Iconicity in argument structure

Psych-verbs in Sign Language of the Netherlands

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A long tradition of psych-verb research in spoken languages has demonstrated that they constitute a class of their own, both semantically and syntactically. This study presents a description and analysis of psych-verbs in Sign Language of the Netherlands (NGT) in order to investigate whether this verb type displays comparable peculiarities in sign languages. The study is primarily based on data from the Corpus NGT (Crasborn et al. 2008). Firstly, the data indicate that all psych-verbs in NGT select a subject Experiencer. Secondly, it is shown that there is an iconic property of psych-verbs in NGT that lays bare a conceptual link between psychological states and locative relations: body-anchoring. The location singled out by the place of articulation of a psych-verb is associated with the metaphoric location of an emotion, or a type of behavior associated with the expression of an emotion. It is furthermore argued that the body as a whole iconically represents the container of a psychological state. The body is analyzed as a possessive determiner that may receive a first person specification as a consequence of body-anchoring. The data support such an analysis, as they suggest that sentences without an overt Experiencer yield a default first person interpretation. Thus, it is claimed that iconicity affects sentence structure and as such should be incorporated into the formal grammar system. Given that body-anchoring is the source of the effects mentioned above, it may be hypothesized that psych-verbs in NGT do not constitute a class of its own, but rather belong to a larger class of iconically motivated body-anchored verbs that share the properties mentioned above.

Keywords: psych-verbs, Experiencer, iconicity, body-anchoring, Sign Language of the Netherlands, corpus

1. Introduction

Psych-verbs have long been the subject of intense scrutiny due to their seemingly unusual syntactic behavior: cross-linguistically, the thematic relations of

Experiencer and Theme[1] are often found to participate in different argument structure patterns. In (1a), for instance, the Experiencer argument selected by *adore* maps onto subject position, while the Theme maps onto object position. In contrast, the psych-verb *amuse* in (1b) selects an object Experiencer and a subject Theme.

(1) a. I adore cats.
     b. Cats amuse me.

Many linguists have proposed solutions to this 'psych-problem'. However, the discussion has been driven almost exclusively by spoken language research. This article, therefore, presents a description and analysis of psych-verbs in a sign language, namely Sign Language of the Netherlands (*Nederlandse Gebarentaal*; NGT). Following Levin (1993), I define 'psych-verbs' as verbs that denote an emotional (psychological) state, or the bringing about of a change in emotional state. Verbs of mental activities, such as *know* or *think*, and verbs of perception, such as *smell* or *see*, are thus excluded. This is a semantic definition; part of the aim of the investigation is to assess whether psych-verbs (as defined above) also constitute a separate verb class syntactically.

   The description presented in this article is primarily based on corpus data, although the results of a small grammaticality judgment task complement the findings. The data clearly indicate that NGT psych-verbs do not appear in constructions with an object Experiencer as in (1b). In the analysis, I argue that the lack of such constructions is an effect of the iconic properties of psych-verb forms in NGT, proposing a structural representation of psych-verb constructions that integrates insights from the study of both signed and spoken languages.

   Section 1.1 sets the stage with a brief discussion of several prominent and oft-cited solutions to the psych-problem. I discuss the handful of works that have examined psych-verbs in sign languages in Section 1.2. Sign-language specific terminology relevant to the discussion is introduced in Section 1.3. Finally, Section 1.4 outlines the aims of the study and lays out the structure of the remainder of the article.

1.1 Psych-verbs in spoken languages

In their seminal article on psych-verbs in Italian, Belletti & Rizzi (1988) propose a tripartite classification of psych-verbs. The authors distinguish psych-verbs that select subject, accusative object, and dative object Experiencers. *Temere* in (2)

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1. The Theme is also sometimes called Causer, trigger of emotion, stimulus, or subject/target matter.

exemplifies Class I psych-verbs and selects a subject Experiencer (*Gianni*) and an object Theme (*questo*). Class II psych-verbs like *preoccupare* (3) select a subject Theme (*questo*) and an accusative object Experiencer (*Gianni*). Class III verbs (4) select a subject Theme (*questo*) and a dative object Experiencer preceded by a preposition (*a Gianni*). The position of the Experiencer and Theme of Class III verbs like *piacere* may alternate, as shown in (4ab) (examples from Belletti & Rizzi (1988: 291–292)).

