The auxiliary verb AUX-OP in Sign Language of the Netherlands (NGT)
Patterns of the use in Deaf NGT signers and NGT-Dutch interpreters

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Abstract

There is an auxiliary verb in NGT glossed as AUX-OP which is used to mark agreement relations in (non)agreeing verbs. It has been noted by the Deaf community that the usage of AUX-OP in NGT has been increased, most notably within the group of sign language interpreters. Thus the aim of this experimental study was to investigate whether this claim is justified. Analysis of the usage of AUX-OP shows that the average usage of AUX-OP within the interpreter group is almost the same as within the Deaf group. Interestingly, the study finds that variation within age-groups shows similar patterns for both the Deaf and the interpreter group in that older signers in both groups do not use AUX-OP as much as younger signers. Moreover, this study also finds that the increase in the usage of AUX-OP within the youngest group of Deaf signers is to be attributed to an increased use of double agreement constructions, in which AUX-OP is combined with another agreement strategy. In addition, based on the results of this study I propose that AUX-OP is not the sole agreement marker available in NGT. Rather, the findings of this study show that there are four different agreement markers available: AUX-OP, role-shifting, AUX and INDEX. Furthermore, I also propose that AUX-OP has two functions; namely as an agreement marker and as an emphatic marker.
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1. Introduction

In recent years, extensive research on natural sign languages has demonstrated that – despite the use of a different modality – sign languages share many interesting features with spoken languages, in particular in the areas of morphology and syntax. Still, there are also interesting modality effects, and many of these have to do with the use of signing space for grammatical functions. This study investigates a functional element in Sign Language of the Netherlands (Nederlandse Gebarentaal, henceforth NGT), which employs space for the expression of agreement: the agreement auxiliary AUX-OP. This study was carried out in collaboration with the Nederlandse Gebarencentrum (Dutch Sign Centre: www.gebarencentrum.nl). There have been few studies in the past on the functions and use of this auxiliary in NGT. Bos (1994) did a pilot study on person and location marking in NGT in which she described AUX-OP as an agreement marker for the first time. She found that this auxiliary is commonly used when the main verb itself cannot agree. However, in this study, the possible variation of usage of AUX-OP in the NGT population was not subject of investigation.

In recent years, Deaf users of interpreters – usually native Deaf signers who have been exposed to NGT since an early age – report their experiences with interpreters, and these reports include their observations on the use of the auxiliary verb AUX-OP by NGT interpreters. Interestingly, they report that NGT interpreters use the auxiliary verb AUX-OP more often than Deaf signers and also that interpreters use the auxiliary in contexts different from Deaf signers. The Deaf users refer to this kind of signing as ‘tolkentaal’ (which can be translated into ‘interpreter language’) in social media.

These observations reported by native Deaf signers made us wonder whether indeed a form of interpreter signing had been developed. Therefore, the research question for this study is:

*Are there quantitative (frequency) and qualitative (context of use) differences in the use of the auxiliary verb AUX-OP between NGT interpreters and native signers?*

Another possible way to express agreement besides using the auxiliary verb AUX-OP is role-shifting. The general assumption in this study is that native signers are more fluent in role-shifting than the NGT interpreters, and that therefore, the NGT interpreters will rather use the
auxiliary verb as it is the more accessible strategy for them. Consequently, the hypothesis is that the NGT interpreters use AUX-OP more often than the native signers.

Since the new interpreting training program has been established at the Hogeschool van Utrecht (University of Applied Sciences, Utrecht) in 1997, it has been noted that the usage of the auxiliary verb AUX-OP by NGT interpreters has increased. A possible explanation for this is that the outcome of the research by Bos, which was published in 1994, has been used explicitly in the modules taught. In contrast, role-shifting has been taught less explicitly, possibly resulting in an emphasis on the usage of the auxiliary verb AUX-OP. This might explain why NGT interpreters who graduated after 1997 are using the auxiliary verb AUX-OP in a different way than Deaf signers. In addition, this study also investigates whether there are other ways to mark agreement besides AUX-OP and role-shifting.

This thesis is organized as follows. The development of (agreeing) auxiliaries in both spoken and sign languages is reviewed in chapter two. The third chapter describes the language changes throughout time and the historical changes in Deaf education policies which might have influenced the way in which NGT is used. Chapter four focuses on methodology and data collection. The results of the data analysis are presented in chapter five. Finally, a discussion of the results and a conclusion follow in chapter six.
2. On the development and use of agreement auxiliaries in sign languages

This chapter provides some background on agreement auxiliaries in spoken and sign languages since, as explained in the introduction, the difference in the use of the NGT agreement auxiliary between native signers and sign language interpreters is the focus of this study. Thus it is crucial to provide some information on how agreement auxiliaries in sign languages have been developed and are used. Section 2.1 provides a general overview of the functions commonly associated with auxiliary verbs in spoken languages. In section 2.2 the usage of auxiliary verbs in sign languages will be briefly addressed. Section 2.3 then discusses the development and use of agreement auxiliaries in NGT and some other sign languages.

2.1 Auxiliary verbs in spoken languages

In this section, the nature and use of auxiliary verbs in spoken languages will be discussed. We will first have a look at how verbs are inflected to express agreement; subsequently we will turn to auxiliary verbs and their different forms.

Languages worldwide employ verbs, a class of words which describes actions or a state of being. Verbs can be inflected for tense and aspect and to express the relationship between the verb and its subject/object in person, number, and gender. In some languages the verb can be inflected directly by modifying the form of the verb as seen in the Dutch example (1), where the verb *weten* (‘to know’) is inflected in the third person singular form *weet*.

(1)  
*Hij weet alles over auto’s.*  
He knows everything about cars.

Next to main verbs, most languages also exhibit auxiliary verbs: linguistic elements with a grammatical function that provide linguistic information about the main verb. Heine (1993) states that auxiliary verbs constitute a class of their own with its own prototypical properties that differentiate them from other word classes, yet they also share some properties with verbs. Auxiliary verbs have no independent lexical meaning as opposed to main verbs, they only modify or specify the basic meaning of the main verb. One of the features of auxiliary verbs is that they have a reduced verbal morphosyntax. Auxiliaries are primarily tense, aspect, and modality (TAM) markers, that is, they usually appear in certain tenses (e.g. English *have*,
be and will) or mark deontic or epistemic modality (e.g. English must and can). Commonly, agreement is also marked on the auxiliary while the main verb appears in a fixed form, e.g. as an infinitive or participle. However, it is important to note that some auxiliary verbs can behave as an independent predicate, such as hebben (‘to have’) in Dutch, which can be used as an auxiliary verb, but also as a main predicate expressing possession. In the examples (2a) and (2b) heeft is used, which is a third singular person form of hebben. In example (2a) heeft is used as an auxiliary verb expressing perfect tense accompanying the main predicate gekocht (‘bought’) while in example (2b) heeft functions as main predicate.

(2) a.  
  Hij heeft een boot gekocht.
  He has bought a boat.

  b.  
  Hij heeft een boot.
  He has a boat.

The five following examples illustrate how an auxiliary verb can express tense, aspect and modality. Example (3a) shows that the auxiliary verb will is used to express future tense. The auxiliary verb has in example (3b) is expressing perfect aspect. Example (3c) contains the auxiliary verb is which, in combination with the particle aan, marks continuous aspect. In example (3d), the auxiliary verb can is used to show the notions of ability or possibility. Finally, in example (3e) the auxiliary verb was is used as a passive auxiliary (Steinbach & Pfau 2007).

(3) a.  
  Zij zal een boek schrijven.
  She will write a book.

  b.  
  Zij heeft een boek geschreven.
  She has written a book.

  c.  
  Zij is een boek aan het schrijven.
  She is writing a book.

  d.  
  Zij kan een boek schrijven.
  She can write a book.

  e.  
  Dit boek was geschreven door Sara.
  This book was written by Sara.

It must be stated that across different languages, auxiliary verbs can behave in different ways. The way an auxiliary verb behaves in a specific language is dependent on the degree of grammaticalization of the respective auxiliary verb. Pfau & Steinbach (2006:4) point out that grammaticalization can be defined as development from lexical to free grammatical forms (functional elements) and further from free grammatical forms to bound grammatical forms.
(affixes). Investigations into the diachronic development of spoken language auxiliaries indicate that most auxiliary verbs originate from full lexical verbs.

Pfau & Steinbach (2006:5) describe roughly what happens during the pathway from lexical verb to auxiliary verb. Firstly, the lexical verb loses its lexical meaning and acquires a grammatical function (desemanticization). Furthermore, the verbal source, which contains a verb and a complement, loses its argument-selecting properties (decategorization). Additionally, the verbal source may be phonologically reduced and change from an independent element into a clitic or affix.

So far we have looked at verbs as a class of words on its own and its offspring, auxiliaries. Different functions of auxiliaries have been described and the grammaticalization of auxiliaries has been addressed.

2.2 Auxiliary verbs in sign languages

In this section the general concept of auxiliary verbs found in sign languages will be briefly discussed. However, for the present study the focus will be on agreement auxiliaries in sign languages which will be discussed further in section 2.3.

Steinbach & Pfau (2007) clearly state that the auxiliary verbs used in spoken language and sign language are different from each other. As mentioned above in spoken languages auxiliary verbs are primarily used to express morphosyntactic features such as aspect, tense and modality. However, the sign language auxiliaries that we will focus on are mainly used to express agreement with the subject and object. Still, we also find auxiliary verbs that express tense or aspect. For example, in NGT there is an auxiliary verb KLAAR which can be translated as finished which is used as an auxiliary marking completive or perfective aspect, as illustrated in example (4).

(4) IX₃a ETEN KLAAR
she/he eat ready
She/he has finished eating.

Fischer & Gough (1999) examined different properties of the verb FINISH in American Sign Language (ASL) and identified two uses of FINISH as an auxiliary. In the first use, FINISH functions strictly as a past time marker, though this use may be limited to talking with children¹, as illustrated in example (5) (Fischer & Gough 1999:69).

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¹ Fischer & Gough (1999) found very few instances of this use of FINISH.
Moreover, in ASL FINISH is also used as a perfective marker, similar to the function of KLAAR in NGT. In this use, the completion of the act is emphasized, as shown in example (6) (Fischer & Gough 1999: 69).

(6) YOU HAVE EAT FINISH SHALLOW ONE, TWO, THREE, FOUR?
You had and ate and swallowed one? 2? 3? 4?

Janzen (1995:68) points out that FINISH can also function as an auxiliary denoting anteriority (perfect) next to the two uses identified by Fischer & Gough. In example (7) FINISH has an anterior reading (Janzen 1995:104). Janzen (1995) explains that there is a subtle difference between perfective and anterior; the perfective is a bounded event in the past without relevance to the time of speaking and the anterior refers to a past action with relevance to the time of reference (Bybee et al 1994, in Janzen 1995). To sum up, in ASL the lexical verb FINISH has undergone a grammaticalization process, during which it gradually developed into a morpheme which is less lexical and more grammatical semantically and morphologically.

(7) INDEX\_1 FINISH-AUX SEE B-I-L-L LAST WEEK
I saw Bill last week.

### 2.3 Agreement auxiliaries in sign languages

A number of sign languages worldwide, regardless of their historical relationship and the stage on the evolutionary continuum, has been shown to employ a specific auxiliary whose main function is to mark agreement. In order to set the stage for the following discussion, we will introduce the basics of sign language agreement in section 2.3.1, together with some notes on the grammaticalization of agreement auxiliaries. In sections 2.3.2 to 2.3.5, we will introduce agreement auxiliaries as used in four sign languages, Brazilian Sign Language (Língua Brasileira de Sinais - LSB), German Sign Language (Deutsche Gebärdensprache - DGS), Taiwanese Sign Language (TSL), and finally NGT.
2.3.1 Sign language agreement

Sign languages are visual-spatial languages; that is, space is crucial in the expression of the language, as a lexical feature of signs, but also for grammatical reasons (Baker 2008). The use of space may explain the difference in the usage of auxiliary verbs between spoken and signed languages. In sign languages, referents are located in the space, which is called signing space. An illustration of signing space is provided in Figure 1.

![Figure 1: signing space (Baker 2008: 22)](image)

Padden (1990) describes that verb agreement in sign languages is marked using spatial positions. Discourse referents are located in the signing space. These locations can either be actual locations of present referents or abstract locations that are associated with non-present referents by means of a pointing sign INDEX. Those loci do have two grammatical functions: they can be used in pronominalization and to realize agreement on certain verbs.

For many different sign languages, different classes of verbs have been identified, but in the present context, I will focus only on two classes of verbs: agreement verbs and non-agreement (plain) verbs. Agreement verbs can agree with previously established loci in the signing space by means of movement and/or orientation changes. For instance, the verb GEVEN (‘to give’) in NGT is an example of an agreement verb. The verb GEVEN can be signed with a movement from one locus to another locus. By that movement the agreement is realized, as the subject is indicated by the begin point of the movement and the object by the end point of the movement. This is shown in example (8). Example (9) illustrates the use of another agreement verb, ANTWOORDEN (‘to answer’).

(8) \[ I_{X_1} \text{BOEK}_{1} \text{GEVEN}_{2} \]
   I book give
   I give you a book.

