hits (Google) for different orders in participial clusters (October 13, 2006 and May 3, 2016).

Both in participial (table 5.11) and in infinitival clusters (table 5.12) decreasing and increasing percentages of 1-2 orders can be found. It is very clear that the preference for 1-2 is strong in infinitival clusters. In participial clusters the picture is diffuse: both orders exist and in some cases there seems to be a preference for 1-2 in others for 2-1.

Entries RI **RV (Fin) + V main (Inf)**	**Year**	**2-1 order**	**1-2 order**	**% 1-2 order**
niet zien kan (2-1) vs niet kan zien (1-2)	2006	15600	105000	87,1
	2016	18400	279000	93,8
niet horen kan (2-1) vs niet kan horen (1-2)	2006	531	15300	96,4
	2016	2810	32200	92,0
niet lopen kan (2-1) vs niet kan lopen (1-2)	2006	285	12500	97,8
	2016	6540	60300	90,2

Table 5.12 Number of hits (Google) for different orders in infinitival clusters (October 13, 2006 and May 3, 2016).

Concluding, it will be assumed that Standard Dutch allows variation in ordering in most two- and three-verb clusters. An overview of the possible orders in Dutch and Standard Frisian in the cluster types investigated in this study was given in table 3.5 in the previous chapter. The synchronic and diachronic variation discussed in this section don't provide us reason to change that table.

5.4 Conclusion

In this chapter it was shown that variation in the Dutch verbal complex can in part be explained by geographical and linguistic factors as well as by changing preferences over time. It was also demonstrated that variation exists in the Frisian verbal complex as well, as opposed to what is expected in Standard Frisian. However, many investigations into verb clusters in Frisian are based on a limited number of data. Most of the data were gathered by means of written tasks, often with only one or two cluster types or only in matrix clauses. These data show that inversion in two-verb clusters seems to have become part of Frisian, but it is not clear how much individual variation there is. Nor is it entirely clear whether there is a strong difference between infinitival clusters and participial clusters, like in Dutch. It seems that orders that do not occur in other West-Germanic languages (cf. Wurmbrand 2006) do not appear in Frisian either, or only very marginally. It nevertheless remains difficult to draw conclusions about these developments on the basis of the available studies and data, in particular in larger verb clusters.

A study into the developments in the Frisian verbal complex would therefore have to provide more data, in particular on larger verb clusters. Language production data would seem highly valuable for a language that is much wider spoken than written. The most interesting phenomena to further investigate would be the intra- and inter-individual variation and the social and linguistic correlates of variation (cf. previous chapters as well).

Another remaining question is whether the developments are progressing: did the process as suggested by Koeneman & Postma (2006) for ARI clusters -from only Standard Frisian orders to a mix of Standard Frisian, hybrid, and Standard Dutch orders to only Dutch orders- continue? Did stabilization occur? Or did the developments go in a different direction, e.g. more like regional varieties of Dutch? An apparent time study combined with a real time study should be able to give at least an indication of the developments in the Frisian verbal complex. In the next chapter these conclusions will be translated into our research questions and the methodology of this study will be elaborated.

Chapter 6

Research Questions and Methodology

6.1 Introduction
6.2 Research questions and design
6.3 Methodology
6.4 Data collection and procedures

6.1 Introduction

In the previous chapters it was shown that the combination of methodologies and insights from contact linguistics, variationist sociolinguistics, language acquisition studies and dynamic systems theory may contribute to the understanding of the developments that are taking place in the Frisian. Likewise, the study of the developments in Frisian may contribute to outstanding issues in the different disciplines. A study of the variation in the Frisian verbal complex would be of particular interest, because it concerns a syntactic (or structural) phenomenon, and syntactic phenomena are regarded less vulnerable to change (see chapter 2 regarding the 'stability gradient' of language).

In order to establish whether the variation in the Frisian verbal complex is indeed a case of contact-induced language change, it is necessary to gather a large and coherent set of data. A first goal of a study of the variation in the Frisian verbal complex should therefore be to gather a large data set, and to do so more systematically. The methodologies offered by variationist sociolinguistics seem suitable to reach that goal. An apparent time study could provide a clearer picture of the developments in the Frisian verbal complex. Preferably in combination with a real time study in order to be able to distinguish intergenerational change from age grading (cf. Sankoff 2008).

Studying variation and the social and linguistic factors involved in different types of contact situations is necessary to contribute to the discussion whether there is a causal relationship between contact and change and which social and/or linguistic variables will be the 'winning' variables. This may effectively predict the linguistic outcome of language contact. Including these different types of factors, a study of the variation in the Frisian verbal complex could contribute to this discussion. Also, it would be one of few studies of syntactic change in a variationist approach.

Some social factors that might play a role in the developments in Frisian were identified in chapter 2: age, sex, language proficiency, language use, educational level and attitude should be included in a study of the developments in the Frisian verbal complex. Regional differences or the degree of urbanization could also play a role.

In chapter 3 the specific linguistic characteristics of the Frisian and Dutch verbal complex were demonstrated, and in chapter 4 the existing variation in word order and morphology in these clusters were discussed. In a study of the Frisian verbal complex these characteristics and the differences between Frisian and Dutch should be taken into account. The linguistic factors studied should thus include the size of the verb cluster (two versus three verbs) and cluster type (infinitival, participial or ARI cluster), which could result in the following mix of clusters[3]:

Participial and infinitival two-verb clusters:

- AP clusters: V Aux (fin) - V Main (part)
- RI clusters: RV (fin) - V Main (inf)

Participial, infinitival and ARI three-verb clusters:

- RAP clusters: RV (fin) - V Aux (inf) - V Main (part)
- RRI clusters: RV (fin) - RV (inf) - V Main (inf)
- ARI (or IPP) clusters: V Aux (fin) - RV (inf/part) - V Main (inf)

In chapter 3 it was demonstrated that Standard Frisian and Dutch have different ordering possibilities in different verb cluster types. Also, Standard Frisian has rigid ordering in all of these cluster types, whereas Dutch shows optionality (variation) in some of the cluster types (cf. table 3.5). The main differences between Standard Frisian and Dutch in the types of verb clusters investigated are:

- different ordering possibilities in different verb clusters;
- the fact that Dutch allows variation/optionality (in AP, RAP and possibly also in RRI clusters);
- the presence (Dutch) versus absence (Frisian) of the IPP effect (in ARI clusters);
- the phonetic (Dutch) versus morpho-syntactic (Frisian) distribution of infinitival endings in *-e* and *-en*.

In chapter 4 it was shown that this variation in the Dutch verbal complex can in part be explained by geographical and linguistic factors as well as by changing

[3] A = Auxiliary; R = Restructuring verb; P = Participle; I = Infinitive; V = Verb; and see the list of abbreviations.

preferences over time. It was also demonstrated that variation exists in the Frisian verbal complex as well, as opposed to what is expected in Standard Frisian. However, many investigations into verb clusters in Frisian are based on a limited number of data. Most of the data were gathered by means of written tasks, often with only one or two cluster types or only in matrix clauses. These data indicate that inversion in two-verb clusters has become part of Frisian, but it is not clear how much individual variation there is. Nor is it entirely clear whether there is a strong difference between infinitival clusters and participial clusters, like in Dutch. It seems that orders that do not occur in other West-Germanic languages (cf. Wurmbrand 2006) do not appear in Frisian either (or only very marginally). It nevertheless remains difficult to draw conclusions about these developments on the basis of the available studies and data, in particular in larger verb clusters.

An answer to the question whether structural language change is taking place or has taken place in the Frisian verbal complex can only be given on the basis of more data, in particular data on larger verb clusters (see chapters 3 and 4). Language production data would seem highly valuable for a language that is much wider spoken than written. A larger corpus of (spoken) data would also provide the opportunity to further investigate differences in individual variation and the social and linguistic correlates of variation (cf. previous chapters as well) and variation between different cluster types in the same subjects.

Another remaining question is whether the developments are contact-induced: can the developments be attributed to contact with Dutch or are they internal changes, or both? Are ARI clusters developing towards exclusively (Standard) Dutch orders, as suggested by Koeneman & Postma (2006)? Or do the developments go in a different direction, for example in the direction of regional varieties of Dutch? A comparison between the variation in the Frisian verbal complex and that in Dutch and regional varieties might give an indication whether the developments in the Frisian verbal complex could be contact-related.

6.2 Research questions and hypotheses

In the previous chapters different perspectives on language variation, language contact and change were given. These perspectives help identify how to investigate the variation in the Frisian verbal complex (as summarized in the introduction to this chapter). More in particular, the relationship between social and linguistic variables and the variation in Frisian verbal constructions should be investigated, as well as an in-depth comparison to variation in Dutch and regional varieties. But first of all, we need a much clearer pucture of what is going on in the Frisian verbal complex.

This results in the following research questions:

1. What variation can be found in Frisian verbal constructions of different size and verb type?
    a. What is the variation in two-verb clusters consisting of a finite auxiliary and a participial main verb (AP clusters)?
    b. What is the variation in two-verb clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters)?
    c. What is the variation in three-verb clusters consisting of a finite restructuring verb, an infinitival auxiliary, and a participial main verb (RAP clusters)?
    d. What is the variation in three-verb clusters consisting of a finite restructuring verb, an infinitival restructuring verb, and an infinitival main verb (RRI clusters)?
    e. What is the variation in three-verb clusters consisting of a finite auxiliary, a participial/infinitival restructuring verb and, an infinitival main verb (ARI clusters, or IPP clusters)?

2. How do the number of verbs in the verb cluster, the type of verbs and their morphology relate to the variation in the Frisian verbal complex?

3. What is the relationship between the following social variables and the variation in the Frisian verbal complex?
- Age & Time
- Sex
- Regional background
- Level of education
- Language proficiency
- Language use

- (Language) Attitude

4. How does the variation in the Frisian verbal complex relate to the variation in the Dutch verbal complex, and to that in regional varieties?

The first research question aims at a solid empirical base for claims on the variation in the Frisian verbal complex. Our hypothesis is that variation will be found in two-verb clusters as well as in three-verb clusters, and across verb types. This would confirm findings and/or assumptions made in earlier research regarding variation in the Frisian verbal complex (Ytsma 1995, Wolf 1996, De Haan 1996b, Koeneman & Postma 2006). Following Reitsma (2003) and Cornips (2009) we expect to find individual differences regarding the attested variation in the verbal complex.

The second and third research question relate to the effects of linguistic and social factors (respectively) on the variation in the Frisian verbal complex. When we assume that the Frisian verbal complex is changing to a more Dutch-like verbal complex, it is expected that there is an effect of the length of the verb cluster and of verb type. Dutch two-verb clusters show a lot of variation (cf. chapter 3). In auxiliary clusters (AP clusters) Dutch shows more variation than in infinitival clusters (RI clusters). In Dutch AP clusters there is a preference for the order that is also the Standard Frisian order, at least in spoken Dutch (cf. chapter 3, 4), whereas in RI clusters the preferred order in Dutch deviates from the Standard Frisian order. One could argue that it is easier to switch to a more Dutch-like variation in AP clusters, since Dutch also shows the Standard Frisian order there, or one could argue that the pressure for change is lower in AP clusters, and expect increased variation in RI clusters. Wolf (1995a,b, 1996) found more variation in clusters with a modal auxiliary (among the restructuring verbs). Meyer & Weerman (2015) find a lot of variation both in AP as well as in RI clusters in small Frisian L1 children, but still with a significant difference between AP and RI clusters (Meyer & Weerman 2015). In Dutch, both historical (Coupé 2015) as well as synchronic studies (De Sutter 2009, Bloem et al. 2014) point at a stronger preference for 1-2 in clusters with a restructuring verb (as opposed to participial clusters). Hence, our hypothesis is that in both type of two-verb clusters variation will be considerable, with a stronger rise of 1-2 orders in clusters with a restructuring verb.

For three-verb clusters it is more difficult to formulate expectations. In participial clusters (RAP clusters) there is a lot of variation in Dutch. One of the possible orders in RAP clusters is the Standard Frisian order. In infinitival clusters (RRI clusters) there is less variation, and the Standard Frisian order is not common, definitely not in Standard Dutch. Cornips (2009) also finds this in Heerlen Dutch: more variation in participial clusters and less so in infinitival clusters. In spontaneous speech she finds no variation at all in infinitival clusters (Cornips 2009). In clusters in the infinitivus-pro-participio (IPP) condition (ARI clusters) Standard Dutch shows the ascending (head-initial) order with an IPP whereas Standard Frisian shows descending (head-final) ordering without IPP. Looking at geographical variation in verb cluster orders in Dutch dialects (see chapter 4) and differences in ordering between verb cluster types as found in Dutch (cf. Stroop 2009, Coupé 2015) it is expected that in participial (RAP) clusters the Standard Frisian 3-2-1 order is holding ground. We expect to find 3-1-2 and 1-3-2 orders as well, may be also some 1-2-3 orders. In infinitival (RRI) clusters we expect more variation and a stronger rise of ascending clusters or clusters that start with the first verb (1-2-3 and 1-3-2 orders). In ARI-clusters we expect a rise of the Standard Dutch 1-2-3 order (cf. Koeneman & Postma 2006). Following De Haan (1997) and contra Koeneman & Postma (2006) we expect to find a rise in hybrid orders like 1-3-2 and 3-1-2 as well. Regarding verb morphology, in ARI clusters we expect to find a rise in clusters with the IPP effect, i.e. more clusters with an infinitival restructuring verb instead of a participial restructuring verb. This is expected in the Standard Dutch verb order 1-2-3, however, we expect to find the IPP effect in other verb orders as well, in line with findings by Wolf (1996) and Koeneman & Postma (2006). Also, we expect to find individual differences regarding the attested variation in the verbal complex in three-verb clusters as well as in two-verb clusters (cf. Reitsma 2003 and Cornips 2009).

With regard to the different factors listed in research question 3, different effects on the variation in the Frisian verbal complex are expected. Age (or time) is known as one of the most significant factors in language variation and change (see chapter 2 for a more elaborate discussion on this). By investigating the verbal complex in subjects of different ages at one point in time (apparent time), as well as in subjects of the same age at two different points in time (real time), we expect to be able to demonstrate the effect of time in the variation in the Frisian verbal complex. Our hypothesis is that there will be a strong link between age/time and the variation in the verbal complex in Frisian: with an increase in age we will see a decrease in variation. In the real time study, we expect that the group tested earlier in time will show less variation than subjects from the same age tested at a later moment in time. This would confirm earlier findings by De Haan (1990), Ytsma (1995), and Wolf (1996), and, importantly, this will establish whether there is change in progress in the Frisian verbal complex, or whether variation is stable.

Within the Frisian context, no difference is expected between male and female subjects. On the basis of classic sociolinguistic research, one would expect females to lead the change (if there is change), and hence to show more variation. On the other hand, research also shows that females are more inclined to conformity with the linguistic norm, which in the case of Standard Frisian would mean less variation. Tagliamonte & D'Arcy (2009) also make some critical remarks on assumed male-female differences. With regard to verb ordering in the Frisian verbal complex no significant differences between the sexes have been found so far (cf. Meekma 1989, Ytsma 1995, De Haan 1995). Hence, there is no clear expectation regarding the effect of sex on the variation in the Frisian verbal complex.

No differences are expected with regard to the regional background of the subjects. The three main Frisian varieties do not differ with regard to the verbal complex, hence no differences are expected in this regard. In figure 2.5 (in chapter 2) it was shown that in the North and East of the province of Fryslân the percentage of L1 speakers of Frisian is higher. This might have an effect, just as well as the degree of urbanization.

With regard to level of education (as the closest estimate of social class in the province of Fryslân), no effect is expected. Although there is a clear standard vs. non-standard *linguistic* evaluation of the variation in the Frisian verbal complex, the *social* evaluation of the different variants may not have a clear standard vs. non-standard distribution and hence it is not sure whether it is aligned with the prevailing social hierarchy in the community (see also Tagliamonte 2011). So far, no effects of social class or educational level have been reported for the variation in the Frisian verbal complex. This is in line with findings of Stanford & Preston (2009) that many indigenous minority languages do not have clear socioeconomic class distinctions or that distinctions emerge in different ways. Hence, we do not expect to find an effect of level of education on the variation in the Frisian verbal complex.

With regard to language proficiency in Frisian, the sociolinguistic surveys report large differences in proficiency between speaking, listening, reading, and writing (see chapter 2). Breuker (1993, 2001) suggests that the group of Frisian speakers that actively reads and writes Frisian tries to avoid 'Dutchification'. As the variation in the Frisian verbal complex is often seen as interference from Dutch, this could trigger an effect of writing proficiency on the variation in the Frisian verbal complex. Also, Jongbloed-Faber et al. (2016) found an effect of writing skills on the use of Frisian on social media by teenagers. In general, the relative proficiency in Frisian and Dutch can give an indication of the linguistic dominance. If an effect is found, we expect a higher proficiency in Frisian to be related to less variation in the verbal complex.

The same holds for the effect of language use. In contact linguistics it is assumed that a language that is spoken in more different domains, and particular also in more formal domains, is less vulnerable to change. Language use in different domains can give an indication of the social dominance. Also, Montrul (2008) specifically points at reduced input and use as a cause for incomplete acquitistion in minority-language speaking children. We expect that - if an effect is found - a more extensive use of Frisian (i.e. use of Frisian in more different domains), will be related to less variation in the verbal complex.

With regard to language attitude, it has been shown that the Frisian speaking population in general has a positive attitude towards the language (see chapter 2). Ytsma (1995) found a link between linguistic behavior and language attitude, but only in the results of Dutch L1 speakers. Jongbloed-Faber et al. (2016) did find an effect in Frisian L1 speakers: teenagers with a positive attitude tend to use Frisian more often on social media or online (Jongbloed-Faber et al. 2016). For the variation in the Frisian verbal complex we do not expect a strong effect of attitude. If there is an effect, we expect that a more positive attitude, will be related to less variation in the verbal complex.

To summarize, with regard to the factors mentioned in research question three, we do expect that there is change in progress, hence also to to find an effect of both age and time on the variation in the Frisian verbal complex, i.e. with an increase in age, or going back in time we expect to find less variation. With regard to the factors sex, regional background, and level of education, we don't expect an effect on the variation in the verbal complex. With regard to language proficiency, language use and (language) attitude no strong effect is expected. If an effect is found, higher proficiency, more extensive use and a more positive attitude are expected to be related to less variation in the Frisian verbal complex.

The fourth research question aims at investigating the variation in the Frisian verbal complex in the larger context of the languages it is in close contact with. These languages are Standard Dutch and regional varieties of Dutch (or dialects). Data from the DynaSAND (Barbiers et al. 2006) will be taken as a point of reference for the ordering possibilities in Northern Dutch varieties. The differences between Standard Frisian, Standard Dutch and Northern Dutch with regard to the verbal complex are shown in table 6.1 below, which is an extension of table 3.5 on Standard Frisian and Standard Dutch with data from the DynaSAND on Northern Dutch.

Cluster type	Standard Frisian	Standard Dutch	Northern Dutch
AP clusters V Aux (fin) - V Main (part)	2-1	1-2, 2-1	1-2, 2-1
RI clusters RV (fin) - V Main (inf)	2-1	1-2 (2-1)	1-2, 2-1
RAP clusters RV (fin) - V Aux (inf) - V Main (part)	3-2-1	1-2-3, 3-1-2 (1-3-2, 3-2-1)	3-1-2, 3-2-1, 1-3-2
RRI clusters RV (fin) - RV (inf) - V Main (inf)	3-2-1	1-2-3 (1-3-2, 3-1-2, 3-2-1)	1-2-3, 3-1-2, 1-3-2, 3-2-1
ARI/IPP clusters V Aux (fin) - RV (inf/part) - V Main (inf)	3-2-1 (no IPP)	1-2-3 + IPP	1-2-3 + IPP, 3-1-2, 1-3-2 (IPP?), 3-2-1

Table 6.1 Ordering possibilities in Standard Frisian, Standard Dutch, and Northern Dutch two- and three-verb clusters.

De Haan (1996b) demonstrated that developments in the Frisian verbal complex do not per se go into the direction of copies of Standard Dutch, i.e. literal translations of Dutch. Koeneman & Postma (2006) found many 'hybrid' constructions in ARI clusters (i.e. orders that are present neither in Standard Frisian, nor in Standard Dutch). Heeringa & Hinskens (2014) showed that all dialects in the Netherlands converge to Standard Dutch, but in general dialects converge to each other. Our hypothesis is that the variation in the Frisian verbal complex will show more resemblance with the variation in the verbal complex in the Northern Dutch varieties than with the variation in the verbal complex in Standard Dutch.

6.3 Design and methodology

The focus of this study lies on constructions of two and three verbs in the sentence final verbal complex. Whereas previous studies mainly focused on constructions with two verbs or on a small subset of tripartite clusters (see chapter 3 for examples and references), the present study compares constructions of two and three verbs of different verb types. A combination of research methods from theoretical linguistics and sociolinguistics might produce valuable insights with regards to linguistic developments and the trajectory of language change and the role of different variables therein.

In an ideal world, there would be evidence of the situation before the change, variation should be established within the community (not just a few individuals. In order to be able to attribute the change to the contact pre-contact and post-contact varieties should be analyzed (see Poplack & Levey 2010, Thomason 2010). These conditions can only be met by large collections of transcribed and coded corpora of vernacular speech from a socially diverse sample of speakers (Ravindranath 2015). For monolingual communities it is hard enough to get this kind of data, in multilingual communities, however, more social parameters, more inter-individual variation and some additional methodological considerations apply (Sankoff 2004). Besides, it is highly doubtful whether all these different types of verb clusters would be encountered in spontaneous speech, in particular the longer ones. See for example Cornips 2009, who used a combination of spontaneous speech data and grammaticality judgments in her study on verb clusters in Limburgish (Cornips 2009).

Therefore, a set of experiments and questionnaires was set up in order to answer the research questions as stated in the previous section. This was done in the following way: verb cluster data were gathered with male and female subjects from three different age groups, with different levels of education. To consider the other socio- and psycholinguistic variables, information on the level of proficiency in Frisian and Dutch (self-reported), the use of Frisian in daily life (self-reported) and the subjects' attitude towards Frisian was gathered. This was done by means of questionnaires, which will be further elaborated upon below (section 6.3.3). Subjects and subject variables will be discussed in section 6.4.

The linguistic data gathered consisted of a verb cluster elicitation task (see section 6.3.1) and an acceptability judgment task (section 6.3.2), both containing clusters of different size, verb type and ordering. The apparent time data were gathered in the years 2004-2007. A second study with the same judgment task and questionnaire on language use was carried out with a similar population in 2016 in order to be able to track change over time.

6.3.1 Verb cluster elicitation task

In sociolinguistic studies spontaneous speech data are usually preferred over data gathered in less natural conditions like linguistic experiments. Yet relatively rare syntactic constructions must necessarily be elicited. Syntactic variation does not occur very frequently in corpora and is often investigated by means of elicitation experiments (Tagliamonte 2006). Besides, it is not certain whether a non-occurring structure in a sample of spontaneous speech is due to ungrammaticality or to chance (Cornips 2009). In order to be able to gain insight in the use of verb clusters consisting of two and three verbs in a broad range of verb cluster types, a verb cluster elicitation task was designed.

The task was essentially designed as a conditioned reproduction task. The subjects were asked to repeat clauses that were presented to them aurally. The sentences offered were main clauses with one, two or three verbs. The clauses had to be complemented with a subordinate clause marker like *dat* 'that', *omdat* 'because', or *hy sei dat* 'he said that'. In this way, the sentences would be transformed into subordinate clauses and the verbs would show up in a verb cluster at the end of the clause. Sentences with one verb were considered fillers and sentences with more than one verb were the test items. The sentences were presented in a randomized order for each subject. Three practice sentences preceded the test. Apart from these training sentences, the entire task was audio-recorded.

An example of a test sentences is given below. (33a) represents the sentence that is offered aurally to the subject, (33b) is an example of the (target) Standard Frisian response and (33c) and (33d) are examples of non-standard responses which do contain a verb cluster of the targeted type. (33e) is an example of a Standard Frisian response with a reduced verb cluster. More response types will be demonstrated in the results section (chapter 8).

(33) a. *de man hie (1) syn hûs grien fervje (3) wollen(2)*
the man had his house green paint wanted
"the man wished he had painted his house green"

dat/omdat/hy sei dat …
that/because/he said that …

b. *... de man syn hûs grien fervje (3) wollen (2) hie (1)*
… the man his house green paint wanted had
c. *... de man syn hûs grien hie (1) wolle (2) fervje (3)*
… the man his house green had wanted paint
d. *... de man syn hûs grien fervje (3) hie (1) wollen (2)*
… the man his house green paint had wanted
"… the man wished he had painted his house green"

e. *... de man syn hûs grien ferve (2) hie (1)*
… the man his house green painted had
"… the man had painted his house green"

The subjects were instructed (orally) to use all of the words presented in the aural stimulus, preceded by *dat* 'that', *omdat* 'because' or *hy sei dat* 'he said that' at the beginning of the sentence. The assumption was that by putting the focus on the additional elements and the repetition of all of the words in the sentence the subject would be less inclined to focus on the verb cluster. The task was aimed at getting as close as possible to the spontaneous production of verb clusters of different types and length. It enabled us to gather a substantial amount of data in a limited amount of time, with an acceptable degree of difficulty for the subjects[4].

The task contained verb clusters of two verbs in two different conditions. One condition with a finite auxiliary and a participial main verb, the AP-condition, and one condition with a finite restructuring verb and a infinitival main verb, the RI condition. The task contained verb clusters of three verbs in three different conditions. The RAP condition, referring to clusters with a finite restructuring verb, an infinitival auxiliary, and a participial main verb; the RRI condition, containing a finite restructuring verb, an infinitival restructuring verb, and an infinitival main verb; and, the ARI condition, or IPP condition, with a finite auxiliary, a participial or infinitival restructuring verb, and an infinitival main verb. There were 28 filler sentences with only one verb and 18 fillers with three verbs, namely sentences containing the so-called third construction (see chapter 3). This is demonstrated schematically in the graph below.

Condition	**Verbs used (excl. main verb)**			**Nr of items**
AP	hawwe (6)		wêze (3)	9
RI	kinne (3)	meie (3)	litte (3)	9
RAP	sille-hawwe (2) sille-wêze	wolle-hawwe (2) wolle-wêze	moatte-hawwe (2) moatte-wêze	9
RRI	sille-kinne sille-meie sille-litte	wolle-kinne wolle-meie wolle-litte	moatte-kinne moatte-meie moatte-litte	9
ARI-modal	hawwe-kinne (3)	hawwe-meie (3)	hawwe-litte (3)	9
ARI-perception	hawwe-hearre (3)	hawwe-sjen (3)	wêze-bliuwe (3)	9
Filler sentences	Third construction (18) Single verb (28)			46
Total				*100*

Table 6.2: Design verb cluster elicitation task (the numbers between the brackets indicate the number of items with that combination of verbs).

The table demonstrates that both auxiliaries[5] of the perfect, *hawwe* (to have) and *wêze* (to be) were used. Restructuring verbs used in the task included modals like

[4] A pilot study revealed that subjects generated more target-like responses in two-verb clusters, and that they displayed more variation and reduction in three-verb clusters.

wolle 'to want', and aspectuals like *litte* 'to let' (see chapter 3 for a more elaborate discussion of the specific linguistic characteristics of the different types of verbs and conditions). The ARI condition can trigger the so-called *Infinitivus pro Participio* effect (henceforth: IPP effect): the restructuring verb can take the form of a past participle -like in Standard Frisian- or an infinitive -like in Dutch (for a more elaborate discussion see chapter 3). The same verbs were used in the AP and RAP conditions and in the RI and RRI conditions, which is presented in table 6.2. In the ARI condition we used the verbs from the RI condition combined with the appropriate auxiliary of the perfect, also, we added an ARI-condition with perception verbs and *bliuwe* (a restructuring verb that selects a motion verb in Standard Frisian). The complete task can be found in Appendix II, including which verbs were used as the lexical main verb in the different items.

6.3.2 Acceptability judgment task

As in many previous studies (e.g. Koeneman & Postma 2006), an acceptability judgment task was part of the investigation. This was done to be able to compare our results to those of other studies, but also to compare results on the judgment task to other tasks done by the same subjects: acceptability judgment task may provide valuable information on the range of possibilities in current day Frisian, whereas a production task might reflect only the preferences of the speaker. Acceptability judgments are said to tap into the conscious knowledge of the speaker. As discussed in the previous section Frisian verb clusters are difficult to obtain in a less formal setting. Giving the subjects a limited amount of time to give their judgment could reduce the disadvantage of using a judgment task. It is assumed that in these *speeded* acceptability judgment tasks the subjects do not have enough time to process the sentence in a very conscious way, and are thus less inclined to tap into their conscious metalinguistic knowledge.

For this study, such a speeded acceptability judgment task was used. In this task the stimuli were presented aurally to the subjects, with a gap of 5 seconds between the stimuli. The stimuli were presented in a written form as well. In this way subjects could read along when they were hearing the sentences and give

[5] Both Dutch and Frisian are ergative languages in which unaccusative (or ergative) verbs form their perfect tense with *to be* rather than with *to have* (cf. ANS).

their judgments directly below the presented sentence. The task was explained to the subjects orally and in writing on the first page of the handout. One example of a test sentence was also shown on the first page of the handout. The subjects were supposed to indicate their (dis) agreement with the statement that a sentence was acceptable in Frisian. It was not asked why they thought it was acceptable or not. An acceptability scale of five points was used for the judgments, as demonstrated in (34) below.

(34) [SENTENCE]

This sentence is an acceptable Frisian sentence:

0 I completely disagree
0 I disagree
0 no opinion
0 I agree
0 I completely agree

While some consider a scale of five or three points less adequate because there is a middle point, and therefore subjects are not forced to choose between 'right' and 'wrong', I would like to argue that in the case of Frisian, where linguistic insecurity has been reported repeatedly (Breuker 1993 a.o.), including a middle point in the experiment could provide valuable information. Subjects who felt insecure in their judgment would be able to tick the box in the middle, and 'no opinion' would be an adequate description of their judgment.

The goal of the acceptability judgment task was to gather judgments on different types of clusters, on the potential use in current day Frisian, rather than preferences only. Although Standard Frisian has the same word order in these different cluster types, Dutch has different order preferences in different types of clusters. Gathering data on these different cluster types facilitates the comparison between Frisian and Dutch and could show possible convergence to Dutch with its different ordering possibilities in different cluster types.

The subjects were asked to give their judgments on 150 sentences. 75 sentences were presented with a Standard Frisian verbal complex and 75 sentences were presented with a deviating verbal complex. The deviating verbal complexes were offered in all of the logically possible orders. This is shown in a schematic way in table 6.3. Five different cluster types were tested, identical to those in the verb cluster elicitation task:

Participial and infinitival two-verb clusters:
- AP clusters: V Aux (fin) - V Main (part)
- RI clusters: RV (fin) - V Main (inf)

Participial, infinitival and ARI three-verb clusters:
- RAP clusters: RV (fin) - V Aux (inf) - V Main (part)
- RRI clusters: RV (fin) - RV (inf) - V Main (inf)
- ARI/IPP clusters: V Aux (fin) - RV (inf/part) - V Main (inf)

Condition	**Standard Frisian orders**	**Non-Standard Frisian orders**		**Number of items**
AP: Aux (1) Part (2)	2-1 (6)	1-2 (6)		12
RI: RV (1) Inf (2)	2-1 (6)	1-2 (6)		12
RAP: **RV (1) Aux (2) Part (3)**	3-2-1 (15)	1-2-3 (3) 1-3-2 (3) 3-1-2 (3) 2-1-3 (3) 2-3-1 (3)		30
RRI: **RV (1) RV (2) Inf (3)**	3-2-1 (15)	1-2-3 (3) 1-3-2 (3) 3-1-2 (3) 2-1-3 (3) 2-3-1 (3)		30
ARI: **Aux (1) RV (2) Inf (3)**	3-2-1 no IPP (33)	1-3-2 no IPP (3) 1-2-3 no IPP (3) 3-1-2 no IPP (3) 2-1-3 no IPP (3) 2-3-1 no IPP (3)	1-2-3 IPP (3) 1-3-2 IPP (3) 3-1-2 IPP (3) 3-2-1 IPP (3) 2-1-3 IPP (3) 2-3-1 IPP (3)	66
TOTAL	*75*	*75*		*150*

Table 6.3: Design of the speeded acceptability judgment task (the numbers between the brackets indicate the number of items with that combination of verbs).

The verbs in table 6.3 are numbered according to their hierarchical order, that is, their depth of embedding relative to each other (cf. chapter 3), as is shown in the examples below.

(35) *Hy sei dat er dy film graach sjen (3) wollen (2) hie (1)*
He said that he that film gladly see (3) wanted (2) had (1)
"He said he had gladly wanted to see that film"

(36) *de man hie (1) fervje (3) wollen(2)*
the man had his house green paint wanted
"the man wished he had painted his house green"

The linear order of the numbers is used to indicate the linear ordering of the verbs: 1-2-3, 2-1, 3-2-1 etcetera. For example (8) the cluster would be indicated as 3-2-1 (no IPP), which is a Standard Frisian order, and for example (9) the cluster would be indicated as 1-3-2, which is a non-standard Frisian order. In the ARI clusters it is also indicated whether or not the IPP effect occurred. In clusters with IPP the restructuring verb appears as an infinitive and in clusters marked 'no IPP' the restructuring verb appears as a participle. The different cluster types and orders appeared in the task in a randomized order. The complete task of 150 items took about 25 minutes, the exact sentences can be found in Appendix III.

6.3.3 Sociolinguistic questionnaires

In chapter 2 it was shown that language variation and (contact-induced) language change can often be linked to some socio- or psycholinguistic variables. Previous research into the developments in the Frisian verbal complex has barely taken this kind of variables into account. The current study aims at filling that knowledge gap. This led to the formulation of research question 3, in which the relationship between the variation in the Frisian verbal complex and the following variables will be considered:

- Age & Time
- Sex
- Regional background
- Level of education
- Language proficiency
- Language use
- (Language) Attitude

In order to administer these variables, a set of questionnaires was developed. Below, it will be explained how each of the variables was accounted for in those questionnaires.

Age & Time

As one of the most significant factors in language change is time (see chapter 2 for a more elaborate discussion on this), this study was set-up in an apparent time framework. By studying subjects from different age groups at the same point in time it is assumed that we can track change over time. In the apparent time study three different age groups were included, the younger one old enough to have acquired the more complex three-verb clusters (second graders in Dutch secondary education), the oldest group born before or not long after World War II, with an intermediate group in between. Thus, there were three groups, one group of 12–15-year-olds (N=24, for the acceptability judgment task N=61), a group of 25 to 48 years old (N=16) and a group of 59 years old and up (N=22).

By investigating subjects of the same age at two different points in time, real time change could also be investigated. The apparent time study took place between 2004 and 2007. All subjects from the youngest subject group participated in 2004. In 2016 the acceptability judgment task was repeated with a similar age group (12–13-year-olds, N=82). In this way, a time difference of twelve years was covered, which made it possible to track changes over real time.

Sex

Although some studies found a difference between male and female subjects in the Frisian-Dutch contact situation, others did not (cf. chapter 2). It is possible to argue against the inclusion of sex as a variable, but it is a common factor found in sociolinguistic research. We therefore did take sex as one of the variables in our study. Subjects could indicate their sex by ticking a box for either male or female.

Geographical background

The main reason to administer subjects' geographical background was to be able to control for dialectal differences, even when such differences were not expected in the case of verb clusters (Frisian dialects differ mainly in phonology, not in syntax, cf. chapter 1). Subjects' current place of residence and -if different- the place(s) where they lived for the longest period of time were administrated.

The subjects were assigned to one of three groups representing the three main Frisian dialects *Klaaifrysk* (Clay Frisian), *Wâldfrysk* (Wood Frisian) and *Súd-Westhoeksk* (Frisian from the 'South-West corner' of the province) according to the dialect map of the province of Fryslân (cf. figure 1.1 in chapter 1). For subjects whose current place of residence was different from the place they lived for the longest period of their life, it was checked how big the relative difference was and how long ago they lived there. 2 subjects were thus assigned a different dialect region than the one they currently lived in.

Level of education

Early sociolinguistic studies showed that certain variants were used more frequently by the highest status classes and less frequently by the lowest status classes and at intermediate frequencies by the classes in between (Tagliamonte 2011). Where social class is a relevant social category, linguistic variables will correlate with it (Tagliamonte 2011). When a linguistic variable has a clear standard vs. non-standard social evaluation it is sure to be aligned with the prevailing social hierarchy in the community, whatever that might be. In the Netherlands society is not divided into different social classes as in the Anglo-Saxon world. Labov (2001) also mentions education in relation to social class. In general, higher education is associated with a better occupation and higher income (Tuckman & Monetti, 2010). In the Netherlands, and in the province of Fryslân this is probably the best indicator of socio-economic status (SES): with educational level the chances of economic and political power increase. Nevertheless, no effects of SES or educational level have been reported for the variation in Frisian so far.

Three educational levels were administered, according to the current or latest educational level of the subjects: one group for primary education and lower vocational education, a second group for intermediate vocational education and secondary education and a third group for higher education and higher secondary education.[6] Note that the factor 'level of education' was not intended to reflect the number of hours of education in Frisian (or Dutch) that the subjects had

[6] Equivalent to Dutch *po, vbo, vmbo, lbo, lts, huishoudschool*; Dutch *mbo, mavo, havo, mulo;* and Dutch *hts, hbs, vwo, hbo, wo,* respectively.

received. The subjects' proficiency of Frisian and Dutch was administered in a separate factor, as well as their language use.

Language proficiency

In the literature on language contact, bilingualism and bilingual language acquisition, relative language proficiency - i.e. the language proficiency in one (first) language relative to the proficiency in the other (second) language - is often mentioned as one of the factors that could play a role in language development and language change. In contact linguistics this is referred to as linguistic 'dominance' (cf. Van Coetsem 1988, 2000, and see chapter 2). Linguistic dominance could influence the type of transfer between the languages (Van Coetsem, 1988, 2000). Language proficiency in Frisian and Dutch was therefore part of this investigation.

The subjects' own assessment of their proficiency in Frisian and Dutch was determined by means of a can-do list. For different tasks the subjects were asked to indicate the level of difficulty or ease with which they could perform (can do) a task like that in Frisian and Dutch. An example is given in (37) below.

1 = I absolutely can't do this
2 = I can do this with a great deal of difficulty
3 = I can do this with some difficulty
4 = I can do this fairly easily
5 = I can do this without any difficulty

(37)	DUTCH	FRISIAN
I can write short e-mail messages	1 2 3 4 5	1 2 3 4 5

The tasks were based on the descriptions from the Common European Framework of Reference for Languages (CEFR, Council of Europe 2001). The CEFR descriptions for Dutch were used in four different domains: reading, writing, speaking/having a conversation, and listening. Each domain contained relatively easy tasks and more difficult tasks (CEFR levels B1-C1). The tasks were presented in Dutch, and by domain. In this way it was possible to administer the subjects' self-assessed proficiency for both Frisian and Dutch. Also, an indication of linguistic dominance could be given by comparing the proficiency in the two languages. The complete can-do list can be found in Appendix IV.

Language use

Language use can be of interest for language development in two ways. One of them is related to the frequency of language use. Some theories assume frequency of use to be correlated with language fluency or proficiency, and (indirectly) to vulnerability to change (see also the description of the previous variable). Greater proficiency and greater use are then linked to more robustness (and less likeliness to change). The other way in which language use has been linked to language development concerns the (number of) domains in which the language is used (see chapter 2). Language use is assumed to be an indicator of the usefulness or status of a language: in the more domains the language is used, the more useful the language is and the higher the status. High status languages are thought to be less vulnerable to change.

A questionnaire on language use was included in this study. Both aspects of use were covered, i.e. the frequency of use and the domains in which the language was used. The questions in the questionnaire consider the majority of the language domains or language functions discussed in chapter 2 (cf. Fishman 1965, Fasold 1984 a.o.). There were seven questions regarding the family domain (parents, grandparents, siblings, children, grandchildren, and small children in the (wider) family), four questions regarding the closest circle (neighbors, best friend, friends, and pets). Two questions concerned a more formal setting, in school (in the younger group) or at work (both older groups) and at the medical doctor (all groups), but still concerning a familiar person. Five questions concerned unknown others (asking for directions, at the railway station, at the post office, in a shop, in a pub). And a last category concerned people that were known not to speak Frisian. Finally, there were three questions regarding the use of Frisian media (written media including literature, radio, and tv). The entire list of questions can be found in Appendix V.

The questionnaire was presented as a table with different domains as rows, where subjects had to mark a column for their frequency of use of Frisian in that kind of situations. The columns represented the following values:

1 = never
2 = seldom
3 = sometimes
4 = most of the time
5 = always

There also was a column for ‘not applicable’. The last column could be used for example when a person was asked to indicate their use of Frisian with their pet and they did not have any pet.

Language attitude
Both in sociolinguistics as well as in second language acquisition studies the attitude towards a language is mentioned as a factor that could influence (one’s use of) that language. In sociolinguistics this can for example be related to the affection one has for a dialect as opposed to a standard language, whereas in second language acquisition this can also entail the willingness to learn the second language.

In this study all subjects were asked whether they thought it was important that the Frisian language would continue to exist. Answers could be given on a five-point Likert scale with the following distribution of answers:

- very important
- relatively important
- no opinion
- relatively unimportant
- not important at all

As indicated in chapter 4, for Frisian some found an effect of attitude (most recently Jongbloed-Faber 2016), whereas others only found an effect of attitude in L2 speakers of Frisian (Ytsma 1995).

By means of the different questionnaires it was possible to collect a large amount of data on the sociolinguistic background of the subjects. In this way, all variables from research question 3 were covered. In the next section it will be demonstrated how these data were collected and processed.

6.4 Subjects

In this section it will be elaborated who participated in the study and how the different tasks were administered. Second grade pupils from different school types were recruited from schools that provided different types of secondary education. The schools were deliberately chosen from the different dialect areas of the province of Fryslân. Consecutively participants of around 40 and around 65 were recruited in the same dialect areas. The school visits took place 2004, the rest of the data were collected in the following years (final participant in 2007). In 2016 the same schools were asked to participate. From two schools another group of second grade pupils participated in the study. The third school was replaced with a school from the same dialect area.

6.4.1 Subjects apparent time study

The apparent time study consisted of the acceptability judgment task, the verb cluster elicitation task and all the questionnaires elaborated in the previous sections. The total number of subjects in this group was 62, and all were Frisian L1 speakers. Three different age groups were investigated in the apparent time framework. The youngest group consisted of 24 second-grade pupils (ages 12-14). For the oldest group 22 subjects were selected, who were all born before the 1950's (ages 59-74). The intermediate group consisted of 16 subjects, who were between 25 and 49 years old at the moment of the study.

The number of subjects differs slightly between groups. It was particularly difficult to find subjects between 25 and 50 years of age. It also turned out to be difficult to recruit subjects from the *Súd-Westhoeke* dialect area, which could be explained by its considerably smaller size compared to the other two dialect areas (cf. figure 1.1 in chapter 1). The tables below show the composition of the subject group that participated in the apparent time study. The different tables demonstrate the distribution of other variables (sex, regional background and level of education) for the different age groups.

Age group	Male	Female	*TOTAL*
Young (12-14)	12	12	*24*
Intermediate (25-49)	7	9	*16*
Elder (59-74)	10	12	*22*
TOTAL	29	33	*62*

Table 6.4 Subjects apparent time study according to age group and sex. N=62, L1=Frisian

The table shows that in both elder groups there were slightly more female than male participants.

Age group	Klaai	Súd-Westhoeke	Wâld	*TOTAL*
Young (12-14)	8	8	8	*24*
Intermediate (25-49)	5	4	7	*16*
Elder (59-74)	10	4	8	*22*
TOTAL	*23*	*16*	*23*	*62*

Table 6.5 Subjects apparent time study according to age group and region. N=62, L1=Frisian

As stated above, it was difficult to recruit subjects from the Southwest area of the province of Fryslân. In the Klaai area it turned out to be more difficult to recruit subjects in the intermediate age group.

Age group	Low	Intermediate	High	*TOTAL*
Young (12-14)	8	8	8	*24*
Intermediate (25-49)	5	4	7	*16*
Elder (59-74)	10	4	8	*22*
TOTAL	*23*	*16*	*23*	*62*

Table 6.6 Subjects apparent time study according to age group and level of education). N=62, L1=Frisian.

In the subjects participating in the apparent time study, the level of education was not distributed completely evenly over the different age groups, in particular in the elder groups.

6.4.2 Subjects real time study

The real time study consisted of the acceptability judgment task, the questionnaires on language use and the general background questionnaire (the verb cluster elicitation task and language proficiency task were omitted). The total number of subjects in this group was 142 Frisian L1 speakers. Two groups of subjects were investigated in the real time framework: one group in 2004 and another group in 2016. The group of 2004 consisted of 61 second-grade pupils (ages 12-14, mean age 12,4). The group of 2016 consisted of 82 second-grade pupils (ages 12-13, mean age 12,9). The tables below show the distribution of the subjects participating in the real time study. The different tables demonstrate the distribution of other variables (sex, regional background and level of education) for the different years.

Year of test	**Male**	**Female**	***TOTAL***
2004 (12-14)	31	30	*61*
2016 (12-13)	38	43	*81*
TOTAL	*69*	*74*	*142*

Table 6.7 Subjects real time study according to age group and sex (N=142, L1=Frisian).

Year of test	**Klaai**	**Súd-West**	**Wâld**	***TOTAL***
2004 (12-14)	22	29	10	*61*
2016 (12-13)	33	35	13	*81*
TOTAL	*55*	*64*	*24*	*142*

Table 6.8 Subjects real time study according to age group and region (N=142, L1=Frisian).

Year of test	**Lower**	**Intermediate**	**Higher**	***TOTAL***
2004 (12-14)	30	28	3	*61*
2016 (12-13)	33	35	13	*81*
TOTAL	*63*	*63*	*26*	*142*

Table 6.9 Subjects real time study according to age group and level of education (N=142, L1=Frisian).

The data from both younger subject groups were collected at their schools, in 2004 and 2016 respectively. The data from the other age groups were gathered in the years following 2004 (final participant in 2007). The questionnaires and tasks of the apparent time study were all processed by the main investigator, including the transcription and processing of the (oral) verb cluster elicitation task. The latter were checked by the professor of Frisian linguistics from the University of Groningen. A research assistant processed the questionnaires and grammaticality judgment task administered in 2016.

6.5 Data collection and procedures

Data on the variables summarized in research question 3 (age/time, sex, regional background, level of education, language proficiency, language use, and (language) attitude) were collected by means of the different questionnaires. The distribution of the variables age, sex, regional background, and level of education in the subject groups was discussed in the previous section. In this section it will be demonstrated how the data on language proficiency, language use, and attitude were collected and processed. Further information on the procedures and scoring method for the acceptability judgment task and the verb cluster elicitation task can be found in the relevant sections of the chapters concerning these tasks (chapter 7 and 7 respectively).

6.5.1 Language proficiency data

Can-do scales based on the Common European Framework of Reference for Languages (CEFR, Council of Europe 2001) were used to assess the proficiency in Frisian and Dutch of our subjects (cf. section 6.3.3). For each domain (reading, listening, speaking, writing) 7-10 items corresponding to CEFR levels A1 to C1 were included in the task (the complete task can be found in Appendix IV).

Subjects

60 subjects filled out the can-do scales. The task was part of the apparent time study, with three different age groups. The distribution of subjects over the different age groups is shown in table 6.10.

Age group	Number of subjects
Young (12-14)	24
Intermediate (25-49)	14
Elder (59-74)	22
TOTAL	*60*

Table 6.10 Subjects that filled out the can-do scales (N=60, L1=Frisian)

All of the subjects had Frisian as their first language, i.e. all subjects spoke Frisian with their parents and/or siblings.

Procedure and scoring method

The can-do lists were administered on paper. Subjects had to indicate their proficiency level on a five-point scale for both Frisian and Dutch. The scales represented the level of difficulty or ease with which a subject could perform a given task in the following way:

1 = I absolutely can't do this
2 = I can do this with a great deal of difficulty
3 = I can do this with some difficulty
4 = I can do this fairly easily
5 = I can do this without any difficulty

For each subject an average score was calculated for the four different domains (reading, listening, speaking, writing) and the two different languages (Frisian and Dutch), i.e. for each subject 8 averages would be calculated.

Findings

Subjects reported slightly higher proficiency on Dutch than Frisian when comparing the two languages over all subjects: the average proficiency over all domains for Dutch amounted to 4,09 (SD 0,56) on the five-point scale, whereas the average reported proficiency for Frisian over all domains was 3,72 (SD 0,61). Differences between Dutch and Frisian were found to be larger in the written domain, i.e. on reading (Dutch 4,18 and Frisian 3,86) and in particular writing (Dutch 3,98 versus Frisian 3,06). On speaking, the reported proficiency was almost the same (Frisian 3,81 against 3,82 for Dutch). The table below demonstrates the averages per domain over all subjects.

Language	Listening	Reading	Speaking	Writing	*Overall*
Frisian	4,19 (0,84)	3,86 (0,97)	3,81 (0,96)	3,06 (1,39)	*3,72 (0.61)*
Dutch	4,28 (0,82)	4,18 (0,86)	3,82 (1,00)	3,98 (1,10)	*4,09 (0,56)*

Table 6.11 Mean reported proficiency in Frisian and Dutch on a 1-5 scale, standard deviations given between brackets (N=60, L1=FR)

The reported proficiency was also split out according to age group. On the basis of the literature (cf. chapter 2 and 3), one would expect that the youngest group would have a lower proficiency in (standard) Frisian. Their self-reported proficiency for Frisian however was higher than that of the intermediate or both older groups. The youngest group reported the highest proficiency for Frisian in the active domains (speaking and writing), the oldest group had the highest reported proficiency for Frisian in the passive domains (listening and reading). The intermediate group reported overall lower proficiency for Frisian, and in particular for writing: the mean reported proficiency for writing in Frisian in the intermediate group was 2,18 with an SD of 1,15 indicating some variation in writing proficiency.

Age group	Listening	Reading	Speaking	Writing
Young	4,09 (0,63)	3,79 (0,57)	3,96 (0,66)	3,46 (0,89)
Intermediate	4,20 (0,59)	3,53 (0,54)	3,58 (0,69)	2,18 (1,15)
Old	4,32 (0,53)	4,16 (0,62)	3,83 (0,60)	3,21 (1,16)

Table 6.12 Average self-reported proficiency for Frisian per domain and age group on a 1-5 scale, standard deviations given between brackets (N=60, L1=FR)

For Dutch, a similar pattern appears across age groups. The youngest group scores very high on self-reported proficiency. Only on reading the oldest group reports a higher proficiency. The intermediate group again reports the lowest proficiency rates, on writing however the oldest group reports a slightly lower proficiency. Note that the intermediate and oldest groups report a (slightly) lower speaking proficiency for Dutch than for Frisian. These are the only instances in which the average reported proficiency for Frisian is higher than that for Dutch.

Age group	Listening	Reading	Speaking	Writing
Young	4,35 (0,54)	4,23 (0,44)	4,13 (0,67)	4,32 (0,44)
Intermediate	4,18 (0,63)	4,02 (0,56)	3,50 (0,66)	3,79 (0,72)
Old	4,28 (0,58)	4,28 (0,53)	3,72 (0,80)	3,72 (0,87)

Table 6.13 Average self-reported proficiency for Dutch per domain and age group on a 1-5 scale, standard deviations given between brackets (N=60, L1=FR)

The (self-reported) language proficiency as calculated on the basis of the can-do scales will serve as a variable to investigate whether there is a relation between language proficiency and (the extent of) variation in the Frisian verbal complex. The overall value for language proficiency in Frisian and the value for writing proficiency n Frisian will be used to this end.

6.5.2 Language use data

A questionnaire on the use of Frisian in different domains was administered in order to get insight into possible differences in the use of Frisian between subjects. The domains were based on the language domains or language functions discussed in chapter 2 (cf. Fishman 1965, Fasold 1984 a.o.). The complete task can be found in Appendix V.

Subjects

140 subjects filled out the questionnaire on language use. The task was part of the apparent time study, as well as the real time study. This resulted in four different age groups with two younger groups representing the real time study. All of the subjects had Frisian as their first language, i.e. spoke Frisian with their parents and/or siblings. The distribution of subjects over the different age groups is shown in table 6.14.

Age group	Number of subjects
Old	22
Intermediate	16
Young 2004	24
Young 2016	78
TOTAL	*140*

Table 6.14 Subjects that filled out the questionnaire on language use (N=140, L1=Frisian)

Procedure and scoring method

Subjects were asked to indicate their use of Frisian in 25 different domains. In each domain, they had to choose one of the following values:

1 = never
2 = seldom
3 = sometimes
4 = most of the time
5 = always

It was also possible to give the value 'not applicable' to a domain. Subjects used this option for example when they were asked whether they talked Frisian to their pet and they did not have a pet. These cases were considered as missing values.

For each domain a mean score (over all subjects) was calculated. Subsequently, a common factor analysis was carried out. For each of the four factors resulting from the common factor analysis an average score was calculated per subject, i.e. for each subject four averages would be calculated. The findings are presented below.

Findings

Almost all subjects reported to use Frisian always or most of the time in the family domain. All subjects that reported on their use of Frisian with grandparents stated that they only spoke in Frisian with them (for both grandfather and grandmother the mean equals 5,00 with SD 0,00). The table demonstrates that use of Frisian with parents, partners and (grand) children was also reported relatively high with relatively low standard deviations. This was a logical consequence of the selection criterion of having Frisian as the first/home language. The information value of the scores on these domains in relation to the research questions would therefore probably be relatively low: all subjects score about the same.

Domain	Mean	Std. Deviation	N
Siblings	4.68	.917	139
Father	4.72	.826	130
Mother	4.73	.889	133
Partner	4.95	.324	38
Children	4.75	.841	36
Grandchildren	4.24	1.562	17
Grandfather	5.00	.000	41
Grandmother	5.00	.000	41
Friends	3.74	1.219	137
Best friend	3.83	1.522	138
Neighbors	3.98	1.347	137
Pet	4.09	1.507	116
Station	2.32	1.386	128
Child in the family	4.02	1.364	137
Cashier	2.62	1.470	135
Dutch acquaintance	2.02	1.223	126
Directions	2.30	1.323	135
Dutch family member	2.11	1.286	132
Physician	3.05	1.528	132
Pub	2.95	1.622	110
Teacher/Boss	2.97	1.349	124
Post office	2.53	1.507	109
Frisian books	2.61	1.188	129
Frisian TV	3.11	1.178	133
Frisian radio	2.91	1.297	130

Table 6.15 Average self-reported language use for Frisian on a scale of 1 (never) to 5 (always) in 25 different domains (N=140, L1=Frisian).

In the domains *pet, neighbor, best friend, friends* and *with a child in the family* the average reported use is above 3.5, which indicates frequent use of Frisian In these domains. In the domains *Dutch family member, asking directions, Dutch acquaintance* and *at the station* the average reported use is below 2.5, which indicates infrequent use of Frisian in these situations. All other domains (*cashier, physician, pub, teacher/boss, post office, books, TV and radio*) are rated between 2.5 and 3.5. Standard deviations are between 1.20 and 1.65 for all of these domains.

A common factor analysis (Principle Axis Factoring) was carried out in order to reduce the data and create a number of 'umbrella domains' (the factors) with strongly correlating domains. The domains within the closest family, i.e. *(grand) parents, (grand) children and siblings*, were left out because there was a relatively large number of missing values in those domains, in particular on the domains *(grand) children and (grand) parents* depending on the age of the subjects. Also, the subjects all scored very high on those domains (they were selected on the basis of having Frisian as their first/home language), which could influence the result of the factor analysis in these domains.

	Factor			
Domain	1	2	3	4
Friends		.743		
Best friend		.654		
Neighbors		.829		
Pet				
Station	.779			
Child in the family				
Cashier	.643			
Dutch acquaintance				.653
Directions	.702			
Dutch speaking family member				.664
Physician				
Pub	.612			
Teacher/Boss				
Post office	.715			
Frisian books			.684	
Frisian TV			.831	
Frisian radio			.685	

Table 6.16 Rotated factor matrix (extraction method: principal axis factoring, rotation method: Varimax with Kaiser normalization, rotation converged in 6 iterations) of 17 domain variables with regard to use of Frisian (N=140)

The rotated factor matrix as demonstrated in table 6.16 shows four different factors. The factors were minimized to those variables with a correlation higher than .5 with the other variables in the group (i.e. a cut-off value of .5 was used). As a result, the domains *pet, physician* and *teacher/boss* had to be dropped.

Looking at the different variables that group under the four factors, the following umbrella terms could be used. Factor 1 could be named 'public', as these variables all represent domains in the public domain. Factor 2 with variables *friends, best friend* and *neighbors* could be named 'social' as these variables all represent domains in the closer social environment. Factor 3 could be named 'media', with variables *books, TV* and *radio*. Factor 4 could be named 'Dutch interlocutor' as the two remaining variables both represent a situation in which a person is communicating with somebody that speaks Dutch to them.

For these different umbrella domains average scores were calculated per subject. The reported use of Frisian in the four domain groups identified in our common factor analysis is demonstrated in table 6.17 below. Recall that the five-point scale reflects values for reported use of Frisian from 1 (never) to 5 (always).

Age group	Social	Public	Media	Dutch interlocutor
Old (n=22)	4.33 (.97)	3.95 (1.08)	4.03 (.82)	2.85 (1.29)
Intermediate (n=16)	4.12 (1.10)	3.04 (1.08)	2.77 (.71)	1.72 (.91)
Young 2004 (n=24)	3.90 (1.03)	1.83 (.80)	2.36 (.77)	1.69 (1.04)
Young 2016 (n=78)	3.62 (1.24)	2.18 (1.04)	2.75 (1.09)	2.03 (1.07)
Over all (n=140)	*3.83 (1.18)*	*2.50 (1.23)*	*2.90 (1.08)*	*2.05 (1.13)*

Table 6.17 Average reported use of Frisian per domain group and age group on a 1-5 scale, standard deviations given between brackets (N=140, L1=FR)

The table demonstrates that the reported use of Frisian is highest in the domain group 'social' and low with Dutch speaking interlocutors, while the domain groups 'public' and 'media' are in between. The table also shows the differences in reported use between the different age groups. The reported use of Frisian is highest in the oldest and intermediate age groups, in the younger groups the picture is mixed. Reported use in the social domain was higher in 2004, but for the other domains a slight increase in use is shown between 2004 and 2016.

The average (self-reported) language use per domain group will serve as a variable to investigate whether there is a relation between language use and (the extent of) variation in the Frisian verbal complex.

