Space Oddities: The Acquisition of Agreement Verbs by L2 Learners of Sign Language of the Netherlands

Boers-Visker, E.; Pfau, R.

Link to publication

Citation for published version (APA):

Space Oddities: The Acquisition of Agreement Verbs by L2 Learners of Sign Language of the Netherlands

EVELINE BOERS–VISKER[1] iD AND ROLAND PFAU[2] iD

[1]*Utrecht University of Applied Sciences, Deaf Studies Research Group, Research Centre for Social Innovation (Utrecht University of Applied Sciences), Padualaan 101, Utrecht, 3584 CH, the Netherlands Email: eveline.boers@hu.nl*
[2]*University of Amsterdam, Faculty of Humanities, Spuistraat 134, Amsterdam, 1012 VB, the Netherlands Email: r.pfau@uva.nl*

This article reports the results of the first longitudinal study that systematically investigates the acquisition of verb agreement by hearing learners of a sign language. During a 2-year period, 14 novel learners of Sign Language of the Netherlands (NGT) with a spoken language background performed an elicitation task 15 times. Seven deaf native signers and NGT teachers performed the same task to serve as a benchmark group. The results obtained show that for some learners, the verb agreement system of NGT was difficult to master, despite numerous examples in the input. As compared to the benchmark group, learners tended to omit agreement markers on verbs that could be modified, did not always correctly use established locations associated with discourse referents, and made characteristic errors with respect to properties that are important in the expression of agreement (movement and orientation). The outcomes of the study are of value to practitioners in the field, as they are informative with regard to the nature of the learning process during the first stages of learning a sign language.

Keywords: sign language; second language acquisition; agreement verbs; use of space; overgeneralization

---

LEARNING A NEW LANGUAGE INVOLVES acquiring vocabulary, grammatical rules, and social conventions. To facilitate this task, learners use their existing knowledge of their mother tongue (L1) as well as (a) previously learned second language(s) (L2) as a sort of scaffolding upon which they build their new knowledge. Target language features that are similar to L1 patterns will be easier to detect and acquire than features that are unfamiliar to the learner (Ringbom, 2007). Given this, one could argue that for sign language learners with a spoken language background (M2L2 learners, that is,

learners of an L2 in a second modality [M2]), the target language patterns might be particularly difficult to acquire, since sign languages employ an entirely different modality of signal transmission, the visual–spatial modality. The visual–spatial modality allows the signer to make use of resources that are not available in spoken languages, for instance, to use the space in front of the body (the 'signing space') to encode grammatical relations. This rule-governed use of signing space is new to M2L2 learners and might be difficult to master, given the absence of similar (rule-governed) elements in the L1 of the learner. However, since there is a paucity of studies addressing the acquisition of sign language as an L2, the characteristics of M2L2 learning in general and of modality-specific features in particular are not well understood. The aim of our study is to broaden understanding of the acquisition of one of these modality-specific phenomena: the system of verb agreement. To that end, we report quantitative and qualitative findings obtained in a 2-year study in which we followed 14 novel learners of Sign

FIGURE 1
Spatially Modified Forms of the NGT Agreement Verb HELP
[Color figure can be viewed at wileyonlinelibrary.com]

a.

| MY | BROTHER | IX:3a | $_{3a}$HELP$_1$ |

"my brother helps me"

b.

| MY | BROTHER | IX:3a | $_1$HELP$_{3a}$ |

"I help my brother"

Note. The gloss IX:3a refers to pointing sign targeting a locus in space; $_{3a}$HELP$_1$ involves a movement path from that locus toward the signer; $_1$HELP$_{3a}$ shows the reversed movement.

Language of the Netherlands (*Nederlandse Gebarentaal*, NGT).

This article is organized as follows: First, a brief overview of the system of sign language (specifically NGT) agreement is given, including a note on its L1 acquisition. Then, the methodology is outlined, followed by a quantitative and qualitative analysis of the results. Finally, we discuss our results in light of findings from L1 acquisition and sign language typology; we also sketch the limitations of our study and its implications for teaching practice.

ON THE NATURE OF SPATIAL AGREEMENT IN SIGN LANGUAGES

Verb Classes

Research has revealed that in almost all established sign languages, similar systems of 'directional' or 'agreement verbs' exist (Lillo–Martin & Meier, 2011; Mathur & Rathmann, 2012). Agreement verbs may undergo changes in the direction of movement and/or the orientation of the hands to mark the subject and object of the verb. This phenomenon is illustrated in Figure 1 by means of the NGT verb HELP.[1] The form in Figure 1a is directed from a location (locus) to the right of the signer's body—which has previously been associated with the referent *my brother*

(see "Localization" section)—toward the signer's body, yielding the meaning "My brother helps me." The verb in Figure 1b moves from a locus in front of the signer's body to the locus associated with the brother, meaning "I help my brother" (note that HELP is characterized by a hand-internal change: closing of the hands during the movement).

However, not all verbs can be modified in this way to mark their arguments. In her seminal work on American Sign Language (ASL) morphology and syntax, Padden (1988) distinguished three verb classes:

1. The class of agreement verbs,[2] exemplified in the previous paragraph, includes (di)transitive verbs that can mark agreement by changing the movement path and/or orientation of the hand(s) to indicate the verb's (indirect) object and subject. It has been argued that, semantically, all agreement verbs involve (concrete or metaphorical) transfer (Meir, 2002). In regular agreement verbs, the initial point signals the subject and the end point the object. Examples from NGT are HELP (see Figure 1), ASK, and SEND. A small subset of verbs, known as backward verbs, moves in the opposite direction, that is, from object toward subject locus (e.g., NGT

FETCH, in the sense of "to fetch or pick up a person from a location," and INVITE). Besides verbs that inflect for both subject and object, a small subset of verbs inflects for object only (e.g., NGT OPPRESS and FIND)—this subset is sometimes referred to as single agreement verbs, as opposed to the double agreement verbs mentioned before (Mathur & Rathmann, 2012).[3]

2. The class of spatial verbs includes verbs that move between, from, or toward loci in signing space associated with locative arguments. Examples are the NGT signs GO-TO, MOVE-HOUSE, and COME. The class of spatial verbs also includes the so-called "entity classifier predicates" (see Note 15).

3. The class of plain verbs includes verbs that cannot be spatially modified, either because they do not denote transfer (Class 1) or change in location (Class 2; e.g., NGT CELEBRATE, EXERCISE, MAKE), or because they are body-anchored, that is, phonologically specified for a location on or close to the signer's body (e.g., NGT SAY, UNDERSTAND, and LOVE; Meir, 2002; Pfau, Salzmann, & Steinbach, 2018).

These different types of verbs have been attested in almost all sign languages studied to date (Rathmann & Mathur, 2002), although alternative classifications have been proposed (e.g., Quadros & Quer, 2008). As for NGT, properties of the agreement system have first been studied by Bos (1990, 1993, 2017[4]), who confirmed the distinction between modifiable and nonmodifiable verbs. More recently, Zwitserlood and van Gijn (2006) offered a formal account of NGT agreement, and Legeland (2016) and Couvee and Pfau (2018) studied agreement phenomena based on corpus data.

Clearly, the NGT agreement system—beyond the fact that it is realized in space—presents the learners, who have Dutch as their L1, with unfamiliar grammatical characteristics: (a) the fact that verb classes exist that behave differently when it comes to the realization of agreement, (b) object agreement, (c) localization, and (d) the possibility to take on the role of a character. The latter two potentially challenging characteristics will be addressed in the next sections.

Localization

As previously discussed, agreement can be realized by changing the underlying (citation) form of certain verbs according to spatial loci. These loci are either actual loci of present referents (signer, addressee, or other physically present person) or arbitrary loci in signing space that are associated with nonpresent referents. The process of establishing a referent–locus association is called localization. There are several devices to localize a nonpresent referent. First, a signer can produce a noun followed by a pointing sign (INDEX) toward a locus (as in Figure 1). Second, instead of using INDEX, a signer can also localize a referent by means of the agreement verb itself. In Example 1a, for instance, the direct object DOCTOR is not explicitly localized, but becomes associated with locus 3a by means of the spatially modified verb CALL. Third, some nouns that are articulated in neutral space can be signed at a particular locus (e.g., PERSON, see Example 1b), instead of combining the citation form with INDEX. Finally, referents can also be localized nonmanually, by means of eye gaze toward a specific locus. Once a referent has been associated with a locus, this locus can be used for further reference (i.e., pronominal reference and verb agreement).

EXAMPLE 1

a. IX:1 DOCTOR $_1$CALL$_{3a}$
   I call the doctor.
b. IX:1 SISTER PERSON$_{3b}$ $_{3b}$HELP$_1$
   My sister helps me.

Canonically, the locus for second person is positioned right in front of the signer, and the loci for (present or nonpresent) third-person referents at the ipsilateral and contralateral side (loci 3a/3b). While the locus for first person is fixed, there is in principle an infinite number of loci for non-first-person referents (Liddell, 2003; Padden, 1988), which in turn implies that the paradigm of potential agreement markers on verbs is extremely rich—and thus clearly different from the Dutch paradigm (which features three subject markers). In other words, what we glossed as "3a" in Figure 1 is not a single fixed marker for third-person agreement (Wilbur, 2013), but rather a context-specific instantiation of that marker.

Constructed Action

Signers, like spoken language users, can opt to report utterances, thoughts, feelings, and actions from the perspective of another character. This device is called constructed action (CA) or role shift (Lillo–Martin, 2012). Importantly, use of CA has consequences for the interpretation of pronouns and modified verbs. The moment a

FIGURE 2
Different Options for Modification of the Verb GIVE
[Color figure can be viewed at wileyonlinelibrary.com]

a.	b.	c.	d.
citation form GIVE	$_1$GIVE$_3$ $_{[1=1]}$GIVE$_3$	$_3$GIVE$_3$	$_{[1=3]}$GIVE$_3$
	subject argument is first person, object argument is placed in neutral space	both arguments are placed in neutral space	object argument is placed in neutral space, subject argument is mapped on signer's body
	1 → y form 1 → y form (CA)	x → y form	x → y form (CA)

unmodified verb — *modification options (regular verb)*
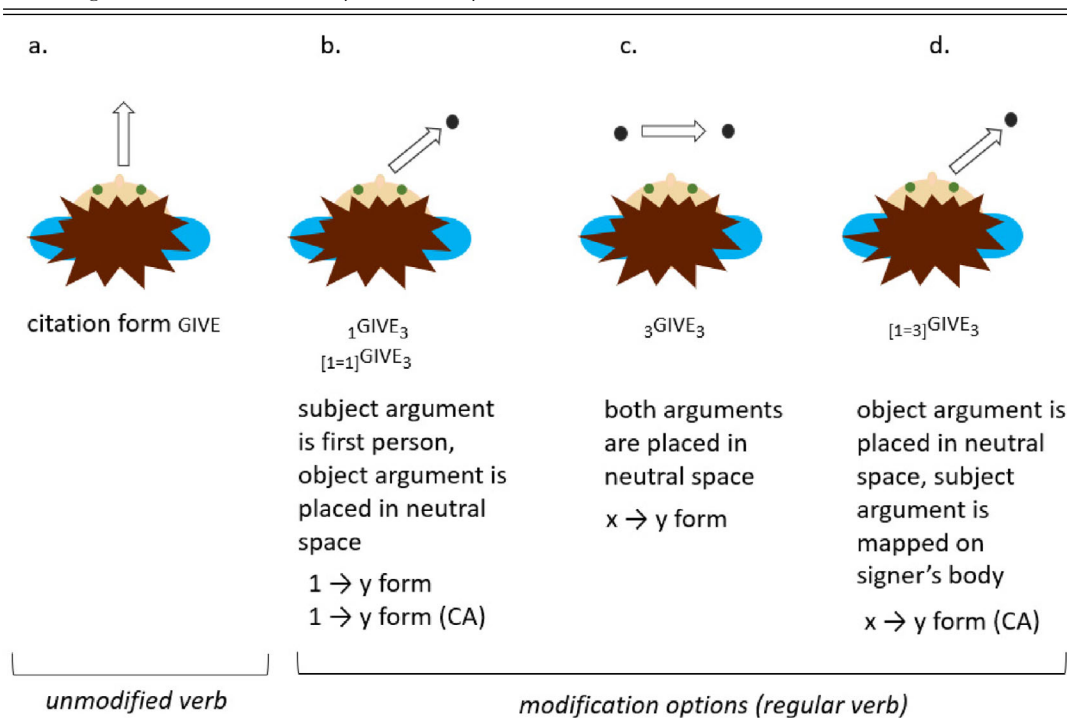
Note. Options (b) and (d) are forms that may surface in constructed action (CA) contexts. Crucially, in (d), the locus close to the signer's body refers to a third-person subject.

signer takes up a role, the portrayed character is mapped onto the signer's body, and consequently, a point on or close to the chest should be interpreted as referring to the character rather than to first person (Engberg–Pedersen, 1993). In Example 2, the signer directs the verb from their own body (to be interpreted as the woman) toward the object locus (associated with the man). In the example, shifting into the role (RS) of the woman is indicated by a line above the gloss.