(2) *Gianni teme questo.*   Class I
     Gianni fears this

(3) *Questo preoccupa Gianni.*   Class II
     this   worries   Gianni

(4) a. *A Gianni piace   questo.*   Class III
         to Gianni pleases this
     b. *Questo piace   a Gianni.*
         this   pleases to Gianni

Belletti and Rizzi argue that, although the surface syntactic position of the Experiencer relative to the Theme differs, the Experiencer always c-commands the Theme in the underlying structure. They claim that subject Experiencer psych-verbs are structural Case assigners that select an Experiencer argument as the external θ-role, while Experiencers selected by verbs of Class II or III are realized as objects because they are assigned inherent accusative or dative Case in the verb's θ-grid. Experiencers that bear inherent Case must remain VP-internal, albeit in a higher position than the Theme. The Theme is subsequently raised to a position external to the VP, which results in a surface representation where the Theme is situated higher than the Experiencer.

   Belletti and Rizzi's classification and analysis of psych-verbs in Italian have had a profound influence on research into psych-verbs in subsequent years, and many typologically different languages have been shown to adhere to a similar classification (see e.g. Grimshaw 1990; Pesetsky 1995; Landau 2010). However, the classification has also been contested. For instance, some linguists have argued that Class I conflates two distinct subclasses of psych-verbs in languages like Greek and Hebrew. The first subclass includes stative, noncausative and underived verbs. The second comprises subject Experiencer verbs that are the anti-causative, derived, counterpart of object Experiencer forms (Alexiadou & Iordăchioaia 2004; Reinhart 2001). Italian does not have verbs of the latter type. In addition, there has been fierce debate about whether the Experiencer of Class II psych-verbs carries accusative Case, as Belletti and Rizzi argue. For instance, Pesetsky (1995), among others, argues that Class II verbs are transitive and select an external Causer

argument (also see e.g. Iwata 1995; Reinhart 2001). Since a Causer is semantically more prominent than an Experiencer, it is entirely expected that the Experiencer ends up in object position, at least under the assumption that semantically more prominent arguments map onto syntactically more prominent positions.

Landau (2010) offers an alternative approach to object Experiencer psych-verbs by proposing that Experiencers represent mental locations, realized linguistically as locative arguments. Under his account, object Experiencers are structurally assigned inherent Case by means of a preposition, which is (usually) overt in the case of dative Experiencers, but null in the case of accusative Experiencers. Interesting about Landau's proposal is the idea that the conceptualization of Experiencers as mental locations is reflected in the linguistic realization of psych-verb constructions. This makes his approach a potentially valuable one to consider in the investigation of psych-verbs in sign languages. After all, sign languages have the ability to represent spatial and locative relations directly due to the use of the visual-spatial modality in the transmission of linguistic messages. I return to Landau's account in the theoretical analysis in Section 5.

1.2 Psych-verbs in sign languages

While the study of psych-verbs in spoken languages has a long tradition, sign languages have so far been sorely underrepresented in this research domain. In this section, I give an overview of the available literature.

First, Kegl (1990) provides a basic classification of psych-verbs in American Sign Language (ASL) based on Belletti and Rizzi's work. It can be concluded from her discussion that ASL has psych-verbs that select subject Experiencers, but not object Experiencers. This conclusion is echoed in Winston (2013), and Healy (2015).[2] Winston (2013) argues for ASL that 'uncaused' psych-events are expressed with transitive psych-verbs that select a subject Experiencer and an object Theme, much like the spoken language examples in (1a) and (2). 'Caused' psych-events, however, are expressed with intransitive psych-verbs that select a subject

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2. However, both Kegl (1990) and Healy (2015) mention a psych-verb alternately glossed as SCARE or FEAR, which sometimes selects a subject Experiencer, and sometimes an object Experiencer. Kegl argues that FEAR/SCARE is not a 'true' Class II psych-verb because it is an action verb that denotes the agentivity of the Theme, but it does not emphasize the Experiencer's response. Healy observes that, while SCARE/FEAR is indeed sometimes observed in transitive constructions with an object Experiencer, it most frequently occurs in intransitive subject Experiencer clauses. She attributes this unexpected pattern to the salience of the emotion, speculating that "[i]t may be that FEAR/SCARE appears in constructions that other affective predicates do not because it denotes an affect that stands out conceptually and experientially from other affects" (2015:159).