(9) \[ \text{MOEDER}_{IX_{3a}} \text{VADER}_{IX_{3b}} \text{ANTWOORDEN}_{3b} \]
   Mother she father he answer
   Mother answers father.
The subscript numbers indicate the position in the signing space, for instance locus 1 is being used for the first person(s), and is usually located near the signer’s chest. Locus 2 is being used for the second person(s), and is generally located in the signing space opposite of the signer. Loci 3a and 3b, which are used for the third person(s), are usually located in ipsi- and/or contralateral signing space. Figure 2 illustrates the position of these loci.

![Figure 2: Localization of referents](image)

In example (8), the sign GEVEN moves from locus 1 towards locus 2, thus expressing agreement with the subject and object. In contrast, in example (9), the sign ANTWOORDEN moves from the ipsilateral locus 3a to the contralateral locus 3b, thereby agreeing with two previously localized non-present-referents.

Non-agreeing verbs are a group of verbs, which cannot be spatially modulated in this way. They cannot be moved between locations due to different reasons. The main reason is that those signs are lexically specified for location and movement features such as a conflict in the motor requirements of the joint movements to show agreement (Mathur & Rathmann 2001:18). Another reason is that some verbs are body-anchored which means that they are produced on the body. These kinds of verbs cannot be detached from their location to show agreement with a non-first person (Rathmann 2003: 182). Examples of non-agreeing verbs in NGT are HOUĐEN VAN (‘to love’), which makes contact with the signer’s chest, and BEGRIJPEN (‘to understand’), which is articulated in front of the forehead.

In order to express agreement in the context of plain verbs, some sign languages have developed a grammatical element called an auxiliary verb. These auxiliaries are capable of showing agreement with the subject and object using movement and orientation features, similar to what has been described above for agreeing verbs (Steinbach & Pfau 2007:311), and they are semantically empty except for the agreement relation they mark (Sapountzaki...
In different sign languages, the auxiliary verbs do have different names and each of them has different features, as will be described in the next sections.

One interesting feature that Sapountzaki (2012) reports is that agreement auxiliaries sometimes accompany uninflected agreement verbs. Moreover, double inflection, cases where agreement auxiliaries combine with inflected agreement verbs, have been observed in some sign languages. Another interesting feature is that agreement auxiliaries do not only accompany (non)agreement verbs, they can also be used in combination with predicative adjectives such as BOOS (‘angry’) in NGT. Furthermore, while most agreement auxiliaries are semantically empty, there is a small group of semi-grammaticalized auxiliaries such as GIVE-AUX in Greek Sign Language (GSL) which still carry some semantic load by expressing the additional meaning of causativity. As a consequence, these agreement auxiliaries put specific semantic restrictions on the possible usage of the agreement auxiliaries itself (Sapountzaki 2012:3).

As discussed in the previous chapter, auxiliary verbs in spoken language are generally grammaticalized from verbal sources. In sign languages, this process of grammaticalization is also evident. According to Steinbach & Pfau (2007), the process differs in at least two respects. First, auxiliaries in sign languages are derived from verbal, nominal, and pronominal sources. Still, the patterns found in the grammaticalization are comparable to those described for spoken languages, which indicates that the development of grammatical elements is modality-independent. Secondly, as discussed above the main function of auxiliaries in sign languages is to express verbal subject and object agreement as opposed to spoken languages where auxiliaries are used to express tense, aspect and modality.

In this chapter, the general concept of agreement and agreement auxiliaries in sign language has been discussed. Furthermore, a brief comparison of grammaticalization of auxiliaries between spoken and signed languages has been offered.

2.3.2 Auxiliary verb in LSB

De Quadros (2003) has identified an agreement auxiliary in LSB. De Quadros mentions that the Brazilian auxiliary verb is quite similar to one of the auxiliary verbs found in TSL, which will be described in section 2.3.4. The auxiliary verb found in LSB involves an index point which first points towards the subject locus and then moves in a smooth arc-like movement towards the object locus, as can be seen in example (10) (de Quadros 2003). According to de Quadros the LSB auxiliary verb AUX is a pure expression of agreement, and has as its origin a pronominal source.
(10)  \(IX_{3a} \text{JOHN} \ IX_{3b} \text{MARY} \ _{3a}\text{AUX}_{3b} \text{LIKE}\)

John likes Mary.

In LSB the auxiliary verb is also not semantically independent, it must be signed in the context of a non-agreement verb. De Quadros furthermore states that the auxiliary verb is required when the irregular word order does not allow for identifying the subject and the object in a reversible sentence with a non-agreeing verb (de Quadros 2003:145).

2.3.3 Auxiliary verb in DGS

In German Sign Language an auxiliary verb has been identified, which Rathmann (2001) glosses as PAM (Person Agreement Marker). This gloss is related to the phonological form and the morphosyntactic function in DGS, as the handshape and orientation of the auxiliary verb are the same as in the sign for PERSON, as illustrated in Figure 3, which implies that it has a nominal source as opposed to the pronominal source suggested for LSB. PAM may be accompanied by a mouthing related to the German preposition \textit{auf}, which is similar to \textit{on} in English. However, Sapountzaki (2012) states that recent observations indicate that the mouthing /auf/ seems to disappear, which can be taken as evidence of further grammaticalization.

![Figure 3: PAM in DGS (Steinbach & Pfau 2007: 321)](image)

Interestingly, in spoken German, this preposition is almost never used with verbs, only with some adjectival predicates. An interesting feature of PAM in DGS is that the syntactic distribution of PAM (preverbal or postverbal position) is subject to dialectal variation. PAM can be inflected for number and person. As in LSB, the agreement relation is expressed by a path movement from the subject locus towards the object locus; in addition, the orientation of the fingertips is towards the object locus. It is used mostly in the context of plain verbs, as in
example (11), and with adjectival predicates such as PROUD, as shown in example (12) (Steinbach & Pfau 2007:322).

(11) MOTHER IX3a NEIGHBOR NEW3b IX LIKE 3aPAM3b
My mother likes the new neighbor.
(12) IX1 POSS1 BROTHER IX3a PROUD 1PAM3a
I am proud of my brother.

Another feature of PAM is that it can also be used in reciprocal constructions. Pfau and Steinbach (2003, 2005) demonstrated that agreeing verbs can be used in reciprocal constructions by undergoing backwards reduplication. The movement path of a verb sign can be reduplicated backwards, either simultaneously with one-handed agreement verbs or sequentially with two-handed agreement verbs. Plain verbs, however, are not capable of these reciprocal constructions. In these cases, the plain verbs either will be zero marked or PAM can take over the backwards reduplication, as shown in example (13) (Steinbach & Pfau 2007:323).

(13) WE-TWO HATE 1PAM2-rec (1H)
We(dual) hate each other.

One final feature of PAM in DGS to be discussed here is that the use of PAM can create an episodic reading when PAM is used as a marker of emphasis, similar to the usage of do in emphatic sentences in English. An example of the usage of PAM as a marker of emphasis is provided in example (14) (Rathmann 2003:184).

(14) SON2 MOTHER1 5-YEARS 1PAM2 TEACH
A mother has been teaching her son for 5 years. (episodic reading)
A mother used to teach her son for 5 years. (generic reading)

2.3.4 Auxiliary verbs in TSL
As for TSL, Smith (1990) described three different agreement auxiliaries. The first one is described as AUX-1 because of the 1-handshape with which the auxiliary verb is produced. It is the most frequently used auxiliary verb in TSL and is similar to the auxiliary verb described for LSB in section 2.3.2. Some of its features are worth mentioning such as its ability to be used in reciprocal constructions. When used in reciprocal constructions AUX-1 is produced
with two hands, the two hands move in opposite directions and exchange locations. Smith also mentions that AUX-1 can be used with almost every verb, but occurs more often with non-agreeing verbs. If AUX-1 is used with an agreeing verb, the agreeing verb will remain uninflected. In example (15), it can be seen that the auxiliary verb starts with the tip of a 1-hand pointing to the third person locus in signing space and then moves with a straight path toward the signer where it ends in contact with the center of the signer’s chest (Smith 1990: 217).

(15) THAT FEMALE 3aAUX-1, NOT-LIKE
That woman doesn’t like me.

As opposed to AUX-1, which has a pronominal source, the two other forms of auxiliary verbs in TSL originate from verbs. The second auxiliary is called AUX-2 and it has been derived from the sign SEE. It is signed with a bent V-hand, the fingertips are facing the object locus and the back of the hand is facing the subject locus. The third auxiliary verb called AUX-11 grammaticalized from the verb MEET. It is a two-handed sign in which both hands have a 1-handshape and both hands approach each other in the neutral signing space. This sign resembles a classifier sign in which two persons are walking towards each other. Both AUX-2 and AUX-11 are illustrated in Figure 4.

![Figure 4: Auxiliaries in TSL (Steinbach & Pfau 2007: 316)](image)

It must be stated that both these auxiliary verbs have clearly lost their original semantic meaning (SEE and MEET), as is evident from their use in examples (16) and (17). Both always appear with a lexical verb (Smith 1990). One interesting difference with respect to the auxiliary verb used in NGT (see section 2.3.5) is that in TSL the auxiliary verb can also be used for non-human arguments as seen in example (17) (Smith 1990: 219).
(16) IX_{1} 3a AUX-2, IX_{1} UNFAMILIAR
     I don’t know him.
(17) THAT VEGETABLE, IX_{1} AUX-1 3 NOT-LIKE
     I don’t like that dish.

2.3.5 Auxiliary verb in NGT
Bos (1994) did a pilot study on person and location marking in NGT and she noticed the use of a sign with the function of an auxiliary verb. Bos glosses this auxiliary as ACT-ON, but for reasons of consistency, we gloss it as AUX-OP in this study. This sign looks like the sign GO-TO, however, it is accompanied by the Dutch mouthing op, a preposition corresponding to English *on*. Just as in DGS, the mouthing *op* is used in many NGT clauses, where the use of the corresponding preposition would be ungrammatical in Dutch. Only a few verbs and adjectival predicates that combine with AUX-OP would be accompanied by *op* in Dutch, such as wachten *op* (‘wait for’), verliefd *op* (‘in love with’) and boos *op* (‘angry at’) (Bos 1994). Bos also claims that the use of the mouthing *op* is an example of a loan element from Dutch, which has been transformed into an integrated part of NGT. Figure 5 illustrates an example of AUX-OP.

![Figure 5: AUX-OP in NGT (Steinbach & Pfau 2007: 316)](image)

The sign AUX-OP has no lexical meaning, it only has a grammatical function, namely to express agreement in person with one or two arguments of the verb in the clause (Bos 1994:40). Subject and object are marked by a smooth arc-like path movement and finger orientation, similar to what we described for the auxiliaries found in LSB and TSL. As shown in examples (18) and (19), the path movement goes from the locus of the subject referent towards the locus of the object referent.

(18) IX_{3a} HOUDEN 3b AUX-OP_{1}
     He love AUX-OP
     He loves me.
(19)  MAN IX₃a  VROUW IX₃b  BELOVEN ₃aAUX-OP₃b  ROKEN STOPPEN
Man  he  woman  she  promise  AUX-OP  smoke  stop
The man promised the woman to stop smoking.

Bos mentions that it is noticeable that within the clause, the sign AUX-OP receives more stress than other elements in the clause. Bos also observed that occasionally the sign AUX-OP is not accompanied by the mouthing op. Another interesting feature that Bos mentions is that the auxiliary verb can only co-occur with arguments that are specified as [+human]. She argues that this is due to the fact that human arguments are more likely to be placed in the signing space than non-human arguments. Bos also claims that she found a few examples where both the main verb and AUX-OP agree, that is, instances of double agreement marking.

2.3.6 Summary
In this chapter, we discussed a special type of auxiliary attested in a number of (unrelated) sign languages. In contrast to spoken language auxiliaries, the main function of these auxiliaries is agreeing with verbs. As we have seen, agreement in sign languages makes use of locations in the signing space and these locations also determine the form of the auxiliary, which are used for the most part when the lexical verb cannot agree.
3. Language change and historical changes in Deaf education in the Netherlands

The focus of this chapter will be on language change and historical changes in Deaf educational policies in the Netherlands. As mentioned in the introduction, there might be a relationship between the role of NGT in Deaf education and possible changes in the usage of AUX-OP in NGT. In order to be able to evaluate this relationship, it is necessary to provide some background information on changes in language structure and language policy. The rationale of language change in both spoken and signed languages and its properties will be examined in section 3.1. Section 3.2 covers the historical changes that occurred in Deaf educational policies in the Netherlands regarding the role of NGT.

3.1 Language change

Each generation speaks a little different from the previous one because our language is constantly changing. Trask (2010: 2) sketches an example of the naming of a concept that has changed throughout time, namely the colored substance that women sometimes put on their cheeks. The first time such a concept came up in recorded literature was in 1660 and it was named paint back then. In 1753, a new word appeared in English: rouge. The first writer to use this word also added an explanation to his readers that rouge referred to the same substance as paint. But rouge soon replaced paint as the word of choice, and it stayed that way for several hundred years. Then, in 1965, an advertisement coined a new word for the product: blusher. This word has gradually displaced rouge to the extent that rouge is rarely used nowadays.

The example given above is a good illustration of a change in a language, a lexical change, to be more precise. Most people would think that language change often consists of changes at the lexical level, as described above. Other examples of changes at the lexical level include the use of loanwords from other languages, newly coined lexemes for new concepts such as technology-related terms, and the disappearance of lexemes.

