

Habituals in Sign Language of the Netherlands: A corpus-based study*

Cindy van Boven
ACLC, University of Amsterdam

Marloes Oomen
ACLC, University of Amsterdam

In this corpus-based study on habituals in Sign Language of the Netherlands (NGT), we investigate the manual and non-manual marking of habituality in naturalistic data. We show that both reduplication of the predicate and adverbials with a habitual flavor are used in habitual contexts, but both of these manual markers appear to be optional. As for non-manual markers, even more variation is attested; left-to-right head and body movements and narrowed eyes are the most frequently occurring non-manuals in habitual contexts but are by no means obligatory. The findings contrast with the results reported in two previous studies on habituals in NGT (Hoiting & Slobin 2001; Oomen 2016), which can be partially explained by the fact that these studies used elicitation methods. As such, the present study underscores the importance of using a combination of different methods in investigating linguistic phenomena.

1 Introduction

In this study, we investigate the marking of habitual aspect in Sign Language of the Netherlands (*Nederlandse Gebarentaal*; NGT), using naturalistic corpus data as a data source. To set the stage, Section 1.1 provides a brief general introduction to aspect marking in sign languages. There has been some previous work on habitual aspect marking in NGT based on elicited data; these studies are discussed in Section 1.2. Section 1.3 outlines the research goals of the present study.

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1.1 Aspect in sign languages

Previous studies have shown that sign languages often have rich aspectual systems, and that they are similar in how they mark aspectual distinctions. Across sign languages, aspect can be marked by (i) inflection of the verb sign or (ii) free aspectual markers or particles (Pfau, Steinbach & Woll 2012).

The first strategy, aspectual inflection, often involves reduplication of the predicate. Reduplication fulfills various iconically-motivated functions across sign languages, as it does in spoken languages. Yet the visual-spatial modality allows for the additional possibility to superimpose dynamic features onto the reduplicated movement – that is, sign languages can use simultaneous strategies in the marking of aspectual distinctions. For instance, the rate and rhythm of the reduplicated movement can be adapted (e.g., Klima & Bellugi 1979; Pfau et al. 2012).

Aspectual inflection was first described for a sign language by Klima & Bellugi (1979), who identify 15 different aspectual distinctions for American Sign Language (ASL). This list was later reduced by Rathmann (2005) to six aspectual distinctions in ASL, including habitual aspect. Since this aspectual distinction is the focus of the present study, we use it here as an example and compare it to iterative aspect to illustrate how aspectual inflection works in sign languages.

According to Rathmann (2005: 40), the verb is inflected for habitual aspect in ASL by “reduplicating the movement of the verb root, but in quicker and shorter cycles compared to the iterative morpheme”. Thus, both iterative and habitual aspect are marked by reduplication, but they are distinguished by means of rate of movement. Habitual inflection as compared to iterative aspect in ASL is illustrated in Figure 1; a glossed example of a construction with habitual marking on the verb is shown in (1).¹

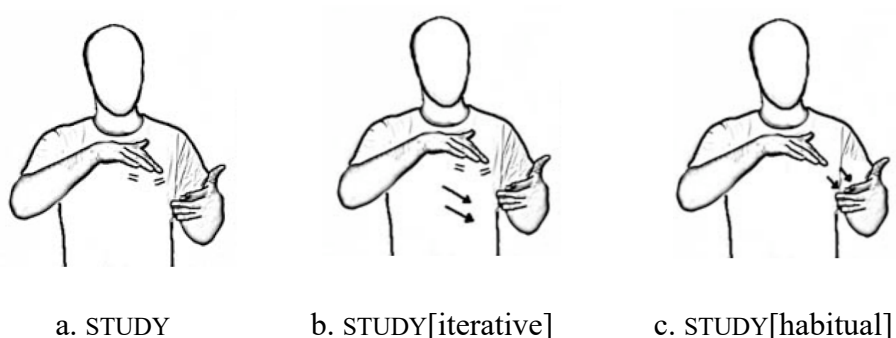


Figure 1: ASL verb STUDY (a) modulated for iterative (b) and habitual (c) aspect (Rathmann 2005: 37–40)

¹ For a list of glossing conventions used in the sign language examples, see the appendix.

- (1) JOHN GO[habitual] CHURCH
 John goes to church (regularly)
 ‘John usually goes to church.’ (ASL; Rathmann 2005: 41)

Similar use of reduplication and superimposed movement adaptations to inflect for various aspectual distinctions has also been found in other sign languages (see, e.g., Bergman & Dahl 1994 for Swedish Sign Language; Sutton-Spence & Woll 1999 for British Sign Language).

The second strategy, the use of free aspectual markers or particles, is mostly used to express perfective aspect across sign languages (see, e.g., Meir 1999 for Israeli Sign Language; Rathmann 2005 for ASL; Sapountzaki 2005 for Greek Sign Language). For instance, (2) exemplifies the aspectual marker DONE in Italian Sign Language (LIS) (Zucchi 2009: 101), indicating that the event is completed. For NGT, it has been suggested that there is a habitual particle; see Section 1.2 for discussion.

- (2) GIANNI HOUSE BUY DONE
 ‘Gianni has bought a house.’ (LIS; Zucchi 2009: 101)

1.2 *Habitual aspect in NGT*

The marking of habitual aspect in NGT, the focus of the present study, has been investigated – however, previous studies on this topic offer contradicting conclusions. We briefly discuss these studies here.

The first to investigate habitual aspect in NGT were Hoiting & Slobin (2001), who maintain a rather narrow definition of habituality. According to them, habitual aspect expresses an *ongoing* action that occurs habitually, such as “he always works on and on” (Hoiting & Slobin 2001: 128). They note that habitual aspect in NGT is marked by verbal inflection, accompanied by non-manual markers (NMMs; i.e., linguistic elements expressed on the body and/or the face). More specifically, they report that habitual aspect in NGT is expressed by “a slower elliptical modulation accompanied by gaze aversion, lax lips with protruding tongue, and slowly circling head movement” (Hoiting & Slobin 2001: 128). They do not specify what they mean exactly by “elliptical modulation”, but it concerns a specific modulation of the verb’s reduplicated movement. This elliptical modulation also plays a role in the marking of continuative aspect, the second aspectual category that Hoiting & Slobin describe.