Experiencer. A Causer is introduced in a separate preceding clause. Thus, the way caused psych-events are expressed in ASL is formally very different.

Meir, Padden, Aronoff & Sandler (2007) looked at body-anchored verbs in Israeli Sign Language (ISL) and mention in passing that psych-verbs in ISL are also of the subject Experiencer type. I discuss their analysis in more detail in Section 5.

ISL (Meir 1998), Catalan Sign Language (LSC; Quer 2009), Greek Sign Language (Sapountzaki 2012), and Spanish Sign Language (LSE; Costello 2015) all have an auxiliary-like element that mostly or exclusively occurs in combination with psych-predicates and triggers a causative interpretation. In all four languages, the source of the auxiliary is the lexical verb GIVE. An example from LSC is given in (5) (adapted from Quer 2009). For a discussion of the language-specific properties of the auxiliaries in the different sign languages, the reader is referred to the works mentioned above.

(5) $_3$GIVE-AUX$_1$ ANNOY
      'S/he annoys me.'

Other than the studies discussed above, of which the latter four are more concerned with the auxiliaries that co-occur with psych-verbs than with the verbs themselves, there has been little mention of psych-verbs in the sign language literature. Nonetheless, sign languages, which employ hands, body, and face in the articulation of language, can potentially shed new light on the special status of this class of verbs. Considering that the human face and body also take a primary role in (the expression of) human experience, studying sign languages may help us better understand the relation, if there is any, between linguistic encoding and conceptual representation.

1.3 Some terminology and definitions

In sign languages, non-manual markers can express a variety of lexical, syntactic, discourse, and affective functions. Teasing apart these different functions can be a challenge, but it is often crucial for a sound analysis of the data. For the purposes of the current study, there are two functions especially – expressed by partially overlapping non-manual markers – that need to be carefully distinguished from one another. Firstly, the data show that psych-verbs in NGT are usually accompanied by facial expressions associated with the denoted psychological state, although they can be overridden by affective, non-linguistic, facial expressions (see Figure 4b in Section 3.2.1 for an example).

However, facial expressions are also known markers of role shift (Padden 1986). Through role shift, a signer conveys the point of view and thoughts or (speech) actions of a referent (Lillo-Martin 2012). It subsumes instances of both

quotative and non-quotative role shift (equivalent to constructed discourse and constructed action, respectively; see e.g. Pfau & Quer (2010) and Lillo-Martin (2012)). The former involves 'shifted reference' (Engberg-Pedersen 1993), which refers to the use of pronominal pointing signs not signed from the point of view of the signer, but from that of a quoted referent. The role shift is sometimes introduced with a verb like SAY. Apart from these manual markers, quotative role shift may be non-manually marked by facial expressions, shift in body position and change in the direction of eye gaze (Padden 1986). An example from ASL is given in (6) (adapted from Padden 1986).[3]

$$\overline{}\text{rs}$$
(6)   HUSBAND REALLY INDEX$_1$ NOT MEAN
       'The husband [says]: "Really, I didn't mean it."'

Non-quotative role-shift, on the other hand, involves the construction of the thoughts or actions of a referent, and is exclusively marked by non-manual markers, which may be some or all of the ones mentioned above. Another ASL example is given in (7) (adapted from Padden 1986).[4]

$$\overline{}\text{rs}$$
(7)   HUSBAND WORK
       'The husband was working.'

Since both psych-verbs and role shift can be marked by facial expressions, disentangling the sentences with psych-verbs that feature role shift from those that do not is not always a straightforward task. Annotation guidelines regarding this issue are described in Section 2.1.