Processes of lexical change like the one described above for blusher have also been observed for sign languages. Schermer & Pfau (2008:277) mention that changes at the lexical level occur at a high frequency in sign languages. The main reason for this is that 95% of all sign language users have hearing parents who are not fluent in sign language; therefore it is not self-evident that they learn signs from their parents. As Woodward (1978) described,
American Sign Language (henceforth ASL) has historical ties to French Sign Language (Langue des Signes Française – LSF). Woodward compared old French signs from the beginning of the 19th century with ASL signs from 1918 and the 1970’s. Based on this comparison, Woodward concluded that there are indeed historical changes noticeable. For example, he noticed that signs transferred from an iconic form to a more arbitrary form throughout time and that bodily and complex movements were replaced by hand-internal and simple movements.

However, changes do not only occur at the lexical level, but at all linguistic levels. When a language change occurs at the phonological level, it affects the pronunciation of a language. The pronunciation of English in the past would be rather unintelligible to us, if we could hear it. Sound systems evolve over a long time and during that time some sounds may disappear and others are bound to be pronounced differently. Another example of a change at the phonological level is the difference in pronunciation between American English and British English. Since English people brought the English language to the United States in the 1600’s, there has been a development during which the pronunciation between those two versions of English slowly drifted apart to a point now where most people would have difficulties understanding each other at first encounter (Trask 2010).

As in spoken languages, phonological changes also occur in sign languages. For instance, in sign languages compounds of two signs tend to assimilate into one sign. Currently in ASL the verb INFORM is signed as one sign. However, the sign originates from a compound of two signs, namely KNOW and BRING. These two signs fused together into one fluent sign by means of reduction and assimilation, the handshape of BRING remained the handshape of choice for the fused sign (Schermer & Pfau 2008:280).

Appel et al (2002) mention that the addition of the suffix -able in English is an example of language change at the morphological level. The suffix –able was introduced in English by French loan words such as acceptable and charitable. Subsequently the suffix –able changed its properties, drifted from its French origins, and was also attached to non-French stem-words such as wash (washable) and drink (drinkable). Frishberg (1975) describes an example of a change at the morphologically level in ASL. The location for the sign DON’T-CARE has moved from the forehead to the tip of the nose. This change is not conform with the principle of head displacement, which constrains phonological change, since the sign has moved from the periphery toward the center of the face. Frishberg (1975:714) offers a morphological explanation for this change: a number of signs use the tip of the nose,
and all seem to have negative implications like DON’T CARE: TEDIOUS, FOOL, LOUSY, INSECT, etc.

Finally, changes in language also occur at the syntactic level. Trask (2010) gives an example of a change in the usage of progressive passive constructions in the grammar of English. In old English, the progressive passive construction being was not used, which can be seen in example (20). However, in progressive passive constructions of present-day English, the usage of being is required, as shown in example (21).

(20) My house is painting. (Trask 2010: 8)
(21) My house is being painted. (Trask 2010: 8)

For sign languages, changes at the syntactic level have been reported by, for example, Fischer (1975), who describes a word order change in ASL. The basic word-order in present day ASL is Subject-Verb-Object (SVO), which is similar to English. However, Fischer (1975:6) claims that there is evidence that the word order in ASL 100 years ago was Subject-Object-Verb (SOV). That is, the position of the object in the clause has changed from pre-verbal to post-verbal. The reason for this is the contact between two languages, ASL and English. Fischer (1975:11) mentions that the way in which Deaf children learn sign language is a factor contributing to the word order change in ASL, as they are frequently exposed to the English-speaking environment. In this case, English is the dominant language, as it is spoken by the majority of the population in the United States. One of the factors contributing to the contact between ASL and English is that 95% of Deaf children are born into hearing families, thus it is self-evident that Deaf children are exposed to English from an early age (Schermer & Pfau 2008: 277).

When at a point in time a language change has occurred, it will take time for that language change to be spread out to the majority of the language-users. The group of people who uses the newer version will not expand overnight, instead it will increase gradually over time, whereas the number of people who still use the older version decreases. As Trask (2010: 9) summarizes: “All the people who hated the new form grew old and died, until eventually the only speakers left alive were those who had grown up with the new form and considered it normal.”

The question is now what causes such changes. Changes at the lexical level often have obvious reasons, such as changes in society resulting in new concepts, changes in pronunciation, the technological advancement requiring newly coined words, and contact
between different languages resulting in loanwords being adopted in one’s language (Trask 2010:22). Another explanation for the occurrence of language changes lies in the sociolinguistic variation within the community of language users itself. Young people tend to be the ones who trigger a change in language. However, age is not the only factor that can induce language change, although it might be one of the most important factors. Other sociolinguistic factors that can be responsible are social class, gender, and style (Appel 2002:337).

Thus far, we have provided an overview of properties of language change in spoken and sign languages; in addition possible reasons for language changes have been explained.

3.2 Changes of Deaf educational policies throughout time

In the context of this study, it is necessary to also address the changes in Deaf education in the Netherlands throughout time, as these changes have had a direct impact on how Deaf people and interpreters acquired NGT. We hypothesize that this difference in acquisition may influence how NGT users mark agreement, in particular, that within both the Deaf and the interpreter group, the older members prefer another way of marking agreement compared to the younger members. In section 3.2.1 the changes in Deaf educational policies concerning sign languages will be reviewed. The development of the interpreting services for the Deaf will be described in section 3.2.2.

3.2.1 Changes in language policies in Deaf education

Education for the Deaf in the Netherlands started in 1790 when Henri Daniel Guyot established the first school for the Deaf in Groningen. Before Guyot established the school, he visited de l'Épée, a Frenchman who had established a school for the Deaf in 1760 in Paris, France. De l'Épée taught his pupils in a sign-system which he had developed based on natural signs of the Deaf. Guyot studied this method and brought it back to the Netherlands, where it was used in the first school for the Deaf in Groningen (Rietveld-van Wingerden & Tijsseling 2010).

During the 19th century, a discussion in education for the Deaf started, namely what method would be the best one to use to teach Deaf pupils: a sign-method or an oral-method. Some schools used the sign-method, which involved the use of sign language as the language of instruction. In contrast, the oral-method is characterised by the use of speech and speech perception only (oralism) and a ban on the use of sign (language). This ideology was driven
by the belief that spoken language is inherently superior to sign language (McCaskill et al 2011:26). In contrast to schools that used the sign-method, the oral-method forbade the use of sign language in schools, as it was assumed at that time that learning sign language would obstruct the development of speech and speech-reading (Rietveld-van Wingerden & Tijsseling 2010: 133). During the 19th century, two more schools for the Deaf were set up in the Netherlands, one in St. Michielsgestel and another one in Rotterdam. The school in St. Michielsgestel used the sign-method whereas the school in Rotterdam used the oral-method.

In 1880 a world congress for teachers in Deaf education was organized in Milan, Italy. The outcome of this congress had an enormous impact on Deaf education in the late 19th and 20th century in Europe: during the congress, it was decided that the oral-method would be the only method for teaching Deaf pupils. Thus sign languages were banned from Deaf education. This impact was also felt in the Netherlands where the schools in Groningen and St. Michielsgestel adopted the oral-method. During the 20th century two more schools for the Deaf opened, one in Voorburg and one in Amsterdam, both of which also implemented the oral-method.

For a long time, sign languages have been not been viewed as fully-fledged natural languages comparable to spoken languages. The general view on sign languages was that they were limited communication systems with which the Deaf can communicate with each other (Baynton 1996). But since the sixties of the last century, starting with seminal work on ASL phonology by Stokoe (1960), linguists have gradually discovered that sign languages are, in fact, natural languages. This development lead to the increasing awareness among the educators in the field of Deaf education that sign language belonged in the Deaf education.

As for the situation in the Netherlands, in the 1980’s the parents of Deaf children, who participated in the parent guidance program of NSDSK (Dutch Foundation for the Deaf and Hard of Hearing Child), started to demand that NGT is to be included in the education of their Deaf children (Schermer 2012:470). Subsequently, the schools for the Deaf, with the exception of St. Michielsgestel, switched to the Total Communication method, a method that includes all possible communication methods such as speech, signs, the manual alphabet, pictograms, pantomimes, pictures and drawings (Rietveld-van Wingerden & Tijsseling 2010:215). In practice this meant that Nederlands-met-Gebaren (NmG – Dutch supported with signs2) was used in the classroom as the language of instruction.

2 That is a form of signing method in where spoken Dutch is simultaneous supported with signs (Schermer 2012:471).
In 1995 the Deaf school in Groningen was the first one to introduce the bilingual model, which is a model that teaches the pupils in both Dutch and NGT. This change resulted in NGT being taught as a subject at schools for the Deaf and becoming part of the curriculum. Deaf signers were hired as teachers and thus provided the pupils with a Deaf role model. Schermer (2012:472) points out that “[t]he generation of Deaf children that grew up in this period are the only pupils that were exposed to bilingual NGT/Dutch education.” The bilingual model was never fully implemented, however, as a consequence of the influx of children with a cochlear implant. In 2011 Kentalis, the largest school for the Deaf in the Netherlands, denounced bilingual education as a viable option for all Deaf children (Knoors 2011).

3.2.2 Development of the interpreting services for the Deaf

De Jong (1996) mentions that before the interpreter services for the Deaf started in the Netherlands, Deaf people mostly relied on family members and acquaintances to facilitate communication between them and the hearing environment. This voluntary service developed in the 1980’s into a new profession: sign language interpreter.

In 1983 the former National Association for the Deaf in the Netherlands started to lobby for the establishment of sign language interpreting services for the Deaf, which led to the foundation of the two-year sign language interpreter training program at the vocational level at OVDB (Opleidingen Verzorgende en Dienstverlenende Beroepen - Caring and Service Profession Training) in 1985. At first, the interpreter-students came from Deaf families or had Deaf acquaintances. Often they had been raised bilingually with Dutch and NGT. Consequently, these first students were already familiar with NGT before they started their sign language interpreter training.

The two-year program became a three year program in 1989. The reason for expanding the interpreter training program from two to three years was that the number of interpreter-students who did not have any Deaf background, thus not having any sign language skills, increased. It was therefore necessary to extend the duration of the training as the new students started with zero knowledge about sign language (Peters 1992).

De Jong (1996) mentions that due to various organizational problems at different levels, the development of the interpreter training program was hampered. For example, at the political level, there was not enough concordance regarding the implementation of the sign language interpreter training program. Another reason was that MADIDO (‘Maatschappelijk Dienstverlening voor Doven’ – social services for the Deaf), who was responsible for
providing support with respect to practical training for interpreter-students, was not able to provide adequate such support as it was faced with a shortage of mentors. Apart from that, the profession of sign language interpreter became increasingly demanding.

The above problems lead to the decision to close the sign language interpreting training program in 1996, as it did not provide adequate training to become a qualified sign language interpreter on the level that was required by the Deaf community. In 1997 a new sign language interpreter training program was opened at the Hogeschool van Utrecht (University of Applied Sciences, Utrecht). This new four year long sign language interpreter training program is now offering a Bachelor’s degree in sign language interpreting.

3.3 Summary

In this chapter, we have discussed language changes in both spoken and sign languages. Some examples of language changes on the lexical, phonological, morphological and syntactic levels were reviewed. Historical changes in the field of Deaf educational and with respect to sign language interpreting services were also discussed to shed some light on the rationale behind selecting different groups of participants, which will be explained in chapter 4.
4. Methodology

This chapter describes the methodology used in the research to elicit the data from two groups of participants. In section 4.1 the participants in this study will be described; in section 4.2 the selection of data to be used in the test as well as the production task itself will be explained. During the production task, it was noticed that AUX-OP probably has another function as well, namely an emphatic function. To investigate this other function, a post-test procedure was conducted which will be explained in section 4.3.

4.1 Participants

It is difficult and sometimes impossible to measure the development of language changes over time. The best way to analyze language change would be a diachronic analysis. Such an analysis, however, relies on the availability of historical data. Given the scarcity of historical NGT data, a diachronic analysis was impossible to execute, and it was decided to use the next best strategy, a synchronic analysis. A good example of a synchronic analysis involves a comparison between age groups at one point of time. Based on the differences between age groups, conclusions can be drawn about language changes. The general assumption here is that older speakers/signers use older lexical or grammatical variants while the younger ones use the newer variants (Appel et al 2002).

A total of 42 people participated in this study. The participants can be divided into two groups: namely 21 Deaf native signers, whose L1 is Sign Language of the Netherlands (NGT), and 21 hearing NGT interpreters, whose L1 is Dutch and their L2 is NGT. The Deaf participants were selected through my personal network. Since the aim was to have an evenly distributed age variation within the Deaf group, selecting participants through my personal network ensured that the participants were native signers, members of the Deaf community and evenly distributed in age. The age-range within the Deaf group was between 16 and 80 years old. The 21 interpreters were selected through different channels: my personal network, the register of interpreters NGT\(^3\), and by means of an advertisement asking for participants that was distributed amongst all 4th year interpreting students at the Hogeschool van Utrecht (University of Applied Sciences, Utrecht), where the NGT interpreting program is located.

\(^3\) Stichting RTG is a public register where all certified interpreters can be found: http://www.stichtingrtg.nl/het-register/het-register
Specific details of all participants such as age, gender and year of graduation from the interpreting training program can be found in Table 1.