6.5.3 Language attitude data

One question in the general background questionnaire was related to the language attitude of the subject. This concerned a question on the survival of the Frisian language.

Subjects

Most subjects filled out a general background questionnaire, both participants of the apparent time study, as well as participants of the real time study. This resulted in four different age groups with two younger groups representing the real time study. All of the subjects had Frisian as their first language, i.e. spoke Frisian with their parents and/or siblings. The distribution of subjects over the different age groups is shown in table 6.18.

Age group	**Number of subjects**
Old	22
Intermediate	15
Young 2004	69
Young 2016	78
TOTAL	*184*

Table 6.18 Number of subjects that indicated their language attitude per age group (N=184, L1=FR)

Procedure and scoring method

All subjects were asked whether they thought it was important that the Frisian language would remain. Answers could be given on a five-point scale:

Vind je het voor jezelf belangrijk dat de Friese taal blijft bestaan?
Do you find it important for yourself that the Frisian language remains?

- very important
- relatively important
- no opinion
- relatively unimportant
- not important at all

When a subject answered 'very important' this would be seen as a very positive attitude, 'relatively important' as a positive attitude, 'no opinion' as neutral, 'relatively unimportant' as a negative attitude and 'not important at all ' as a very negative attitude.

Findings

The distribution of attitude per age group is given in table 6.19 below.

Age group	Very negative	Negative	Neutral	Positive	Very positive
Old (n=22)	-	-	-	6	16
Intermediate (n=15)	-	-	-	6	9
Young 2004 (n=69)	-	-	8	26	35
Young 2016 (n=78)	2	1	6	19	50
Over all (n=140)	*2*	*1*	*14*	*57*	*110*

Table 6.19 Number of subjects per attitude towards Frisian and per age group (N=184, L1=FR)

In the subject group that participated in the apparent time study (all with L1 Frisian), all but 3 values on the attitude question were neutral, positive or very positive. The fact that Frisian L1 subjects have a relatively positive attitude towards the Frisian language might make it difficult to use attitude as a variable to investigate whether there is a relation between language attitude and (the extent of) variation in the Frisian verbal complex.

In table 6.20 the average reported language proficiency in Frisian and Dutch is shown per attitude level.

Attitude	Neutral	Positive	Very positive	Overall
Frisian proficiency	3,35 (0,91)	3,72 (0,87)	3,81 (0,86)	3,72 (0.61)
Dutch proficiency	4,65 (0,35)	4,17 (0,66)	4,01 (0,66)	4,09 (0,56)

Table 6.20 Average self-reported proficiency for Dutch and Frisian (1-5 scale) according to attitude towards Frisian, standard deviations given between brackets (N=60, L1=FR)

Even with overall neutral to positive attitudes, it seems that self-reported proficiency in Frisian is proportional with attitude, whereas self-reported proficiency in Dutch is inversely proportional with attitude towards Frisian. All groups report higher proficiency in Dutch compared to Frisian, and the difference is smallest in the group with a very positive attitude towards Frisian.

Chapter 7

Findings of the Acceptability Judgment Task

7.1 Introduction
7.2 Subjects
7.3 Procedure and scoring method
7.4 Findings

7.1 Introduction

In this chapter the findings of the verb cluster acceptability judgment task will be discussed. The findings of the verb cluster elicitation task will be presented in chapter 8. In chapter 9 the findings of both tasks will be discussed and interpreted with regards to the research questions and in light of the theoretical framework presented in this thesis.

As in many previous studies that investigated clusters of more than two verbs (Koeneman & Postma 2006, Barbiers 2005, Cornips 2009), an acceptability judgment task was part of this study. A speeded acceptability judgment task was used in which the stimuli were presented aurally to the subjects, with an interval of 5 seconds (see chapter 6 for the set up of the task and the reasoning behind it). Subjects were supposed to indicate their agreement or disagreement with the statement that a sentence was acceptable in Frisian. An acceptability scale of five points was used for the judgments, as demonstrated in (38) below.

(38) [SENTENCE]

This sentence is an acceptable Frisian sentence:

0	I completely disagree
0	I disagree
0	no opinion
0	I agree
0	I completely agree

In total, the subjects were asked to give their judgments on 150 sentences: 75 Standard Frisian sentences and 75 sentences in which the verb cluster deviated from Standard Frisian with regards to verb order and/or morphology (as shown in table 6.3). The exact sentences can be found in Appendix III.

7.2 Subjects

The acceptability judgment task was part of both the apparent time study, with subjects in different age groups, tested between 2004 and 2007, and the real time study, with 12-14-year-old subjects tested in either 2004 or 2016. The total number of subjects thus added up to 180.

	Age range	**Male**	**Female**	***TOTAL***
Old	59-74	10	12	*22*
Intermediate	25-49	6	9	*15*
Young 2004	12-14	31	30	*61*
Young 2016	12-13	38	43	*81*
TOTAL	*12-74*	*85*	*94*	*179*

Table 7.1 Subjects grammaticality judgment task (N=179, L1=FR)

The group existed of 85 male and 94 female subjects, the distribution over the different age groups is shown in table 7.1 above. 76 subjects were from the Clay Frisian region ‘Klaai’, 65 from the South-West corner and 38 from the Wood Frisian region ‘Wâld’.

7.3 Procedure and scoring method

In (1) above it was shown that each item required an answer on a five-point scale, ranging from ‘completely disagree’ to ‘completely agree’. A numerical value was attributed to each of the different answers of the five-point scale, 1 for ‘completely disagree’, 2 for ‘disagree’, 3 for ‘no opinion’, 4 for ‘agree’, and 5 for ‘completely agree’. These numerical values were called the acceptability scores. In the course of this chapter average acceptability scores will be given on various occasions. It is therefore important to note that an average could never reach a value below 1 as the lowest possible acceptability score was 1.

In the execution of the task in 2016 it turned out that in one of the schools the lessons were too short to explain and administer the complete test of 150 items plus the social questionnaire. Subsequent groups were therefore asked to start the task at different points (item 1, item 50 and item 100) in order to avoid a concentration of missing values at the end of the task. In that way, missing values were spread over the different conditions in a more equal way.

7.4 Findings

The findings will be presented in the following way. First the judgments per condition are shown: for each of the different verb cluster types the acceptability scores per verb order are given. Secondly, the relationship between the acceptability judgment scores and various other factors will be investigated by means of a cumulative link mixed model (R Core Team 2015, Christensen 2015a,b). The final section discusses individual differences in linguistic variation.

7.4.1 Acceptability judgments per condition

In this section, the acceptability judgment scores on each of the different orders will be shown per verb cluster type. Absolute and relative frequencies are shown for each of the acceptability judgment scores. As in previous chapter, two-verb clusters will be discussed before three-verb clusters.

7.4.1.1 Two-verb clusters

The acceptability judgment task contained 12 items each of clusters with a finite auxiliary and a participial main verb (the AP-condition) and clusters with a finite restructuring verb and an infinitival main verb (the RI condition). Half of the items were offered in the Standard Frisian 2-1 order with the finite verb at the end of the phrase, cf. example (39a), and half of the items were offered in the 1-2 order, cf. example (39b).

(39) a. Hy sei dat Jan de doar grien ferve (2) hie (1)
b. Hy sei dat Jan de doar grien hie (1) ferve (2)
He said that John the door green painted had/had painted

In participial two-verb clusters, where both 1-2 and 2-1 orders are possible in Dutch, we found the following.

	Completely agree	Agree	No opinion	Disagree	Completely disagree	*TOTAL*
AP 1-2	431	258	50	139	150	*1028*
	41,9%	25,1%	4,9%	13,5%	14,6%	*100%*
AP 2-1	599	284	76	33	17	*1009*
	59,4%	28,1%	7,5%	3,3%	1,7%	*100%*

Table 7.2 Absolute and relative grammaticality judgments of different orders in participial two-verb clusters (N=179, L1=FR, N.B. all subjects together)

What we can see from the table is that both orders receive a substantial amount of approval. By accumulating 'completely agree' and 'agree' the acceptance rate of the 1-2 order adds up to 67%, whereas the 2-1 order is accepted in 88% of the cases. 1-2 orders are disapproved in 28% of the cases, and 2-1 orders in 5% of the cases. These percentages are calculated over all subjects, so it may well be that differences show up when different subgroups are compared.

The bar chart below shows the same data (AP condition) per age group. Each bar represents one of the orders for one of the age groups. The oldest group is displayed on the left, the youngest group on the right. As the age groups did not match in size, relative acceptability judgments are shown.

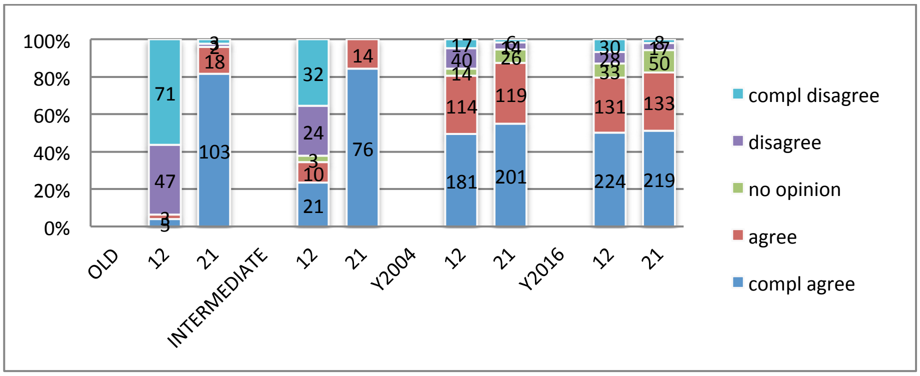

Figure 7.3 Relative acceptability judgments on the 1-2 and 2-1 order in clusters with a finite auxiliary and a participial main verb (AP) according to age group (N=179, L1=FR)

The bar chart clearly demonstrates the differences in acceptability judgments between the different age groups. In the oldest group, the 2-1 order is still prevalent, in the intermediate group the 1-2 order is accepted in almost 40% of the cases, besides the Standard-Frisian 2-1 order, and in the two youngest groups both orders are accepted to a large extent (75-85% of the cases). In the next section the statistic significance of the differences between different age groups, among other variables, will be tested.

First, the findings for the other verb cluster types will be demonstrated, starting with the findings for two-verb clusters consisting of a finite restructuring verb and an infinitival main verb in table 7.4 below. In Standard Frisian 2-1 is the only possible order in this condition, whereas Dutch has both options, with a preference for 1-2.

	Completely agree	**Agree**	**No opinion**	**Disagree**	**Completely disagree**	***TOTAL***
RI 1-2	368	269	91	144	169	*1041*
	35,4%	25,8%	8,7%	13,8%	16,2%	*100%*
RI 2-1	577	287	68	42	37	*1011*
	57,1%	28,4%	6,7%	4,2%	3,7%	*100%*

Table 7.4 Absolute and relative grammaticality judgments of different orders in infinitival two-verb clusters (N=179, L1=FR)

As was the case in participial clusters, both the 1-2 and the 2-1 order are approved in a substantial number of cases. Again, the acceptance rate for 2-1 orders (86%) is higher than that for 1-2 orders (61%), and the disapproval rate is quite a bit lower than that for 1-2 orders (8% vs. 30%). It seems that, over all subjects, the Standard Frisian 2-1 orders is still favored, but the Dutch 1-2 order is also approved twice as much as it is disapproved.

In the bar chart below the acceptability judgments for the RI condition are shown per age group. As was the case with the participial cluster, the differences with regard to acceptability judgments between the different age groups are very clear. In the oldest group, the Standard Frisian 2-1 order is still dominant, in the intermediate group the 1-2 order is accepted in almost 40% of the cases besides the 2-1 order, and in the two youngest groups both orders are accepted to a large extent, with overall acceptability scores going down a little: neither of the orders reaches an acceptability rate of 80% in the youngest group.

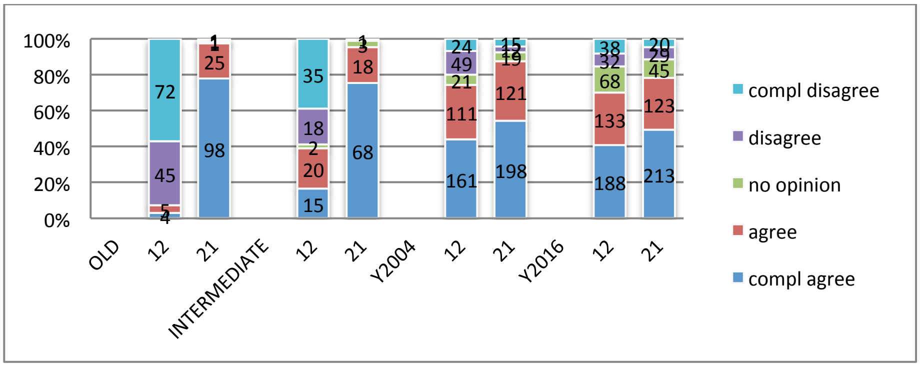

Figure 7.5 Relative acceptability judgments on the 1-2 and 2-1 order in clusters with a finite restructuring verb and an infinitival main verb (RI) according to age group (N=179, L1=FR)

7.4.1.2 Three-verb clusters

In three-verb clusters there are six logically possible orders. As the number of Standard Frisian items had to match the number of non Standard Frisian items, the absolute number of 3-2-1 orders is about 5 times as high as the absolute number of each of the other orders separately. Therefore, in the case of three-verb clusters it makes more sense to observe the relative scores per judgment instead of the absolute numbers.

RAP clusters

First, the findings in clusters with a finite restructuring verb, an infinitival auxiliary verb and a participial main verb (RAP clusters) will be presented. An example of this condition with the different verb orders is given in (40a-f) below.

(40) a. Sy tocht dat se dat sa sels ek wol dien (3) hawwe (2) koe (1).
b. Sy tocht dat se dat sa sels ek wol dien (3) koe (1) hawwe (2)
c. Sy tocht dat se dat sa sels ek wol koe (1) hawwe (2) dien (3)
d. Sy tocht dat se dat sa sels ek wol koe (1) dien (3) hawwe (2)
e. Sy tocht dat se dat sa sels ek wol hawwe (2) koe (1) dien (3)
f. Sy tocht dat se dat sa sels ek wol hawwe (2) dien (3) koe (1)
She thought that she could have done it herself like that

In Standard Frisian (40a) is the only possible order. In Dutch many orders are possible with a preference for the order in (40c) in Standard Dutch, as was discussed in chapter 4. Each of the orders in (40b)-(40f) was offered three times and the order in (3a) was offered 15 times, i.e. 15 times a non-Standard Frisian order and 15 times a Standard Frisian order.

	Completely agree	**Agree**	**No opinion**	**Disagree**	**Completely disagree**	***TOTAL***
RAP 123	24	54	56	133	245	*512*
	4,7%	10,5%	10,9%	26,0%	47,9%	*100%*
RAP 132	58	102	59	125	173	*517*
	11,2%	19,7%	11,4%	24,2%	33,5%	*100%*
RAP 213	44	50	65	148	204	*511*
	8,6%	9,8%	12,7%	29,0%	39,9%	*100%*
RAP 231	23	42	72	147	219	*503*
	4,6%	8,3%	14,3%	29,2%	43,5%	*100%*
RAP 312	30	62	75	164	181	*512*
	5,9%	12,1%	14,6%	32,0%	35,4%	*100%*
RAP 321	462	677	403	583	395	*2520*
	18,3%	26,9%	16,0%	23,1%	15,7%	*100%*

Table 7.6 Absolute and relative grammaticality judgments of different orders in RAP clusters (N=179, L1=FR)

The table shows rather low overall acceptability ratings of the different orders in these three-verb cluster types. The Standard Frisian 3-2-1 order is approved in only 45% of the instances (accumulated score of ‘completely agree’ and ‘agree’). This is the only order that is approved more often than it is disapproved. The ‘Standard Dutch’ 1-2-3 order has an approval rate of only 15% (disapproved in more than 70% of the cases), whereas 1-3-2 receives 31% approval (versus almost 58% disapproval). The other orders are approved in 12% to 19% percent of the cases and receive much larger shares of disapproval (67% to 78%). Looking at the acceptance rates over all subjects, the Standard Frisian 3-2-1 order receives the highest approval of the six orders in RAP clusters with some tolerance for 1-3-2 orders.

In the following bar charts the acceptability judgments for the RAP condition are shown per age group. Each of the charts represents one age group. The bars represent the six different orders.

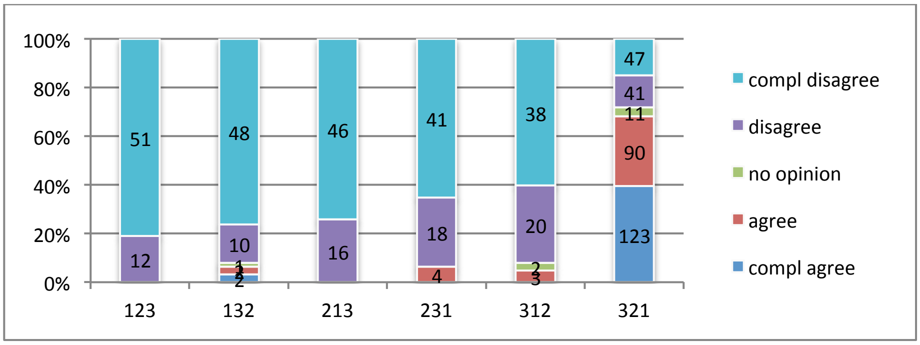

Figure 7.7 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP) of subjects age 59 and up (N=21, L1=FR)

The graph demonstrates that the only orders that did not receive any agreement were 1-2-3 (the preferred order in Dutch) and 2-1-3. The Standard Frisian 3-2-1 order is clearly the preferred order in the oldest subject group. In the intermediate group the same preference for the Standard Frisian 3-2-1 order is displayed. The 1-3-2 order, which is generally known as a Southern Dutch order (cf. chapter 4), is also accepted in some cases in the intermediate group.

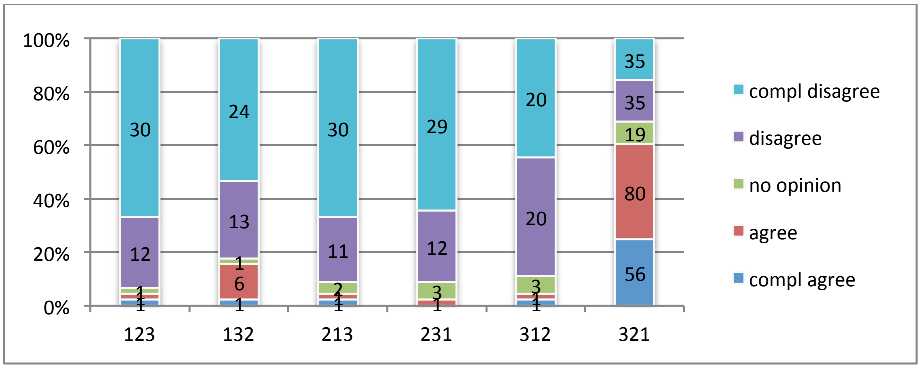

Figure 7.8 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP) of subjects aged 25-48 (N=15, L1=FR)

The acceptability judgment rates of the 12-14 year olds tested in 2004 are shown in figure 7.9, with those of their peers tested in 2016 shown in figure 7.10.

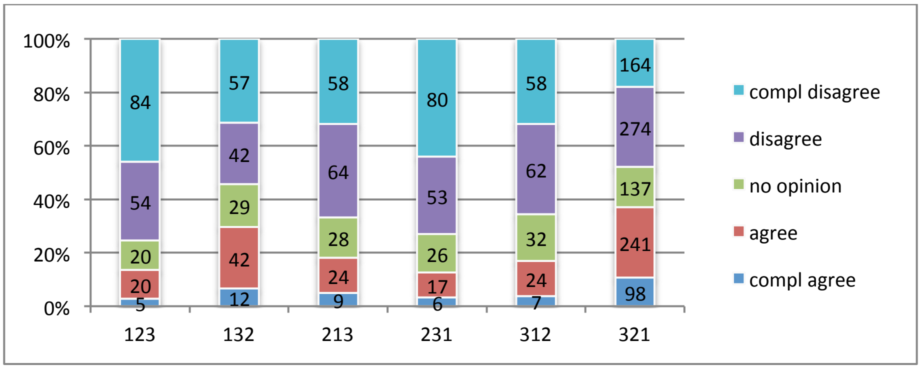

Figure 7.9 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP) of subjects aged 12-14 in 2004 (N=61, L1=FR)

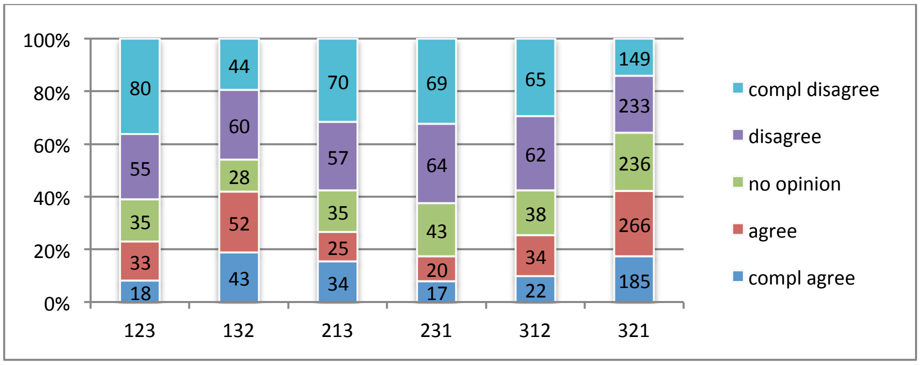

Figure 7.10 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP) of subjects aged 12-13 in 2016 (N=82, L1=FR)

The bar charts show that the 1-3-2 order is given an acceptability rate of about 25% in 2004 and up to 40% in 2016, whereas the Standard Frisian 3-2-1 order is down to also around 40%. All of the orders are accepted to a certain extent, including the orders that are not found in Dutch or other West-Germanic languages. The Standard Frisan 3-2-1 order is also rejected in quite a number of cases. In the 2004-group more than 40% of the items in the 3-2-1 order was disapproved. In 2016, the number is also close to 40%. Note that some of the bars seem to go in the direction of a distribution by chance, where each of the five answer categories from the Likert scale (as displayed in example (38)) represents around 20% of the cases. The effect of verb order and age group and their interaction on acceptability judgment scores will be shown in section 7.3.2.

RRI clusters

The second type of three-verb clusters that was tested concerns clusters consisting of a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters). The different ordering possibilities are displayed in (41) below.

(41) a. omdat hy syn suster syn hier knippe (3) litte (2) soe (1)
b. omdat hy syn suster syn hier knippe (3) soe (1) litte (2)
c. omdat hy syn suster syn hier litte (2) soe (1) knippe (3)
d. omdat hy syn suster syn hier litte (2) knippe (3) soe (1)
e. omdat hy syn suster syn hier soe (1) litte (2) knippe (3)
f. omdat hy syn suster syn hier soe (1) knippe (3) litte (2)
Because he was going to let his sister cut his hair

The only possible order in Standard Frisian is 3-2-1 (like 41a), whereas Dutch has a strong preference for 1-2-3 (like 41e), with some regional variability as was shown in chapter 4. Subjects were offered 30 items in the RRI condition, 15 of which were in the 3-2-1 order and three of each of the other orders.

Table 7.11 demonstrates the findings in three-verb clusters consisting of a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters). In RRI clusters, the Standard Frisian 3-2-1 order receives approval (accumulated score of 'completely agree' and 'agree') in just over half of the cases (disapproved in 36% of the cases). The 2-3-1 order has the lowest acceptability rate (23% approval, 65% disapproval), all other orders are in between, 3-1-2 (33% approval, 53% disapproval), 1-2-3 (32% approval, 54% disapproval), 2-1-3 (29% approval, 58% disapproval), 1-3-2 (28% approval, 63% disapproval). All in all, acceptability rates of the RRI clusters seem pretty low, as was the case for RAP clusters.

	Completely agree	Agree	No opinion	Disagree	Completely disagree	*TOTAL*
RRI 123	60	106	70	134	145	*515*
	11,7%	20,6%	13,6%	26,0%	28,2%	*100%*
RRI 132	58	86	51	148	167	*510*
	11,4%	16,9%	10,0%	29,0%	32,7%	*100%*
RRI 213	62	82	65	151	141	*501*
	12,4%	16,4%	13,0%	30,1%	28,1%	*100%*
RRI 231	47	69	64	100	226	*506*
	9,3%	13,6%	12,6%	19,8%	44,7%	*100%*
RRI 312	74	96	72	142	128	*512*
	14,5%	18,8%	14,1%	27,7%	25,0%	*100%*
RRI 321	611	687	341	547	364	*2550*
	24,0%	26,9%	13,4%	21,5%	14,3%	*100%*

Table 7.11 Absolute and relative grammaticality judgments of different orders in RRI clusters (N=179, L1=FR)

When we split the judgment scores according to age group, a different picture appears. This is shown in the bar charts below. Each of the charts represents one age group. The bars represent the six different orders. As the age groups did not match in size, relative acceptability judgments are shown.

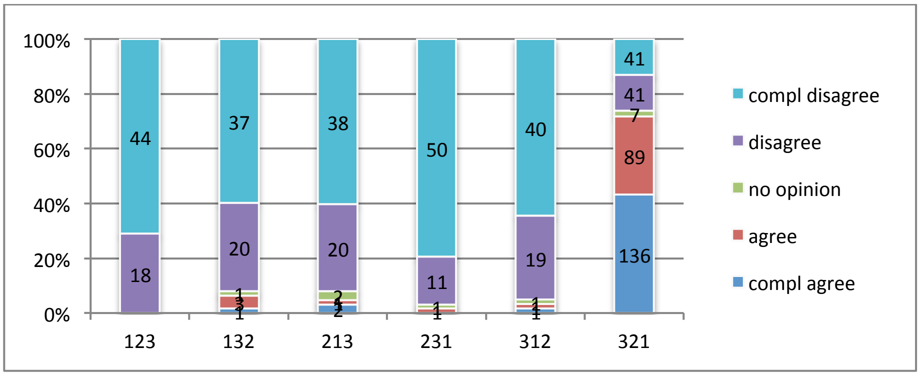

Figure 7.12 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI) of subjects age 59 and up (N=21, L1=FR)

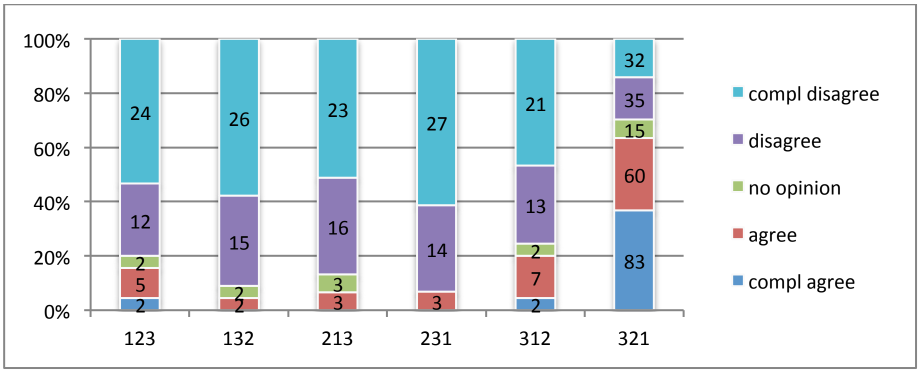

Figure 7.13 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI) of subjects aged 25-48 (N=15, L1=FR)

As was the case with the RAP clusters, both elder groups show a strong preference for the Standard-Frisian 3-2-1 order. The intermediate group sees the rising of two other orders, the 1-2-3 order and the 3-1-2 order, both going in the direction of approval rates of one-fifth. In the younger groups the approval rate for the Standard-Frisian 3-2-1 order drops, and those for the other orders go up. In the 2004 group it seems that there is a slight preference for some of the orders over others, but in the 2016 group it almost looks like a distribution by chance, much like the distribution of approval rates of the youngest groups in the RAP clusters.

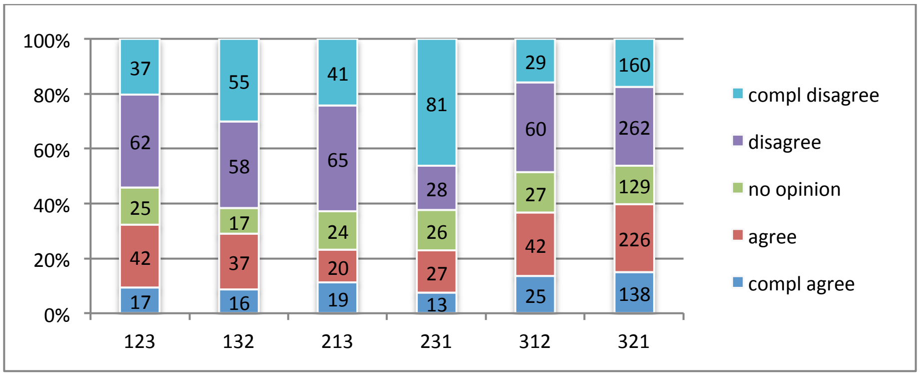

Figure 7.14 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI) of subjects aged 12-14 in 2004 (N=61, L1=FR)

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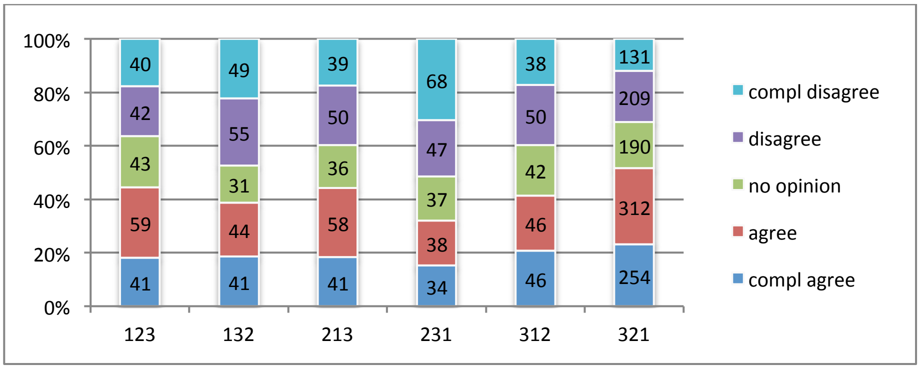

Figure 7.15 Relative acceptability judgments on the six different orders in clusters with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI) of subjects aged 12-13 in 2016 (N=82, L1=FR)

ARI clusters

Finally, the findings in three-verb clusters with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI condition) will be discussed, the so-called IPP clusters. As in the other three-verb clusters the ARI condition has six ordering possibilities. On top of that, the second verb can appear as a participle or an infinitive. This adds up to twelve different options. These options are demonstrated in (42) below, with the second verb shown in the participial (PP) and infinitival (INF) form in the same sentence.

(42) a. omdat Klaas Jan in it doarp fytsen (3) sjoen$_{PP}$/sjen$_{INF}$ (2) hie (1)
b. omdat Klaas Jan in it doarp fytsen (3) hie (1) sjoen$_{PP}$/sjen$_{INF}$ (2)
c. omdat Klaas Jan in it doarp sjoen$_{PP}$/sjen$_{INF}$ (2) hie (1) fytsen (3)
d. omdat Klaas Jan in it doarp sjoen$_{PP}$/sjen$_{INF}$ (2) fytsen (3) hie (1)
e. omdat Klaas Jan in it doarp hie (1) sjoen$_{PP}$/sjen$_{INF}$ (2) fytsen (3)
f. omdat Klaas Jan in it doarp hie (1) fytsen (3) sjoen$_{PP}$/sjen$_{INF}$ (2)
because Klaas saw Jan biking in the village

In Standard Frisian 3-2-1 with a participial restructuring verb, like in (42a), is the only possibility, whereas Standard Dutch has 1-2-3 with the second verb displaying as an infinitive (i.e. with the IPP effect), like in (42e). In order to offer all of the different orders with and without IPP, the amount of items offered in this condition was larger than in the other conditions. 33 items were offered in the Standard Frisian 3-2-1 order with a past participle, 3 items were offered of the 3-2-1 order with IPP and 3 items were offered of each of the other orders, both with and without IPP, adding up to 66 items in total.

In table 7.16 below, the acceptability ratings are shown without taking into account the morphology, i.e. with and without IPP. Separate values for the orders with and without IPP will be shown in the bar charts further on in this section.

	Completely agree	**Agree**	**No opinion**	**Disagree**	**Completely disagree**	***TOTAL***
ARI 123	169	270	116	213	229	*997*
	17,0%	27,1%	11,6%	21,4%	23,0%	*100%*
ARI 132	137	187	124	265	297	*1010*
	13,6%	18,5%	12,3%	26,2%	29,4%	*100%*
ARI 213	126	167	119	281	327	*1020*
	12,4%	16,4%	11,7%	27,5%	32,1%	*100%*
ARI 231	125	161	146	260	341	*1033*
	12,1%	15,6%	14,1%	25,2%	33,0%	*100%*
ARI 312	128	187	117	284	289	*1005*
	12,7%	18,6%	11,6%	28,3%	28,8%	*100%*
ARI 321	2055	1847	788	888	564	*6142*
	33,5%	30,1%	12,8%	14,5%	9,2%	*100%*

Table 7.16 Absolute and relative grammaticality judgments of different orders in ARI clusters (N=179, L1=FR, clusters of the same order with participial and infinitival restructuring verbs are taken together)

The table shows somewhat higher acceptability rates than in both other three-verb clusters. The Standard Frisian 3-2-1 order stands out with an acceptance rate (accumulated score of 'completely agree' and 'agree') of 64% (vs. disapproval in 24% of the cases). Second best rated is the Standard Dutch order with an acceptance rate of 44% (but also disapproved in 44% of the cases). The 1-3-2 order and the 3-1-2 order receive acceptance rates of around one third of the cases. Both orders starting with the second verb stay below 30% acceptance (and far higher disapproval rates). Again, the only order that receives a (much) higher acceptance than disapproval rate is the Standard Frisian order, but in the case of ARI clusters, the Standard Dutch 1-2-3 order is also accepted quite frequently, albeit with a similar amount of disapproval. Of course, these are the rates calculated across all subjects.

The bar charts below demonstrate the differences in acceptability rates in the different age groups. Also, here the orders with and without IPP are demonstrated separately.

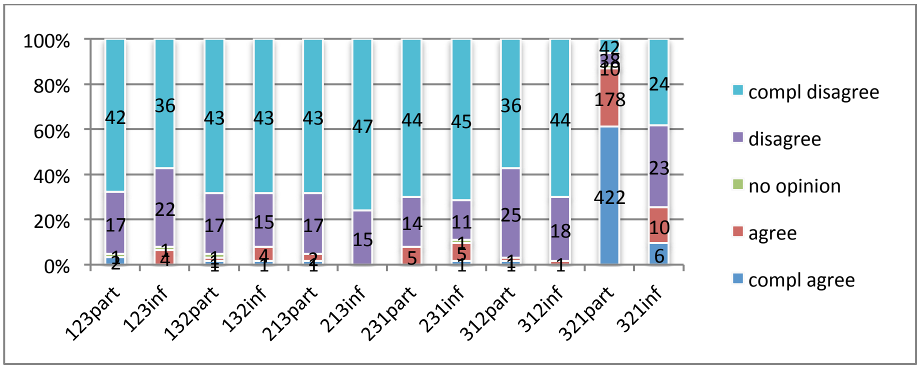

Figure 7.17 Relative acceptability judgments on the six different orders in clusters with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI) of subjects age 59 and up (N=21, L1=FR)

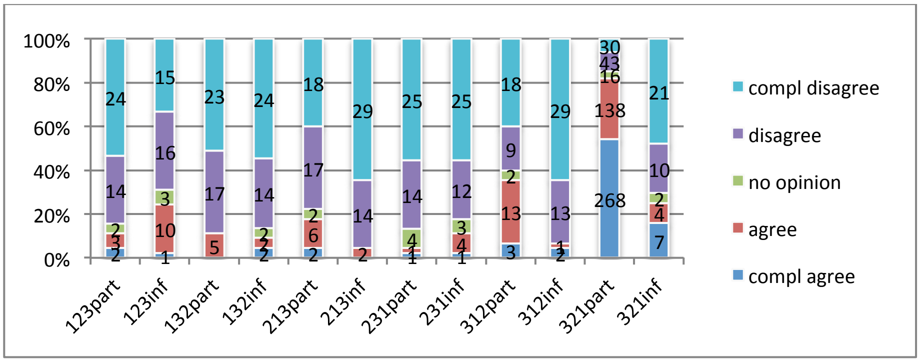

Figure 7.18 Relative acceptability judgments on the six different orders in clusters with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI) of subjects aged 25-48 (N=15, L1=FR)

In the oldest group the preference for the Standard Frisian 3-2-1 order with a past participle is still very clear. The same order with the IPP effect also gets approved in more than 20% of the cases. In the intermediate group the picture changes slightly. The Standard Frisian order with a past participle is clearly favored, but the same order with IPP, the Standard Dutch 1-2-3 order (with IPP) and the 3-1-2 order with a past participle also receive considerable approval. The latter has an approval rate of almost 40%.

In the two youngest groups, the picture is not getting clearer. In both groups the Standard Frisian and Standard Dutch orders receive a large amount of approval. In the 2016 group, the relative approval of the Dutch order is even higher than that of the Frisian order. In the 2004 group, the same orders as in the intermediate group are favored: besides the Standard Frisian and Dutch orders, these are 3-2-1 with IPP, and 3-1-2 (no IPP), but the Dutch order with a participle and the 1-3-2 order with a participle also receive considerable approval rates (around 40%).

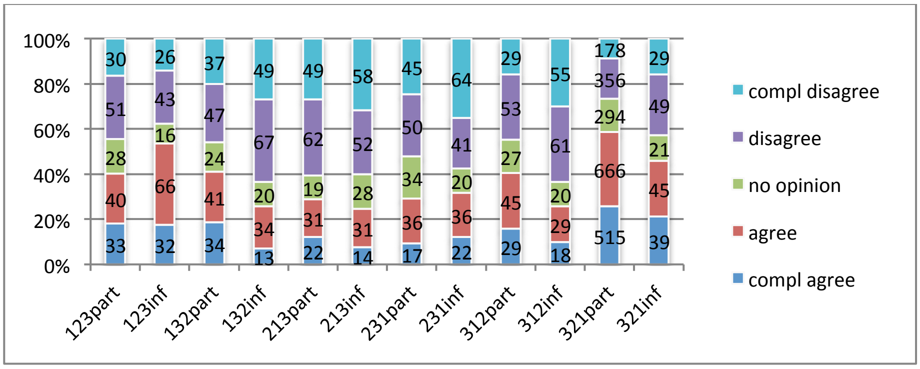

Figure 7.19 Relative acceptability judgments on the six different orders in clusters with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI) of subjects aged 12-14 in 2004 (N=61, L1=FR)

In the 2016 group approval rates for the Standard Dutch 1-2-3 and Standard Frisian 3-2-1 order, both with and without IPP, remain or rise to around 60%. The approval rate of the 3-1-2 order is at almost 50%. In the other orders the bars go in the direction of a by-chance distribution, as was the case in the other three-verb conditions.

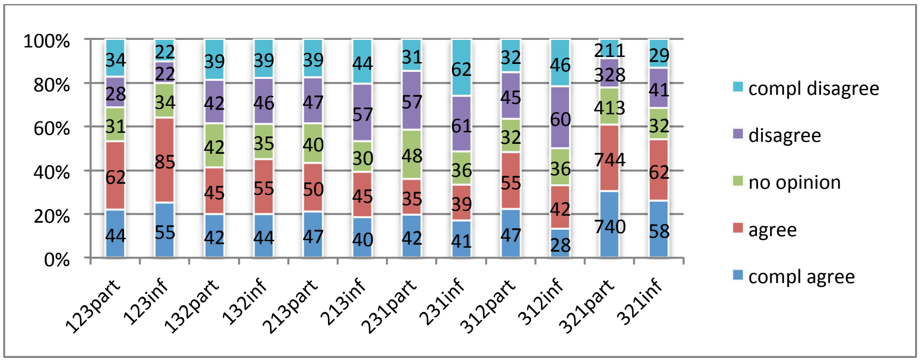

Figure 7.20 Relative acceptability judgments on the six different orders in clusters with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI) of subjects aged 12-13 in 2016 (N=82, L1=FR)

In the next section the statistical significance of the differences in acceptability judgments will be investigated: those between different age groups and verb orderings, but also differences with regard to other social and linguistic variables. In the final section of this chapter the individual variation in ordering possibilities will be investigated.

7.4.2 Relating acceptability judgments to other variables

In this section the relationship between different variables and the acceptability judgments will be investigated. Since the judgments were on an ordinal scale, the *clmm* function in the R-package ordinal was used, which enabled us to perform a cumulative link mixed model (R Core Team 2015, Christensen 2015b). Cumulative link models (also: ordinal regression models) are a powerful model class for ordinal data since observations are treated rightfully as categorical, the ordered nature is exploited and the flexible regression framework allows in-depth analyses (Christensen 2015a).

The dependent variable was the acceptability judgment as expressed in a number ranging from 1 to 5 called 'Judgment Integer' (cf. section 7.2). The independent variables that were investigated were the following:

Social factors:

- Age group / Year of Test
- Sex
- Region
- Education

Language external factors[7]:

- Mean proficiency
- Writing proficiency
- Use media
- Use social
- Use public
- Use Dutch

[7] A more detailed description of the language external factors and how they were calculated can be found in chapter 6.

Language internal factors:
- Type of verb (AP vs. RI and RAP vs. RRI)
- Order of verbs
- IPP (ARI condition)

And the interactions between:
- Order of verbs x Age group / Year of test
- Type of verb x Age group / Year of test
- Type of verb x order of verbs
- IPP x Order of verbs
- IPP x Age group / Year of test

In a first run 'Attitude' was also part of the list of independent variables, but the values in our subject group of L1 Frisian speakers hardly differed (mostly positive or very positive attitudes and a few neutral) and no clear effect was found, therefore it was left out in the final run.

Twelve models were tested, six of which compare age groups in an apparent time framework (models 1-6) and six of which compare two groups of 12-14 year-olds, one from 2004 and one from 2016 (models 7-12), a so-called trend study (see chapter 2). All of the odd models include variables on language proficiency and/or language use and thus exclude subjects for which no data on language use or language proficiency were available. In the even models language use and language proficiency were not taken into account, hence subjects for which no language use or language proficiency data were available were included in these models. Therefore the even models contained more cases than the odd models. Finally, we also had separate models for the different verb cluster types, i.e. four models comparing two-verb clusters of the AP and RI condition (models 1, 2, 7, and 8), four models comparing three-verb clusters of the RAP and RRI condition (models 3, 4, 8, and 9), and four models comparing three-verb clusters in the ARI-condition (models 5, 6, 11, and 12). Schematically, this is shown in table 7.21.

Model	Age group / Year of test	Type of verbs in cluster	Language use & proficiency included?	IPP	Nr of cases
1	Age group	2-verb AP & RI	Yes	NA	1079
2	Age group	2-verb AP & RI	No	NA	2327
3	Age group	3-verb RAP & RRI	Yes	NA	2687
4	Age group	3-verb RAP & RRI	No	NA	5783
5	Age group	3-verb ARI (IPP)	Yes	Yes	2953
6	Age group	3-verb ARI (IPP)	No	Yes	6382
7	YoT	2-verb AP &RI	Yes	NA	383
8	YoT	2-verb AP &RI	No	NA	3201
9	YoT	3-verb RAP & RRI	Yes	NA	955
10	YoT	3-verb RAP & RRI	No	NA	7784
11	YoT	3-verb ARI (IPP)	Yes	Yes	1050
12	YoT	3-verb ARI (IPP)	No	Yes	8643

Table 7.21 Models used for the cumulative link mixed model

Thus, models 1-6 compare three different age groups, which were all tested between 2004 and 2007. In model 1 and 2 two-verb clusters with a finite auxiliary and a participial main verb (AP) are considered as well as two-verb clusters with a finite restructuring verb and an infinitival main verb (RI). Model 1 includes the variables concerning language use and language proficiency and the number of cases is 1079. In model 2 subjects for whom no language use or language proficiency data were available were included, which resulted in an increase in the number of cases: 2327. Models 3 and 4 consider three-verb clusters with a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP) and three-verb clusters with a finite as well as an infinitival restructuring verb and an infinitival main verb (RRI). The clusters in models 1-4 are not sensitive to the IPP effect, so this factor is not considered in these models. Models 5 and 6 do take this factor into account, as these contain the clusters that are sensitive to the IPP effect, i.e. clusters with a finite auxiliary a modal and an infinitival main verb. The modal can show participial morphology or infinitival morphology, the latter is referred to as IPP.

In models 7-12, as demonstrated in table 7.21, two groups of 12-14 year olds were compared, one which took the test in 2004 and one which took the test in 2016. These models are therefore referred to as real time comparison. Again, the first two models, models 7 and 8, consider two-verb AP and RI clusters. Models 9 and 10 consider three-verb RAP and RRI clusters and models 11 and 12 consider ARI (or IPP) clusters.

The *clmm* function in the R-package ordinal was used, which enabled us to perform a cumulative link mixed model. The response variable 'Judgment Integer' was defined as an ordered factor. In each of the twelve models we included random intercepts for 'speaker ID' and 'item number'. Random slopes were not included, since we do not have a particular expectation that the relationship between 'Speaker Judgment' and any predictor would be different per speaker or per item.

For each of the twelve models we performed model selection. Given *n* predictors, 2^n-1 subsets of predictors can be formed per model. Using the function *dredge* of the R package MuMIn for each subset the ordinal mixed-effects model was analyzed and an AICc[8] value was obtained. AIC estimates the quality of each model, relative to each of the other models. The function *dredge*, however, does not provide AIC values, but rather AICc values. AICc is AIC with a correction for finite sample sizes.

Next, the models with AICcs that did not differ more than 2 from the 'best model' (i.e. the model with the smallest AICc) were considered. Of these models, the simplest model (i.e. the model with the smallest degrees of freedom) was chosen[9].

We used the function *lsmeans* from the lsmeans package for multiple comparisons of factors with three or more levels and the Bonferroni method to adjust the p-values.

In the following we will discuss the models pair wise, pairing the models with the same verb cluster types. We will start with the apparent time models, i.e. the models that compare different age groups (as opposed to the real time models that compare the same age group tested in two different years). The exact results and scripts can be found in Appendix VI.

[8] **A**kaike **I**nformation **C**riterion with a **c**orrection for finite sample sizes: the Akaike information criterion is a measure of the relative quality of statistical models for a given set of data. Given a collection of models for the data, AIC estimates the quality of each model, relative to each of the other models.

[9] Given the fact that the number of predictors is large in most of our models and given the exploratory nature of the analysis, we found the best model by considering all subsets. However, when omitting the model selection step and just considering the full models, i.e. keeping all predictors in the models, the results are almost identical.

7.4.2.1 Apparent time models

Two-verb clusters AP-RI (models 1 & 2)

Model 1 and 2 compare acceptability judgments of two-verb clusters of the type Auxiliary-Participle (AP) and Restructuring verb-Infinitive (RI). The models differ in the sense that model 1 accounts for six supplementary variables, i.e. language use (use of Frisian in the four different domains media, social, public and Dutch, cf. the factor analysis in chapter 6) and language proficiency (average proficiency in Frisian and writing proficiency in Frisian). Model one was performed with 1079 cases, model 2 with 2327 cases. The latter has more cases because it also includes subjects of which no language use and proficiency data were available.

After model selection, model 1 consists of the following factors: Age group, Education, Type of verb, Order of verbs, and the interaction between Age group and Order of verbs. Significant differences with regard to judgment scores were found between the oldest and youngest group of subjects ($p<.0001$), with the youngest group giving higher judgments (presumably because they are also giving higher scores to non-standard Frisian items). No significant difference was found between the middle and oldest ($p<.4817$), nor between the middle and youngest group ($p<.0925$). Regarding level of education there were three different groups: high, medium and low educational level (cf. chapter 6). The intermediate group gave significantly higher judgments than the highest educated group ($p<.0295$). The lowest educated group fell in between, but no other significant differences were found concerning level of education.

With regard to verb type a significant difference was found between judgments on verb clusters with a finite auxiliary and a past participle (AP), and clusters with a finite restructuring verb and an infinitival main verb (RI), with RI clusters judged significantly lower ($p<.0281$). The difference between the two orders, i.e. finite verb first (1-2) or last (2-1), was also significant, with overall significantly higher scores on the 2-1 order ($p<.0001$).

In model 1 the interaction between age group and verb order also lead to significant differences. In all age groups, the differences between the two orders was highly significant ($p<.0001$ in all three cases), i.e. judgments of 2-1 orders were significantly higher than those of 1-2 orders in all age groups, including in the youngest group. Judgments of 1-2 orders were significantly higher in the youngest group compared to the oldest group (p<.0001) as well as compared to the intermediate group (p<.0001), cf. the graph below.

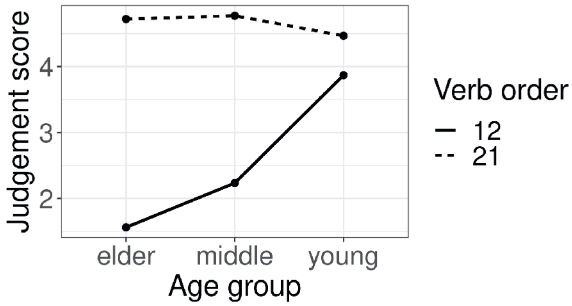

Figure 7.22 Average judgments on a scale of 1-5 of different age groups on different verb orders in Frisian two-verb clusters (AP and RI) in model 1

Model 2 consists of the following factors after model selection: Age group, Order of verbs and the interaction between the two. Like in model 1, the difference between the youngest and oldest group is highly significant (p<.0001), with the youngest group giving higher judgments. Also, judgments on the 2-1 order were significantly higher than on the 1-2 order (p<.0001), i.e. over both verb types (AP and RI) and all age groups. The interaction between verb order and age group also turned out to be significant in the following ways: in each of the age groups the 2-1 order was judged significantly higher than the 1-2 order (p<.0001 for the oldest and intermediate group, p<.0239 for the youngest group). A significant difference between the oldest and the intermediate group was found for the 1-2 order, where the intermediate group gave significantly higher acceptability judgments (p<.0079), but not for the 2-1 order. Between the oldest and youngest group, significant differences were found on the 2-1 (p<.0037) and the 1-2 order (p<.0001). Also, between the intermediate group and the youngest group significant differences were found on the 2-1 (p<.0018) and the 1-2 order (p<.0001).

Three-verb RAP-RRI clusters (models 3 & 4)

Models 3 and 4 compare acceptability judgments of three-verb clusters of the type Restructuring verb-Auxiliary-Participle (RAP), like *omdat sy ek wol in priis wûn ha woe* (she also would have wanted to win a prize), and Restructuring verb-

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Restructuring verb-Infinitive (RRI), like *omdat hy de doar grien skilderje litte soe* (because he planned to have the door painted green). Here as well, the first model (model 3) has six extra variables (four with regard to use of Frisian and two with regard to self-reported proficiency in Frisian). Model 3 contains 2687 cases, and model 4 contains 5783 cases.

Model 3 consists of the following factors after model selection: Age group, Level of education, Order of verbs and the interaction between Age group and Order of verbs. Significant differences with regard to judgment scores were found between the oldest and youngest group of subjects ($p<.0001$), and between the intermediate and the youngest group ($p<.0017$), with the youngest group giving higher judgments. No significant difference was found between the intermediate and oldest group.

In clusters with three verbs, the number of possible orders is six. As before (cf. chapter 3), the verbs are numbered according to their hierarchy: 1-2-3 for a strictly descending order, 3-2-1 for a strictly ascending order (see also examples (3)-(5) in section 7.3.1 above). Overall differences (regardless of other factors like age group or verb type) were found between clusters in the 3-2-1 order, which is the Standard Frisian order, and each of the other orders (1-2-3, 1-3-2, 2-1-3, 2-3-1, 3-1-2), with significantly higher acceptance scores for 3-2-1 orders ($p<.0001$ in all of the cases).

With regard to the interaction between Age group and Order of Verbs, the following findings can be reported: in the older group, all other orders were rated significantly lower than the 3-2-1 order ($p<.0001$ in all of the cases). The same was found in the intermediate group (each of the other orders significantly lower judged than the 3-2-1 order, at the $p<.0001$ level). Within the youngest group the 1-2-3 order was scored significantly lower than 3-2-1 ($p<.0075$) and the 2-3-1 order was also scored significantly lower than 3-2-1 ($p<.0132$). No other significant differences were found within the youngest group.

Between the oldest and youngest group, significant differences were found on all orders (1-2-3, 1-3-2, 2-1-3, 2-3-1, 3-1-2, 3-2-1), with the older group giving significantly higher acceptability judgments on the Standard Frisian order (the 3-2-1 order) and significantly lower acceptability scores on the non-Standard Frisian orders (the rest of the orders). The relevant p-scores can be found in the appendix. No significant differences were found between judgment scores of the oldest and intermediate group. Between the intermediate and youngest group significant differences were found for the orders 1-3-2 ($p<.0283$), 2-1-3 ($p<.0065$), and a tendency for 3-1-2 ($p<.0663$), with the younger group giving higher acceptability scores in all three cases.

Model 4 consists of the following factors after model selection: Age Group, Order of Verbs and the interaction between the two. Like in model 3, significant differences with regard to judgment scores were found between the oldest and youngest group of subjects ($p<.0001$), and between the intermediate and the youngest group ($p<.0003$), with the youngest group giving higher judgments. Again, no significant difference was found between the intermediate and oldest group. Also, with regard to verb order, significant differences were found between clusters in the 3-2-1 order, and all other orders (1-2-3, 1-3-2, 2-1-3, 2-3-1, 3-1-2), with significantly higher acceptance scores for 3-2-1 orders ($p<.0001$ for each of the cases).

In model 4, the interaction between verb order and age group also turned out to be significant in the following ways:

- Within the oldest group acceptability scores on the Standard Frisian 3-2-1 orders were significantly higher than scores on any of the other orders ($p<.0001$ in all cases).
- Within the intermediate group the same pattern was found (p-values also identical)
- Within the youngest group the only significant difference found was between the 2-3-1 order and the 3-2-1 order (3-2-1 getting higher ratings, $p<.0229$)
- Between the oldest and youngest group significant differences were found on all of the orders ($p<.0001$ in each of the cases), with the older group giving significantly higher ratings on the Standard Frisian 3-2-1 order, and significantly lower ratings on all other orders
- No significant differences were found between judgment scores of the oldest and intermediate group
- Between the intermediate and youngest group significant differences were found on all of the orders except the 3-2-1 order (with p-values

ranging form <.0006 to <.0490), with the intermediate group giving significantly lower ratings on the non-Standard Frisian orders

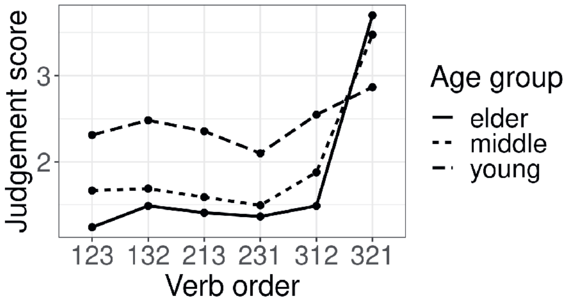

Figure 7.23 Average acceptability judgment scores (on a scale from 1-5) per age group for each of the different orders on three-verb clusters (RRI and RAP) in model 4

Three-verb IPP (ARI) clusters (model 5 & 6)

Models 5 and 6 compare acceptability judgments of three-verb clusters of the type Auxiliary-Restructuring verb-Infinitive (ARI), the IPP condition. As both models only contain one cluster type (ARI clusters), the variable 'Type of verb', and the interactions in which it occurs do not apply to these models. On the other hand, in this cluster type, three other variables are added, called 'IPP' and the interaction between IPP and Order of verbs and between IPP and Age group. All verb orders appeared twice in the task, once with a perfective restructuring verb and once with an infinitival restructuring verb, the latter being referred to as 'IPP', *Infinitivus pro Participio*. Here as well, the first model (model 5) had six extra variables (four with regard to use of Frisian use and two with regard to self-reported proficiency in Frisian). Model 5 contains 2953 cases, and model 6 contains 6382 cases.

Model 5 consists of the following variables after model selection: Age group, Education, IPP, Order of verbs, and the interactions Age group x Order of verbs, Age Group x IPP, and IPP X Order of verbs. Between the oldest and youngest as well as between the intermediate and the youngest group significant differences in acceptability ratings of ARI clusters were found (both p<.0001). No significant difference was found between the intermediate and oldest group. Regarding the

Order of verbs, it was found that all orders were rated significantly lower compared to the Standard Frisian 3-2-1 order (all p<.0001).