Moreover, Hoiting & Slobin note that some verbs cannot be inflected for habitual or continuative aspect due to phonological constraints. According to them, verbs that have a hand-internal movement or body contact in their base form are not inflected, but combine with the particle DOOR ‘on and on’, borrowed from

Dutch,² in order to mark for habitual or continuative aspect. In those cases, DOOR rather than the verb takes on the aspectual inflection; for instance, the verb TRY – which makes contact with the nose – combines with DOOR+habitual in a habitual sentence context (Hoiting & Slobin 2001: 129).

Yet Hoiting & Slobin (2001) do not discuss their methodology, and it is unclear how they came to this analysis. Oomen (2016) therefore further investigates habitual and continuative aspect in NGT by eliciting data from one deaf, native signer, who completed a translation task. Oomen maintains a more traditional definition of habituality, excluding the additional notion of continuous action. Strikingly, her findings differ from what Hoiting & Slobin (2001) describe. She finds that habitual aspect is marked manually by means of reduplication of the verb sign, as well as non-manually by left-to-right body and head movements accompanying each reduplication cycle. This marking only occurs with sentences situated in the past.³ Furthermore, the marking found by Oomen – for habitual as well as continuative aspect – occurs with all sorts of verbs, that is, there are no phonological restrictions, and DOOR does not show up in the data.

It remains unclear why exactly Oomen's findings differ from those reported by Hoiting & Slobin; potentially, the differences are caused by diverging methodologies. However, as Hoiting & Slobin do not specify their methodology, it is impossible to determine whether this is actually the case. Moreover, Oomen offers the alternative explanation that regional variation may play a role, since the informants in the two studies come from different regions in the Netherlands.

DOOR as an aspectual marker in NGT is further investigated by van Boven (2018). Van Boven looks into corpus data, analyzing the use of DOOR to mark habitual and continuative aspect. Indeed, DOOR shows up in some habitual sentences; however, in most sentences analyzed by van Boven, DOOR is used to mark continuative aspect, combining with a broad range of verbs. We will come back to DOOR and its relation to continuative and habitual aspect in Section 3.1.

² Hoiting & Slobin (2001: 126) specify that in Dutch, *door* 'through' is a verb particle that marks not only temporal, but also locative notions: it can be used as a locative preposition or satellite (e.g., *Hij reed **door** het park* 'He rode **through** the park'). Hoiting & Slobin indicate that only the temporal uses have been borrowed in NGT, as there is no motivation for borrowing a locative term: such sentences are signed by means of a verb of motion with a classifier handshape (for more discussion, we refer to Hoiting & Slobin 2001). We chose to use the Dutch gloss DOOR because we think the English translation 'through' is both inaccurate and confusing. An alternative, suggested by one of the reviewers, would be ON-AND-ON; however, this gloss strongly implies a continuative reading, which we wished to avoid a priori (but see Section 3.1).

³ Note that tense is not expressed grammatically in NGT; 'past' thus refers to the setting of an event in the past, which can be determined, for instance, based on the sentence context, but not by means of verbal inflection.

1.3 *Research aims*

Previous studies, two of which are based on elicited/informant data, offer contradicting conclusions as to how habituality is marked in NGT: they find different types of verbal inflection as well as NMMs, and present different findings regarding the presence and role of the particle *DOOR*. Therefore, the goal of the present study is to further investigate habitual marking in NGT as it is used in (semi-)spontaneous data. We aim to offer an overview of manual and non-manual habitual markers in the language. In contrast to previous studies, we do not base our description on elicited data; rather, this study is the first to systematically investigate NGT habitual marking based on naturalistic corpus data.

Section 2 details our methodology: analysis of naturalistic corpus data. Then, Section 3 presents our results, which display substantial variation, but nevertheless suggest that habitual sentences tend to be marked by an adverb and/or reduplication. Section 4 attempts at explaining the variation by presenting a semantic analysis, including additional elicited data. The section also reflects on potential explanations for the differences with previous studies, touching upon some methodological issues. Finally, in Section 5, we conclude that, although the corpus data show substantial variation that cannot be fully explained by semantic factors, some non-obligatory manual markers of habituality can be identified in NGT.

2 *Methodology*

We gathered data by searching for and analyzing sentences with habitual meaning in the Corpus NGT (Crasborn & Zwitserlood 2008; Crasborn, Zwitserlood & Ros 2008). Section 2.1 provides more details about the corpus. Then, Section 2.2 discusses our corpus searches and how we selected our data set. Finally, our data annotation is discussed in Section 2.3.

2.1 *The Corpus NGT*

The Corpus NGT consists of data collected from 92 native signers between 17 and 84 years of age. They come from all over The Netherlands, and thus regional variation is included in the corpus. The signers were asked to participate in several language tasks, varying from retelling a narrative to more spontaneous signing about a past experience. In total, the corpus contains more than 70 hours of video data. Part of these data has been annotated in ELAN (Crasborn & Sloetjes 2008; <http://tla.mpi.nl/tools/tla-tools/elan/>) – annotations include, for instance, Dutch glosses and NMMs, but no annotations for aspectual distinctions are available. Part of the data has been translated into Dutch: in total, there are 8,401 annotations

on the translation tier.⁴ Since we could not directly search for habituals in the corpus, we collected our data by means of searches on this translation tier.