EXAMPLE 2

RS(woman)
IX:3a MAN. WOMAN PRESENT [$_1$GIVE$_{3a}$]
There is a man. The woman gives him a present.

Consequently, there are different modification options for one and the same verb, visualized in Figure 2: (a) the verb remains unmodified (see next section), (b) a verb involving a first-person argument moves from or toward the body, which represents the first-person argument, either in a declarative sentence (neutral) or in a CA context, (c) a verb involving two third-person arguments moves between two locations in signing space, or (d) a verb involving two third-person arguments moves between the signer's body, which represents one of the arguments, and a location in signing space.

Optionality of Agreement

A factor that may complicate the acquisition process is that it has been shown, based on corpus data, that NGT verbs that are licensed to carry agreement markers do not always actually (fully) encode the agreement relation (Legeland, 2016). That is, signers can opt to use either the unmodified citation form or a form that is partially inflected, signaling only one of the arguments, usually the object argument.[5] Furthermore, they may employ other devices instead to encode the verb's arguments (see the next section).

Alternative Strategies for Identifying the Verb's Arguments

As indicated in the previous section, signers do not always use verb modification to identify the verb's arguments. Alternative strategies to express

who is doing what to whom that are relevant in the present context are (a) the insertion of an agreement carrier, and (b) the use of successive one-argument structures. Both strategies will be briefly explained.

First, a signer can use a functional element that serves as agreement carrier. NGT features two types of agreement carriers: The first, the agreement auxiliary ACT-ON, is a semantically empty sign that is inserted to encode the agreement relation by moving between the loci associated with arguments (Bos, 1994, 2016[6]). ACT-ON commonly accompanies plain verbs, as in Example 3a, adapted from Bos (1994, p. 39), but it also occasionally co-occurs with agreement verbs. Agreement auxiliaries are attested in some, but not all, sign languages (for an overview, see Sapountzaki, 2012). Second, in a serial verb construction, one of the two lexical verbs carries the agreement (Bos, 2016; Couvee & Pfau, 2018). In Example 3b (adapted from Bos, 2016, p. 238), the agreement verb CALL is not semantically required, but is inserted, as the verb SAY cannot be modified to mark agreement.

EXAMPLE 3

a. IX:1 PARTNER IX:3a LOVE $_{3a}$ACT-ON$_1$
   My partner loves me.
b. WHY NOT HONESTLY SAY $_2$CALL$_1$ PALM-UP
   Why didn't you tell me (that) openly?

A second strategy to denote who is doing what to whom is to produce successive one-argument structures (Ergin et al., 2018). In the Nicaraguan Sign Language example in Example 4 (Senghas et al., 1997, p. 555), the signer distributes the arguments over two subsequent clauses: The giver and given object appear in the first clause, the receiver in the second clause. However, the signer does not display the scene from the perspective of one of the characters.

EXAMPLE 4

MAN CUP GIVE WOMAN RECEIVE
The man gives the cup. The woman receives it.

Finally, in addition to these two strategies, L2 learners who lack specific vocabulary could also resort to their gestural repertoire in order to get the message across (see "Possible Influence of Gestural Repertoire" section).

L1 Acquisition of Sign Language Agreement

At present, only relatively few studies are available that investigate the acquisition of a sign language as an L2 by hearing learners, in particular studies that address the M2L2 acquisition of agreement verbs.[7] In contrast, there is a substantial body of literature on the L1 acquisition of sign language agreement (e.g., Hänel, 2005, for German Sign Language; Meier, 1982, 2002, for ASL; Morgan, Barrière, & Woll, 2006, for British Sign Language; van den Bogaerde, 2000, for NGT). The picture emerging from these studies is a relatively late onset of agreement production and a protracted period of acquisition (but see Quadros & Lillo–Martin, 2007, for an opposing view). Initially, children produce uninflected verb signs. From age 2;0 onwards, they gradually start to inflect verbs, but only for present, real-world referents (Baker, van den Bogaerde, & Woll, 2008). Agreement with nonpresent referents, that is, the use of arbitrary loci, appears much later, starting around age 3;6. Errors observed are overgeneralization (i.e., realizing agreement on plain verbs), erroneous agreement (i.e., production of forms that agree with the wrong argument), and omission of agreement where it might be expected given the linguistic context.[8] The fact that verb agreement and the establishment and maintenance of abstract loci in space (localization) are related might account for the observed prolonged period of acquisition (Newport & Meier, 1985).

Possible Influence of Gestural Repertoire

The fact that NGT agreement is realized in space is unfamiliar to learners with Dutch as L1. Yet, using the space in front of their body might not be entirely unfamiliar to them, given that gestures produced by speakers share the same medium. Gestures are visual actions of the hands, body, and face that accompany (co-speech gestures) or replace speech (e.g., pantomime; Goldin–Meadow, 2003; Özyürek, 2012). In the context of this investigation, it is of importance to consider the possible influence of gesticulations on the acquisition of (a) the localization mechanism and (b) the agreement mechanism. Regarding the former, there is ample evidence that co-speech gesturers use the space in front of their body to refer to nonpresent entities (see, e.g., Fenlon et al., 2019, and Zwets, 2014, for evidence regarding the use of pointing gestures). Yet, there is—to the best of our knowledge—no unambiguous evidence that gesturers would also move gestures between locations in space to denote abstract transfer, that is, that they produce gestures that would resemble agreement verbs expressing abstract transfer.[9] We will return to this in the "Discussion" section.

TABLE 1
Background Information: M2L2 Participants

ID	Program	Age	Prior Knowledge of NGT	Proficiency in Other Foreign Languages
1	Teacher	21	None	English
2	Teacher	18	None	English, German
3	Teacher	19	None	English, German
7	Teacher	19	None	English, Spanish
9	Teacher	20	None	English
10	Teacher	20	None	English, French, German, Spanish
4	Interpreter	17	None	English, French, German
5	Interpreter	20	None	English, Spanish
8	Interpreter	17	None	English, French, German
12	Interpreter	18	Limited (deaf friend)	English
13	Interpreter	19	Limited (followed course)	English
14	Interpreter	40	Limited (followed course)	English, French, Spanish
6	Captionist	48	None	English, French, German
11	Captionist	30	None	English, Sinhala

Note. M2L2 = second language in a second modality; NGT = Sign Language of the Netherlands.

METHODOLOGY

The current investigation aimed to describe the development of the NGT verb agreement system in M2L2 learners and to document possible interlanguage phenomena (errors, omissions, etc.) in the expression of agreement. To that end, we recruited M2L2 learners and L1 signers of NGT from whom we elicited NGT sentences by means of various visual or written stimuli. Their productions were then transcribed and coded for the use (or nonuse) of various grammatical and lexical strategies.

Participants

In order to investigate sign language acquisition in novel learners, we recruited students who were enrolled in the Interpreter NGT and Teacher NGT bachelor programs or the Speech to Text Captionist associate degree offered by the Institute for Sign, Language & Deaf Studies, hosted by Utrecht University of Applied Sciences. We invited all first-year students of the 2016–2017 cohort ($n = 89$) to participate in our longitudinal study. Fourteen of the 22 students who signed up completed the first year, and 12 of these 14 participants were followed during the second year as well. As can be seen in Table 1, the majority of the M2L2 participants did not have prior knowledge of NGT.[10]

Furthermore, we analyzed data from three deaf L1 signers[11] as well as four NGT teachers who performed the same task, to serve as a benchmark. All teachers worked at the Institute for Sign, Language & Deaf Studies. In Tables 2 and 3, we present the background information of the benchmark groups.

Elicitation Materials

The present study is part of a longitudinal investigation of the M2L2 acquisition of a variety of grammatical features of NGT. A series of six tests (T1–T6) was developed to assess the participants' mastery of a variety of grammatical devices, including verb agreement. Each test contained 7 (T1, T3, and T5) or 15 (T2, T4, and T6) prompts (i.e., a total of 66), which particularly were designed to elicit verbs that can be spatially modified to signal the verb's subject and object. Six target verbs were elicited by means of images (photo or drawing; see Figure 3a, b for examples), six by means of an image combined with a (Dutch) sentence (see Figure 3c), and three by a Dutch sentence only.

Table 4 provides an overview of target verbs per elicitation strategy. Note that ASK, GIVE, and SEND were each elicited by two stimuli.

All target verbs were present in the teaching materials the participants received during the first year. Thirteen of the 15 prompts aimed to elicit constructions with a third-person subject and a third-person object (which we refer to as x→y forms; e.g., *The boy asks the teacher*, see Figure 2c and 2d); the remaining two constructions

TABLE 2
Background Information: L1 Signers

ID	Age	Age of Onset of NGT Acquisition	Hearing Status of Parents	Use of NGT on a Daily Basis
N5	49	From birth	Deaf	Yes
N6	37	8 months	Hearing	Yes
N7	33	1 year	Hearing	Yes

Note. NGT = Sign Language of the Netherlands.

TABLE 3
Background Information: Teachers

ID	Age	Hearing Status	Age of Onset of NGT Acquisition	Deaf Relatives
D1	31	Hearing	19	No
D2	43	Hearing	27	No
D3	29	Deaf	1	No
D4	54	Deaf	3	No

Note. NGT = Sign Language of the Netherlands.

FIGURE 3
Examples of Stimuli Aimed to Elicit Target Verbs [Color figure can be viewed at wileyonlinelibrary.com]
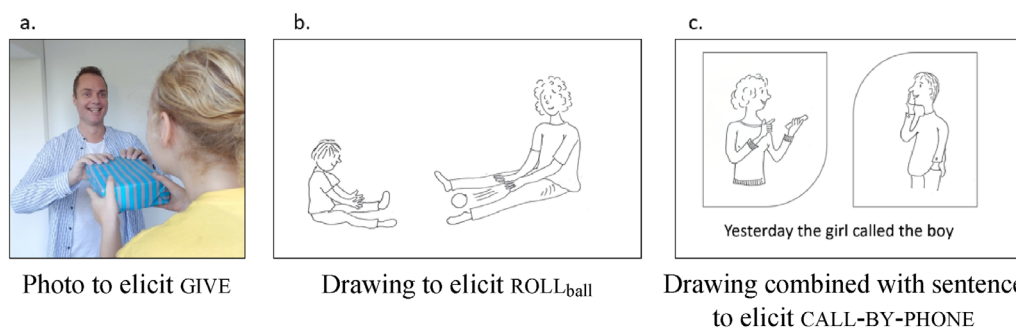
Photo to elicit GIVE

Drawing to elicit ROLL_ball

Yesterday the girl called the boy

Drawing combined with sentence to elicit CALL-BY-PHONE

TABLE 4
Overview of Target Verbs per Elicitation Strategy

Elicitation Strategy	Target Verbs
Image only	GIVE (2), GIVE_reciprocal, THROW_ball, ROLL_ball, TAKE-AWAY
Image and sentence	ANSWER, ASK (2), CALL-BY-PHONE, FETCH, VISIT
Sentence only	SEND (2), HELP

Note. (2) indicates that a verb was elicited by two stimuli.

involving a third-person subject and a first-person object (referred to as y→1 forms; e.g., *My brother sent me a package*). The selection includes one tar-

get verb (GIVE) that can combine with a so-called handle classifier, a handshape that denotes shape characteristics of the direct object. Four of the verbs (THROW, ROLL, FETCH, and SEND) are able to mark agreement with locative arguments as well (e.g., *throw a ball toward a bucket*), and as such, can be members of the class of spatial verbs as well as the class of agreement verbs (see "Verb Classes" section). However, these verbs were all presented in a context that calls for person agreement (see Supporting Information A for an overview of the targeted verbs).