**Table 1: Participants’ characteristics.**

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>NGT interpreters</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>age</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>79</td>
</tr>
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<td>3</td>
<td>75</td>
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<td>32</td>
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<td>20</td>
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<td>19</td>
<td>18</td>
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<tr>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>21</td>
<td>16</td>
</tr>
</tbody>
</table>

As mentioned in the first paragraph, the best way to measure a possible language change would be a diachronic approach; however, this is not feasible within the framework of this Master’s thesis. Thus a synchronous analysis is the next best option to investigate whether there has been a shift in the manner of using the auxiliary under investigation. Hence, the group of 21 Deaf native signers was divided into three different age groups: 16-35 year old, 36-55 year old, and 56+ year old. The rationale behind creating these three age groups was that each of them represents a specific era of educational policies in schools for the Deaf. The oldest participants (56+) was born between 1931 and 1956 and attended school when oralism
was strictly enforced in all schools for the Deaf in the Netherlands and signing was forbidden within the school. As a result, this generation of Deaf people mostly learned NGT from their Deaf peers of Deaf families and used signing outside the classroom. The middle-aged group (36-55) was born between 1956 and 1975 and attended primary schools for the Deaf between 1961 and 1989 when oralism was still enforced in the majority of the schools but less strict than in the previous years.

Around 1979 Total Communication became a popular concept in the schools for the Deaf in Groningen and Amsterdam and sign-supported Dutch was allowed in the first grades of these schools. The Deaf signers in this group learned NGT in a similar fashion as the first group of Deaf signers, however, they have more experience in using interpreters, as interpreting services started in the 1980’s in the Netherlands. In contrast, the youngest group (16-35), born between 1976 and 1995, went to school between 1981 and 2008, which was a period of many changes. At first signing was introduced in the schools around 1980; subsequently bilingual NGT/Dutch education was implemented in the schools for the Deaf, which, however, was never fully implemented as a consequence of the influx of children with a cochlear implant. These Deaf signers thus had access to various forms of NGT their whole lives. In some instances, they were offered NGT as a subject at their schools, and they were also exposed to native Deaf adult signers in the classrooms. This youngest group is also more likely to continue studying after graduating from high school, as compared to the older participants; therefore, they have been more exposed to interpreters than the other two groups.

The interpreter group was also divided into three subcategories to investigate whether the time of their enrollment in the interpreter training program had an influence on their usage of AUX-OP: (i) interpreters who graduated before 1996 (because in 1997 the current interpreter training program started at Hogeschool van Utrecht); (ii) interpreters who graduated from the current interpreting training program between 2002 and 2009, and who thus have had about 2-9 years of work experience in the field; and (iii) current 4th year interpreter-students who do not yet have any work experience in the field.

4.2 Procedure

In this section, I will describe the way in which the research was conducted in order to gain insight into potential differences in the usage of the auxiliary verb AUX-OP within the three sub-groups of Deaf signers and hearing interpreters. In 4.2.1, we explain how the predicates for the production task were selected, and in 4.2.2, we describe the task itself.
4.2.1 Selection of predicates

In order to establish which non-agreeing verbs would be most likely to trigger the usage of AUX-OP during the task carried out by the participants, I first needed to compile a set of non-agreeing verbs which are used most frequently by both sign language interpreters and members of the Deaf community. A sizeable corpus of non-agreeing verbs which conjure with AUX-OP within both communities was collected from two different sources, which will be explained below.

The first source consisted of all 2009 morning TV-news broadcasts from the Dutch TV channel Nederland 2. Every weekday, the morning TV-news broadcasts are interpreted by a team of 6 interpreters, and for the year 2009, all of these broadcasts – a total of 242 broadcasts of approximately 5 minutes each (i.e. 20 hours, 10 minutes) – have been recorded by the Nederlandse Gebarentheater. All news broadcasts were analyzed and each occurrence of the auxiliary verb AUX-OP was noted down, paying attention to the verb it occurred with, and to whether this was an agreeing verb or not. In total AUX-OP appeared in 128 clauses. Subsequently, I composed a list of verbs that occurred most frequently with the auxiliary verb AUX-OP.

Secondly, the use of AUX-OP constructions by Deaf native signers was analyzed. This was done by using the online database of the Corpus NGT administered by the Radboud University in Nijmegen, the Netherlands (Crasborn et al. 2008). Researchers at the Radboud University started with the Corpus NGT project in 2007 and have recorded 100 Deaf native signers, using different strategies for eliciting sign language data. The native signers participated in pairs and they were given a list of different activities that resulted in a variety of genres including monologues, dialogues, narratives, etc. The pairs were also encouraged to discuss several topics concerning sign language and deafness. I randomly selected the first 12 pairs of native signers from the list which was accessible on the website of the Corpus NGT project. For each pair, there were about 80 minutes of video material including all genres mentioned above, thus totaling to 960 minutes of video material. Each occurrence of the auxiliary verb AUX-OP in a sentence was noted down, again specifying the verb it occurred with and whether it was an agreeing verb or not. From the corpus, 71 clauses with AUX-OP appeared in the data set of Deaf signers.

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4 The list of 128 clauses of verbs with AUX-OP can be found in the appendix A.
5 http://www.ru.nl/corpusngt/
6 The list of 71 clauses of verbs with AUX-OP can be found in the appendix B.
4.2.2 Production task I

Two lists of predicates which co-occurred with AUX-OP were compiled based on the data provided by the two sources described in section 4.2.1. The top 10 most frequently occurring predicates were selected from both lists, resulting in a list of 20 different predicates which could potentially trigger the usage of AUX-OP. This list is provided in Table 2.

Table 2: The 20 predicates most frequently occurring with AUX-OP, predicates in bold are non-agreeing verbs.

<table>
<thead>
<tr>
<th>STEUNEN</th>
<th>to support</th>
<th>BELOVEN</th>
<th>to promise</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHIETEN</td>
<td>to shoot</td>
<td>ZORGEN</td>
<td>to take care of</td>
</tr>
<tr>
<td>VERMOORDEN</td>
<td>to murder</td>
<td>ZEGGEN</td>
<td>to say</td>
</tr>
<tr>
<td>LUISTEREN</td>
<td>to listen</td>
<td>WAARSCHUWEN</td>
<td>to warn</td>
</tr>
<tr>
<td>KRITIEK-GEVEN</td>
<td>to criticize</td>
<td>VOORKEUR-HEBBEN</td>
<td>to prefer</td>
</tr>
<tr>
<td>KIJKEN</td>
<td>to look</td>
<td>VOLGEN</td>
<td>to follow</td>
</tr>
<tr>
<td>HOUDEN-VAN</td>
<td>to love</td>
<td>VERTROUWEN</td>
<td>to trust</td>
</tr>
<tr>
<td>HELPEN</td>
<td>to help</td>
<td>VERSLAAN</td>
<td>to defeat</td>
</tr>
<tr>
<td>GEBAREN</td>
<td>to sign</td>
<td>UITLEGGEN</td>
<td>to explain</td>
</tr>
<tr>
<td>BLAFFEN</td>
<td>to bark</td>
<td>VERTELLEN</td>
<td>to tell</td>
</tr>
</tbody>
</table>

Only 7 predicates out of 20 predicates are non-agreeing verbs. The other 13 selected predicates are potentially agreeing verbs. Despite the fact that those 13 are potentially agreeing verbs, they commonly occur with AUX-OP. Based on this list of 20 verbs, 20 drawings were composed which depict a situation that involved one of the 20 verbs. For instance, BLAFFEN (‘to bark’) was in the top 20 list; therefore a drawing was made of a dog barking at a man. The verb BLAFFEN was written underneath the drawing to ensure that the participants would use the exact same verb during the data elicitation task. An example of such a drawing is given in Figure 6. These 20 drawings were meant to trigger the usage of the auxiliary verb AUX-OP with both interpreters and native signers. All 42 participants were invited individually to participate in what they thought was a test about the word-order in

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7 In drawing it is glossed as KRITIEK instead of KRITIEK-GEVEN, this was done to avoid any occurrence of no agreement due to the usage of NmG.
8 In drawing it is glossed as VOORKEUR instead of VOORKEUR-HEBBEN, this was done to avoid any occurrence of no agreement due to the usage of NmG.
9 The complete set of 20 drawings can be found in the appendix C.
NGT. They were asked to look at each drawing and to describe it in NGT using the verb that was written underneath the drawing. They were asked to focus on the relation between different animate referents in the drawings, that is, who is doing what to whom, for example. The 42 participants were videotaped during the task. All videotapes were analysed for the occurrences of the auxiliary verb AUX-OP and other agreement markers. Each agreement marker, whether it was AUX-OP or a different marker to mark the agreement relation, was noted down.

![Figure 6: Drawing used to elicit the verb BLAFFEN (‘to bark’)](image)

The second and final step of the test was a grammaticality judgment task of the occurrences of AUX-OP in the recorded TV-news broadcasts. After the native signers finished the elicitation task, the real purpose of the task was revealed to them. Subsequently, native signers were asked to judge the grammaticality of the use of AUX-OP by interpreters in the news broadcast recordings. Interpreters were excluded from this task, because NGT is not their first language. As mentioned earlier, each occurrence of AUX-OP in the TV-news broadcast was recorded, and 40 examples of the clauses shown on TV-news in which the auxiliary verb AUX-OP appeared were selected and montaged on a DVD. The native signers were asked to watch the DVD with the 40 different clips. They were given an answer sheet on which they could circle per clip YES when they thought that the interpreter used the auxiliary verb adequately, or NO when they thought that the interpreter used the auxiliary verb inappropriately.

4.3 Production task II: Emphatic use of AUX-OP

Given that some occurrences of AUX-OP elicited by means of the production task appeared to have an additional emphatic function, it was decided post-hoc to conduct an additional experiment to test this hypothesis. This extra task was conducted to explore whether the AUX-
OP marker may indeed function as an empathic marker, similar to the usage of PAM in DGS as a marker of emphasis, as described in chapter 2.3.3. In order to conduct this task, four new Deaf participants were recruited from my personal network. Table 3 provides background information for those four participants, all of whom are native Deaf signers and range in age from 25 to 63 years old.

**Table 3: Characteristics of Deaf native signers in post-test.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>63</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td>58</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>M</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td>F</td>
</tr>
</tbody>
</table>

Participants followed exactly the same main task protocol as described in section 4.2.2, that is, they were presented with the same 20 drawings and asked to sign what they saw. However, in this extra task, the investigator aimed to elicit the function of AUX-OP as an emphasis-marker. In order to elicit the emphatic function, the investigator would manipulate the participant by pretending that he was not able to understand him or her when the participant used role-shift or INDEX to express agreement, then asking the participant to clearly re-state who did what to whom in cases when the participant had not produced a clause containing AUX-OP. It was hoped that the signer would use AUX-OP to emphasize the agreement relation. This particular marker will be glossed as AUX-EMPH.
5. Results

In this chapter the results of the two main tasks, the elicitation task and the grammaticality judgment task, as well as results of the extra task will be presented. Results from the elicitation task will be reported in sections 5.1 and 5.2. First, in section 5.1, an overall impression will be presented of the usage of the auxiliary verb $AUX$-$OP$ within the two groups, Deaf native signers and NGT interpreters. Section 5.2 will provide a more detailed analysis of the different strategies used to express agreement. Results from the grammatically judgement task will be described in section 5.3. Finally, the results from the extra task, which investigated whether $AUX$-$OP$ can be used as a marker of emphasis, will be reviewed in section 5.4.

5.1 Elicitation task

The main objective of this study was to discover whether or not the NGT interpreters use the auxiliary verb $AUX$-$OP$ more often than Deaf native signers. Therefore, the frequency of the occurrence of $AUX$-$OP$ is relevant for this study. In this section, the total number of $AUX$-$OP$ occurrences is examined, no matter whether the auxiliary appears as the only agreement marker in the clause or whether it combines with another agreement marker, i.e. we observe double agreement. Table 4 provides the average frequency of $AUX$-$OP$ over the 20 predicates used in the elicitation task for both Deaf native signers and NGT interpreters in the elicitation task (see 4.2).

Table 4: Average use of $AUX$-$OP$ over 20 predicates.

<table>
<thead>
<tr>
<th></th>
<th>Deaf native signers</th>
<th>NGT interpreters</th>
</tr>
</thead>
<tbody>
<tr>
<td>$AUX$-$OP$</td>
<td>6.9</td>
<td>6.6</td>
</tr>
</tbody>
</table>

These overall results suggest that Deaf native signers use $AUX$-$OP$ slightly more frequently than the NGT interpreters. The Deaf native signers group displays an average of 6.9 occurrences of $AUX$-$OP$ over the 20 predicates, while the NGT interpreters group shows an average of 6.6 occurrences of $AUX$-$OP$ over the 20 predicates. Although the average use of $AUX$-$OP$ is slightly higher in Deaf native signers, it is not clear whether the overall distribution of $AUX$-$OP$ is consistent across and within different age-groups, which will be reviewed in the
next section. Nevertheless, it is surprising that out of 20 selected predicates, all of which commonly occurred with AUX-OP (see section 4.2), only a third actually combined with AUX-OP as an agreement marker in both groups, the Deaf signers and the NGT interpreters. For the other two third of 20 selected predicates other agreement markers were used, which will be reviewed in section 5.2.

5.1.1 Individual results

In contrast to the observations reported by Deaf signers (see chapter 1), the averages in table 1 do not show a difference in the use of AUX-OP between the two groups. However, in order to assess whether the age of Deaf native signers and the year in which NGT interpreters graduated from their program are factors contributing to the variation in the usage of AUX-OP in NGT, it is necessary to look at the frequency of occurrence of AUX-OP within each age group. Firstly, I will provide all the occurrences of AUX-OP for each participant (results for the three cohorts per group and the two groups will be discussed in section 5.1.2). As described in section 4.1, Deaf native signers were divided into three different cohorts based on the age at which they enrolled in Deaf schools. The NGT interpreters were also divided into three different cohorts based on the date of their graduation from the interpreting training program. Each cohort is marked with a colour. Results for the Deaf native signers group are presented in Table 5.