The following was found with regard to interactions:

IPP x Age group

- The oldest group gave significantly lower acceptability scores on clusters with an infinitival restructuring verb (with IPP, p<.0458) than on clusters with a participial restructuring verb, and so did the intermediate group (p<.0342)
- In the youngest group no significant difference between clusters with and without IPP was found
- Between age groups it was found that the oldest group scores significantly higher on clusters with a participial modal (p<.0001) and significantly lower on clusters with an infinitival modal (i.e. with IPP, p<.0001) than the youngest group. There were no significant differences between the oldest and intermediate group. The intermediate group scored significantly higher than the youngest group on clusters with a participial modal (p<.0056) and significantly lower on clusters with IPP (p<.0001)

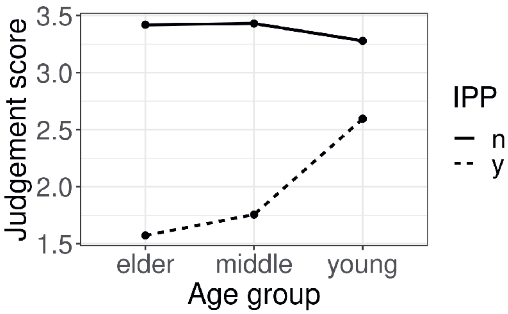

Figure 7.24 Average acceptability judgment scores per Age group in AMI-clusters with (y) and without (n) IPP (model 5)

Age group x Order of verbs

- Within the oldest group acceptability scores on the Standard Frisian 3-2-1 orders were significantly higher than scores on any of the other orders (p<.0001 for all of the other orders).
- Within the intermediate group the same pattern was found (p-values also identical)
- Within the youngest group no significant differences were found between the different orders
- The oldest group gave significantly higher ratings than the youngest group on the Standard Frisian 3-2-1 order (p<.0447) and significantly lower ratings on all other orders (p<.0001 for all of the other orders)
- For none of the orders significant differences were found between judgment scores of the oldest and intermediate group
- Between the intermediate and youngest group significant differences were found on all of the orders except the Standard-Frisian 3-2-1 order, with the intermediate group giving significantly lower ratings on the non-Standard Frisian orders (p-values can be found in the appendix)

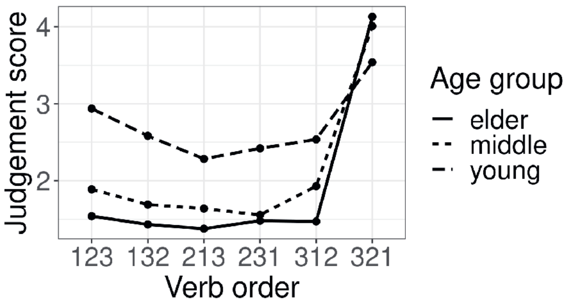

Figure 7.25 Average acceptability judgment scores per age group for each of the different orders in IPP-clusters (model 5)

IPP x Order of verbs

- The Standard Frisian order with a participial modal (i.e. no IPP), is rated significantly higher than the same order with an infinitival (with IPP) and also significantly higher than all other orders, with and without IPP (p<.0001 in all of the cases).
- No other significant differences were found

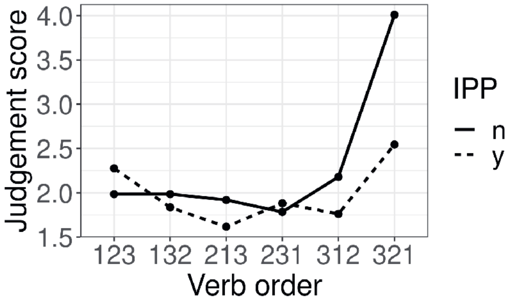

Figure 7.26 Average acceptability judgment scores for each of the different orders in AMI-clusters with (y) and without (n) IPP (model 5)

After model selection model 6 consists of the following variables: Age group, Sex, IPP, Order of verbs, and the interactions between IPP and Age group and between Order of verbs and Age group. Significant differences in acceptability ratings of ARI clusters were found between the oldest and youngest as well as between the intermediate and the youngest group (both p<.0001). The difference between the intermediate and oldest group did not reach significance (p<.0587). Regarding verb order, all orders were rated significantly lower compared to the Standard Frisian 3-2-1 order (all at the p<.0001 level).

With regard to the interactions the findings of model 5 are replicated, both for IPP x Age group, as well as for Order of verbs x Age group. No effect was found of the interaction between Order of verbs and IPP. Exact p-values can all be found in Appendix VI.

When the results of all the apparent time models are compared, we obtain the following results matrix:

FACTOR	1	2	3	4	5	6
Age group	***	***	***	***	***	***
Sex						
Region						
Education	*				*	
Type of verb	*				-	-
Order of verbs	***	***	***	***	***	***
Type of V x Age group					-	-
Order of V x Age group	***	***	***	***	***	***
Type of V x Order of V					-	-
IPP	-	-	-	-		***
IPP x Age group	-	-	-	-	***	***
IPP x Order of V	-	-	-	-	***	

Table 7.27 Results matrix clmm apparent time models (* = significant at the .05 level, ** = significant at the .01 level, *** = significant at the .001 level, - = not applicable)

The apparent time models are quite similar for the different verb cluster types. In all of the models Age group, Order of verbs and the interaction between both are highly significant for the acceptability judgments. In both models that cover the ARI condition, i.e. models 5 and 6, a significant effect of the interaction between IPP and Age group is found. Education and type of verb have an effect in some of the models.

7.4.2.2 Real time models

In the following models, two groups of 12-14 year-olds are compared, one of which did the task in 2004 and one of which did the task in 2016. The groups are referred to as ‘Year of test’ (or YoT) 2004 and 2016. The 2016 group was slightly larger than the 2004 group (cf. section 7.1). Like in the previous section on the apparent time models, the models are compared pair wise, according to the type of verb cluster they examine. The even models contain a higher number of cases as these models include subjects for whom no language use data were available. In the odd numbered models, four variables on language use (use of Frisian in the four different domains media, social, public and Dutch) were included. As a result the number of cases dropped, as these variables were not available for all subjects.

Two-verb clusters AP-RI (models 7 & 8)

Model 7 and model 8 compare acceptability judgments of two-verb clusters of the type Auxiliary-Participle (AP) and Restructuring verb-Infinitive (RI). The models differ in the sense that model 7 accounts for four supplementary variables concerning language use, as described above. Model 7 exists of 1896 cases, and model 8 consists of 3201 cases.

After model selection model 7 consists of the following variables: Year of test, Region, Type of verb, Order of verbs, and the interaction between Year of test and Order of verbs. The difference between the bipartite cluster types (AP and RI) does not reach significance (p<.0511). A significant difference was found between the two different verb orders 1-2 and 2-1, with the Standard Frisian 2-1 order getting higher acceptability judgment scores than the 1-2 order (p<.0004). If we look at the interaction between Age group and Year of test, a significant difference was found between the two orders within the 2004 group, with the Standard Frisian 2-1 order getting significantly higher acceptability judgment scores (p<.0002). No other significant effects were found in the interaction. Note that the average acceptability scores on both orders are relatively high in both groups, as table 7.28 below demonstrates.

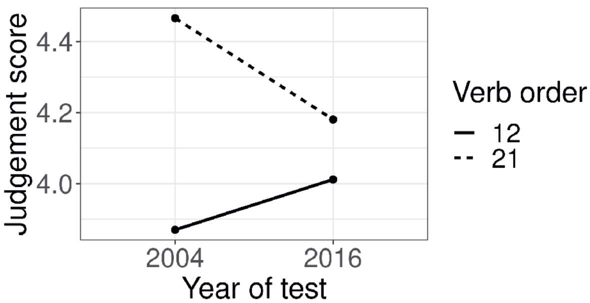

Figure 7.28 Average acceptability judgment scores for each of the different orders in AP and RI two-verb clusters in 12-14 year-olds in 2004 and 2016 (model 7)

Model 8 is comparable to model 7, but with more cases since this model also contains data from subjects for whom no language use data were available. After model selection model 8 consists of the following variables: Region and Order of verbs.

The only significant differences were found between two of the three regional groups and between the two verb orders. The group from the South-West corner gave significantly lower acceptability ratings than the group from the Clay region ($p<.0328$). Also, the clusters in the Standard Frisian 2-1 order were rated significantly higher than clusters in the 1-2 order (disregarding cluster type). No significant differences were found between the different cluster types, nor between the group that took the task in 2004 and the group that took the task in 2016.

Three-verb RAP-RRI real time (models 9 & 10)

Models 9 and 10 compare acceptability judgments of three-verb clusters of the type Restructuring verb-Auxiliary-Participle (RAP) and Restructuring verb-Restructuring verb-Infinitive (RRI), examples of both are repeated in (43) and (44) below for convenience' sake. Like the other odd-numbered models model 9 contains four extra variables regarding language use. It contains 4543 cases, whereas model 10 contains 7784 cases.

(43) RAP condition with six different verb orders

a. De plysje tocht dat sy it net dien (3) hawwe (2) koe (1).
b. De plysje tocht dat sy it net dien (3) koe (1) hawwe (2)
c. De plysje tocht dat sy it net koe (1) hawwe (2) dien (3)
d. De plysje tocht dat sy it net koe (1) dien (3) hawwe (2)
e. De plysje tocht dat sy it net hawwe (2) koe (1) dien (3)
f. De plysje tocht dat sy it net hawwe (2) dien (3) koe (1)
DU *De politie dacht dat zij het niet kon (1) hebben (2) gedaan (3)*
The police thought she could not have done it

(44) RRI condition with six different verb orders

a. Omdat hy syn suster syn hier knippe (3) litte (2) soe (1)
b. Omdat hy syn suster syn hier knippe (3) soe (1) litte (2)
c. Omdat hy syn suster syn hier litte (2) soe (1) knippe (3)
d. Omdat hy syn suster syn hier litte (2) knippe (3) soe (1)
e. Omdat hy syn suster syn hier soe (1) litte (2) knippe (3)
f. Omdat hy syn suster syn hier soe (1) knippe (3) litte (2)
DU *Omdat hij zijn zus zijn haar zou (1) laten (2) knippen (3)*
Because he was going to let his sister cut his hair

After model selection, **model 9** contains the following variables: Year of test, Region, Type of verb, Order of verbs, and the interactions Year of test x Type of verb and Year of test x Order of verbs. A significant difference was found between the group with Year of test 2004 and the group with year of test 2016 (p.<0007), with the latter giving significantly higher acceptability judgments (note that this difference might be partly caused by the interaction with Order of verbs). Also, the orders 1-2-3 (p<.0001), 2-1-3 (p<.0145), and 2-3-1 (p<.0001) each differed significantly from the Standard Frisian 3-2-1 order. The acceptability judgment scores given to the orders 1-3-2 and 3-1-2 do not differ significantly from the scores given to the Standard Frisian 3-2-1 order. Here as well, this might be partly caused by the interaction with Year of test.

The interaction between Verb order and Year of test, gave us the following results: within the 2004 group the orders 1-2-3 (p<.0001), 2-1-3 (p<.0259) and 2-3-1 (p<.0002) all differed significantly from the Standard Frisian 3-2-1 order. Within the 2016 group only the 2-3-1 order differed significantly from the 3-2-1 order (p<.0007). Between the two groups it was found that the 2016 group gave significantly higher acceptability judgments on the 1-2-3 order than the 2004 group (p<.0034). The interaction between Year of test and Verb order is demonstrated in figure 7.29 below.

Figure 7.29 Average acceptability judgment scores for each of the different orders in RAP and RRI three-verb clusters in 12-14 year-olds in 2004 and 2016 (model 9)

With regard to the interaction between Type of verb and Year of test, a significant difference in acceptability judgment scores was found between the group of 2004 and the group of 2016 on the RAP clusters, with the 2016 group giving significantly higher scores (p<.0261). The same was found for the RRI clusters (p<.0011). Within the 2016 group a significant difference was also found between the two verb cluster types RAP and RRI, with the latter receiving higher judgment scores (p<.0065). Within the 2004 group no such difference was found.

Figure 7.30 Average acceptability judgment scores on three-verb RAP and RRI clusters of 12-14 year-olds in 2004 and 2016 (model 9)

Model 10 consisted of the following variables after model selection: Year of test, Sex, Region, Education, Type of verb, and Order of verbs. In model 10 a significant difference was found for Year of test. The group that took the task in 2004 gave significantly lower acceptability ratings than the group that took the test in 2016 (p<.0001). In the same vein, male students gave significantly higher ratings than female students (p<.0177).

For level of education a significant difference was found between the highest educated group and the intermediate group (p<.0394) and between the highest educated group and the lowest educated group (p<.0194), in both cases the highest educated group gave lower acceptability ratings.

Contrary to what was found in the real time models on two-verb clusters (model 7 and 8), in three-verb clusters a significant difference was found between the two types of verb cluster. Clusters consisting of two restructuring verbs and an infinitive (RRI) were rated significantly higher than clusters with a restructuring verb an auxiliary and a past participle (RAP, with p<.0088). Unlike model 9, in this model there was no colinearity disclaimer, so the effect was strictly due to verb cluster type.

With regard to verb order it was found that the 2-3-1 order and the 1-2-3 order were rated significantly lower than the Standard Frisian 3-2-1 order ($p<.0002$ and $p<.0350$ respectively).

Three-verb IPP (ARI) clusters (models 11 & 12)
Model 11 and 12 are the real time equivalent of models 5 and 6. They compare acceptability judgments of three-verb clusters of the type Auxiliary-Restructuring verb-Infinitive (ARI), the IPP condition. As both models only contain one cluster type (IPP clusters), the variable 'Verb type' does not apply to these models. On the other hand, in this cluster type, three other variables are added, called 'IPP', the interaction between IPP and Verb order and between IPP and Year of test. All verb orders appeared twice in the task, once with a perfective modal and once with an infinitival modal, the latter being referred to as 'IPP', *Infinitivus pro Participio*. Model 11 has four extra variables with regard to use of Frisian and contains 5065 cases. Model 12 contains 8643 cases.

After model selection we get the following model for model 11: Year of test, Region, Education, Order of verbs, and the interaction between Year of test and Order of verbs. The group of 2004 gave significantly lower acceptability judgments than the group of 2016 ($p<.0046$), although this could be caused by the interaction with Verb order.

It was also found that subjects from the Clay Frisian area gave on average higher acceptability judgments than subjects from the South-West Corner area ($p<.0048$). Subjects with an intermediate level of education had significantly higher acceptability judgment scores than the lowest educated subjects ($p<.0204$). No other significant differences were found with regard to Region or Level of education.

With regards to Verb order, the 1-3-2 order, the 2-1-3, 2-3-1 and the 3-1-2 order all differ significantly from the Standard Frisian 3-2-1 order (all with p-values below .001). The exact p-values of all models can be found in Appendix VI. The interaction between Year of test and Order of verbs yielded the following differences:

- Within the group of 2004 there was a significant difference between the Standard Frisian 3-2-1 order and the 1-3-2, 2-1-3, 2-3-1 and 3-1-2 orders

(each with p<.001), with the 3-2-1 order given higher acceptability judgment scores
- Within the 2016 group, only the 2-3-1 order was rated significantly lower than the 3-2-1 order (with p<.0015)
- Between the 2004 and 2016 group the only difference found concerned the 2-1-3 order, which was rated significantly lower by the 2004 group (p<.0292)

Figure 7.31 Average acceptability judgment scores for each of the different orders in ARI three-verb clusters (IPP condition) in 12-14 year-olds in 2004 and 2016 (model 11)

Model 12 consisted of the following variables after model selection: Year of test, Sex, Region, IPP, Order of verbs, and the interactions IPP x Year of test, and Order of verbs x Year of test. In model 12, like in model 10, which was also comparing three-verb clusters, a difference was found for Year of test. The group that took the task in 2004 gave significantly lower acceptability ratings than the group that took the test in 2016 (p<.0001). In the same vein, male students gave significantly higher ratings than female students (p<.0155). In this model we also found a difference between two of the three regional groups. Again, the group from the South-West corner gave significantly lower acceptability ratings than the group from the Klaai region (p<.0135).

Concerning the order of the verbs in the verb cluster it was found that three orders were rated significantly lower than the Standard Frisian 3-2-1 order, i.e. the 2-3-1 order (p<.0022), the 2-1-3 order (p<.0049) and the 3-1-2 order (p<.0383). The ratings on both orders starting with the finite verb (i.e. the 1-2-3 and 1-3-2 orders) did not differ significantly from the ratings of the Standard Frisian 3-2-1 order.

Concerning the interaction between Year of test and IPP, within the groups of 2004 and 2016 no significant differences were found between clusters with an infinitive (with IPP) compared to those with a past participle. Between the two groups a significant difference was found, both for clusters with an infinitve (p<.0001) and for clusters with a past participle (p<.0020). As is shown in figure 7.32 below, in both cases the group that took the task in 2016 gave higher acceptability ratings.

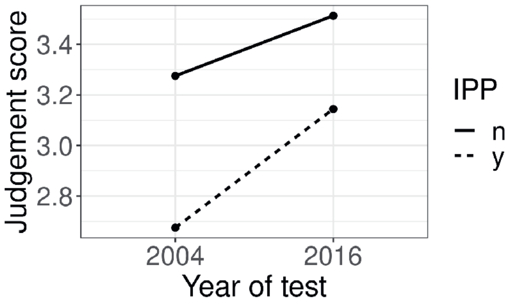

Figure 7.32 Average acceptability judgment scores in ARI clusters with (y) and without (n) IPP in 12-14 year-olds in 2004 and 2016 (model 12)

With regard to the interaction between Year of test and Order of verbs, it was found that within the group of 2004, a significantly higher rating was given to the Standard Frisian 3-2-1 order compared to both orders starting with the second verb (2-1-3 with p<.0011 and 2-3-1 with p<.0044). Within the group of 2016 no significant differences were found between the different verb orders.

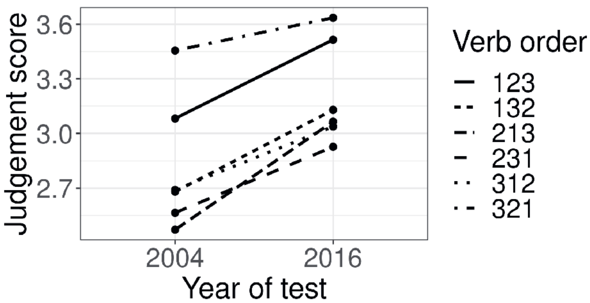

Figure 7.33 Average acceptability judgment scores for each of the different orders in ARI three-verb clusters (IPP condition) in 12-14 year-olds in 2004 and 2016 (model 12)

Between the groups of 2004 and 2016 a significant difference in rating was found for the 1-2-3, 1-3-2 and 2-1-3 orders, with the group of 2016 rating these orders significantly higher (exact p-values can be found in the appendix).

When the results of the real time models, i.e. models 7-12, are combined, the results matrix as demonstrated in table 7.34 below is obtained. In the real time models, the only factors that reached significance in all models were Region and Order of verbs. In the real time models concerning three-verb clusters (models 9-12), Year of test also reaches significance. In the models that do not consider language use variables, i.e. models 7, 9, and 11, the interaction between Order of verbs and Year of test has a significant effect.

FACTOR	7	8	9	10	11	12
Year of test			***	***	**	**
Sex				*		*
Region	*	**	**	*	***	**
Education				*	**	
Type of verb				**	-	-
Order of verbs	***	*	***	**	**	*
Type of V x Year of test			*		-	-
Order of V x Year of test	***		***		***	*
Type of V x Order of V					-	-
IPP	-	-	-	-		*
IPP x Year of test	-	-	-	-		*
IPP x Order of V	-	-	-	-		

Table 7.34 Results matrix clmm real time models (* = significant at the .05 level, ** = significant at the .01 level, *** = significant at the .001 level, - = not applicable)

7.4.2.3 Resume

When the cumulative link mixed model is completed for all models, i.e. the apparent time and the real time models, the following results matrix is obtained.

FACTOR	1	2	3	4	5	6	7	8	9	10	11	12
Age group	***	***	***	***	***	***						
Year of test									***	***	**	**
Sex										*		*
Region							*	**	**	*	***	**
Education	*				*					*	**	
Use public					*							
Type of V	*				-	-				**	-	-
Order of V	***	***	***	***	***	***	***	*	***	**	**	*
Type of V x Age group / Year of test					-	-			*		-	-
Order of V x Age group / Year of test	***	***	***	***	***	***	***		***		***	*
Type of V x Order of V					-	-					-	-
IPP	-	-	-	-		***	-	-	-	-		*
IPP x Age group / Year of test	-	-	-	-	***	***	-	-	-	-		*
IPP x Order of V	-	-	-	-	***		-	-	-	-		

Table 7.35 Results matrix clmm all models (* = significant at the .05 level, ** = significant at the .01 level, *** = significant at the .001 level, - = not applicable)

As the matrix demonstrates, the only variable that reached significance across all models was Order of verbs. In the apparent time models Age group and the interaction of Age group and Order of verbs also always reached significance, the same held for the majority of the real time models. In the real time models a significant effect of Region was found, but only between two of the three regions. The matrix also shows that only one of the variables on Language use and Language proficiency reached significance, and in only one case (model 5).

7.4.3 Individual variation

With statistical modeling it is easy to overlook individual differences that influence the results (see for example Reitsma 2003). To check for these individual differences, all the accepted orders per individual, i.e. all the orders that get scores of 4 (agree) and 5 (completely agree) were listed. Then the number of subjects with identical combinations of orders was counted. This is what is demonstrated in the tables below: each row represents an order or a combination of orders and the number of subjects with that combination of orders is indicated per verb cluster type. Table 7.36 demonstrates this for two-verb clusters.

Nr of orders	Combination of orders	Verb cluster type	
		Aux + Part	*RV + Inf*
one order	a) 2-1	26	26
	b) 1-2	2	-
two orders	2-1 & 1-2	151	152

Table 7.36 Individual order combinations in two-verb clusters in the acceptability judgment task (N=179, L1=FR)

Both in clusters of a finite auxiliary and a past participle (AP), as well as in clusters with a finite restructuring verb and an infinitive (RI), 26 subjects accepted only the Standard Frisian 2-1 order. Two subjects exclusively accepted the 1-2 order in AP clusters. For the RI clusters there are no subjects that have only the 1-2 order. In both AP and RI clusters, the majority of the subjects (around 85%) accept both 2-1 and 1-2 orders. A lower number of subjects indicates that some subjects did not agree with any of the orders.

In clusters of three verbs, there is a huge number of combinatory possibilities. Many of the possible combinations occur, but many of them also don't. This is demonstrated in table 7.37 below. Table 7.37 only shows the combinations that have 4 or more occurrences (per cluster type). A table with all occurring combinations can be found in Appendix VII.

	Combination of orders	Verb cluster type		
		RAP	RRI	ARI
one order	321	35	28	21
two orders	a) 3-2-1 & 3-1-2	8	-	-
	b) 3-2-1 & 1-3-2	22	-	-
	c) 3-2-1 & 2-3-1	9	7	-
	d) 3-2-1 & 2-1-3	-	5	-
three orders	a) 3-2-1 & 3-1-2 & 1-3-2	9	4	-
	b) 3-2-1 & 3-1-2 & 1-2-3	-	8	-
	c) 3-2-1 & 3-1-2 & 2-1-3	5	-	-
	d) 3-2-1 & 1-3-2 & 1-2-3	7	-	-
	e) 3-2-1 & 1-3-2 & 2-1-3	6	-	-
four orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3	-	6	4
	b) 3-2-1 & 3-1-2 & 1-3-2 & 2-3-1	-	4	-
	c) 3-2-1 & 3-1-2 & 1-3-2 & 2-1-3	7	6	-
	d) 3-2-1 & 3-1-2 & 1-2-3 & 2-1-3	-	6	-
	e) 3-2-1 & 1-3-2 & 1-2-3 & 2-3-1	-	-	6
	f) 3-2-1 & 1-3-2 & 1-2-3 & 2-1-3	7	-	-
	g) 3-2-1 & 1-3-2 & 2-3-1 & 2-1-3	4	-	-
five orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-3-1	-	4	12
	b) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-1-3	6	10	6
	c) 3-2-1 & 3-1-2 & 1-3-2 & 2-3-1 & 2-1-3	7	4	-
	d) 3-2-1 & 3-1-2 & 1-2-3 & 2-3-1 & 2-1-3	-	9	5
	e) 3-2-1 & 1-3-2 & 1-2-3 & 2-3-1 & 2-1-3	-	6	7
six orders	3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-3-1 & 2-1-3	12	40	87

Table 7.37 Individual order combinations with 4 or more occurrences in three-verb clusters in the acceptability judgment task (N=179, L1=FR)

There are some observations that can be made regarding occurrence and non-occurrence of combinatory possibilities:

- For all combinations in table 7.37 (i.e. all combinations that occur more than three times in a given cluster type) the Standard Frisian 3-2-1 order is part of the combination.
- For a combination of five orders there are six logical possibilities, of which only the combination without the Standard Frisian 3-2-1 order never occurs.
- In RAP clusters subjects tend to have fewer orders (combinations of two and three are numerous).

- In ARI clusters subjects tend to have a lot of variation, with a small group of subjects with only one order and a large group of subjects with 4, 5, or 6 orders.
- In ARI clusters almost 50% of the subjects accepts all of the six verb orders, in RRI clusters about a quarter of the subjects do and in RAP clusters less than 10% accept all of the six verb orders.

As demonstrated in section 7.4.1 in all of the cluster types the Standard Frisian order is the 'most popular' order, i.e. it receives the highest amount of acceptance (4 or 5 scores on the acceptability judgment task). In the RAP clusters the 1-3-2 order is second most popular, in RRI clusters 3-1-2 and 1-2-3 are second to the Standard Frisian 3-2-1 order, and in the ARI clusters the 1-2-3 order is the second most popular order (cf. absolute and relative acceptability judgments for these cluster types in tables 7.6, 7.11 and 7.16).

In chapter 9 the findings of the acceptability judgment task will be compared to the findings of the verb cluster elicitation task, including a comparison of the most popular orders per cluster type and a comparison of the order combinations found in both tasks. First, the findings of the verb cluster elicitation task will be presented in the next chapter.

Chapter 8

Findings Verb Cluster Elicitation Task

8.1 Introduction
8.2 Subjects
8.3 Procedure and scoring method
8.4 Findings

8.1 Introduction

In order to be able to gain insight in the use of verb clusters consisting of two and three verbs in a broad range of verb cluster types, a verb cluster elicitation task was administered. The task was essentially designed as a conditioned reproduction task (cf. chapter 6.1.1). The complete task can be found in Appendix II. In this chapter the findings of the verb cluster elicitation task will be presented.

In chapter 9 these findings and the findings of the verb cluster acceptability judgment task (from chapter 7) will be discussed and interpreted with regard to the research questions and in light of the theoretical framework presented in this thesis.

8.2 Subjects

59 subjects participated in the verb cluster elicitation task. All of the subjects had Frisian as their first language, i.e. they spoke Frisian with their parents and/or siblings. The group of subjects had the following composition:

Age x Region	**Klaai**	**Súd-West**	**Wâld**	***TOTAL***
Younger	4 male, 4 female	3 male, 5 female	5 male, 3 female	*12m, 12f (24)*
Middle	2 male, 3 female	2 male, 2 female	2 male, 4 female	*6m, 9f (15)*
Elder	4 male, 5 female	1 male, 2 female	4 male, 4 female	*10m, 10f (20)*
TOTAL	*10 m, 12f (22)*	*6m, 9f (15)*	*11m, 11f (22)*	*28m, 31f (59)*

Table 8.1 Subjects that participated in the elicitation task N=59, L1=Frisian

In the apparent time models in chapter 7 (for which the group of subjects is almost identical to the current task), the variables Sex and Region did not result in any significant results. These subject variables will therefore not be investigated further in this chapter.

8.3 Procedure and scoring method

In this conditioned repetition task the subjects were asked to repeat a clause that was offered aurally and insert *dat* (that)*, omdat* (because) or *hy sei dat* (he says that) at the beginning of the clause. In the examples below *dat* (that) will be used. An example of one of the test sentences is shown below: (45a) represents the sentence that is offered aurally to the subject, (45b) is an example of the target Standard Frisian response and (45c) and (45d) are examples of non-standard responses with a verb cluster of the targeted type. (45e) is an example of a Standard Frisian response with a reduced verb cluster.

(45) a. *de man hie syn hûs grien fervje wollen*
the man had his house green paint wanted
"the man wished he had painted his house green"

b. *dat de man syn hûs grien fervje wollen hie*
that the man his house green paint wanted had
c. *dat de man syn hûs grien hie wolle fervje*
that the man his house green had wanted paint
d. *dat de man syn hûs grien fervje hie wollen*
that the man his house green paint had wanted
"that the man wished he had painted his house green"
e. *dat de man syn hûs grien ferve hie*
that the man his house green painted had
"that the man had painted his house green"

In practice, variation was even larger. Not only the order in the verb cluster varied, but also morphology. Sometimes clusters with two participles appeared or different verbs were used, which could cause a change in cluster type (for example when a modal was replaced with an auxiliary) and sometimes an extra subordinate clause would be introduced, which would also result in a reduced verb cluster.

The different types of responses were coded in the following way. Clusters with the targeted verbs would be coded in numbers according to the order in which the verbs appeared. Deviating morphology would also be marked. The response in (5b) would thus be coded 3-2-1. The response in (5c) would be coded 1-2-3+IPP, since the second verb showed infinitival morphology there (the default would be participial morphology). When deviating morphology was infrequent, it would be disregarded, i.e. a 3-2-1 cluster in which two verbs showed participial morphology, could be counted as a 'normal' 3-2-1, if that morphology was rare. Infrequent responses would be gathered under the category 'other'.

8.4 Findings

First, the distribution of the responses over the different answer categories will be shown. For bipartite clusters there were only two possible verb orders, the Standard Frisian 2-1 order and the inverted 1-2 order. In two-verb clusters the targeted clusters accounted for 96%-99% of the responses, hence there was only one other response category namely 'other'. Other responses included for example responses in which the subject added a third verb to the cluster or responded with a main clause.

The distribution of responses in bipartite clusters with a finite auxiliary and a participial main verb (AP) and bipartite clusters with a finite restructuring verb and an infinitival main verb (RI) is demonstrated in table 8.2:

Cluster type	**2-1**	**1-2**	**other**	***TOTAL***
Aux Part (AP)	404 (77%)	114 (22%)	6 (1%)	*524*
RV Inf (RI)	382 (72%)	127 (24%)	20 (4%)	*529*

Table 8.2 Responses verb cluster elicitation task for AP and RI two-verb clusters (N=59, L1=FR)

In clusters with a finite auxiliary and a past participle the 2-1 order is slightly more popular than in clusters with a finite restructuring verb and an infinitival main verb. Clusters in the 1-2 order are used a fraction more frequently in the RI cluster type.

The distribution of responses in conditions with three verbs is shown in tables 8.3 and 8.4. Table 8.3 shows the responses for the conditions with a finite restructuring verb, an infinitival auxiliary and a past participle (RAP, cf. example 46) and the conditions with a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI, cf. example 47).

(46) RAP condition in Standard Frisian 3-2-1 order

De plysje tocht dat sy it net dien (3) hawwe (2) koe (1)
The police thought that she it not done (3) have (2) could (1)
The police thought she could not have done it

(47) RRI condition in Standard Frisian 3-2-1 order

Omdat hy syn suster syn hier knippe (3) litte (2) woe (1)
Because he his sister his hair cut (3) let (2) wanted (1)
Because he wanted to let his sister cut his hair

Cluster type	**3-2-1**	**other orders**	**reduced clusters**	**other**	***TOTAL***
RAP	159 (30%)	82 (16%)	250 (47%)	38 (7%)	*529*
RRI[10]	162 (31%)	68 (13%)	257 (49%)	41 (8%)	*528*

Table 8.3 Responses verb cluster elicitation task for RAP and RRI three-verb clusters (N=59, L1=FR)

As the table shows, there are a lot of cluster reductions in these type of three-verb constructions, close to 50%. This is higher than the number of target responses (i.e. a response with the targeted verbs in a three-verb cluster) in the Standard Frisian 3-2-1 order or any other order together, which account for around 45% in both of the cluster types. Other responses included for example main clauses and cluster type changes.

The last condition that was part of the verb cluster elicitation task was the IPP construction, with a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (ARI condition). The table below presents the findings for these construction types. ARI 1 concerns clusters with a modal or aspectual restructuring verb, namely *kinne, meie*, and *litte*, and ARI 2 are clusters with the perception verbs *hearre*, *sjen*, and with the verb *bliuwe*, to stay as the second verb in the cluster (see chapter 6 for a more elaborate description of the task).

Chapter 8

[10] As a consequence of rounding the sum of the percentages amounts to 101% in the case of RRI.

Cluster type	3-2-1	other order/ morphology	reduced clusters	other	*TOTAL*
ARI 1	285 (54%)	102 (19%)	124 (23%)	19 (4%)	*530*
ARI 2 (perc)	327 (62%)	143 (27%)	48 (9%)	11 (2%)	*529*
ARI total	612 (58%)	245 (23%)	172 (16%)	30 (3%)	*1059*

Table 8.4 Responses verb cluster elicitation task for ARI three-verb clusters (N=59, L1=FR)

In the ARI condition there are much less cluster reductions than in the other three-verb conditions, on average 16%. For the ARI constructions containing a perception verb, the amount of realized clusters (3-2-1 and other orders) adds up to nearly 90%.

The findings shown above are the responses of the entire group. In the previous chapter, it was demonstrated that age group and verb order were the two factors with the strongest relation to judgment ratings. Therefore, in the next section the findings of the elicitation task will be presented in relation to these variables as well.

8.4.1 Distribution of findings per age group

In this section the findings of the verb cluster elicitation task will be presented per age group. Possible order preferences of the different age group, or differences in answer categories between the groups will become visible. Like in previous chapters clusters of two verbs will be discussed before the conditions with three verbs.

Two-verb clusters

In table 8.5 the results of the different age groups are shown for clusters consisting of a finite auxiliary and a past participle (AP). The ordering possibilities are 1-2 (Aux-Part) and 2-1 (Part-Aux), the latter of which is the Standard Frisian order. In Dutch, both orders are possible. Each of the subjects had to complete 8 items of this type.

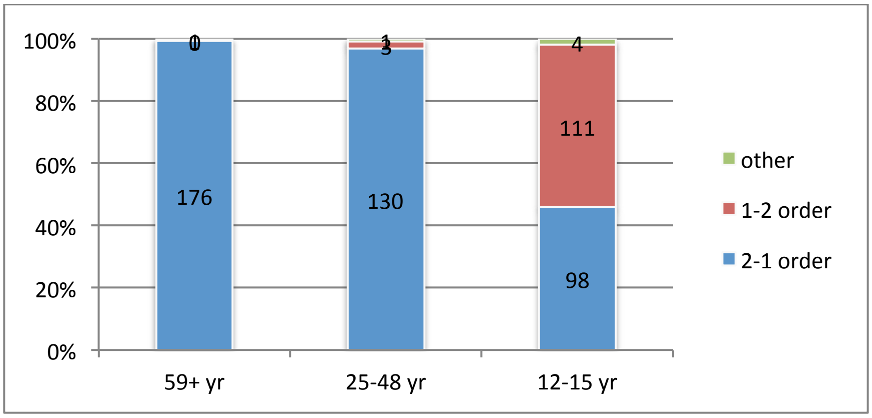

Figure 8.5 Production of Aux-Part clusters according to age group

In both elder groups there was hardly any variation: most of the responses were in the Standard Frisian 2-1 order. In the youngest group on the other side, the picture drastically changed. More than half of the responses were in the 1-2 order (52%) with the remaining responses almost all 2-1 clusters (46%).

Table 8.6 shows the results of the different age groups for clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters). Eight items of this type were included in the test. The ordering possibilities are 1-2 (RV-Inf) and 2-1 (Inf-RV). In Standard Frisian 2-1 is the only possible order, whereas Dutch has both options, with a preference for 1-2.

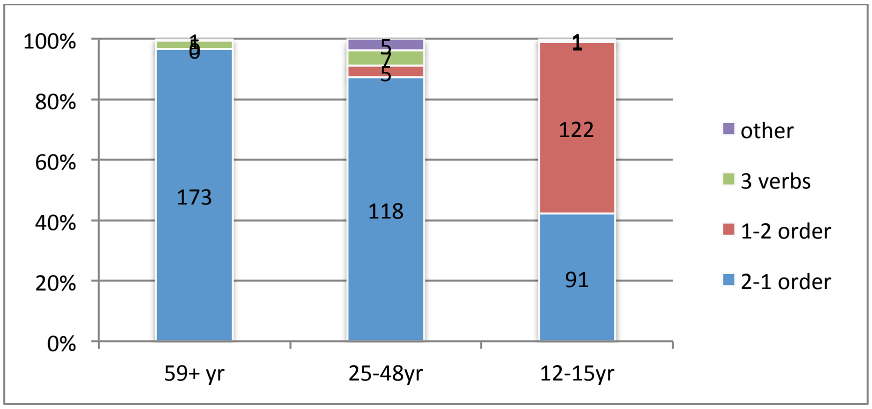

Figure 8.6 Production of RI clusters according to age group

The picture is comparable to that of the AP clusters, with (very) little variation in both elder groups, and a drastic increase in 1-2 orders in the youngest group (57%, versus 42,5% 2-1 orders).

Three-verb clusters

In conditions with three verbs, answers differed a lot more. Some examples of responses to an item with three verbs were given in example (1) in section 8.2 above. The category of reduced clusters was split in '2-verb cl' for clusters reduced to two verbs in the Standard Frisian descending order, and 'INV 2-verb cl' was used for clusters reduced to two verbs in the ascending order. Responses that yielded a change in verb cluster type, for example when an auxiliary was replaced by a restructuring verb or vice versa, or responses that contained only a repetition of the stimulus, resulting in a main clause, were brought together in the category 'other' The numbers were too small for each of these types of responses to create more different categories.

In table 8.7 the results of the different age groups are shown for clusters consisting of a finite restructuring verb, an infinite auxiliary and a past participle main verb (RAP clusters). There are six logically possible orders. In Standard Frisian 3-2-1 is the only possible order, whereas Dutch has several possibilities, with a preference for 1-2-3 (see chapters 3 and 4). The subjects were offered 9 items of this type.

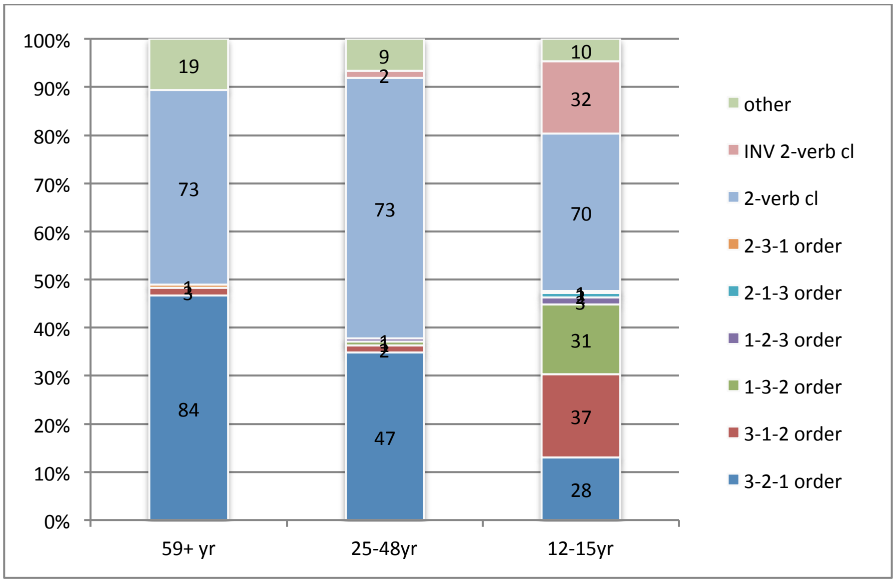

Figure 8.7 Production of RAP clusters according to age group

The graph shows that in all age groups, many clusters were reduced to a cluster of two verbs instead of three. In the oldest group the category of other answers amounts to about 10%. In the two elder groups almost all the tripartite cluster responses were realized in the Standard Frisian 3-2-1 order. In the youngest group three orders are dominant: the 3-1-2 is most used, the 1-3-2 order comes second and the Standard Frisian 3-2-1 is the third most popular order. The 1-2-3 order is hardly present, just like the orders starting with the second verb.

In figure 8.8 the results of the different age groups are shown for clusters consisting of a finite restructuring verb, an infinite restructuring verb and an infinitive. Again, there are six logically possible orders. In Standard Frisian 3-2-1 is the only possible order, whereas Dutch has a strong preference for 1-2-3 (with some regional variation, cf. chapter 4). The test contained 9 items of this type. A category that was not present in the RAP condition concerns 'sub'. This category contains responses in which the subject created an extra subordinate clause with one of the three verbs or with a new verb, leaving only two verbs behind in the cluster, like in (48) below.

(48) Stimulus:	Hy woe syn hûs grien fervje litte	
		He wanted his house green paint let
Target response	Omdat er syn hus grien fervje litte woe	
		Because he his house green paint let wanted
'sub' response 1	Omdat er tocht dat hy syn hûs grien fervje woe	
		Because he thought that he his house green paint wanted
'sub' response 2	Omdat hy woe dat er syn hûs grien fervje liet	
		Because he wanted his house green paint let

Essentially, in this category of responses three verbs can be found, but only two of them are in the verb final complex. The net result is therefore also a form of cluster reduction.

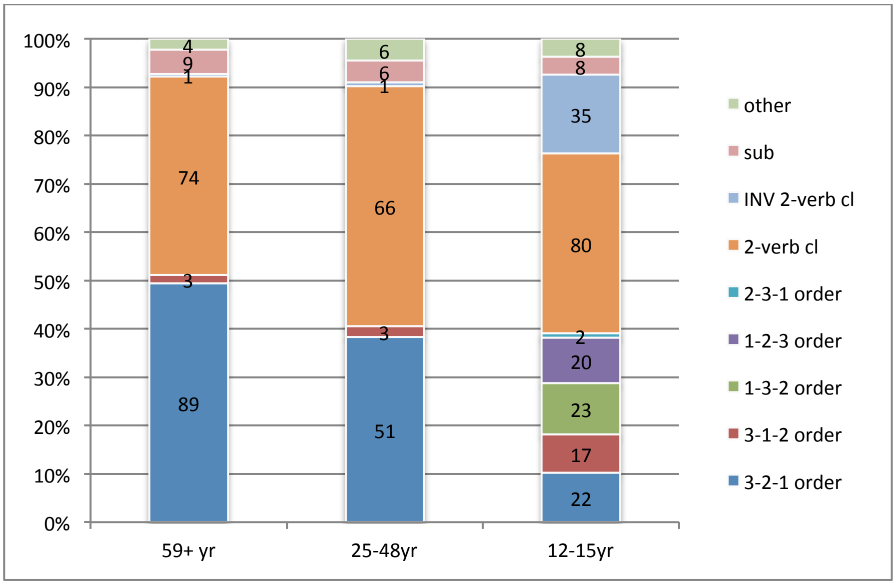

Figure 8.8 Production of RRI clusters according to age group

Figure 8.8 demonstrates that in each of the age groups, many clusters were reduced to a cluster of two verbs instead of three. Also, the large majority of the three-verb clusters are realized in the 3-2-1 order in both elder groups. In the youngest group we find four different orders in this condition: 1-3-2, 3-2-1, 1-2-3, and 3-1-2. Orders that start with the second verb are almost absent.

In figure 8.9 the results of the different age groups are shown for clusters consisting of a finite auxiliary, a participial or infinitival restructuring verb and an infinitival main verb (the ARI or IPP condition). Again, there are six logically possible orders. In Standard Frisian 3-2-1 is the only possible order, with a participle as the second verb, whereas Dutch has 1-2-3 with the so-called IPP effect, i.e. with the second verb showing up as an infinitive. Response categories with IPP, i.e. with an infinitival second verb, are marked as such.

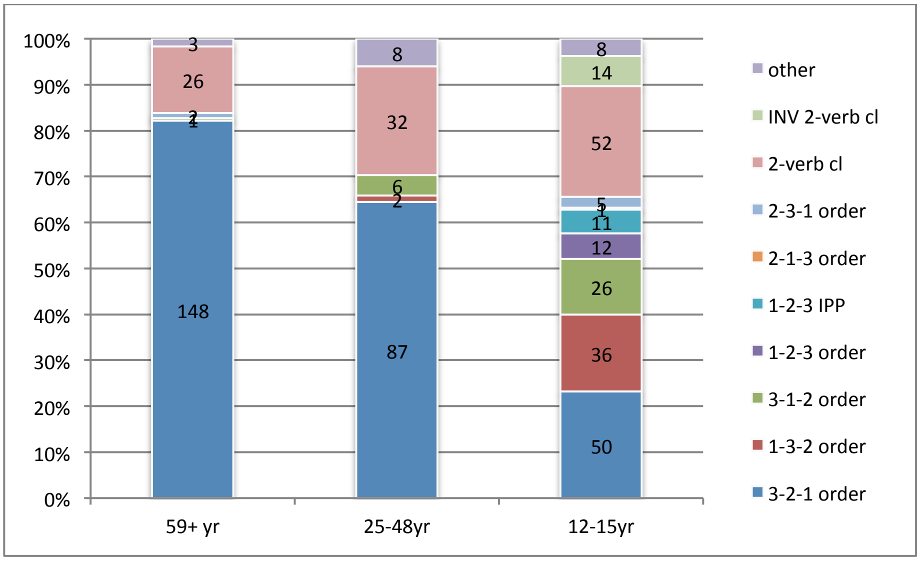

Figure 8.9 Production of ARI clusters with a modal or aspectual restructuring verb according to age group

The figure demonstrates that there are less cluster reductions in the ARI condition than in the other three-verb conditions, in particular in the oldest and intermediate group. In the youngest group, more variation is found regarding verb order. Five different orders are found five times or more, one of which is found with and without the IPP effect (the Standard Dutch 1-2-3 order). In the intermediate group a small amount of 3-1-2 clusters shows up, next to a large majority of clusters in the Standard Frisian 3-2-1 order. The verb clusters that the oldest group produces are overwhelmingly 3-2-1, like in the other three-verb conditions.

In the elicitation task there were two groups of ARI clusters: one in which the second verb was an aspectual or modal restructuring verb, as shown above, and one with a perception verb as the second verb. In table 8.10 the results of the different age groups are shown for ARI clusters with a perception verb. In Standard Frisian these clusters display the 3-2-1 order, with a participial perception verb. In Dutch these clusters display 1-2-3 with an infinitival perception verb (IPP).

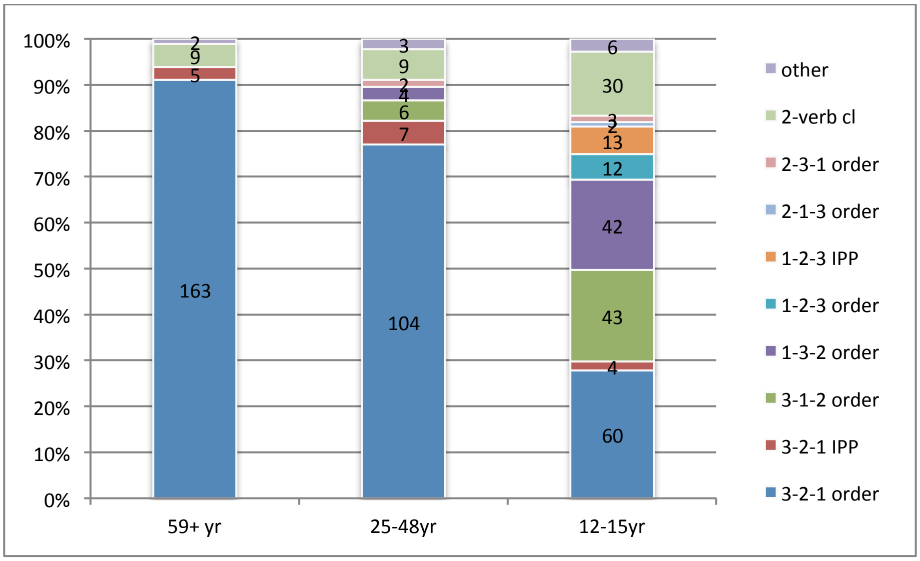

Figure 8.10 Production of ARI clusters with a perception verb according to age group

The ARI condition with perception verbs gave the highest amount of three-verb cluster responses from the three-verb conditions, to around 90% in both elder groups. The oldest group shows the same pattern as in the other three-verb clusters: overwhelmingly Standard Frisian 3-2-1 verb order. In the intermediate group next to the Standard Frisian 3-2-1 order with a participial perception verb some variation is found: 3-1-2 and 1-3-2 orders and besides that, 3-2-1 orders are found with an infinitive, i.e. with IPP. In the youngest group the 3-2-1 order is also most popular, but with strong presence of other orders as well: 3-1-2, 1-3-2 and the 1-2-3 order, the latter both with and without IPP.

8.4.2 Individual variation

Like in the last section of chapter 7, in the final section of this chapter the individual variation will be examined. In order to avoid attributing the variation in a smaller group of subjects to the entire group, individual combinations of orders were analyzed. The results are shown in tables 8.11 and 8.12, for two- and three-verb clusters respectively. Each row represents an order or a combination of orders. The number of subjects with that combination of orders is indicated per verb cluster type.

	Combinations of orders	Verb cluster type	
		Aux + Part	RV + Inf
one order	a) 2-1	37	34
	b) 1-2	6	6
two orders	2-1 & 1-2	16	19

Table 8.11 Individual order combinations in two-verb clusters in the verb cluster elicitation task, in the entire group of subjects and in the youngest group, between brackets (N=59, L1=FR)

In the two-verb conditions, we find a lot of subjects with only one verb order. For the clusters containing a finite auxiliary and a past participle 37 subjects only produced the Standard Frisian 2-1 order, of whom three belong to the youngest age group; 6 subjects only produce 1-2 orders, all belonging to the youngest subject group, and 16 use both orders (15 of whom belong to the youngest age group).

In the clusters with a finite restructuring verb and an infinitival main verb, a similar picture appears. 34 subjects only produced the Standard Frisian 2-1 order, two of whom belong to the youngest age group. Six subjects only produce 1-2 orders, all belonging to the youngest subject group, and 19 subjects use both orders (16 of whom belong to the youngest age group). The variation in RI clusters seems slightly larger than in AP clusters, but this was not tested for significance.

In the clusters containing three verbs the following combinations of orders were found in the verb cluster elicitation task:

	Combinations of orders	Verb cluster type[11]			
		RAP	RRI	ARI	ARI pc
one order	a) 3-2-1	28	35	31	30
	b) 1-3-2	-	-	2	-
two orders	a) 3-2-1 & 3-1-2	6	6	7	4
	b) 3-2-1 & 1-3-2	2	2	-	-
	c) 3-2-1 & 2-3-1	-	-	2	2
	d) 3-1-2 & 1-3-2	2	2	2	2
	e) 1-3-2 & 1-2-3	-	3	2	-
three orders	a) 3-2-1 & 3-1-2 & 1-3-2	10	2	-	5
	b) 3-2-1 & 3-1-2 & 2-3-1	-	-	2	-
	c) 3-1-2 & 1-3-2 & 1-2-3	-	-	-	2
	d) 1-3-2 & 1-2-3 & 3-1-2	-	2	-	-
four orders	3-2-1 & 3-1-2 & 1-3-2 & 1-2-3	-	-	6	5
No 3-verb cluster		3	-	-	-

Table 8.12 Individual order combinations with 2 or more occurrences in three-verb clusters in the verb cluster elicitation task (N=59, L1=FR)

As the number of subjects was smaller than in the acceptability judgment task, here the combinations that show up at least two times are mentioned. An overview of all combinations can be found in Appendix VIII.

In three-verb clusters, fewer subjects have only one order than in the two-verb clusters. The following observations can be made:

- In most of the combinations the 3-2-1 order is present
- If the 3-2-1 order is lacking, then 1-3-2 is always part of the combination

[11] RAP = finite RV + infinitival Aux + participial main verb: ferve ha wol
RRI = finite RV + infinitival RV + infinitival main verb: knippe litte soe
ARI = fin Aux + participial/infinitival RV + inf main verb: spylje wollen hie
ARI perc = finite Aux + participial/infinitival perception verb + infinitival main verb: fytsen sjoen hie

- The 3-1-2 order is also very popular: it occurs in the most frequent combination of two orders (with 3-2-1) and in the most frequent combination of three orders (with 3-2-1 and 1-3-2)
- The 1-2-3 order mainly occurs in RRI and ARI clusters (in RAP clusters it appeared three times in a combination that only one subject displayed, cf. Appendix VIII)
- Like in the acceptability judgment task, in RAP clusters most combinations contain two or three orders. No subjects have more than three different orders in the RAP clusters. In ARI-clusters larger combinations can be found in more subjects.
- Orders starting with the second verb are rare
- There are three subjects that do not produce a single three-verb cluster in the RAP condition

Considering the frequency of cluster reductions that was demonstrated in section 8.4.1, in particular in the RAP and RRI conditions, the variation and combinatory possibilities found seems substantive. In the next chapter these findings will be compared with those from the acceptability judgment task and will be discussed in light of the questions and theories put forward in this thesis.

Chapter 9

Results and Discussion

9.1 Introduction
9.2 Results and discussion
9.3 Additional findings

9.1 Introduction

This chapter consists of two parts. In the first part (section 9.2) we will go back to the research questions as elaborated in chapter 6 and discuss the findings presented in chapters 6 and 7 in relation to those questions. In the second part of the chapter (section 9.3) we will go beyond the research questions with a broader discussion and interpretation of our results in light of the theories on language variation, language contact and language change discussed in chapter 2. Conclusions will follow in chapter 10.

9.2 Results and discussion

In order to give a broad overview of the state of affairs in the Frisian verbal complex, verb clusters of different length, and consisting of different verb types were investigated in this study. A large amount of data was collected between 2004 and 2007, and more recently in 2016. The analysis of these data, as presented in chapters 6 and 7, provides the material to sketch a picture of the state of affairs in the Frisian verbal complex, and to answer the first research question: what variation can be found in Frisian verbal constructions of different size and verb type? This will be done in section 9.2.1.

The second and third research question investigate the relationship between various linguistic and social factors and variation in the Frisian verbal complex. This will be discussed in the second part of this section (9.2.2). Consecutively, section 9.2.3 discusses how the variation in the Frisian verbal complex relates to the variation in the Dutch verbal complex, and to that in regional varieties, i.e. research question 4.

9.2.1 Variation in Frisian verbal constructions (research question 1)

In chapter 3 and 4 it was shown that Standard Frisian and Standard Dutch have different ordering possibilities in the verbal complex, with Dutch allowing for variation, in particular in participial clusters. Ytsma 1995, Wolf 1996, De Haan 1996b, Koeneman & Postma 2006 and others reported on the rise of non-standard Frisian verb clusters. However, an empirical basis for such claims was lacking. This resulted in the following (sub-)questions for this study (the first research question):

1. What variation can be found in Frisian verbal constructions of different size and verb type?
    a. What is the variation in two-verb clusters consisting of a finite auxiliary and a participial main verb (AP clusters)?
    b. What is the variation in two-verb clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters)?
    c. What is the variation in three-verb clusters consisting of a finite restructuring verb, an infinitival auxiliary, and a participial main verb (RAP clusters)?
    d. What is the variation in three-verb clusters consisting of a finite restructuring verb, an infinitival restructuring verb, and an infinitival main verb (RRI clusters)?
    e. What is the variation in three-verb clusters consisting of a finite auxiliary, a participial/infinitival restructuring verb and, an infinitival main verb (ARI clusters, or IPP clusters)?

This section summarizes the encountered variation in our data, as presented in chapters 6 and 8. It provides a solid empirical basis on the variation in the Frisian verbal complex and sketches a picture of the state of affairs in the Frisian verbal complex.

9.2.1.1 Two-verb clusters

Two-verb clusters were part of the acceptability judgment task as well as the verb cluster elicitation task. In the acceptability judgment task it was found that the majority of the subjects (around 85%) accepted both 2-1 and 1-2 orders (indicated by a score of 4 (agree) or 5 (completely agree), see chapter 7 for more details). Both in clusters of a finite auxiliary and a past participle (the AP condition), as well as in clusters with a finite restructuring verb and an infinitive (the RI condition), 26 subjects (out of 179) accepted only the Standard Frisian 2-1 order. Two subjects exclusively accepted the 1-2 order in AP clusters. For the RI clusters there were no subjects that only accepted the 1-2 order.

In the elicitation task the number of subjects was smaller, and the mean age was substantially higher than in the acceptability judgment task. This was due to the fact that the elicitation task was not part of the real time study, which essentially consisted of a large additional group of younger subjects. Another difference between the acceptability judgment task and the verb cluster elicitation task was that subjects did not always respond with a verb cluster in the latter. Omission or addition of a verb, a change of verb type (e.g. restructuring verb instead of auxiliary) and other responses were quite common, in particular in larger clusters. These responses were labeled as ‘other’ (cf. chapter 8). In the two-verb cluster conditions there were relatively little ‘other’ responses (see table 8.2).

The order combinations per subject were administered as well. This made it easier to compare the results of the elicitation task with those of the acceptability judgment task. Besides that, the order combinations per subject can give an indication of the individual variation (as opposed to the communal variation). Many subjects used only one verb order. For the clusters containing a finite auxiliary and a past participle (the AP condition) 37 subjects only produced the Standard Frisian 2-1 order. Six subjects only produced 1-2 orders, and 16 used both orders. Clusters with a finite restructuring verb and an infinitival main verb (the RI condition) show a similar distribution: 34 subjects only produced the Standard Frisian 2-1 order, six subjects only produce 1-2 orders, and 19 subjects use both orders.

Summarizing, the results of the acceptability judgment task and the verb cluster elicitation task show a considerable amount of variation in Frisian two-verb clusters, both in clusters consisting of a finite auxiliary and a participial main verb (AP clusters, research question 1a) as well as in two-verb clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters, research question 1b). The judgment task showed that order variation is accepted to a large degree (85% of the subjects accepted both orders), whereas the elicitation task demonstrated that not all subjects actively vary in the ordering of the verbs in the verb cluster. In the discussion (section 9.3) it will be elaborated what this means, e.g. whether this is indicative of a system change in progress.

9.2.1.2 Three-verb clusters

Three-verb clusters were part of the acceptability judgment task as well as the verb cluster elicitation task. In clusters of three verbs, the verbs can be ordered in six different ways. All of these possibilities were offered in the acceptability judgment task. In the clusters where the *Infinitivus pro Participio* effect (IPP, see chapter 3 for a more detailed description) could occur (the ARI condition) all different orders were offered both with a participial restructuring verb as well as with an infinitival restructuring verb, adding up to a total of 12 different clusters. The results show that many of the possible orders are accepted, but also, many of them are not accepted or only in small numbers. In all of the cluster types the Standard Frisian order receives the highest amount of acceptance. In the RAP clusters the 1-3-2 order is the second-best accepted order, whereas in RRI clusters 3-1-2 and 1-2-3 are following the Standard Frisian 3-2-1 order. In ARI clusters the 1-2-3 order is the second highest accepted order. An overview of the absolute and relative acceptability judgment scores per cluster type was given in tables 7.6 (RAP clusters), 7.11 (RRI clusters) and 7.16 (ARI clusters), in chapter 7.

Not all subjects accepted all orders. The most important findings regarding occurrence and non-occurrence of combinatory possibilities per individual are the following (see table 7.37):

- In all combinations that occur more than three times in a given cluster type the Standard Frisian 3-2-1 order is part of the combination;
- In RAP clusters subjects tend to have fewer orders (less than 10% accept all of the six verb orders), in ARI clusters subjects tend to have a lot of variation (almost 50% of the subjects accept all of the six verb orders).

Three-verb clusters were also part of the elicitation task. As stated above, subjects did not always respond with a verb cluster. In the case of three-verb clusters many subjects omitted one of the verbs in their response, thus realizing a two-verb cluster. It was shown in chapter 8 that between 9% and 49% of the responses contain a reduced cluster (see tables 8.3 and 8.4). In particular responses in the RAP and RRI condition[12] are often reduced clusters. In these

[12] RAP = finite RV + infinitival Aux + participial main verb: ferve ha wol

conditions less than half of the responses contain a three-verb cluster. In the ARI condition around three quarter of the responses contain a three-verb cluster. When the restructuring verb in the ARI condition is a perception verb, the percentage goes up to almost 90%. Of the realized three-verb clusters the majority (between 65% and 75%) is in the Standard Frisian 3-2-1 order.