Procedure

The M2L2 participants were filmed 12 times during the first year of their education and 3

TABLE 5
Coding Scheme Including Five Coding Categories

Coding Category	Description	Included Verbs
Agreement	Verb modified to signal argument(s) from a neutral perspective - fully agreeing verb - partly agreeing verb	Targeted verb [modified] Neologism [modified] Other verb from the class of agreement verbs (erroneous) [modified]
Agreement (CA)	Verb modified to signal arguments from perspective of character	Targeted verb [from perspective of character(s)] Neologism [from perspective of character(s)] Other verb from the class of agreement verbs (erroneous) [from perspective of character(s)]
Agreement carrier	Use of agreement carrier to signal argument(s) - agreement auxiliary ACT-ON - serial verb construction	Targeted verb + agreement carrier Neologism + agreement carrier Other verb from the class of agreement Verbs (erroneous) + agreement carrier
Lexical	No use of space - unmodified agreement verb candidate - replacement by plain verb - successive 1-argument structures - gesticulations/mime	Targeted verb [unmodified] Neologism [unmodified] Other verb from the class of agreement verbs (erroneous) [unmodified] Plain verb (agreement not possible)
Absence of verb		Omission of verb Verb mouthed without manual sign

times during the second year (the tests were repeated after completion of the first six tests, T1–T6, though with different orders and different distractor items; see Supporting Information B). The tests were administered individually in a quiet room at the university. Participants sat in front of a laptop and were asked to sign an NGT sentence in response to a prompt (i.e., image, sentence, or combination, as described in Table 4) that appeared on the screen. After signing a response, they continued to the next test item by clicking the mouse. The test was self-paced, and participants were allowed to skip items they felt incapable of signing. However, skipping an item did not mean that this item would not appear in the analysis because skipped items were registered as such. The first author or a research assistant (both hearing) was present while the participants performed the task.

The L1 signers and teachers performed the same task, with the difference that their responses to the six tests were filmed in a single, or at most two, session(s).

Transcription and Coding

The dataset,[12] comprising 1,966 M2L2 responses and 330 L1 signer/teacher responses, was transcribed using ELAN (a software package developed at the Max Planck Institute for Psycholinguistics; Crasborn & Sloetjes, 2008) by the first author and a trained research assistant, both hearing fluent (M2L2) signers. Part of the data (8 sessions, 4% of the dataset) was transcribed by both transcribers to identify and solve disagreements. For all sessions, the level of interrater reliability was sufficient, with 85–97% (mean 93%) agreement between transcribers.

Subsequently, the data were coded by the first author for occurrence of (target-like or erroneous) agreement and use of alternative strategies. The coding scheme, illustrated in Table 5, included five main categories: (a) verb agreement from a neutral perspective, (b) verb agreement from perspective of a character (CA), (c) use of an agreement carrier, (d) lexical solution, and (e) absence of verb. In cases of verb agreement, the verb was tagged as fully or partly agreeing, and additional codes were added to indicate whether the object and/or subject were assigned a locus in space and whether the start and end locations of the verb aligned with this locus. As for agreement carriers, we distinguished between the agreement auxiliary ACT-ON and serial verb constructions. Within the *lexical solution* category, we labeled whether the verb was an unmodified agreement

FIGURE 4
Distribution of Responses in the Benchmark Group
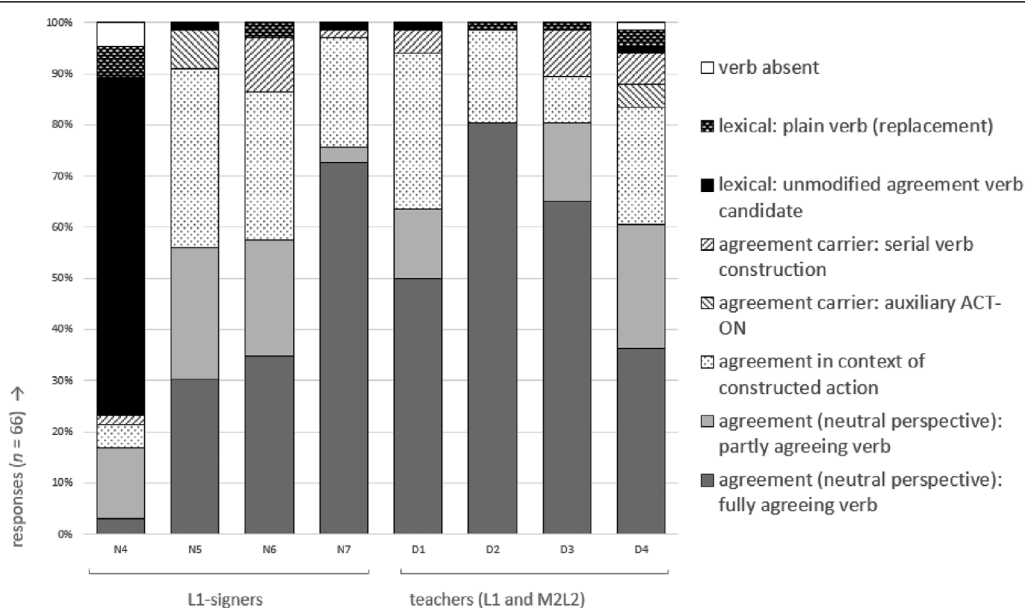
Note. L1 = first language; M2L2 = second language in a second modality.

verb or a plain verb (e.g., replacement of target verb ASK by plain verb TALK) and whether the participant used successive one-argument structures or pantomime or gestures.

The coding process was complicated by the fact that the M2L2 participants occasionally created neologisms on the spot or erroneously selected another verb from the class of agreement verbs (e.g., signing ANSWER instead of ASK, while mouthing[13] the word *vragen* "ask"). Since our goal was to identify and analyze productions of verb agreement, these neologisms and erroneously selected signs were assigned the labels *agreement verb, agreement verb (CA),* or *agreement carrier,* if applicable, with an extra code that would allow us to trace back whether these tokens were neologisms or erroneous signs. Table 5 provides an overview of the types of verbs that were included in each main category.

During the coding process, an extensive logbook was kept to record specific learner behavior and errors.

RESULTS

We now turn to the results from the elicitation tasks, regarding the participants' production of agreeing verbs and alternative strategies to convey who is doing what to whom. First, we examine the benchmark data that served as baseline, followed by a quantitative (group performance) and qualitative analysis (individual patterns and strategies) of the M2L2 data.

Analysis of Benchmark Data

We analyzed the data obtained from three L1 signers and four teachers, to which we will refer as the benchmark group. Figure 4 shows the distribution of responses of each respondent, as percentage of the total of responses ($n = 66$; six tests).

The benchmark participants produced an agreeing verb from a neutral perspective or an agreement carrier in 64–89% of the responses (mean 74%). In 9–30% of the responses, they presented the scene using a modified verb from a character perspective (CA; mean 24%). Only a small percentage of their responses (2–5%, mean 2%) contained either a plain verb replacing the targeted agreement verb (six instances) or an unmodified agreement verb (four instances). This latter finding contrasts with the optionality of agreement marking reported for NGT (Legeland, 2016) and other sign languages (e.g., Fenlon et al., 2018; cf. Note 4), but this is likely an artefact resulting from the elicitation task.

Figure 5 presents an overview per individual prompt. Based on this graph, we can distinguish three categories of responses: First, some stimuli mainly evoked agreement in the context of

FIGURE 5
Distribution of Responses per Item in the Benchmark Group
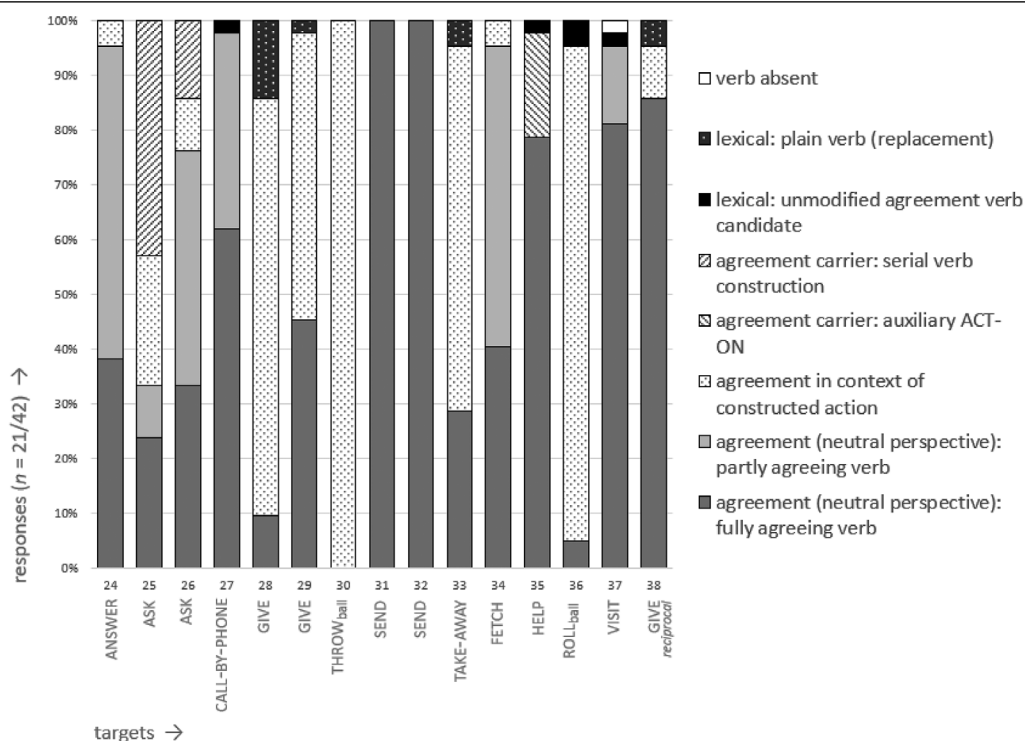
CA, that is, from the perspective of a character mapped on the signer's body. This concerns five items (28-GIVE, 29-GIVE, 30-THROW, 33-TAKE-AWAY, 36-ROLL), all of which express concrete transfer and were image-only items. The second category includes prompts that elicited the production of a modified agreement verb from a neutral perspective or an agreement carrier in 90–100% of the responses (mean 96%; categories *fully agreeing verb*, *partly agreeing verb*, and *agreement carrier* collapsed). This category includes the items 24-ANSWER, 26-ASK, 27-CALL-BY-PHONE, 31/32-SEND, 34-FETCH, 35-HELP, 37-VISIT, and the reciprocal 38-GIVE$_{rec}$. With the exception of the latter verb, these verbs all express metaphorical transfer (Meir, 2002) and, again with the exception of 38-GIVE$_{rec}$, were all elicited using a sentence-only or a sentence–image prompt. The third category comprises prompts that evoked mixed responses. In our set, one item (25-ASK) generated both verb modification from a neutral perspective and in a CA context.