Table 5: Frequency of AUX-OP (over 20 predicates) per individual signer in the three age-based cohorts for the Deaf native signers group.

<table>
<thead>
<tr>
<th>Cohort 1 (age 16-35)</th>
<th>Cohort 2 (age 36-55)</th>
<th>Cohort 3 (age 56-80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of participants</td>
<td>Occurrence of AUX-OP</td>
<td>Age of Participants</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>39</td>
</tr>
<tr>
<td>17</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>18</td>
<td>14</td>
<td>47</td>
</tr>
<tr>
<td>20</td>
<td>11</td>
<td>48</td>
</tr>
<tr>
<td>22</td>
<td>12</td>
<td>49</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
<td>53</td>
</tr>
<tr>
<td>28</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>32</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>34</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>average</td>
<td>9.56</td>
<td>average</td>
</tr>
</tbody>
</table>
Table 5 shows that there is indeed variation within the Deaf native signers group. The cohort of 16-35 year olds shows a higher frequency of occurrence of AUX-OP. However, there is some variation within the cohort. The two youngest participants, 16 and 17 year old, display an unusually low number of AUX-OP occurrences compared to the rest of their peers. This probably can be explained by the fact that both come from a Deaf family, thus they are likely to have learned NGT from their Deaf parents, who possibly do not use AUX-OP often. The other seven members of this cohort show a fairly consistent behaviour (between 10 and 14 uses of AUX-OP). As for the middle aged cohort (36-55 year old), there is a lot more variation within this age group compared to the two other cohorts. One possible explanation may be the type of work that these participants perform. Those who work within the Deaf community, such as a sign language teacher, a concierge at a school for the Deaf, and a counsellor for Deaf clients, show an increased average use of AUX-OP. An alternative explanation could be that these three participants encounter AUX-OP more often than others in their cohort through the nature of their work that they do, as they work with (young) Deaf people and they probably use NGT interpreters in their work settings. The number of occurrence of AUX-OP in the oldest cohort (56-80 year old) is more homogenous and is lower compared to the two other cohorts, which is evidence for a change in the usage of AUX-OP in the Deaf NGT community. In Table 6, we present the results for the NGT interpreters group.

<table>
<thead>
<tr>
<th>Cohort 1 (graduation date &lt; 1996)</th>
<th>Cohort 2 (graduation date 2002-2009)</th>
<th>Cohort 3 (Current interpreting student)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of graduation</td>
<td>Occurrence of AUX-OP</td>
<td>Date of Graduation</td>
</tr>
<tr>
<td>1986</td>
<td>5</td>
<td>2002</td>
</tr>
<tr>
<td>1986</td>
<td>4</td>
<td>2002</td>
</tr>
<tr>
<td>1989</td>
<td>2</td>
<td>2003</td>
</tr>
<tr>
<td>1992</td>
<td>9</td>
<td>2004</td>
</tr>
<tr>
<td>1994</td>
<td>4</td>
<td>2006</td>
</tr>
<tr>
<td>1996</td>
<td>10</td>
<td>2006</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>2008</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>2009</td>
</tr>
<tr>
<td>average</td>
<td>5,66</td>
<td>average</td>
</tr>
</tbody>
</table>
The numbers in Table 6 reveal that we also find variation within the interpreters group. The cohort of NGT interpreters who graduated from the old style interpreting training program before 1997 display considerable variation in the use of AUX-OP. Similar to the cohort that graduated before 1997, NGT interpreters who graduated from the current interpreting training program between 2002 and 2009, and who have thus had about 2-9 years of work experience in the field, also displayed great variation. One interpreter, who graduated in 2008, scored 0 during the trigger test, which is surprising, as it was expected that the NGT interpreters would be more likely to use AUX-OP as an agreement marker. It turns out that this interpreter is a staff-interpreter at De Gelderhorst (the national centre for elderly Deaf people in the Netherlands), thus he is accustomed to signing with elderly Deaf, who make little use of AUX-OP. As for the youngest interpreter-student cohort, the number of occurrences of AUX-OP is rather high and homogenous across cohort members compared to the two other interpreter cohorts.

As mentioned in section 4.1, 21 NGT interpreters were selected for this study; however, I have excluded results from one participant. This participant was a 4th year interpreting student with an expected graduation date of 2011. During the elicitation task, it was observed that she rarely used AUX-OP as an agreement marker. Following the trigger task, I asked her why she did not use AUX-OP much as an agreement marker. She revealed that she already knew the purpose of the trigger task, as she had looked up my name on the internet after receiving my invitation to participate in the trigger task. It turned out that the Nederlandse Gebarencentrum had already published an announcement on their website about an upcoming workshop to be held by me about the usage of AUX-OP, which I would hold after completing the research. Thus I decided to exclude the results from this particular participant, as she had foreknowledge which may have influenced the results.

5.1.2 Results related to age-groups and year of graduation.

As mentioned in section 4.1, a synchronic analysis is required to yield insight into a potential change in the usage/occurrence of AUX-OP. It is thus essential to review the average frequency of occurrence of AUX-OP within each cohort for both the Deaf native signers group and the NGT interpreters group; these averages are provided in Table 7.

Table 7 reveals that the frequency of use of AUX-OP decreases with age, with the younger and the medium cohort being closer to each other compared to the oldest cohort. The 16-35 year old cohort displays an average of 9.56 occurrences of AUX-OP over the 20 predicates and the 36-55 year old cohort shows an average of 8.2 occurrences of AUX-OP. In
contrast, within the 56+ cohort, AUX-OP is used as an agreement marker on average only 2.57 times over the 20 predicates.

Table 7: Average frequency of AUX-OP (over 20 predicates) within each cohort for both the Deaf native signers group and the NGT interpreters group.

<table>
<thead>
<tr>
<th></th>
<th>Deaf native signers</th>
<th>NGT interpreters</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX-OP</td>
<td>9.56</td>
<td>8.2</td>
</tr>
</tbody>
</table>

As for the NGT interpreters group, the cohort that graduated before 1996 shows an average of 5.67 occurrences of AUX-OP. The second cohort of NGT interpreters, who graduated between 2002 and 2009, shows an average of 4 occurrences of AUX-OP over the 20 predicates, which is slightly lower than the average of the interpreter cohort that graduated from the old interpreter training program. The average number of occurrences of AUX-OP within the interpreter-student cohort is the highest of all three interpreter cohorts and also higher than that of all three Deaf native signers cohorts, which indicates that the interpreter-student cohort uses AUX-OP as an agreeing marker most frequently. It is interesting to note that the youngest cohorts within both the Deaf and the interpreter group are using AUX-OP more frequently than the other cohorts. Moreover, the youngest cohorts are producing AUX-OP on average minimally twice as often as the oldest groups.

5.1.3 AUX-OP in double agreement versus single agreement

It has been reported in the relevant literature that double agreement constructions do occur in verb agreement in sign languages (Bos 1994, Smith 1990, Zeshan 2000, Steinbach & Pfau 2007). Double agreement either involves the combination of an agreement auxiliary with an agreeing verb that is itself inflected for subject and/or object agreement or the combination of an agreement auxiliary with one of the other strategies for expressing agreement (see section 2.3.1). Interestingly, I found that the results differed when the data were sorted according to whether AUX-OP was utilized in a clause as the only marker of agreement or was combined with another agreement marker (i.e. double agreement marking; note that the attested combinations of agreement markers will be addressed in section 5.2.5). Table 8 provides the average number of occurrence of AUX-OP as a single agreement marker over the 20 predicates.

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10 Other strategies of agreement will be examined in section 5.2.
Table 8 shows that within both groups, the oldest cohorts do not frequently use AUX-OP as the single agreement marker within the clause, in comparison to the younger groups.

**Table 8:** Average use of AUX-OP as a single agreement marker (over the 20 predicates) within each cohort for both the Deaf native signers group and the NGT interpreters group.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>NGT interpreters</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX-OP</td>
<td>4.56</td>
</tr>
</tbody>
</table>

It is evident that the two younger Deaf native signers cohorts utilize AUX-OP less frequently as the only marker of agreement. The Deaf native cohort of 16-35 years displays an average of 4.56 occurrences of AUX-OP as the only marker of agreement, compared to the average overall occurrence of AUX-OP of 9.56 in table 4. That is, almost the half of the occurrences of AUX-OP surface in contexts where they combine with another marker of agreement. The overall usage of AUX-OP in the cohort of 16-35 was much higher than within the 56+ cohort, and table 5 reveals that the reason for that lies mainly in the increased use of double agreement within the 16-35 cohort. The cohort of 36-55 shows a similar pattern: for this cohort, we find an average of 3.5 occurrences of AUX-OP as single agreement marker, opposed to an average of 8.2 instances of AUX-OP in single and double agreement. Compared to the 16-35 cohort, the difference in the usage of AUX-OP in single and double agreement is bigger in the 36-55 cohort, as more than the half of the instances of AUX-OP surface in double agreement constructions. The 56+ group does not show this pattern. For this cohort the average occurrence for AUX-OP as single agreement marker is 2.33, compared to the average overall occurrence of AUX-OP of 2.57 in table 4. This reveals that the 56+ cohort displays very few instances of double agreement.

As for the NGT interpreter group, only the cohort that graduated before 1996 shows the same pattern as the two younger cohorts of Deaf signers, namely 2.5 occurrences of AUX-OP as single marker of agreement as opposed to 5.67 occurrences of AUX-OP in total. This is similar to the difference found between singular use of AUX-OP and use of AUX-OP in singular form and double agreement constructions overall within two youngest cohorts of Deaf native signers. The two other cohorts, interpreters who graduated between 2002-2009 and interpreter-students, do not show this pattern. For them, the numbers in table 4 and 5 are almost identical, that is, they produce hardly any double agreement constructions. The
youngest cohort of interpreters produced an average of 10.5 AUX-OP in single agreement constructions, which is approximately four times more compared to the average produced by the oldest cohort. Thus, within the two groups, both the youngest cohort of Deaf native signers and the youngest cohort of interpreters (i.e. the interpreter students) are using AUX-OP more frequently, suggesting a diachronic change in the usage of AUX-OP. However, the difference lies in the fact that almost half of the increase in the youngest Deaf cohort can be attributed to the increased use of AUX-OP in double agreement constructions. The interpreter students do not show this pattern: the only use of AUX-OP in this cohort is the one as single marker of agreement.

5.2 A closer look at the variation of agreement strategies

This section will address the various strategies besides AUX-OP used by Deaf native signers in this study to express agreement. The data consists of in total 420 elicited predicates as each one of 21 deaf participants produced 20 predicates. Only data from Deaf native signers will be reviewed here since NGT is their L1, as opposed to NGT interpreters. Besides AUX-OP, the agreement marking strategies found in our data are: agreeing verbs, role-shift, AUX, and INDEX. In subsections 5.2.1 to 5.2.4, we will discuss the cases in which these strategies occurred by themselves, while in section 5.2.5, we will address all attested cases of double agreement, including those with AUX-OP. Finally, in section 5.2.6, we turn to the data that did not include any agreement marking.

5.2.1 Agreeing verbs

As mentioned in section 2.3.1, an agreeing verb belongs to a class of verbs that can agree with previously established loci in the signing space by means of movement and/or orientation changes. Out of the 20 elicited predicates, 13 can be classified as an agreeing verb. Table 9 displays the average use of this strategy to mark agreement in the 20 elicited predicates.

Table 9: Average use of agreement verbs (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th></th>
<th>Deaf native signers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16-35 yr old</td>
</tr>
<tr>
<td>Agreeing verbs</td>
<td>2.11</td>
</tr>
</tbody>
</table>
As is evident from Table 9, the strategy of using an agreeing verb to mark agreement is attested with a low frequency in the data, which is somewhat surprising. Despite the fact that the total of 20 predicates included 13 agreeing verbs, the 16-35 cohort in average used agreeing verbs as a way to mark agreement only 2.11 times. The 36-55 group had an average of 2.5 times, whereas the 56+ group had an even lower average of 1.33 times. The two younger groups show an equal overall frequency of using this strategy compared to the 56+ group. This can probably be explained by the fact that those younger signers are more fluent in NGT since they either had NGT as a course during their education or followed a work-related workshop; thus they likely are aware of the NGT grammatical rule of exploiting the agreement potential of the agreement verbs.

5.2.2 Role-shift

Role-shift is a linguistic process whereby a signer “takes on a role” of a character in a discourse (Sandler & Lillo-Martin 2006:379). The signer can present others’ words, thoughts, or “point of view” by shifting the body position either to the side or slightly forward and/or by changing the facial expression. It is often used as a manner to indicate direct speech, as, for instance, in example (22) (Baker & van den Bogaerde 2008:93).

(22) BROER INDEX3a [OOK SCHOMMELEN WILLEN]
    brother he too swing want
My brother said: “I want to swing too.”

Padden (1986) claims that role-shifting does not only include discourse topics, marking of speaker perspective, etc. Rather, role-shifting can also be exploited to mark agreement involving a body-shift. Padden (1990:129) provides the following ASL example to illustrate agreement marking by means of role-shifting. Example (23) demonstrates that the signer first takes on the role of the man who held a gun (subject), by applying a body-shift, the signer then takes on the role of a man with a gun to his head (object). Thus, role-shifting is a way to mark agreement other than using an agreement auxiliary (ASL does not have an agreement auxiliary).