Frequently, differences regarding variation in the verbal complex are related to the structure or some characteristics of the deepest embedded verb (see chapter 3). Differences regarding the realization of three-verb cluster responses cannot be attributed to the deepest embedded verb, since both RRI and ARI clusters have an infinitive as the deepest embedded verb and there is a large difference between the realization of three-verb clusters in the RRI condition and in the ARI condition. If we look at the differences between ARI clusters (both types) and the other cluster types (RAP and RRI), it can be seen that ARI clusters have an auxiliary as the highest verb, whereas both other cluster types have a restructuring verb as the highest verb. In this case the differences between the cluster types may have to be attributed to the highest embedded verb. Another aspect to these observations is that when the highest verb is a restructuring verb the meaning of the entire cluster becomes more hypothetical.

The length of the cluster might also play a role. Coupé (2015) claimed on the basis of a diachronic analysis that longer clusters, as well as modal clusters, generate more ascending orders. As far as we know, the difference between modal and auxiliary clusters has never been attributed to semantic aspects of these verb clusters. The same holds for the – sometimes subtle – changes in meaning when verb clusters become longer. This could be something interesting to investigate in future research.

Now, let us take a look at the differences regarding the realization of three-verb cluster responses between the two types of ARI clusters (with different types of restructuring verbs). When the restructuring verb is a perception verb, i.e. a verb with a clear and concrete meaning, the number of three-verb cluster realizations

RRI = finite RV + infinitival RV + infinitival main verb: knippe litte soe
ARI = fin Aux + participial/infinitival RV + inf main verb: spylje wollen hie [with a modal RV]
ARI perc = finite Aux + participial/infinitival perception verb + infinitival main verb: fytsen sjoen hie [with a perception RV]]

is much higher than when the restructuring verb is a modal (i.e. a verb with a more abstract meaning).

In two-verb clusters it was shown that not all subjects actively vary in the ordering of the verbs in the verb cluster. In chapter 8 the individual variation in three-verb clusters, i.e. the combinations of orders per subject in the verb cluster elicitation task, was shown (see table 8.12). Fewer subjects than in the two-verb clusters have only one order. If they do, it is almost always the Standard Frisian 3-2-1 order. Some other observations regarding the order combinations in the elicitation task can be made:

- In most of the combinations the (Standard Frisian) 3-2-1 order is present;
- If the 3-2-1 order is lacking, then the 1-3-2 order is always part of the combination;
- The 3-1-2 order is also very popular: it occurs in the most frequent combination of two orders (with 3-2-1) and in the most frequent combination of three orders (with 3-2-1 and 1-3-2);
- The 1-2-3 order mainly occurs in RRI and ARI clusters;
- Like in the acceptability judgment task, in RAP clusters most combinations contain two or three orders. No subjects have more than three different orders in the RAP clusters. In ARI-clusters larger combinations can be found in more subjects;
- Contrary to what was found in the acceptability judgment task, RRI clusters seem to show less variation than RAP clusters (only four subjects have more than two orders, whereas in RAP clusters 10 subjects have three orders);
- Orders starting with the second verb are rare;
- There are three subjects that do not produce a single three-verb cluster in the RAP condition.

Summarizing, the results of the acceptability judgment task and the verb cluster elicitation task show a lot of variation in Frisian three-verb clusters, both in clusters consisting of a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP clusters, research question 1c) as well as in clusters consisting of a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters, research question 1d), and in clusters consisting of a finite auxiliary, a participial/infinitival restructuring verb and an infinitival main verb (ARI clusters, research question 1e). Most variation was found in ARI clusters, least (but still considerable) in RAP clusters.

This confirms our hypothesis regarding variation both in two-verb clusters as well as in three-verb clusters, and across verb types, and is in line with earlier research regarding variation in the Frisian verbal complex (Ytsma 1995, Wolf 1996, De Haan 1996b, Koeneman & Postma 2006). However, not all subjects actively vary in the ordering of the verbs in the elicitation task, nor do all subjects accept variation as offered in the acceptability judgment task. This confirms our hypothesis of individual differences regarding the variation in the Frisian verbal complex, following Reitsma (2003) and Cornips (2009). This could indicate that some individuals are more ‘stable’ than others. The findings with regard to the effect of social factors on the variation in the Frisian verbal complex might shed a light on that. These will be discussed in the next section.

The acceptability judgment task displayed more order variation than the elicitation task, both in two-verb clusters as well as in three-verb clusters. In the elicitation task, particularly in three-verb clusters, many subjects responded with reduced clusters. In particular in the RAP and RRI conditions, many subjects dropped one of the verbs. We suggested that this might be caused by the more abstract meaning of verb clusters with a restructuring verb as their highest verb, but it would require further research to confirm that. In the discussion in section 9.3 the differences between the findings of the acceptability judgment task and the verb cluster elicitation task will be elaborated. First, the role of social and linguistic factors with regard to the variation in the Frisian verbal complex will be investigated.

9.2.2 Social and linguistic variables (research question 2 and 3)

As discussed in chapter 2, one of the questions in contact linguistics is whether social or linguistic factors determine the outcome of language contact, and how. Variationist sociolinguistic studies have demonstrated that social and linguistic factors can influence language variation and change. The second and third research question of the current study relate to the effects of linguistic and social factors (respectively) on the variation in the Frisian verbal complex: ‘How do the number of verbs in the verb cluster, the type of verb and its morphology relate to the variation in the Frisian verbal complex?' (research question 2) and 'What is the relationship between the variables age & time, sex, regional background, level of education, language proficiency, language use, and (language) attitude and the variation in the Frisian verbal complex?' (research question 3).

The effect of these different factors was investigated by means of ordinal regression models, more specifically cumulative link mixed models (clmm, see section 7.3.2). The group of subjects that participated in the elicitation task was small compared to that in the judgment task, and many reduced clusters and other responses made it impossible to carry out an analysis like clmm with the data of the elicitation task. Therefore, the ordinal regression models (clmm) were only used with the data of the acceptability judgment task. The models tested were shown in chapter 7 (table 7.21). Our findings with regard to variation in acceptance rates in the acceptability judgment task were elaborated in chapter 7 as well (see for example the results matrix in table 7.35 that shows which factors had a significant effect on acceptability judgments of the Frisian verbal complex). The only variable that reached significance across all models was Order of verbs. In the apparent time models Age group and the interaction of Age group and Order of verbs also always reached significance. In the real time models a significant – but inconsistent – effect of Region was found. Below, the results for each of the variables will be discussed separately.

9.2.2.1 Social factors

Both from diachronic and synchronic research it is known that variants often show regular patterns of variability conditioned by linguistic and/or social factors. Chambers (2004) claims that age is "the social attribute that is the primary correlate of language change" (which is why apparent time studies are so powerful in detecting it), along with social class and sex.

With regard to social class, early sociolinguistic studies showed that certain variants were used more frequently by the highest status classes and less frequently by the lowest status classes and at intermediate frequencies by the classes in between (Tagliamonte 2011). When a linguistic variable has a clear standard vs. non-standard social evaluation it is sure to be aligned with the prevailing social hierarchy in the community, whatever that might be. Where social class is a relevant social category, linguistic variables will correlate with it (Tagliamonte 2011). Earlier research of Frisian language change in general and of the Frisian verbal complex in particular either lacked social variables, or did not find a difference in this regard. Also, one could argue that Standard Dutch is the standard language for speakers of Frisian, and not Standard Frisian (cf. De Haan, Breuker, and others).

The (lack of an) effect of social factors, apart from age and time, could indicate that the developments that are occurring are an example of internal language change, but they could also be an argument to underline the importance of other, e.g. linguistic factors, in language change and thus contribute to the discussion on the relative inmportance of social versus linguistic factors in language change.

Time (age)

In this study two concepts of time were investigated: in the apparent time study the effect of age (by means of three different age groups) was investigated, in the real time study the effect of time (by means of different years of testing) was investigated. Subjects of different age groups participated in the apparent time study (i.e. 12-14; 25-49; 59-74) in order to investigate a possible change over time. In the real time study, the data of the youngest subject group from the apparent time study were compared to those of subjects of the same age who did the task 12 years later in order to track real time change.

Our hypothesis regarding the factor age/time was confirmed. In all of the apparent time models (very) significant differences were found between age groups, at least between the oldest and youngest group and sometimes between the intermediate and oldest group, the intermediate and youngest group or both. In the real time models significant differences were found between the group of 2004 and 2016 regarding their acceptability judgments of three-verb clusters. Only in the real time models concerning two-verb clusters, there was no significant difference between the two groups (note that for model 7 the p-value was <.0511 which is close to significant). In the verb cluster elicitation task it was also very clear that the responses differed between age groups (see chapter 8). This confirms our hypothesis and it indicates that a change over time is taking place. The fact that both apparent time and real time findings point in this direction, gives a stronger evidence base for claims of language change, which were also put forward in earlier research like e.g. De Haan (1990), Ytsma (1995), and Wolf (1996).

Sex

With regard to the factor sex (as well as for regional background, and level of education), we did not expect an effect on the variation in the verbal complex. In the apparent time models, no effect of sex was found. In the real time models a significant effect of sex was found in models 10 and 12 concerning three-verb clusters ($p<.05$ for both models). In both cases male subjects gave significantly higher judgments, indicating a higher acceptance of variation. On the basis of classic sociolinguistic research, one would expect females to lead the change, hence to show more variation (Labov, 1994, 2001). On the other hand, research also shows that females are more inclined to conformity with the linguistic norm, which in the case of Standard Frisian would mean less variation. With regard to verb ordering in the Frisian verbal complex no significant differences between the sexes were found so far (cf. Meekma 1989, Ytsma 1995, De Haan 1990) Hence, we did not expect to find an effect of sex on the variation in the Frisian verbal complex. As we found a difference in only 2 out of 12 models, we consider this as according to our hypothesis.

Regional background (dialect region)

There were three different regional groups, aligned with the three main Frisian dialect areas: *Klaaifrysk* (Clay Frisian), *Wâldfrysk* (Wood Frisian), and *Súd-Westhoeksk* (Frisian from the Southwest corner of the province). As the three main Frisian dialects do not differ with regard to the verbal complex, no differences were expected with regard to the regional background of the subjects. In the apparent time models no effect was found for regional background. However, in the real time models significant differences were found between subjects from different regional backgrounds. In all models subjects from the Southwest Corner gave significantly lower acceptability judgments, indicating a lower level of acceptance of variation. In models 8, 9, and 12 subjects from the Southwest Corner gave significantly lower acceptability judgments than subjects from the Clay area. In model 9 subjects from the Wood area gave significantly lower acceptability judgments than average, indicating a lower level of acceptance of variation.

As this effect was not expected, explanations are sought. Another factor may provide some clarity. The percentage of L1 speakers of Frisian in the province of Fryslân was shown in figure 2.5 (in chapter 2). The municipalities where the participating schools were located had slightly different percentages of L1-Frisian inhabitants. The school in the Clay area was located in the municipality of *Franekeradeel*, where the percentage of L1-Frisian inhabitants was 52,6 in 2016. The school in the Wood area was located in the municipality of *Opsterland*, where the percentage of L1-Frisian inhabitants was 68,9 in 2016. The school in the Southwest Corner was located in the municipality of *Gaasterlân-Sleat*[13], where the percentage of L1-Frisian inhabitants was 73,1 in 2016. This seems a plausible explanation for the differences between regional backgrounds as encountered in the real time models (as reported in chapter 7). The subjects that participated in the apparent time study, in particular the elder groups, had a more diverse regional background, i.e. they came from different municipalities within the different dialect areas. This could explain why the effect only shows up in the real time models and not in the apparent time models.

Assuming that the effect found in the apparent time models can be attributed to the percentage of L1-Frisian inhabitants of the respective municipalities, there is no reason to reject our hypothesis. Our expectation that no effect would be found regarding (dialect) regional background can thus be regarded as confirmed. This is in line with the general assumption that Frisian dialects hardly differ on the level of syntax. On the other hand, the differences found in the real time study suggest that areas with less L1 inhabitants are more likely to accept more variation. This could be an indication that the variation is somehow related to (contact with) larger numbers of non L1 Frisian speakers. Ytsma (1995) also put forward the idea that some changes in Frisian may occur through the introduction of new forms or new pronunciations by L2 speakers of Frisian, which are then adopted by L1 Frisian speakers. The establishment of a direct link between (contact with) more L1 Dutch speakers, or more L2 Frisian speakers, is something that deserves more investigation in future research.

Level of education

[13] In 2014 the municipality of Gaasterlân-Sleat merged with the municipalities of Lemsterland and Skarsterlân into the municipality of De Fryske Marren. As part of our data was collected before the merger, and the data are from that region, the data point for the municipality of Gaasterlân-Sleat is used as a reference.

Subjects were divided into three groups according to their highest or current educational level. Note that this variable did not represent educational attainment but was considered as the closest representation of social class (see chapter 6). No effects of social class or educational level have been reported for the variation in the Frisian verbal complex so far, and hence we did not expect to find an effect for level of education. In 8 models no significant effect was found. Nevertheless, a significant effect of level of education was found in 4 of the 12 models. The effects differed between models. In models 1, 5, and 11 the intermediately educated subjects gave significantly higher judgments than average. In models 1 and 11 intermediately educated subjects gave significantly higher judgments than lower educated subjects, in model 1 intermediately educated subjects also gave significantly higher judgments than highly educated subjects. This indicates a higher acceptance of variation among intermediately educated subjects. On the other hand, in model 10 highly educated subjects gave significantly lower judgments than both lower educated subjects as well as intermediately educated subjects. This is a finding we would have expected when we would have taken education as a sign of access to written Frisian, to Standard Frisian, but we argued in our hypothesis that higher education is probably more related to access to written Dutch and Standard Dutch.

Concluding, for level of education we did not find a clear, consistent effect. This was according to our expectation, and in line with findings of e.g. Stanford & Preston (2009) that many indigenous minority languages do not have clear socioeconomic class distinctions or that distinctions emerge in different ways. Also, this could be an indication that it is not a standardization effect, nor an effect to Dutch, as presumably access to Dutch literacy is also educationally constrained. Or, along the lines of Tagliamonte (2011), that the *social* evaluation of the different variants may not have a clear standard vs. non-standard distribution (and hence it is not aligned with the prevailing social hierarchy in the community), even though there is a clear standard vs. non-standard *prescriptive* evaluation of the variation in the Frisian verbal complex.

Attitude

In chapter 2 it was indicated that language attitude might have an effect on the acquisition of a heritage language (Montrul 2008). In general, the Frisian speaking population has a positive attitude towards the language (see chapter 4). Ytsma

(1995) found a link between linguistic behavior and language attitude, but only in the results of Dutch L1 speakers. Jongbloed-Faber et al. (2016) did find an effect in Frisian L1 speakers: teenagers with a positive attitude tend to use Frisian more often on social media or online (Jongbloed-Faber et al. 2016). Nevertheless, for the variation in the Frisian verbal complex we did not expect a strong effect of attitude. In a first run of the clmm Attitude was part of the list of independent variables, but the values in our subject group of L1 Frisian speakers hardly differed and no clear effect was found, therefore it was left out in the final run. This means that the differences in attitude towards Frisian were too small to be meaningful. This part of research question 3 will therefore be considered as inconclusive.

9.2.2.2 Language external factors

Sometimes it is argued that a lack of use of or a weak proficiency in a language by a speaker could make that language more prone to change in that speaker, even when this language is their first language. In particular in situations like that of a heritage language, language change or incomplete acquisition has been reported (e.g. Montrul 2008). In order to investigate whether there was such an effect in the case of Frisian, the frequency of use of Frisian, the reported proficiency in Frisian and Dutch, and the use of Frisian in different domains were compared to the variation in the Frisian verbal complex. Six language external factors were included in the ordinal regression models:

- mean proficiency in Frisian;
- writing proficiency in Frisian;
- the use of Frisian in the four umbrella domains (as derived by a common factor analysis, see section 6.5.1)
  - media;
  - social;
  - public *and*
  - Dutch.

These factors were analyzed in six models (for some subjects no language use or language proficiency data were obtained). No strong expectations were formulated with regard to the effect of these variables. Breuker (1993) suggested a relation between writing proficiency and the use of Standard Frisian forms. Our hypothesis was that if an effect were found, it would be in the direction as suggested, i.e. less frequent use or lower proficiency correspond to more variation in the Frisian verbal complex. However, in none of the models a significant effect was found for any of the six variables on language use and language proficiency.

9.2.2.3 Language internal factors

As very little social factors were expected to have an effect and one of the outstanding issues within (variationist) sociolinguistics concentrates on the role of social versus linguistic factors, a number of linguistic factors were taken into account in this study. In chapter 4 it was shown that variation in verb clusters often was related to linguistic factors, like the length of the verbal complex and verb type (Coupé 2015, De Sutter 2009, Bloem et al. 2014). The occurrence of the *Infinitivus pro Participio* (IPP) effect in some Germanic languages, including Dutch, was elaborated in chapter 3. In this study the effect of the number of verbs in the verbal complex, verb type, verb order, and the occurrence of the *Infinitivus pro Participio* (IPP) on the Frisian verbal complex effect was investigated.

Number of verbs

The effect of the size of the verb cluster (i.e. a possible difference between two-verb clusters and three-verb clusters) was not analyzed in the cumulative link mixed models. The logical ordering possibilities of three-verb clusters are three times that of two-verb clusters, so it is inevitable that more variation will be found in three-verb clusters. Instead, the percentage of non-standard Frisian verb clusters in our data was compared to that in data from earlier research.

In the case of two-verb clusters the amount of non-Standard orders that was found in data from 1994 (subjects aged 15-16, n=20) was 33% (Wolf 1995). In our elicitation task data from 2004 we find around 45% non-Standard orders in the youngest group (12-14-year-olds), indicating that since Wolf's study the level of non-Standard orders has increased[14]. In the acceptability judgment data, the

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[14] Note that Wolf's 1994 data are not 1:1 comparable with the data from the current study as they were collected in different ways.

difference between 2004 and 2016 did not reach significance. This could be a first indication of stabilization of the variation pattern. Of course, it is also possible that the proportion of non-Standard orders will increase even more over time. More research would be needed to investigate these scenarios. However, it seems plausible that the peak in incrementation (cf. Tagliamonte & D'Arcy 2009) has passed and change will be more gradual, for example like Olthof et al. (2017) demonstrated for spoken Dutch (cf. figure 5.10 in chapter 5).

The individual variation encountered also indicates that variation is more widespread now. A large majority of the subjects accepts both orders (cf. table 7.36 for the combination of orders found), whereas in Wolf's 1994 data 40% of the subjects used more than 85% Standard Frisian orders and only 1 subject exclusively used non-Standard orders (Wolf 1995, Reitsma 2003).

For three-verb clusters there are less data to compare ours with. The only exception is the ARI-cluster. Koeneman & Postma (2006) showed that besides the Standard Frisian and Standard Dutch order (the two most accepted orders), some 'hybrid' orders also received acceptance rates between 30 and 50%, i.e. the 1-3-2, and 3-1-2 orders with a past participle. Their results are more or less compatible with the findings from our apparent time study, which was around the same time (2004-2007). Due to different methodologies (5-point scale vs. binary choice), in our data it seems that 3-2-1 with an infinitive is accepted as well, and the 1-2-3, 1-3-2, and 3-1-2 order with a participle are getting acceptance at chance level, whereas other orders are more explicitly rejected (orders starting with the second verb). In 2016, variation increased and many of the orders had a distribution of acceptance rates that is going in the direction of a by chance distribution (with each of the 5 judgments options representing about 20% of the cases).

With regard to individual differences in order variation in Frisian three-verb clusters no empirical data have been considered in previous work. In chapters 6 and 7 it is shown that both in the elicitation task, as well as in the acceptability judgment task individual differences can be found. This confirms our expectations and is in line with the individual differences in variation in the verbal complex as reported by Reitsma (2003) for Frisian two-verb clusters and Cornips (2009) for Heerlen Dutch two- and three-verb clusters. RAP clusters show less variation than RRI and ARI clusters, where many subjects accept five or six different orders. This seems counterintuitive, as in Dutch participial verb clusters more variation is accepted than in other cluster types. Nevertheless, the pressure for change is also lowest in the participial clusters as the Standard Frisian order is already part of the (regional) Dutch ordering possibilities. This will be elaborated upon in section 9.2.3.

Verb type

A possible effect of verb type on acceptability judgments of participial and infinitival two- and three-verb clusters was investigated by means of cumulative link mixed models. Models 1 and 2 (apparent time), 7 and 8 (real time) analyzed the effect of different verb types in two-verb clusters (AP versus RI clusters), and models 3 and 4 (apparent time), 9 and 10 (real time) analyzed the effect of verb type in three-verb clusters (RAP versus RRI clusters). In the two-verb clusters an effect was found in model 1, with RI clusters getting significantly lower acceptability judgments than AP clusters, indicating more variation in participial two-verb clusters. In three-verb clusters, an effect was found in model 10, with RRI clusters getting significantly higher acceptability judgments than RAP clusters, indicating more variation in infinitival three-verb clusters.

The difference between two- and three-verb clusters is surprising when one presumes that the developments should be going in the direction of Dutch. In particular the effect in the two-verb clusters was not as expected (even if found in only one model out of the four that tested it). In the two-verb clusters we see that in AP clusters there are many ‘completely agree’ scores as opposed to just ‘agree’, whereas in RI clusters we find many ‘completely disagree’ judgments and less of just ‘disagree’ (see figure 7.3 and 7.5 in chapter 7). When we look at the individual variation in the different two-verb cluster types, we see no difference between RI and AP clusters in the judgment task (cf. table 7.36), but slightly more variation in RI clusters in the elicitation task (cf. table 8.11). The result of the elicitation task is therefore more in line with expectations, with more variation in the verb type where the Standard Frisian order differs from the Standard Dutch order. The results of the clmm could indicate that variation in the auxiliary clusters is more accepted, as it is in Dutch.

In three-verb clusters it was expected that RRI clusters would show more variation, which was confirmed: in RAP clusters 3-2-1 orders and to a lesser extent

1-3-2 orders are accepted, whereas in RRI clusters more different verb orders are accepted but the Standard Frisian 3-2-1 order also receives higher acceptance rates than in the RAP clusters. The results from the elicitation task are largely compatible with the findings of the acceptability judgment task regarding three-verb clusters. On the level of individual variation there is a difference between the verb cluster elicitation task and the grammaticality judgment task. The judgment task shows the smallest number of different orders per individual in RAP clusters, followed by RRI clusters, and with the highest number of accepted orders in ARI clusters. The elicitation task shows a higher number of different orders per individual in RAP clusters than in RRI clusters, again with the highest number of different orders in ARI clusters (cf. individual combinations of orders in tables 7.37 and 8.12). At the community level however, the elicitation task reveals more different order combinations in RRI clusters than in RAP clusters. We therefore consider our hypothesis regarding more variation and a stronger rise in ascending orders in RRI and ARI clusters than in RAP clusters confirmed.

The interaction between type of verb and age group/year of test had a significant effect in 1 of the 12 models. In model 9 regarding three-verb RAP and RRI clusters in the real time study a significant difference was found in acceptability judgments between RAP clusters in 2004 and RAP clusters in 2016. This also held for the RRI clusters. In both cases the ratings were higher in 2016, i.e. more variation was accepted in 2016. Within the 2016 group, RRI clusters were rated significantly higher than RAP clusters. This is in line with the findings on the individual factors and in line with expectations regarding the developments in different verb types.

In the elicitation task the variation was largest in the youngest age group and different orders appear in the different verb cluster types. In RAP clusters 3-2-1, 3-1-2, and 1-3-2 are most frequent. In RRI 3-2-1, 3-1-2, 1-3-2, and 1-2-3 appear. In ARI clusters all orders except those starting with the second verb are well represented. The Standard Frisian and Standard Dutch order both appear with a participle and with an infinitive as the second verb (i.e. with *Infinitivus pro Participio*), most frequently in the youngest group. Nevertheless - bearing in mind the acceptance of various verb orders with IPP in the acceptability task - the presence of IPP is not very prominent. In the next section verb order will be discussed in more detail.

Verb order

Verb order was the only dependent variable that had a significant effect in all models of the clmm. In all but one model (model 12, real time comparison regarding three-verb ARI clusters) the Standard Frisian order was given significantly higher judgments than average. In model 8 (2004-2016 data, RAP and RRI clusters) the 3-1-2 order also received higher than average judgments (p<.05). In model 11 (real time data, ARI clusters) the 2-1-3 order received lower than average judgments (p<.05). In model 12 (real time data, ARI clusters) the 2-1-3 order and the 2-3-1 order received lower than average judgments (both at the p<.05 level).

Also, in most of the models the Standard Frisian order was given significantly higher judgments than all or most of the other orders. In the two-verb clusters there were only two orders to compare: in all models the 2-1 order was rated significantly higher than the 1-2 order (p<.001 for the apparent time models and real time model 7, p<.05 for model 8).

For three-verb clusters table 9.1 below demonstrates the order-by-order comparison for the different models.

Orders compared		**RAP & RRI clusters**				**ARI clusters**			
		3	4	9	10	5	6	11	12
3-2-1	1-2-3	***	***	***	*	***	***		
	1-3-2	***	***			***	***	***	
	2-1-3	***	***	*		***	***	***	**
	2-3-1	***	***	***	***	***	***	***	**
	3-1-2	***	***			***	***	***	*

Table 9.1 Results matrix clmm order-by-order comparison of acceptability judgments in three-verb clusters (* = significant at the .05 level, ** = significant at the .01 level, *** = significant at the .001 level).

It can be seen that only comparisons with the Standard Frisian 3-2-1 order reached significance, no significant differences were found between other orders. However, in many of the models an interaction between verb order and age group or year of test was found. So, for some age groups there were significant differences between other orders. The table also clearly demonstrates this in the sense that the number of significant results in the real time models (9, 10, 11, and 12) is lower than in the apparent time models (3, 4, 5, and 6). Both the acceptability judgment task and the elicitation task show different ordering preferences for different verb types: a preference for orders starting with the deepest embedded verb in participial constructions, a preference for orders starting with the finite verb in IPP constructions, and a mix of both in RRI constructions. Summarizing, our hypothesis regarding an effect for verb order was confirmed.

Above it was demonstrated that the factor of Age/Time had a strong effect on acceptability judgments in Frisian verb clusters. The interaction of Age/Time and Verb order is significant in all but two models. The picture that appears from the apparent time models of two-verb clusters (models 1 and 2, see section 7.3.2 for a detailed description), is that the difference between judgments on the 2-1 and 1-2 order decreases in younger age groups, with (significantly) rising judgment scores on the 1-2 order, and also a small decrease in rating of the 2-1 order. Nevertheless, the difference between the two orders remains significant in all age groups in the apparent time models. This corresponds to the findings from the elicitation task that was also part of the apparent time study. In the real time models concerning two-verb clusters (models 7 and 8) a significant difference is found between the two orders in one of the two models, and only in the 2004 group. Neither between the two groups, nor between the two orders a significant effect was found in the 2016 group.

The apparent time models of RAP and RRI clusters (models 3 and 4) show comparable results with regard to the interaction of age group and verb order (see section 7.3.2). Within both elder groups, the 3-2-1 order is rated significantly higher than all other orders, in the youngest group the difference between the judgments of the Standard Frisian 3-2-1 order and those of many other orders is not significant any more (e.g. 3-1-2 and 1-3-2). Also, the difference between the oldest and youngest group is significant for all orders, whereas the judgments of the intermediate and youngest group differ significantly in some cases. Between both elder groups no significant difference was found on any of the orders. Here as well, this corresponds to the findings from the elicitation task.

One of the real time models regarding RAP and RRI clusters (models 9 and 10) did not find an interaction between year of test and verb order, the other model (model 9) points in the direction of more variation in 2016: the number of (significant) differences with the Standard Frisian order is decreasing and only one order was rated significantly higher in the 2016 group than in the 2004 group, notably the 1-2-3 order which is also accepted in Standard Dutch.

In the apparent time models of ARI clusters the interaction between verb order and age group shows that in both elder groups the Standard Frisian 3-2-1 order is rated significantly higher than all other orders, whereas no significant differences are found between the different orders within the younger group. No significant differences were found between the oldest and intermediate age group on any of the orders. The oldest and youngest group differed significantly on all orders, and the difference between the intermediate and youngest group was significant on all but the Standard Frisian order. In the real time models of ARI clusters, there were significant differences between different orders and the Standard Frisian 3-2-1 order in the 2004 group, whereas the 2016 group did not show any significant differences between the different orders (in one of the models a difference was found between the 3-2-1 and the 2-3-1 order in the 2016 group). In both models the 2016 group had significantly higher ratings of the 2-1-3 order than the 2004 group, in the other model the 1-2-3 and 1-3-2 order were also rated significantly higher than in the 2004 group.

The interactions between verb order and Age/Time confirm the findings on the individual factors and in addition they give us more information about differences between and within age groups regarding particular word orders in the verbal complex. The findings are in line with expectations regarding an increase in variation and the rise in acceptability of non-Standard Frisian orders.

Verb morphology (IPP)

By means of the clmm our data were analyzed for an effect of verb morphology (i.e. IPP effect) on acceptability judgments in four models, the models concerning the ARI clusters (models 5, 6, 11, and 12). An effect was found in models 6 ($p<.001$) and 12 ($p<.05$), nevertheless for both models a disclaimer with regard to interactions was made. In particular, the interaction between Verb morphology and Age/Time showed a very strong effect for IPP in both elder age groups in the apparent time models of the clmm. Both groups gave significantly higher acceptability judgments to clusters with a participle than to clusters with an infinitive. In the younger groups the effect was less clear. These groups prefer clusters with an infinitive, but no significant differences were found between clusters with and without IPP. The group of 2016 gave significantly higher judgments than the group of 2004 to both clusters with an infinitive as well as clusters with a participle. Between the age groups it was found that the oldest and intermediate group differed significantly with the youngest group: they gave significantly lower ratings to clusters with an infinitival restructuring verb, and significantly higher ratings to clusters with a past participle.

In the elicitation task we saw an increase in order variation in the intermediate age group. In ARI clusters in both elder groups we see some clusters in the Standard Frisian order with an infinitive as the second verb, i.e. 3-2-1 clusters with the IPP effect. This is in line with findings by Wolf (1996) and Koeneman & Postma (2006), who also found the IPP effect in other than the Standard Dutch order. This cluster type is also found in the youngest group, and there the Standard Dutch verb cluster, i.e. 1-2-3 with IPP, is also found more frequently (cf. tables 8.9 and 8.10). Nevertheless, the frequency of IPP in the elicitation task remains low in comparison to the findings of the acceptability judgment task. The combined results of the acceptability judgments and the elicitation task do indicate however that the orders with an infinitive are getting more popular over time. We therefore consider our hypothesis regarding verb morphology confirmed.

The interaction between IPP and Verb order was part of model 5, i.e. one of the two apparent time models considering this interaction. The Standard Frisian order with a past participle was rated significantly higher than the same order with an infinitive, and also significantly higher than all other orders with and without IPP. No other significant differences were found.

Resume

Summarizing, it can be stated that there is one social variable that has a large effect on the variation in the Frisian verbal complex, which is Age/Time. With a decrease in age, more variation is found in the Frisian verbal complex, both in two-verb clusters as well as in three-verb clusters. Inconsistent effects of sex and (dialect) regional background were found, mainly in the younger subject groups. The latter might be attributed to the differences in the proportion of Frisian L1 speakers in the municipalities of the participating schools. No effect was found for the other social factors (level of education as an indicator of socioeconomic status and attitude), neither for the language external variables of (self reported) language proficiency and (self reported) language use.

Of the linguistic factors verb order had the largest effect on the acceptability ratings. In particular in the older groups the Standard Frisian order was rated much higher than any other order and used almost exclusively. In the younger groups more different orders are used and preferences depend also on the type of verbs in the cluster. IPP is also hardly accepted or seen in the older age groups. In the younger groups it is accepted more, in particular in clusters in the Standard Frisian and Standard Dutch order. It is used to some extent, albeit moderately.

9.2.3 Variation in the Frisian and Dutch compared (research question 4)

In this section the variation in the Frisian verbal complex will be placed in the context of language contact and geographical variation in verb cluster orders (see chapters 3 and 4). As was demonstrated by De Haan (1996a), developments in the Frisian verbal complex do not per se go into the direction of copies (literal translations) of Standard Dutch. Also, Koeneman & Postma (2006) found many 'hybrid' constructions in ARI clusters (i.e. orders that are present neither in Standard Frisian, nor in Standard Dutch). Nevertheless, it is often assumed that 'Dutchification' of Frisian is taking place, for example, the presence of hybrid constructions is interpreted by Koenenman & Postma (2006) as an 'intermediate' phase in language change towards a Standard Dutch pattern.

In this section our findings will be compared to the verbal complex of Standard Frisian, Standard Dutch and Northern Dutch varieties. The orders considered Northern Dutch were extracted from the DynaSAND (Barbiers et al. 2006), as demonstrated on the maps in chapter 4. Barbiers & Bennis (2010) also point at a difference between the North and the South (including Belgium) regarding verb clusters, with a Central Dutch area going with the north in some cases and with the south in others. Here, the Central Dutch area was not taken into account. The ordering possibilities in the verbal complex in our findings (order combinations as found in the elicitation task and in the acceptability judgment task), and in Standard Frisian, Standard Dutch, and Northern Dutch varieties are shown in table 9.2 below.

Cluster type	Findings	Standard Frisian	Standard Dutch	Northern Dutch
AP clusters	2-1, 1-2	2-1	1-2, 2-1	1-2, 2-1
RI clusters	2-1, 1-2	2-1	1-2 (2-1)	1-2, 2-1
RAP clusters	3-1-2, 1-3-2, 3-2-1	3-2-1	3-1-2, 1-2-3 (1-3-2, 3-2-1)	3-1-2, 3-2-1, 1-3-2
RRI clusters	1-3-2, 3-2-1, 1-2-3, 3-1-2	3-2-1	1-2-3 (1-3-2, 3-1-2, 3-2-1)	1-2-3, 3-1-2, 1-3-2, 3-2-1
ARI clusters (IPP)	3-2-1, 1-3-2, 3-1-2, 1-2-3 (IPP)	3-2-1 (no IPP)	1-2-3 IPP	1-2-3 IPP, 3-1-2, 1-3-2 (IPP?), 3-2-1

Table 9.2 Ordering possibilities found in Frisian two- and three-verb clusters compared to Standard Frisian, Standard Dutch and Northern Dutch.

The table demonstrates that the variation encountered in our data shows more resemblance with Northern Dutch varieties than with Standard Dutch. This confirms our hypothesis that the variation in the Frisian verbal complex is not a copy of Standard Dutch. This could confirm findings by Heeringa & Hinskens (2014, 2015), who claim that all dialects in the Netherlands converge to Standard Dutch, but in general dialects converge to each other. However, it could also mean that Frisian, like other regional languages, shows more variation and more ascending orders in the verbal complex because of increasing numbers of verbs in the verbal complex (cf. Coupé 2015). This will be elaborated upon in section 9.3.

With regard to the broader West-Germanic picture (cf. Wurmbrand 2006), it is interesting to note that clusters starting with the second verb are also quite rare in our findings. They are not absent, however. In RRI clusters orders starting with the second verb are accepted to a certain extent in the judgment task: they quite frequently occur in the different order combinations (cf. table 7.37). The overall popularity of these orders is much lower nevertheless (cf. table 7.11). On top of that, in the results of the verb cluster elicitation task these orders are much rarer (cf. table 8.8). In ARI clusters the orders starting with the second verb are also accepted to a certain extent, but there the preference for 3-2-1 and 1-2-3 is much clearer (cf. table 7.16). In the elicitation task they hardly occur (cf. tables 8.9 and 8.10). We will therefore assume that orders starting with the second verb are accepted to some extent, but are not productive. This corresponds to findings in other Germanic languages where orders starting with the second verb are rare or absent (cf. chapter 3).

9.3 Additional findings

From the results and discussion above three topics emerge that might be worth discussing in more depth. This concerns the similarities and differences between the findings of the elicitation task and the acceptability judgment task, which will be discussed in section 9.3.1. Secondly, some possible explanations regarding the high number of cluster reductions in the elicitation task data will be elaborated upon (section 9.3.2). And finally, the question whether this is a case of contact-induced language change will be revisited (section 9.3.3).

9.3.1 Elicitation compared to acceptability judgments

The verb cluster elicitation task as well as the acceptability judgment task was part of the apparent time study, i.e. the same subjects participated in both tasks. When comparing the findings from the acceptability judgment task (chapter 7) to those of the verb cluster elicitation task (chapter 8), there are similarities but also some remarkable differences.

In both tasks subjects had to listen to a Frisian sentence. In the acceptability judgment task a written sample of the sentence was also provided. After listening to the sentence, the subjects had to give their acceptability rating (in the acceptability judgment task) or had to repeat the sentence with the addition of a word at the beginning of the sentence (the verb cluster elicitation task). In two-verb clusters consisting of an auxiliary and a participle it can be seen that both older groups hardly produce any non-Standard orders in the elicitation task. The youngest group produces more than 50% non-Standard orders. In the acceptability judgment task it can be seen that in the oldest group the non-Standard order is hardly accepted, but in the intermediate age group the non-Standard order is accepted in almost 35% of the cases it is offered. In the youngest group the preference for 1-2 in the elicitation task is not reflected in the judgment task. Both Standard and non-Standard orders are accepted to a very high degree, but the Standard 2-1 order is accepted more often than the non-Standard 1-2 order (almost 80% of the cases versus more than 90% of the cases). In two-verb clusters consisting of a finite restructuring verb and an infinitival main verb the picture is comparable, albeit with slightly deviating percentages. An interesting observation to make is that in the reduced verb cluster responses, i.e.

in the cases in which a three-verb cluster was targeted but a two-verb-cluster was produced, the percentage of 2-1 orders is higher than in the targeted two-verb clusters: around 70% 2-1 orders in RAP and RRI condition, and 78% and 100% of Standard Frisian 2-1 orders in ARI clusters and ARI clusters with a perception verb respectively. This may be related to the fact that sentences were offered in the Standard Frisian form, with a two-verb cluster in the 2-1 order.

In three-verb clusters as well, less variation is encountered in the elicitation task than in the acceptability judgment task. In both elder groups the largest part of the three-verb cluster responses are in the Standard Frisian 3-2-1 order in the verb cluster elicitation task. In RAP clusters we see that two non-Standard orders (the 3-1-2 order and the 1-3-2 order) are used more often by the youngest group than the Standard Frisian 3-2-1 order. In the acceptability judgment task however, the Standard Frisian order is accepted more often than these other orders, but all RAP clusters are accepted at relatively low levels (below chance level). In the RRI clusters the same picture appears, with a fourth non-Standard Frisian cluster being used, i.e. the Standard Dutch 1-2-3 order. With regard to favorite orders, another difference between the acceptability judgments and the elicitation task can be seen: in RAP clusters the 3-1-2 order is the most popular non-Standard order in the elicitation task, and the 1-3-2 order is most popular in the acceptability judgment task. In the RRI clusters, this is the other way around. In ARI clusters we see higher cluster realizations in the elicitation task and higher acceptability rates in the acceptability judgment task. The differences between the two tasks are comparable to those in the other three-verb clusters. In ARI clusters the oldest groups accept non-Standard orders to a larger extent, whereas the elicitation task shows no (or very little) variation.

The difference between the elicitation task and the judgment task can be interpreted in different ways. One way is to say that the elicitation task is more conservative, or only shows the subjects' preferences, not their entire repertoire. Another explanation could be that the first step in language change is for a language user to accept a new variant in language perception, and only in a later stage this variant will become productively used. If we assume that this is a characteristic of the process of language change, then the difference between a elicitation or production task should not be found in situations where language change is absent. This seems implausible, as a difference was also seen between written and spoken data of Dutch verb clusters (cf. chapters 3 and 5). This could also indicate that Dutch verb clusters are also in the process of (gradual) change (see also Olthof et al. 2017).

The difference between the verb cluster elicitation task and the acceptability judgment task could also be related to the difference between spoken and written language. Aural stimuli were presented to the subjects both in the elicitation task as well as in the judgment task, but in the judgment task a written stimulus was also available and the subjects had to give their acceptability judgments on paper (below the written stimulus). What remains to be explained in this case is the fact that normally written language is closer to the Standard, which in the case of Frisian would mean less or no variation, whereas we found more variation in the judgment task. It could be the case that Standard Dutch is seen as the standard language, or it could be the case that, like in Dutch, there is a preference for ascending orders in the written language.

The difference in degree of variation between the tasks did not only show up within the different age groups in the apparent time study, but also at the level of individual order combinations. In the judgment task many more individuals showed combinations of three, four, and five different orders, and also a considerable amount of subjects considered all six logically possible orders acceptable. Also, in the elicitation task the cluster type with the highest number of subjects with only one order was the RRI cluster, whereas this was the RAP cluster in the acceptability judgment task. Note that the tables on the individual order combinations of the acceptability judgment task (tables 7.36 and 7.37) also contain the 2016 data. In that sense comparing these data to the elicitation task data is somewhat like comparing apples and oranges. Nevertheless, the number of subjects with combinations of two or three orders in RRI and ARI clusters is much lower in the acceptability judgment task, even when the data of 2016 are left out. This confirms the pattern of more variation in the judgment task than in the elicitation task that was discussed above.

Another remarkable difference between the two tasks was that the elicitation task showed many reduced clusters, mainly when a three-verb cluster was targeted. In the case of a reduced cluster subjects produced a two-verb cluster instead of a three-verb cluster. This was of course not an option in the acceptability judgment task. We will elaborate on this specific finding in more detail in the next section.

Summarizing, it seems that there is a slight mismatch between the findings from the acceptability judgment task and those of the verb cluster elicitation task. This implies that research that relies on only one type of data might be incomplete at best. It seems therefore highly recommendable to use both production data as well as perception data, or spoken and written language, when investigating a linguistic phenomenon.

9.3.2 Verb cluster reduction and the paradox of the norm

In the findings of the verb cluster elicitation task, it was noted that in the three-verb cluster conditions, many responses would contain a two-verb cluster rather than a three-verb cluster (see chapter 8). Sometimes the subjects used an extra subordinate clause, dividing the number of verbs over two subordinate clauses, but more often one of the verbs was simply left out, resulting in a 'cluster reduction'. This downsizing of the cluster to a smaller cluster (or in some cases to no cluster at all) could be seen as a way of avoiding the production of a larger cluster, be it conscious or not.

With regard to these reduced clusters themselves, it is interesting to notice that the proportion of inverted two-verb clusters in the three-verb conditions is much smaller than in the two-verb cluster conditions. In the two-verb conditions the inverted clusters accounted for more than half of the clusters, whereas in reduced clusters in the three-verb conditions they are either absent (in ARI clusters with a perception verb), or account for a much smaller proportion of the responses (22% in other ARI clusters, and around 30% in RRI and RAP clusters). This could indicate that the Standard Frisian 2-1 order is still more or less the 'default' order. It could also be a consequence of the way the task was set up. But investigating that would require a different way of analyzing the data, which will be left for future research.

The question is why would subjects avoid the production of three-verb clusters? Are three-verb clusters too difficult, too infrequent, too hard to process? Was the task too complicated? The answer to these questions should take account of the fact that the proportion of reduced clusters was higher in RAP and RRI clusters than in ARI clusters. In particular ARI clusters with a perception verb had a much higher realization of three-verb clusters: almost 90% of the responses contained a three-verb cluster, as opposed to around 45% in RAP and RRI clusters. It is also worth to notice here that acceptance rates of ARI clusters were also higher than those of RAP and RRI clusters, with the latter receiving larger numbers of rejections (‘(absolutely) disagree’), although here the difference was less stark than in the elicitation task.

One could argue that three-verb clusters are more complex, more difficult to produce than two-verb clusters, but apparently there are also differences in complexity or difficulty between different cluster types. Why would RAP and RRI clusters be more difficult or more complex than ARI-clusters? In the case of the RAP and RRI clusters a restructuring verb is the highest verb. Many of the restructuring verbs make the meaning of the cluster, and with that the meaning of the entire sentence, uncertain: something *should*, *could* or *has to* happen, but it did not happen (yet). In the case of the ARI clusters, and in particular those where the restructuring verb is a perception verb, the meaning of the sentence is like stating a fact. Some examples are given below, to demonstrate the difference between RAP, RRI and ARI clusters.

(49) RAP Ik tink dat ik dat koekje net opiten hawwe soe
I think that I that cookie not eaten (Part) have (Inf) would (3P-sg)
‘I think I would not have eaten that cookie’

RRI Hy sei dat er dat boek lêze wolle soe
He said that he the book read (Inf) want (Inf) would (3P-sg)
‘He said that he would want to read that book’

ARI Nynke sei dat Hester him yn it park fytsen sjoen hie
Nynke said that Hester him in the park bike (Inf) seen (Part) had (3P-sg)
‘Nynke said that Hester saw him biking in the park’

The (re)production of a sentence with this uncertainty, i.e. with a RAP or RRI cluster, might be more difficult because of this ‘irrealis’ effect. It might be interesting to investigate the effects of the semantics of the verb in future research.

Alternatively, it could also be the case that RAP and RRI clusters are less frequent than ARI clusters (of course, a lower frequency could be related to difficulty as well). Unfortunately, there are no data on the frequency of different types of verb clusters in Frisian. For Dutch, no data are known to us either, at least not on frequencies of different types of (three-) verb clusters. In Cornips' data of spontaneous speech of Heerlen Dutch three-verb clusters are not very frequent: 23 tokens in 67 speakers (Cornips 2009). Her article contained only RAP and RRI like clusters, and no ARI clusters, hence nothing can be stated about the relative frequency of ARI clusters compared to RAP and RRI clusters.

With regard to language acquisition, a lower frequency (whether or not it was caused by a certain degree of difficulty) might cause a lack of input. In our data, the relative amount of reduced clusters was highest in the youngest group, followed by the intermediate group, and it was lowest in the oldest group. If these verb clusters are very difficult in the sense of processing complexity, one might expect that the oldest group would also encounter (more) difficulties. If these verb clusters are very difficult in the sense of hard to learn, one might expect a pattern similar to what we found. The youngest group had the greatest repertoire of different orders to choose from, but apparently that did not make the production of the verb cluster easier, as they also massively reduced the three-verb clusters to two-verb clusters. As the intermediate age group also produced a lot of reduced clusters, there might be a lack of input of certain types of three-verb clusters for the youngest group. This, combined with less frequent input of Frisian in general (and overabundance of Dutch input), might cause the difficulties that are displayed in our data.

Infrequency could also promote linguistic insecurity. The increasing use (fewer in the older groups, more in the youngest groups, and more in 2016 than in 2004) of the 'no opinion' judgment in the case of the acceptability judgment task may also be an indication of this linguistic insecurity. The large degree of variation (acceptance of all six orders in RRI and ARI clusters by a substantial group of subjects, cf. table 7.37) can also be seen as an indication of linguistic insecurity. Some subjects hinted at this linguistic insecurity after doing the task. Some subjects indicated that they thought they had scored very poorly on the clusters or that they thought it was very difficult. Many of them were speaking about the verbs or the 'construction of the sentences' they had to produce. The older subjects also indicated that they thought that younger people used those verbal constructions in a 'non-Frisian' way, or outright 'wrong'. They all thought that that was a consequence of Dutch, that they would use Dutch constructions. The orders found, however, are not all Dutch-like (see section 9.2.3).

A teacher at one of the schools visited in 2016 stated that it was a pity that the data was not collected a couple of months later, as the pupils would receive more instructions on these clusters in Standard Frisian. It is highly unlikely that this syntactic construction has not been fully acquired yet at the age of these pupils (13-14 years old). They may or may not (un)learn a syntactic construction by formal instruction, but they will definitely learn that they are doing something 'wrong' and linguistic insecurity may increase.

The paradox of the norm of Standard Frisian

The prescriptive norm of Standard Frisian is known for its distance to the spoken language (cf. Breuker 1993, 2001, De Haan 1997). This distance between the norm and the spoken language promotes linguistic insecurity, giving some speakers the feeling that their Frisian is not correct, or at best not *geef* ('*geef Frysk*' is Frisian with no or little interference from Dutch, and sometimes also with conscious distancing from Dutch. It can best be translated as 'proper Frisian'). The linguistic insecurity caused by this distant norm may promote language change (see chapter 2).

A norm less distant from the spoken language might reduce the linguistic insecurity, but it would also reduce the typological distance between Frisian and Dutch. In situations of heavy language contact typological similarity may also promote language change (cf. Thomason & Kaufman 1988, De Haan 2001). Paradoxically, this entails that both bringing the norm of Standard Frisian closer to the spoken language (and thereby diminishing the typological distance to Dutch) as well as keeping the norm of Standard Frisian distant from the spoken language (and thereby promoting linguistic insecurity) will promote language change.

THE PARADOX OF THE NORM

BOTH BRINGING THE NORM OF STANDARD FRISIAN CLOSER TO THE SPOKEN LANGUAGE (AND THEREBY DIMINISHING THE TYPOLOGICAL DISTANCE TO DUTCH) AS WELL AS KEEPING THE NORM OF STANDARD FRISIAN DISTANT FROM THE SPOKEN LANGUAGE (AND THEREBY FOSTERING LINGUISTIC INSECURITY) PROMOTES LANGUAGE CHANGE.

9.3.3 Contact-induced language change?

One of the reasons to investigate the variation in the Frisian verbal complex was the frequent assumption that this variation should be attributed to language contact with Dutch, without strong empirical evidence. In this section we will discuss this assumption again, on the basis of the data that were presented in this thesis.

When we take into account the data from the apparent time study and the real time study, it is difficult to claim that there is no change. The data from the apparent time study could be interpreted as a generational change, but age grading cannot be excluded (i.e. it cannot be excluded that learning over age causes the differences between age groups). When we compare the data from the youngest group of the apparent time study to data of a similar group twelve years later, i.e. the real time study, a mixed picture appears. For the two-verb clusters there is no significant difference between the two groups. In three-verb clusters, however, change is progressing. This ongoing change in three-verb clusters entails a rejection of the age grading hypothesis. The fact that in two-verb clusters change has not progressed significantly could indicate that the change has completed, or is taking place at a much slower rate.

Now if we assume that language change has been taking place indeed, the remaining question is whether it is contact-induced. Thomason (2010) indicated that two (out of six) criteria that have to be met in order to be able to establish contact-induced change formulated, often are not met (criteria as rephrased by Poplack & Levey (2010):

- Prove that the proposed interference features were not present in the pre-contact variety
- Prove that the proposed features were present in the source variety prior to contact

Thomason (2010) states that in cases where these criteria are not met no solid case can be made for contact-induced change. This holds for the Frisian verbal complex as well. It is not clear whether order variation is (completely) unknown prior to contact. Some indications exist that in 17th century Frisian order variation was present as well, at least in two-verb clusters (although this could also be a result of language contact of course, see for example Hoekstra 2010). Unfortunately, for three-verb clusters there is no empirical evidence to prove that variation was or was not present in the pre-contact variety. For the second criterion it is much clearer that it is not met in the case of the variation in the verbal complex in Frisian. Not all variants that appear in Frisian are present in Standard Dutch. Some of the most frequent variants seem to have been present in regional dialects, although it is not clear to which extent, nor how intensive contact between Frisian and these regional dialects has been.

In a different contact-induced change scenario Koeneman and Postma (2006) assumed that there would be a shift towards a (Standard) Dutch repertoire of orders, i.e. that the variation as seen in the Frisian verbal complex would be an intermediate stage between the Standard Frisian situation with only descending orders (and no IPP) to a situation in which only ascending orders would be used, with the IPP effect. However, our data show that the Standard Frisian order still exists in all of the different verb types. In the ARI-condition that Koeneman and Postma studied, it seems that both Standard orders are favored over other orders (cf. table 7.16). Koeneman and Postma (2006) also suggest that not language contact but incomplete acquisition might cause these hybrid constructions. However, the picture that arises from Dijkstra (2013) and Bosma (2017) does not seem to justify the assumption that the developments in Frisian are caused by large scale interrupted or incremental acquisition. Rather, their findings seem to demonstrate that the simultaneous or early bilingual acquisition of Frisian and Dutch is comparable to other cases of simultaneous and early bilingual acquisition.

If we go back to the theories on language change and language contact as discussed in chapter 2, where some would expect social dominance as the basis for the outcome of language contact (Thomason 2010, Thomason & Kaufman 1988), whereas others (Van Coetsem 1988, 1995, 2000, Winford 2003, 2005) argue that linguistic dominance determines its outcome, some observations can be made.

For a case of structural or syntactic change, Thomason & Kaufman (1988) offer two scenarios, i.e. interference through shift or structural borrowing. As Frisian speakers still speak two languages and there is no complete shift to Dutch, the scenario of interference through shift does not apply. Borrowing of more stable domains, or structural borrowing, is rare and only happens in heavy cases of borrowing they argue (Thomason & Kaufman 1988). In section 2.5 it was shown that all of these conditions do apply to the Frisian-Dutch contact situation. Nevertheless, it remains hard to actually prove that social dominance is the determining factor in a situation like ours, where social factors do not seem to play a large role. In particular social factors like sex and socioeconomic status, which are often linked to language variation and change, do not have an effect on the variation in the verbal complex of Frisian. This could be caused by the specific sociolinguistic relation between Frisian and Dutch, which is (at least historically) not a dialect-Standard language relationship. It could also be caused by the nature of the linguistic feature investigated, i.e. a syntactic, salient feature.

When we look at the theory as proposed by Van Coetsem where linguisitic dominance determines the outcome of language contact, syntactic or structural change can be the result of borrowing or of imposition, depending on the linguistic proficiency of the speaker in both languages. In chapter 6 it was demonstrated that our subjects on average report higher proficiency in Dutch than in Frisian. This pleads for a case of imposition (possibly preceded by borrowing). Winford (2003, 2005) also argues that structural borrowing is not common and he shows that cases formerly marked as 'structural borrowing' can often be reinterpreted as cases of indirect borrowing or as cases in which both borrowing and imposition took or take place, in which case the structural changes will be attributed to imposition. The concept of linguistic dominance and the individual differences it allows for, also matches with the individual differences encountered in our data. On the other hand, language proficiency did not have an effect on the acceptability ratings in our judgment task.

There is another remaining issue to be resolved when assigning the changes in the Frisian verbal complex directly to contact with Dutch: why is the result different from (Standard) Dutch? In chapter 2 it was shown that in many domains Frisian is changing in the direction of (Standard) Dutch, but that, on the other hand, the Frisian system was not replaced by a copy of Dutch, for example in the case of Frisian diminutive suffixes (Van Balen et al. 2015). The verbal complex is no exception to this. Another resemblance with the case of diminutive suffixes is that the changes depend on the linguistic context in both languages. In the verb cluster, the variation in verb orders is largest in the contexts where Frisian and Dutch differ most. In infinitival clusters there is a stronger increase in variation than in participial clusters. In the latter, the Frisian order is also part of Dutch, or at least Northern varieties of Dutch.

In general, the variation encountered in our data shows more resemblance with Northern Dutch varieties than with Standard Dutch (see section 9.2.3). Although it is not clear to which extent, nor how intensive contact between Frisian and these regional dialects has been, one could argue that the developments in Frisian are going into the direction of regional clustering patterns rather than Standard Dutch patterns. This would complement findings by Heeringa & Hinskens (2014, 2015) that all dialects in the Netherlands converge to Standard Dutch, but in general dialects converge to each other. On the other hand, we did not find (dialect-) regional effects in our data. It would be very interesting to investigate the verbal complex in Frisian and other regional varieties and to compare that to the verbal complex in Dutch in the same speakers, to see whether they use the same ordering patterns in their local varieties and Dutch. This will remain for future research.

The resemblance with regional varieties could also point at broader developments in verb clusters all across the region. Coupé (2015) showed for historical data that longer clusters lead to more ascending orders. This could indicate that verb clusters are becoming longer in Frisian and in other Northern Dutch dialects as well, and therefore all of these dialects show more variation in the verbal complex. It is not known whether Frisian verb clusters or those in regional varieties are becoming longer, but this could be the case. This is also something that will remain for future research.

It seems that there is no conclusive evidence to speak of directly contact-induced change. We might have to conclude that this is a case of internal Frisian language change, possibly indirectly due to contact with Dutch. The fact that we did not find significant effects of social factors other than age/time supports this idea. On the other hand, linguistic insecurity and infrequency are probably caused by the presence and status of the Dutch language, but this concerns an indirect effect of language contact. The changes in the Frisian verbal complex are accommodated by contact with Dutch, which is also supported by the fact that the variation is largest in the contexts where Standard Frisian and Standard Dutch deviate most, but are no direct changes to a verbal complex similar to (Standard) Dutch.

Resuming, it is hard to link the changes in the Frisian verbal complex directly to contact with Dutch. Indirectly, the extensive contact with Dutch, a possible lack of input of particularly three-verb clusters and growing linguistic insecurity, seem to have paved the way for more variation in the Frisian verbal complex. Other factors, like for example an increasing number of verbs in the verbal complex, have to be studied more in-depth in order to draw conclusions on their effect.

Chapter 10

Conclusions and Recommendations

10.1 Introduction
10.2 Conclusions
10.3 Recommendations and future research

10.1 Introduction

This thesis started with a short introduction of the object of this study, the variation in the verbal complex in current-day Frisian. For a relatively small language like Frisian this phenomenon has been studied well (see chapters 3 and 5). Nevertheless, empirical, quantitative data remained scarce, in particular for clusters existing of more than two verbs. In order to study the developments in the Frisian verbal complex a larger and coherent set of data was needed. These data were provided by this study (see chapters 6, 7, 8). Different perspectives on language variation, language contact and change were discussed in chapter 2, and a combination of methodologies and insights from e.g. contact linguistics and variationist sociolinguistics has been used to contribute to the understanding of the developments that are taking place in the Frisian verbal complex.

The overarching question to be answered was whether the variation encountered was, like often suggested, an indication of (ongoing) language change. And if so, whether this change was related to the degree and type of bilingualism of Frisian speakers. In other words, whether the developments in the Frisian verbal complex are an example of contact-induced language change. In chapter 6 this question was translated into four different research questions. The answers to these questions are discussed in this chapter (section 10.2). Furthermore, some recommendations will be made as well as suggestions for future research (section 10.3).

10.2 Conclusions

The main research questions of the research reported on here were, first of all, what variation can be found in Frisian verbal constructions of different sizes and with different verb types, and secondly, what is the effect of different linguistic and social factors on the variation, and finally, whether or not these variation patterns align with Standard Dutch or regional Dutch clustering patterns. A number of tasks have been used in this study, including an acceptability judgment task for language perception data and an elicitation task for language production data.