Analysis of M2L2 Learners: Group Performance

Figure 6 shows the data obtained from the M2L2 participants during the first year of their education.[14] Session 6 is not included, since some participants ($n = 5$) could not participate in this session. The graph on the left details the categories of responses produced by the complete group. The graph on the right shows the performances of the 11 participants who did not have previous knowledge of NGT—that is, Participants 12, 13, and 14 (see Supporting Information A) are not included.

This graph reveals that, although the use of (partly or fully) modified verbs from a neutral perspective or from the perspective of a character (CA) increased across sessions, after 1 year of instruction, learners with no previous knowledge of NGT produced unmodified verb forms in a considerable number of the responses (almost 50%).

In Supporting Information C, we provide the M2L2 group data per prompt, following the three categories introduced in the "Analysis of Benchmark Data" section. In the following, we will discuss the M2L2 responses on the items that evoked agreement in the context of CA (Category 1) and agreement from a neutral perspective (Category 2) in the benchmark group. Furthermore, we will compare the use of alternative strategies across the two groups.

FIGURE 6
M2L2 Group Performance During Year 1
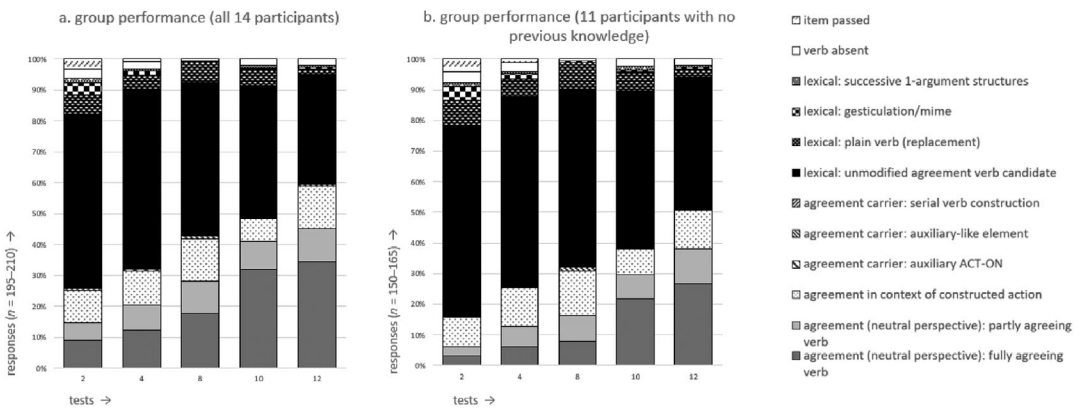
Note. M2L2 = second language in a second modality.

Items That Evoked Agreement in a Constructed Action Context in the Benchmark Group. As discussed in the "Analysis of Benchmark Data" section, 5 out of 15 prompts evoked a high percentage of scene descriptions seen from a character perspective in the benchmark group. Not surprisingly, these particular stimuli prompted CA in the M2L2 learners as well, but with lower frequency. It must be acknowledged, however, that a sign language scene description from the perspective of a character closely resembles a gestured (pantomimic) scene description from the perspective of a character. That is, when asked to gesture a scene, nonsigners may produce gestures that have similar or identical forms as the signs (cf. Quinto–Pozos & Parrill, 2015). Consequently, the items that evoked verb modification from the perspective of a character do not provide clear evidence that a learner actually masters the verb agreement system.

Still, these items revealed an interesting M2L2 feature. Closer examination of the five Category 1 items showed that in four of them, the M2L2 participants tended to 'overuse' the neutral space at the expense of taking up the role of a character. This is exemplified in Figure 7, showing two signers who have localized the argument(s) in the neutral space by means of a classifier predicate articulated on the nondominant (left) hand, and subsequently directed the agreement verb toward this classifier predicate.[15] The L1 signers we consulted judged these constructions as well formed in principle but without exception, they added, "but, this should be presented using constructed action"—which is not what the M2L2 learners do.

Items That Evoked Modified Verbs From a Neutral Perspective in the Benchmark Group. In contrast to

Category 1 items, Category 2 items could not be produced using gestures or pantomime, due to their noniconic nature. As a consequence, these items provided a better opportunity to gain insight into the actual mastery of the agreement system. The M2L2 group responses on the nine Category 2 items are displayed in Figure 8.

Figure 8 demonstrates that the group percentage of responses containing a (fully or partly modified) agreement verb from a neutral perspective is only 43% at the end of the first year—as compared to 90–100% in the benchmark group. The noniconic nature of this category—that is, the fact that the verb meanings involve abstract rather than concrete transfer—is reflected in the responses: Like the benchmark group, the M2L2 respondents hardly used CA on these targets, using either an uninflected verb or verb modification from a neutral perspective instead.

Use of Alternative Strategies. A comparison across groups regarding the use of alternative strategies (see "Alternative Strategies for Identifying the Verb's Arguments" section) reveals some differences. First of all, the groups differed with regard to the use of agreement carriers. During the first year, the M2L2 participants did not use the agreement carrier ACT-ON at all (except for one participant, who produced an auxiliary-like element twice in Session 8). The benchmark group did produce ACT-ON, but only with the verb HELP (see Figure 5). Moreover, the benchmark group frequently produced the serial verb construction ASK^CALL (or CALL^ASK; Targets 25 and 26), whereas the M2L2 participants never used serial verb constructions. Admittedly, this finding is not surprising given that neither

FIGURE 7
M2L2 Participants Directing an Agreement Verb Toward a Classifier Predicate
[Color figure can be viewed at wileyonlinelibrary.com]
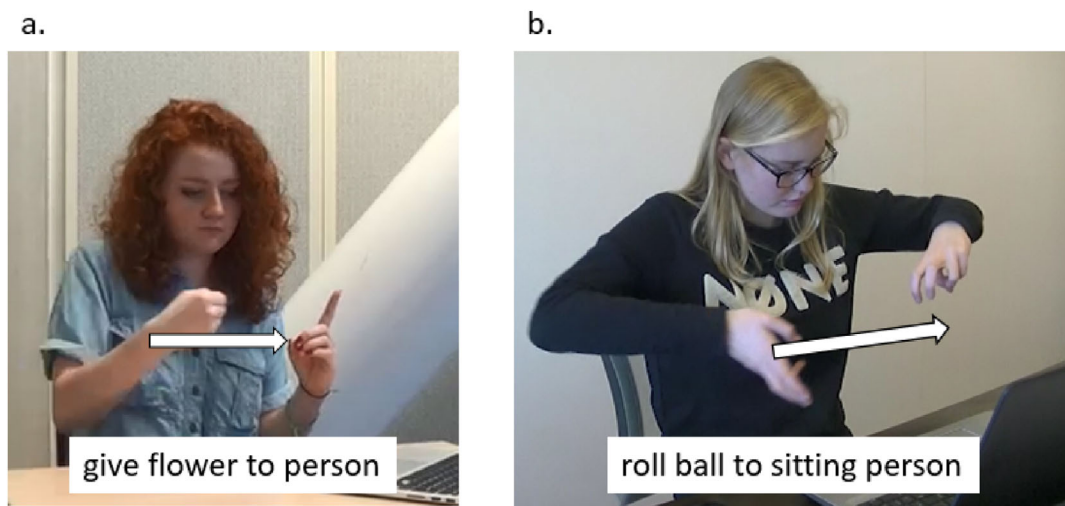
Note. M2L2 = second language in a second modality.

ACT-ON nor serial verb constructions had been explicitly taught prior to testing. Still, both strategies were regularly present in the input the learners received. Conversely, the benchmark group did not produce successive one-argument structures, while some participants in the M2L2 group did (e.g., GIVE-RECEIVE structures like the one presented in Example 4)—despite the fact that such structures had not been offered in the input.

Not surprisingly, some M2L2 participants provided responses containing mime and gestures when they did not know the lexical sign for a particular verb meaning. Yet, this avoidance strategy accounted for only a small proportion (4%) of the responses during the first sessions. Other strategies employed by the M2L2 participants to compensate for the lack of vocabulary knowledge included mouthing the verb, creating neologisms, replacing the verb, or simply omitting the verb from the sentence.

Analysis of M2L2 Learners' Individual Patterns and Strategies

Having presented the group results, we shall now zoom in on the behavior of individual participants as well as learner strategies associated with certain verb types or verbs.

The results obtained from an analysis per participant are provided in Supporting Information E. The graphs detail the distribution of responses during Year 1 (Sessions 2, 4, 8, and 12; 14 participants) and the first session of Year 2 (Session 13; 9 participants). Clearly, different learners employed different strategies in order to perform the task at a point in time at which the targeted structure was not mastered yet. To give just three examples: Participant 1 tended to replace the target verb by a plain verb, Participant 6 used gestures, and Participant 8 used successive one-argument structures. Furthermore, it can be seen that 6 out of 14 learners (Participants 4, 6, 10, 12, 13, and 14) showed high rates of verb modification (fully or partly modified verbs from a neutral perspective or modified verbs in a CA context) at the end of Year 1 (Session 12; 73–100%, which is actually close to the benchmark). It must be noted, however, that three of these six participants had previous knowledge of NGT. In contrast, Participants 1, 2, and 11 displayed a strikingly low production of the target structure in Session 12, with success rates between 7–20%. All participants ($n = 9$) who were filmed after 3 months in their second year (Session 13) showed an increase in verb modification, with the exception of Participant 11. This divergence can be explained by the fact that this participant, who followed the Speecht Text Captionist program, received less in-class instruction than the participants who followed the Teacher or Interpreter education program.

In the following, we first address whether different verb types possibly present us with different learner behaviors, that is, whether certain verbs were spatially modified earlier and more

FIGURE 8

M2L2 Performance of 11 Participants with No Previous Knowledge of NGT on Items That Evoked 90–100% Agreement Verbs from a Neutral Perspective or Agreement Carriers in the Benchmark Group
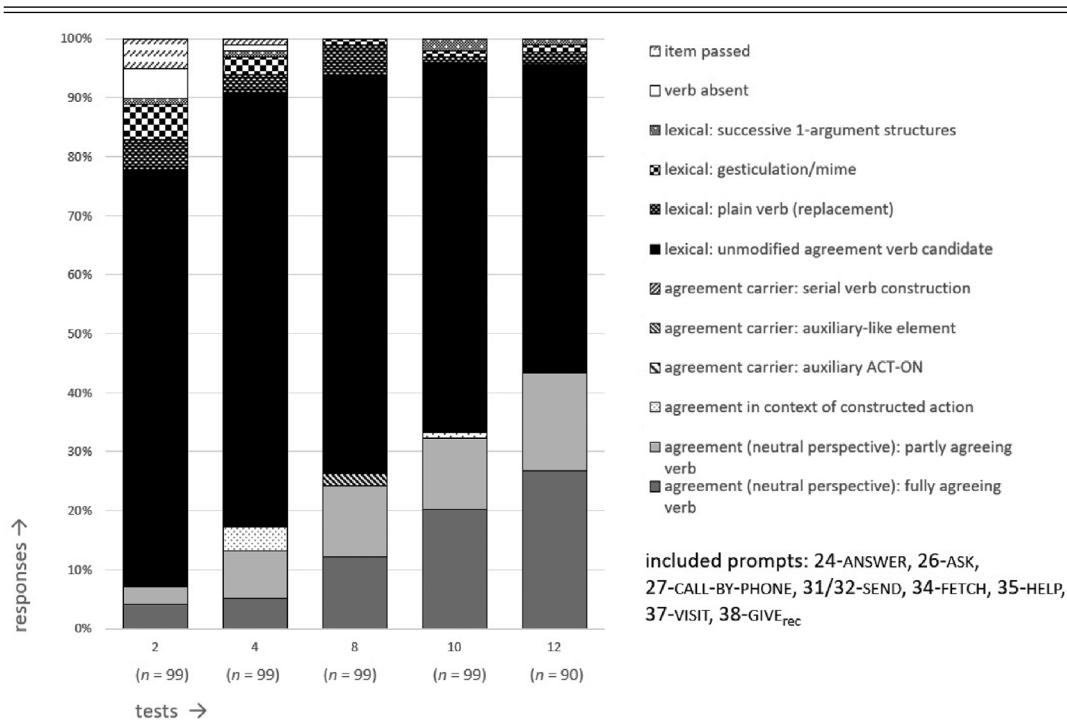
Note. M2L2 = second language in a second modality; NGT = Sign Language of the Netherlands.

consistently than other verbs (see "Verb Types" section). Subsequently, we describe a selection of typical learner strategies we noted repeatedly in the data (see "Omissions," "Overgeneralization," and "Simultaneous Production of GIVE and RECEIVE" sections). Besides telling us something about the behavior of L2 learners who acquire a language in a different modality, the recurrent patterns are of interest for practitioners in the field and have—to the best of our knowledge—not been documented before for M2L2 learners.