(23) MAN [GUN-IN-HAND]; (body-shift) [GUN-HELD-BY-HAND-TO-HEAD.]
The man held a gun to another’s head.
In the data collected for our study, this kind of role-shifting to mark the agreement relation has also been found. Table 10 provides the average frequency of role-shifting for the three cohorts of Deaf native signers. The properties of expressing agreement by means of a role-shift found in this study are in most cases exactly the same as those described for ASL.

**Table 10:** Average frequency of using role-shifting as an single agreement marker (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>role-shifting</td>
<td>4.44</td>
<td>6.17</td>
<td>10</td>
</tr>
</tbody>
</table>

Overall, the following pattern emerges: the older the signers are, the more they employ role-shifting as an agreement marker instead of using AUX-OP. The 56+ year old cohort shows an average of 10 occurrences of role-shifting over the 20 offered predicates, that is, in 50% of all elicited sentences, agreement is expressed using role-shifting. The two younger groups show a lower frequency of applying role-shifting as a marker of agreement compared to the 56+ group.

Since role-shifting seems to be the strategy most frequently used for agreement marking for the 56+ cohort, the question emerges whether the results would differ when the data were sorted according to whether role-shifting was utilized in a clause as the only marker of agreement or was combined with another agreement marker. Table 11 provides an overview of the frequency of role-shifting in both single and double agreement constructions.

**Table 11:** Average frequency of using role-shifting as an agreement marker (over the 20 predicates) in single and double agreement constructions within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>role-shifting</td>
<td>9.61</td>
<td>9.65</td>
<td>11.32</td>
</tr>
</tbody>
</table>

As can be seen in Table 11, once we combine role-shifting data from both single agreement clauses and double agreement clauses, the average frequency for the two youngest cohorts increases. Especially in the 16-35 cohort, the frequency is more than doubled. This shows that role-shifting is still the main agreement manner, whether it appears by itself or in combination...
with another agreement marker such as AUX-OP. Further properties of double agreement constructions will be discussed in 5.2.5.

5.2.3 AUX

As mentioned in section 2.3.5, the Dutch mouthing op, a preposition corresponding to English on, often accompanies AUX-OP. Bos (1994:40) reports that out of 212 instances of AUX-OP, 68 appeared without mouthing of op. Out of these 68 instances, 53 only consisted of the manual part while the remaining 15 appeared with another form of mouthing. In our data, we also found an agreement marker that is manually identical to AUX-OP, but lacks the mouthing op. The instances of this agreement marker in our data – no matter whether they are accompanied by no mouthing or by another mouthing – are glossed as AUX. An example of such utterance from my data is given in example (24).

(24) MAN$_{3a}$ AUX MAN$_{3a}$ VERMOORDEN MET MES
Man AUX man kill with knife
A man killed other man with a knife.

Table 12 shows the average number of AUX occurring in this study. AUX occurred in total 18 times out of 420 elicited predicates, which is a low number, compared to the findings of Bos.

Table 12: Average frequency of AUX as an agreement marker (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX</td>
<td>0.44</td>
<td>0.17</td>
<td>1.5</td>
</tr>
</tbody>
</table>

An interesting feature found was that out of 18 AUX markers, 9 instances were accompanied by a mouthing other than op. In total 7 different Dutch mouthings were found and they include an adjective (ander-‘other’), prepositions (aan-‘to’, tegen-‘against’, voor-‘for’, and naar-‘to’), a verb (zeggen-‘to say’), and a pronoun (jou-‘you’). Interestingly, these mouthings only show up in the data of one participant aged 16 years and the participants in the age range of 47-80 (i.e. in the participants of the oldest cohort and participants of the older half of the middle cohort).
For the older group, there is a correlation between the educational policy at school, namely a strict oral policy, and the use of these mouthings, which may explain the use of various mouthings with \textit{AUX}. However, it is rather surprising that the 16-year old participant also uses different mouthings considering the fact that she comes from a Deaf family and enrolled in a Deaf school when bilingualism was introduced. An alternative explanation may be that individual preference might play a role here. Still, at least across the younger cohorts, \textit{AUX} produced without the \textit{op} mouthing appears to be infrequent.

\textbf{5.2.4 INDEX}

Bos (1994:40) mentions that the function of \textit{AUX-OP} is to express agreement in person with one or two arguments of the verb in the clause. She found that 155 out of 212 instances of \textit{AUX-OP} signal two arguments of the verb where the movement of the sign always proceeds from the subject to the object locus. However, in the remaining 57 examples, \textit{AUX-OP} only signals one of the verb’s arguments or an INDEX is used. The movement of the auxiliary verb \textit{AUX-OP} does not signal the subject argument, it instead starts at a location in front of the signer’s body, despite the fact that there is no first person subject. In other cases, instead of using the sign \textit{AUX-OP}, an INDEX is used which points towards the location of one of the arguments, simultaneously with mouthing \textit{op}. Bos reports that this INDEX always points towards the object locus. The INDEX can thus be viewed as an object agreement marker.

In our data, we found a total of 29 instances of INDEX. An example of a sentence with INDEX as agreement marker is given in example (25).

\begin{verbatim}
(25) MAN INDEX3a VERMOORDEN INDEX MAN INDEX3b
Man he kill INDEX man he
A man killed a man.
\end{verbatim}

Table 13 displays the average number of INDEX found in this study. In contrast to Bos’ findings, no occurrences of INDEX were accompanied by the mouthing \textit{op}. 25 INDEX forms were produced without mouthing and 4 INDEXes were accompanied with a mouthing other than \textit{op}, either a preposition (\textit{voor}-'for' or \textit{aan}-'to’) or a pronoun (\textit{jou}-'you’). Three of the latter instances were found in two participants aged 55 and 17. That is, like the mouthings found with \textit{AUX}, these instances were observed in an older participant and one of the youngest participants. In summary, INDEX is only used infrequently as an agreement strategy across all Deaf signers.
Table 13: Average use of INDEX as an agreement marker (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th></th>
<th>Deaf native signers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16-35 yr old</td>
<td>36-55 yr old</td>
<td>56+ yr old</td>
</tr>
<tr>
<td>INDEX</td>
<td>1.44</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

5.2.5 Double agreement

It has been reported that double agreement occurs in other sign languages, but in previous studies, the term ‘double agreement’ is mostly used for cases in which an inflected main verb combines with an auxiliary verb. To date, there is no reference in the literature to double agreement marking involving an agreement auxiliary combined with other agreement markers. In the data, I have found a number of double agreement occurrences that include either an inflected main verb combined with an agreement auxiliary or an agreement auxiliary combined with other agreement markers. Example (26) provides an insight of such a double agreement construction.

(26) MAN PISTOOL SCHIETEN AUX-OP (bodyshift) MAN [VALLEN-OP-GROND]  
    Man pistol shoot AUX-OP (bodyshift) man [falling-on-ground]  
    A man shot a man who fell on the ground.

Table 14 provides an overview of the average frequency of the use of double agreement across the three cohorts of Deaf native signers.

Table 14: Average frequency of double agreement (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th></th>
<th>Deaf native signers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16-35 yr old</td>
<td>36-55 yr old</td>
<td>56+ yr old</td>
</tr>
<tr>
<td>Double agreement</td>
<td>6.78</td>
<td>5.33</td>
<td>1.33</td>
</tr>
</tbody>
</table>

The 16-35 age cohort displays an average frequency of 6.78 instances of double agreement across the 20 elicited predicates. To put in other words, within the 16-35 cohort about a third of all clauses was signed with double agreement. The 36-55 age cohort averaged 5.33 out of 20 elicited predicates, whilst the 56+ cohort displays an average of 1.33 per 20 elicited predicates. It is noteworthy that the 56+ cohort utilizes double agreement with a very low
frequency compared to the two younger cohorts, which suggests that the older signers prefer single agreement. Table 15 provides an overview of the different kinds of combinations of double agreement found in the data.

Table 15: Different combinations of double agreement and their actual number of occurrence and their average frequency over 20 predicates in corresponding Deaf age cohorts.

<table>
<thead>
<tr>
<th>Combination</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreeing verb + AUX-OP</td>
<td>12/1.33</td>
<td>11/1.83</td>
<td>-/-</td>
</tr>
<tr>
<td>Agreeing verb + AUX</td>
<td>-/-</td>
<td>-/-</td>
<td>-/-</td>
</tr>
<tr>
<td>Agreeing verb + INDEX</td>
<td>2/0.22</td>
<td>-/-</td>
<td>-/-</td>
</tr>
<tr>
<td>Role-shifting + AUX-OP</td>
<td>31/3.44</td>
<td>7/1.16</td>
<td>4/0.66</td>
</tr>
<tr>
<td>Role-shifting + AUX</td>
<td>2/0.22</td>
<td>3/0.5</td>
<td>3/0.16</td>
</tr>
<tr>
<td>Role-shifting + INDEX</td>
<td>2/0.22</td>
<td>2/0.33</td>
<td>-/-</td>
</tr>
<tr>
<td>Role-shifting + agreeing verb</td>
<td>8/0.89</td>
<td>7/1.16</td>
<td>1/0.5</td>
</tr>
<tr>
<td>Agreeing verb + role-shifting + AUX-OP</td>
<td>4/0.44</td>
<td>2/0.33</td>
<td>-/-</td>
</tr>
</tbody>
</table>

As can be seen in Table 15, 8 different combinations of agreement markers were found which is represented by their actual numbers of occurrences and their average frequency over 20 predicates across the three Deaf cohorts. The first three combinations involving double agreement have been reported in the literature, namely that double agreement may result from the combination of an inflected main verb with an auxiliary verb or INDEX (Smith 1990, Massone & Curiel 2004, Zeshan 2000). However, it was nowhere to be found in the relevant literature that double agreement may also be due to a combination of the role-shifting strategy with an auxiliary agreement verb.

Table 15 shows that role-shifting and AUX-OP are both frequently used as one of the agreement markers in double agreement constructions. Interestingly and surprisingly, the 101 elicited instances of multiple agreement also included 6 instances of triple agreement, namely a combination of an agreeing verb, role-shifting and AUX-OP.

Overall, this data shows that the increase in the usage of AUX-OP, as mentioned in section 5.1.3 is not at the cost of other possible markers of agreement, as they are still used, as shown in this section, combined with AUX-OP. Moreover, due to this outcome the decrease in the usage of role-shifting, as mentioned in section 5.2.2, does not indicate that the younger
cohorts actually use role-shifting less, as it is evident from this data that they combine role-shifting with other agreement markers instead of using it as the only agreement marker like the 56+ cohort. A detailed discussion of the features of different types of double agreement is outside the scope of this study.

5.2.6 No agreement
In several instances, it was noted that some participants did not apply any of the agreement strategies described above. Instead they relied on spoken Dutch supported with signs (NmG) to mark the agreement. Example (27) provides an example of such an utterance without any agreement.

(27) MAN STEUNEN OBAMA
Man supports Obama
A man is supporting Obama.

Table 16 displays the average frequency of occurrence of no agreement noted.

Table 16: Average frequency occurrence of no agreement (over the 20 predicates) within 3 Deaf cohorts.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>No agreement</td>
<td>0.22</td>
<td>0.67</td>
<td>1.83</td>
</tr>
</tbody>
</table>

A gradual increase in using spoken Dutch supported with signs to mark agreement is noticed when looking at the age groups; the youngest age group displays an average of 0.22 occurrences of no signed agreement marker in 20 elicited predicates. The 36-55 age group shows an average of 0.67 occurrences, whilst the 56+ group averaged 1.83 occurrences of no agreement per 20 elicited predicates. This appears to correspond to the time they enrolled in Deaf schools when oralism was strictly enforced, as the older the group is, the more they make use of spoken Dutch to express agreement.

5.2.7 Summary
We have discussed different strategies for marking agreement in NGT and the average frequency of the occurrences of different agreement markers divided across age group. From
the elicited data, it is evident that there are 5 different single ways to mark agreement in NGT (AUX-OP, agreeing verb, role-shifting, AUX, INDEX, and double agreement). Furthermore, we found evidence that double agreement in NGT may result from 7 different combinations of agreement strategies. Table 17 gives an overview of the average frequency for all agreement strategies – including double agreement as one strategy as well as no agreement – found across all age groups and the average frequency for the whole population of 21 Deaf participants.

Table 17: Overview of all types of agreement markers used by Deaf signers.

<table>
<thead>
<tr>
<th></th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
<th>Overall average across all age-groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX-OP</td>
<td>4.56</td>
<td>3.5</td>
<td>2.33</td>
<td>3.62</td>
</tr>
<tr>
<td>Agreeing verbs</td>
<td>2.11</td>
<td>2.5</td>
<td>1.33</td>
<td>2</td>
</tr>
<tr>
<td>role-shifting</td>
<td>4.44</td>
<td>6.17</td>
<td>10</td>
<td>6.52</td>
</tr>
<tr>
<td>AUX</td>
<td>0.44</td>
<td>0.71</td>
<td>1.5</td>
<td>0.86</td>
</tr>
<tr>
<td>INDEX</td>
<td>1.44</td>
<td>1</td>
<td>1.5</td>
<td>1.38</td>
</tr>
<tr>
<td>Double agreement</td>
<td>6.78</td>
<td>5.33</td>
<td>1.33</td>
<td>4.8</td>
</tr>
<tr>
<td>No agreement</td>
<td>0.22</td>
<td>0.67</td>
<td>1.83</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Looking at the overall frequency for all participants, it is evident that role-shifting is the favoured agreement marker with a frequency of 6.52. The second next most favoured agreement strategy is double agreement, which averaged 4.8. AUX-OP followed as the third most favoured agreement marker with a frequency of 3.62. The remaining four manners of marking agreement occur in a frequency lower than 2 occurrences per 20 elicited predicates. One of the main questions of this study was whether there is a grammatical shift going on in the usage of different manners to express agreement. To provide an answer, the differences among the age groups are visualized in figure 7.