10.2.1 Intra- and inter-individual variation encountered

The first research question concerned the attestation of variation in participial and infinitival two-verb clusters, i.e. in the following cluster types:

- AP clusters: V Aux (fin) - V Main (part)
- RI clusters: RV (fin) - V Main (inf)

A considerable amount of variation was encountered in Frisian two-verb clusters, both in the acceptability judgment task as well as in the verb cluster elicitation task (cf. chapters 6, 7, 8). This was demonstrated for clusters consisting of a finite auxiliary and a participial main verb (AP clusters, research question 1a) and for two-verb clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters, research question 1b). The judgment task showed that order variation is accepted to a large degree (85% of the subjects accepted both orders), whereas the elicitation task demonstrated that not all subjects actively vary in the ordering of the verbs in the verb cluster.

CONCLUSIONS ON VARIATION IN TWO-VERB CLUSTERS

- VARIATION IN AP CLUSTERS IS ENCOUNTERED IN THE ACCEPTABILITY JUDGMENT TASK AND IN THE VERB CLUSTER ELICITATION TASK. ACCEPTANCE OF BOTH ORDERS IS HIGH, BUT NOT ALL SUBJECTS ACTIVELY VARY THE ORDERING OF VERBS.
- VARIATION IN RI CLUSTERS IS ENCOUNTERED IN THE ACCEPTABILITY JUDGMENT TASK AND IN THE VERB CLUSTER ELICITATION TASK. ACCEPTANCE OF BOTH ORDERS IS HIGH, BUT NOT ALL SUBJECTS ACTIVELY VARY THE ORDERING OF VERBS.

The attestation of variation in participial, infinitival and ARI three-verb clusters was also part of the first research question. This concerns the following cluster types:

- RAP clusters: RV (fin) - V Aux (inf) - V Main (part)
- RRI clusters: RV (fin) - RV (inf) - V Main (inf)
- ARI (or IPP) clusters: V Aux (fin) - RV (inf/part) - V Main (inf)

In these three-verb clusters as well, a lot of variation was encountered (cf. chapters 6, 7, 8). This holds for clusters consisting of a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP clusters, research question

1c), for clusters consisting of a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters, research question 1d), and for clusters consisting of a finite auxiliary, a participial/infinitival restructuring verb and an infinitival main verb (ARI clusters, research question 1e). Most variation was found in ARI clusters, least (but still considerable) in RAP clusters.

Conclusions on variation in three-verb clusters

- Variation in RAP clusters is encountered in the acceptability judgment task and in the verb cluster elicitation task, but to a smaller extent than in the infinitival clusters. Orders that start with the participial verb (3-2-1 and 3-1-2) are preferred, but 1-3-2 orders are encountered as well.
- Variation in RRI clusters is encountered in the acceptability judgment task and in the verb cluster elicitation task. Both orders that start with the infinitival verb (3-2-1, 3-1-2) and orders that start with the finite verb (1-3-2. 1-2-3) are frequent.
- Variation in ARI clusters, or IPP clusters, is encountered in the acceptability judgment task and in the verb cluster elicitation task. Orders that start with the finite verb (1-2-3, 1-3-2) are more frequent than in both other cluster types, but orders starting with the infinitival verb (3-2-1, 3-1-2) occur as well. 1-2-3 ordering is often (but not always) combined with IPP, whereas also 3-2-1 ordering occurs with IPP.
- Intra-individual differences are smaller than inter-individual differences, i.e. variation at the community level is larger than variation at the personal level.

With these conclusions the empirical basis for the variation in the Frisian verbal complex has been given.

The results also confirm earlier findings that intra-individual differences are smaller than inter-individual differences, i.e. (synchronic) variation at the community level is larger than (synchronic) variation at the personal level (cf. Reitsma (2003), Cornips (2009), and see chapter 8): in the elicitation task not all subjects actively varied verb ordering in similar clusters, nor did all subjects accept the order variation as offered in the acceptability judgment task. Looking at this so-called ideolectal variability, it was shown that many subjects still accept and use only the Standard Frisian order in two-verb clusters. The large majority – but not all – of these subjects are in the elder age groups. In the younger groups it is clear that most of them use both orders actively, whereas a few use exclusively inverted verb orders. In the acceptability judgment task almost no one rejected the Standard Frisian order. Most subjects rate both orders as acceptable.

In three-verb clusters as well, the Standard Frisian order is almost always part of the combination of orders any given subject has in its ideolect. In participial clusters (i.e. RAP clusters) subjects tend to accept and use fewer different verb orders. In infinitival clusters, in particular those in the IPP condition (i.e. ARI clusters), subjects accept and use more different verb orders, notably in the younger groups, where many subjects accept all six possible orders.

Even with some degree of acceptance for orders starting with the second verb, the verb cluster elicitation task clearly shows that not many subjects actively produce orders starting with the second verb, as in most of the Germanic languages (cf. Wurmbrand (2006) and see chapter 8). Apart from the Standard Frisian 3-2-1 order the 1-3-2 and 3-1-2 order are used a lot, as well as the 1-2-3 order – the latter mainly in infinitival (RRI and ARI) clusters. A complete overview of the ordering possibilities in the Frisian verbal complex was given in chapter 9.

10.2.2 Language change and its determining factors

The second and third research question concerned the attestation of a possible effect of a number of social and linguistic factors on the variation in the Frisian verbal complex. Our methodology was based on variationist sociolinguistics and consisted of an apparent time study combined with a real time study, in order to be able to distinguish age grading - in which each generation uses a certain variant more (or less) with age - from generational change (Sankoff 2008, and see chapter 2). In the apparent time study the factor age was found to have a significant effect on acceptability judgments in all models. In the real time models the factor time was found to be significant in four (out of six) models. Thus, it was possible to show that the linguistic variation in the Frisian verbal complex can be seen as a case of language change in progress (see section 9.3.3). The results of the apparent time study alone, i.e. without confirmation from a diachronic or real time study, would not have sufficed to draw this conclusion.

While a change over time was attested in our data, for other factors that are known to play a role in language change no clear effect on the Frisian verbal complex was found. Factors known from (variationist) sociolinguistics (see chapter 2.2), like sex, level of education (as an indicator of socioeconomic status) and regional background did not have a clear effect on the acceptability of variation in the Frisian verbal complex. Also, factors that are often linked to bilingual acquisition and contact-induced language change like e.g. language use, language proficiency and attitude (see chapter 2.4) did not show an effect on the acceptability judgments of Frisian verb clusters.

CONCLUSIONS ON THE EFFECT OF SOCIAL AND LANGUAGE-EXTERNAL FACTORS ON VARIATION IN THE FRISIAN VERBAL COMPLEX

- THE EFFECT OF AGE (IN THE APPARENT TIME STUDY) AND TIME (IN THE REAL TIME STUDY) ON THE LINGUISTIC VARIATION IN THE FRISIAN VERBAL COMPLEX FOLLOWS THE PATTERN OF GENERATIONAL CHANGE. HENCE, THE LINGUISTIC VARIATION IN THE FRISIAN VERBAL COMPLEX CAN BE SEEN AS A CASE OF LANGUAGE CHANGE IN PROGRESS.
- NO OR NO CLEAR EFFECT ON THE LINGUISTIC VARIATION IN THE FRISIAN VERBAL COMPLEX WAS FOUND FOR SEX, REGIONAL BACKGROUND, LEVEL OF EDUCATION, LANGUAGE PROFICIENCY, LANGUAGE USE, AND (LANGUAGE) ATTITUDE.

The fact that not many social factors were found to have an effect on the variation in the Frisian verbal complex may be related to the nature of the linguistic structure investigated, which is a syntactic (or structural) phenomenon. In a bilingual community, particularly in a minority language setting, these processes may proceed differently. However, the external factors related to bilingual acquisition that were investigated, did not show an effect either. The question then is, whether these changes can or cannot be attributed to language contact with Dutch.

With regard to the effect of linguistic factors on the variation in the Frisian verbal complex this study showed that verb order had the largest effect on the acceptability ratings (cf. chapters 6, 8). In particular in the older groups the Standard Frisian order was rated much higher than any other order, and in the elicitation task it was used almost exclusively (see chapter 8). In the younger groups more different orders are used and preferences depend also on the type of verbs in the cluster. IPP morphology is also hardly accepted or used in the older age groups. In the younger groups it is accepted more, in particular in clusters in the Standard Frisian and Standard Dutch order. It is also used to some extent, but only in the Standard Dutch and Standard Frisian order. Nevertheless, the combined results of the acceptability judgments and the elicitation task indicate that the orders with an infinitive, i.e. with IPP, are getting more popular over time (see chapters 6, 7, 8).

The interaction between the social factor with the largest effect and the linguistic factor with the largest effect was also highly significant. That is, the interaction between the order of the verbs and age (in the apparent time study) or year of test (in the real time study) had a strong effect on the acceptability judgments. The acceptance of certain verb orders in the verbal complex interacted strongly with age/time (see chapter 7, 8). The patterns of acceptance as shown in chapter 7, and the findings from the verb cluster elicitation task as shown in chapter 8 demonstrate a process of language change in progress (cf. chapter 9).

In the case of three-verb clusters many subjects omitted one of the verbs in their response, thus realizing a two-verb cluster. It was shown in chapter 8 that between 9% and 49% of the responses contain a reduced cluster (see tables 8.3 and 8.4). In particular responses in the RAP and RRI condition are often reduced clusters. In these conditions less than half of the responses contain a three-verb cluster.

Conclusions on the effect of linguistic factors on variation in the Frisian verbal complex

- Developments in the ordering of the verbs in the Frisian verbal complex show a pattern of change over time.
- Different verb ordering possibilities occur in different types of verb clusters:
    - The Standard Frisian verb order 3-2-1 is still very strong, in particular in participial clusters and in the language production task.
    - Infinitival clusters show more variation in ordering than participial clusters, both at the community level as well as at the individual level.
    - In participial clusters a preference for orders starting with the deepest embedded verb is present, whereas in infinitival clusters more orders starting with the finite verb are found, in particular in ARI clusters.
- The IPP effect has become part of the Frisian verb cluster grammar, in particular in the 1-2-3 order, but also in the 3-2-1 order.

10.2.3 Change in the direction of Dutch?

In light of the discussion on the 'Dutchification' of Frisian, and whether or not the changes in the verbal complex are contact-induced, the fourth research question compared the variation encountered in the Frisian verbal complex to that in Standard Dutch and regional varieties (see chapters 3, 4, 8).

Our data showed a lot of variation, which is something that Standard Frisian lacks. Standard Dutch knows variation, but the variation patterns we encountered did not match the Standard Dutch pattern. We found more variation in infinitival clusters than in participial clusters, whereas Dutch shows more variation in participial clusters than in infinitival clusters. The ordering possibilities that were found look more like the ordering possibilities in regional varieties than like Standard Dutch (see section 9.2.3).

CONCLUSION ON THE COMPARABILITY OF THE VARIATION IN THE FRISIAN VERBAL COMPLEX TO THAT IN STANDARD DUTCH AND REGIONAL VARIETIES

- THE VARIATION ENCOUNTERED IN THE FRISIAN VERBAL COMPLEX SHOWS MORE RESEMBLANCE WITH THE VARIATION ENCOUNTERED IN REGIONAL VARIETIES THAN WITH STANDARD DUTCH.

10.2.4 Bilingualism and language contact as a trigger of variation

Even if it has been possible to establish language change (cf. the conclusions in section 10.2.2), the assumption that this should be attributed to language contact with Dutch has been much harder to confirm. It was expected that the determination of a *direct* causal relationship between language contact and language change would be difficult (Thomason 2010, Poplack & Levey 2010 and see chapter 2, 8). For example, it is not clear whether order variation was (completely) inexistent prior to contact. Also, not all variants that appear in Frisian are present in Standard Dutch (cf. chapter 9). Interpreting this as an intermediate stage between a Standard Frisian situation and a Standard Dutch situation is also problematic, as Standard Frisian variants make up a robust part of the repertoire in the different conditions.

Besides, factors that usually play a role in language contact or in bilingual communities like a heritage language setting, do not have an effect on the variation in the Frisian verbal complex. This holds for social factors like sex and level of education, but also for language proficiency and language use. The fact that the variation in verb orders is largest in the contexts where Frisian and Dutch differ most (stronger increase in variation in infinitival clusters than in participial clusters) and the comparability to northern varieties could be an indication of contact-induced change, but they could also point in the direction of a broader development in the verbal complex across languages, for example along the lines of Coupé (2015), with longer clusters triggering more ascending verb orders.

All in all, a direct and causal relationship between contact with Standard Dutch and/or regional varieties and the changes in the Frisian verbal complex is hard to establish. Linguistic insecurity and infrequency (of input), on the other hand, are probably caused by the presence and status of the Dutch language as opposed to the minority language status of Frisian. The fact that we found so many cluster reductions in the three-verb conditions in our elicitation task and the comments of the subjects point in the direction of linguistic insecurity. These cluster reductions could cause a lack of input of longer verb clusters. Nevertheless, this concerns only an indirect effect of language contact. In other words, the changes in the Frisian verbal complex are accommodated by contact with Dutch, but can only be linked to bilingualism and language contact indirectly.

Conclusion on relation between language contact and change

- The changes in the Frisian verbal complex cannot be directly attributed to contact with Dutch

10.3 Recommendations and future research

The conclusions and insights this study brought, have also generated some further questions. In this section these will be presented as suggestions for future research. Also, some more general recommendations for linguistic research and for language policy will be given.

10.3.1 Recommendations

From the findings and experience gathered in the process of this study many lessons can be learnt. Two of these will be highlighted here and put forward as recommendations. One is addressing linguistic researchers and the other is addressed to policy makers and norm setters.

The importance of spoken data

The acceptability judgment task displayed more verb order variation than the elicitation task, both in two-verb clusters and in three-verb clusters. In the youngest group, for example, the order that was accepted most in the acceptability judgment task, the Standard Frisian order, was hardly found in the elicitation task, sometimes not at all. The reverse held for the intermediate group: hardly any use of other orders than the Standard Frisian order, but acceptance of those orders to a certain degree. Also, in the elicitation task a large number of cluster reductions were found in three-verb clusters (see chapters 7, 8), a phenomenon that would not have been found with a grammaticality judgment task alone. Therefore, it seems hard, possibly even inaccurate, to build a theory of language or a theory of linguistic behavior on only one source of data.

By using both methodologies this study was able to show some dissimilarities between data resulting from an acceptability judgment task and data from an elicitation task. The use of only one of these data sources would not have given a complete picture of the state of affairs in the Frisian verbal complex. The first recommendation - addressed to linguists - is therefore not to depend on only one source of linguistic data. Language use or language production data are costly to gather, but they give a more complete view of the linguistic phenomenon studied, in particular when combined with other data sources. The trend of relying more and more on huge sets of written data, for example in corpus linguistics, comes with great advantages, like the huge quantity of data that can be investigated, but there is also a downside. A linguistic study based solely on written texts can hardly give a reliable representation of the language use in a community or individual. This holds in particular for the study of a language like Frisian, which is much wider spoken than written.

The paradox of the norm

The second recommendation is related to the paradox of the norm, as elaborated in chapter 9. The paradox of the norm entails that both bringing the norm of Standard Frisian closer to spoken Frisian as well as keeping the norm at a distance from the spoken language may promote language change. Bringing the norm closer to the spoken language would decrease the typological distance between Frisian and Dutch, which could facilitate language change. Keeping the norm at a distance from the spoken language could reinforce linguistic insecurity and thus promote avoidance and ultimately language change. It is therefore recommended that policy makers and norm setters find a middle way between giving up on any standard and setting a too distant and '*geef*' norm.

10.3.2 Suggestions for future research

In addition to the more general recommendations that were made in the previous section, there are also some concrete suggestions for future research that follow from this study.

Degree of urbanization and presence of L2 Frisian speakers

The first suggestion for future research concerns the geographical factor. In this study the dialect region was taken as the factor to investigate a possible geographical effect on the variation in the Frisian verbal complex. In the apparent time no effect was found and the differences found in the real time study were difficult to interpret. The suggestion was made that areas with less L1 Frisian inhabitants are more likely to accept more variation (cf. chapter 9). This might be an indication that the variation is somehow related to (contact with) larger numbers of non L1 Frisian speakers. A similar idea was put forward by Ytsma (1995). He suggested that some changes in Frisian might occur through the introduction of new forms or new pronunciations by L2 speakers of Frisian, which were then adopted by L1 Frisian speakers. A possible relation between (contact with) more L1 Dutch speakers and/or more L2 Frisian speakers and language variation and change, is something that deserves investigation in future research. The Province of Fryslân regularly updates its maps on the numbers of L1 Frisian inhabitants per municipality. The merging of municipalities might lead to a loss of data points. Nevertheless, the use of these data, as well as the degree of urbanization of the different parts of the Frisian language area, could provide more insight in the geographical distribution of variants and the underlying factors that play a role in language variation and change.

Cluster reduction and avoidance

The phenomenon of cluster reduction, in which a two-verb cluster is produced in a three-verb condition, was elaborated upon in section 9.3.2. It would be interesting to investigate whether other types of elicitation experiments than the one used in this study would also generate these reduced verb clusters (either by simply omitting one of the verbs or by means of the creation of a subordinate clause). In some conditions, particularly those with a finite restructuring verb, the amount of cluster reductions was higher than the number of target responses. Different questions regarding cluster reductions deserve further research:

- the differences in the number of reduced clusters between different verb cluster types;
- the fact that reduced clusters show less inversion than two-verb clusters in the two-verb conditions.

It is also worth investigating whether or not this can be related to avoidance. Avoidance can be defined as 'the choice to use one language feature over another in order to avoid producing an error' (Kleinmann, 1977). Assessing avoidance is complicated, because there have to be more than one solution that are all more or less acceptable. If these cluster reductions are a strategy to avoid producing an error, this could indicate that the production of three-verb clusters is difficult, or it could be an indication of linguistic insecurity. Avoidance can be conscious or intentional, but also subconscious or incidental. It would be interesting to investigate whether these types of three-verb clusters still occur in spontaneous speech. A lack of three-verb clusters in spontaneous speech, or a lack of a certain type of three-verb clusters, could cause a lack of input for language learners and could cause incremental acquisition and/or linguistic insecurity. In other words, it would be interesting to further investigate the phenomenon of cluster reduction.

Frequency of and in the verbal complex

A somewhat related suggestion for further research concerns several issues regarding the frequency of verb clusters in general and of certain verb cluster types. Spontaneous speech would provide the most reliable data to investigate frequencies of verbs and verb clusters in the spoken language, which is particularly valuable in the case of Frisian. The most interesting issues for further research regarding frequency of and in verb clusters would concern:

- the frequency of clusters with three or more verbs compared to that of two-verb clusters;
- the frequency of the different types of verb clusters (e.g. RAP, RRI, ARI);

- the frequency of different types of verbs: restructuring verbs, modal verbs, perception verbs, etcetera;
- differences in frequencies between different age groups;
- frequency of verb clusters in child-directed speech.

It might be useful to investigate a written corpus first, in order to develop a better sense of the contexts where (longer) verb clusters are used. It would also be interesting to investigate whether the length of verb clusters (i.e. the number of verbs in the verb cluster) has increased over time, possibly triggering more variation in the ordering of the verbs (cf. Coupé 2015).

There is a need for dense data on language development at the individual level. Clusters may not be combinations of elements, but function as larger multiword units in the language system of the speaker. That takes away the idea of rules being applied to the development, storage and retrieval of fixed multiword units in the analyses. Seeing clusters as multiword units changes the perspective on such constructions. From a usage-based perspective what matters is the frequency and context of use of these elements. In addition, there is a need for research on other constructions and corpus-based analysis of their patterns of use. An interesting question is to what extent 'typical' (and therefore overrated?) clusters like the verb clusters in Frisian are different in terms of processing from other fixed expressions (De Bot & Bülow 2020).

Frisian, Dutch and a regiolect?

The comparison of our data with the ordering possibilities in the verbal complex of Standard Dutch and of regional varieties triggers the question whether bilingual Frisian-Dutch speakers have different preferences of verb ordering in Frisian and Dutch. The suggestion for furure research therefore is to compare the ordering of the verbal complex in Dutch and Frisian and/or a regional variety in the same speakers. This could also give more clarification on the possible existence of a regional variety, or regiolect, at least regaring the verbal complex.

Hoppenbrouwers (1990) introduced the term regiolect, which refers to a variety 'in between' the dialect and the standard language. Regiolects emerge when speakers of a given dialect develop a shared variety that is typically showing elements of the standard language and fewer 'extreme' (i.e. deviating from the standard language) elements of the dialect. According to Hoppenbrouwers, educational institutions and regional schools play a crucial role in the development of regiolects. It is not clear to what extent regiolects can explain the changes reported on for Frisian. To elucidate this, more detailed analyses would be needed using corpora of spoken dialects and standard language to find relations between the two, also in such educational settings

Apart from these more elaborate suggestions, it would also be great to welcome more research on other multi-verb constructions like the third construction or on the questions whether semantic effects could play a role in the ordering of different verbs in the verb cluster or on the realization or avoidance of a larger verb cluster. Finally, it would be great to see more work on syntactic variation and change and the role of social and linguistic factors involved in a variationist approach. This study may be seen as one contribution to that end.

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List of abbreviations

ANS	Algemene Nederlandse Spraakkunst
AP	Finite Auxiliary Verb + Participial Main Verb
ARI	Finite Auxiliary Verb + Participial/Infinitival Restructuring Verb + Infinitival Aux
Aux	Auxiliary (verb)
CGN	Corpus Gesproken Nederlands (Corpus Spoken Dutch)
clmm	cumulative link mixed model
DU	Dutch
fin	finite
FR	Frisian
IF	Interference Frisian
Inf	Infinitive (verb)
IPP	Infinitivus pro Participio
L1	First Language
L2	Second Language
Mod	Modal (verb)
Part	Participle (verb)
Pl	Plural
RAP	Finite Restructuring Verb + Infinitival Auxiliary Verb + Participial Main Verb
RI	Finite Restructuring Verb + Infinitival Main Verb
RRI	Finite Restructuring Verb + Infinitival Restructuring Verb + Infinitival Main Verb
RV	Restructuring Verb
SAND	Syntactische Atlas Nederlandse Dialecten (Syntactic Atlas of Dutch Dialects)
SES	Socio-economic Status
SF	Standard Frisian
Sg	Singular
V2	Verb Second
V Aux	Auxiliary Verb
V Main	Main Verb
YoT	Year of Test

Appendices

I Internet query word order variation Dutch
II Verb cluster elicitation task
III Acceptability judgment task
IV Can-do scales
V Questionnaire on the use of Frisian
VI Factor analysis
VII CLMM script and tables
VIII Individual order combinations judgment task
IX Individual order combinations elicitation task

I Internet query word order variation in Dutch verb clusters

In 2006 a simple Internet search was carried out into Dutch two-verb clusters in order to investigate whether the strong preference for 1-2 orders as claimed for Standard Dutch also held on the more informal Internet. Different verbal constructions in different orders were searched making use of G*oogle*'s search engine, searching for the exact phrase in the entry field in the tables below by making use of double quotation marks. This investigation was replicated in 2016 to check on any shift in frequency. The tables below demonstrate the search entries and the search results in number of hits per order. For each entry the year of search is indicated as well as the percentage of 1-2 orders.

Entries AP **Aux (Fin) + V main (Part)**	**Year**	**2-1 order**	**1-2 order**	**% 1-2 order**
niet getrouwd ben (2-1) vs. niet ben getrouwd (1-2)	2006	1460	88	5,7
	2016	5230	6900	56,9
niet getrouwd bent (2-1) vs niet bent getrouwd (1-2)	2006	691	447	39,3
	2016	16900	1340	7,3
niet getrouwd is (2-1) vs niet is getrouwd (1-2)	2006	822	1370	62,5
	2016	14900	16600	52,7
gelukkig getrouwd ben (2-1) vs gelukkig ben getrouwd (1-2)	2006	468	12	2,5
	2016	2120	2780	56,7
gelukkig getrouwd bent (2-1) vs gelukkig bent getrouwd (1-2)	2006	166	25	13,1
	2016	1930	351	15,4
gelukkig getrouwd is (2-1) vs gelukkig is getrouwd (1-2)	2006	500	1050	67,7
	2016	6720	25600	79,2
gelukkig getrouwd zijn (2-1) vs gelukkig zijn getrouwd (1-2)	2006	488	78	13,8
	2016	6590	7600	53,6
gelukkig getrouwd was (2-1) vs gelukkig was getrouwd (1-2)	2006	179	4	2,2
	2016	6610	5730	46,4
gelukkig getrouwd waren (2-1) vs gelukkig waren getrouwd (1-2)	2006	61	2	3,2
	2016	2730	904	24,9

Table A.1 Google hits for different orders in AP clusters, with different forms of the same finite verb (October 13, 2006 and May 3, 2016).

Entries AP Aux (Fin) + V main (Part)	Year	2-1 order	1-2 order	% 1-2 order
helemaal gelezen heb (2-1) vs helemaal heb gelezen (1-2)	2006	304	272	47,2
	2016	4980	4450	47,2
helemaal gelezen had (2-1) vs helemaal had gelezen (1-2)	2006	61	118	65,9
	2016	766	510	40,0
niet gezien heb (2-1) vs niet heb gezien (1-2)	2006	55100	27300	33,1
	2016	84800	58300	40,7
niet gelezen heb (2-1) vs niet heb gelezen (1-2)	2006	13900	9710	41,1
	2016	22100	21000	48,7
niet gehoord heb (2-1) vs niet heb gehoord (1-2)	2006	914	627	40,7
	2016	13400	19200	58,9
niet gelopen heb (2-1) vs niet heb gelopen (1-2)	2006	169	319	65,4
	2016	6750	5710	45,9

Table A.2 Google hits for different orders in AP clusters (October 13, 2006 and May 3, 2016).

Entries MI Mod (Fin) + V main (Inf)	Year	2-1 order	1-2 order	% 1-2 order
niet zien kan (2-1) vs niet kan zien (1-2)	2006	15600	105000	87,1
	2016	18400	279000	93,8
niet horen kan (2-1) vs niet kan horen (1-2)	2006	531	15300	96,4
	2016	2810	32200	92,0
niet lopen kan (2-1) vs niet kan lopen (1-2)	2006	285	12500	97,8
	2016	6540	60300	90,2
niet zien wil (2-1) vs niet wil zien (1-2)	2006	3890	39500	91,0
	2016	8120	128000	94,0
niet trouwen wil (2-1) vs niet wil trouwen (1-2)	2006	9	533	98,3
	2016	1630	8350	83,7

Table A3 Google hits for different orders in RI clusters (October 13, 2006 and May 3, 2016).

In the table on two-verb clusters with a modal restructuring verb three of the entries show a decreased percentage for the word order 1-2, contrary to what one would expect. Some of the entries had a very small number of hits in 2006, therefore it remains difficult to draw any hard conclusions on the basis of these examples. In all RI clusters there is a strong preference for the 1-2 order. Nevertheless, a number of entries give a substantial amount of hits for the 2-1 order as well, therefore the 2-1 order will be considered grammatical in Dutch.

II Verb cluster elicitation task

AP condition

1. Geart hat hiel lang mei Siemen belle
2. Rixt hat juster de doarren ferve
3. It jonkje hie al twa koekjes pakt
4. Heit hat de kopkes ôfwosken
5. Reinder hat in blomke tekene
6. Sytse hie syn húswurk net leard
7. Piter is foar it eksamen slagge
8. De foarstelling is om acht oere begûn
9. Us mem is op har achtste nei Dútslân ferhuze

RI condition

10. Dat lytse berntsje kin noch net prate
11. Gerbrich kin sûnder hannen fytse
12. Nelly kin hiel hurd drave
13. Mabel mei fan Peter net lige
14. Do meist net mei dy âlde faas smite
15. Dan meie wy us kadootsje sykje
16. Hy lit syn bân by de fytsmakker plakke
17. Sy lit dy âlde skuon wer meitsje
18. Douwe lit syn hier troch syn suske knippe

RAP condition

19. De regisseur sil it boek ek wol lêzen hawwe
20. Ik soe dat koekje net opiten hawwe
21. Sy soe har in ûngelok skrokken wêze
22. Sy moat ek yn Snits wenne hawwe
23. Us juf moat in gleske tefolle dronken hawwe
24. Sy moat juster let op bêd kommen wêze
25. Hy wol dat op syn manier dien hawwe
26. Sy wol al har skuon hjoed noch poetst hawwe

27. Anneke woe ek wol earder kommen wêze

RRI condition

28. Elbrich sil Harm net sjen kinne by de sleat
29. Rinse soe dy film net op fideo opnimme meie
30. Hy sil syn koplampen by de garaazje meitsje litte
31. Beukers moatte hjoeddedei ek al op de computer leare kinne
32. Troch dy reade kaart moat Foppe no net spylje meie
33. Gurbe moat it rút op eigen kosten meitsje litte
34. Dy akrobaat wol hiel heech springe kinne
35. Marten wol sûnder plankje swimme meie
36. Tine wol har neilen troch in manikuere knippe litte

ARI condition

37. Rintsje hat syn p.r. net ferbetterje kinnen
38. Maaike hat it gedicht net sels skriuwe kinnen
39. Ik hie dat op sa'n manier ek wol dwaan kinnen
40. Heit hie dy blommen wol wat wetter jaan meien
41. Do hiest de tiid wol wat earder trochjaan meien
42. Dat hie Hotze wol lûdop sizze meien
43. Dit lekken is hjir troch in jonkje lizze litten
44. Dit boek is hjir troch Klaas lizze litten
45. Dizze teddybear is hjir troch dat bern lizze litten

ARI condition with perception verb

46. Beppe hat omke Pyt in iel fangen sjoen
47. Us learaar hat dy juster in sigaar opstekken sjoen
48. Sy hawwe Robby Williams yn Ahoy optreden sjoen
49. Wytse hat Jeltsje in ferske sjongen heard
50. Wy hawwe dy plysjeman razen heard
51. Wy hawwe de buorlju oer de pastoar praten heard
52. Durk is yn de tredde klas net sitten bleaun
53. De slûge proefpersoan is te lang op bêd lizzen bleaun

54. Jelle is mei de bestelling by de bar stean bleaun

Filler sentences third construction

55. De presintator miende in moaie blondine oankundige te hawwen
56. Tsjerk miende in grutte auto wûn te hawwen
57. Pake miende foarich jier al 80 wurden te wêzen
58. Dy bear skynt in fersoarger opiten te hawwen
59. Dy taalkundige skynt hiele rare sintsjes betocht te hawwen
60. De film skynt in kertier lyn begûn te wêzen
61. Hy tocht de Alvestêdetocht wûn te hawwen
62. De spits tocht in doelpunt makke te hawwen
63. Hy tocht yn ien kear foar it EHBO-diploma slagge te wêzen
64. Dy frou mient samar fuortrinne te kinnen
65. Hindrik miende sûnder plankje swimme te meien
66. Hy miende it famke lekker sliepe te litten
67. Jan skynt ek sûnder hannen fytse te kinnen
68. Bush skynt ek sûnder mandaat oanfalle te meien
69. Hy skynt syn bern mei dy grutte hûn boartsje te litten
70. Atze tinkt syn broek sels wol ynkoartsje te kinnen
71. Jurjen tinkt yn 'e hûs ek sigaren roke te meien
72. De coach tocht syn team foar straf hurddrave te litten

Filler sentences single verb

73. Jan rint sneintemiddeis altyd in blokje om
74. Jitske freget op har jierdei in nije fyts
75. Dat bern boartet mei in grutte reade bal
76. Sytske har heit fûn yn '94 it earste ljipaai
77. Dokkum is ek ien fan de âlve stêden
78. Ik gean moarn nei myn âld-omke ta
79. Us buorman fervet syn hûs grien
80. Heit en mem dogge freeds tegearre de boadskippen

81. De molkkarre komt net mear yn dit doarp
82. Sake jout syn freondin in reade roas
83. Dy plysjeman liket my in bytsje sleau
84. Wy gean nei Frankryk op fakânsje
85. Hylpen is ien fan de lytste stedsjes
86. Tys bliuwt in frjemde jonge
87. Syn mem rint alle dagen troch it park
88. Markus giet mei it pakje nei it postkantoar
89. Sy hawwe altyd wille tegearre
90. Wy sille moarn nei it Ryksmuseum yn Amsterdam
91. Do keapest gjin boeken yn de boekewike
92. It iten yn Ingelân liket my net sa lekker
93. De sinne skynt de hiele dei al
94. De kat krûpt ûnder de bank
95. Hy is in grut fan fan Jamai
96. Jaap keatst al sûnt syn fyfde
97. Wy gean moarn nei it Midwinterfeest
98. Jildou boartet altyd mei har iten
99. Hy is de âldste fan syn klas
100. Alde tsiis rûkt soms net sa lekker

III Acceptability judgment task

Item numbers per verb type and condition

AP clusters	
AP 21	item7, item67, item96, item109, item140, item146
AP 12	item38, item50, item60, item74, item121, item137
RI clusters	
MI 21	item42, item55, item61, item80, item135, item145
MI 12	item23, item24, item28, item39, item87, item107
RAP clusters	
RAP 321	item3, item10, item40, item54, item64, item65, item68, item78, item106, item108, item111, item129, item130, item148, item149
RAP 123	item17, item58, item100
RAP 312	item103, item113, item43
RAP 132	item4, item19, item115
RAP 231	item128, item105, item52
RAP 213	item30, item75, item118
RRI clusters	
RRI 321	item6, item18, item29, item31, item47, item51, item63, item69, item77, item88, item114, item117, item120, item127, item140
RRI 123	item8, item94, item138
RRI 312	item15, item132, item136
RRI 132	item45, item66, item125
RRI 231	item1, item48, item126
RRI 213	item22, item59, item139
ARI clusters	
ARI 321	item2, item9, item12, item14, item16, item26, item34, item35, item36, item37, item41, item44, item46, item53, item62, item70, item71, item76, item84, item85, item86, item89, item91, item95, item98, item101, item102, item110, item116, item119, item122, item131, item141
ARI 123+	item73, item97, item134
ARI 312-	item56, item83, item92
ARI 132-	item20, item99, item150
ARI 231+	item25, item32, item49
ARI 213+	item21, item79, item104

ARI 321+ item13, item72, item90
ARI 312+ item5, item82, item142
ARI 132+ item11, item33, item143
ARI123-item57, item133, item147
ARI 231- item81, item112, item123
ARI 213- item27, item93, item124

1. Sy fertsjinje mei har beiden sa folle dat se dat hûske wol net meie hiere sille
2. Hy fynt datsto dat wol wat earder trochjaan meien hiest
3. De froulju binne sa bliid dat sy de wedstriid wol wûn hawwe moatte
4. Hy sei dat Gerard Joling ek op dit poadium moat songen hawwe
5. Thea makket har ferkering út omdat se Theo mei in oar tútsjen hat sjen
6. De dirigent fynt dat de fioelen dit stik wol spylje kinne moatte
7. Wy snapten it net omdat de foarstelling al om acht oere begûn wie
8. Hy giet moarn nei de garaazje omdat er syn koplampen sil litte meitsje
9. Juf sei dat se Klaas en Niko praten heard hie
10. It wie sa drok dat ik him sûnder tagongsbewiis noait sjoen hawwe soe
11. Syn heit is net in goed foarbyld omdat dy sels ek twa kear is sitten bliuwe
12. Klaske tocht dat se sûnder te trainen net winne kinnen hie
13. Hylke sliepte sa swier dat er it net tongerjen hearre hat
14. Dy man tinkt dat er my in fyts stellen sjoen hat
15. Gurbe sjocht sa skurf omdat er it rút op eigen kosten meitsje moat litte
16. Beppe sei dat se omke Pyt in iel fangen sjoen hie
17. Sy tocht dat sy har ek in ûngelok soe wêze skrokken
18. Sy sit troch har brutsen foet yn in rolstoel en fynt it ferfelend dat se har triuwe litte moat
19. De fytsmakker sei dat er de bân moarn soe makke hawwe
20. Ik tink dat ik him juster op de Grutte Merk ha fytsen sjoen
21. Johan fûn dat Patrick dy goal wol meie hie meitsje
22. Syn ankel is sa bot ferstûke dat er it in moanne litte rêste moat
23. Gerbrich is stoer omdat sy no ek sûnder hannen kin fytse
24. Ik hoopje dat it gau tsjuster wurdt omdat wy dan ús skoech meie sette
25. De fytsmakker hat it sa drok dat er dyn bân noch net kinne plakke hat
26. Syn mem is sa bliid dat Durk dit jier net sitten bleaun is
27. Omdat Henk my yn de stêd sjoen hat fytsen, tinkt er dat ik in kadootsje kocht haw
28. Moatst fan dy âlde faas ôfbliuwe omdat we dêr net mei meie boartsje
29. Dat famke docht hiel goed har bêst by gymnastyk omdat sy ek trampolinespringe meie wol
30. Geeske sei dat se de wedstriid sûnder gelokspopke hawwe soe ferlern
31. Dy akrobaat oefent de hiele dei omdat er hiel heech springe kinne wol
32. Gelske wie fertrjitlik omdat se ús oer har hearre praten hat
33. Ik tink dat er dat sels wol hie betinke kinne
34. De arbiter miende dat er de spiler slaan sjoen hie

35. Hy koe himsels wol foar de kop slaan dat er him troch sa'n kwaksalver behannelje litten hie
36. Mem seit dat heit dy pannen wol ôfwaskje meien hie
37. De bassist wie yn de ferûnderstelling dat er in solo spylje meien hie
38. Sy tochten dat hy ek thús wie bleaun
39. Hy seit dat er sûnder bril net goed kin sjen
40. De learaar sei domwei dat se dat al lang begrepen hawwe moast
41. De buorman skamme him omdat wy him hiel lûd laitsjen heard hienen
42. Nelly hat in medaille wûn omdat sy hiel hurd drave kin
43. Hy besiket it noch in kear omdat er it op syn eigen manier dien wol hawwe
44. Dy jonge seit dat hy dat wol yn ien dei fervje kinnen hie
45. Ik fyn dat elke mem sûpengroattenbrij moat meitsje kinne
46. De soapstjêr sei dat se troch har freonen sitte litten wie
47. It hûs wie yn sa'n minne steat dat se it troch in prof fervje litte moasten
48. Sy oefent op de computer omdat se fan har suster kinne winne wol
49. Witte jim troch wa't dit boek hjir litte lizze is?
50. Sinteklaas wie lulk op Swarte Pyt omdat er it ferkearde kado hie kocht
51. Elbrich tocht dat Harm har by de sleat net sjen kinne soe
52. Ik tink dat ik sels ek flink wêze skrokken soe
53. Ik leau net dat dy rare foto hjir troch dat lytse jonkje lizze litten is
54. Ik tink dat ik dat oars dien hawwe soe
55. De brulloft giet net troch omdat Mabel fan Jan-Peter net lige mei
56. Ik tink dat dy slûge proefpersoan te lang op bêd lizzen is bleaun
57. Gurbe wie fertrjitlik omdat er net oan de maraton hie meien meidwaan
58. Wytse seit dat sy oant har tredde yn Snits moat hawwe wenne
59. Dit is bûten de beboude kom, dat men soe hjir 80 meie moatte ride
60. It jonkje is ûndogens omdat er al twa koekjes hat pakt
61. De fytsmakker docht syn wurk sa goed dat Jan syn bân graach troch him plakke lit
62. Bert wie bliid dat master him net spiken sjoen hie
63. De sopraan tocht dat se noch wol in toantsje heger sjonge kinne soe
64. Ik tink dat Harry Potter soks ek wol meimakke hawwe woe
65. Us juf waard oanholden omdat sy in gleske tefolle dronken hawwe moat
66. It famke seurde by har mem omdat se allinnich yn it wetter woe springe meie
67. Hinke sei dat se dat fan hûs út oars wend wie
68. Ik tink dat er leaver net sa lang wachte hawwe woe
69. De atleet wol wer nei de takomst sjen omdat er yn it nije sikehûs revalidearje meie sil
70. Douwe hat in pet op omdat er syn hier troch syn suske knippe litten hat
71. Dy mem tinkt dat dizze teddybear hjir troch har soan lizze litten is
72. Hotze is te let omdat er te lang op bêd lizzen bliuwe is
73. Ik tink dat dat boek hjir troch Klaas is litte lizze
74. It is in wûnder dat Piter foar it eksamen is slagge
75. Ik hearde fia-fia dat sy oant djip yn de nacht wêze moat bleaun
76. It publyk skrok omdat de keeper samar stil lizzen bleaun wie
77. Ik fyn dat Foppe nei dizze goede ynfalbeurt de kommende wedstriid begjinne meie moat
78. Anneke sei dat sy wol earder kommen wêze woe

79. Hy sei dat er my yn de trein sjen hie sitten
80. Jan-Peter fynt dat wy net om it Keninklik Hûs laitsje meie
81. Omdat er syn teloarstelling net kinnen ferbergje hat, is er nei hûs gien
82. Kees kaam bliid út skoalle omdat er it skoalboerd skjinfeie hie meie
83. Wytse seit dat er Jeltsje in ferske sjongen hat heard
84. Hy stuts oer omdat er dy auto net oankommen heard hie
85. De heit wie grutsk omdat syn dochter dat stik sûnder missers spylje kinnen hie
86. De dosinte romme it it skrift op dat troch ien fan har learlingen lizze litten wie
87. Hy liket my bazich omdat er har altyd op lit belje
88. Ik fyn dat sy nei it jaan fan it goede foarbyld sels ek op ús help rekkenje meie moat
89. Pake sei dat hy neat oars as boer wurde kinnen hie
90. Omdat Jan net mei de Lego boartsje meie hie, tocht er dat syn neef him stom fûn
91. Rinskje ferklapte dat wy de buorlju oer de pastoar praten heard hienen
92. Ik tink dat hy dat op sa'n manier ek wol dwaan hie kinnen
93. Jaap is sa bliid dat er by George op besite mocht hat komme
94. Marten docht hiel goed syn bêst omdat er ek sûnder plankje wol meie swimme
95. As er kampioen wurde wol, tink ik dat er dizze wedstriid wol wûn meien hie
96. Jehannes is bliid omdat er in hiel grut kado krigen hat
97. Maaike sei dat se sûnder dy dichterskursus dat gedicht net hie kinne skriuwe
98. Sjoukje tocht dat se dy broek fan har mem net keapje meien hie
99. Mem wie lulk op heit omdat er it ljocht noch net hie meitsje litten
100. Sy giet net mei nei bûten omdat sy har skuon hjoed noch wol hawwe poetst
101. De honkballer sei dat er dy bal troch de hurde wyn net fange kinnen hie
102. Hiske fertelde dat se him juster noch yn it park rinnen sjoen hie
103. It koekje seach der sa âld út dat ik it net opiten soe hawwe
104. Durk fertelde dat hy noch oant nei trijen op it feest bliuwe wie hingjen
105. Ik tink dat er leaver Kolonisten hawwe dien woe
106. Heit fertelde dat mem hiel bot skrokken wêze moat
107. Sy is fertrjitlik omdat se net yn it grutte koar mei sjonge
108. De buorlju seinen dat sy ferhuze wêze soe
109. Reinder sei dat er in blomke tekene hie
110. Pier doart net nei hûs ta te gean omdat er dit jier alwer sitten bleaun is
111. De museumdirekteur fertelde dat Rembrandt dit portret fergees tekene hawwe moat
112. Dy fûgel fljocht de beam yn omdat er syn wyfke heard fluitsjen hat
113. Sy is net oanwêzich omdat se juster te let op bêd kommen moat wêze
114. Henk seit dat er syn freondin kieze litte woe
115. Hy fertelde dat er leaver nei Stiens woe ferhuze wêze yn stee fan nei Ljouwert
116. Rintsje mei net nei it EK omdat er syn p.r. net ferbetterje kinnen hat
117. Japke seit dat se har boeken net wer lizze litte sil
118. Kees tocht dat ik ek in stikje fan syn selsbakte taart hawwe woe preaun
119. Ik tink dat Jelle mei de bestelling by de bar stean bleaun is
120. Ik tink dat er straft wurdt omdat er dêr wol net mei smite meie sil
121. Master seach frjemd op omdat Sytse syn húswurk hie makke
122. Gosse sei dat er syn broer wol sterkere ferhalen fertellen heard hie
123. Sy woe witte troch wa't dat lekken hjir litten lizze is
124. Sy beweart dat se him rare dingen heard hat sizzen

125. Hy moat grou jild fertsjinje omdat hy syn hûs oernij sil fervje litte
126. Omdat ik dêr neat brûkbers oer kinne soe sizze, hat se it oan Pyt syn broer frege
127. Tine is oan it sparjen omdat sy har neilen troch in manikuere knippe litte wol
128. Hy sei dat er in protte húswurk hawwe makke moat
129. Ik tink dat de regisseur it boek ek wol lêzen hawwe sil
130. Hy sei dat hy ek graach meidien hawwe woe
131. Jan hie de wedstriid wûn omdat hy it langst yn de ringen hingjen bleaun wie
132. It famke sjocht goed nei de akrobaat omdat sy ek sa heech springe wol kinne
133. Ik bin bang dat sy by de ôfdieling berneboeken is bleaun stean
134. Sy seinen dat se Robbie Williams yn Ahoi hiene sjen optreden
135. De mem is sa foarsichtich omdat dat lytse berntsje noch net swimme kin
136. Rinse gie mei syn grutte broer nei de fideoteek omdat hy dy film sels noch net hiere soe meie
137. Heit is lulk omdat wy de kopkes net hawwe ôfwosken
138. Ik fyn it frjemd dat beukers hjoeddedei ek al op de computer moatte kinne leare
139. Hy hat de wedstriid ferlern, omdat er har foarút litte woe rinne
140. De húsbaas is lulk omdat Rixt de doarren grien ferve hat
141. Us learaar seit dat er dy juster in sigaar opstekken sjoen hat
142. De wethâlders binne lulk op de boargemaster omdat er har de rommel opromje hat litte
143. Ik wit dat myn stift hjir is omdat ik him krekt noch haw lizzen sjen
144. Se sei dat se op sa'n fleurige dei ek wol laitsje kinne woe
145. Har freondinnen laitsje har út omdat se dy âlde skuon wer meitsje lit
146. Geart seit dat er juster mei Siemen belle hat
147. Ik fyn dat Ids Postma te âld wurden is omdat er syn p.r. al jierren net hat kinnen ferbetterje
148. Hy sei dat er eins dokter wurden wêze woe
149. Hy hie ferwachte dat Hindrik allinne nei hûs rûn wêze soe
150. De jonge alt is lulk op de dirigent omdat sy dy solo net hat sjonge meien

IV Can-do scales

LUISTEREN
1. Ik begrijp de grote lijn en de hoofdpunten van lessen, lezingen en presentaties.
2. Ik kan de meeste lezingen, discussies en debatten relatief gemakkelijk volgen.
3. Ik kan gesprekken en discussies tussen moedertaalsprekers met gemak begrijpen.
4. Ik begrijp radio- en tv-documentaires, praatprogramma's interviews en de meeste films.
5. Ik begrijp berichten en mededelingen ook als de kwaliteit van de omroepinstallatie slecht is of als er veel lawaai is.
6. Ik begrijp de aanwijzingen van telefonischecomputers.
7. Ik kan in het algemeen de hoofdpunten begrijpen van gesprekken van mensen om me heen.

LEZEN
1. Ik kan brieven die te maken hebben met mijn interessegebied of vakterrein lezen en snel de belangrijkste punten begrijpen.
2. Ik begrijp de belangrijkste punten in eenvoudige artikelen over bekende onderwerpen.
3. Ik kan complexe zakelijke correspondentie begrijpen.
4. Ik kan in langere teksten de informatie vinden die ik nodig heb.
5. Ik kan informatie vinden in korte teksten over alledaagse, vertrouwde onderwerpen.
6. Ik kan korte, eenvoudige brieven en kaarten begrijpen.
7. Ik kan artikelen en rapporten over actuele zaken begrijpen.
8. Ik kan allerlei soorten lange en complexe teksten in detail begrijpen.

GESPREKKEN VOEREN/SPREKEN
1. Ik kan telefoongesprekken voeren in minder voorspelbare omstandigheden.
2. Ik kan een eenvoudige presentatie, spreekbeurt of toespraak houden.
3. Ik kan een verhaal systematisch opbouwen en belangrijke punten en relevante details goed naar voren brengen.
4. Ik kan iets uitgebreid beschrijven of een lang verhaal vertellen.
5. Ik kan vlot en met gemak deelnemen aan informele gesprekken.
6. Ik kan een actieve bijdrage leveren aan vergaderingen en onderhandelingsgesprekken.
7. Ik kan problemen bespreken en onderhandelen over oplossingen.

SCHRIJVEN
1. Ik kan heel korte verslagen schrijven volgens een vaste indeling.

2. Ik kan een verslag of rapport schrijven waarin ik een argument uitwerk en voor- en nadelen van keuzes toelicht.
3. Ik kan met gemak corresponderen over allerlei zaken in persoonlijk leven en werk.
4. Ik kan korte e-mailberichten schrijven.
5. Ik kan een kort stukje schrijven over mijn
familie, mijn buurt of stad, mijn school, mijn werk.
6. Ik kan eenvoudige kaarten en berichten schrijven.
7. Ik kan heldere, goed gestructureerde verslagen en rapporten schrijven over complexe onderwerpen.
8. Ik kan adequate zakelijke brieven schrijven.
9. Ik kan eenvoudige zinnen opschrijven over mezelf en over andere mensen.
10. Ik kan persoonlijke brieven schrijven over allerlei dingen uit mijn dagelijks leven.

LUISTEREN
B1 wordt gecheckt door 6 en 7
B2 wordt gecheckt door 1 en 4
C1 wordt gecheckt door 2, 3, en 5

LEZEN
A2 wordt gecheckt door 5 en 6
B1 wordt gecheckt door 2 en 4
B2 wordt gecheckt door 1 en 7
C1 wordt gecheckt door 3 en 8

GESPREKKEN VOEREN/ SPREKEN
B1 wordt gecheckt door 2
B2 wordt gecheckt door 3, 5 en 7
C1 wordt gecheckt door 1, 4 en 6

SCHRIJVEN
A1 wordt gecheckt door 6 en 9
A2 wordt gecheckt door 4 en 5
B1 wordt gecheckt door 1 en 10
B2 wordt gecheckt door 2 en 8
C1 wordt gecheckt door 3 en 7

V Questionnaire on the use of Frisian

Spreek je/spreekt u met de volgende personen/in de volgende situaties Fries?
Je/U kunt een kruisje zetten in het voor jou/u van toepassing zijnde hokje. Als er situaties zijn die voor u/jou niet van toepassing zijn, zet dan een kruisje in de laatste kolom.

1= nooit, 2= zelden, 3=soms, 4= meestal, 5= altijd	1	2	3	4	5	n.v.t.
met uw evt. partner						
met uw evt. kinderen						
met uw evt. kleinkinderen						
met je/uw broers en/of zussen						
met je/uw vader						
met je/uw moeder						
tegen vrienden op straat						
met je beste vriend/vriendin						
met de buren						
tegen huisdieren						
als je op het station informatie vraagt						
tegen kleine kinderen in je familie						
tegen een onbekende juffrouw achter de kassa						
tegen mensen op je (sport)club of vereniging die alleen Nederlands spreken						
wanneer je aan iemand de weg vraagt						
tegen een aangetrouwd familielid dat alleen Nederlands spreekt						
wanneer je bij de dokter komt						
tegen een onbekende in de kroeg						
tegen je docent (of baas)						
tegen een beambte op het postkantoor						
lees je Friese kranten, tijdschriften of boeken?						
kijk je naar Friese tv-programma’s?						
luister je naar Friese radioprogramma’s?						