2.2 Corpus search and data selection

We were interested in the formal characteristics of NGT habituals; however, as noted in Section 1.2, the literature has been divided over how habituals are marked in NGT. Therefore, we took the semantics as a starting point, adopting a more traditional definition of habituality which corresponds to Comrie's description of habituals as "[describing] a situation which is characteristic of an extended period of time" (1985: 27). It is also similar to the definition maintained by Rathmann (2005) in his work on grammatical aspect in ASL (see Section 1.1), in which he states that "the habitual morpheme has the meaning of 'usually' and expresses a pattern of events or states, not any particular situation" (2005: 40). He additionally describes that, in a sentence with habitual marking, "there is a property that is characterized by a regular repetition of the eventualities and that holds over an interval of time" (2005: 42). Thus unlike Hoiting & Slobin (2001), we did not limit our investigation to ongoing or continuous habitual events, but rather we searched for any sentences that referenced an event that is regularly repeated over an extended period of time.

Since we started from meaning instead of form, we conducted specific searches on the translation tier in the Corpus NGT. Given that Dutch does not have a dedicated habitual marker, we searched for particles and adverbials that regularly occur in Dutch habitual sentences. Table 1 provides an overview of our specific search terms in Dutch, as well as the English translations.

Table 1: Dutch search entries and their English translations

Dutch		Translation	Dutch		Translation
1	<i>regelmatig</i>	regularly	9	<i>per dag</i>	a day
2	<i>iedere/elke dag</i>	every day	10	<i>altijd</i>	always
3	<i>iedere/elke week</i>	every week	11	<i>vaak</i>	often
4	<i>ieder/elk jaar</i>	every year	12	<i>elke</i>	every
5	<i>iedere/elke maand</i>	every month	13	<i>elk</i>	every
6	<i>per week</i>	a week	14	<i>ieder</i>	every
7	<i>per jaar</i>	a year	15	<i>iedere</i>	every
8	<i>per maand</i>	a month			

⁴ For more information on the data collection and annotation for the Corpus NGT, see: <https://www.ru.nl/corpusngtuk/methodology/background/>

In total, searching for these terms yielded 218 translations. For each search hit, we looked at the translation, the signed utterance, and the context, and then decided per sentence whether or not it could be analyzed as a habitual. Our selection criteria were rather broad: any event that recurred systematically over an extended period of time, such as in the sentences in (3), was included in the data set. Any sentences that did not involve a systematically recurring event, such as those in (4), were excluded.

(3) *Examples of sentences included in the habitual data set*

- a. INDEX₁ GO++ PART.AFF⁵ PU
‘I go there regularly.’ (0064-S006-01:56.90)⁶
- b. ONE TIME DAY GO BEACH [...]
‘Every day we went to the beach [...].’ (0049-S006-04:06.20)

(4) *Examples of sentences excluded from the habitual data set*

- a. ALWAYS INDEX₃
‘Was he always like that?’ (0370-S019-00:57.20)
- b. INDEX₃ BOOK READ ALWAYS IMPORTANT INDEX₃
‘And that – reading books – is always important.’ (0429-S021-02:59.50)

Some translations contain multiple search words (e.g., ‘always’ and ‘every day’ in one sentence), and thus appeared as multiple hits. After excluding these double appearances, as well as all sentences that did not involve habituality as described above, 106 sentences remained for analysis.

2.3 Data annotation

We annotated the 106 sentences for both formal markers (2.3.1) as well as some semantic factors (2.3.2). For illustration purposes, Figure 2 shows a screenshot of our annotations for one of the sentences in ELAN (Crasborn & Sloetjes 2008).

⁵ The sign we gloss here as PART.AFF is a modal particle that also occurs in Dutch, i.e., *wel* or *WEL*. *Wel* in Dutch has been analyzed as a response to a negation in the context (Hogeweg 2009). It seems to be used in a similar manner in this NGT example; the context is: although I do not feel like we are stronger as a group [negation in context], I go there regularly [response with *WEL*].

⁶ All examples from the Corpus NGT are accompanied by a code indicating where in the corpus the example can be found. The code has the format “(video file - signer - time stamp)”.

Tier	Annotation
TranslationFree S ₂	[29]
TranslationNarrow	[0]
TranslationNarrow	[0]
Habituals	[2] yes
Consistency	[2] -
Specificity	[2] +
Past tense	[2] +
Adverb	[2] 0
Reduplication	[2] KOMEN
NMM	[2] ne; head nods
Mouthing	[2] vroeger doch komen niet begrijpen vragen klopt klopt
Comments	[1]

Figure 2: Annotations in ELAN

2.3.1 Habitual markers

First, we created four tiers on which we annotated for potential habitual markers. We use the term ‘marker’ in a descriptive sense, by which we mean that we use it to refer to any linguistic element that signals habituality. On the *Adverb* tier, we annotated signs that potentially serve as free habitual markers, i.e., adverbs marking for aspect, such as ALWAYS. If such a sign was present in the sentence, we annotated the gloss of that sign. Moreover, if an instance of the particle DOOR ‘on and on’ was present, this was also annotated on this tier. If no adverbs or particles could be identified, we annotated a 0.

Apart from free aspect markers, we were also interested in potential inflection of the verb sign. Since reduplication is known to be a common habitual marker across sign languages, we annotated whether signs in the sentence were reduplicated on the *Reduplication* tier. If a sign was reduplicated, we annotated the gloss; if not, we annotated a 0.

Since previous studies (Hoiting & Slobin 2001; Oomen 2016) have described habitual NMMs, we also created an *NMM* tier. On this tier, we focused on the NMMs previously described: left/right body and head movement (l/r), brow raise (br), brow lowering (bl), narrowed eyes (ne), and pursed lips (pl), checking for each of these markers whether they were present. If we observed other NMMs potentially marking aspect, such as head nods (hn), we also annotated these.

The fourth tier we created is the *Mouthing* tier. Since mouthings, i.e., (silent) articulations of a (part of a) spoken language word, occur quite frequently

in NGT (Bank 2015), we were interested in what they look like in habituals. We annotated all identifiable mouthings present in the sentence. In some cases, the corpus files already contained annotations for NMMs and mouthings; when this was the case, we used these annotations. If not, we created annotations ourselves.

2.3.2 *Semantic factors*

While collecting our data set, we noticed some semantic differences between the sentences we included. In order to gain more insight into these differences, and to see whether we could identify distinctions in terms of how the different sentences are marked, we also created three tiers on which we annotated for various semantic aspects.