Verb Types. First, we asked whether verbs that express concrete transfer (Category 1 verbs like GIVE and THROW) were mastered earlier, for the simple reason that the movement component in these verbs is iconic (e.g., the act of giving involves a movement of the hand from the giver to the receiver). Indeed, we observed that at the end of Year 1, the percentage of modified forms was higher for these verbs than for abstract transfer verbs (e.g., CALL-BY-PHONE and VISIT)—with the exception of SEND, which yielded 80–90% modified forms. Remember, however, that SEND was the only verb meant to elicit y→1 forms (see "On the Special Status of First Person" section for discus-

sion). Notably, this verb was already modified by almost half of the M2L2 participants at an early stage (Item 32, Session 4).[16] It thus seems that iconicity helped the M2L2 learners in the acquisition of spatial modulation—in contrast to what has been demonstrated for L1 learners (Meier, 2002). Yet, we have to keep in mind that the Category 1 verbs were also those that were elicited by an image only, and while the image does not depict the movement, this may still have motivated the use of spatial modulation.

An item analysis of the nine Category 2 items (see Supporting Information C) revealed further interesting findings. First of all, the highly frequent verbs ASK and ANSWER were produced in a modified form in 40% and 30% of the responses, respectively, at the end of Year 1 (Session 12). This percentage may be higher than that for other abstract transfer verbs, but it was still surprisingly low, considering the frequent use of these (modified) verbs in the input from the teachers. Returning to the Category 2 verb SEND, additional analyses revealed that the M2L2 participants showed a high tendency to modify this verb without establishing a locus for the

FIGURE 9

Example of Unutilized Loci: The Established Loci IX_{3a} and IX_{3b} Are Not Used for the Modification of the Agreement Verb HELP [Color figure can be viewed at wileyonlinelibrary.com]

IX_{3a} TWO   BROTHER

IX_{3b} TWO   SISTER   HELP
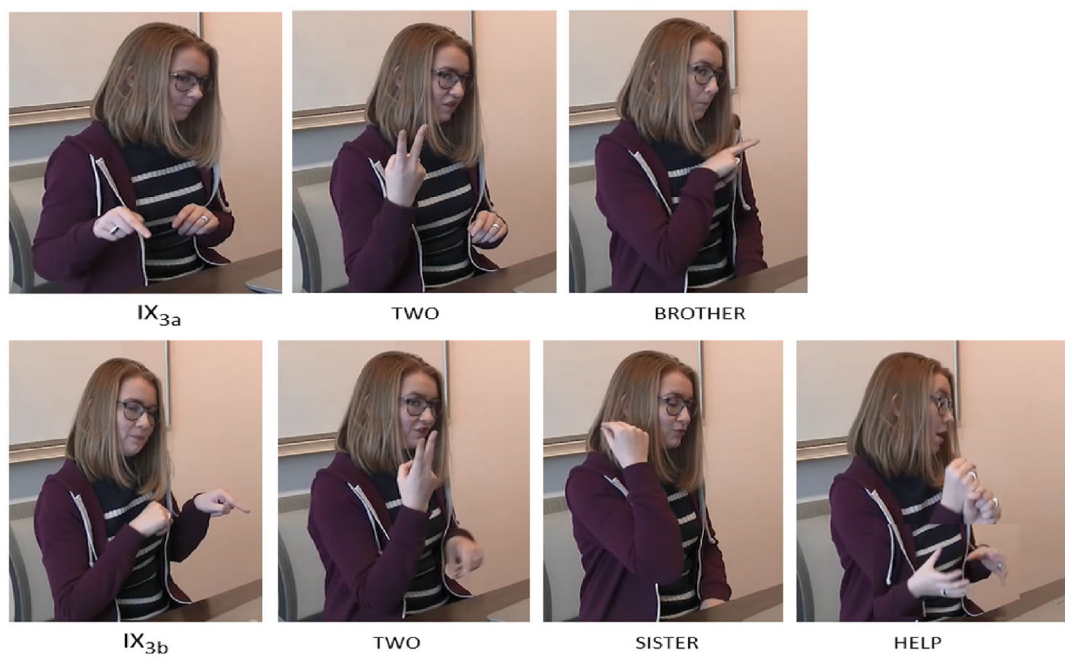
third-person subject—which is clearly different from the elicited x→y forms (see Supporting Information D). The benchmark group, in contrast, established a locus in space for the third-person subject prior to or after modifying the verb SEND in all cases.

Second, it is worth investigating whether the two backwards verbs in the sample (TAKE-AWAY and FETCH) were particularly challenging for the learners, as the mapping of grammatical role onto the begin and end point of the movement is reversed. However, no clear results emerged, as the two verbs behaved differently, which, again, is likely due to the fact that the transfer semantics is more concrete in TAKE-AWAY than in FETCH. At the end of Year 1, productions for both verbs showed 20% fully agreeing verbs from a neutral perspective—but while TAKE-AWAY involved 70% modification from the perspective of a character (CA), FETCH involved approximately 70% unmodified forms. In fact, the distribution observed for FETCH is very close to that observed for the regular agreement verb HELP.

Omissions.   Three types of omissions were observed in the data. The first and most common type of omission was locus omission. During the analysis, we noted an interesting difference be-

tween the benchmark participants and the M2L2 participants with regard to the use of established loci: In the M2L2 dataset, we identified multiple instances ($n = 78$) of 'unutilized loci.' That is, the learner assigned a locus to one referent or both referents but did not subsequently use these loci for verb modification. This is exemplified in Figure 9, where the signer does establish loci on the right and left side for the referents *two brothers* and *two sisters*, respectively, but then does not employ these loci for modifying the agreement verb HELP. Remember from "Optionality of Agreement" section that corpus data suggest that agreement is not always spelled out on verbs that can be modified. One might therefore argue that the observed locus omissions are actually target-like. Still, we think that for the learners analyzed here, this argument does not hold because such omissions (a) were not present in their input, and (b) were not observed in the benchmark data.

Interestingly, three learners consistently produced HELP with a movement toward their own body—that is, they produced a movement from a location in front of their body toward their body in contexts where a x→y form would be expected. In these productions, the learners thus omitted loci. Since these learners produced this form consistently, we assume that these were not instances
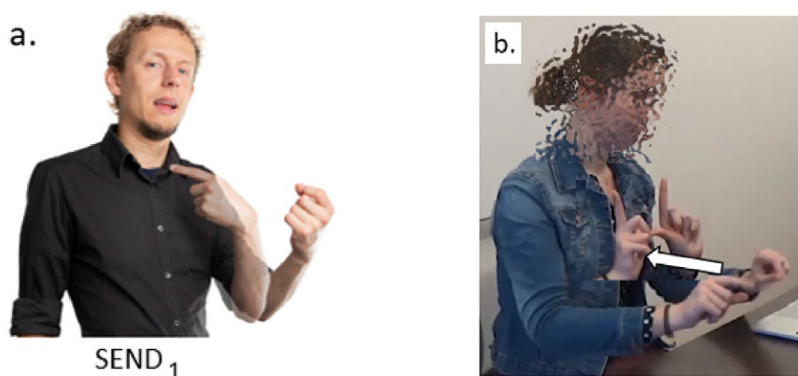
FIGURE 10
Execution of Correctly Modified Movement Path With Only One Hand (Partial Omission) [Color figure can be viewed at wileyonlinelibrary.com]

FIGURE 11
Omission of Orientation Component in Modified VerbsSEND₁ [Color figure can be viewed at wileyonlinelibrary.com]

of erroneous agreement, but rather phonological mistakes—that is, the learners produced an unmodified form with an incorrect movement component.[17]

A second type of omission is clearly modality-specific, as it concerned the nondominant hand. In her attempt to modify the verb HELP, the signer in Figure 10 executes the movement path with only one hand, while the other hand (her right hand) is already placed at the end locus corresponding to the object—that is, we observe partial omission of the movement component. We investigate this specific characteristic in a follow-up study with 54 novel learners.

A third type of omission concerns orientation. As explained in "Verb Classes" section, in some signs, the orientation of the hand(s) signals (object) agreement. In the sign SEND, for example, the fingertips are oriented toward the object (a first-person object in Figure 11a). The learner depicted in Figure 11b attempts to sign SEND₁ ("send

to me"). The path and hand-internal movement (opening of thumb and index finger) are present, but she fails to orient the fingertips toward the locus of the object (*me*).

Overgeneralization. Another type of error we observed in the data is overgeneralization, that is, erroneous application of the agreement mechanism. The learner in Figure 12b, for instance, uses a variant of the verb ASK that cannot be spatially modified (Variant 1 in Figure 12a) but modifies it by directing the movement and fingertips toward the object (herself). Instead, the learner should have used Variant 2 in Figure 12a, which can be modified to signal agreement by modifying the movement path.[18]

Simultaneous Production of GIVE and RECEIVE. The M2L2 data contained multiple striking examples of attempts to express the act of giving and receiving simultaneously, using both hands (see Figure 13). In all cases, the dominant hand executes

FIGURE 12

Overgeneralization: Plain VerbASK(1) Used in Spatially Modified Form [Color figure can be viewed at wileyonlinelibrary.com]
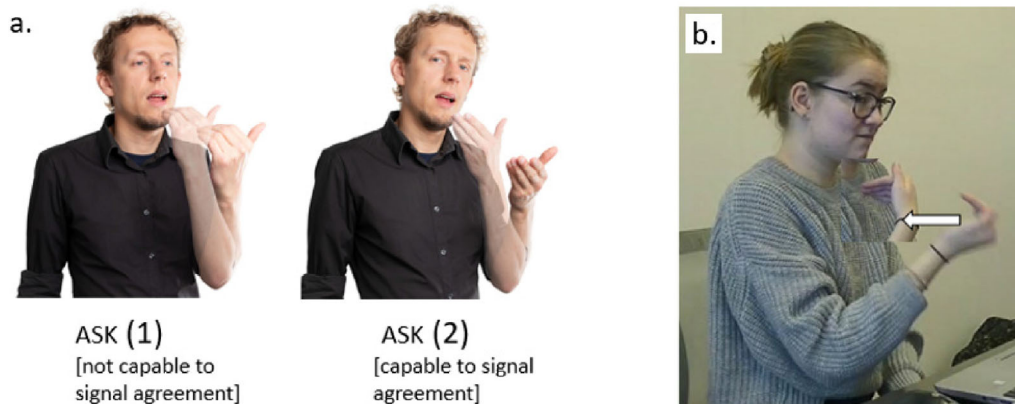

FIGURE 13

Attempts to Express the VerbGIVEand the Act of Receiving Simultaneously [Color figure can be viewed at wileyonlinelibrary.com]

the verb ($_{3a}$GIVE$_{3b}$) while the nondominant hand (which is stationary at locus 3b) represents the hand of the receiver. We did not find these constructions in the benchmark data, and they were certainly not present in the input the learners received. In a sense, this strategy is the simultaneous counterpart of the sequential one-argument structure presented in Example 4, which, as mentioned previously, was also observed in the M2L2 productions.