VI CLMM script and tables

CLMM script

R Script

```
###################################################################
# FUNCTION : analysis of syntactic perceptual measurements        #
# AUTHOR   : Wilbert Heeringa                                     #
# PROJECT  : the determiners of Frisian syntactic perception      #
# DATE     : 9 January 2017                                       #
# COPYRIGHT: Liefke Reitsma, Fryske Akademy, KNAW                 #
# NOTES    : SpeakerJudgmentInteger is response variable          #
###################################################################

# N.B.: size png's interaction plots: width: 700, height: 395

# install.packages("ordinal")
library(ordinal)
# install.packages("lsmeans")
library(lsmeans)
# install.packages("MuMIn")
library(MuMIn)
# install.packages("MASS")
library(MASS)

options(max.print=9999)

# Inlezen CSV tabel

Table <- read.csv("~/HD/FA/Verbs/DataJudgments.csv", na.strings =
"NA")
Table$IPP[Table$IPP=="0"] <- NA

# Kies types van random   variabelen

Table$SpeakerID             <-       as.factor
(Table$SpeakerID)
Table$ItemNr                <-       as.factor   (Table$ItemNr)

# Kies types van fixed    variabelen

Table$Gender           <-  as.factor         (Table$Gender)
Table$Age              <-  as.character      (Table$Age)
Table$AgeOriginal      <-  as.numeric        (Table$Age)
Table$Age              <-  scale(as.numeric  (Table$Age))
Table$AgeGroup         <-  as.factor         (Table$AgeGroup)
Table$PoR              <-  as.factor         (Table$PoR)
Table$Region           <-  as.factor         (Table$Region)
Table$OtherLang        <-  as.factor         (Table$OtherLang)
Table$Education        <-  as.factor         (Table$Education)
Table$Attitude         <-  as.factor         (Table$Attitude)
Table$YearofTest       <-  as.factor         (Table$YearofTest)
```

```
Table$NrOfVerbs           <-  as.factor        (Table$NrOfVerbs)
Table$TypeOfVerb          <-  as.factor        (Table$TypeOfVerb)
Table$OrderOfVerbs        <-  as.factor        (Table$OrderOfVerbs)
Table$IPP                 <-  as.factor        (Table$IPP)
Table$MeanProficiency     <-  scale(as.numeric (Table$MeanProficiency))
Table$WritingProficiency  <-  scale(as.numeric (Table$WritingProficiency))
Table$UseMedia            <-  scale(as.numeric (Table$UseMedia))
Table$UseSocial           <-  scale(as.numeric (Table$UseSocial))
Table$UsePublic           <-  scale(as.numeric (Table$UsePublic))
Table$UseDutch            <-  scale(as.numeric (Table$UseDutch))

# Kies type  van response variabele

Table$SpeakerJudgmentInteger  <-          factor
(Table$SpeakerJudgmentInteger, levels=c("1","2","3","4","5"),
ordered=TRUE)

# Weg te laten variabelen

Table$Age        <- NULL
Table$OtherLang <- NULL
Table$PoR        <- NULL
Table$Attitude  <- NULL
Table$NrOfVerbs <- NULL

# APPARENT TIME

# Model 01

Table01 <- subset(Table, ((TypeOfVerb=="ap") | (TypeOfVerb=="mi"))
& (YearofTest!="2016"))
Table01$IPP                <- NULL
Table01 <- na.omit(Table01)
print(nrow(Table01))

model01.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     TypeOfVerb:OrderOfVerbs+
                     MeanProficiency+
                     WritingProficiency+
                     UseMedia+
                     UseSocial+
                     UsePublic+
                     UseDutch+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table01)
```

```
options(na.action=na.fail)
models01 <- dredge(model01.clmm, trace=TRUE,
fixed=~AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup)
View(models01)

model01.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Education+
                     TypeOfVerb+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table01)

summary(model01.clmm)
print(lsmeans(model01.clmm, pairwise~AgeGroup,adjust="bonf"))
print(lsmeans(model01.clmm, pairwise~Education,adjust="bonf"))
print(lsmeans(model01.clmm, pairwise~TypeOfVerb,adjust="bonf"))
print(lsmeans(model01.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model01.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))

interaction.plot(x.factor     = Table01$AgeGroup,
                 trace.factor = factor(Table01$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table01$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

# Model 02

Table02 <- subset(Table, ((TypeOfVerb=="ap") | (TypeOfVerb=="mi"))
& (YearofTest!="2016"))
Table02$MeanProficiency    <- NULL
Table02$WritingProficiency <- NULL
Table02$IPP                <- NULL
Table02$UseMedia           <- NULL
Table02$UseSocial          <- NULL
Table02$UsePublic          <- NULL
Table02$UseDutch           <- NULL
Table02 <- na.omit(Table02)
print(nrow(Table02))

model02.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
```

```
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     TypeOfVerb:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table02)

options(na.action=na.fail)
models02 <- dredge(model02.clmm, trace=TRUE)
View(models02)

model02.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table02)

summary(model02.clmm)
print(lsmeans(model02.clmm, pairwise~AgeGroup,adjust="bonf"))
print(lsmeans(model02.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model02.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))

interaction.plot(x.factor     = Table02$AgeGroup,
                 trace.factor = factor(Table02$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table02$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

# Model 03

Table03 <- subset(Table, ((TypeOfVerb=="rap") |
(TypeOfVerb=="rri")) & (YearofTest!="2016"))
Table03$IPP                <- NULL
Table03 <- na.omit(Table03)
print(nrow(Table03))

model03.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
```

```
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     TypeOfVerb:OrderOfVerbs+
                     MeanProficiency+
                     WritingProficiency+
                     UseMedia+
                     UseSocial+
                     UsePublic+
                     UseDutch+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table03)

options(na.action=na.fail)
models03 <- dredge(model03.clmm, trace=TRUE,
fixed=~AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup)
View(models03)

model03.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Education+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table03)

summary(model03.clmm)
print(lsmeans(model03.clmm, pairwise~AgeGroup,adjust="bonf"))
print(lsmeans(model03.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model03.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))

interaction.plot(x.factor     = Table03$AgeGroup,
                 trace.factor = factor(Table03$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table03$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

interaction.plot(x.factor     = factor(Table03$OrderOfVerbs),
                 trace.factor = Table03$AgeGroup,
```

```
                 response     =
as.numeric(as.character(Table03$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Age group",
                 xtick        = TRUE)
mtext(side = 1, text = "Verb order", line = 4)

# Model 04

Table04 <- subset(Table, ((TypeOfVerb=="rap") |
(TypeOfVerb=="rri")) & (YearofTest!="2016"))
Table04$MeanProficiency    <- NULL
Table04$WritingProficiency <- NULL
Table04$IPP                <- NULL
Table04$UseMedia           <- NULL
Table04$UseSocial          <- NULL
Table04$UsePublic          <- NULL
Table04$UseDutch           <- NULL
Table04 <- na.omit(Table04)
print(nrow(Table04))

model04.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     TypeOfVerb:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table04)

options(na.action=na.fail)
models04 <- dredge(model04.clmm, trace=TRUE)
View(models04)

model04.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table04)

summary(model04.clmm)
print(lsmeans(model04.clmm, pairwise~AgeGroup,adjust="bonf"))
```

```
print(lsmeans(model04.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model04.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))

interaction.plot(x.factor     = Table04$AgeGroup,
                 trace.factor = factor(Table04$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table04$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

interaction.plot(x.factor     = factor(Table04$OrderOfVerbs),
                 trace.factor = Table04$AgeGroup,
                 response     =
as.numeric(as.character(Table04$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Age group",
                 xtick        = TRUE)
mtext(side = 1, text = "Verb order", line = 4)

# Model 05

Table05 <- subset(Table, (TypeOfVerb=="ari") &
(YearofTest!="2016"))
Table05 <- na.omit(Table05)
print(nrow(Table05))

model05.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
                     Region+
                     Education+
                     IPP+
                     IPP:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     IPP:OrderOfVerbs+
                     MeanProficiency+
                     WritingProficiency+
                     UseMedia+
                     UseSocial+
                     UsePublic+
```

```
                     UseDutch+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table05)

options(na.action=na.fail)
models05 <- dredge(model05.clmm, trace=TRUE,
fixed=~AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup)
View(models05)

model05.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Education+
                     IPP+
                     IPP:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     IPP:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table05)

summary(model05.clmm)
print(lsmeans(model05.clmm, pairwise~AgeGroup,adjust="bonf"))
print(lsmeans(model05.clmm, pairwise~Education,adjust="bonf"))
print(lsmeans(model05.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model05.clmm, pairwise~IPP:AgeGroup,adjust="bonf"))
print(lsmeans(model05.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))
print(lsmeans(model05.clmm,
pairwise~IPP:OrderOfVerbs,adjust="bonf"))

interaction.plot(x.factor     = Table05$AgeGroup,
                 trace.factor = factor(Table05$IPP),
                 response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "IPP",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

interaction.plot(x.factor     = factor(Table05$IPP),
                 trace.factor = Table05$AgeGroup,
                 response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
```

```
                  fixed        = T,
                  legend       = TRUE,
                  trace.label  = "Age group",
                  xtick        = TRUE)
mtext(side = 1, text = "IPP", line = 4)

interaction.plot(x.factor     = Table05$AgeGroup,
                  trace.factor = factor(Table05$OrderOfVerbs),
                  response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                  xlab         = "",
                  ylab         = "Judgement score",
                  type         = "b",
                  pch          = 1,
                  fixed        = T,
                  legend       = TRUE,
                  trace.label  = "Verb order",
                  xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

interaction.plot(x.factor     = factor(Table05$OrderOfVerbs),
                  trace.factor = Table05$AgeGroup,
                  response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                  xlab         = "",
                  ylab         = "Judgement score",
                  legend       = TRUE,
                  trace.label  = "Age group",
                  xtick        = TRUE)
mtext(side = 1, text = "Verb order", line = 4)

interaction.plot(x.factor     = factor(Table05$IPP),
                  trace.factor = factor(Table05$OrderOfVerbs),
                  response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                  xlab         = "",
                  ylab         = "Judgement score",
                  type         = "b",
                  pch          = 1,
                  fixed        = T,
                  legend       = TRUE,
                  trace.label  = "Verb Order",
                  xtick        = TRUE)
mtext(side = 1, text = "IPP", line = 4)

interaction.plot(x.factor     = factor(Table05$OrderOfVerbs),
                  trace.factor = factor(Table05$IPP),
                  response     =
as.numeric(as.character(Table05$SpeakerJudgmentInteger)),
                  xlab         = "",
                  ylab         = "Judgement score",
                  type         = "b",
                  pch          = 1,
                  fixed        = T,
```

```
                 legend       = TRUE,
                 trace.label  = "IPP",
                 xtick        = TRUE)
mtext(side = 1, text = "Verb order", line = 4)

# Model 06

Table06 <- subset(Table, (TypeOfVerb=="ari") &
(YearofTest!="2016"))
Table06$MeanProficiency    <- NULL
Table06$WritingProficiency <- NULL
Table06$UseMedia           <- NULL
Table06$UseSocial          <- NULL
Table06$UsePublic          <- NULL
Table06$UseDutch           <- NULL
Table06 <- na.omit(Table06)
print(nrow(Table06))

model06.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
                     Region+
                     Education+
                     IPP+
                     IPP:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     IPP:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table06)

options(na.action=na.fail)
models06 <- dredge(model06.clmm, trace=TRUE)
View(models06)

model06.clmm <- clmm(SpeakerJudgmentInteger~
                     AgeGroup+
                     Gender+
                     IPP+
                     IPP:AgeGroup+
                     OrderOfVerbs+
                     OrderOfVerbs:AgeGroup+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table06)

summary(model06.clmm)
print(lsmeans(model06.clmm, pairwise~AgeGroup,adjust="bonf"))
print(lsmeans(model06.clmm, pairwise~IPP,adjust="bonf"))
print(lsmeans(model06.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model06.clmm, pairwise~IPP:AgeGroup,adjust="bonf"))
print(lsmeans(model06.clmm,
pairwise~OrderOfVerbs:AgeGroup,adjust="bonf"))
```

```
interaction.plot(x.factor     = Table06$AgeGroup,
                 trace.factor = factor(Table06$IPP),
                 response     = 
as.numeric(as.character(Table06$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "IPP",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

interaction.plot(x.factor     = Table06$AgeGroup,
                 trace.factor = factor(Table06$OrderOfVerbs),
                 response     = 
as.numeric(as.character(Table06$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Age group", line = 4)

# REAL TIME

# Model 07

Table07 <- subset(Table, ((TypeOfVerb=="ap") | (TypeOfVerb=="mi"))
& (AgeGroup=="young"))
Table07$MeanProficiency    <- NULL
Table07$WritingProficiency <- NULL
Table07$IPP                <- NULL
Table07 <- na.omit(Table07)
print(nrow(Table07))

model07.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     TypeOfVerb:OrderOfVerbs+
                     UseMedia+
                     UseSocial+
                     UsePublic+
```

```
                     UseDutch+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table07)

options(na.action=na.fail)
models07 <- dredge(model07.clmm, trace=TRUE,
fixed=~Region+OrderOfVerbs)
View(models07)

model07.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Region+
                     TypeOfVerb+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table07)

summary(model07.clmm)
print(lsmeans(model07.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model07.clmm, pairwise~TypeOfVerb,adjust="bonf"))
print(lsmeans(model07.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model07.clmm,
pairwise~OrderOfVerbs:YearofTest,adjust="bonf"))

interaction.plot(x.factor     = factor(Table07$YearofTest),
                 trace.factor = factor(Table07$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table07$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)

# Model 08

Table08 <- subset(Table, ((TypeOfVerb=="ap") | (TypeOfVerb=="mi"))
& (AgeGroup=="young"))
Table08$MeanProficiency    <- NULL
Table08$WritingProficiency <- NULL
Table08$IPP                <- NULL
Table08$UseMedia           <- NULL
Table08$UseSocial          <- NULL
Table08$UsePublic          <- NULL
Table08$UseDutch           <- NULL
Table08 <- na.omit(Table08)
print(nrow(Table08))
```

```
model08.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     TypeOfVerb:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table08)

options(na.action=na.fail)
models08 <- dredge(model08.clmm, trace=TRUE)
View(models08)

model08.clmm <- clmm(SpeakerJudgmentInteger~
                     Region+
                     OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table08)

summary(model08.clmm)
print(lsmeans(model08.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model08.clmm, pairwise~OrderOfVerbs,adjust="bonf"))

# Model 09

Table09 <- subset(Table, ((TypeOfVerb=="rap") |
(TypeOfVerb=="rri")) & (AgeGroup=="young"))
Table09$MeanProficiency    <- NULL
Table09$WritingProficiency <- NULL
Table09$IPP                <- NULL
Table09 <- na.omit(Table09)
print(nrow(Table09))

model09.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     TypeOfVerb:OrderOfVerbs+
                     UseMedia+
                     UseSocial+
                     UsePublic+
                     UseDutch+
```

```
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table09)

options(na.action=na.fail)
models09 <- dredge(model09.clmm, trace=TRUE,
fixed=~Region+OrderOfVerbs)
View(models09)

model09.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Region+
                     TypeOfVerb+
                     TypeOfVerb:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table09)

summary(model09.clmm)
print(lsmeans(model09.clmm, pairwise~YearofTest,adjust="bonf"))
print(lsmeans(model09.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model09.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model09.clmm,
pairwise~TypeOfVerb:YearofTest,adjust="bonf"))
print(lsmeans(model09.clmm,
pairwise~OrderOfVerbs:YearofTest,adjust="bonf"))

interaction.plot(x.factor     = factor(Table09$YearofTest),
                 trace.factor = factor(Table09$TypeOfVerb),
                 response     =
as.numeric(as.character(Table09$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Type of verb",
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)

interaction.plot(x.factor     = factor(Table09$YearofTest),
                 trace.factor = factor(Table09$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table09$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
```

```
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)

# Model 10

Table10 <- subset(Table, ((TypeOfVerb=="rap") |
(TypeOfVerb=="rri")) & (AgeGroup=="young"))
Table10$MeanProficiency    <- NULL
Table10$WritingProficiency <- NULL
Table10$IPP                <- NULL
Table10$UseMedia           <- NULL
Table10$UseSocial          <- NULL
Table10$UsePublic          <- NULL
Table10$UseDutch           <- NULL
Table10 <- na.omit(Table10)
print(nrow(Table10))

model10.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     TypeOfVerb:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     TypeOfVerb:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table10)

options(na.action=na.fail)
models10 <- dredge(model10.clmm, trace=TRUE)
View(models10)

model10.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     TypeOfVerb+
                     OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table10)

summary(model10.clmm)
print(lsmeans(model10.clmm, pairwise~YearofTest,adjust="bonf"))
print(lsmeans(model10.clmm, pairwise~Gender,adjust="bonf"))
print(lsmeans(model10.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model10.clmm, pairwise~Education,adjust="bonf"))
print(lsmeans(model10.clmm, pairwise~TypeOfVerb,adjust="bonf"))
print(lsmeans(model10.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
```

```
# Model 11

Table11 <- subset(Table, (TypeOfVerb=="ari") & (AgeGroup=="young"))
Table11$MeanProficiency    <- NULL
Table11$WritingProficiency <- NULL
Table11 <- na.omit(Table11)
print(nrow(Table11))

model11.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     IPP+
                     IPP:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     IPP:OrderOfVerbs+
                     UseMedia+
                     UseSocial+
                     UsePublic+
                     UseDutch+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table11)

options(na.action=na.fail)
models11 <- dredge(model11.clmm, trace=TRUE,
fixed=~Region+OrderOfVerbs)
View(models11)

model11.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Region+
                     Education+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table11)

summary(model11.clmm)
print(lsmeans(model11.clmm, pairwise~YearofTest,adjust="bonf"))
print(lsmeans(model11.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model11.clmm, pairwise~Education,adjust="bonf"))
print(lsmeans(model11.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model11.clmm,
pairwise~OrderOfVerbs:YearofTest,adjust="bonf"))

interaction.plot(x.factor     = factor(Table11$YearofTest),
                 trace.factor = factor(Table11$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table11$SpeakerJudgmentInteger)),
                 xlab         = "",
```

```
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)

# Model 12

Table12 <- subset(Table, (TypeOfVerb=="ari") & (AgeGroup=="young"))
Table12$MeanProficiency    <- NULL
Table12$WritingProficiency <- NULL
Table12$UseMedia           <- NULL
Table12$UseSocial          <- NULL
Table12$UsePublic          <- NULL
Table12$UseDutch           <- NULL
Table12 <- na.omit(Table12)
print(nrow(Table12))

model12.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     Education+
                     IPP+
                     IPP:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     IPP:OrderOfVerbs+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table12)

options(na.action=na.fail)
models12 <- dredge(model12.clmm, trace=TRUE)
View(models12)

model12.clmm <- clmm(SpeakerJudgmentInteger~
                     YearofTest+
                     Gender+
                     Region+
                     IPP+
                     IPP:YearofTest+
                     OrderOfVerbs+
                     OrderOfVerbs:YearofTest+
                     (1|SpeakerID) +
                     (1|ItemNr),
                     data=Table12)

summary(model12.clmm)
print(lsmeans(model12.clmm, pairwise~YearofTest,adjust="bonf"))
print(lsmeans(model12.clmm, pairwise~Gender,adjust="bonf"))
```

```
print(lsmeans(model12.clmm, pairwise~Region,adjust="bonf"))
print(lsmeans(model12.clmm, pairwise~IPP,adjust="bonf"))
print(lsmeans(model12.clmm, pairwise~OrderOfVerbs,adjust="bonf"))
print(lsmeans(model12.clmm, pairwise~YearofTest:IPP,adjust="bonf"))
print(lsmeans(model12.clmm,
pairwise~OrderOfVerbs:YearofTest,adjust="bonf"))

interaction.plot(x.factor     = factor(Table12$YearofTest),
                 trace.factor = factor(Table12$IPP),
                 response     =
as.numeric(as.character(Table12$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "IPP",
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)

interaction.plot(x.factor     = factor(Table12$YearofTest),
                 trace.factor = factor(Table12$OrderOfVerbs),
                 response     =
as.numeric(as.character(Table12$SpeakerJudgmentInteger)),
                 xlab         = "",
                 ylab         = "Judgement score",
                 type         = "b",
                 pch          = 1,
                 fixed        = T,
                 legend       = TRUE,
                 trace.label  = "Verb order",
                 xtick        = TRUE)
mtext(side = 1, text = "Year of test", line = 4)
```

Tables CLMM

Results
Since the ratings were on an ordinal scale, we used the *clmm* function in the R package *ordinal*, which enabled us to perform a cumulative link mixed model (R Core Team 2015, CHRISTENSEN 2015).

Model selection is done by finding the AICc's of all 2^n -1 models where *n* is the number of predictor variables. Next the models are considered with AICc's that do not differ more than 2 from the 'best Model', i.e. the model with the smallest AICc, and the simplest model – i.e. the model with the smallest number of predictors- is chosen.

The response variable 'SpeakerJudgmentInteger' is defined as an ordered factor. Model fit was determined through the AICc value. We used the function *lsmeans* from the *lsmeans* package for multiple comparisons of factors with three or more levels and the Bonferroni method to adjust the *p*-values.

Overview of models

Model	TypeOfVerb	Age group	YearOfTest	Comparison	Proficiency & Use	IPP	Number of cases
1	ap,ri	y,m,e	04, 07, 05	apparent	yes	no	1079
2	ap,ri	y,m,e	04, 07, 05	apparent	no	no	2327
3	rap,rri	y,m,e	04, 07, 05	apparent	yes	no	2687
4	rap,rri	y,m,e	04, 07, 05	apparent	no	no	5783
5	ari	y,m,e	04, 07, 05	apparent	yes	yes	2953
6	ari	y,m,e	04, 07, 05	apparent	no	yes	6382
7	ap,ri	y	04	real	only use	no	1896
8	ap,ri	y	04, 16	real	no	no	3201
9	rap,rri	y	04	real	only use	no	4543
10	rap,rri	y	04, 16	real	no	no	7784
11	ari	y	04	real	only use	yes	5065
12	ari	y	04, 16	real	no	yes	8643

N.B.: in the models with light grey rows the proficiency variables were left out, in order to keep the 2016 participants in.

Model 1

1079 cases

Initial predictors:

AgeGroup+Gender+Region+Education+TypeOfVerb+TypeOfVerb:AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+TypeOfVerb:OrderOfVerbs+MeanProficiency+WritingProficiency+UseMedia+UseSocial+UsePublic+UseDutch

After model selection we get the following model:

AgeGroup+Education+TypeOfVerb+OrderOfVerbs+OrderOfVerbs:AgeGroup+(1|SpeakerID) +(1|ItemNr)

```
Coefficients:
                                Estimate Std. Error z value Pr(>|z|)
AgeGroupmiddle                    0.8149     0.4382   1.860   0.0629 .
AgeGroupyoung                     4.0806     0.4169   9.787   <2e-16
***
Education2                        0.8240     0.3777   2.182   0.0291 *
Education3                       -0.2930     0.5031  -0.582   0.5604
TypeOfVerbmi                     -0.3110     0.1417  -2.195   0.0281 *
OrderOfVerbs21                    6.0903     0.3111  19.579   <2e-16
***
AgeGroupmiddle:OrderOfVerbs21  -0.4402     0.3965  -1.110   0.2669
AgeGroupyoung:OrderOfVerbs21   -5.0220     0.3585 -14.010   <2e-16
***
```

```
$contrasts
 contrast         estimate        SE df z.ratio p.value
 elder - middle -0.5948258 0.4239137 NA  -1.403  0.4817
 elder - young  -1.5695860 0.3726452 NA  -4.212  0.0001
 middle - young -0.9747602 0.4514639 NA  -2.159  0.0925
```

```
$contrasts
 contrast   estimate        SE df z.ratio p.value
 1 - 2    -0.8240181 0.3777038 NA  -2.182  0.0874
 1 - 3     0.2929605 0.5031273 NA   0.582  1.0000
 2 - 3     1.1169785 0.4326751 NA   2.582  0.0295
```

```
$contrasts
 contrast  estimate        SE df z.ratio p.value
 ap - mi  0.3109931 0.1416664 NA   2.195  0.0281
```

```
$contrasts
 contrast estimate        SE df z.ratio p.value
 12 - 21  -4.26956 0.2071227 NA -20.614  <.0001
```

```
$contrasts
 contrast                  estimate        SE df z.ratio p.value
 12,elder - 21,elder   -6.0902980 0.3110648 NA -19.579  <.0001
 12,elder - 12,middle  -0.8149182 0.4381794 NA  -1.860  0.9437
 12,elder - 21,middle  -6.4650315 0.5307469 NA -12.181  <.0001
 12,elder - 12,young   -4.0806010 0.4169500 NA  -9.787  <.0001
 12,elder - 21,young   -5.1488691 0.4334626 NA -11.878  <.0001
 21,elder - 12,middle   5.2753798 0.4830227 NA  10.922  <.0001
 21,elder - 21,middle  -0.3747335 0.4959923 NA  -0.756  1.0000
 21,elder - 12,young    2.0096970 0.4104692 NA   4.896  <.0001
 21,elder - 21,young    0.9414290 0.4100320 NA   2.296  0.3251
 12,middle - 21,middle -5.6501134 0.3707292 NA -15.241  <.0001
 12,middle - 12,young  -3.2656828 0.4783780 NA  -6.827  <.0001
 12,middle - 21,young  -4.3339509 0.4920136 NA  -8.809  <.0001
 21,middle - 12,young   2.3844305 0.5143277 NA   4.636  0.0001
 21,middle - 21,young   1.3161625 0.5132175 NA   2.565  0.1550
 12,young - 21,young   -1.0682681 0.2147774 NA  -4.974  <.0001
```

Model 2

2327 cases

Initial predictors:

AgeGroup+Gender+Region+Education+TypeOfVerb+TypeOfVerb:AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+TypeOfVerb:OrderOfVerbs

After model selection we get the following model:

SpeakerJudgmentInteger~AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+(1|SpeakerID) +(1|ItemNr)

```
Coefficients:
                              Estimate Std. Error z value Pr(>|z|)    
AgeGroupmiddle                  1.5410     0.4444   3.467 0.000525 ***
AgeGroupyoung                   4.1755     0.3464  12.055  < 2e-16 ***
OrderOfVerbs21                  5.9855     0.2813  21.280  < 2e-16 ***
AgeGroupmiddle:OrderOfVerbs21  -1.2404     0.3522  -3.522 0.000429 ***
AgeGroupyoung:OrderOfVerbs21   -5.4682     0.2701 -20.248  < 2e-16 ***
```

```
$contrasts
 contrast        estimate        SE df z.ratio p.value
 elder - middle -0.9208635 0.4315559 NA  -2.134  0.0986
 elder - young  -1.4414590 0.3224447 NA  -4.470  <.0001
 middle - young -0.5205955 0.3675003 NA  -1.417  0.4698
```

```
$contrasts
 contrast  estimate        SE df z.ratio p.value
 12 - 21  -3.749307 0.1896665 NA -19.768  <.0001

$contrasts
 contrast                 estimate        SE df z.ratio p.value
 12,elder - 21,elder   -5.9854854 0.2812730 NA -21.280  <.0001
 12,elder - 12,middle  -1.5410487 0.4444269 NA  -3.467  0.0079
 12,elder - 21,middle  -6.2861637 0.5067782 NA -12.404  <.0001
 12,elder - 12,young   -4.1755419 0.3463837 NA -12.055  <.0001
 12,elder - 21,young   -4.6928616 0.3708105 NA -12.656  <.0001
 21,elder - 12,middle   4.4444367 0.4808019 NA   9.244  <.0001
 21,elder - 21,middle  -0.3006782 0.4868195 NA  -0.618  1.0000
 21,elder - 12,young    1.8099436 0.3740929 NA   4.838  <.0001
 21,elder - 21,young    1.2926238 0.3527380 NA   3.665  0.0037
 12,middle - 21,middle -4.7451149 0.3137303 NA -15.125  <.0001
 12,middle - 12,young  -2.6344931 0.3811173 NA  -6.913  <.0001
 12,middle - 21,young  -3.1518129 0.4028972 NA  -7.823  <.0001
 21,middle - 12,young   2.1106218 0.4322577 NA   4.883  <.0001
 21,middle - 21,young   1.5933021 0.4136231 NA   3.852  0.0018
 12,young - 21,young   -0.5173198 0.1638740 NA  -3.157  0.0239
```

Model 3

2687 cases

Initial predictors:

AgeGroup+Gender+Region+Education+TypeOfVerb+TypeOfVerb:AgeGroup+OrderOfVerbs+

OrderOfVerbs:AgeGroup+TypeOfVerb:OrderOfVerbs+MeanProficiency+WritingProficiency+

UseMedia+UseSocial+UsePublic+UseDutch+

After model selection we get the following model:

SpeakerJudgmentInteger~AgeGroup+Education+OrderOfVerbs+OrderOfVerbs:AgeGroup+

(1|SpeakerID) +(1|ItemNr)

```
Coefficients:
                              Estimate Std. Error z value Pr(>|z|)
AgeGroupmiddle                 0.42131    0.45576   0.924   0.3553
AgeGroupyoung                  1.73495    0.39861   4.352 1.35e-05
***
Education2                     0.45269    0.28719   1.576   0.1150
Education3                    -0.33445    0.38495  -0.869   0.3849
```

```
OrderOfVerbs132                    0.58191    0.52672   1.105    0.2693
OrderOfVerbs213                    0.46529    0.52523   0.886    0.3757
OrderOfVerbs231                    0.21662    0.52962   0.409    0.6825
OrderOfVerbs312                    0.69264    0.52146   1.328    0.1841
OrderOfVerbs321                    4.47696    0.41662  10.746  < 2e-16
***
AgeGroupmiddle:OrderOfVerbs132 -0.39374    0.47624  -0.827    0.4084
AgeGroupyoung:OrderOfVerbs132  -0.02622    0.41267  -0.064    0.9493
AgeGroupmiddle:OrderOfVerbs213 -0.51497    0.47673  -1.080    0.2800
AgeGroupyoung:OrderOfVerbs213   0.01148    0.40824   0.028    0.9776
AgeGroupmiddle:OrderOfVerbs231 -0.42135    0.48478  -0.869    0.3848
AgeGroupyoung:OrderOfVerbs231  -0.18705    0.42192  -0.443    0.6575
AgeGroupmiddle:OrderOfVerbs312 -0.09431    0.46539  -0.203    0.8394
AgeGroupyoung:OrderOfVerbs312   0.14898    0.40468   0.368    0.7128
AgeGroupmiddle:OrderOfVerbs321 -0.76897    0.37090  -2.073    0.0381
*
AgeGroupyoung:OrderOfVerbs321  -2.90860    0.32429  -8.969  < 2e-16
***


$contrasts
 contrast          estimate        SE df z.ratio p.value
 elder - middle -0.05575778 0.3244831 NA  -0.172  1.0000
 elder - young  -1.24137896 0.2863555 NA  -4.335  <.0001
 middle - young -1.18562118 0.3436135 NA  -3.450  0.0017

$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast    estimate        SE df z.ratio p.value
 123 - 132 -0.44192477 0.4586823 NA  -0.963  1.0000
 123 - 213 -0.29745745 0.4582490 NA  -0.649  1.0000
 123 - 231 -0.01382133 0.4600977 NA  -0.030  1.0000
 123 - 312 -0.71086383 0.4571422 NA  -1.555  1.0000
 123 - 321 -3.25110775 0.3598103 NA  -9.036  <.0001
 132 - 213  0.14446732 0.4570734 NA   0.316  1.0000
 132 - 231  0.42810344 0.4590201 NA   0.933  1.0000
 132 - 312 -0.26893906 0.4558592 NA  -0.590  1.0000
 132 - 321 -2.80918297 0.3573581 NA  -7.861  <.0001
 213 - 231  0.28363612 0.4585750 NA   0.619  1.0000
 213 - 312 -0.41340638 0.4554790 NA  -0.908  1.0000
 213 - 321 -2.95365030 0.3571951 NA  -8.269  <.0001
 231 - 312 -0.69704250 0.4574765 NA  -1.524  1.0000
 231 - 321 -3.23728642 0.3602144 NA  -8.987  <.0001
 312 - 321 -2.54024392 0.3547432 NA  -7.161  <.0001

$contrasts

 contrast                        estimate        SE df z.ratio p.value
 123,elder - 132,elder    -5.819132e-01 0.5267249 NA  -1.105  1.0000
 123,elder - 213,elder    -4.652863e-01 0.5252333 NA  -0.886  1.0000
 123,elder - 231,elder    -2.166218e-01 0.5296175 NA  -0.409  1.0000
 123,elder - 312,elder    -6.926426e-01 0.5214584 NA  -1.328  1.0000
 123,elder - 321,elder    -4.476963e+00 0.4166224 NA -10.746  <.0001
 123,elder - 123,middle   -4.213139e-01 0.4557643 NA  -0.924  1.0000
 123,elder - 132,middle   -6.094862e-01 0.6189738 NA  -0.985  1.0000
 123,elder - 213,middle   -3.716307e-01 0.6205012 NA  -0.599  1.0000
 123,elder - 231,middle   -2.165883e-01 0.6233341 NA  -0.347  1.0000
```

123,elder - 312,middle	-1.019643e+00	0.6147669	NA	-1.659	1.0000
123,elder - 321,middle	-4.129311e+00	0.5138145	NA	-8.037	<.0001
123,elder - 123,young	-1.734949e+00	0.3986104	NA	-4.352	0.0021
123,elder - 132,young	-2.290638e+00	0.5806273	NA	-3.945	0.0122
123,elder - 213,young	-2.211718e+00	0.5784884	NA	-3.823	0.0201
123,elder - 231,young	-1.764517e+00	0.5841197	NA	-3.021	0.3857
123,elder - 312,young	-2.576568e+00	0.5797870	NA	-4.444	0.0014
123,elder - 321,young	-3.303312e+00	0.4892131	NA	-6.752	<.0001
132,elder - 213,elder	1.166269e-01	0.5183642	NA	0.225	1.0000
132,elder - 231,elder	3.652914e-01	0.5229344	NA	0.699	1.0000
132,elder - 312,elder	-1.107294e-01	0.5145630	NA	-0.215	1.0000
132,elder - 321,elder	-3.895050e+00	0.4067588	NA	-9.576	<.0001
132,elder - 123,middle	1.605993e-01	0.6146857	NA	0.261	1.0000
132,elder - 132,middle	-2.757302e-02	0.4454702	NA	-0.062	1.0000
132,elder - 213,middle	2.102825e-01	0.6146192	NA	0.342	1.0000
132,elder - 231,middle	3.653250e-01	0.6174971	NA	0.592	1.0000
132,elder - 312,middle	-4.377303e-01	0.6087213	NA	-0.719	1.0000
132,elder - 321,middle	-3.547398e+00	0.5059255	NA	-7.012	<.0001
132,elder - 123,young	-1.153036e+00	0.5735973	NA	-2.010	1.0000
132,elder - 132,young	-1.708724e+00	0.3901373	NA	-4.380	0.0018
132,elder - 213,young	-1.629805e+00	0.5717978	NA	-2.850	0.6682
132,elder - 231,young	-1.182603e+00	0.5775804	NA	-2.048	1.0000
132,elder - 312,young	-1.994655e+00	0.5730314	NA	-3.481	0.0765
132,elder - 321,young	-2.721398e+00	0.4810227	NA	-5.658	<.0001
213,elder - 231,elder	2.486645e-01	0.5214411	NA	0.477	1.0000
213,elder - 312,elder	-2.273562e-01	0.5130622	NA	-0.443	1.0000
213,elder - 321,elder	-4.011677e+00	0.4051586	NA	-9.901	<.0001
213,elder - 123,middle	4.397239e-02	0.6135185	NA	0.072	1.0000
213,elder - 132,middle	-1.441999e-01	0.6118781	NA	-0.236	1.0000
213,elder - 213,middle	9.365563e-02	0.4464298	NA	0.210	1.0000
213,elder - 231,middle	2.486981e-01	0.6163286	NA	0.404	1.0000
213,elder - 312,middle	-5.543571e-01	0.6075570	NA	-0.912	1.0000
213,elder - 321,middle	-3.664025e+00	0.5046640	NA	-7.260	<.0001
213,elder - 123,young	-1.269662e+00	0.5723207	NA	-2.218	1.0000
213,elder - 132,young	-1.825351e+00	0.5726990	NA	-3.187	0.2197
213,elder - 213,young	-1.746432e+00	0.3855726	NA	-4.529	0.0009
213,elder - 231,young	-1.299230e+00	0.5763160	NA	-2.254	1.0000
213,elder - 312,young	-2.111282e+00	0.5717934	NA	-3.692	0.0340
213,elder - 321,young	-2.838025e+00	0.4795823	NA	-5.918	<.0001
231,elder - 312,elder	-4.760208e-01	0.5176317	NA	-0.920	1.0000
231,elder - 321,elder	-4.260341e+00	0.4114206	NA	-10.355	<.0001
231,elder - 123,middle	-2.046921e-01	0.6173510	NA	-0.332	1.0000
231,elder - 132,middle	-3.928644e-01	0.6157214	NA	-0.638	1.0000
231,elder - 213,middle	-1.550089e-01	0.6172663	NA	-0.251	1.0000
231,elder - 231,middle	3.356758e-05	0.4553580	NA	0.000	1.0000
231,elder - 312,middle	-8.030216e-01	0.6114593	NA	-1.313	1.0000
231,elder - 321,middle	-3.912689e+00	0.5096082	NA	-7.678	<.0001
231,elder - 123,young	-1.518327e+00	0.5766211	NA	-2.633	1.0000
231,elder - 132,young	-2.074016e+00	0.5770431	NA	-3.594	0.0498
231,elder - 213,young	-1.995096e+00	0.5748955	NA	-3.470	0.0795
231,elder - 231,young	-1.547895e+00	0.3999613	NA	-3.870	0.0166
231,elder - 312,young	-2.359946e+00	0.5761704	NA	-4.096	0.0064
231,elder - 321,young	-3.086690e+00	0.4848567	NA	-6.366	<.0001
312,elder - 321,elder	-3.784321e+00	0.3999602	NA	-9.462	<.0001
312,elder - 123,middle	2.713286e-01	0.6102947	NA	0.445	1.0000
312,elder - 132,middle	8.315633e-02	0.6086441	NA	0.137	1.0000
312,elder - 213,middle	3.210119e-01	0.6102278	NA	0.526	1.0000

312,elder - 231,middle	4.760543e-01	0.6131318	NA	0.776	1.0000
312,elder - 312,middle	-3.270009e-01	0.4339203	NA	-0.754	1.0000
312,elder - 321,middle	-3.436669e+00	0.5004901	NA	-6.867	<.0001
312,elder - 123,young	-1.042306e+00	0.5687378	NA	-1.833	1.0000
312,elder - 132,young	-1.597995e+00	0.5690723	NA	-2.808	0.7625
312,elder - 213,young	-1.519075e+00	0.5669003	NA	-2.680	1.0000
312,elder - 231,young	-1.071874e+00	0.5727545	NA	-1.871	1.0000
312,elder - 312,young	-1.883926e+00	0.3820857	NA	-4.931	0.0001
312,elder - 321,young	-2.610669e+00	0.4751573	NA	-5.494	<.0001
321,elder - 123,middle	4.055649e+00	0.5225109	NA	7.762	<.0001
321,elder - 132,middle	3.867477e+00	0.5204709	NA	7.431	<.0001
321,elder - 213,middle	4.105332e+00	0.5226562	NA	7.855	<.0001
321,elder - 231,middle	4.260375e+00	0.5262672	NA	8.095	<.0001
321,elder - 312,middle	3.457320e+00	0.5145579	NA	6.719	<.0001
321,elder - 321,middle	3.476520e-01	0.3272515	NA	1.062	1.0000
321,elder - 123,young	2.742014e+00	0.4710287	NA	5.821	<.0001
321,elder - 132,young	2.186326e+00	0.4697989	NA	4.654	0.0005
321,elder - 213,young	2.265245e+00	0.4675461	NA	4.845	0.0002
321,elder - 231,young	2.712447e+00	0.4755278	NA	5.704	<.0001
321,elder - 312,young	1.900395e+00	0.4679877	NA	4.061	0.0075
321,elder - 321,young	1.173652e+00	0.2909651	NA	4.034	0.0084
123,middle - 132,middle	-1.881723e-01	0.5515167	NA	-0.341	1.0000
123,middle - 213,middle	4.968324e-02	0.5529963	NA	0.090	1.0000
123,middle - 231,middle	2.047257e-01	0.5559767	NA	0.368	1.0000
123,middle - 312,middle	-5.983295e-01	0.5468602	NA	-1.094	1.0000
123,middle - 321,middle	-3.707997e+00	0.4315077	NA	-8.593	<.0001
123,middle - 123,young	-1.313635e+00	0.4516223	NA	-2.909	0.5553
123,middle - 132,young	-1.869324e+00	0.6174672	NA	-3.027	0.3774
123,middle - 213,young	-1.790404e+00	0.6155443	NA	-2.909	0.5554
123,middle - 231,young	-1.343203e+00	0.6209430	NA	-2.163	1.0000
123,middle - 312,young	-2.155254e+00	0.6167593	NA	-3.494	0.0727
123,middle - 321,young	-2.881998e+00	0.5322894	NA	-5.414	<.0001
132,middle - 213,middle	2.378555e-01	0.5513688	NA	0.431	1.0000
132,middle - 231,middle	3.928980e-01	0.5544973	NA	0.709	1.0000
132,middle - 312,middle	-4.101572e-01	0.5450761	NA	-0.752	1.0000
132,middle - 321,middle	-3.519825e+00	0.4289401	NA	-8.206	<.0001
132,middle - 123,young	-1.125463e+00	0.6156239	NA	-1.828	1.0000
132,middle - 132,young	-1.681151e+00	0.4496126	NA	-3.739	0.0283
132,middle - 213,young	-1.602232e+00	0.6139176	NA	-2.610	1.0000
132,middle - 231,young	-1.155030e+00	0.6193290	NA	-1.865	1.0000
132,middle - 312,young	-1.967082e+00	0.6151299	NA	-3.198	0.2119
132,middle - 321,young	-2.693825e+00	0.5303773	NA	-5.079	0.0001
213,middle - 231,middle	1.550424e-01	0.5558500	NA	0.279	1.0000
213,middle - 312,middle	-6.480128e-01	0.5467239	NA	-1.185	1.0000
213,middle - 321,middle	-3.757680e+00	0.4315560	NA	-8.707	<.0001
213,middle - 123,young	-1.363318e+00	0.6172548	NA	-2.209	1.0000
213,middle - 132,young	-1.919007e+00	0.6175235	NA	-3.108	0.2886
213,middle - 213,young	-1.840087e+00	0.4496222	NA	-4.093	0.0065
213,middle - 231,young	-1.392886e+00	0.6209605	NA	-2.243	1.0000
213,middle - 312,young	-2.204937e+00	0.6168342	NA	-3.575	0.0537
213,middle - 321,young	-2.931681e+00	0.5324226	NA	-5.506	<.0001
231,middle - 312,middle	-8.030552e-01	0.5498692	NA	-1.460	1.0000
231,middle - 321,middle	-3.912723e+00	0.4360375	NA	-8.973	<.0001
231,middle - 123,young	-1.518361e+00	0.6201663	NA	-2.448	1.0000
231,middle - 132,young	-2.074049e+00	0.6204654	NA	-3.343	0.1269
231,middle - 213,young	-1.995130e+00	0.6185440	NA	-3.226	0.1924
231,middle - 231,young	-1.547928e+00	0.4608526	NA	-3.359	0.1198

```
 231,middle - 312,young  -2.359980e+00 0.6197970 NA  -3.808  0.0215
 231,middle - 321,young  -3.086723e+00 0.5358970 NA  -5.760  <.0001
 312,middle - 321,middle -3.109668e+00 0.4218679 NA  -7.371  <.0001
 312,middle - 123,young  -7.153053e-01 0.6111291 NA  -1.170  1.0000
 312,middle - 132,young  -1.270994e+00 0.6112143 NA  -2.079  1.0000
 312,middle - 213,young  -1.192075e+00 0.6092894 NA  -1.956  1.0000
 312,middle - 231,young  -7.448732e-01 0.6148407 NA  -1.211  1.0000
 312,middle - 312,young  -1.556925e+00 0.4424670 NA  -3.519  0.0663
 312,middle - 321,young  -2.283668e+00 0.5247503 NA  -4.352  0.0021
 321,middle - 123,young   2.394362e+00 0.5072941 NA   4.720  0.0004
 321,middle - 132,young   1.838674e+00 0.5061508 NA   3.633  0.0429
 321,middle - 213,young   1.917593e+00 0.5041144 NA   3.804  0.0218
 321,middle - 231,young   2.364795e+00 0.5114825 NA   4.623  0.0006
 321,middle - 312,young   1.552743e+00 0.5046765 NA   3.077  0.3202
 321,middle - 321,young   8.259996e-01 0.3470021 NA   2.380  1.0000
 123,young - 132,young   -5.556888e-01 0.4979000 NA  -1.116  1.0000
 123,young - 213,young   -4.767693e-01 0.4954086 NA  -0.962  1.0000
 123,young - 231,young   -2.956784e-02 0.5023463 NA  -0.059  1.0000
 123,young - 312,young   -8.416194e-01 0.4965673 NA  -1.695  1.0000
 123,young - 321,young   -1.568363e+00 0.3863123 NA  -4.060  0.0075
 132,young - 213,young    7.891953e-02 0.4951220 NA   0.159  1.0000
 132,young - 231,young    5.261209e-01 0.5023302 NA   1.047  1.0000
 132,young - 312,young   -2.859306e-01 0.4960598 NA  -0.576  1.0000
 132,young - 321,young   -1.012674e+00 0.3852725 NA  -2.628  1.0000
 213,young - 231,young    4.472014e-01 0.4998680 NA   0.895  1.0000
 213,young - 312,young   -3.648501e-01 0.4936036 NA  -0.739  1.0000
 213,young - 321,young   -1.091594e+00 0.3822729 NA  -2.856  0.6574
 231,young - 312,young   -8.120515e-01 0.5010108 NA  -1.621  1.0000
 231,young - 321,young   -1.538795e+00 0.3919099 NA  -3.926  0.0132
 312,young - 321,young   -7.267435e-01 0.3830843 NA  -1.897  1.0000
```

Model 4

5783 cases

Initial predictors:

AgeGroup+Gender+Region+Education+TypeOfVerb+TypeOfVerb:AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+TypeOfVerb:OrderOfVerbs

After model selection we get the following model:

SpeakerJudgmentInteger~AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+(1|SpeakerID) +(1|ItemNr)

Coefficients:

```
                              Estimate Std. Error z value Pr(>|z|)
AgeGroupmiddle                  0.9188     0.4283   2.145   0.0319 *
AgeGroupyoung                   2.3399     0.3255   7.189 6.52e-13 ***
OrderOfVerbs132                 0.5104     0.5250   0.972   0.3310
```

```
OrderOfVerbs213                    0.5510     0.5220   1.055   0.2912
OrderOfVerbs231                    0.2943     0.5272   0.558   0.5767
OrderOfVerbs312                    0.7680     0.5194   1.479   0.1392
OrderOfVerbs321                    4.6938     0.4113  11.412  < 2e-16 ***
AgeGroupmiddle:OrderOfVerbs132   -0.3565     0.4310  -0.827   0.4082
AgeGroupyoung:OrderOfVerbs132    -0.2485     0.3287  -0.756   0.4496
AgeGroupmiddle:OrderOfVerbs213   -0.5688     0.4277  -1.330   0.1835
AgeGroupyoung:OrderOfVerbs213    -0.3923     0.3244  -1.209   0.2266
AgeGroupmiddle:OrderOfVerbs231   -0.5644     0.4388  -1.286   0.1984
AgeGroupyoung:OrderOfVerbs231    -0.7132     0.3339  -2.136   0.0327 *
AgeGroupmiddle:OrderOfVerbs312   -0.1529     0.4185  -0.365   0.7149
AgeGroupyoung:OrderOfVerbs312    -0.3138     0.3190  -0.984   0.3253
AgeGroupmiddle:OrderOfVerbs321   -1.4290     0.3363  -4.249 2.15e-05 ***
AgeGroupyoung:OrderOfVerbs321    -3.7763     0.2598 -14.535  < 2e-16 ***
```

```
$contrasts
 contrast         estimate        SE df z.ratio p.value
 elder - middle -0.4068181 0.3134197 NA  -1.298  0.5829
 elder - young  -1.4325376 0.2352027 NA  -6.091  <.0001
 middle - young -1.0257194 0.2653865 NA  -3.865  0.0003
```

```
$contrasts
 contrast     estimate        SE df z.ratio p.value
 123 - 132 -0.30870478 0.4571440 NA  -0.675  1.0000
 123 - 213 -0.23057485 0.4565943 NA  -0.505  1.0000
 123 - 231  0.13156358 0.4580771 NA   0.287  1.0000
 123 - 312 -0.61243210 0.4555890 NA  -1.344  1.0000
 123 - 321 -2.95868642 0.3556624 NA  -8.319  <.0001
 132 - 213  0.07812993 0.4554798 NA   0.172  1.0000
 132 - 231  0.44026836 0.4570131 NA   0.963  1.0000
 132 - 312 -0.30372732 0.4544389 NA  -0.668  1.0000
 132 - 321 -2.64998163 0.3539735 NA  -7.486  <.0001
 213 - 231  0.36213843 0.4564588 NA   0.793  1.0000
 213 - 312 -0.38185725 0.4539084 NA  -0.841  1.0000
 213 - 321 -2.72811156 0.3533836 NA  -7.720  <.0001
 231 - 312 -0.74399568 0.4554692 NA  -1.633  1.0000
 231 - 321 -3.09025000 0.3556499 NA  -8.689  <.0001
 312 - 321 -2.34625432 0.3517390 NA  -6.670  <.0001
```

```
$contrasts
 contrast                     estimate        SE df z.ratio p.value
 123,elder - 132,elder   -0.51038173 0.5250215 NA  -0.972  1.0000
 123,elder - 213,elder   -0.55096099 0.5220445 NA  -1.055  1.0000
 123,elder - 231,elder   -0.29429127 0.5272242 NA  -0.558  1.0000
 123,elder - 312,elder   -0.76798821 0.5193657 NA  -1.479  1.0000
 123,elder - 321,elder   -4.69380138 0.4112997 NA -11.412  <.0001
 123,elder - 123,middle  -0.91875383 0.4283152 NA  -2.145  1.0000
 123,elder - 132,middle  -1.07264063 0.6063952 NA  -1.769  1.0000
 123,elder - 213,middle  -0.90088061 0.6063544 NA  -1.486  1.0000
 123,elder - 231,middle  -0.64868341 0.6101919 NA  -1.063  1.0000
 123,elder - 312,middle  -1.53385353 0.6019360 NA  -2.548  1.0000
 123,elder - 321,middle  -4.18352039 0.5051437 NA  -8.282  <.0001
 123,elder - 123,young   -2.33989637 0.3254742 NA  -7.189  <.0001
 123,elder - 132,young   -2.60174219 0.5408285 NA  -4.811  0.0002
 123,elder - 213,young   -2.49853316 0.5407488 NA  -4.621  0.0006
```

123,elder - 231,young	-1.92098477	0.5415961	NA	-3.547	0.0596
123,elder - 312,young	-2.79410475	0.5403360	NA	-5.171	<.0001
123,elder - 321,young	-3.25738768	0.4591276	NA	-7.095	<.0001
132,elder - 213,elder	-0.04057926	0.5150684	NA	-0.079	1.0000
132,elder - 231,elder	0.21609045	0.5204181	NA	0.415	1.0000
132,elder - 312,elder	-0.25760648	0.5124156	NA	-0.503	1.0000
132,elder - 321,elder	-4.18341965	0.4019171	NA	-10.409	<.0001
132,elder - 123,middle	-0.40837210	0.6020240	NA	-0.678	1.0000
132,elder - 132,middle	-0.56225890	0.4169142	NA	-1.349	1.0000
132,elder - 213,middle	-0.39049888	0.6002451	NA	-0.651	1.0000
132,elder - 231,middle	-0.13830169	0.6041350	NA	-0.229	1.0000
132,elder - 312,middle	-1.02347180	0.5957517	NA	-1.718	1.0000
132,elder - 321,middle	-3.67313866	0.4975974	NA	-7.382	<.0001
132,elder - 123,young	-1.82951464	0.5336586	NA	-3.428	0.0929
132,elder - 132,young	-2.09136046	0.3144563	NA	-6.651	<.0001
132,elder - 213,young	-1.98815143	0.5337868	NA	-3.725	0.0299
132,elder - 231,young	-1.41060304	0.5346804	NA	-2.638	1.0000
132,elder - 312,young	-2.28372303	0.5333453	NA	-4.282	0.0028
132,elder - 321,young	-2.74700595	0.4508553	NA	-6.093	<.0001
213,elder - 231,elder	0.25666971	0.5174248	NA	0.496	1.0000
213,elder - 312,elder	-0.21702722	0.5093529	NA	-0.426	1.0000
213,elder - 321,elder	-4.14284039	0.3980025	NA	-10.409	<.0001
213,elder - 123,middle	-0.36779284	0.5994561	NA	-0.614	1.0000
213,elder - 132,middle	-0.52167964	0.5977023	NA	-0.873	1.0000
213,elder - 213,middle	-0.34991962	0.4137389	NA	-0.846	1.0000
213,elder - 231,middle	-0.09772242	0.6015850	NA	-0.162	1.0000
213,elder - 312,middle	-0.98289254	0.5931491	NA	-1.657	1.0000
213,elder - 321,middle	-3.63255940	0.4944208	NA	-7.347	<.0001
213,elder - 123,young	-1.78893538	0.5307338	NA	-3.371	0.1147
213,elder - 132,young	-2.05078120	0.5309300	NA	-3.863	0.0172
213,elder - 213,young	-1.94757217	0.3099668	NA	-6.283	<.0001
213,elder - 231,young	-1.37002378	0.5317722	NA	-2.576	1.0000
213,elder - 312,young	-2.24314377	0.5304111	NA	-4.229	0.0036
213,elder - 321,young	-2.70642669	0.4473668	NA	-6.050	<.0001
231,elder - 312,elder	-0.47369693	0.5147283	NA	-0.920	1.0000
231,elder - 321,elder	-4.39951010	0.4052094	NA	-10.857	<.0001
231,elder - 123,middle	-0.62446255	0.6041176	NA	-1.034	1.0000
231,elder - 132,middle	-0.77834935	0.6023835	NA	-1.292	1.0000
231,elder - 213,middle	-0.60658933	0.6023482	NA	-1.007	1.0000
231,elder - 231,middle	-0.35439214	0.4255926	NA	-0.833	1.0000
231,elder - 312,middle	-1.23956225	0.5978810	NA	-2.073	1.0000
231,elder - 321,middle	-3.88922911	0.5002097	NA	-7.775	<.0001
231,elder - 123,young	-2.04560509	0.5360578	NA	-3.816	0.0208
231,elder - 132,young	-2.30745091	0.5362680	NA	-4.303	0.0026
231,elder - 213,young	-2.20424188	0.5361954	NA	-4.111	0.0060
231,elder - 231,young	-1.62669349	0.3198031	NA	-5.087	0.0001
231,elder - 312,young	-2.49981348	0.5357649	NA	-4.666	0.0005
231,elder - 321,young	-2.96309640	0.4537234	NA	-6.531	<.0001
312,elder - 321,elder	-3.92581317	0.3944108	NA	-9.954	<.0001
312,elder - 123,middle	-0.15076562	0.5971071	NA	-0.252	1.0000
312,elder - 132,middle	-0.30465242	0.5953410	NA	-0.512	1.0000
312,elder - 213,middle	-0.13289240	0.5953105	NA	-0.223	1.0000
312,elder - 231,middle	0.11930480	0.5992446	NA	0.199	1.0000
312,elder - 312,middle	-0.76586532	0.4038721	NA	-1.896	1.0000
312,elder - 321,middle	-3.41553218	0.4914971	NA	-6.949	<.0001
312,elder - 123,young	-1.57190816	0.5280434	NA	-2.977	0.4456
312,elder - 132,young	-1.83375398	0.5282320	NA	-3.471	0.0792

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312,elder - 213,young   -1.73054495 0.5281636 NA  -3.277  0.1608
312,elder - 231,young   -1.15299656 0.5290936 NA  -2.179  1.0000
312,elder - 312,young   -2.02611654 0.3044022 NA  -6.656  <.0001
312,elder - 321,young   -2.48939947 0.4441467 NA  -5.605  <.0001
321,elder - 123,middle   3.77504755 0.5046943 NA   7.480  <.0001
321,elder - 132,middle   3.62116075 0.5025319 NA   7.206  <.0001
321,elder - 213,middle   3.79292077 0.5025989 NA   7.547  <.0001
321,elder - 231,middle   4.04511796 0.5074540 NA   7.971  <.0001
321,elder - 312,middle   3.15994785 0.4967861 NA   6.361  <.0001
321,elder - 321,middle   0.51028099 0.3153246 NA   1.618  1.0000
321,elder - 123,young    2.35390501 0.4192779 NA   5.614  <.0001
321,elder - 132,young    2.09205919 0.4191637 NA   4.991  0.0001
321,elder - 213,young    2.19526822 0.4193251 NA   5.235  <.0001
321,elder - 231,young    2.77281661 0.4210017 NA   6.586  <.0001
321,elder - 312,young    1.89969662 0.4183264 NA   4.541  0.0009
321,elder - 321,young    1.43641370 0.2369117 NA   6.063  <.0001
123,middle - 132,middle -0.15388680 0.5319742 NA  -0.289  1.0000
123,middle - 213,middle  0.01787322 0.5317775 NA   0.034  1.0000
123,middle - 231,middle  0.27007042 0.5359958 NA   0.504  1.0000
123,middle - 312,middle -0.61509970 0.5269904 NA  -1.167  1.0000
123,middle - 321,middle -3.26476656 0.4134803 NA  -7.896  <.0001
123,middle - 123,young  -1.42114254 0.3483558 NA  -4.080  0.0069
123,middle - 132,young  -1.68298836 0.5545509 NA  -3.035  0.3682
123,middle - 213,young  -1.57977933 0.5544910 NA  -2.849  0.6709
123,middle - 231,young  -1.00223094 0.5553928 NA  -1.805  1.0000
123,middle - 312,young  -1.87535092 0.5540431 NA  -3.385  0.1090
123,middle - 321,young  -2.33863385 0.4751241 NA  -4.922  0.0001
132,middle - 213,middle  0.17176002 0.5299428 NA   0.324  1.0000
132,middle - 231,middle  0.42395722 0.5343051 NA   0.793  1.0000
132,middle - 312,middle -0.46121290 0.5249837 NA  -0.879  1.0000
132,middle - 321,middle -3.11087976 0.4107904 NA  -7.573  <.0001
132,middle - 123,young  -1.26725574 0.5524492 NA  -2.294  1.0000
132,middle - 132,young  -1.52910156 0.3455422 NA  -4.425  0.0015
132,middle - 213,young  -1.42589253 0.5525556 NA  -2.581  1.0000
132,middle - 231,young  -0.84834414 0.5534717 NA  -1.533  1.0000
132,middle - 312,young  -1.72146413 0.5520969 NA  -3.118  0.2785
132,middle - 321,young  -2.18474705 0.4728475 NA  -4.620  0.0006
213,middle - 231,middle  0.25219719 0.5340345 NA   0.472  1.0000
213,middle - 312,middle -0.63297292 0.5248976 NA  -1.206  1.0000
213,middle - 321,middle -3.28263978 0.4108420 NA  -7.990  <.0001
213,middle - 123,young  -1.43901576 0.5524536 NA  -2.605  1.0000
213,middle - 132,young  -1.70086158 0.5526258 NA  -3.078  0.3191
213,middle - 213,young  -1.59765255 0.3458017 NA  -4.620  0.0006
213,middle - 231,young  -1.02010416 0.5534707 NA  -1.843  1.0000
213,middle - 312,young  -1.89322415 0.5521155 NA  -3.429  0.0927
213,middle - 321,young  -2.35650707 0.4728811 NA  -4.983  0.0001
231,middle - 312,middle -0.88517012 0.5293299 NA  -1.672  1.0000
231,middle - 321,middle -3.53483698 0.4168231 NA  -8.480  <.0001
231,middle - 123,young  -1.69121296 0.5567712 NA  -3.038  0.3649
231,middle - 132,young  -1.95305877 0.5569585 NA  -3.507  0.0694
231,middle - 213,young  -1.84984974 0.5568912 NA  -3.322  0.1369
231,middle - 231,young  -1.27230135 0.3535972 NA  -3.598  0.0490
231,middle - 312,young  -2.14542134 0.5564651 NA  -3.855  0.0177
231,middle - 321,young  -2.60870427 0.4779758 NA  -5.458  <.0001
312,middle - 321,middle -2.64966686 0.4038178 NA  -6.562  <.0001
312,middle - 123,young  -0.80604284 0.5473840 NA  -1.473  1.0000
312,middle - 132,young  -1.06788866 0.5475253 NA  -1.950  1.0000
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 312,middle - 213,young  -0.96467963 0.5474782 NA  -1.762  1.0000
 312,middle - 231,young  -0.38713124 0.5484490 NA  -0.706  1.0000
 312,middle - 312,young  -1.26025123 0.3366849 NA  -3.743  0.0278
 312,middle - 321,young  -1.72353415 0.4668323 NA  -3.692  0.0340
 321,middle - 123,young   1.84362402 0.4373137 NA   4.216  0.0038
 321,middle - 132,young   1.58177820 0.4372440 NA   3.618  0.0455
 321,middle - 213,young   1.68498723 0.4373617 NA   3.853  0.0179
 321,middle - 231,young   2.26253562 0.4389229 NA   5.155  <.0001
 321,middle - 312,young   1.38941563 0.4364540 NA   3.183  0.2227
 321,middle - 321,young   0.92613271 0.2677741 NA   3.459  0.0831
 123,young - 132,young   -0.26184582 0.4526132 NA  -0.579  1.0000
 123,young - 213,young   -0.15863679 0.4525468 NA  -0.351  1.0000
 123,young - 231,young    0.41891160 0.4538678 NA   0.923  1.0000
 123,young - 312,young   -0.45420838 0.4518983 NA  -1.005  1.0000
 123,young - 321,young   -0.91749131 0.3505173 NA  -2.618  1.0000
 132,young - 213,young    0.10320903 0.4526474 NA   0.228  1.0000
 132,young - 231,young    0.68075742 0.4540047 NA   1.499  1.0000
 132,young - 312,young   -0.19236257 0.4519433 NA  -0.426  1.0000
 132,young - 321,young   -0.65564549 0.3505300 NA  -1.870  1.0000
 213,young - 231,young    0.57754839 0.4539495 NA   1.272  1.0000
 213,young - 312,young   -0.29557160 0.4519170 NA  -0.654  1.0000
 213,young - 321,young   -0.75885452 0.3505567 NA  -2.165  1.0000
 231,young - 312,young   -0.87311999 0.4533311 NA  -1.926  1.0000
 231,young - 321,young   -1.33640291 0.3524175 NA  -3.792  0.0229
 312,young - 321,young   -0.46328293 0.3495574 NA  -1.325  1.0000
```

Model 5

2953 cases

Initial predictors:

AgeGroup+Gender+Region+Education+IPP+IPP:AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+IPP:OrderOfVerbs+MeanProficiency+WritingProficiency+UseMedia+ UseSocial+UsePublic+UseDutch

After model selection we get the following model:

SpeakerJudgmentInteger~AgeGroup+Education+IPP+IPP:AgeGroup+OrderOfVerbs+OrderOfVerbs:AgeGroup+IPP:OrderOfVerbs+(1|SpeakerID)+(1|ItemNr)

Coefficients:

```
                              Estimate Std. Error z value Pr(>|z|)
AgeGroupmiddle                 0.38616    0.41478   0.931 0.351852
AgeGroupyoung                  2.15212    0.36360   5.919 3.24e-09 ***
Education2                     0.52468    0.22821   2.299 0.021499 *
Education3                    -0.07296    0.30516  -0.239 0.811047
IPPy                           0.28869    0.73454   0.393 0.694303
OrderOfVerbs132                0.06165    0.76278   0.081 0.935588
```

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OrderOfVerbs213                0.04880    0.76423   0.064 0.949085
OrderOfVerbs231               -0.14449    0.76531  -0.189 0.850249
OrderOfVerbs312                0.54906    0.75828   0.724 0.469014
OrderOfVerbs321                5.08842    0.57381   8.868  < 2e-16 ***
AgeGroupmiddle:IPPy           -0.07251    0.24925  -0.291 0.771130
AgeGroupyoung:IPPy             0.79887    0.21809   3.663 0.000249 ***
AgeGroupmiddle:OrderOfVerbs132  0.09429   0.45812   0.206 0.836930
AgeGroupyoung:OrderOfVerbs132  -0.05523   0.39783  -0.139 0.889580
AgeGroupmiddle:OrderOfVerbs213  0.13108   0.46145   0.284 0.776360
AgeGroupyoung:OrderOfVerbs213  -0.47981   0.40463  -1.186 0.235700
AgeGroupmiddle:OrderOfVerbs231 -0.16762   0.46603  -0.360 0.719086
AgeGroupyoung:OrderOfVerbs231  -0.30768   0.40178  -0.766 0.443804
AgeGroupmiddle:OrderOfVerbs312  0.26066   0.45645   0.571 0.567967
AgeGroupyoung:OrderOfVerbs312  -0.38502   0.39441  -0.976 0.328970
AgeGroupmiddle:OrderOfVerbs321 -0.70901   0.36323  -1.952 0.050939 .
AgeGroupyoung:OrderOfVerbs321  -3.46133   0.31849 -10.868  < 2e-16 ***
IPPy:OrderOfVerbs132          -0.94467    1.02426  -0.922 0.356378
IPPy:OrderOfVerbs213          -1.14300    1.02567  -1.114 0.265110
IPPy:OrderOfVerbs231          -0.66800    1.02613  -0.651 0.515056
IPPy:OrderOfVerbs312          -1.45630    1.02422  -1.422 0.155068
IPPy:OrderOfVerbs321          -3.11596    0.90110  -3.458 0.000544 ***

$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast        estimate        SE df z.ratio p.value
 elder - middle -0.2848048 0.2639396 NA  -1.079  0.8417
 elder - young  -1.7700444 0.2345068 NA  -7.548  <.0001
 middle - young -1.4852397 0.2786193 NA  -5.331  <.0001

$contrasts
 contrast    estimate        SE df z.ratio p.value
 1 - 2    -0.52467763 0.2282100 NA  -2.299  0.0645
 1 - 3     0.07295618 0.3051602 NA   0.239  1.0000
 2 - 3     0.59763381 0.2610743 NA   2.289  0.0662

$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast      estimate        SE df z.ratio p.value
 123 - 132  0.397668512 0.5137036 NA   0.774  1.0000
 123 - 213  0.638940385 0.5143654 NA   1.242  1.0000
 123 - 231  0.636922239 0.5151228 NA   1.236  1.0000
 123 - 312  0.220540058 0.5134614 NA   0.430  1.0000
 123 - 321 -2.140325646 0.4524039 NA  -4.731  <.0001
 132 - 213  0.241271874 0.5149929 NA   0.468  1.0000
 132 - 231  0.239253727 0.5157581 NA   0.464  1.0000
 132 - 312 -0.177128453 0.5141902 NA  -0.344  1.0000
 132 - 321 -2.537994158 0.4538212 NA  -5.592  <.0001
 213 - 231 -0.002018146 0.5163367 NA  -0.004  1.0000
 213 - 312 -0.418400327 0.5148244 NA  -0.813  1.0000
 213 - 321 -2.779266031 0.4548562 NA  -6.110  <.0001
 231 - 312 -0.416382181 0.5155951 NA  -0.808  1.0000
 231 - 321 -2.777247885 0.4556660 NA  -6.095  <.0001
 312 - 321 -2.360865704 0.4533616 NA  -5.207  <.0001

$contrasts
 contrast              estimate        SE df z.ratio p.value
 n,elder - y,elder    0.9326280 0.3148397 NA   2.962  0.0458
 n,elder - n,middle  -0.3210581 0.2809557 NA  -1.143  1.0000
 n,elder - y,middle   0.6840766 0.3978678 NA   1.719  1.0000
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 n,elder - n,young   -1.3706103 0.2495657 NA  -5.492  <.0001
 n,elder - y,young   -1.2368505 0.3697956 NA  -3.345  0.0124
 y,elder - n,middle  -1.2536861 0.3970425 NA  -3.158  0.0239
 y,elder - y,middle  -0.2485514 0.3024160 NA  -0.822  1.0000
 y,elder - n,young   -2.3032383 0.3764102 NA  -6.119  <.0001
 y,elder - y,young   -2.1694786 0.2673664 NA  -8.114  <.0001
 n,middle - y,middle  1.0051347 0.3294732 NA   3.051  0.0342
 n,middle - n,young  -1.0495522 0.2948256 NA  -3.560  0.0056
 n,middle - y,young  -0.9157925 0.4016243 NA  -2.280  0.3389
 y,middle - n,young  -2.0546868 0.4086287 NA  -5.028  <.0001
 y,middle - y,young  -1.9209271 0.3113988 NA  -6.169  <.0001
 n,young - y,young    0.1337597 0.3051287 NA   0.438  1.0000

$contrasts
contrast                    estimate        SE df z.ratio p.value
 123,elder - 132,elder    0.41068797 0.5675658 NA   0.724  1.0000
 123,elder - 213,elder    0.52269767 0.5697121 NA   0.917  1.0000
 123,elder - 231,elder    0.47848935 0.5714844 NA   0.837  1.0000
 123,elder - 312,elder    0.17908675 0.5633994 NA   0.318  1.0000
 123,elder - 321,elder   -3.53043994 0.4901225 NA  -7.203  <.0001
 123,elder - 123,middle  -0.34990543 0.3954063 NA  -0.885  1.0000
 123,elder - 132,middle  -0.03350855 0.6229088 NA  -0.054  1.0000
 123,elder - 213,middle   0.04170994 0.6235414 NA   0.067  1.0000
 123,elder - 231,middle   0.29620437 0.6269285 NA   0.472  1.0000
 123,elder - 312,middle  -0.43147552 0.6244509 NA  -0.691  1.0000
 123,elder - 321,middle  -3.17133158 0.5455004 NA  -5.814  <.0001
 123,elder - 123,young   -2.55155563 0.3462917 NA  -7.368  <.0001
 123,elder - 132,young   -2.08563494 0.5930225 NA  -3.517  0.0668
 123,elder - 213,young   -1.54904751 0.5943516 NA  -2.606  1.0000
 123,elder - 231,young   -1.76538807 0.5921392 NA  -2.981  0.4390
 123,elder - 312,young   -1.98745211 0.5945164 NA  -3.343  0.1268
 123,elder - 321,young   -2.62066647 0.5282096 NA  -4.961  0.0001
 132,elder - 213,elder    0.11200970 0.5755021 NA   0.195  1.0000
 132,elder - 231,elder    0.06780139 0.5772428 NA   0.117  1.0000
 132,elder - 312,elder   -0.23160121 0.5691996 NA  -0.407  1.0000
 132,elder - 321,elder   -3.94112791 0.4967123 NA  -7.934  <.0001
 132,elder - 123,middle  -0.76059339 0.6290667 NA  -1.209  1.0000
 132,elder - 132,middle  -0.44419651 0.4015060 NA  -1.106  1.0000
 132,elder - 213,middle  -0.36897803 0.6289509 NA  -0.587  1.0000
 132,elder - 231,middle  -0.11448359 0.6322625 NA  -0.181  1.0000
 132,elder - 312,middle  -0.84216349 0.6298722 NA  -1.337  1.0000
 132,elder - 321,middle  -3.58201955 0.5526816 NA  -6.481  <.0001
 132,elder - 123,young   -2.96224360 0.6001359 NA  -4.936  0.0001
 132,elder - 132,young   -2.49632291 0.3553912 NA  -7.024  <.0001
 132,elder - 213,young   -1.95973547 0.6004809 NA  -3.264  0.1683
 132,elder - 231,young   -2.17607603 0.5983363 NA  -3.637  0.0422
 132,elder - 312,young   -2.39814008 0.6007500 NA  -3.992  0.0100
 132,elder - 321,young   -3.03135443 0.5359319 NA  -5.656  <.0001
 213,elder - 231,elder   -0.04420831 0.5793244 NA  -0.076  1.0000
 213,elder - 312,elder   -0.34361091 0.5713055 NA  -0.601  1.0000
 213,elder - 321,elder   -4.05313761 0.4989529 NA  -8.123  <.0001
 213,elder - 123,middle  -0.87260309 0.6310947 NA  -1.383  1.0000
 213,elder - 132,middle  -0.55620621 0.6303607 NA  -0.882  1.0000
 213,elder - 213,middle  -0.48098773 0.4053277 NA  -1.187  1.0000
 213,elder - 231,middle  -0.22649329 0.6342580 NA  -0.357  1.0000
 213,elder - 312,middle  -0.95417319 0.6318977 NA  -1.510  1.0000
 213,elder - 321,middle  -3.69402925 0.5551928 NA  -6.654  <.0001
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213,elder - 123,young	-3.07425330	0.6021881	NA	-5.105	0.0001
213,elder - 132,young	-2.60833261	0.6013052	NA	-4.338	0.0022
213,elder - 213,young	-2.07174517	0.3613753	NA	-5.733	<.0001
213,elder - 231,young	-2.28808573	0.6003645	NA	-3.811	0.0212
213,elder - 312,young	-2.51014978	0.6027873	NA	-4.164	0.0048
213,elder - 321,young	-3.14336413	0.5383735	NA	-5.839	<.0001
231,elder - 312,elder	-0.29940260	0.5731329	NA	-0.522	1.0000
231,elder - 321,elder	-4.00892930	0.5012269	NA	-7.998	<.0001
231,elder - 123,middle	-0.82839478	0.6325962	NA	-1.310	1.0000
231,elder - 132,middle	-0.51199790	0.6318440	NA	-0.810	1.0000
231,elder - 213,middle	-0.43677941	0.6324592	NA	-0.691	1.0000
231,elder - 231,middle	-0.18228498	0.4104421	NA	-0.444	1.0000
231,elder - 312,middle	-0.90996488	0.6334004	NA	-1.437	1.0000
231,elder - 321,middle	-3.64982093	0.5566427	NA	-6.557	<.0001
231,elder - 123,young	-3.03004498	0.6038346	NA	-5.018	0.0001
231,elder - 132,young	-2.56412429	0.6029670	NA	-4.253	0.0032
231,elder - 213,young	-2.02753686	0.6041729	NA	-3.356	0.1210
231,elder - 231,young	-2.24387742	0.3589622	NA	-6.251	<.0001
231,elder - 312,young	-2.46594146	0.6044497	NA	-4.080	0.0069
231,elder - 321,young	-3.09915582	0.5402191	NA	-5.737	<.0001
312,elder - 321,elder	-3.70952670	0.4909710	NA	-7.555	<.0001
312,elder - 123,middle	-0.52899218	0.6252889	NA	-0.846	1.0000
312,elder - 132,middle	-0.21259530	0.6245814	NA	-0.340	1.0000
312,elder - 213,middle	-0.13737681	0.6252127	NA	-0.220	1.0000
312,elder - 231,middle	0.11711762	0.6285582	NA	0.186	1.0000
312,elder - 312,middle	-0.61056228	0.3994009	NA	-1.529	1.0000
312,elder - 321,middle	-3.35041834	0.5484700	NA	-6.109	<.0001
312,elder - 123,young	-2.73064239	0.5958984	NA	-4.582	0.0007
312,elder - 132,young	-2.26472170	0.5950608	NA	-3.806	0.0216
312,elder - 213,young	-1.72813426	0.5963432	NA	-2.898	0.5748
312,elder - 231,young	-1.94447482	0.5941656	NA	-3.273	0.1630
312,elder - 312,young	-2.16653887	0.3507256	NA	-6.177	<.0001
312,elder - 321,young	-2.79975322	0.5315237	NA	-5.267	<.0001
321,elder - 123,middle	3.18053452	0.5595782	NA	5.684	<.0001
321,elder - 132,middle	3.49693140	0.5593755	NA	6.251	<.0001
321,elder - 213,middle	3.57214989	0.5600356	NA	6.378	<.0001
321,elder - 231,middle	3.82664432	0.5641316	NA	6.783	<.0001
321,elder - 312,middle	3.09896442	0.5599285	NA	5.535	<.0001
321,elder - 321,middle	0.35910836	0.2852625	NA	1.259	1.0000
321,elder - 123,young	0.97888431	0.5209349	NA	1.879	1.0000
321,elder - 132,young	1.44480500	0.5211747	NA	2.772	0.8519
321,elder - 213,young	1.98139244	0.5239884	NA	3.781	0.0239
321,elder - 231,young	1.76505188	0.5207903	NA	3.389	0.1073
321,elder - 312,young	1.54298783	0.5233297	NA	2.948	0.4887
321,elder - 321,young	0.90977348	0.2511498	NA	3.622	0.0447
123,middle - 132,middle	0.31639688	0.5949191	NA	0.532	1.0000
123,middle - 213,middle	0.39161537	0.5956616	NA	0.657	1.0000
123,middle - 231,middle	0.64610980	0.5991607	NA	1.078	1.0000
123,middle - 312,middle	-0.08157010	0.5966480	NA	-0.137	1.0000
123,middle - 321,middle	-2.82142616	0.5144804	NA	-5.484	<.0001
123,middle - 123,young	-2.20165021	0.4004410	NA	-5.498	<.0001
123,middle - 132,young	-1.73572952	0.6262167	NA	-2.772	0.8530
123,middle - 213,young	-1.19914208	0.6275838	NA	-1.911	1.0000
123,middle - 231,young	-1.41548264	0.6255577	NA	-2.263	1.0000
123,middle - 312,young	-1.63754669	0.6277274	NA	-2.609	1.0000
123,middle - 321,young	-2.27076104	0.5654520	NA	-4.016	0.0091
132,middle - 213,middle	0.07521849	0.5946544	NA	0.126	1.0000

```
 132,middle - 231,middle  0.32971292 0.5981539 NA   0.551  1.0000
 132,middle - 312,middle -0.39796698 0.5958965 NA  -0.668  1.0000
 132,middle - 321,middle -3.13782303 0.5131632 NA  -6.115  <.0001
 132,middle - 123,young  -2.51804708 0.6264478 NA  -4.020  0.0089
 132,middle - 132,young  -2.05212639 0.3985311 NA  -5.149  <.0001
 132,middle - 213,young  -1.51553896 0.6269972 NA  -2.417  1.0000
 132,middle - 231,young  -1.73187952 0.6250025 NA  -2.771  0.8550
 132,middle - 312,young  -1.95394356 0.6272211 NA  -3.115  0.2812
 132,middle - 321,young  -2.58715792 0.5652148 NA  -4.577  0.0007
 213,middle - 231,middle  0.25449443 0.5989253 NA   0.425  1.0000
 213,middle - 312,middle -0.47318547 0.5966420 NA  -0.793  1.0000
 213,middle - 321,middle -3.21304152 0.5138478 NA  -6.253  <.0001
 213,middle - 123,young  -2.59326557 0.6270631 NA  -4.136  0.0054
 213,middle - 132,young  -2.12734488 0.6263270 NA  -3.397  0.1044
 213,middle - 213,young  -1.59075745 0.4016272 NA  -3.961  0.0114
 213,middle - 231,young  -1.80709801 0.6256153 NA  -2.889  0.5922
 213,middle - 312,young  -2.02916205 0.6278353 NA  -3.232  0.1881
 213,middle - 321,young  -2.66237641 0.5658793 NA  -4.705  0.0004
 231,middle - 312,middle -0.72767990 0.6001870 NA  -1.212  1.0000
 231,middle - 321,middle -3.46753596 0.5183259 NA  -6.690  <.0001
 231,middle - 123,young  -2.84776000 0.6306906 NA  -4.515  0.0010
 231,middle - 132,young  -2.38183931 0.6299076 NA  -3.781  0.0239
 231,middle - 213,young  -1.84525188 0.6311243 NA  -2.924  0.5291
 231,middle - 231,young  -2.06159244 0.4029310 NA  -5.116  <.0001
 231,middle - 312,young  -2.28365648 0.6313992 NA  -3.617  0.0456
 231,middle - 321,young  -2.91687084 0.5700408 NA  -5.117  <.0001
 312,middle - 321,middle -2.73985606 0.5152652 NA  -5.317  <.0001
 312,middle - 123,young  -2.12008011 0.6273490 NA  -3.379  0.1111
 312,middle - 132,young  -1.65415942 0.6267474 NA  -2.639  1.0000
 312,middle - 213,young  -1.11757198 0.6281794 NA  -1.779  1.0000
 312,middle - 231,young  -1.33391254 0.6261194 NA  -2.130  1.0000
 312,middle - 312,young  -1.55597659 0.4028795 NA  -3.862  0.0172
 312,middle - 321,young  -2.18919094 0.5658467 NA  -3.869  0.0167
 321,middle - 123,young   0.61977595 0.5452204 NA   1.137  1.0000
 321,middle - 132,young   1.08569664 0.5453169 NA   1.991  1.0000
 321,middle - 213,young   1.62228407 0.5478794 NA   2.961  0.4691
 321,middle - 231,young   1.40594352 0.5450347 NA   2.580  1.0000
 321,middle - 312,young   1.18387947 0.5474434 NA   2.163  1.0000
 321,middle - 321,young   0.55066511 0.2974842 NA   1.851  1.0000
 123,young - 132,young    0.46592069 0.5493210 NA   0.848  1.0000
 123,young - 213,young    1.00250812 0.5518394 NA   1.817  1.0000
 123,young - 231,young    0.78616757 0.5489144 NA   1.432  1.0000
 123,young - 312,young    0.56410352 0.5511410 NA   1.024  1.0000
 123,young - 321,young   -0.06911084 0.4781213 NA  -0.145  1.0000
 132,young - 213,young    0.53658743 0.5515218 NA   0.973  1.0000
 132,young - 231,young    0.32024688 0.5487237 NA   0.584  1.0000
 132,young - 312,young    0.09818283 0.5509666 NA   0.178  1.0000
 132,young - 321,young   -0.53503153 0.4782946 NA  -1.119  1.0000
 213,young - 231,young   -0.21634056 0.5509069 NA  -0.393  1.0000
 213,young - 312,young   -0.43840460 0.5532673 NA  -0.792  1.0000
 213,young - 321,young   -1.07161896 0.4811534 NA  -2.227  1.0000
 231,young - 312,young   -0.22206405 0.5504422 NA  -0.403  1.0000
 231,young - 321,young   -0.85527840 0.4777518 NA  -1.790  1.0000
 312,young - 321,young   -0.63321436 0.4800646 NA  -1.319  1.0000


$contrasts
```

contrast	estimate	SE	df	z.ratio	p.value
n,123 - y,123	-0.53081259	0.7233491	NA	-0.734	1.0000
n,123 - n,132	-0.07466447	0.7242713	NA	-0.103	1.0000
n,123 - y,132	0.33918891	0.7276662	NA	0.466	1.0000
n,123 - n,213	0.06744187	0.7250899	NA	0.093	1.0000
n,123 - y,213	0.67962631	0.7286912	NA	0.933	1.0000
n,123 - n,231	0.30292361	0.7250554	NA	0.418	1.0000
n,123 - y,231	0.44010828	0.7302834	NA	0.603	1.0000
n,123 - n,312	-0.50760823	0.7241692	NA	-0.701	1.0000
n,123 - y,312	0.41787576	0.7272704	NA	0.575	1.0000
n,123 - n,321	-3.69830742	0.5395711	NA	-6.854	<.0001
n,123 - y,321	-1.11315646	0.7255741	NA	-1.534	1.0000
y,123 - n,132	0.45614812	0.7236601	NA	0.630	1.0000
y,123 - y,132	0.87000150	0.7264781	NA	1.198	1.0000
y,123 - n,213	0.59825446	0.7245257	NA	0.826	1.0000
y,123 - y,213	1.21043890	0.7275884	NA	1.664	1.0000
y,123 - n,231	0.83373620	0.7245672	NA	1.151	1.0000
y,123 - y,231	0.97092086	0.7290203	NA	1.332	1.0000
y,123 - n,312	0.02320436	0.7235926	NA	0.032	1.0000
y,123 - y,312	0.94868834	0.7262085	NA	1.306	1.0000
y,123 - n,321	-3.16749483	0.5375369	NA	-5.893	<.0001
y,123 - y,321	-0.58234387	0.7240106	NA	-0.804	1.0000
n,132 - y,132	0.41385338	0.7257562	NA	0.570	1.0000
n,132 - n,213	0.14210635	0.7242930	NA	0.196	1.0000
n,132 - y,213	0.75429078	0.7278354	NA	1.036	1.0000
n,132 - n,231	0.37758809	0.7242484	NA	0.521	1.0000
n,132 - y,231	0.51477275	0.7294377	NA	0.706	1.0000
n,132 - n,312	-0.43294376	0.7233707	NA	-0.599	1.0000
n,132 - y,312	0.49254023	0.7264133	NA	0.678	1.0000
n,132 - n,321	-3.62364295	0.5382906	NA	-6.732	<.0001
n,132 - y,321	-1.03849199	0.7246647	NA	-1.433	1.0000
y,132 - n,213	-0.27174703	0.7275639	NA	-0.374	1.0000
y,132 - y,213	0.34043740	0.7303742	NA	0.466	1.0000
y,132 - n,231	-0.03626529	0.7275868	NA	-0.050	1.0000
y,132 - y,231	0.10091937	0.7318455	NA	0.138	1.0000
y,132 - n,312	-0.84679714	0.7268348	NA	-1.165	1.0000
y,132 - y,312	0.07868685	0.7290829	NA	0.108	1.0000
y,132 - n,321	-4.03749633	0.5433244	NA	-7.431	<.0001
y,132 - y,321	-1.45234537	0.7275029	NA	-1.996	1.0000
n,213 - y,213	0.61218443	0.7277002	NA	0.841	1.0000
n,213 - n,231	0.23548174	0.7250530	NA	0.325	1.0000
n,213 - y,231	0.37266640	0.7301724	NA	0.510	1.0000
n,213 - n,312	-0.57505010	0.7242381	NA	-0.794	1.0000
n,213 - y,312	0.35043388	0.7271795	NA	0.482	1.0000
n,213 - n,321	-3.76574929	0.5397786	NA	-6.976	<.0001
n,213 - y,321	-1.18059834	0.7255357	NA	-1.627	1.0000
y,213 - n,231	-0.37670269	0.7285859	NA	-0.517	1.0000
y,213 - y,231	-0.23951803	0.7328837	NA	-0.327	1.0000
y,213 - n,312	-1.18723454	0.7279196	NA	-1.631	1.0000
y,213 - y,312	-0.26175055	0.7301030	NA	-0.359	1.0000
y,213 - n,321	-4.37793373	0.5451611	NA	-8.031	<.0001
y,213 - y,321	-1.79278277	0.7286848	NA	-2.460	0.9162
n,231 - y,231	0.13718466	0.7285929	NA	0.188	1.0000
n,231 - n,312	-0.81053184	0.7242356	NA	-1.119	1.0000
n,231 - y,312	0.11495214	0.7271775	NA	0.158	1.0000
n,231 - n,321	-4.00123103	0.5400771	NA	-7.409	<.0001
n,231 - y,321	-1.41608008	0.7256428	NA	-1.951	1.0000

```
 y,231 - n,312 -0.94771650 0.7294764 NA  -1.299  1.0000
 y,231 - y,312 -0.02223252 0.7316178 NA  -0.030  1.0000
 y,231 - n,321 -4.13841569 0.5467845 NA  -7.569  <.0001
 y,231 - y,321 -1.55326474 0.7300552 NA  -2.128  1.0000
 n,312 - y,312  0.92548398 0.7256058 NA   1.275  1.0000
 n,312 - n,321 -3.19069919 0.5374612 NA  -5.937  <.0001
 n,312 - y,321 -0.60554823 0.7245181 NA  -0.836  1.0000
 y,312 - n,321 -4.11618317 0.5429405 NA  -7.581  <.0001
 y,312 - y,321 -1.53103222 0.7272527 NA  -2.105  1.0000
 n,321 - y,321  2.58515096 0.5374207 NA   4.810  0.0001
```

Model 6

6382 cases

Initial predictors:

AgeGroup+Gender+Region+Education+IPP+IPP:AgeGroup+OrderOfVerbs+Order OfVerbs:AgeGroup+IPP:OrderOfVerbs

After model selection we get the following model:

SpeakerJudgmentInteger~AgeGroup+Gender+IPP+IPP:AgeGroup+OrderOfVerbs +OrderOfVerbs:AgeGroup+(1|SpeakerID) +(1|ItemNr)

```
Coefficients:
                              Estimate Std. Error z value Pr(>|z|)    
AgeGroupmiddle                 0.88861    0.38350   2.317   0.0205 *  
AgeGroupyoung                  2.30651    0.28907   7.979 1.48e-15 ***
Gendermale                     0.21747    0.15186   1.432   0.1521    
IPPy                          -1.17871    0.29402  -4.009 6.10e-05 ***
OrderOfVerbs132               -0.32314    0.54076  -0.598   0.5501    
OrderOfVerbs213               -0.57436    0.54365  -1.057   0.2907    
OrderOfVerbs231               -0.46545    0.54367  -0.856   0.3919    
OrderOfVerbs312               -0.26195    0.53789  -0.487   0.6263    
OrderOfVerbs321                4.12948    0.42882   9.630  < 2e-16 ***
AgeGroupmiddle:IPPy           -0.02597    0.22393  -0.116   0.9077    
AgeGroupyoung:IPPy             0.73820    0.16828   4.387 1.15e-05 ***
AgeGroupmiddle:OrderOfVerbs132 -0.24904    0.40414  -0.616   0.5377    
AgeGroupyoung:OrderOfVerbs132  -0.25508    0.30644  -0.832   0.4052    
AgeGroupmiddle:OrderOfVerbs213  0.09837    0.40668   0.242   0.8089    
AgeGroupyoung:OrderOfVerbs213  -0.33297    0.31171  -1.068   0.2854    
AgeGroupmiddle:OrderOfVerbs231 -0.26146    0.41013  -0.638   0.5238    
AgeGroupyoung:OrderOfVerbs231  -0.36552    0.31074  -1.176   0.2395    
AgeGroupmiddle:OrderOfVerbs312  0.10865    0.40302   0.270   0.7875    
AgeGroupyoung:OrderOfVerbs312  -0.34046    0.30080  -1.132   0.2577    
AgeGroupmiddle:OrderOfVerbs321 -1.23425    0.31665  -3.898 9.70e-05 ***
AgeGroupyoung:OrderOfVerbs321  -3.76755    0.23994 -15.702  < 2e-16 ***
```

```
$contrasts
 contrast         estimate        SE df z.ratio p.value
```

```
 elder - middle -0.6193303 0.2653213 NA  -2.334  0.0587
 elder - young  -1.8320156 0.2005386 NA  -9.135  <.0001
 middle - young -1.2126853 0.2238104 NA  -5.418  <.0001


$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast  estimate        SE df z.ratio p.value
 n - y    0.9413037 0.2641896 NA   3.563  0.0004


$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast     estimate        SE df  z.ratio p.value
 123 - 132   0.49117652 0.4869960 NA   1.009  1.0000
 123 - 213   0.65256283 0.4872543 NA   1.339  1.0000
 123 - 231   0.67444957 0.4880868 NA   1.382  1.0000
 123 - 312   0.33921940 0.4867953 NA   0.697  1.0000
 123 - 321 -2.46221409 0.3881128 NA  -6.344  <.0001
 132 - 213   0.16138631 0.4883223 NA   0.330  1.0000
 132 - 231   0.18327305 0.4891225 NA   0.375  1.0000
 132 - 312 -0.15195712 0.4878846 NA  -0.311  1.0000
 132 - 321 -2.95339061 0.3893683 NA  -7.585  <.0001
 213 - 231   0.02188674 0.4893809 NA   0.045  1.0000
 213 - 312 -0.31334343 0.4881414 NA  -0.642  1.0000
 213 - 321 -3.11477692 0.3899160 NA  -7.988  <.0001
 231 - 312 -0.33523017 0.4889611 NA  -0.686  1.0000
 231 - 321 -3.13666366 0.3907097 NA  -8.028  <.0001
 312 - 321 -2.80143349 0.3891221 NA  -7.199  <.0001


$contrasts
 contrast               estimate        SE df z.ratio p.value
 n,elder - y,elder     1.1787113 0.2940194 NA   4.009  0.0009
 n,elder - n,middle   -0.6323176 0.2769062 NA  -2.284  0.3360
 n,elder - y,middle    0.5723683 0.3822550 NA   1.497  1.0000
 n,elder - n,young    -1.4629169 0.2084037 NA  -7.020  <.0001
 n,elder - y,young    -1.0224030 0.3279817 NA  -3.117  0.0274
 y,elder - n,middle   -1.8110290 0.3836138 NA  -4.721  <.0001
 y,elder - y,middle   -0.6063430 0.2986416 NA  -2.030  0.6348
 y,elder - n,young    -2.6416283 0.3378230 NA  -7.820  <.0001
 y,elder - y,young    -2.2011143 0.2261818 NA  -9.732  <.0001
 n,middle - y,middle  1.2046860 0.3018498 NA   3.991  0.0010
 n,middle - n,young   -0.8305993 0.2342709 NA  -3.545  0.0059
 n,middle - y,young   -0.3900854 0.3450770 NA  -1.130  1.0000
 y,middle - n,young   -2.0352853 0.3531326 NA  -5.764  <.0001
 y,middle - y,young   -1.5947713 0.2485766 NA  -6.416  <.0001
 n,young - y,young     0.4405139 0.2626334 NA   1.677  1.0000



$contrasts

contrast                          estimate        SE df z.ratio p.value
 123,elder - 132,elder     0.32313580 0.5407629 NA    0.598  1.0000
 123,elder - 213,elder     0.57436266 0.5436457 NA    1.057  1.0000
```

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 123,elder - 231,elder    0.46545455 0.5436687 NA   0.856  1.0000
 123,elder - 312,elder    0.26195216 0.5378936 NA   0.487  1.0000
 123,elder - 321,elder   -4.12948132 0.4288240 NA  -9.630  <.0001
 123,elder - 123,middle  -0.87561900 0.3668658 NA  -2.387  1.0000
 123,elder - 132,middle  -0.30344311 0.5954339 NA  -0.510  1.0000
 123,elder - 213,middle  -0.39962495 0.5944085 NA  -0.672  1.0000
 123,elder - 231,middle  -0.14870122 0.5980373 NA  -0.249  1.0000
 123,elder - 312,middle  -0.72232117 0.5967811 NA  -1.210  1.0000
 123,elder - 321,middle  -3.77084858 0.4931430 NA  -7.647  <.0001
 123,elder - 123,young   -2.67561213 0.2767741 NA  -9.667  <.0001
 123,elder - 132,young   -2.09739428 0.5416122 NA  -3.873  0.0165
 123,elder - 213,young   -1.76828036 0.5415944 NA  -3.265  0.1675
 123,elder - 231,young   -1.84463575 0.5417130 NA  -3.405  0.1012
 123,elder - 312,young   -2.07320392 0.5415159 NA  -3.829  0.0197
 123,elder - 321,young   -3.03754349 0.4558175 NA  -6.664  <.0001
 132,elder - 213,elder    0.25122685 0.5493826 NA   0.457  1.0000
 132,elder - 231,elder    0.14231874 0.5493578 NA   0.259  1.0000
 132,elder - 312,elder   -0.06118364 0.5434949 NA  -0.113  1.0000
 132,elder - 321,elder   -4.45261712 0.4341999 NA -10.255  <.0001
 132,elder - 123,middle  -1.19875481 0.5985843 NA  -2.003  1.0000
 132,elder - 132,middle  -0.62657891 0.3793634 NA  -1.652  1.0000
 132,elder - 213,middle  -0.72276075 0.6001170 NA  -1.204  1.0000
 132,elder - 231,middle  -0.47183703 0.6037038 NA  -0.782  1.0000
 132,elder - 312,middle  -1.04545698 0.6024723 NA  -1.735  1.0000
 132,elder - 321,middle  -4.09398439 0.5001325 NA  -8.186  <.0001
 132,elder - 123,young   -2.99874793 0.5480652 NA  -5.472  <.0001
 132,elder - 132,young   -2.42053008 0.2888464 NA  -8.380  <.0001
 132,elder - 213,young   -2.09141616 0.5479071 NA  -3.817  0.0207
 132,elder - 231,young   -2.16777156 0.5480373 NA  -3.956  0.0117
 132,elder - 312,young   -2.39633972 0.5478530 NA  -4.374  0.0019
 132,elder - 321,young   -3.36067930 0.4633565 NA  -7.253  <.0001
 213,elder - 231,elder   -0.10890811 0.5522796 NA  -0.197  1.0000
 213,elder - 312,elder   -0.31241049 0.5464672 NA  -0.572  1.0000
 213,elder - 321,elder   -4.70384398 0.4383880 NA -10.730  <.0001
 213,elder - 123,middle  -1.44998166 0.6012756 NA  -2.412  1.0000
 213,elder - 132,middle  -0.87780576 0.6038137 NA  -1.454  1.0000
 213,elder - 213,middle  -0.97398760 0.3821156 NA  -2.549  1.0000
 213,elder - 231,middle  -0.72306388 0.6063466 NA  -1.192  1.0000
 213,elder - 312,middle  -1.29668383 0.6051425 NA  -2.143  1.0000
 213,elder - 321,middle  -4.34521124 0.5034240 NA  -8.631  <.0001
 213,elder - 123,young   -3.24997478 0.5510630 NA  -5.898  <.0001
 213,elder - 132,young   -2.67175694 0.5509109 NA  -4.850  0.0002
 213,elder - 213,young   -2.34264301 0.2943461 NA  -7.959  <.0001
 213,elder - 231,young   -2.41899841 0.5510023 NA  -4.390  0.0017
 213,elder - 312,young   -2.64756658 0.5508277 NA  -4.807  0.0002
 213,elder - 321,young   -3.61190615 0.4669006 NA  -7.736  <.0001
 231,elder - 312,elder   -0.20350238 0.5464844 NA  -0.372  1.0000
 231,elder - 321,elder   -4.59493587 0.4382953 NA -10.484  <.0001
 231,elder - 123,middle  -1.34107355 0.6012340 NA  -2.231  1.0000
 231,elder - 132,middle  -0.76889765 0.6037521 NA  -1.274  1.0000
 231,elder - 213,middle  -0.86507949 0.6027323 NA  -1.435  1.0000
 231,elder - 231,middle  -0.61415577 0.3856163 NA  -1.593  1.0000
 231,elder - 312,middle  -1.18777572 0.6050944 NA  -1.963  1.0000
 231,elder - 321,middle  -4.23630313 0.5031654 NA  -8.419  <.0001
 231,elder - 123,young   -3.14106667 0.5510150 NA  -5.701  <.0001
 231,elder - 132,young   -2.56284882 0.5508626 NA  -4.652  0.0005
 231,elder - 213,young   -2.23373490 0.5508265 NA  -4.055  0.0077
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231,elder - 231,young   -2.31009030 0.2933334 NA  -7.875  <.0001
231,elder - 312,young   -2.53865847 0.5507819 NA  -4.609  0.0006
231,elder - 321,young   -3.50299804 0.4667831 NA  -7.505  <.0001
312,elder - 321,elder   -4.39143348 0.4303016 NA -10.205  <.0001
312,elder - 123,middle  -1.13757117 0.5960228 NA  -1.909  1.0000
312,elder - 132,middle  -0.56539527 0.5985990 NA  -0.945  1.0000
312,elder - 213,middle  -0.66157711 0.5975559 NA  -1.107  1.0000
312,elder - 231,middle  -0.41065338 0.6011502 NA  -0.683  1.0000
312,elder - 312,middle  -0.98427334 0.3781261 NA  -2.603  1.0000
312,elder - 321,middle  -4.03280075 0.4970873 NA  -8.113  <.0001
312,elder - 123,young   -2.93756429 0.5452841 NA  -5.387  <.0001
312,elder - 132,young   -2.35934644 0.5451326 NA  -4.328  0.0023
312,elder - 213,young   -2.03023252 0.5451074 NA  -3.724  0.0299
312,elder - 231,young   -2.10658792 0.5452399 NA  -3.864  0.0171
312,elder - 312,young   -2.33515608 0.2828867 NA  -8.255  <.0001
312,elder - 321,young   -3.29949566 0.4600768 NA  -7.172  <.0001
321,elder - 123,middle   3.25386232 0.4985890 NA   6.526  <.0001
321,elder - 132,middle   3.82603821 0.5019661 NA   7.622  <.0001
321,elder - 213,middle   3.72985638 0.5006196 NA   7.450  <.0001
321,elder - 231,middle   3.98078010 0.5049426 NA   7.884  <.0001
321,elder - 312,middle   3.40716015 0.5031520 NA   6.772  <.0001
321,elder - 321,middle   0.35863274 0.2816217 NA   1.273  1.0000
321,elder - 123,young    1.45386919 0.4344115 NA   3.347  0.1251
321,elder - 132,young    2.03208704 0.4349568 NA   4.672  0.0005
321,elder - 213,young    2.36120096 0.4352936 NA   5.424  <.0001
321,elder - 231,young    2.28484557 0.4351954 NA   5.250  <.0001
321,elder - 312,young    2.05627740 0.4348818 NA   4.728  0.0003
321,elder - 321,young    1.09193783 0.2109975 NA   5.175  <.0001
123,middle - 132,middle  0.57217590 0.5524876 NA   1.036  1.0000
123,middle - 213,middle  0.47599406 0.5514427 NA   0.863  1.0000
123,middle - 231,middle  0.72691778 0.5554009 NA   1.309  1.0000
123,middle - 312,middle  0.15329783 0.5540002 NA   0.277  1.0000
123,middle - 321,middle -2.89522958 0.4407450 NA  -6.569  <.0001
123,middle - 123,young  -1.79999312 0.3065212 NA  -5.872  <.0001
123,middle - 132,young  -1.22177527 0.5574345 NA  -2.192  1.0000
123,middle - 213,young  -0.89266135 0.5574634 NA  -1.601  1.0000
123,middle - 231,young  -0.96901675 0.5575636 NA  -1.738  1.0000
123,middle - 312,young  -1.19758492 0.5573433 NA  -2.149  1.0000
123,middle - 321,young  -2.16192449 0.4743944 NA  -4.557  0.0008
132,middle - 213,middle -0.09618184 0.5538503 NA  -0.174  1.0000
132,middle - 231,middle  0.15474189 0.5576080 NA   0.278  1.0000
132,middle - 312,middle -0.41887807 0.5565693 NA  -0.753  1.0000
132,middle - 321,middle -3.46740548 0.4426554 NA  -7.833  <.0001
132,middle - 123,young  -2.37216902 0.5604659 NA  -4.232  0.0035
132,middle - 132,young  -1.79395117 0.3118702 NA  -5.752  <.0001
132,middle - 213,young  -1.46483725 0.5603840 NA  -2.614  1.0000
132,middle - 231,young  -1.54119265 0.5604987 NA  -2.750  0.9127
132,middle - 312,young  -1.76976081 0.5602974 NA  -3.159  0.2425
132,middle - 321,young  -2.73410039 0.4779427 NA  -5.721  <.0001
213,middle - 231,middle  0.25092372 0.5566727 NA   0.451  1.0000
213,middle - 312,middle -0.32269623 0.5555163 NA  -0.581  1.0000
213,middle - 321,middle -3.37122364 0.4420417 NA  -7.626  <.0001
213,middle - 123,young  -2.27598718 0.5592997 NA  -4.069  0.0072
213,middle - 132,young  -1.69776933 0.5592377 NA  -3.036  0.3670
213,middle - 213,young  -1.36865541 0.3096495 NA  -4.420  0.0015
213,middle - 231,young  -1.44501081 0.5593523 NA  -2.583  1.0000
213,middle - 312,young  -1.67357898 0.5591464 NA  -2.993  0.4225
```

```
 213,middle - 321,young  -2.63791855 0.4765647 NA  -5.535  <.0001
 231,middle - 312,middle -0.57361995 0.5593820 NA  -1.025  1.0000
 231,middle - 321,middle -3.62214736 0.4460508 NA  -8.120  <.0001
 231,middle - 123,young  -2.52691091 0.5632801 NA  -4.486  0.0011
 231,middle - 132,young  -1.94869306 0.5631853 NA  -3.460  0.0826
 231,middle - 213,young  -1.61957913 0.5631815 NA  -2.876  0.6167
 231,middle - 231,young  -1.69593453 0.3160107 NA  -5.367  <.0001
 231,middle - 312,young  -1.92450270 0.5631007 NA  -3.418  0.0966
 231,middle - 321,young  -2.88884227 0.4811901 NA  -6.004  <.0001
 312,middle - 321,middle -3.04852741 0.4454424 NA  -6.844  <.0001
 312,middle - 123,young  -1.95329095 0.5616252 NA  -3.478  0.0773
 312,middle - 132,young  -1.37507310 0.5616135 NA  -2.448  1.0000
 312,middle - 213,young  -1.04595918 0.5616435 NA  -1.862  1.0000
 312,middle - 231,young  -1.12231458 0.5617395 NA  -1.998  1.0000
 312,middle - 312,young  -1.35088275 0.3138173 NA  -4.305  0.0026
 312,middle - 321,young  -2.31522232 0.4792590 NA  -4.831  0.0002
 321,middle - 123,young   1.09523646 0.4480585 NA   2.444  1.0000
 321,middle - 132,young   1.67345431 0.4485229 NA   3.731  0.0292
 321,middle - 213,young   2.00256823 0.4488175 NA   4.462  0.0012
 321,middle - 231,young   1.92621283 0.4487467 NA   4.292  0.0027
 321,middle - 312,young   1.69764466 0.4484447 NA   3.786  0.0235
 321,middle - 321,young   0.73330509 0.2378937 NA   3.082  0.3141
 123,young - 132,young    0.57821785 0.4849341 NA   1.192  1.0000
 123,young - 213,young    0.90733177 0.4851441 NA   1.870  1.0000
 123,young - 231,young    0.83097637 0.4851874 NA   1.713  1.0000
 123,young - 312,young    0.60240821 0.4848678 NA   1.242  1.0000
 123,young - 321,young   -0.36193137 0.3860587 NA  -0.938  1.0000
 132,young - 213,young    0.32911392 0.4852729 NA   0.678  1.0000
 132,young - 231,young    0.25275852 0.4853452 NA   0.521  1.0000
 132,young - 312,young    0.02419036 0.4850512 NA   0.050  1.0000
 132,young - 321,young   -0.94014922 0.3865756 NA  -2.432  1.0000
 213,young - 231,young   -0.07635540 0.4854721 NA  -0.157  1.0000
 213,young - 312,young   -0.30492356 0.4852029 NA  -0.628  1.0000
 213,young - 321,young   -1.26926314 0.3867829 NA  -3.282  0.1579
 231,young - 312,young   -0.22856817 0.4852669 NA  -0.471  1.0000
 231,young - 321,young   -1.19290774 0.3866685 NA  -3.085  0.3113
 312,young - 321,young   -0.96433957 0.3863068 NA  -2.496  1.0000
```

Model 7

1896 cases

Coefficients:

```
                          Estimate Std. Error z value Pr(>|z|)
YearofTest2016             0.23883    0.36147   0.661 0.508800
RegionNon FR              -1.25939    1.25527  -1.003 0.315723
RegionSud-West            -0.63413    0.29156  -2.175 0.029636 *
RegionWald                -0.07891    0.42774  -0.184 0.853635
TypeOfVerbmi              -0.35151    0.18021  -1.951 0.051108 .
OrderOfVerbs21             1.09631    0.26027   4.212 2.53e-05 ***
```

```
YearofTest2016:OrderOfVerbs21 -0.81955    0.23308  -3.516 0.000438 ***
```

$contrasts

```
 contrast             estimate        SE df  z.ratio p.value
 Klaai - Non FR     1.25939497 1.2552698 NA   1.003  1.0000
 Klaai - Sud-West   0.63412793 0.2915628 NA   2.175  0.1778
 Klaai - Wald       0.07890975 0.4277353 NA   0.184  1.0000
 Non FR - Sud-West -0.62526704 1.2481300 NA  -0.501  1.0000
 Non FR - Wald     -1.18048522 1.2822915 NA  -0.921  1.0000
 Sud-West - Wald   -0.55521818 0.4077360 NA  -1.362  1.0000
```

$contrasts

```
 contrast  estimate       SE df z.ratio p.value
 ap - mi  0.3515074 0.180207 NA   1.951  0.0511
```

$contrasts

```
 contrast   estimate        SE df z.ratio p.value
 12 - 21  -0.6865401 0.1939407 NA   -3.54  0.0004
```

$contrasts

```
 contrast            estimate        SE df z.ratio p.value
 12,2004 - 21,2004 -1.0963142 0.2602712 NA  -4.212  0.0002
 12,2004 - 12,2016 -0.2388257 0.3614697 NA  -0.661  1.0000
 12,2004 - 21,2016 -0.5155916 0.3941076 NA  -1.308  1.0000
 21,2004 - 12,2016  0.8574885 0.3989355 NA   2.149  0.1896
 21,2004 - 21,2016  0.5807226 0.3684386 NA   1.576  0.6899
 12,2016 - 21,2016 -0.2767660 0.1861395 NA  -1.487  0.8223
```

Model 8

3201 cases

Initial predictors:

YearofTest+Gender+Region+Education+TypeOfVerb+TypeOfVerb:YearofTest+
OrderOfVerbs+OrderOfVerbs:YearofTest+TypeOfVerb:OrderOfVerbs

After model selection we get the following model:

SpeakerJudgmentInteger~Region+OrderOfVerbs+(1|SpeakerID) +(1|ItemNr)

Coefficients:

```
               Estimate Std. Error z value Pr(>|z|)
RegionNon FR    -1.4114     1.2983  -1.087  0.27699
```

```
RegionSud-West  -0.6566     0.2363  -2.778  0.00546 **
RegionWald      -0.1446     0.3149  -0.459  0.64625
OrderOfVerbs21   0.4044     0.1955   2.069  0.03855 *
```

$contrasts

```
 contrast             estimate        SE df z.ratio p.value
 Klaai - Non FR      1.4113508 1.2982536 NA   1.087  1.0000
 Klaai - Sud-West    0.6566226 0.2363304 NA   2.778  0.0328
 Klaai - Wald        0.1445538 0.3149435 NA   0.459  1.0000
 Non FR - Sud-West -0.7547282 1.2982216 NA  -0.581  1.0000
 Non FR - Wald     -1.2667969 1.3149652 NA  -0.963  1.0000
 Sud-West - Wald   -0.5120687 0.3158015 NA  -1.621  0.6295
```

$contrasts

```
 contrast  estimate        SE df z.ratio p.value
 12 - 21  -0.404403 0.1954647 NA  -2.069  0.0386
```

Model 9

4543 cases

Coefficients:

```
                            Estimate Std. Error z value Pr(>|z|)
YearofTest2016               1.27311    0.35361   3.600 0.000318 ***
RegionNon FR                 0.01146    1.03797   0.011 0.991188
RegionSud-West              -0.47267    0.23801  -1.986 0.047040 *
RegionWald                  -0.90342    0.34784  -2.597 0.009397 **
TypeOfVerbrri                0.22730    0.17749   1.281 0.200319
OrderOfVerbs132              0.56685    0.39985   1.418 0.156295
OrderOfVerbs213              0.46084    0.39615   1.163 0.244710
OrderOfVerbs231              0.06545    0.40453   0.162 0.871467
OrderOfVerbs312              0.82409    0.39756   2.073 0.038182 *
OrderOfVerbs321              1.54187    0.30929   4.985 6.19e-07 ***
YearofTest2016:TypeOfVerbrri    0.25802    0.13071   1.974 0.048377 *
YearofTest2016:OrderOfVerbs132 -0.32435    0.29627  -1.095 0.273605
YearofTest2016:OrderOfVerbs213 -0.32832    0.29126  -1.127 0.259636
YearofTest2016:OrderOfVerbs231 -0.43847    0.30316  -1.446 0.148088
YearofTest2016:OrderOfVerbs312 -0.71121    0.29391  -2.420 0.015530 *
YearofTest2016:OrderOfVerbs321 -0.77997    0.22777  -3.424 0.000616 ***
```

NOTE: Results may be misleading due to involvement in interactions

$contrasts

```
 contrast      estimate        SE df z.ratio p.value
 2004 - 2016 -0.9717301 0.2879033 NA  -3.375  0.0007
```

$contrasts

```
 contrast             estimate        SE df z.ratio p.value
 Klaai - Non FR    -0.01146438 1.0379651 NA  -0.011  1.0000
 Klaai - Sud-West   0.47266801 0.2380075 NA   1.986  0.2822
 Klaai - Wald       0.90342498 0.3478366 NA   2.597  0.0564
 Non FR - Sud-West  0.48413239 1.0334766 NA   0.468  1.0000
 Non FR - Wald      0.91488935 1.0603961 NA   0.863  1.0000
 Sud-West - Wald    0.43075696 0.3341375 NA   1.289  1.0000
```

```
NOTE: Results may be misleading due to involvement in interactions
$contrasts
 contrast      estimate        SE df z.ratio p.value
 123 - 132 -0.40467562 0.3363435 NA  -1.203  1.0000
 123 - 213 -0.29667919 0.3351538 NA  -0.885  1.0000
 123 - 231  0.15378407 0.3377213 NA   0.455  1.0000
 123 - 312 -0.46849103 0.3356980 NA  -1.396  1.0000
 123 - 321 -1.15189202 0.2604741 NA  -4.422  0.0001
 132 - 213  0.10799643 0.3354533 NA   0.322  1.0000
 132 - 231  0.55845969 0.3381079 NA   1.652  1.0000
 132 - 312 -0.06381541 0.3359556 NA  -0.190  1.0000
 132 - 321 -0.74721640 0.2606410 NA  -2.867  0.0622
 213 - 231  0.45046326 0.3369125 NA   1.337  1.0000
 213 - 312 -0.17181184 0.3347558 NA  -0.513  1.0000
 213 - 321 -0.85521282 0.2592029 NA  -3.299  0.0145
 231 - 312 -0.62227510 0.3374624 NA  -1.844  0.9778
 231 - 321 -1.30567609 0.2627981 NA  -4.968  <.0001
 312 - 321 -0.68340099 0.2597493 NA  -2.631  0.1277
```

```
$contrasts

contrast              estimate        SE df z.ratio p.value
 rap,2004 - rri,2004 -0.2272985 0.1774877 NA  -1.281  1.0000
 rap,2004 - rap,2016 -0.8427205 0.2954748 NA  -2.852  0.0261
 rap,2004 - rri,2016 -1.3280381 0.3248117 NA  -4.089  0.0003
 rri,2004 - rap,2016 -0.6154221 0.3244691 NA  -1.897  0.3472
 rri,2004 - rri,2016 -1.1007397 0.2949802 NA  -3.732  0.0011
 rap,2016 - rri,2016 -0.4853176 0.1484798 NA  -3.269  0.0065
```

```
$contrasts
 contrast                estimate        SE df z.ratio p.value
 123,2004 - 132,2004 -0.566850874 0.3998544 NA  -1.418  1.0000
 123,2004 - 213,2004 -0.460839441 0.3961501 NA  -1.163  1.0000
 123,2004 - 231,2004 -0.065451946 0.4045347 NA  -0.162  1.0000
 123,2004 - 312,2004 -0.824094034 0.3975579 NA  -2.073  1.0000
 123,2004 - 321,2004 -1.541874732 0.3092870 NA  -4.985  <.0001
 123,2004 - 123,2016 -1.402115852 0.3464793 NA  -4.047  0.0034
 123,2004 - 132,2016 -1.644616215 0.4601742 NA  -3.574  0.0232
 123,2004 - 213,2016 -1.534634795 0.4600449 NA  -3.336  0.0561
 123,2004 - 231,2016 -1.029095760 0.4600765 NA  -2.237  1.0000
 123,2004 - 312,2016 -1.515003874 0.4604236 NA  -3.290  0.0660
 123,2004 - 321,2016 -2.164025152 0.4096891 NA  -5.282  <.0001
 132,2004 - 213,2004  0.106011434 0.3966680 NA   0.267  1.0000
 132,2004 - 231,2004  0.501398929 0.4051896 NA   1.237  1.0000
 132,2004 - 312,2004 -0.257243160 0.3979476 NA  -0.646  1.0000
 132,2004 - 321,2004 -0.975023858 0.3095860 NA  -3.149  0.1080
 132,2004 - 123,2016 -0.835264978 0.4599002 NA  -1.816  1.0000
 132,2004 - 132,2016 -1.077765340 0.3476394 NA  -3.100  0.1276
 132,2004 - 213,2016 -0.967783921 0.4603387 NA  -2.102  1.0000
 132,2004 - 231,2016 -0.462244886 0.4604707 NA  -1.004  1.0000
 132,2004 - 312,2016 -0.948152999 0.4607280 NA  -2.058  1.0000
 132,2004 - 321,2016 -1.597174278 0.4098616 NA  -3.897  0.0064
 213,2004 - 231,2004  0.395387495 0.4015179 NA   0.985  1.0000
 213,2004 - 312,2004 -0.363254594 0.3942071 NA  -0.921  1.0000
```

```
 213,2004 - 321,2004 -1.081035292 0.3049228 NA  -3.545  0.0259
 213,2004 - 123,2016 -0.941276412 0.4567802 NA  -2.061  1.0000
 213,2004 - 132,2016 -1.183776774 0.4573447 NA  -2.588  0.6364
 213,2004 - 213,2016 -1.073795354 0.3435126 NA  -3.126  0.1170
 213,2004 - 231,2016 -0.568256320 0.4573336 NA  -1.243  1.0000
 213,2004 - 312,2016 -1.054164433 0.4576205 NA  -2.304  1.0000
 213,2004 - 321,2016 -1.703185711 0.4064036 NA  -4.191  0.0018
 231,2004 - 312,2004 -0.758642089 0.4028828 NA  -1.883  1.0000
 231,2004 - 321,2004 -1.476422787 0.3160604 NA  -4.671  0.0002
 231,2004 - 123,2016 -1.336663907 0.4642001 NA  -2.879  0.2629
 231,2004 - 132,2016 -1.579164269 0.4647712 NA  -3.398  0.0448
 231,2004 - 213,2016 -1.469182849 0.4646417 NA  -3.162  0.1034
 231,2004 - 231,2016 -0.963643815 0.3534788 NA  -2.726  0.4229
 231,2004 - 312,2016 -1.449551928 0.4650235 NA  -3.117  0.1205
 231,2004 - 321,2016 -2.098573206 0.4148053 NA  -5.059  <.0001
 312,2004 - 321,2004 -0.717780698 0.3063490 NA  -2.343  1.0000
 312,2004 - 123,2016 -0.578021818 0.4577632 NA  -1.263  1.0000
 312,2004 - 132,2016 -0.820522181 0.4583078 NA  -1.790  1.0000
 312,2004 - 213,2016 -0.710540761 0.4582070 NA  -1.551  1.0000
 312,2004 - 231,2016 -0.205001726 0.4583689 NA  -0.447  1.0000
 312,2004 - 312,2016 -0.690909840 0.3453919 NA  -2.000  1.0000
 312,2004 - 321,2016 -1.339931118 0.4074039 NA  -3.289  0.0664
 321,2004 - 123,2016  0.139758880 0.3831221 NA   0.365  1.0000
 321,2004 - 132,2016 -0.102741483 0.3837229 NA  -0.268  1.0000
 321,2004 - 213,2016  0.007239937 0.3836350 NA   0.019  1.0000
 321,2004 - 231,2016  0.512778972 0.3839701 NA   1.335  1.0000
 321,2004 - 312,2016  0.026870858 0.3841138 NA   0.070  1.0000
 321,2004 - 321,2016 -0.622150420 0.2912482 NA  -2.136  1.0000
 123,2016 - 132,2016 -0.242500363 0.3320495 NA  -0.730  1.0000
 123,2016 - 213,2016 -0.132518943 0.3318683 NA  -0.399  1.0000
 123,2016 - 231,2016  0.373020092 0.3322912 NA   1.123  1.0000
 123,2016 - 312,2016 -0.112888022 0.3324555 NA  -0.340  1.0000
 123,2016 - 321,2016 -0.761909300 0.2568544 NA  -2.966  0.1989
 132,2016 - 213,2016  0.109981420 0.3324879 NA   0.331  1.0000
 132,2016 - 231,2016  0.615520455 0.3329324 NA   1.849  1.0000
 132,2016 - 312,2016  0.129612341 0.3330686 NA   0.389  1.0000
 132,2016 - 321,2016 -0.519408937 0.2575660 NA  -2.017  1.0000
 213,2016 - 231,2016  0.505539035 0.3327545 NA   1.519  1.0000
 213,2016 - 312,2016  0.019630921 0.3328254 NA   0.059  1.0000
 213,2016 - 321,2016 -0.629390357 0.2573973 NA  -2.445  0.9555
 231,2016 - 312,2016 -0.485908114 0.3333210 NA  -1.458  1.0000
 231,2016 - 321,2016 -1.134929392 0.2581345 NA  -4.397  0.0007
 312,2016 - 321,2016 -0.649021278 0.2581255 NA  -2.514  0.7870
```

Model 10

7784 cases

Initial predictors:

YearofTest+Gender+Region+Education+TypeOfVerb+TypeOfVerb:YearofTest+
OrderOfVerbs+OrderOfVerbs:YearofTest+TypeOfVerb:OrderOfVerbs

```
After model selection we get the following model:

SpeakerJudgmentInteger~YearofTest+Gender+Region+Education+TypeOfVerb
+OrderOfVerbs+(1|SpeakerID) +(1|ItemNr)


Coefficients:
                Estimate Std. Error z value Pr(>|z|)
YearofTest2016   0.83580    0.16614   5.031 4.89e-07 ***
Gendermale       0.38289    0.16137   2.373  0.01765 *
RegionNon FR     1.09727    1.02224   1.073  0.28309
RegionSud-West  -0.43230    0.17560  -2.462  0.01382 *
RegionWald       0.07504    0.29042   0.258  0.79611
Education2       0.10622    0.17137   0.620  0.53537
Education3      -0.84190    0.33945  -2.480  0.01313 *
TypeOfVerbrri    0.41445    0.15826   2.619  0.00883 **
OrderOfVerbs132  0.30275    0.35404   0.855  0.39249
OrderOfVerbs213  0.13096    0.35397   0.370  0.71141
OrderOfVerbs231 -0.36534    0.35441  -1.031  0.30261
OrderOfVerbs312  0.29178    0.35392   0.824  0.40971
OrderOfVerbs321  0.83459    0.27418   3.044  0.00233 **


$contrasts
 contrast      estimate        SE df z.ratio p.value
 2004 - 2016 -0.8357985 0.1661392 NA  -5.031  <.0001


$contrasts
 contrast        estimate        SE df z.ratio p.value
 female - male -0.3828882 0.1613672 NA  -2.373  0.0177


$contrasts
 contrast             estimate        SE df z.ratio p.value
 Klaai - Non FR    -1.09727428 1.0222355 NA  -1.073  1.0000
 Klaai - Sud-West   0.43230025 0.1755997 NA   2.462  0.0829
 Klaai - Wald      -0.07503838 0.2904162 NA  -0.258  1.0000
 Non FR - Sud-West  1.52957454 1.0235260 NA   1.494  0.8104
 Non FR - Wald      1.02223590 0.9960656 NA   1.026  1.0000
 Sud-West - Wald   -0.50733864 0.2983291 NA  -1.701  0.5341

$contrasts Education
 contrast   estimate        SE df z.ratio p.value
 1 - 2    -0.1062228 0.1713736 NA  -0.620  1.0000
 1 - 3     0.8419001 0.3394516 NA   2.480  0.0394
 2 - 3     0.9481228 0.3481068 NA   2.724  0.0194

$contrasts
 contrast    estimate        SE df z.ratio p.value
 rap - rri -0.4144457 0.1582607 NA  -2.619  0.0088

$contrasts
 contrast    estimate        SE df z.ratio p.value
 123 - 132 -0.3027458 0.3540448 NA  -0.855  1.0000
 123 - 213 -0.1309580 0.3539702 NA  -0.370  1.0000
```

```
 123 - 231  0.3653419 0.3544081 NA   1.031  1.0000
 123 - 312 -0.2917754 0.3539249 NA  -0.824  1.0000
 123 - 321 -0.8345935 0.2741787 NA  -3.044  0.0350
 132 - 213  0.1717878 0.3541088 NA   0.485  1.0000
 132 - 231  0.6680877 0.3545740 NA   1.884  0.8931
 132 - 312  0.0109704 0.3540467 NA   0.031  1.0000
 132 - 321 -0.5318477 0.2742888 NA  -1.939  0.7875
 213 - 231  0.4962999 0.3544899 NA   1.400  1.0000
 213 - 312 -0.1608174 0.3539720 NA  -0.454  1.0000
 213 - 321 -0.7036355 0.2742575 NA  -2.566  0.1545
 231 - 312 -0.6571173 0.3544603 NA  -1.854  0.9564
 231 - 321 -1.1999354 0.2749398 NA  -4.364  0.0002
 312 - 321 -0.5428181 0.2741310 NA  -1.980  0.7153
```