The first semantic tier is the *Consistency* tier. In some sentences, there is a consistent amount of time between the repetitions of the event. Those sentences were annotated as [+consistent]; an example is (3b) above, repeated below as (5a): in this sentence, it is specified how often the event is repeated exactly, namely every day. In other sentences the event is repeated, but the amount of time between each repetition is not specified. Those sentences were annotated as [–consistent]; an example is given in (5b), where it is clear that the event recurs over a period of time, but not exactly how much time passes in between the repetitions.

- (5) a. ONE TIME DAY GO BEACH [...] (0049-S006-04:06.20)
 ‘Every day we went to the beach [...].’
- b. PEOPLE FAMILY ALWAYS SAY [...] (0135-S007-00:23.90)
 ‘Family members always say [...].’

The second semantic tier we created is the *Specificity* tier. On this tier, we annotated whether the referent in the sentence is [+specific] or [–specific]. We annotated [+specific] if the sentence refers to a specific person or specific persons (or entities) participating in the event as an agent, such as in (5a), where it is clear who went to the beach every day, namely ‘we’ (from the context it is clear that the signer means her and her friend). We annotated [–specific] if the sentence involves more general referents, as in (5b), where it is not indicated in the context which or whose family members are meant exactly.

Finally, the third semantic tier is the *Past tense* tier. We annotated [+past] if the sentence is situated in the past, as in (5a). We annotated [–past] for all sentences not situated in the past, as in (5b). We made this distinction because Oomen (2016) found that habitual marking only occurred in past tense contexts, as discussed in Section 1.2. Since NGT does not employ tense marking on the verb, we could only decide [±past] based on the available semantic context, and in some cases the presence of adverbs.

Since the annotations on the semantic tiers are preliminary and the choice of these semantic factors over others is rather arbitrary, we will not systematically include them as autonomous factors in our analyses of the results in the following section. We will, however, get back to the semantic factors in relation to the habitual markers in our discussion (Section 4.1).

3 Results

In this section, we provide a description of the manual (Section 3.1) and non-manual (Section 3.2) markers found in habitual contexts.

3.1 *Manual markers*

Both the use of adverbials and reduplication of the predicate were frequently attested in habitual contexts. In Table 2, we tabulate the frequency of occurrence of both types of markers, individually as well as in combination.

Table 2: Frequency of examples (N=106) with/without adverbs and reduplication.

	Adverb	No adverb
Reduplication	28 (26.4%)	21 (19.8%)
No reduplication	43 (40.6%)	14 (13.2%)

It can be observed from Table 2 that the majority of examples in the data set include at least one manual marker (86.8%). Still, 14 examples include neither an adverb nor reduplication and as such remain manually unmarked.

An example of a habitual construction without a manual marker is presented in (6), where the signer employs role shift markers (rs) as a means to represent the perspective from her past self. What we gloss as ‘rs’ actually involves a host of non-manual markers, including head movement, brow lowering and narrowing of the eyes, and pursed lips. Coincidentally, these markers have also been described to occur in habitual contexts – but note that, here, one would rather expect the matrix predicate SAY in this example to be marked for habituality than the contents of the (role-shifted) embedded predicate, which does not have a habitual meaning.

- (6) _____rs
 SAY PAST INDEX₁ CERTAIN
 ‘I used to say “I’m certain [it will forever stay that way]”.’
(0862-S040-03:25.50)

Example (7a) presents a construction which includes both an adverbial (ALWAYS) as well as reduplication of the sign ANGRY, indicated with a ‘+’ for every

reduplication cycle. ANGRY, which is body-anchored, happens to be a sign which does not already possess inherent repetition in its citation form, such that its reduplication in (7a) seems to be a clear marker of habituality. This is different in biclausal (7b), which also includes the adverb ALWAYS. The reduplicated sign DOCTOR, which occurs twice, also involves repetition in its citation form, such that it is less certain whether the repetition of the movement present in the sign is a genuine marker of habituality.⁷ However, a couple of observations speak in favor of treating reduplication as a habitual marker here. Firstly, DOCTOR has five reduplication cycles the first time it occurs, and three cycles the second time around, while its citation form DOCTOR would typically have only two reduplication cycles. And secondly, it can be observed that there is also reduplication of the mouthing with the first occurrence of the sign.

- (7) a. INDEX_3 $\overline{\text{ne}}$ ALWAYS ONE TIME MONTH ANGRY++
 ‘He always used to be angry once a month.’ (0132-S021-01:24.15)
- b. $\overline{\text{‘dokter dokt’}}$, l/r / ALWAYS INDEX_1 $\overline{\text{‘dokter’}}$ DOCTOR++++ / DOCTOR+++
 ‘Doctor, like this. I always sign doctor like this.’ (0016-S004-00:20.00)

There are quite a few cases in which the sign which is annotated as being reduplicated for habitual marking purposes also involves repetition in its citation form. The example above serves to illustrate how decisions were made as to whether or not reduplication was considered a marker of habituality within a particular sentence.

As shown in Table 2, it is also very common (40.6% of examples) for constructions to include an adverbial constituent such as ALWAYS, OFTEN, or EVERY DAY, but no reduplication to signal habituality. Two examples are displayed in (8) below.

- (8) a. $\overline{\text{hn}}$ BECAUSE ONE GIRL INDEX_3 ALWAYS INDEX_3 MUST TIME BUS GET
 ‘Because there was one girl who always had to catch the bus on time.’
 (0847-S039-01:06.35)
- b. EVERY DAY JUST FRIEND FROM INDEX_3 OVER D-E SURFACE⁸
 ‘He has friends visiting every day.’ (0432-S021-01:04.30)

⁷ Note that DOCTOR, in both instances, can be analyzed as a sign with a predicative function.

⁸ The sign string ‘OVER D-E (‘the’) SURFACE’ appears to be a literal translation of the Dutch expression ‘over the floor’, which means ‘receiving guests’.