DISCUSSION

The present study was designed to investigate the acquisition of agreement verbs in M2L2 learners. The study yielded some interesting findings that—to the best of our knowledge—have not been documented before, such as omission and overgeneralization errors and use of the nondominant hand in ways not observed in the benchmark group (entity classifier, "receive" construc-

tion). The quantitative calculations indicate moderate to low production of instances of verb agreement after 1 year of instruction (204 in-class hours)—that is, a large proportion (almost 50%) of agreement verb candidates were produced in the unmodified citation form. This is in sharp contrast with the benchmark group (consisting of L1 signers and teachers), who produced an unmodified verb from the class of agreement verbs in less than 1% (4/462) of the responses. This allows us to tentatively conclude that verb agreement is difficult to acquire for M2L2 learners. Strikingly, the same M2L2 participants were quite successful in producing other constructions that make use of the signing space—namely, classifier constructions.

Impact of L1

In the introduction, we briefly touched upon the theoretical assumption that L2 learners might

use their existing linguistic knowledge to acquire a new language. It is assumed that cross-linguistic similarities (i.e., transfer) in particular would aid learners in the acquisition process (Ringbom, 2007). For sign language learners with a spoken language background, one could hypothesize that, given the different modalities, only few cross-linguistic similarities exist, and that this lack of similarities will result in a prolonged acquisition process.

Indeed, beyond the fact that Dutch, the L1 of the learners in our study, also marks subject agreement on verbs, the learners could not fall back on characteristics of their L1 when acquiring the spatial agreement system of NGT. The observation that (at least some of) the M2L2 learners failed to notice modified verb forms in the input might thus be related to the fact that for them, this type of spatial morphological marking was entirely unfamiliar. It is important to note that, during the first year, the students did not receive explicit rule explanation concerning agreement verbs. Still, numerous examples of modified forms of the verbs targeted in the present study were offered in the input,[19] and negative evidence was regularly provided in the form of recasts and, occasionally, explicit feedback. The observation that, in spite of provision of multiple examples, participants failed to notice the form–meaning mappings of verbs might be explained by the absence of cross-linguistic similarities in the L1 and the target language.

A first challenge the learners are faced with is the co-existence of different verb classes. The existence of a considerable number of nonmodifiable (plain) verbs likely confuses the learners and leads to the incorrect classification of verbs: an agreement verb classified as plain verb, and thus produced in an unmodified form, or a plain verb wrongly considered as agreement verb, and thus produced in a spatially modified form. Our data showed that the first type of misclassification was very common (but see Figure 12b for the other type), and that even concrete transfer verbs frequently remained unmodified. Of course, we cannot be sure whether the learners really misclassified a particular verb or whether they simply failed to apply the agreement mechanism.

The fact that NGT verbs, in contrast to Dutch verbs, agree with their object does not seem to impede learning. If the learners were indeed struggling with object agreement, then one would expect partly agreeing productions to be more likely to agree with the subject. This, however, was not the case. In fact, the begin locus (which is the subject locus in regular agreement verbs) was more

likely to be omitted. In these cases, the movement generally started in front of the signer's body (i.e., the learners produced a $1/\emptyset \rightarrow y$ form, where the benchmark produced a $x \rightarrow y$ form; see also "On the Special Status of First Person" section). Interestingly, this pattern aligns with an object-marking preference reported for many sign languages (e.g., Meir et al., 2007; Padden, 1988). However, it is unlikely that the learners were aware of this kind of optionality, as fully agreeing verb forms are ubiquitous in the input they receive from teachers and learning materials.[20]

An interesting observation in this context is the high rate of instances of 'nonutilized localization' in the dataset. One would expect that the localization mechanism, another characteristic modality-specific feature, would be equally challenging for M2L2 learners. However, data analysis showed that the participants commonly did establish loci for the referents involved in an event—that is, they were well aware of the fact that space can be used in this way. Yet oftentimes these loci remained unutilized, which indicates that learners were not yet aware that these loci can and should be used for anaphoric reference. This suggests that it is not the use of space per se that poses problems, but rather the copy mechanism that underlies spatial agreement. In "Possible Influence of Gestural Repertoire" section, we discussed that nonsigners are found to produce pointing gestures to arbitrary loci in space to introduce and refer to entities. There is, however, little evidence that nonsigners direct gestures other than pointing gestures from one location to the other to indicate the arguments of an event. So, et al. (2005) report that non-signers use space for coreference when producing action gestures, in particular when asked to describe a scene using gesture without speech (examples provided are 'kiss' and 'give')—but still "do not introduce all properties of language, or even all properties of spatial agreement systems, into their gestures" (p. 1,039). One could thus argue that there is some form of cross-linguistic similarity (i.e., transfer) between the learners' gestural repertoires and the sign language for the domain of localization, but only limited transfer for the domain of verb agreement. This would explain the different acquisition rate of both mechanisms.

Given (a) that for any spoken L1–sign L2 pair, the same (or very similar) limitations regarding the possibility of L1 transfer will apply, (b) that most mature sign languages are known to behave very much alike when it comes to the spatial modification of verbs (Meier, 2012), and assuming (c) that the gestural repertoire available to the sign

language learner will also be quite similar (e.g., use of pointing), we assume that the patterns we described will also characterize, at least to some extent, the acquisition process of other sign languages that are acquired as L2s. It is hoped that future studies on other sign languages, acquired by speakers of typologically different spoken languages, will allow us to evaluate whether this assumption is correct.

Our findings regarding the realization of object agreement suggest that having a spoken language as an L1 that features object agreement might not be much of an advantage—after all, our participants did better on object than on subject agreement. Another L1 characteristic that might potentially have an impact is a rich agreement system, that is, familiarity with the fact that all person features are spelled out by distinct markers. Studies on the M2L2 acquisition of, for example, Italian Sign Language or Turkish Sign Language might shed light on the impact of this particular grammatical property. However, it may well be the case that a potential impact of language-specific typological properties is concealed by a much stronger impact of the modality difference.

It must be kept in mind, of course, that details regarding the instruction the learner receives may also have an impact on the success in acquiring the system (see "Implications for Teaching Practice" section).

Comparison to L1 Acquisition of Spatial Agreement

Our conclusion that the acquisition of verb agreement poses challenges corroborates the prolonged path of acquisition observed in L1 learners (Baker et al., 2008). Like L1 learners, the M2L2 participants often produced unmodified (citation) forms, using lexical expressions or pronouns instead. In addition, L1 learners have also been reported to overgeneralize, that is, to occasionally spatially modify plain verbs (e.g., Hänel, 2005; Meier, 2002). Meier (2002) further pointed out that children show more reliable use of object agreement, which is also what we found (note, however, that Meier focused on agreement with present referents).

Still, there are some important differences. First, as mentioned in the previous section, our M2L2 learners were obviously capable of making use of abstract loci in space, but still left verbs unmodified (remember that most verb forms we elicited involved nonpresent referents). In contrast, L1 learners have been reported to modify verbs for present referents well before starting to use abstract loci (Loew, 1984; cf. Hänel,

2005). In Loew's (1984) study, children occasionally produced an apparently agreeing verb, but failed to identify the argument with which the verb agrees—which is the opposite of what we observed. Second, Meier (1982) showed that iconic properties of certain agreeing verbs did not facilitate the acquisition of verb agreement, that is, GIVE was not acquired earlier than, for example, ASK. Once again, this is different from what our data suggest, as concrete transfer verbs were more likely to be modified than abstract or metaphorical transfer verbs.

However, the comparison should be exercised with due caution, since the present study examined short responses without context, while studies on L1 acquisition generally investigated language use in natural contexts or examined longer stretches of text (e.g., narratives).

On the Special Status of First Person

Despite the fact that we only elicited two verb forms with a first-person argument (an object), two interesting observations can be made regarding the use of first-person forms, or rather the use of the signer's body. First, as pointed out in "Impact of L1" section, when producing partly agreeing forms, the learners were more likely to omit the (third-person) subject locus than the object locus. In this case, they started the path movement in front of their body, that is, at the first-person locus. While the produced forms were thus not target-like (i.e., not the expected x→y form), they still followed a strategy that has been referred to as 'body as subject' (Meir et al., 2007). That is, even outside of CA, mapping a third-person subject onto one's body is considered a default strategy. Among other things, Meir et al. (2007) hypothesized that this may explain the primacy of object marking over subject marking across sign languages (subject agreement is more likely to be omitted, and there are verbs that can only agree with their object). Of course, the learners were not aware of this mapping strategy, but their experience with a visual–spatial language may still have led them to realize that "[w]hen we use our body and hands to conceptualize an event, the body can represent only one argument, thus forcing us to separate one argument from all other aspects of the event" (Meir et al., 2007, p. 561)—and this argument is the subject (this insight has recently been formalized by Oomen, 2017, for NGT verbs).

Second, we also witnessed the special status of the first-person locus when it comes to the end point of the path movement, that is, the object

locus in regular agreement verbs (for a detailed discussion of first-person object forms in ASL, and the impact of such forms on person distinctions, see Hou & Meier, 2018). Remember that we observed that the target-like y→1 form SEND appeared earlier in the M2L2 productions than the x→y forms. Obviously, the presence of a first-person object blocks the body-as-subject strategy, but the signers still successfully mapped the first-person argument onto their body (i.e., the locus in front of their body).[21] It is quite possible that first-person object forms are potentially more clear in the form of agreement, since the locus needed for first person is given, while for other (nonpresent) referents, a locus must be established and remembered in order to be used correctly. In this way, the first-person forms might offer the opportunity to disentangle the need for localization from agreement as a process.[22] This finding aligns with the phases emerging sign languages have been observed to go through. Padden et al. (2010) noted that in two emerging sign languages (Israeli Sign Language and Al-Sayyid Bedouin Sign Language), the oldest signers preferred to move a sign along the sagittal axis, that is, from or toward the body (the 1→y form and the y→1 form—remember that the former was not elicited in the present study). Only as the languages matured, verb modification from one side of the signing space to the other, that is, along the horizontal axis, increased (the x→y form; see also Meir, 2012).

Taken together, the correct use as well as the overuse of the first-person locus (for subjects and objects) observed in the M2L2 learners are in line with what has been described for the synchronic (body as subject) and the diachronic (preference for sagittal axis) use of that specific locus, that is, of the signer's body.

Limitations

We are aware that our research has some limitations. First of all, some of the selected target verbs (e.g., GIVE, ROLL_ball, TAKE-AWAY) did not provide clear evidence that the learner understood the system of verb agreement, since these verbs, and the way they were elicited (i.e., by images), are likely to evoke verb modification from the perspective of a character mapped on the signer's body (i.e., CA). While agreement in the context of CA is in principle target-like—and was indeed also used by the benchmark group for these verbs—it is not easily distinguished from a gestural rendition (i.e., enactment), and these target verbs were therefore less suitable for demonstrating under-

standing of the verb agreement system. In fact, the gestural enactments we observed sometimes resembled NGT signs, which was problematic during the coding process. Although we were very conservative in our coding, this could have led to an overestimation of the learners' performances.

A second limitation concerns the specific agreement forms our stimuli elicited. Remember that the target items featured only x→y forms and y→1 forms, and that the latter were limited to one verb (SEND). That is, we elicited neither constructions with a second-person subject or object nor constructions with a first-person subject. These gaps have practical reasons. First, the study presented here is part of a larger project on the M2L2 acquisition of the use of space, with many more stimuli targeting other construction types. Second, first- and second-person forms are not easily elicited by images, which in general is the preferred elicitation strategy. It is possible that other forms of the paradigm (e.g., person combinations like 1→y or x→2) would yield further interesting results, no matter whether they align with or differ from the results reported here. We hope to include such forms in future research.