Figure 7 provides evidence that there is a grammatical shift going on in NGT, as every agreement manner is preferred by one of the age cohorts. Three categories are used most frequently by the Deaf signers, namely AUX-OP, double agreement and role-shifting. Four other categories all occur with an overall average of 2 or less per 20 predicates, these are AUX, INDEX, agreeing verb and no agreement. In the context of this study, the focus will be on the

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11 A detailed table is provided in appendix D, where we also indicate per participant and per predicate which strategy (or combination) was used.
three main markers of agreement, as the four other categories do appear too infrequently and the differences within age groups are too small to allow for safe conclusions about a possible grammatical shift in NGT.

![Figure 7: Overview of all types of agreement strategies used by Deaf signers and their frequency per 20 elicited predicates per age cohort.]

As for AUX-OP, it is evident that the 16-35 group prefers to use AUX-OP as a way of marking agreement. Similarly, double agreement tends to be the most favoured manner of agreement marking in the 16-35 group. The 56+ group applies AUX-OP and double agreement much less frequently compared to the younger groups. However, role-shifting is the most favoured agreement strategy amongst the 56+ group. The frequency with which the 36-55 group applies a certain strategy appears in all cases to fall in between the frequency of the 16-35 group and 56+ group, thus there is always a linear increase or decrease across the age groups except for the agreeing verb and INDEX strategy.

The present study thus reveals that there is not a single rule for expressing agreement in NGT. Although AUX-OP may be expected to be “obligatory” in the context of plain verbs, it is not always grammatically obligatory thanks to various other strategies of agreement in NGT. From the data it is evident that individual signers may have their own preferred agreement strategy. Further evidence for unconstrained agreement rules is that the double agreement seems to become the most favoured manner of agreement as it increased across the age groups, with the youngest group applying this strategy most frequently. Double
agreement includes different ways of marking agreement, thus the manner to mark agreement is less constrained nowadays, as it may involve different combinations of agreement markers.

5.3 Grammaticality judgment task

A grammatical judgement task was conducted with the Deaf participants after finishing the main production task. The goal of the grammatical judgement task was to judge the grammaticality of the use of AUX-OP by interpreters in the news broadcast recordings. It was predicted that the older Deaf people would judge the usage of AUX-OP as ungrammatical more often than younger signers. The procedure of the grammatical judgment task has been described in section 4.2.2. By answering YES after viewing a video clip, Deaf signers indicated that they considered the usage of AUX-OP in that clause as acceptable. By answering NO, they indicated that the usage of AUX-OP in that clause was unacceptable. The only aim of this task was to check whether the Deaf agreed with the use of AUX-OP as an agreement marker in the 40 clauses; the properties of the 40 selected verbs, which accompanied AUX-OP, and their possible influence on the judgment of the Deaf participants was not taken into account in the context of the present study. Table 18 displays the average percentage of negative responses from the Deaf audience.

Table 18: Average percentage of negative responses of grammatically judgment task.

<table>
<thead>
<tr>
<th>Deaf native signers</th>
<th>16-35 yr old</th>
<th>36-55 yr old</th>
<th>56+ yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average percentage of negative responses</td>
<td>38.33%</td>
<td>53%</td>
<td>67.17%</td>
</tr>
</tbody>
</table>

Table 18 reveals that there is a correlation between the frequency of negative judgements and age cohorts. The 16-35 group turned out to be the group with the lowest percentage of negative responses, namely with an average percentage of 38.33%. The 36-55 group averaged with a percentage of 53% negative responses. The 56+ group shows an average of 69.17% negative responses. These results do correspond with the outcome of the main production task, namely that the older the Deaf participants are, the less likely they use AUX-OP as an agreement marker. Consequently, they are also more likely to judge the use of AUX-OP as ungrammatical than younger Deaf participants.
5.4 Use of AUX-OP as a marker of emphasis

While conducting the main task, it was noted that AUX-OP is probably also used as a marker of emphasis. This was evident in cases in which the participants initially used an agreement marker other than AUX-OP but in an unclear manner. As the agreement relation was not clearly marked, they were asked to repeat what they said. In almost all cases of repetition, they then made use of AUX-OP as a marker of agreement, apparently to emphasize the agreement relationship. Remember that Rathmann (2003, see section 2.3.3) mentioned that DGS PAM may also be used as a marker of emphasis.

In order to test this hypothesis, it was decided to conduct a post-test with four signers of different ages to elicit the usage of AUX-OP as a marker of emphasis (see section 4.3 for the methodology).

Table 19: The outcomes of post-test to test if AUX-OP is used as a marker of emphasis (that is, as AUX-EMPH).

<table>
<thead>
<tr>
<th>N=20</th>
<th>25 yr old</th>
<th>40 yr old</th>
<th>58 yr old</th>
<th>63 yr old</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX-OP</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Agreeing verbs</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>role-shifting</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>AUX</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>INDEX</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Double agreement</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>No agreement</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AUX-EMPH</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 19 shows the data elicited during the post-test. For reasons of consistency, the marker of emphasis found in this study will be glossed AUX-EMPH in the context of elicited emphasized responses. The phonological properties of AUX-EMPH are exactly the same as those of AUX-OP, it consists of the same handshape, location, and movement as AUX-OP and the mouthing of *op* is also present in AUX-EMPH. We speculate that the mouthing *op* is required in the emphatic use of the auxiliary, as it was noted in the study that the mouthing of *op* was more pronounced than when used regularly with AUX-OP.
During the post-test, the participants were asked to repeat what they said if they had used an agreement marker other than AUX-OP. The clauses produced with role-shifting, AUX, INDEX and agreeing verb as agreement marker were subject to manipulation by the investigator, who pretended not to understand the clause. The frequency of manipulation varied per participant depending on when a participant signed an agreement relationship that was not clear enough. In some instances the participants expressed the agreement relationship clear enough by role-shifting or by clear usage of other agreement markers, such that it would have been superfluous to ask for clarification. It was noted that in every instance of manipulation, the participants would all use AUX-EMPH to emphasize the agreement relation. Alternatively, the participant may use AUX-OP as one of the agreement markers of choice, which can be seen in the 63 year old participant who used AUX-OP with nine of the 20 selected predicates. This phenomenon, the use of AUX-OP as an emphatic marker AUX-EMPH, has not been described before for NGT.

5.5 Summary

Analysis of the elicited productions of 20 predicates which commonly co-occur with AUX-OP resulted in 420 agreement markers, of which not all were AUX-OP. Results show that role-shifting is the main agreement marker across all three age cohorts of Deaf signers. However, results also indicate that there is an increase in the usage of AUX-OP among the Deaf younger cohorts. The increasing use of double agreement constructions in which AUX-OP is utilized contributes to this pattern. Moreover, the results also reveal that there are other ways to mark agreement such as AUX, INDEX and double agreement. Besides AUX-OP having a grammatical function as an agreement marker, this study also finds that AUX-OP can also be used as a marker of emphasis. To sum up, this study shows that age is an important factor contributing to the variability in the usage of AUX-OP and different agreement markers.
6. Discussion and conclusion

Deaf signers reported that NGT interpreters use AUX-OP much more often than they do and also in different contexts. The aim of this study was to investigate whether Deaf native signers use the auxiliary verb AUX-OP differently from the NGT interpreters. Interestingly, the results of the research show that there are different methods to mark agreement besides AUX-OP and role-shifting, which we did not set out to investigate. The following sections will discuss the different aspects of our findings. The use of AUX-OP by Deaf signers will be discussed in section 6.1, followed by a discussion of the use of AUX-OP in the NGT interpreters group in section 6.2. Other agreement strategies are the subject of discussion in section 6.3. The use of AUX-OP as a marker of emphasis will be highlighted in section 6.4, which is followed by concluding remarks in section 6.5.

6.1 Use of AUX-OP by Deaf signers

Section 5.1.2 noted that within the group of Deaf signers, the AUX-OP shows an increased usage within the two younger cohorts as compared to the oldest age cohort; moreover, the two youngest cohorts are producing AUX-OP at least twice as much as the oldest cohort in Deaf signers, suggesting a diachronic change in the usage of AUX-OP. However, it has been noted that a big portion of the increase of AUX-OP is can be related to an increased usage of double agreement constructions. In almost half of the occurrences of AUX-OP, it surfaces in contexts in combination with another marker of agreement. Section 5.1.3 demonstrated that if all double agreement constructions containing an AUX-OP within all Deaf cohorts was deleted from the total AUX-OP data, the number of occurrences of AUX-OP would decrease sharply. This suggests that AUX-OP did not take over as the main agreement marker within younger Deaf cohorts as it was perceived. Thus this study suggests that the usage of AUX-OP as a single agreement marker has not strongly increased across the Deaf cohorts, and more specifically that the observed increase in AUX-OP is due to the increase in the double agreement constructions in which AUX-OP complements other existing agreement markers such as role-shifting.

It is rather interesting that AUX-OP has been subject to such explosive growth. A possible explanation is that the young people are more able to adapt their language compared

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12 Since this is an explorative study, no statistical analysis has been done.
to older individuals. As mentioned in section 3.1, this study supports previous research that showed that young people tend to be the ones who trigger language change. Age also affects language and has been found to be a contribution to language changes in sign languages (Lucas et al 2001, Schembri et al 2009). A possible explanation for the difference in age cohorts within the Deaf group might be various educational backgrounds: different educational methods implemented throughout the school years of these Deaf signers. As outlined in section 3.2.1, there were a multitude of educational systems ranging from strictly oral-focused methods to systems surrounding Total Communication, to bilingual methods. The two youngest cohorts born and educated in the 1980’s, 1990’s and 2000’s were educated in a period in which NGT was taught as a formal subject at Deaf schools. Therefore, the results suggest that exposure to formal NGT grammar influences the way in which signers incorporate AUX-OP as a manner of agreement. However, a striking observation is that the younger Deaf were not taught to use double agreement constructions in formal NGT grammar. The fact that the use of double agreement constructions has increased among young Deaf signers could be due to the fact that young Deaf people were raised bilingually, therefore they could be more flexible in developing novel structures. An example supporting this argument is the straatstaal project (‘street language project’) which is a project carried out by the Nederlandse Gebarencentrum and Dutch Deaf bilingual youths, which resulted in a DVD-ROM with straatstaal lexicon that differed from the normal NGT lexicon. This project showed that the bilingually raised Dutch Deaf youths were creative with their language use which resulted in a different lexicon. Thus bilingualism is probably one of the reasons for the changing use of AUX-OP.

6.2 Use of AUX-OP by NGT interpreters

The increased use of AUX-OP has also been noted across the NGT interpreter cohorts; however, the trend shows the opposite from what was found within Deaf cohorts. The cohort that graduated between 2002-2009 displays an average that is lower by a slight margin compared to the cohort of NGT interpreters who graduated before 1996. Finding a decrease of AUX-OP usage was interesting, as it was anticipated that the oldest cohort would display the lowest average. Unlike the other two cohorts, the older group attended interpreter training programs before the article of Bos (1994) was published, so the usage of AUX-OP was not taught explicitly to the oldest cohort. A possible explanation is that the 2002-2009 cohort of NGT interpreters were exposed to different forms of agreement when they worked with Deaf
community members. This involvement allowed for them to incorporate different agreement strategies into their “toolkit” as L2 users of NGT. Another possible explanation is that working interpreters are aware of the fact that younger interpreters tend to use AUX-OP more often. They often do not want to be associated with ‘tolkentaal’ (interpreter signing), which is typical of younger (student) interpreters. This would cause them to avoid using AUX-OP as a manner of agreement (E. Kauling, NGT interpreter p.c.). Of the three interpreter cohorts, the cohort of interpreter-students used AUX-OP most frequently as a manner of expressing agreement. This supports the idea that formal instruction is one of the important contributions to the strong increase in AUX-OP, since this cohort has not started to work with Deaf individuals. Another possible explanation is that AUX-OP is a fairly easy manner of agreement for L2 learners of NGT, as opposed to role-shifting, which is on average the most frequently used manner of agreement among the Deaf signers in my data. Role-shifting requires the use of more elaborate linguistic resources, e.g., slight changes in body posture (body-shifts), facial expressions, and eye-gaze. Swabey (2005:89) reports that interpreting students often have developed a basic understanding of role-shifting; however, their ability to use and comprehend rapid shifts in multiple perspectives is far from being well developed. Thus, due to their lack of understanding of more complex linguistic resources to indicate agreement (e.g., role-shifting), interpreting students may find themselves incorporating an easier option: AUX-OP. Data from my study confirms this claim.

That brings us to a third possible explanation for the increased usage of AUX-OP within Deaf cohorts. Younger Deaf signers are in more frequent contact with NGT interpreters compared to older Deaf signers. This is due to the increase of accommodations to Deaf individuals within educational and career opportunities. Simply put, younger Deaf individuals come in contact with predominant AUX-OP users and are likely to be influenced by interpreters’ signing styles.