Finally, constructions with reduplication but without an adverb make up 19.8% of the data set. An example is shown in (9).⁹

- $$\begin{array}{c} \text{rs} \\ \hline \text{hn} \end{array}$$
- (9) PAST INDEX₁ DAUGHTER COME++
 ‘I used to ask my daughter to come.’ (0012-S004-02:31.12)

Two other phenomena that merit some discussion in this section are (i) doubling and (ii) use of the particle DOOR.

Several examples were found in which one or more signs in a construction were doubled, that is, repeated several times within the same sentence or, as in example (10), across several clauses. In this example, the first clause is repeated in its entirety and is then followed by another clause which includes the adverbial ALWAYS.

- (10) INDEX₁ FATHER MOTHER / $\begin{array}{c} \text{hn} \\ \hline \text{hn} \end{array}$
 INDEX₁ FATHER MOTHER / INDEX₁ ALWAYS INDEX₁
 ‘I always sign father and mother like this.’ (0018-S003-05:46.55)

It should be pointed out that doubling of all sorts of constituents is a commonly reported phenomenon in sign languages, and a variety of functions have been attributed to it (see, e.g., Fischer & Janis 1990; Petronio & Lillo-Martin 1997; Crasborn, van der Kooij & Ros 2012; Kimmelman 2014). Still, it is worth noting that five of the 14 examples that include neither an adverb nor reduplication of the predicate *do* involve doubling of part of the clause or the entire clause.

Finally, as discussed in Section 1, the particle DOOR has previously been reported by both Hoiting & Slobin (2001) and van Boven (2018) to occur in habitual contexts, thus warranting some attention here. Strikingly, just two instances of DOOR were attested in the 106 examples included in this study. Both examples are displayed in (11) below. However, in (11a), DOOR actually occurs in the second clause, which has a continuative reading, and not in the preceding habitual clause. (11b) appears to combine a habitual reading and a continuative reading, such that it is not clear whether DOOR is used to mark habitual or continuative aspect – in fact, it appears more plausible that it only marks continuativity. At the very least, and contrary to previous reports, it is evident that

⁹ The predicate COME in example (9), which is marked for habituality by means of reduplication, is accompanied by quotative role-shift markers. Thus, the habitual action is the signer habitually saying “Come!” to her daughter in the past.

DOOR is not a regularly occurring marker of habituality. Indeed, van Boven (2018) also notes that DOOR is more often used in continuative contexts than in habituals.

- _____hs
_____l/r; tongue
- (11) a. INDEX₁ SELF MORE-OR-LESS **OFTEN** THINK SELF / FINGERSPELL **DOOR++**
 ‘I often make up something myself so that I don’t have to keep on
 fingerspelling.’ (0067-S006-00:22.15)
- b. INDEX₃ SPEECH-THERAPY PUT-IN KEEP **DOOR++** STILL PUT-IN 20
 MINUTE DAY
 ‘Speech therapy continues to be taught for 20 minutes a day.’
 (0255-S014-00:27.95)

3.2 *Non-manual markers*

Table 3 lists all NMMs that were found to occur at least once in the data, including their frequencies. Mouthings are not included in this table, as virtually every example included mouthings accompanying one or (more often) multiple signs, and we do not think that mouthing is a marker of habituality per se. We briefly discuss mouthings further below.

Table 3: NMMs attested in the 106 habitual constructions, and their frequency of occurrence.

Category	Non-manual	N	%
Body and head movement	Left-to-right	29	27.4
	Back-and-forth	9	8.5
	Head tilt	2	1.9
	Head nod	10	9.4
Brows and eyes	Brow raise	15	14.2
	Brow lowering	16	15.1
	Narrowed eyes	28	26.4
	Wide eyes	1	0.9
Lips and mouth	Open mouth	1	0.9
	Pursed lips	16	15.1
	Protruding tongue	3	2.8

It can be observed that a wide variety of NMMs were attested in habitual contexts, with a left-to-right movement of the body and/or head (N=29) and narrowing of the eyes (N=28) occurring most frequently. Indeed, Oomen (2016) previously identified left-to-right movement as the only consistent NMM of habituality, and it also seems to be compatible with Hoiting & Slobin’s (2001) observation that predicates marked for habitual aspect are accompanied by a slowly circling head movement. However, with a rate of occurrence in the corpus data of just 27.4%,

it is clear that such head and body movements are by no means obligatory. Even if back-and-forth and left-to-right movement of the body or head are considered to be different instantiations of the same non-manual feature, we can consider just a little over a third of examples to be marked in this way.¹⁰

Brow action (both raising and lowering) and narrowed eyes were fairly common, with brow lowering and narrowing of the eyes sometimes occurring together. Yet, as before, it is clear that many examples do not feature non-manual marking involving the eyebrows or eyes, thus again clearly showing that these markers are not obligatory in habitual contexts.

Finally, pursed lips (N=16) – also mentioned as sometimes occurring in habitual contexts by Oomen (2016), and possibly comparable to the ‘lax lips’ Hoiting & Slobin (2001) describe – is the most frequently occurring NMM involving the lips or mouth, but with a rate of occurrence of 15.1%, it is clear that this marker, too, is far from obligatory. The same holds for several other NMMs, such as head nod (9.4%).

Thus, it is clear that there is no one individual NMM which is obligatory in habitual contexts, but it could still be the case that at least one of the markers listed in Table 3 has to be present. However, this also does not hold: 28 examples (26.4%) do not involve any NMMs at all. Given that some of the markers included in Table 3 might actually not mark habituality at all, in reality this number is probably even higher. In conclusion, then, the corpus data show that non-manual marking is not obligatory in habitual contexts. Indeed, two of the 14 examples without a *manual* marker of habituality also do not include any of the NMMs listed in Table 3; a further four of those include some NMMs, but not left-to-right body or head movement or narrowed eyes, i.e., the NMMs which occur the most often in habitual contexts.