Despite these limitations, we believe that the present study, being the first longitudinal study to investigate the acquisition of verb agreement in M2L2 learners, contributes to our knowledge of M2L2 learning and serves as a stepping-stone for future studies.

Implications for Teaching Practice

The results of our study have important implications for teaching practice—not only for NGT but also for other sign languages. Clearly, at the end of Year 1, the M2L2 learners were still struggling with the spatial modification of those verbs that allow it. Even forms that were offered in modified form repeatedly and explicitly in the input, such as ASK and ANSWER, remained unmodified in the productions of some of the learners. This is striking, as other spatial predicates (i.e., classifier predicates) were picked up from the input at an early point. This indicates that learners might need additional explicit rule explanation with regard to the verb agreement system, given the lack of cross-linguistic similarities in the two languages. Given a natural tendency to apply L1 strategies (see "Impact of L1" section), learners who have Dutch as their L1 might initially focus on word order to comprehend the argument structure of an NGT verb, since Dutch uses word order (subject–verb–object) as one of the mechanisms to express argument structure (in

addition to case marking on pronouns, which is absent in NGT). It might well be the case that the NGT word order (subject–object–verb), combined with contextual cues, provides learners enough information to determine the meaning of the message, resulting in a failure to notice the form–meaning mapping present in the verb form. Drawing the learners' attention to the form–meaning mapping of the agreement verb paradigm (i.e., providing form-focused instruction) might help learners to see the modification of the movement and/or orientation parameters. The challenge will be to offer such explanation at the appropriate point in time, such that it will help rather than impede the acquisition process (cf. Hammerly, 1991).

At the same time, teachers should be aware of the learners' tendency to overuse neutral space at the expense of presenting the scene from the perspective of a character. What we observed here is a sort of trade-off that proved challenging for the learners: Once they correctly applied spatial modification from a neutral perspective (i.e., using arbitrary locations in signing space, see Figure 2c), they sometimes failed to employ CA (Figure 2d), which was judged as more appropriate by our L1 consultants. This implies that, in addition to teaching the rules for verb agreement, the choice of the appropriate perspective also requires attention in the curriculum. Explicit instruction regarding contexts that call for CA and contexts that call for localization of entities in neutral space might aid learners to select the most appropriate strategy.

CONCLUSION

In this article, we provided a quantitative and qualitative description of the acquisition of the NGT agreement verb system by M2L2 leaners. From our investigation, we can conclude that, at least for some learners, the regularities underlying this system were difficult to master, in spite of the fact that the input provided by the teachers contained numerous examples of spatially modified verbs. The difficulties of mastering the agreement system might be due to the different modality. It is, for instance, likely that the co-existence of different verb classes in sign languages—with only a subset of verbs showing agreement—impedes the process of recognizing the rules governing the verb agreement system in the input.

We are currently in the process of investigating whether different didactics (e.g., input flood, explicit focus on form) may aid learners in their learning process. The research reported here provides useful information with regard to the timing of these treatments as well as the methodology.

NOTES

[1] Following standard conventions, NGT signs are glossed in (English) SMALL CAPS. If multiple words are needed to gloss a sign, hyphens are used. The gloss IX refers to a pointing sign, IX:1 refers to a pointing sign toward the signer's body (meaning "I"). Agreement markers on verbs are represented by subscripts preceding (begin point) and following (end point) the gloss; for instance, $_1$GIVE$_2$ involves a movement path from close to the signer's body (Locus 1) toward the addressee (Locus 2), yielding the meaning "I give you."

[2] Initially, Padden (1988) termed this class "inflecting verbs." Later, Padden (1990) adopted the term "agreement verbs" to account for the fact that plain verbs can inflect for aspect.

[3] Note that some researchers have argued against analyzing spatial loci as grammatical morphemes signalling subject and object, arguing instead that spatial modification results from the incorporation of gestures. That is, spatially modified verbs are considered blends of a verb stem and gestural points, and are thus referred to as "indicating verbs" (e.g., Liddell, 2000, 2003; Schembri, Cormier, & Fenlon, 2018). Still, the resulting modified forms are grammatical entities; they are not outside the grammar (see Schembri et al., 2018). See Pfau et al. (2018) for a recent discussion of various theoretical approaches.

[4] Published article based on a seminal conference presentation: Bos (1998). An analysis of main verb agreement and auxiliary agreement in NGT within the theory of Conceptual Semantics (Jackendoff 1990). Paper presented at the Sixth International Conference on Theoretical Issues in Sign Language Research, Washington DC, USA.

[5] Legeland (2016) used conversational data from the Corpus NGT. An analysis of 393 "agreement verb candidates," produced by 52 L1 signers, revealed that 41.7% ($n = 164$) of the tokens were unmodified for subject

and 35.4% ($n = 139$) were unmodified for object. Unfortunately, in her presentation of results, Legeland did not distinguish between unmodified and partially modified verb forms. Note that similar observations regarding the optionality of agreement, also based on corpus data, have been made for Australian Sign Language (De Beuzeville, Johnston, & Schembri, 2009) and British Sign Language (Fenlon, Schembri, & Cormier, 2018). In contrast, a recent study based on data from the German Sign Language corpus finds almost no unambiguous cases of agreement verbs that are not spatially modified (Oomen, 2020), suggesting that sign languages may differ from each other when it comes to the optionality of agreement.

[6] Published article based on a seminal conference presentation: Bos (1996). Serial verb constructions in Sign Language of the Netherlands (SLN). Paper presented at the Fifth International Conference on Theoretical Issues in Sign Language Research, Montreal, Canada.

[7] The M2L2 acquisition of other spatial devices—in Norwegian Sign Language and NGT, respectively—is addressed in Ferrara & Nilsson (2017) and Boers–Visker & van den Bogaerde (2019). For overviews of M2L2 acquisition, see Quinto–Pozos (2011), Woll (2013), and Chen Pichler & Koulidobrova (2015)

[8] Recall from the "Optionality of Agreement" section that—at least in some sign languages—agreement is not obligatory, and syntactic relations can be expressed using other devices. However, this potential optionality is not taken into account in the description of the acquisition process offered by Baker et al. (2008). Consequently, their findings regarding omission of agreement where it might be expected should be taken with a grain of salt. We thank an anonymous reviewer for making us aware of this point.

[9] Two studies that report on hearing nonsigners' spatial modulation of gestures to indicate events that involve transfer are Casey (2003) and Carrigan (2016). Casey (2003) reported that nonsigners use 'directionality' as response to stimuli showing people interacting with each other. However, it is not clear whether gestural responses (to prompts aimed at evoking gestures to represent abstract transfer, e.g., *scold*, *warn*) that were coded as directional by Casey actually resembled abstract agreement verbs (involving an abstract movement path between locations in space). Carrigan (2016) observed that some nonsigners use spatially modified gestures to indicate events of concrete transfer, such as *pushing* or *kicking*. Her investigation did not include verbs of abstract transfer.

[10] The Institute for Sign, Language & Deaf Studies does not require a minimum level of knowledge of NGT for entering the program. As a consequence, the majority of learners start the program with no or minimal NGT skills.

[11] Unfortunately, we had to remove the data from a fourth L1 signer from the set, as this signer mainly used sign-supported Dutch to express the particular targets aimed to elicit verb agreement. As a consequence, 81% of the responses did not include verb agreement.

[12] For the interested reader, supplementary materials are provided in the online repository DANS: https://doi.org/10.17026/dans-x6z-4nvb

[13] Mouthings are silently articulated words from the surrounding spoken language that accompany signs; they are omnipresent in NGT (Bank, 2014).

[14] In this analysis, we focused on the data obtained during the first year, since some learners did not participate (fully) during Year 2. Therefore, data collected during the second year could only be used for the qualitative analysis; the graphs detail 5 of the 12 sessions (Sessions 2, 4, 8, 10, and 12) in which the complete sets of targets ($n = 15$) was presented. Recall that the other sessions contained only 7 targets (see Online Supporting Information A).

[15] A whole-entity-classifier predicate contains a handshape that denotes an entity, such as a standing person (Figure 7a) or a sitting person (Figure 7b; Zwitserlood, 2003); the dominant hand is the hand signers prefer to use in one-handed signs, usually the right hand in right-handed signers and the left hand in left-handed signers. The constructions depicted in Figure 7 are reminiscent of so-called 'indexical classifiers' attested in some East Asian sign languages, whereby a handshape replaces an agreement locus in neutral space (Fischer & Osugi, 2000). We thank one of the reviewers for pointing out this parallel.

[16] Interestingly, the other prompt containing the verb SEND, Prompt 31, did not evoke the production of a modified verb in any of the participants during this session, and evoked a lower degree of modification in general during the first year. This can be explained by the fact that Prompt 31 is more complex than Prompt 32 in that it contains a dual object (e.g., "me and my brother") while the object in Prompt 32 is singular.

[17] Some learners directed other verbs with a third-person subject and object (VISIT, GIVE, CALL-BY-PHONE, ANSWER) toward their own body, which implies a first-person object. Note that for the concrete transfer verb GIVE, in particular, this movement is counter-iconic. In contrast to HELP, we did not find a recurrent pattern regarding these four verbs. Possibly, the forms we identified are forms of erroneous agreement, but it is equally possible that these are actually incorrectly articulated unmodified verbs.

[18] Another type of overgeneralization, which is beyond the scope of this article but is worth mentioning, was observed in the verb SEND. Analysis revealed is that 11 learners combined the verb SEND with a handle classifier, a handshape denoting how an object is held. Such a classifier is commonly observed with the verb GIVE (and at the end of the first year [Session 12], 62% of the GIVE items indeed contained a classifier). Use of a handle classifier with SEND, however, is clearly ungrammatical. We noted 40 such instances of overgeneralization (16% of the responses featuring the verb SEND).

[19] In order to obtain information on the input, we analyzed 15% of the homework assignments offered to first-year students, which are all offered in NGT. This randomly selected sample ($n = 27$) contained a total of 119 modified agreement verbs. Only a small

number of agreement verb candidates ($n = 8$) was unmodified. In addition, we asked the NGT teachers working at the Institute for Sign, Language & Deaf Studies whether they intentionally use modified agreement verbs during NGT classes. Without exception, these teachers ($n = 11$) self-reported intentionally using modified forms, half of them more than five times in each class.

[20] They might, however, occasionally encounter non- or partly modified forms in interactions with members of the deaf community or in NGT materials that can be found online.

[21] Remember that there were also three signers who consistently produced the verb HELP in the Ø→1 form, that is, with movement toward their body (while the target was the x→y form). In the section on omissions as a strategy, we speculated that this might be a phonological error. In principle, however, these examples might also exemplify the preference for the sagittal axis.

[22] We thank one of the reviewers for bringing this point to our attention and also for pointing out the relevance of the recent study by Hou and Meier (2018).

REFERENCES

Baker, A., van den Bogaerde, B., & Woll, B. (2008). Methods and procedures in sign language acquisition studies. In A. Baker & B. Woll (Eds.), *Sign language acquisition* (pp. 1–50). Philadelphia/Amsterdam: John Benjamins.

Bank, R. (2014). *The ubiquity of mouthings in NGT: A corpus study.* (Doctoral dissertation). Radboud University Nijmegen, the Netherlands. Accessed 1 September 2020 at https://www.lotpublications.nl/Documents/376_fulltext.pdf

Boers–Visker, E., & van den Bogaerde, B. (2019). Learning to use space in the L2 acquisition of a signed language: Two case studies. *Sign Language Studies, 19*, 410–452.

Bos, H. (1990). Person and location marking in Sign Language of the Netherlands: Some implications of a spatially expressed syntactic system. In S. Prillwitz & T. Vollhaber (Eds.), *Current trends in European sign language research: Proceedings of the 3rd European Congress on Sign Language Research, Hamburg, July 26–29, 1989* (pp. 231–246). Hamburg, Germany: Signum Verlag.