Taken together, this study proposes that age, language contact and bilingualism are three predominant contributing factors to the changing usage of AUX-OP within Deaf cohorts. The outcome of the grammatically judgement task also supports this claim, since the attitude towards AUX-OP of younger Deaf signers was less negative than that of older Deaf signers. However it is still striking that the youngest Deaf cohort still judged more than a third of NGT interpreter’s use of AUX-OP negatively. That can probably be attributed to the attitude within the Deaf community towards tolkentaal (interpreter language).
6.3 Other agreement strategies

During the study several facts emerged from the data which were not part of the research question. However, these facts are too important to be ignored. First, it was expected that the informants would apply the grammatical rules with the agreement verbs in the main task. However, the frequency of applying agreeing verbs’ grammatical rules in my data was much lower than anticipated. In total 13 out of 20 selected predicates are potentially agreeing verbs. Deaf signers, however, marked these verbs for agreement, on average, only 2 times out of 20 predicates. On the other hand, the two younger cohorts do show an increase in exploiting the properties of agreeing verbs compared to the 56+ cohort, which suggests that the age does play a role in applying the grammatical rules of an agreeing verb.

Second, it is surprising that the Deaf signers exploited a wide array of different agreement strategies rather than relying on the expected AUX-OP - a finding that has not previously been described for NGT in the relevant literature. These strategies are role-shifting, AUX, INDEX, double agreement or no agreement. Without going into too much details, the use of role-shifting decreases among the two youngest Deaf cohorts compared to the oldest cohort. Especially the youngest cohort of 16-35 exhibits a sharp decrease in the usage of role-shifting compared to the 56+ cohort: they produce role-shifting minimally twice less often than the 56+ cohort. A similar pattern has been reported for other sign languages, namely in Belgium. Van Herreweghe and Vermeerbergen (2013) mention that the usage of role-shifting is also decreasing in Flemish Sign Language (VGT) among the younger VGT signers. However, if the double agreement data are taken into account, it can be noted that role-shifting still makes up the majority of double agreement constructions. Thus if the role-shifting data from double agreement constructions are added to the overall role-shifting data, then the difference between the oldest cohort and the two younger cohorts would be much smaller. This suggests that role-shifting is the main marker of agreement among all Deaf signers, be it in a single or double agreement constructions.

6.4 Use of AUX-OP as a marker of emphasis

In addition to expressing agreeing in the context of non-agreeing verbs, AUX-OP appears to also be used for emphasis, as was noted in the results of some Deaf signers during the main task. This pattern was not found in the NGT interpreters data. This type of emphatic use of
AUX-OP has not been reported for NGT in the relevant literature. In order to test if AUX-OP could be used as a linguistic marker to show emphasis, a post-task that was conducted. The results confirm that another function of AUX-OP is that of an emphatic marker. This indicates that older Deaf individuals did not utilize AUX-OP as much as an agreement marker as the younger cohorts because of the emphatic character of AUX-OP. The original property of AUX-OP may have been to express emphasis. Throughout time, the usage of AUX-OP has been overgeneralized to the today’s current state where it can be freely manipulated as an agreement marker. We therefore suggest that in NGT, AUX-OP can also be used as a linguistic marker for emphasis.

6.5 Concluding remarks

In previous sections the results of the study have been discussed, and some suggestions about the use of AUX-OP were made. In this section the research question will be answered. Second, the implications of this study will be explored. Third, suggestion for future research will be given. The research question is repeated below.

*Are there quantitative (frequency) and qualitative (context of use) differences in the use of the auxiliary verb AUX-OP between NGT interpreters and native signers?*

The answer to the research question whether there are quantitative differences between the Deaf signers group and NGT interpreters group is *no*. However, the age of Deaf signers and the year when NGT interpreters graduated from the interpreting-training program are indeed factors that contribute to the variation of the usage of AUX-OP. The answer to the research question whether there are qualitative differences between the Deaf signers group and the NGT interpreters group is *yes*. To sum it up, among Deaf signers the usage of AUX-OP has indeed increased; however, a big portion of the increase is to be related to the popular use of double agreement constructions in which AUX-OP appears. Nevertheless, within the youngest Deaf cohort, the use of AUX-OP as the only marker of agreement still has almost doubled compared to the oldest Deaf cohort and this suggests a grammatical shift in NGT. This shift is characterized by the fact that AUX-OP is more accepted as a single marker of agreement although it appears less grammatically obligatory thanks to various other strategies of agreement in NGT, as well as by the fact that double agreement is the favoured manner of
agreement use among young Deaf signers. This occurrence shows the grammatical function of AUX-OP to be less “specific” but instead extending its scope, i.e. it can be used as an agreement marker, in single or double constructions, and as an marker of emphasis.

Changes in the function of AUX-OP reaffirm that NGT is a full-fledged language that experiences language changes similar to other spoken and signed languages. The NGT courses taught in Deaf schools and in the interpreting training program need to offer information about different ways of marking agreement other than AUX-OP. Furthermore, the NGT interpreters and NGT teachers need to be aware of the fact that they are sign language role-models to Deaf children as the number of Deaf children that are being mainstreamed in regular schools increases. Thus, the natural way of learning NGT through their Deaf peers at Deaf schools will be not be available to the new generation of mainstreaming Deaf children. Grammatical markers in NGT need to be further investigated, as it has been noted that AUX-OP is over-generalized in today’s interpreter’s use. It is also important to further study the other possible agreement markers in NGT, such as role-shifting, AUX, INDEX, double agreement and the emphatic properties of AUX-OP. Furthermore, it would be interesting to further study the properties of AUX-OP as a marker of emphasis.
References


Appendix A: List of 128 clauses of verbs with *AUX-OP* found in news broadcasts

1. SCHIETEN OP
2. VERSLAAN OP MIJ
3. BESCHULDIGEN OP
4. SCHIETEN OP
5. SCHIETEN OP
6. VERMOORDEN OP
7. SCHIETEN OP
8. SCHIETEN OP
9. SCHIETEN OP
10. DEMONSTEREN OP
11. HALLO HALLO OP
12. VERMOORDEN OP
13. DUIDELIJK MAKEN OP
14. VERKRACHTEN OP
15. VERTROUWEN OP
16. VERDENKEN OP
17. ADVIES OP
18. ZORGEN OP
19. GOED OPVOEDEN OP
20. VERDENKEN AANSLAG OP
21. GEDAAN OP
22. VRAGEN OP
23. HEB BRIEF OP
24. VERMOORDEN OP
25. EISEN OP
26. STUREN OP
27. DOORGAAN HARD OP
28. WILLEN BETER OP
29. COMPLIMENTEN OP
30. BELEDIGEN OP
31. BOETE OP
32. STEUNEN OP
33. SCHIETEN OP
34. EXCUSES GEVEN OP
35. SCHIETEN OP
36. SCHIETEN OP
37. ZORGEN OP
38. BEHANDELEN OP
39. WAARSCHUWEN OP
40. SCHIETEN OP
41. GEVANGEN OP
42. ONDERZOEKEN OP
43. UITSPREKEN OP
44. ZEGGEN OP
45. VERTROUWEN OP
46. TOEZICHT OP
47. VERTROUWEN OP
48. TOEZICHT OP
49. KRITIEK OP
50. OVERVALLEN OP
WERELD TOP OP 500 METER FIETSEN
VERSLAAN OP
KRITIEK OP
BELLEN OP
BEHANDELEN OP
BOTSEN OP
ONDERDRUKKEN OP
OORDELEN OP
STEUNEN OP
VOORSTELLEN OP
BELOVEN OP
STEUNEN OP
VERZORGEN OP
VERZORGEN OP
VEEL GELD OP SCHOOL GEVEN
AANPAKKEN OP
PRATEN OP
AANPAKKEN OP TALIBAN
ONDERZOEKEN OP
KONINGIN OP APPLAUS
BESCHERMEN OP
AANVALLEN OP
VERTELLEN OP
RECHTSZAAK OP SOMALISCHE PIRATEN
BEDREIGEN OP
BEDREIGEN OP
VERKRACHTEN OP
OORDELEN OP
TROUW ZWEREN OP
ZEGT OP
VERTELLEN OP
VOORKEUR OP
VOORKEUR OP
STEMMEN OP
VOORKEUR OP
BELOVEN OP
INFORMEREN OP
WAARSCHUWEN OP
SLAAN OP
BOOS OP
ZEGGEN OP
HOUDEN OP
MISHANDELEN OP
EMAILEN OP
BANG OP
SCHIETEN OP
DISCRIMINEREN OP
HERDENKEN OP
VERKLAREN OP
SCHIETEN OP
KRITIEK OP
RECHTSZAAK RVD OP PERSBUREAU AP
KRITIEK OP
FOUT OP
105 STEUNEN OP
106 VERTROUWEN OP
107 SCHIETEN OP
108 BRULLEN OP
109 BETALEN OP
110 STEKEN OP
111 AJAX STERK OP
112 STEUNEN OP
113 HELPEN OP
114 BEGELEIDEN OP
115 WAARSCHUWEN OP
116 VERSLAAN OP
117 VERPLICHTEN OP
118 BESCHULDIGEN OP
119 UITDAGEN OP
120 SLAAN OP
121 KRITIEK OP
122 STEMMEN OP
123 STEMMEN OP
124 DWINGEN OP
125 INVLOED OP
126 DOODSTEKEN OP
127 SCHIETEN OP
128 STEUNEN OP
Appendix B: List of 71 clauses of verbs with AUX-OP found in Corpus NGT

1 VOLGEN OP  
2 ZEGGEN OP  
3 HELPEN OP  
4 TACKLE OP  
5 ACCEPTEREN OP  
6 GEBAREN OP  
7 KIJKEN OP  
8 KOPIEREN OP  
9 AANPASSEN OP  
10 GEBAREN OP  
11 LUISTEREN OP  
12 VERTELLEN OP  
13 KIJKEN OP  
14 ZEGGEN OP  
15 SNUFFELEN OP  
16 VERTELLEN OP  
17 VERTELLEN OP  
18 ZEGGEN OP  
19 BETEKENNEN OP  
20 HELPEN OP  
21 VERTELLEN OP  
22 GEBAREN OP  
23 HOUDEN OP  
24 SPREKEN  
25 KLAGEN OP  
26 VERTELLEN OP  
27 FLUISTEREN OP  
28 HELPEN OP  
29 UITLEGGEN OP  
30 UITLEGGEN OP  
31 HOUDEN OP  
32 GEHOORZAMEN OP  
33 KUNNEN OP  
34 VERTELLEN OP  
35 DONDER OP, MAAR OP NIET  
36 OPHANGEN OP  
37 HELPEN OP  
38 BLAFFEN OP  
39 KIJKEN OP  
40 KIJKEN OP  
41 SLAAN OP  
42 VERKRACHTEN OP  
43 VERTELLEN OP  
44 REKENING HOUDEN OP  
45 VADER OP ZOON SLEEN  
46 GEBAREN OP  
47 BEGRIJPEN OP  
48 KWAAD/MOPPEREN OP  
49 HELPEN OP  
50 VOLGEN OP  
51 MAN OP BAND OMDOEN
52 DISCRIMINEREN OP
53 GRIJPEN OP
54 ZIEN OP
55 ZEGGEN OP
56 VOLGEN OP
57 ZEGGEN OP
58 GOOIEN OP
59 VOOR HOOFD HOUDEN OP
60 PLAGEN OP
61 ZEGGEN OP
62 SPREKEN OP
63 KIJKEN OP
64 AANVALLEN OP
65 ZWAAIEN OP
66 VERTELLEN OP
67 LUISTEREN OP
68 KRITIEK OP
69 RESPECTEREN OP
70 AFHALEN OP
71 BLAFFEN OP
Appendix C: 20 drawings of 20 selected verbs

HELPEN  GEBAREN  BELOVEN  ZORGEN  ZEGGEN

WAARSCHUWEN  VOORKEUR  HOUDEN VAN  VERTROUWEN  VOLGEN

VERSLAAN  LUISTEREN  KIJKEN  VERTELLEN  BLAFFEN

UITLEGGEN  STEUNEN  SCHIETEN  VERMOORDEN  KRITIEK
Appendix D: An overview of strategies (or combinations thereof) that were used per participant and per predicate

Legenda: RS = role-shift  *= no agreement  AV = agreement verb  **In bold** = use of AUX-EMPH

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| KIJKEN              | RS/AV | RS  | RS  | RS  | RS/AV | RS/AV | AV  | RS/AV |
| HOUDE VAN           | AUX-OP /RS | INDEX | AUX-OP | RS  | AUX-OP /RS | AUX-OP | INDEX | AUX |
| HELPEN              | AUX-OP /RS | RS  | RS  | RS  | AUX-OP /RS | AV  | RS  | RS  |
| GEBALEN             | RS  | RS  | RS  | RS  | RS - AUX-EMPH | RS  | AV  | RS  |
| WAARSCHIJVEN        | RS  | RS  | RS  | RS  | AUX-OP /RS | AUX-OP /AV | AV  | AV  |
| VOORKEUR            | INDEX /RS | INDEX | AUX-OP /RS | INDEX | INDEX | INDEX | INDEX | INDEX |
| VERTROUWEN          | AUX/RS | RS  | AUX-OP | AV  | INDEX /RS | AUX-OP | AV  | AUX-OP |