We wish to make two final remarks. Firstly, we did not systematically investigate the scope of the NMMs that were annotated, but a look at the examples included in the previous section gives the impression that it tends to be the habitual adverb or the reduplicated predicate that is marked, or both. Other signs generally fall outside the scope of marking, with the exception of the index signs in (10b). However, pronominal signs are prosodically light and easily encliticize to other signs, such that they might be included in the scope of the NMM simply for prosodic reasons (see Oomen, Pfau & Aboh 2018 for a similar argument).

¹⁰ It has previously been suggested that NMMs involving directly opposed movements might be different realizations of the same grammatical feature. Gökgöz (2011), for instance, has shown that brow raise as well as brow lowering can be used to mark negation in Turkish Sign Language, suggesting that both these non-manual forms may be subsumed under the umbrella category ‘non-neutral brow position’. In relation to this point, note that brow raise (N=15) and brow lowering (N=16) occurred almost equally often in our data.

Secondly, as mentioned above, mouthing very frequently accompanied one or more signs in our data set. While it is clear that mouthings, generally, do not mark habituality, it is worth noting that in habitual contexts, mouthings are sometimes reduplicated. Typically, these reduplicated mouthings would accompany signs which are also themselves reduplicated, such as in the case of DOCTOR in example (7b). In other words, the mouthing is synchronized with the manually marked sign.

3.3 *Interim summary*

To sum up the main results discussed above, the corpus data show that habitual constructions tend to be marked by a manual marker – be it a dedicated adverb, reduplication of the predicate, or both – although about 13% of the examples did not include any manual marker. In some of those cases, doubling of part of or the entire sentence was attested as another potential marker of habituality.

As for non-manual markers, it is evident that there is not one dedicated non-manual marker of habituality, with a wide range of different non-manuals being observed in the data. In fact, it seems that most of the non-manuals we discussed do not necessarily mark habituality but rather fulfil other functions. Secondly, a sizeable proportion of the data, namely over 25% of the examples, did not include any non-manual markers at all. This included a couple of examples that did not include manual markers either. The most commonly attested non-manual markers are left-to-right movement of the body and/or head, and narrowing of the eyes.

4 Discussion

In addition to annotating manual and non-manual markers in habitual constructions, we also made annotations for various semantic factors for which we hypothesized that they might have the potential to be associated with certain types of marking. Given the more exploratory nature of this analysis, a discussion of the results has been postponed to this section; see Section 4.1.

The results discussed in the previous section show some striking differences with results previously reported in Hoiting & Slobin (2001) and Oomen (2016). It appears that the differences in data type are largely responsible for this discrepancy; the matter is further discussed in Section 4.2, where we also touch upon the potential methodological issues that could have resulted from our choice of data and method of analysis.

4.1 *Semantic analysis*

Our results reveal quite some variation in the marking of habituals, as adverbs and reduplication sometimes occur on their own, but may also combine, or not show

up at all. This section therefore explores whether there is a connection between the semantic factors introduced in Section 2.3.2 and the different ways of marking habituality in NGT. We focus only on manual marking, since we do not find any consistent NMMs of habituality. Section 4.1.1 goes into the consistency and specificity distinctions, while Section 4.1.2 focuses on past versus non-past habituals.

4.1.1 Consistency and specificity

Table 4 shows the relation between the different manual markers and the consistency and specificity distinctions.

Table 4: Relation between manual habitual marking and semantic distinctions.

	N	Adverb, reduplication	Adverb	Reduplication	No manual marking
[+consistent, +specific]	15	6 (40%)	7 (47%)	2 (13%)	0
[−consistent, +specific]	65	18 (28%)	26 (40%)	10 (15%)	11 (17%)
[−consistent, −specific]	23	3 (13%)	9 (39%)	8 (35%)	3 (13%)
[+consistent, −specific]	3	1 (33.3%)	1 (33.3%)	1 (33.3%)	0

First of all, it is clear that these semantic distinctions do not offer an unambiguous, consistent explanation for the variation. Moreover, note that the combination [+consistent, −specific] appears rarely in our data set, and therefore is not very informative. We will not consider it here, although it is interesting that these two semantic properties apparently are not likely to co-occur.

For the other three semantic combinations, some observations can be made. Representative examples are given in (12a–c).

- (12) a. [+consistent, +specific]
 EVERY DAY SPEECH-THERAPY++
 ‘[I used to go to] speech therapy every day.’ (1622-S067-00:27.30)
- b. [−consistent, +specific]
 INDEX₁ ALWAYS GO GROCERIES INDEX₁
 ‘I always shop there.’ (0014-S004-05:05.20)

c. [–consistent, –specific]

ACCEPT++

‘[Some deaf people] always accept anything.’ (1927-S077-01:11.00)

A few things are striking. First, the clearest result is that habituals that are [+consistent, +specific] (12a) are always marked manually in our data set. Usually, this habitual type contains an adverb (87%; EVERY DAY in 12a), sometimes combined with reduplication (SPEECH-THERAPY++ in 12a). Reduplication alone also occurs in this context, but less often (13%) – although reduplication alone is the lesser-used strategy in the data set in general (as described in Section 3.1). Potentially, contexts labeled as [+consistent, +specific] are always marked because they can be considered the most prototypical habitual contexts: a systematically recurring event, involving a specific referent.¹¹

For the other two context types considered here, manual marking is optional. If the sentence is marked, [–consistent, +specific] contexts (12b) behave according to the general pattern that an adverb, sometimes combined with reduplication, is the most popular strategy. In fact, different adverbs can be associated with the [±consistent] distinction: ALWAYS often occurs in [–consistent] contexts, while adverbs such as EVERY DAY occur in [+consistent] contexts; compare (12a) to (12b).¹²

Notably, the [–consistent, –specific] contexts (12c) behave slightly different with respect to the type of marking: unlike the other context types, they are usually marked by either an adverb (39%) or reduplication (35%; ACCEPT++ in 12c), while a combination of the two rarely occurs (13%). It remains unclear why this is the case. In terms of semantic distinctions, [–consistent, –specific] is the opposite of what we above considered to be the most prototypical habitual context; potentially, this is why the marking differs slightly. However, note that even though combining the two manual markers is rare for this type, there is still no complementary distribution.