Bos, H. (1993). Agreement and prodrop in Sign Language of the Netherlands. In F. Drijkoningen & K. Hengeveld (Eds.), *Linguistics in the Netherlands 1993* (pp. 37–48). Philadelphia/Amsterdam: John Benjamins.

Bos, H. (1994). An auxiliary verb in Sign Language of the Netherlands. In I. Ahlgren, B. Bergman, & M. Brennan (Eds.), Papers from the Fifth International Symposium on Sign Language Research, Volume I: *Perspectives on sign language structure* (pp. 37–53). Durham, UK: ISLA.

Bos, H. (2016). Serial verb constructions in Sign Language of the Netherlands. *Sign Language & Linguistics, 19*, 238–251.

Bos, H. (2017). An analysis of main verb agreement and auxiliary agreement in NGT within the theory of Conceptual Semantics (Jackendoff 1990). *Sign Language & Linguistics, 20*, 228–252.

Carrigan, E. (2016). *An experimental investigation of the factors supporting the emergence of spatial agreement in Nicaraguan Sign Language.* (Unpublished doctoral dissertation). University of Connecticut, Storrs, CT.

Casey, S. (2003). *"Agreement" in gestures and signed languages: The use of directionality to indicate referents involved in actions.* (Unpublished doctoral dissertation). University of California, San Diego, CA.

Chen Pichler, D., & Koulidobrova, E. (2015). Acquisition of sign language as a second language. In M. Marschark & P. Spencer (Eds.), *The Oxford handbook of deaf studies in language* (pp. 218–230). Oxford: Oxford University Press.

Couvee S., & Pfau, R. (2018). Structure and grammaticalization of serial verb constructions in Sign Language of the Netherlands—A corpus-based study. *Frontiers in Psychology, 9*, 993.

Crasborn, O., & Sloetjes, H. (2008). Enhanced ELAN functionality for sign language corpora. In *Proceedings of LREC 2008, 6th International Conference on Language Resources and Evaluation* (pp. 39–43). Accessed 1 August 2019 at http://pubman.mpdl.mpg.de/pubman/item/escidoc:61042/component/escidoc:61043/Crasborn_2008_enhanced.pdf

De Beuzeville, L., Johnston, T., & Schembri, A. (2009). The use of space with indicating verbs in Auslan: A corpus-based investigation. *Sign Language & Linguistics, 12*, 53–82.

Engberg–Pedersen, E. (1993). *Space in Danish Sign Language: The semantics and morphosyntax of the use of space in a visual language.* Hamburg, Germany: Signum Verlag.

Ergin, R., Meir, I., Aran, D., Padden, C., & Jackendoff, R. (2018). The development of argument structure in Central Taurus Sign Language. *Sign Language Studies, 18*, 612–639.

Fenlon, J., Cooperrider, K., Keane, J., Brentari, D., & Goldin–Meadow, S. (2019). Comparing sign language and gesture: Insights from pointing. *Glossa: A Journal of General Linguistics, 4*, 1–26.

Fenlon, J., Schembri, A., & Cormier, K. (2018). Modification of indicating verbs in British Sign Language: A corpus-based study. *Language, 94*, 84–118.

Ferrara, L., & Nilsson, A.–L. (2017). Describing spatial layouts as an L2M2 signed language learner. *Sign Language & Linguistics, 20*, 1–26.

Fischer, S. D., & Osugi, Y. (2000, July). *Thumbs up vs. giving the finger: Indexical classifiers in Japanese Sign Language.* Paper presented at Theoretical Issues in Sign Language Research 7, Amsterdam, the Netherlands.

Goldin–Meadow, S. (2003). *Hearing gesture: How our hands help us think.* Cambridge, MA: Belknap Press.

Hammerly, H. (1991). *Fluency and accuracy.* Clevedon, UK: Multilingual Matters.

Hänel, B. (2005). *Der Erwerb der Deutschen Gebärdensprache als Erstsprache. Die frühkindliche Sprachentwicklung von Subjekt und Objektverbkongruenz in DGS* [The acquisition of German Sign Language as first language: The development of subject and object agreement in DGS in early childhood]. Tübingen, Germany: Narr.

Hou, L., & Meier, R. P. (2018). The morphology of first-person object forms of directional verbs in ASL. *Glossa: A Journal of General Linguistics, 3,* 1–44.

Legeland, I. (2016). *Agree? Or not? Congruentie in de Nederlandse Gebarentaal—een corpus-gebaseerd onderzoek* [Agreement in Sign Language of the Netherlands—A corpus-based study] (Unpublished BA thesis). University of Amsterdam, the Netherlands.

Liddell, S. (2000). Indicating verbs and pronouns: Pointing away from agreement. In K. Emmorey & H. Lane (Eds.), *The signs of language revisited: An anthology to honor Ursula Bellugi and Edward Klima* (pp. 303–320). Mahwah, NJ: Lawrence Erlbaum.

Liddell, S. (2003). Sources and meaning in ASL classifier predicates. In K. Emmorey (Ed.), *Perspectives on classifier constructions in sign languages* (pp. 199–220). Mahwah, NJ: Lawrence Erlbaum.

Lillo–Martin, D. (2012). Utterance reports and constructed action. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (pp. 365–387). Berlin: De Gruyter Mouton.

Lillo–Martin, D., & Meier, R. (2011). On the linguistic status of "agreement" in sign languages. *Theoretical Linguistics, 37,* 95–141.

Loew, R. (1984). *Roles and reference in American Sign Language: A developmental perspective.* (Unpublished doctoral dissertation). University of Minnesota, Minneapolis, MN.

Mathur, G., & Rathmann, C. (2012). Verb agreement. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (pp. 136–157). Berlin: De Gruyter Mouton.

Meier, R. (1982). *Icons, analogues and morphemes: The acquisition of verb agreement in American Sign Language.* (Unpublished doctoral dissertation). University of California, San Diego, CA.

Meier, R. (2002). The acquisition of verb agreement: Pointing out arguments for the linguistic status of agreement in signed languages. In G. Morgan & B. Woll (Eds.), *Directions in sign language acquisition* (pp. 115–142). Philadelphia/Amsterdam: John Benjamins.

Meier, R. (2012). Language and modality. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (pp. 574–601). Berlin: De Gruyter Mouton.

Meier, I. (2002). A cross-modality perspective on verb agreement. *Natural Language & Linguistic Theory, 20,* 413–450.

Meir, I. (2012). The evolution of verb classes and verb agreement in sign languages. *Theoretical Linguistics, 38,* 145–152.

Meir, I., Padden, C. A., Aronoff, M., & Sandler, W. (2007). Body as subject. *Journal of Linguistics, 43,* 531–563.

Morgan, G., Barrière, I., & Woll, B. (2006). The influence of typology and modality on the acquisition of verb agreement morphology in British Sign Language. *First Language, 26,* 19–43.

Newport, E., & Meier, R. (1985). The acquisition of American Sign Language. In D. Slobin (Ed.), *The crosslinguistic study of language acquisition* (pp. 881–938). Hillsdale, NJ: Lawrence Erlbaum.

Oomen, M. (2017). Iconicity in argument structure: Psych-verbs in Sign Language of the Netherlands. *Sign Language & Linguistics, 20,* 55–108.

Oomen, M. (2020). *Iconicity as a mediator between verb semantics and morphosyntactic structure: A corpus-based study on verbs in German Sign Language* (Doctoral dissertation). University of Amsterdam, the Netherlands. Accessed 1 September 2020 at https://www.lotpublications.nl/Documents/557_fulltext.pdf

Özyürek, A. (2012). Gesture. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (pp. 626–646). Berlin: De Gruyter Mouton.

Padden, C. (1988). *Interaction of morphology and syntax in American Sign Language.* New York: Garland Publishing.

Padden, C. (1990). The relation between space and grammar in ASL morphology. In C. Lucas (Ed.), *Sign language research: Theoretical issues* (pp. 118–132). Washington, DC: Gallaudet University Press.

Padden, C., Meir, I., Aronoff, M., & Sandler, W. (2010). The grammar of space in two new sign languages. In D. Brentari (Ed.), *Sign languages* (pp. 570–592). Cambridge: Cambridge University Press.

Pfau, R., Salzmann, M., & Steinbach, M. (2018). The syntax of sign language agreement: Common ingredients, but unusual recipe. *Glossa, 3,* 1–46.

Quadros, R. M., & Quer, J. (2008). Back to back(wards) and moving on: On agreement, auxiliaries and verb classes in sign languages. In R. M. Quadros (Ed.), *Sign languages: spinning and unraveling the past, present, and future.* Petrópolis: Editora Arara Azul.

Quadros, R., & Lillo-Martine, D. (2007). Gesture and the acquisition of verb agreement in sign languages. In H. Caunt-Nulton S. Kulatilake & I. Woo (Eds.). *Proceedings of the 31st Boston University Conference on Language Development (BUCLD),* (pp. 520–531). Somerville, MA: Cascadilla Press.

Quinto–Pozos, D. (2011). Teaching American Sign Language to hearing adult learners. *Annual Review of Applied Linguistics, 31,* 137–158.

Quinto–Pozos, D., & Parrill, F. (2015). Signers and co-speech gesturers adopt similar strategies for portraying viewpoint in narratives. *Topics in Cognitive Science, 7,* 12–35.

Rathmann, C., & Mathur, G. (2002). Is verb agreement the same crossmodally? In R. Meier, K. Cormier, & D. Quinto–Pozos (Eds.), *Modality and structure in signed and spoken languages* (pp. 370–404). Cambridge: Cambridge University Press.

Ringbom, H. (2007). *The importance of cross-linguistic similarity in foreign language learning: comprehension, learning and production.* Clevedon, UK: Multilingual Matters.

Sapountzaki, G. (2012). Agreement auxiliaries. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign language: An international handbook* (pp. 204–226). Berlin: De Gruyter Mouton.

Schembri, A., Cormier, K., & Fenlon, J. (2018). Indicating verbs as typologically unique constructions: Reconsidering verb "agreement" in sign languages. *Glossa, 3*, 1–40.

Senghas, A., Coppola, M., Newport, E., & Supalla, T. (1997). Argument structure in Nicaraguan Sign Language: The emergence of grammatical devices. In E. Hughes, M. Hughes, & A. Greenhill (Eds.), *Proceedings of the 21st Boston University Conference on Language Development* (pp. 550–561). Somerville, MA: Cascadilla Press.

So, W. C., Coppola, M., Licciardello, V., & Goldin–Meadow, S. (2005). The seeds of spatial grammar in the manual modality. *Cognitive Science, 29*, 1029–1043.

van den Bogaerde, B. (2000). *Input and interaction in deaf families.* (Doctoral dissertation). University of Amsterdam, the Netherlands.

Wilbur, R. B. (2013). The point of agreement: Changing how we think about sign language, gesture, and agreement. *Sign Language & Linguistics, 16*, 221–258.

Woll, B. (2013). Second language acquisition of sign language. In C. A. Chapelle (Ed.), *The encyclopedia of applied linguistics.* Hoboken, NJ: Blackwell Publishing.

Zwets, M. (2014). *Locating the difference: A comparison between Dutch pointing gestures and pointing signs in Sign Language in the Netherlands* (Doctoral dissertation). Radboud University, Nijmegen. Accessed 1 September 2020 at https://www.lotpublications.nl/Documents/351_fulltext.pdf

Zwitserlood, I. (2003). *Classifying hand configurations in Nederlandse Gebarentaal* (Doctoral dissertation). University of Utrecht, the Netherlands. Accessed 1 November 2020 at https://www.lotpublications.nl/Documents/078_fulltext.pdf

Zwitserlood, I., & van Gijn, I. (2006). Agreement phenomena in Sign Language of the Netherlands. In P. Ackema, P. Brandt, M. Schoorlemmer, & F. Weerman (Eds.), *Arguments and agreement* (pp. 195–229). Oxford: Oxford University Press.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.