Model 11

```
5065 cases
```

Coefficients:

```
                               Estimate Std. Error z value Pr(>|z|)
YearofTest2016                   1.0722     0.3686   2.909 0.003629 **
RegionNon FR                    -0.6181     1.5705  -0.394 0.693889
RegionSud-West                  -0.9001     0.2686  -3.351 0.000806 ***
RegionWald                      -0.6702     1.1859  -0.565 0.571950
Education2                       0.7221     0.2669   2.706 0.006810 **
Education3                       0.2354     1.1175   0.211 0.833156
OrderOfVerbs132                 -0.4514     0.4120  -1.096 0.273194
OrderOfVerbs213                 -0.9627     0.4145  -2.322 0.020215 *
OrderOfVerbs231                 -0.7263     0.4119  -1.763 0.077878 .
OrderOfVerbs312                 -0.5494     0.4142  -1.326 0.184681
OrderOfVerbs321                  0.9495     0.3157   3.008 0.002631 **
YearofTest2016:OrderOfVerbs132  -0.1786     0.2924  -0.611 0.541398
YearofTest2016:OrderOfVerbs213   0.2319     0.2962   0.783 0.433797
YearofTest2016:OrderOfVerbs231  -0.2420     0.2920  -0.829 0.407248
YearofTest2016:OrderOfVerbs312  -0.1137     0.2956  -0.385 0.700564
YearofTest2016:OrderOfVerbs321  -0.7796     0.2243  -3.476 0.000510 ***
```

```
NOTE: Results may be misleading due to involvement in interactions
```
$contrasts
```
 contrast     estimate        SE df z.ratio p.value
 2004 - 2016 -0.891878 0.3146924 NA  -2.834  0.0046
```

$contrasts
```
 contrast           estimate        SE df z.ratio p.value
 Klaai - Non FR   0.61811704 1.5704872 NA   0.394  1.0000
```

```
 Klaai - Sud-West   0.90005458 0.2686213 NA   3.351  0.0048
 Klaai - Wald       0.67024125 1.1858864 NA   0.565  1.0000
 Non FR - Sud-West  0.28193754 1.5420039 NA   0.183  1.0000
 Non FR - Wald      0.05212421 1.1182917 NA   0.047  1.0000
 Sud-West - Wald   -0.22981333 1.1478907 NA  -0.200  1.0000
```

$contrasts

```
 contrast   estimate        SE df z.ratio p.value
 1 - 2    -0.7221347 0.2668627 NA  -2.706  0.0204
 1 - 3    -0.2354141 1.1175301 NA  -0.211  1.0000
 2 - 3     0.4867206 1.1087118 NA   0.439  1.0000
```

$contrasts

```
 contrast       estimate        SE df z.ratio p.value
 123 - 132  0.5406710495 0.3539529 NA   1.528  1.0000
 123 - 213  0.8467635902 0.3547731 NA   2.387  0.2550
 123 - 231  0.8473202995 0.3539382 NA   2.394  0.2500
 123 - 312  0.6062777451 0.3545684 NA   1.710  1.0000
 123 - 321 -0.5597537035 0.2704646 NA  -2.070  0.5773
 132 - 213  0.3060925408 0.3544857 NA   0.863  1.0000
 132 - 231  0.3066492501 0.3536383 NA   0.867  1.0000
 132 - 312  0.0656066957 0.3543124 NA   0.185  1.0000
 132 - 321 -1.1004247530 0.2705803 NA  -4.067  0.0007
 213 - 231  0.0005567093 0.3543412 NA   0.002  1.0000
 213 - 312 -0.2404858451 0.3550609 NA  -0.677  1.0000
 213 - 321 -1.4065172937 0.2717485 NA  -5.176  <.0001
 231 - 312 -0.2410425544 0.3542093 NA  -0.681  1.0000
 231 - 321 -1.4070740030 0.2706395 NA  -5.199  <.0001
 312 - 321 -1.1660314486 0.2713981 NA  -4.296  0.0003
```

$contrasts

```
 contrast                estimate        SE df z.ratio p.value
 123,2004 - 132,2004  0.45139168 0.4119530 NA   1.096  1.0000
 123,2004 - 213,2004  0.96269211 0.4145377 NA   2.322  1.0000
 123,2004 - 231,2004  0.72630855 0.4119420 NA   1.763  1.0000
 123,2004 - 312,2004  0.54943860 0.4142084 NA   1.326  1.0000
 123,2004 - 321,2004 -0.94953290 0.3156789 NA  -3.008  0.1736
 123,2004 - 123,2016 -1.07220497 0.3686202 NA  -2.909  0.2395
 123,2004 - 132,2016 -0.44225455 0.4894560 NA  -0.904  1.0000
 123,2004 - 213,2016 -0.34136989 0.4897472 NA  -0.697  1.0000
 123,2004 - 231,2016 -0.10387291 0.4893072 NA  -0.212  1.0000
 123,2004 - 312,2016 -0.40908807 0.4896417 NA  -0.835  1.0000
 123,2004 - 321,2016 -1.24217948 0.4338768 NA  -2.863  0.2770
 132,2004 - 213,2004  0.51130042 0.4135265 NA   1.236  1.0000
 132,2004 - 231,2004  0.27491686 0.4109733 NA   0.669  1.0000
 132,2004 - 312,2004  0.09804691 0.4131877 NA   0.237  1.0000
 132,2004 - 321,2004 -1.40092458 0.3148136 NA  -4.450  0.0006
 132,2004 - 123,2016 -1.52359665 0.4892764 NA  -3.114  0.1218
```

```
 132,2004 - 132,2016 -0.89364624 0.3677723 NA  -2.430  0.9968
 132,2004 - 213,2016 -0.79276158 0.4892869 NA  -1.620  1.0000
 132,2004 - 231,2016 -0.55526460 0.4887995 NA  -1.136  1.0000
 132,2004 - 312,2016 -0.86047976 0.4891958 NA  -1.759  1.0000
 132,2004 - 321,2016 -1.69357116 0.4335126 NA  -3.907  0.0062
 213,2004 - 231,2004 -0.23638356 0.4134529 NA  -0.572  1.0000
 213,2004 - 312,2004 -0.41325351 0.4157347 NA  -0.994  1.0000
 213,2004 - 321,2004 -1.91222500 0.3184826 NA  -6.004  <.0001
 213,2004 - 123,2016 -2.03489707 0.4915572 NA  -4.140  0.0023
 213,2004 - 132,2016 -1.40494666 0.4911897 NA  -2.860  0.2793
 213,2004 - 213,2016 -1.30406200 0.3711416 NA  -3.514  0.0292
 213,2004 - 231,2016 -1.06656502 0.4909162 NA  -2.173  1.0000
 213,2004 - 312,2016 -1.37178018 0.4913762 NA  -2.792  0.3460
 213,2004 - 321,2016 -2.20487158 0.4360998 NA  -5.056  <.0001
 231,2004 - 312,2004 -0.17686995 0.4131128 NA  -0.428  1.0000
 231,2004 - 321,2004 -1.67584144 0.3148848 NA  -5.322  <.0001
 231,2004 - 123,2016 -1.79851351 0.4891991 NA  -3.676  0.0156
 231,2004 - 132,2016 -1.16856310 0.4889037 NA  -2.390  1.0000
 231,2004 - 213,2016 -1.06767844 0.4891740 NA  -2.183  1.0000
 231,2004 - 231,2016 -0.83018146 0.3673614 NA  -2.260  1.0000
 231,2004 - 312,2016 -1.13539662 0.4890941 NA  -2.321  1.0000
 231,2004 - 321,2016 -1.96848802 0.4334336 NA  -4.542  0.0004
 312,2004 - 321,2004 -1.49897149 0.3177707 NA  -4.717  0.0002
 312,2004 - 123,2016 -1.62164356 0.4911256 NA  -3.302  0.0634
 312,2004 - 132,2016 -0.99169315 0.4908328 NA  -2.020  1.0000
 312,2004 - 213,2016 -0.89080849 0.4911007 NA  -1.814  1.0000
 312,2004 - 231,2016 -0.65331151 0.4906015 NA  -1.332  1.0000
 312,2004 - 312,2016 -0.95852667 0.3705760 NA  -2.587  0.6398
 312,2004 - 321,2016 -1.79161807 0.4356024 NA  -4.113  0.0026
 321,2004 - 123,2016 -0.12267207 0.4106791 NA  -0.299  1.0000
 321,2004 - 132,2016  0.50727835 0.4107651 NA   1.235  1.0000
 321,2004 - 213,2016  0.60816300 0.4111633 NA   1.479  1.0000
 321,2004 - 231,2016  0.84565998 0.4107276 NA   2.059  1.0000
 321,2004 - 312,2016  0.54044482 0.4110070 NA   1.315  1.0000
 321,2004 - 321,2016 -0.29264658 0.3160342 NA  -0.926  1.0000
 123,2016 - 132,2016  0.62995042 0.3515738 NA   1.792  1.0000
 123,2016 - 213,2016  0.73083507 0.3517961 NA   2.077  1.0000
 123,2016 - 231,2016  0.96833205 0.3514124 NA   2.756  0.3867
 123,2016 - 312,2016  0.66311689 0.3515116 NA   1.886  1.0000
 123,2016 - 321,2016 -0.16997451 0.2679614 NA  -0.634  1.0000
 132,2016 - 213,2016  0.10088466 0.3520935 NA   0.287  1.0000
 132,2016 - 231,2016  0.33838164 0.3515682 NA   0.962  1.0000
 132,2016 - 312,2016  0.03316648 0.3518220 NA   0.094  1.0000
 132,2016 - 321,2016 -0.79992492 0.2687381 NA  -2.977  0.1924
 213,2016 - 231,2016  0.23749698 0.3517071 NA   0.675  1.0000
 213,2016 - 312,2016 -0.06771818 0.3519654 NA  -0.192  1.0000
 213,2016 - 321,2016 -0.90080958 0.2689667 NA  -3.349  0.0535
 231,2016 - 312,2016 -0.30521516 0.3515295 NA  -0.868  1.0000
 231,2016 - 321,2016 -1.13830656 0.2685158 NA  -4.239  0.0015
 312,2016 - 321,2016 -0.83309140 0.2686587 NA  -3.101  0.1273
```

Model 12

```
8643 cases

Initial predictors:

YearofTest+Gender+Region+Education+IPP+IPP:YearofTest+OrderOfVerbs+O
rderOfVerbs:YearofTest+IPP:OrderOfVerbs


After model selection we get the following model:

SpeakerJudgmentInteger~YearofTest+Gender+Region+IPP+IPP:YearofTest+O
rderOfVerbs+OrderOfVerbs:YearofTest+(1|SpeakerID) +(1|ItemNr)


Coefficients:
                               Estimate Std. Error z value Pr(>|z|)
YearofTest2016                  0.70391    0.21609   3.257  0.00112 **
Gendermale                      0.40095    0.16566   2.420  0.01551 *
RegionNon FR                   -0.35881    1.00000  -0.359  0.71973
RegionSud-West                 -0.55388    0.18124  -3.056  0.00224 **
RegionWald                     -0.33844    0.23965  -1.412  0.15788
IPPy                           -0.42899    0.20690  -2.073  0.03814 *
OrderOfVerbs132                -0.58469    0.38193  -1.531  0.12579
OrderOfVerbs213                -0.92234    0.38218  -2.413  0.01581 *
OrderOfVerbs231                -0.82701    0.38216  -2.164  0.03046 *
OrderOfVerbs312                -0.59945    0.38187  -1.570  0.11647
OrderOfVerbs321                 0.38756    0.30399   1.275  0.20234
YearofTest2016:IPPy             0.20060    0.10224   1.962  0.04975 *
YearofTest2016:OrderOfVerbs132 -0.05716    0.18831  -0.304  0.76145
YearofTest2016:OrderOfVerbs213  0.18275    0.18821   0.971  0.33157
YearofTest2016:OrderOfVerbs231 -0.12458    0.18738  -0.665  0.50614
YearofTest2016:OrderOfVerbs312 -0.12384    0.18830  -0.658  0.51074
YearofTest2016:OrderOfVerbs321 -0.32221    0.14948  -2.156  0.03112 *


$contrasts
NOTE: Results may be misleading due to involvement in interactions
 contrast      estimate        SE df z.ratio p.value
 2004 - 2016 -0.7300376 0.1700191 NA  -4.294  <.0001

$contrasts
 contrast       estimate        SE df z.ratio p.value
 female - male -0.400954 0.1656613 NA   -2.42  0.0155

$contrasts

 contrast              estimate        SE df z.ratio p.value

 Klaai - Non FR      0.3588137 0.9999987 NA   0.359  1.0000
 Klaai - Sud-West    0.5538802 0.1812383 NA   3.056  0.0135
 Klaai - Wald        0.3384381 0.2396477 NA   1.412  0.9473
 Non FR - Sud-West   0.1950666 0.9987034 NA   0.195  1.0000
 Non FR - Wald      -0.0203756 1.0131855 NA  -0.020  1.0000
 Sud-West - Wald    -0.2154421 0.2424750 NA  -0.889  1.0000

$contrasts
```

```
NOTE: Results may be misleading due to involvement in interactions
 contrast  estimate        SE df z.ratio p.value
 n - y    0.3286862 0.1998824 NA   1.644  0.1001

$contrasts
 contrast     estimate        SE df z.ratio p.value
 123 - 132  0.61327701 0.3693994 NA   1.660  1.0000
 123 - 213  0.83096854 0.3693972 NA   2.250  0.3672
 123 - 231  0.88929748 0.3693294 NA   2.408  0.2407
 123 - 312  0.66136856 0.3693793 NA   1.790  1.0000
 123 - 321 -0.22645241 0.2940309 NA  -0.770  1.0000
 132 - 213  0.21769153 0.3695254 NA   0.589  1.0000
 132 - 231  0.27602047 0.3694389 NA   0.747  1.0000
 132 - 312  0.04809155 0.3695255 NA   0.130  1.0000
 132 - 321 -0.83972942 0.2943680 NA  -2.853  0.0650
 213 - 231  0.05832894 0.3693815 NA   0.158  1.0000
 213 - 312 -0.16959998 0.3694843 NA  -0.459  1.0000
 213 - 321 -1.05742095 0.2942988 NA  -3.593  0.0049
 231 - 312 -0.22792892 0.3694136 NA  -0.617  1.0000
 231 - 321 -1.11574989 0.2942232 NA  -3.792  0.0022
 312 - 321 -0.88782097 0.2942709 NA  -3.017  0.0383

$contrasts
 contrast          estimate        SE df z.ratio p.value
 2004,n - 2016,n -0.6297388 0.1755477 NA  -3.587  0.0020
 2004,n - 2004,y  0.4289850 0.2069008 NA   2.073  0.2288
 2004,n - 2016,y -0.4013513 0.2620965 NA  -1.531  0.7542
 2016,n - 2004,y  1.0587238 0.2627248 NA   4.030  0.0003
 2016,n - 2016,y  0.2283874 0.2057286 NA   1.110  1.0000
 2004,y - 2016,y -0.8303364 0.1795057 NA  -4.626  <.0001

$contrasts
contrast                  estimate        SE df z.ratio p.value
 123,2004 - 132,2004  0.58469483 0.3819270 NA   1.531  1.0000
 123,2004 - 213,2004  0.92234222 0.3821848 NA   2.413  1.0000
 123,2004 - 231,2004  0.82700652 0.3821568 NA   2.164  1.0000
 123,2004 - 312,2004  0.59944631 0.3818680 NA   1.570  1.0000
 123,2004 - 321,2004 -0.38755910 0.3039911 NA  -1.275  1.0000
 123,2004 - 123,2016 -0.80421371 0.2094267 NA  -3.840  0.0081
 123,2004 - 132,2016 -0.16235451 0.4141925 NA  -0.392  1.0000
 123,2004 - 213,2016 -0.06461885 0.4139969 NA  -0.156  1.0000
 123,2004 - 231,2016  0.14737473 0.4136319 NA   0.356  1.0000
 123,2004 - 312,2016 -0.08092290 0.4143404 NA  -0.195  1.0000
 123,2004 - 321,2016 -0.86955942 0.3442032 NA  -2.526  0.7608
 132,2004 - 213,2004  0.33764739 0.3823492 NA   0.883  1.0000
 132,2004 - 231,2004  0.24231170 0.3823442 NA   0.634  1.0000
 132,2004 - 312,2004  0.01475148 0.3820812 NA   0.039  1.0000
 132,2004 - 321,2004 -0.97225393 0.3045611 NA  -3.192  0.0932
 132,2004 - 123,2016 -1.38890853 0.4143828 NA  -3.352  0.0530
 132,2004 - 132,2016 -0.74704934 0.2103013 NA  -3.552  0.0252
 132,2004 - 213,2016 -0.64931367 0.4142833 NA  -1.567  1.0000
 132,2004 - 231,2016 -0.43732009 0.4138870 NA  -1.057  1.0000
 132,2004 - 312,2016 -0.66561773 0.4146279 NA  -1.605  1.0000
 132,2004 - 321,2016 -1.45425425 0.3446662 NA  -4.219  0.0016
 213,2004 - 231,2004 -0.09533569 0.3825268 NA  -0.249  1.0000
 213,2004 - 312,2004 -0.32289591 0.3822951 NA  -0.845  1.0000
 213,2004 - 321,2004 -1.30990132 0.3047595 NA  -4.298  0.0011
```

213,2004 - 123,2016	-1.72655592	0.4146615	NA	-4.164	0.0021
213,2004 - 132,2016	-1.08469673	0.4147321	NA	-2.615	0.5882
213,2004 - 213,2016	-0.98696106	0.2104320	NA	-4.690	0.0002
213,2004 - 231,2016	-0.77496748	0.4141024	NA	-1.871	1.0000
213,2004 - 312,2016	-1.00326512	0.4148641	NA	-2.418	1.0000
213,2004 - 321,2016	-1.79190164	0.3450070	NA	-5.194	<.0001
231,2004 - 312,2004	-0.22756022	0.3822739	NA	-0.595	1.0000
231,2004 - 321,2004	-1.21456563	0.3045475	NA	-3.988	0.0044
231,2004 - 123,2016	-1.63122023	0.4146054	NA	-3.934	0.0055
231,2004 - 132,2016	-0.98936104	0.4147020	NA	-2.386	1.0000
231,2004 - 213,2016	-0.89162537	0.4144956	NA	-2.151	1.0000
231,2004 - 231,2016	-0.67963179	0.2094672	NA	-3.245	0.0776
231,2004 - 312,2016	-0.90792942	0.4148417	NA	-2.189	1.0000
231,2004 - 321,2016	-1.69656595	0.3449434	NA	-4.918	0.0001
312,2004 - 321,2004	-0.98700541	0.3042558	NA	-3.244	0.0778
312,2004 - 123,2016	-1.40366001	0.4143074	NA	-3.388	0.0465
312,2004 - 132,2016	-0.76180082	0.4144194	NA	-1.838	1.0000
312,2004 - 213,2016	-0.66406515	0.4142118	NA	-1.603	1.0000
312,2004 - 231,2016	-0.45207157	0.4138087	NA	-1.092	1.0000
312,2004 - 312,2016	-0.68036921	0.2105129	NA	-3.232	0.0811
312,2004 - 321,2016	-1.46900573	0.3445945	NA	-4.263	0.0013
321,2004 - 123,2016	-0.41665460	0.3436285	NA	-1.213	1.0000
321,2004 - 132,2016	0.22520459	0.3439507	NA	0.655	1.0000
321,2004 - 213,2016	0.32294026	0.3437258	NA	0.940	1.0000
321,2004 - 231,2016	0.53493384	0.3432995	NA	1.558	1.0000
321,2004 - 312,2016	0.30663620	0.3441478	NA	0.891	1.0000
321,2004 - 321,2016	-0.48200032	0.1759561	NA	-2.739	0.4063
123,2016 - 132,2016	0.64185919	0.3804905	NA	1.687	1.0000
123,2016 - 213,2016	0.73959486	0.3802044	NA	1.945	1.0000
123,2016 - 231,2016	0.95158844	0.3798949	NA	2.505	0.8085
123,2016 - 312,2016	0.72329081	0.3805097	NA	1.901	1.0000
123,2016 - 321,2016	-0.06534572	0.3027700	NA	-0.216	1.0000
132,2016 - 213,2016	0.09773567	0.3806311	NA	0.257	1.0000
132,2016 - 231,2016	0.30972925	0.3802320	NA	0.815	1.0000
132,2016 - 312,2016	0.08143161	0.3809107	NA	0.214	1.0000
132,2016 - 321,2016	-0.70720491	0.3032209	NA	-2.332	1.0000
213,2016 - 231,2016	0.21199358	0.3798877	NA	0.558	1.0000
213,2016 - 312,2016	-0.01630405	0.3805768	NA	-0.043	1.0000
213,2016 - 321,2016	-0.80494058	0.3027107	NA	-2.659	0.5171
231,2016 - 312,2016	-0.22829763	0.3802544	NA	-0.600	1.0000
231,2016 - 321,2016	-1.01693416	0.3025171	NA	-3.362	0.0511
312,2016 - 321,2016	-0.78863652	0.3031549	NA	-2.601	0.6127

VII Individual order combinations judgment task

	Combination of orders	Verb cluster type		
		RAP	RRI	ARI
one order	a) 321	35	28	21
	b) 132	2	-	-
	c) 123	1	1	-
	d) 231	-	-	1
two orders	a) 3-2-1 & 3-1-2	8	3	2
	b) 3-2-1 & 1-3-2	22	1	-
	c) 3-2-1 & 1-2-3	3	1	-
	d) 3-2-1 & 2-3-1	9	7	1
	e) 3-2-1 & 2-1-3	2	5	1
	f) 3-1-2 & 1-3-2	1	-	-
	g) 3-1-2 & 2-1-3	-	1	-
three orders	a) 3-2-1 & 3-1-2 & 1-3-2	9	4	1
	b) 3-2-1 & 3-1-2 & 2-3-1	1	1	-
	c) 3-2-1 & 3-1-2 & 1-2-3	1	8	3
	d) 3-2-1 & 3-1-2 & 2-1-3	5	3	-
	e) 3-2-1 & 1-3-2 & 1-2-3	7	1	2
	f) 3-2-1 & 1-3-2 & 2-3-1	-	1	-
	g) 3-2-1 & 1-3-2 & 2-1-3	6	3	2
	h) 3-2-1 & 1-2-3 & 2-3-1	1	3	2
	i) 3-2-1 & 1-2-3 & 2-1-3	2	1	-
	j) 3-2-1 & 2-3-1 & 2-1-3	3	1	-
four orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3	3	6	4
	b) 3-2-1 & 3-1-2 & 1-3-2 & 2-3-1		4	1
	c) 3-2-1 & 3-1-2 & 1-3-2 & 2-1-3	7	6	1
	d) 3-2-1 & 3-1-2 & 1-2-3 & 2-3-1	1	-	1
	e) 3-2-1 & 3-1-2 & 1-2-3 & 2-1-3	1	6	2
	f) 3-2-1 & 3-1-2 & 2-3-1 & 2-1-3	-	1	-
	g) 3-2-1 & 1-3-2 & 1-2-3 & 2-3-1	2	3	6
	h) 3-2-1 & 1-3-2 & 1-2-3 & 2-1-3	7	3	3
	i) 3-2-1 & 1-3-2 & 2-3-1 & 2-1-3	4	3	3
	j) 3-2-1 & 1-2-3 & 2-3-1 & 2-1-3	-	1	2
five orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-3-1	3	4	12
	b) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-1-3	6	10	6
	c) 3-2-1 & 3-1-2 & 1-3-2 & 2-3-1 & 2-1-3	7	4	3
	d) 3-2-1 & 3-1-2 & 1-2-3 & 2-3-1 & 2-1-3	3	9	5
	e) 3-2-1 & 1-3-2 & 1-2-3 & 2-3-1 & 2-1-3	2	6	7
six orders	3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-3-1 & 2-1-3	12	40	87
N total		176	179	179

Table A1 Individual order combinations in three-verb clusters in the acceptability judgment task (N=179, L1=FR)

VIII Individual order combinations elicitation task

	Combinations of orders	Verb cluster type			
		RAP	RRI	ARI	ARI perc
one order	a) 321	28 (1)	35 (3)	31 (3)	30 (-)
	b) 132	1 (1)	-	2 (2)	-
	c) 312	1 (1)	1 (1)	-	-
	d) 123	-	1 (1)	-	1 (1)
two orders	a) 3-2-1 & 3-1-2	6 (2)	6 (3)	7 (2)	4 (2)
	b) 3-2-1 & 1-3-2	2 (2)	2 (2)	-	1 (1)
	c) 3-1-2 & 1-3-2	2 (2)	2 (2)	2 (1)	2 (1)
	d) 3-2-1 & 1-2-3	1 (-)	-	-	1 (1)
	e) 3-2-1 & 2-3-1	1 (-)	-	2 (1)	2 (-)
	f) 1-3-2 & 1-2-3	-	3 (3)	2 (2)	-
	g) 1-3-2 & 2-3-1		1 (1)		
three orders	a) 3-2-1 & 3-1-2 & 1-3-2	10 (10)	2 (2)	1 (1)	5 (5)
	b) 3-2-1 & 3-1-2 & 2-3-1	1 (1)	-	2 (2)	1 (1)
	c) 3-2-1 & 3-1-2 & 1-2-3	-	-	1 (1)	1 (1)
	d) 3-1-2 & 1-3-2 & 1-2-3	1 (1)	1 (1)	1 (1)	2 (2)
	e) 3-1-2 & 1-3-2 & 2-1-3	1 (1)	-	-	-
	f) 1-3-2 & 1-2-3 & 2-1-3	1 (1)	-	-	-
	g) 1-3-2 & 1-2-3 & 3-1-2	-	2 (2)	-	-
four orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3	-	1 (1)	6 (6)	5 (5)
	b) 3-2-1 & 3-1-2 & 1-3-2 & 2-3-1	-	1 (1)	-	1 (1)
	c) 3-2-1 & 3-1-2 & 1-3-2 & 2-1-3	-	-	-	1 (1)
	d) 3-2-1 & 1-3-2 & 1-2-3 & 2-3-1	-	-	-	1 (1)
five orders	a) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-3-1	-	-	1 (1)	-
	b) 3-2-1 & 3-1-2 & 1-3-2 & 1-2-3 & 2-1-3	-	-	1 (1)	1 (1)
No 3-verb cluster		3 (1)	1 (1)	-	-
N total		59 (24)	59 (24)	59 (24)	59 (24)

Table A2 Individual order combinations in three-verb clusters in the verb cluster elicitation task (N=59, L1=FR)

Summaries

English summary
Nederlandse samenvatting

English summary

This thesis explores the variation in Frisian verb clusters of two and three verbs. It presents an empirical study of the variation in the Frisian verbal complex as an example of an ongoing process of language change. It sheds light on the process of language change from different viewpoints. Variationist sociolinguistics, contact linguistics and (bilingual) language acquisition theories are integrated into a holistic approach of the developments in the Frisian verbal complex. As such, it contributes to the knowledge about (Frisian) verb clusters in particular and to the knowledge about processes of language variation and change in general. It provides new data and creates a clearer picture of the (im)possibilities in the Frisian verbal complex and the social and linguistic factors involved. The thesis further contributes to our knowledge of the relationship between time, age and language change as it combines an apparent time study (different age groups at the same time) with a trend study (similar age groups at different points in time). By including an acceptability judgment task as well as a verb cluster elicitation task it also demonstrates the value of different data sources, i.e. between language perception data and spoken language data.

The first chapter outlines the historical and linguistic context of the variation in Frisian verb clusters. It also explains what is called ‘Interference Frisian’ (IF). Examples of different types of transfer are given, ranging from lexical transfer to morphological changes. Variation in the verbal complex of Frisian has been indicated as an example of grammatical or syntactic change (De Haan 1990, 1995, 1996a, 1997, Breuker 1993, 1997, 2001). An example is given in (1) below, with a Standard Frisian (FR), Standard Dutch and two Interference Frisian (IF) sentences:

(1)	FR	omdat er it boek lêze (3) wolle (2) soe (1)
		because he the book read (Inf) want (Inf) should (Fin)
	DU	omdat hij het boek zou (1) willen (2) lezen (3)
		because he the book should (Fin) want (Inf) read (Inf)
	IF1	omdat er it boek soe (1) wolle (2) lêze (3)
		because he the book should (Fin) want (Inf) read (Inf)
	IF2	omdat er it boek soe (1) lêze (3) wolle (2)
		because he the book should (Fin) read (Inf) want (Inf)
		‘because he would want to read the book’

It has been argued for years that Frisian verb clusters are changing and that these changes are caused by (the status of) Dutch, or by Frisian-Dutch bilingualism, for example by 'borrowing' from Dutch or because some deficiency in the acquisition of Frisian (Sjölin 1976, De Haan 1996b, 1997, Breuker 1993, Ytsma 1995, Koeneman & Postma 2006). Until now, these claims were often not substantiated with data, or only with a limited subset of verb cluster data. This thesis presents a robust set of empirical data on the perception and production of verb clusters in Frisian.

Chapter 2 introduces three linguistic theories that form a framework for the current study of the variation in the Frisian verbal complex. The underlying assumption of variationist sociolinguistics is that change in language is always preceded by variation. Both the social context and the linguistic system can give rise to language change. This is demonstrated eminently by Labov in his books on the principles of linguistic change (Labov 1994, 2001, 2010). Variationist studies of a syntactic (or structural) phenomenon, that combine an apparent time study with a trend study are relatively few (Sankoff 2006), which makes the current study also very interesting from a theoretical perspective. Apart from age, social class and gender often play a role in language variation and change. Until now, these factors have hardly been investigated with regard to the variation in the Frisian verbal complex.

In contact linguistics the socio-political context of the contact is central to the discipline: the relationship between the two (or more) languages in a community, their social status or prestige, including its effects on the individuals in that community and their (linguistic) behavior. One of the dominating questions in the field of contact linguistics concerns the relative importance of external (e.g. social, or socio-political) factors as opposed to internal (i.e. linguistic) factors. Theories that give more weight to external factors have more difficulties explaining individual differences, whereas theories that give more weight to internal factors may overlook differences between different groups of speakers.

In theories about bilingual language acquisition a comparable distinction is made, where differences between a ‘stronger’ and ‘weaker’ language for some refers to the language that is weaker within a bilingual community (a minority or heritage language), whereas others refer to the language that is stronger or weaker in a bilingual person. Nevertheless, simultaneous acquisition of two languages typically leads to a kind of grammatical knowledge in each language, which is qualitatively not different from that of the respective monolinguals, even in settings where one language is 'weaker' than the other (Meisel 2011).

Chapter 3 compares Standard Frisian and Dutch verb clusters, and also discusses some linguistic background on the formation of verb clusters. It is demonstrated that Standard Frisian has rigid ordering in all of the cluster types investigated, whereas Dutch shows optionality (variation) in some of the cluster types. Besides the different ordering possibilities, the main differences between Standard Frisian and Standard Dutch in the verbal constructions under investigation involve the fact that Dutch allows variation (in the AP, RAP and possibly also in the RRI clusters), the presence (Dutch) versus absence (Frisian) of the IPP effect (in ARI clusters) and the phonetic (Dutch) versus morpho-syntactic (Frisian) distribution of endings in *-e* and *-en*.

The broader context in which variation in Frisian verb clusters should be seen is outlined in chapter 4. Firstly, the socio-political context of Fryslân is outlined: more than half of the inhabitants of the Province of Fryslân still have Frisian as their first language, although this differs between municipalities. Surveys show that Frisian is typically used in more informal language domains. Also, all of the conditions that would be favorable for structural language change, i.e. widespread bilingualism, heavy lexical borrowing, and a small typological distance are met. Finally, the bilingual acquisition of Dutch and Frisian is discussed. The transmission of Frisian from parents to child(ren) seems to decrease (i.e., less parents learn their children Frisian than before). Nevertheless, the simultaneous or early bilingual acquisition of Frisian and Dutch is comparable to other cases of simultaneous and early bilingual acquisition.

Some previous studies regarding variation in the Frisian verbal complex are discussed in chapter 5. The variation in Frisian verb clusters appears to be increasing, both in the ordering of the verbs, and in the morphology of the verbs in the verb clusters. Most of these studies investigate two-verb clusters exclusively, or only one type of three-verb cluster, and little attention is given to variation between individuals. An overview of the variation in different verb cluster types is lacking and -as was demonstrated in chapter 2- not many of these studies pay attention to social factors.

Previous studies regarding the variation in the Dutch verbal complex demonstrate a certain geographic distribution of different variants of verb clusters in the Dutch language area, see also the maps form the DynaSAND corpus (Barbiers et al. 2006) in chapter 5. Studies of large corpora have shown that there are linguistic factors that play a role in the variation in Dutch verb clusters, but individual differences are seldom taken into account in these studies. Some studies also point out the possibility that an increase in variation indicates language change. For example, a study by Coupé (2015) links longer verb clusters (consisting of multiple verbs) to an increase in the so-called red order, where the verbal complex starts with the finite verb.

This study aims to gain a more comprehensive view on the developments in the Frisian verb cluster with a solid empirical base, and to contribute to theoretical questions regarding the importance of social and linguistic factors in language variation and change. Besides, an answer is sought to the question whether bilingualism or language contact should be seen as the cause of variation and change. These aims are translated into four research questions in chapter 6. Consecutively, two experiments were designed to gather two- and three-verb cluster data: an acceptability judgment task and a verb cluster elicitation task. The group of subjects was distributed over different age groups, regional backgrounds and sexes. Other variables (level of education, language proficiency, language use, (language) attitude) were acquired through a sociolinguistic background questionnaire, can-do scales and a language use questionnaire. The acceptability judgment task was repeated approximately 12 years later, with subjects comparable in age to those in the youngest group of the first experiment (12-15 years old).

The results of the acceptability judgment task and the verb cluster elicitation task show a considerable amount of variation in Frisian two-verb clusters, both in clusters consisting of a finite auxiliary and a participial main verb (AP clusters) as well as in two-verb clusters consisting of a finite restructuring verb and an infinitival main verb (RI clusters). The judgment task showed that order variation is accepted to a large degree (85% of the subjects accepted both orders), whereas the elicitation task demonstrated that not all subjects actively vary in the ordering of the verbs in the verb cluster.

In three-verb clusters as well, a lot of variation was found in the two experiments, both in clusters consisting of a finite restructuring verb, an infinitival auxiliary and a participial main verb (RAP clusters) as well as in clusters consisting of a finite restructuring verb, an infinitival restructuring verb and an infinitival main verb (RRI clusters), and in clusters consisting of a finite auxiliary, a participial/infinitival restructuring verb and an infinitival main verb (ARI clusters). Most variation was found in ARI clusters, least (but still considerable) in RAP clusters.

This confirms our hypothesis regarding variation both in two-verb clusters as well as in three-verb clusters, and across verb types, and is in line with earlier research regarding variation in the Frisian verbal complex (Ytsma 1995, Wolf 1996, De Haan 1996b, Koeneman & Postma 2006). However, not all subjects actively vary in the ordering of the verbs in the elicitation task, nor do all subjects accept variation as offered in the acceptability judgment task. This confirms our hypothesis of individual differences regarding the variation in the Frisian verbal complex, following Reitsma (2003) and Cornips (2009). This could indicate that some individuals are more 'stable' than others.

The effect of the different social and linguistic factors was investigated by means of ordinal regression models, more specifically cumulative link mixed models (clmm, see section 7.3.2). There is one social variable that has a large effect on the variation in the Frisian verbal complex, which is Age/Time. With a decrease in age, more variation is found in the Frisian verbal complex, both in two-verb clusters as well as in three-verb clusters. Inconsistent effects of sex and (dialect) regional background were found, mainly in the younger subject groups. The latter might be attributed to the differences in the proportion of Frisian L1 speakers in the municipalities of the participating schools. No effect was found for the other social factors (level of education as an indicator of socioeconomic status and attitude), neither for the language external variables of (self reported) language proficiency and (self reported) language use.

Of the linguistic factors verb order had the largest effect on the acceptability ratings. In particular in the older groups the Standard Frisian order was rated much higher than any other order, and used almost exclusively. In the younger groups more different orders are used and preferences depend also on the type of verbs in the cluster. IPP is also hardly accepted or seen in the older age groups. In the younger groups it is accepted more, in particular in clusters in the Standard Frisian and Standard Dutch order. It is used to some extent, albeit moderately.

The variation encountered in our data shows more resemblance with Northern Dutch varieties than with Standard Dutch. This confirms our hypothesis that the variation in the Frisian verbal complex is not a copy of Standard Dutch. This could confirm findings by Heeringa & Hinskens (2014, 2015), who claim that all dialects in the Netherlands converge to Standard Dutch, but in general dialects converge to each other. However, it could also mean that Frisian, like other regional languages, shows more variation and more ascending orders in the verbal complex because of increasing numbers of verbs in the verbal complex (cf. Coupé 2015). With regard to the broader West-Germanic picture (cf. Wurmbrand 2006), it is interesting to note that three-verb clusters starting with the second verb are also quite rare in our findings.

It is important to note that there were some differences between the findings of the verb cluster elicitation task and the acceptability judgment task. The variation (at the level of the different verb cluster types) encountered in the latter was larger, both within the community, as well as within the individual. Also, in the elicitation task many reduced clusters appeared. These reduced clusters could indicate the avoidance of a longer verb cluster. Their presence was higher in RAP and RRI clusters and smaller in ARI clusters. Linguistic insecurity or a lack of input may cause avoidance, in particular in the youngest group. Also, the distance between the prescriptive norm of Standard Frisian and the spoken language promotes linguistic insecurity, giving some speakers the feeling that their Frisian is not correct. The paradox of the norm is that the linguistic insecurity caused by the distance between spoken Frisian and the prescriptive norm may promote language change, but the adjustment of the norm to the spoken language reduces the typological distance between Frisian and Dutch, which may also promote language change.

The final question that this thesis aims at responding is whether the variation in the Frisian verbal complex is a case of contact-induced language change. The results from the combined apparent time and trend study show that this is a case of language change. It is hard to link the changes in the Frisian verbal complex directly to contact with Dutch. Indirectly, the extensive contact with Dutch, a possible lack of input of particularly three-verb clusters, and growing linguistic insecurity, seem to have paved the way for more variation in the Frisian verbal complex. Other factors, like for example an increasing number of verbs in the verbal complex, have to be studied more in-depth in order to draw conclusions on their effect. For now, this study concludes that this is a case of internal Frisian language change, possibly indirectly due to contact with Dutch. The fact that no significant effects were found of social factors other than age/time supports this idea. On the other hand, linguistic insecurity and infrequency are probably caused by the presence and status of the Dutch language, but this concerns an indirect effect of language contact.

Nederlandse samenvatting

Dit proefschrift onderzoekt de variatie in Friese werkwoordclusters van twee en drie werkwoorden. Het behelst empirisch onderzoek van de variatie in de Friese werkwoordelijke eindgroep als voorbeeld van zich voltrekkende taalverandering. Het proces van taalverandering wordt vanuit verschillende perspectieven bekeken. Variationele sociolinguïstiek, taalcontact-studies en theorieën over (tweetalige) taalverwerving worden geïntegreerd in een holistische benadering van de ontwikkelingen in de Friese werkwoordelijke eindgroep. Daarmee draagt dit proefschrift bij aan de kennis over taalveranderingsprocessen in het algemeen en aan de kennis over (Friese) werkwoordclusters in het bijzonder. Het levert nieuwe data en schetst een duidelijker beeld van de (on)mogelijkheden in Friese werkwoordclusters en de sociale en talige factoren die daarin een rol spelen. Door de combinatie van een zg. *apparent time study* (verschillende leeftijdsgroepen op hetzelfde moment in de tijd) en een *trend study* (dezelfde leeftijdsgroep op verschillende tijdstippen) draagt dit proefschrift ook bij aan onze kennis over de relatie tussen (leef)tijd en taalverandering. Bovendien laat het de toegevoegde waarde van zien het gebruik van verschillende datasoorten, namelijk perceptiedata (van de oordelentaak) en gesproken data (van de werkwoordcluster-uitlokkingstaak).

In het eerste hoofdstuk wordt de historische en taalkundige context van de variatie in Friese werkwoordclusters geschetst. Dat hoofdstuk legt ook het begrip 'Interferentiefries' (IF) uit. Voorbeelden van verschillende soorten transfer worden gegeven, van lexicale transfer tot morfologische veranderingen. Variatie in de werkwoordelijke eindgroep wordt vaak aangeduid als een vorm van grammaticale of syntactische verandering (De Haan 1990, 1995, 1996a, 1997, Breuker 1993, 1997, 2001). In (1) wordt een voorbeeld gegeven, met een Standaardfriese (FR), een Standaardnederlandse (NL) en twee Interferentiefriese (IF) zinnen:

(1)	FR	omdat er it boek lêze (3) wolle (2) soe (1)
		because he the book read (Inf) want (Inf) should (Fin)
	NL	omdat hij het boek zou (1) willen (2) lezen (3)
		because he the book should (Fin) want (Inf) read (Inf)
	IF1	omdat er it boek soe (1) wolle (2) lêze (3)

because he the book should (Fin) want (Inf) read (Inf)
IF2 omdat er it boek soe (1) lêze (3) wolle (2)
because he the book should (Fin) read (Inf) want (Inf)
‘because he would want to read the book’

Er wordt al jaren beweerd dat Friese werkwoordclusters veranderen en dat deze veranderingen worden veroorzaakt door (de status van) het Nederlands, of door Fries-Nederlandse tweetaligheid, bijvoorbeeld door ‘lenen’ uit het Nederlands of door gebrekkige verwerving van het Fries (Sjölin 1976, De Haan 1996b, 1997, Breuker 1993, Ytsma 1995, Koeneman & Postma 2006). Tot nu toe werden deze claims vaak niet voldoende onderbouwd met data, of alleen voor een bepaalde (kleinere) groep van werkwoordclusters. Dit proefschrift presenteert een robuuste set empirische data over de perceptie en de productie van Friese werkwoordclusters.

Hoofdstuk 2 is een inleiding in drie taalkundige theorieën die het kader vormen voor dit onderzoek naar variatie in Friese werkwoordclusters. In de variationele sociolinguïstiek wordt aangenomen dat taalverandering altijd wordt voorafgegaan door taalvariatie. Zowel de sociale context als het talige systeem kunnen taalverandering in gang zetten. Labov legt dit heel goed uit in zijn drie boeken over de principes van taalverandering (Labov 1994, 2001, 2010). Variationeel sociolinguïstische onderzoeken die een syntactisch (of structureel) kenmerk bestuderen met gebruik van zowel *apparent time* data als een trend studie zijn relatief zeldzaam (Sankoff 2006), wat dit proefschrift ook vanuit theoretisch perspectief interessant maakt. Naast leeftijd spelen sociale klasse en gender (of sekse) vaak een rol bij taalvariatie en taalverandering. Tot nu toe zijn deze factoren echter nauwelijks onderzocht bij de variatie in Friese werkwoordclusters.

In de discipline van taalcontactonderzoek staat de socio-politieke context van het taalcontact centraal: de relatie tussen de twee (of meer) talen in een gemeenschap, de sociale status of het prestige van die talen, inclusief de effecten op de individuen in die gemeenschap en hun (taalkundige) gedrag. Een van de belangrijkste vragen in bij onderzoek naar taalcontact is het relatieve gewicht van externe (dat wil zeggen sociale of socio-politieke) factoren ten opzichte van interne (talige) factoren. Theorieën die meer gewicht geven aan externe factoren, kunnen individuele verschillen vaak minder goed verklaren, terwijl theorieën die interne factoren meer gewicht geven soms verschillen tussen verschillende groepen sprekers over het hoofd zien.

In theorieën over de verwerving van twee talen word teen vergelijkbaar onderscheid gemaakt, waarbij een ‘sterkere’ en een ‘zwakkere’ taal voor sommigen verwijst naar de taal die sterker of zwakker is in de tweetalige gemeenschap (een minderheidstaal), terwijl anderen de taal bedoelen die sterker of zwakker is bij een tweetalige persoon. Desalniettemin leidt de gelijktijdige verwerving van twee talen normaliter tot een grammaticale kennis van beide talen die kwalitatief niet onder doet voor die van eentaligen in de beide talen, zelfs in situaties waarin de ene taal ‘zwakker’ is dan de andere (Meisel 2011).

In hoofdstuk 3 worden werkwoordclusters in het (standaard) Fries en Nederlands met elkaar vergeleken en wordt de taalkundige achtergrond geschetst van het fenomeen werkwoordclusters. Zo wordt gedemonstreerd dat het Standaardfries een vaste volgorde kent in alle onderzochte typen werkwoordclusters, terwijl het Nederlands gekenmerkt wordt door optionaliteit (variatie) in sommige soorten clusters. Naast de volgorde van de werkwoorden zijn de grootste verschillen tussen het Standaardfries en het Standaardnederlands in de onderzochte clustertypes het feit dat het Nederlands variatie kent (in AP, RAP en mogelijk ook in RRI clusters), de aanwezigheid (NL) versus afwezigheid (FR) van *Infinitivus Pro Participio* (IPP) in ARI clusters en de fonetische (NL) versus morfo-syntactische (FR) distributie van *-e* en *-en* uitgangen.

De bredere context waarin de variatie in Friese werkwoordclusters wordt onderzocht, wordt uiteengezet in hoofdstuk 4. Eerst wordt de socio-politieke context van Fryslân uitgelegd: meer da de helft van de inwoners van de provincie Fryslân heeft Fries als eerste taal, waarbij er (aanzienlijke) verschillen zijn tussen gemeentes. Onderzoeken hebben laten zien dat het Fries vooral wordt gebruikt in de informele taaldomeinen. Dit hoofdstuk laat ook zien dat alle voorwaarden die gunstig zijn voor structurele taalverandering aanwezig zijn in Fryslân, namelijk grootschalige tweetaligheid, veel leenwoorden en een relatief kleine typologische afstand tussen de talen. Ook wordt in dit hoofdstuk de tweetalige verwerving van het Nederlands en het Fries besproken. De overdracht van het Fries door ouders aan hun kinderen lijkt af te nemen: minder ouders leren hun kinderen Fries dan vroeger het geval was. Desalniettemin is de gelijktijdige of vroege verwerving van het Fries en het Nederlands vergelijkbaar met andere gevallen van gelijktijdige en vroege tweetalige taalverwerving.

In hoofdstuk 5 wordt een aantal eerdere onderzoeken naar de variatie in Friese werkwoordelijke eindgroepen besproken. De variatie in Friese werkwoordclusters lijkt toe te nemen, zowel volgordevariatie als morfologische variatie in de werkwoorden in het cluster. De meeste besproken onderzoeken hebben enkel betrekking op clusters van twee werkwoorden, of op alleen een type werkwoordcluster. Bovendien wordt er weinig aandacht besteed aan individuele variatie. Een goed overzicht van de variatie in de verschillende typen werkwoordclusters ontbreekt en, zoals in hoofdstuk 2 aangegeven, niet veel onderzoeken besteden aandacht aan sociale factoren.

Eerder onderzoek naar de variatie in de Nederlandse werkwoordelijke eindgroep heeft laten zien dat er sprake is van een zekere geografische spreiding tussen de verschillende varianten van werkwoordclusters in het Nederlandse taalgebied (zie ook de kaarten van het DynaSAND corpus (Barbiers et al. 2006) in hoofdstuk 5). Daarnaast heeft corpusonderzoek laten zien dat er ook taalkundige factoren zijn die een rol spelen bij de variatie in Nederlandse werkwoordclusters. Daar moet wel bij gezegd worden dat bij dit soort onderzoeken zelden rekening wordt gehouden met individuele verschillen. Sommige onderzoeken wijzen ook op de mogelijkheid dat een toename in variatie op taalverandering zou kunnen duiden. Zo legt Coupé (2015) een verband tussen langere werkwoordclusters en een toename in de zg. rode volgorde (waarbij het cluster begint met het finiete werkwoord).

Dit onderzoek wil een completer beeld geven van de ontwikkelingen in de Friese werkwoordelijke eindgroep met een solide empirische basis en wil bijdragen aan de theoretische vragen over het relatieve belang van sociale en taalkundige factoren bij taalvariatie en taalverandering. Ook wordt een antwoord gezocht op de vraag of tweetaligheid of taalcontact gezien kan worden als de oorzaak van variatie en verandering. Deze doelstellingen worden in hoofdstuk 6 vertaald in vier onderzoeksvragen. Ook wordt in dat hoofdstuk het ontwerp van dit onderzoek uitgelegd. Er zijn twee experimenten ontwikkeld om data te verzamelen over verschillende soorten clusters van twee en drie werkwoorden, namelijk een acceptatie-oordelentaak en een taak waarbij werkwoordclusters worden uitgelokt. De deelnemers aan dit onderzoek zijn verdeeld in verschillende leeftijdsgroepen en naar sekse en regionale achtergrond. Andere variabelen (onderwijsniveau, taalvaardigheid, taalgebruik, taalhouding) werden door middel van vragenlijsten verkregen. De acceptatie-oordelentaak werd ongeveer 12 jaar later herhaald met deelnemers in dezelfde leeftijd als de jongste deelnemersgroep van het eerste experiment (12-14-jarigen).

De resultaten van de oordelentaak en de uitlokkingstaak laten zien dat er behoorlijk wat variatie voorkomt in tweeledige Friese werkwoordclusters, zowel participiale (AP) clusters als infinitief-clusters (RI). De oordelentaak laat zien dat volgordevariatie grotendeels geaccepteerd is (85% van de deelnemers accepteert beide volgordes), terwijl de ontlokkingstaak laat zien dat niet alle deelnemers zelf ook variëren in de volgorde binnen hun werkwoordclusters.

In drieledige clusters werd ook veel variatie gevonden in de twee experimenten, zowel in RAP clusters (finite restructuring verb, an infinitival auxiliary and a participial main verb), in RRI clusters (finite restructuring verb, an infinitival restructuring verb and an infinitival main verb) als in ARI clusters (finite auxiliary, a participial/infinitival restructuring verb and an infinitival main verb). De meeste variatie werd aangetroffen in ARI clusters en de minste (maar nog steeds aanzienlijk) in RAP clusters.

Dit bevestigt de hypothese dat variatie voorkomt in het Fries in zowel tweeledige als in drieledige werkwoordclusters met verschillende werkwoordtypen en strookt met eerste onderzoek naar variatie in Friese werkwoordclusters (Ytsma 1995, Wolf 1996, De Haan 1996b, Koeneman & Postma 2006). Daarbij moet wel aangetekend worden dat niet alle deelnemers actief variëren in de volgorde van werkwoorden in het uitlokkingsexperiment en ook niet alle deelnemers accepteren de variatie zoals aangeboden in de oordelentaak. Dit bevestigt de hypothese dat er individuele verschillen voorkomen in de variatie in Friese werkwoordclusters, zoals eerder betoogd in Reitsma (2003) en Cornips (2009). Dit kan erop wijzen dat sommige individuen 'stabieler' zijn in hun taalgebruik dan anderen.

Het effect van de verschillende sociale en taalkundige factoren is onderzocht door middel van ordinale-regressiemodelen, namelijk met *cumulative link mixed* *models* (clmm, zie paragraaf 7.3.2). Er is één sociale variabele die een groot effect heeft op de variatie in Friese werkwoordclusters en dat is (leef)tijd. Met een afname in leeftijd wordt meer variatie gevonden in de Friese werkwoordclusters, zowel in 2-ledige als in 3-ledige clusters. Voor sekse en (dialect-)regionale achtergrond werden inconsistente effecten gevonden en alleen in de jongere groepen. De regionale verschillen zouden terug te voeren kunnen zijn op verschillen in de proportie van Friese L1-spreken in de gemeenten waar de deelnemende scholen stonden. Voor andere sociale factoren (onderwijsniveau als indicator van sociaal-economische status en taalhouding) werd geen effect gevonden, noch voor de taalexterne factoren taalvaardigheid en taalgebruik.

Van de talige factoren had de werkwoordvolgorde het grootste effect op de acceptatie-oordelen. Vooral in de oudere groepen werd de Standaardfriese volgorde veel hoger beoordeeld dan alle andere volgordes. Ook werd deze volgorde verreweg het meest gebruikt bij de oudere groepen. In de jongere groepen werden meer verschillende volgordes gebruikt en hangen de voorkeuren mede af van het type werkwoord in het cluster. IPP wordt bij de oudere groepen nauwelijks geaccepteerd en waargenomen, terwijl het bij de jongeren wel wordt geaccepteerd, met name in clusters in de Standaardfriese of Standaard-Nederlandse volgorde. IPP wordt in de uitlokkingstaak wel gebruikt, maar dit gebeurt mondjesmaat.

De variatie in onze data lijkt meer op de variatie die in Noord-Nederland voorkomt dan op die in het Standaardnederlands. Dit bevestigt onze hypothese dat de variatie in het Fries geen kopie is van het Standaardnederlands. Dit zou ook bevindingen van Heeringa & Hinskens (2014, 2015) kunnen bevestigen, die betogen dat alle dialecten in Nederland naar het Standaardnederlands convergeren, maar dat dialecten in het algemeen naar elkaar convergeren. Het zou echter ook kunnen betekenen dat het Fries, net als andere regionale talen, meer variatie en meer oplopende volgordes laat zien in de werkwoordelijke eindgroep doordat er steeds langere clusters voorkomen (cf. Coupé 2015). Voor wat betreft het bredere West-Germaanse perspectief (cf. Wurmbrand 2006), is het interessant om te vermelden dat drieledige clusters die met het tweede werkwoord beginnen ook in onze resultaten vrij zeldzaam zijn.

Het is belangrijk om op te merken dat er verschillen zaten in de uitkomsten van de werkwoordcluster-uitlokkingstaak en die van de acceptatie-oordelentaak. De variatie (op het niveau van de verschillende clustertypen) was groter in de oordelentaak, zowel binnen de groep van deelnemers (de gemeenschap) als bij de individuele deelnemer. Bij de uitlokkingstaak kwamen ook veel gereduceerde clusters voor. Deze gereduceerde clusters zouden een indicatie kunnen zijn van het vermijden van langere werkwoordclusters. In RAP- en RRI-clusters kwamen meer gereduceerde clusters voor dan in ARI clusters. Talige onzekerheid of een gebrek aan input zouden de oorzaak kunnen zijn van het vermijden van drieledige clusters. De afstand tussen de prescriptieve norm van het Standaardfries en de gesproken taal werkt ook talige onzekerheid in de hand. Daardoor hebben sommige sprekers het gevoel dat hun Fries niet goed, niet correct, is. De paradox van de norm geeft aan dat de talige onzekerheid die wordt veroorzaakt door de afstand tussen de norm en de gesproken taal, taalverandering kan veroorzaken, maar dat het aanpassen van de norm naar (dichter bij) de gesproken taal de typologische afstand tussen het Fries en het Nederlands zou verkleinen, wat ook taalverandering kan veroorzaken.

De laatste vraag die dit proefschrift wil beantwoorden is de vraag of de variatie in Friese werkwoordclusters een geval is van door taalcontact veroorzaakte taalverandering. De resultaten van de *apparent time* en trend studie laten zien dat er sprake is van taalverandering. Het is heel moeilijk om de veranderingen in Friese werkwoordclusters direct aan contact met het Nederlands te wijten. Indirect lijkt het erop dat het intensieve contact met het Nederlands, een mogelijk gebrek aan input van vooral drieledige clusters en groeiende talige onzekerheid de weg vrij hebben gemaakt voor meer variatie in Friese werkwoordclusters. Andere factoren, zoals een toename in het aantal werkwoorden in de werkwoordelijke eindgroep, moeten beter worden bestudeerd voordat daar stevige conclusies over kunnen worden getrokken. Dit proefschrift concludeert dat er sprake is van interne Friese taalverandering, die mogelijk indirect te wijten is aan contact met het Nederlands. Het feit dat er geen significante effecten zijn gevonden voor sociale factoren behalve (leef)tijd ondersteunt deze conclusie. De talige onzekerheid en lage frequentie van langere clusters kunnen veroorzaakt zijn door de aanwezigheid en status van het Nederlands, maar dat betreft een indirect effect van taalcontact.

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About the Author

Liefke Reitsma (1977) earned a double MA from the University of Groningen: an MA in Frisian linguistics and literature (2001), with a specialization in linguistics (theoretical linguistics and bilingual language acquisition), and an MA in Dutch linguistics and literature (2001), with a specialization in linguistics (comparative linguistics and theory of grammar). After that, she worked for five years at the same university, investigating bilingualism and language change in Frisian, with special interest in the verbal complex. Early 2007 she made a career switch from academia to government, starting as a policy adviser at the ministry of Education, Culture, and Science in The Hague. At the beginning of 2010 she became the deputy Permanent Representative of the Kingdom of the Netherlands to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in Paris. There she advocated the Dutch interest in different fields of the organization, like the cultural conventions, human rights, and multilateral (UN) and international politics in general.

Returning to the Netherlands in 2015, Reitsma decided to take up the research she had worked on years earlier and pursue a PhD. This enabled her to also investigate real time changes in the Frisian verbal complex. She combined data collection, data analysis, and writing with raising a family and working in the International Policy department at the ministry of Education, Culture, and Science. In the summer of 2017 Reitsma obtained a different position at the ministry, which slowed down progress on the dissertation, but at the beginning of 2021 Reitsma finished her thesis. She now works as a project manager and senior policy adviser on international cooperation and strategic policy in higher education and research in the ministry of Education, Culture, and Science.