Thus, [±consistent] and [±specific] are correlated with manual habitual marking to some extent, however, they cannot completely explain the distribution

¹¹ Also, all of the analyzed [+consistent, –specific] contexts are marked manually, however, since we only found three examples in total, this may well be a coincidence, and as such is not very informative. Yet, we should add that it is also possible that habitual sentences that are [+consistent] are always marked manually, regardless of [±specificity]. Clearly, further research is necessary.

¹² Note that, in a sense, this reasoning is circular: we searched for ‘always’, ‘every day’, etc. on the translation tier, and this yielded results that are inherently [+consistent] or [–consistent]. At the same time, these results are also more likely to contain signs for the adverbs we searched for. For instance, searching for ‘always’ is more likely to yield [–consistent] contexts, which also contain ALWAYS. This is a consequence of the methodology used here, and therefore these results with respect to semantic factors should be interpreted with caution.

of reduplication and adverbs. Thus, although we offered a first step towards a semantic analysis, additional semantic factors should probably be taken into account. We leave this for further research.

4.1.2 Past contexts

We were also interested whether only sentences situated in the past were marked for habituality, as found by Oomen (2016). Note that this distinction between past and non-past has also been described for many spoken languages: cross-linguistically, the dedicated habitual form is often restricted to the past tense (Comrie 1976). The results for our corpus data are shown in Table 5.

Table 5: Relation between manual habitual marking and [$\pm$ past].

	N	Manual marking	No manual marking
[+past]	40	32 (80%)	8 (20%)
[−past]	66	60 (91%)	6 (9%)

According to expectation, a high percentage (80%) of the [+past] sentences is manually marked. However, the vast majority (91%) of the [−past] sentences also contains some type of manual marking, as is also illustrated by examples (12b–c) above. This contradicts the finding by Oomen (2016) that reduplication of the verb sign occurs only in past habituals.

To investigate this matter further, we obtained an additional data set from Ulrika Klomp, who elicited and analyzed data from two deaf, native NGT signers for a descriptive project on Sign Language of the Netherlands (Klomp *forthc.*). Habitual sentences were elicited in past and present contexts. At the time of the elicitation, the COVID-19 pandemic had the entire world in its grip. Therefore, the signers were asked to tell a short story about (i) what they used to do every day before the COVID-19 pandemic, that is, how a normal day used to look like, and (ii) what normal everyday life looked like in the then-present, i.e., during the pandemic. The signers were thus explicitly asked about the difference between past and present.

One signer did not use clear habitual constructions in the story; thus, the data are not informative for the purposes of this study. The second signer, on the other hand, marked habitual constructions in a way close to what Oomen (2016) found: in the past context, the signer mainly uses reduplication as a habitual marker, and she constantly and clearly reduplicates the predicates (13a) (note also the doubling of GET-UP and PACK), while in the present context, the habitual marking is less consistent and less obvious (13b).

- (13) a. PAST INDEX₁ **ALWAYS** GET-UP MORNING GET-UP ON-TIME GET-UP //
 THEN **SHOWER+** WASH // THEN **EAT+++** BREAKFAST // THEN **PACK BAG**
PACK++ [...]
 ‘I used to get up on time in the morning, then I would shower, then I
 would eat breakfast, then I would pack by bag [...].’ (elicited)
- b. NOW INDEX₁ SLEEP[HOLD] // WAKE-UP COFFEE TEA DRINK TELEVISION
 COMPUTER
 ‘Now I sleep in. When I wake up, I drink coffee or tea behind the
 television or the computer.’ (elicited)

While the additional data do not necessarily suggest that there is no habitual marking in non-past contexts at all, they show a difference in consistency and intensity of marking in past versus non-past contexts, which is not (clearly) present in the corpus data. This matter is further discussed in the next section.

4.2 *Corpus vs. elicited data: A reflection*

It is evident from the results discussed in Section 3, as well as the semantic analysis presented in Section 4.1, that the corpus data show considerably more variation in habitual marking than what has previously reported by both Hoiting & Slobin (2001) and Oomen (2016) based on elicited data. This difference is further underscored by the small elicitation task we reported on in the previous section, in which we found clear differences in habitual marking in past versus non-past contexts that did not show up in our corpus data. Here, we address various explanations for this discrepancy, some of which concern potential methodological issues, while others are rather about the nature of the research methods themselves. We conclude that a combined approach can be fruitful.

Firstly, as mentioned in Section 2.2, we were forced to start from meaning rather than form in selecting our examples for analysis, given that the studies by Hoiting & Slobin (2001) and Oomen (2016) did not point toward one single dedicated habitual marker. This meant that we had to make – to an extent subjective – decisions about whether sentences had a habitual interpretation or not. Obviously, with corpus data, it is not possible to check whether a signer actually had the intention to convey a habitual event, such that it is possible that sentences we interpreted as habitual were not intended in that way. Still, if that were the case, it seems unlikely that exclusion of the sentences that were wrongly classified as habitual constructions would lead to a drastically different landscape of variation. Compare the two examples in (14), for instance. Content-wise, the two sentences appear comparable: in both cases, the signers talk about how they sign a particular concept. Yet the sentence in (14a) does not have any habitual

markers, while the example in (14b) includes both reduplication and the adverb ALWAYS.

- (14) a. hn
INDEX₁ SAY SMS INDEX₁
‘I always say ‘sms’ like this.’ (0067-S006-04:27.20)
- b. SHED+++ INDEX₂ ALWAYS
‘You always sign ‘shed’ like this.’ (0018-S003-04:52.00)

It is even possible that we missed out on further variation because our searching method may have favored examples with overt marking of habituality, since we searched for particles and adverbials that regularly occur in Dutch habitual sentences. It seems likely that in examples without clear manual habitual marking, the Dutch translation did not include any such particles or adverbs either, especially since Dutch does not have a dedicated habitual marker.

Altogether, we feel confident in our observation that there is, indeed, a substantial amount of variation in habitual marking in NGT. In Section 4.1, we attempted to identify semantic factors that might account for part of that variation in the use and combination of manual markers. As reported, we found only limited evidence for a correlation between specific semantic properties and manual marking strategies. Still, it is possible that there are other semantic factors at play which we simply failed to identify. We consider this an avenue for further research.

The large discrepancy in the results between the studies on NGT habituals based on elicited data – including the mini-study on past vs. non-past contexts – and our corpus-based investigation might also be partially explained by the fact that the elicitation studies are based on data from just one signer, or a few signers from the same region.¹³ As such, neither of these investigations are able to capture individual and/or regional variation. Note that this is not a drawback of elicitation methods per se, but only of the studies that have so far been carried out on this topic in NGT. We did not do a thorough analysis of the extent of individual variation in our corpus data, so we do not know at present how much of the variation we attested can be attributed to individual variation between signers. This is also an interesting area for further research.

¹³ Hoiting & Slobin (2001: 127) actually do not report how many signers participated in their study, however, they specify that “the findings are based on data provided by several native signers [...] in the northern provinces of The Netherlands [...]”. Thus, even though the study involves multiple signers, the question remains whether enough signers were included to reveal individual variation. Moreover, all signers came from the northern part of the Netherlands, and thus regional variation definitely was not included in the data set.

Of course, the fact that we found more variation in the corpus data than was previously described based on elicited data was also to a certain extent expected. Many other sign language corpus studies on a range of different topics including agreement marking (De Beuzeville, Johnston & Schembri 2009), negation (Oomen & Pfau 2017) and conditional clauses (Klomp 2019) have made similar points. As such, we concur with Kimmelman, Klomp and Oomen (2018: 85) that “corpus-based research serves to identify the boundaries of observed variation and describe both expected and unexpected patterns, while the underlying factors for these patterns can be investigated by eliciting data in more controlled contexts”.

Applying this recommendation to the current research topic, we suggest that future research into habitual marking in NGT focuses on identifying the precise semantic contexts in which habitual marking is triggered. Indeed, we already found that Oomen’s (2016) translation task as well as the setting in which we explicitly asked the signer to contrast past and present habituals, were able to trigger a difference in marking between past and non-past habitual contexts. This difference apparently disappears in more natural language use, which suggests that there are additional factors at play – which may have accidentally been present in the relevant elicitation studies – which we so far have not been able to identify. Further elicitation studies with controlled semantic contexts are thus required to search for links between certain semantic characteristics and habituality – assuming they exist, of course. Then, corpus data can be inspected again – after excluding examples that do not meet the semantic criteria – to establish whether these patterns show up as expected in naturalistic data. In this way, elicited and corpus-based methods can feed into each other in order to arrive at a more comprehensive picture of the way habituality is marked in NGT. With the present study, we have made the important step of demonstrating that the picture that shows up based on elicited data is too simplistic; we are now in a position to further scrutinize the precise factors that play a role in the manual and non-manual marking of habituality in NGT.

5 Conclusion

This study aimed to investigate the manual and non-manual marking of habituality in Sign Language of the Netherlands in naturalistic signing. The motivation for conducting the investigation was that two previous studies on habituals in NGT, entirely based on elicited data, reported contradicting findings (Hoiting & Slobin 2001; Oomen 2016).

Analysis of a set of 106 examples from the Corpus NGT (Crasborn & Zwitserlood 2008; Crasborn et al. 2008) revealed significant variation both in the use of manual and non-manual marking of habitual constructions. With regard to manual markers, both reduplication and use of adverbials were attested –

sometimes in combination – but some examples included neither of these markers. As for non-manual markers, it is clear that there is no dedicated non-manual marker of habituality in NGT, although left-to-right body and head movements and narrowed eyes occurred relatively frequently (~ 27% of examples).

As such, the results clearly contrast with those reported by Hoiting & Slobin (2001) as well as Oomen (2016), who report consistent marking by means of reduplication, body movements, and/or various non-manual markers. This result is not entirely unexpected, since other corpus-based studies on various linguistic phenomena in sign languages (see, e.g., De Beuzeville et al. 2009; Oomen & Pfau 2017; Klomp 2019) also found a considerable amount of variation.

We attempted to identify semantic factors that could potentially be related to different habitual marking strategies. Although we found some limited evidence for a connection between habitual marking and the semantic factors (i) consistency of occurrence of an event, (ii) specificity of the subject, and (iii) past contexts, it was clear that they could not fully explain the distribution of manual markers in the examples in our data set. Strikingly, in a small elicitation task with one signer of NGT we carried out to further investigate the relation between past contexts and habitual marking, we did find consistent marking in the form of reduplication. We take this finding as another reminder of the importance of using both elicitation and corpus methods in the investigation of linguistic phenomena in sign languages.

Appendix

Glossing conventions

The following glossing conventions are used in the sign language examples:

- SIGN** Signs are represented by an English gloss in small capitals. When multiple words are required to represent the meaning of a sign, a dash ('-') separates the words.
- _{xx}** Non-manual markers are indicated by means of a line above the manual sign glosses, indicating their scope. Abbreviations used are the following: l/r = left-to-right body and head movements; hn = head nod; hs = headshake; pl = pursed lips; bl = brow lowering; rs = role-shift markers. Words between single quotes represent mouthed elements.
- SIGN++** Reduplication of a sign. Each '+' represents one reduplication cycle.
- INDEX_x** Pronominal pointing signs are represented with the gloss INDEX, followed by a subscript indicating whether the sign is directed toward the signer ('1'), the addressee ('2'), or a third-person referent associated with some location in signing space ('3'). When an example includes multiple third-person pronoun signs, letter subscripts ('a'; 'b') are added to indicate that they are associated with different locations.
- PU** PALM-UP, a sign which is used in a variety of discourse functions, such as a turn-taking signal.

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Cindy van Boven

ACLC, University of Amsterdam

c.m.j.vanboven@uva.nl

Marloes Oomen

ACLC, University of Amsterdam

m.oomen2@uva.nl