   Another relevant concept from the sign language literature is that of verb classes. Sign language verbs have traditionally been divided over three classes: agreement verbs, spatial verbs, and plain verbs (Padden 1988). Agreement verbs mark their subject and object arguments by modifying their path movement in the signing space so that it starts at the location associated with the subject and ends at the location associated with the object.[5] Spatial verbs make similar use of space, but agree with locative arguments or adjuncts. Plain verbs, which often involve body contact, are generally thought not to agree with subject or object arguments. However, several sources observe that (some) plain verbs that are signed in neutral

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3. Notational conventions for sign language glosses are provided in the Appendix.

4. The original example includes several more clauses, which are left out for simplicity.

5. This is a simplification. There are many intricacies to the verbal agreement system in sign languages, and there is ongoing debate about the most accurate characterization of the system. See, for instance, Lillo-Martin & Meier (2011) and comments on this paper.

space can be localized at a specific point in the signing space (e.g. Fischer & Gough 1978 for ASL; Bergman 1980 for Swedish Sign Language; Costello 2015 for LSE). Costello explicitly argues that this is a form of agreement with either the subject in case of an intransitive verb or the object in case of a transitive verb. He calls this mechanism "single argument agreement".

All psych-verbs in NGT that were identified for this study are plain verbs, and, since most of them are body-anchored, they do not show agreement. However, it is possible for psych-verbs to co-occur with the auxiliary AUX-OP. This auxiliary can be used in combination with plain or agreement verbs and is signed like the verb GO-TO but is often accompanied by the Dutch mouthing *op* ('on') (Bos 1994). The auxiliary, which lacks any semantic content, expresses person agreement with one or two arguments of the verb.[6] As is the case with agreement verbs, the location at the beginning of the auxiliary's trajectory corresponds with the locus of the subject argument, and the end location corresponds with the locus of the object argument (Bos 1994).

A final theoretical issue that merits some discussion is that of person distinctions in sign languages. While originally it was assumed that there is a three-way person distinction just like in spoken languages (Friedman 1975; Baker & Padden 1978), sign linguists were quick to discover that there are important differences. In sign languages, only the location of a first person referent – i.e. that of the signer – is unambiguous. Second and third person referents, on the other hand, can be located potentially anywhere in the signing space. This has led some researchers to propose that there is only a first versus non-first person distinction (e.g. Meier 1990; Engberg-Pedersen 1993), while others posit that sign languages do not make grammatical person distinctions at all. Rather, nominal phrases are assigned a referential index, and this index can be overtly realized by associating a referent with a location in the signing space. Pronominal signs are co-indexed when they point to the same location (Lillo-Martin & Klima 1990). In this article, I steer clear of this ongoing debate and I will assume a three-way person distinction for reasons of clarity and exposition.

1.4 Aims of the study

The purpose of the current study is two-fold. Given the scarcity of descriptive work on psych-verbs in sign languages, the first goal is to provide a description of the lexical and structural properties of psych-verbs in NGT. For the larger part, the description is based on a thorough analysis of data from the Corpus NGT (Crasborn, Zwitserlood & Ros 2008). Section 2 is dedicated to a discussion of the methodology

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6. Sometimes AUX-OP starts at a neutral location, in which case only one argument, the object, is marked.

employed in the corpus study. A description of the lexical and morphosyntactic properties of NGT psych-verbs is provided in Section 3. In addition, I developed a small grammaticality judgment task with the aim of verifying a number of patterns that emerged from the corpus data. Section 4 details the methodology as well as the results. The second goal is to provide a formal analysis of NGT psych-verbs, with the results from the corpus analysis and the judgment task serving as point of departure. The analysis is presented in Section 5. In a nutshell, I show that the place of articulation of NGT psych-verbs on or near the body is an iconic reference to the metaphoric location of an emotion or a type of behavior typically associated with an emotion. I propose that the iconically motivated components of psych-verbs forms make up a locative adjunct. With this, the iconic properties of psych-verbs in NGT are structurally represented. I argue that there is evidence for iconic properties affecting linguistic structure based on the observation that subject drop frequently occurs in the corpus data when the Experiencer referent is a first person entity, but not when it is a third person entity, suggesting that, as a result of body-anchoring, the Experiencer is interpreted as first person by default. I also present a formal mechanism to capture this pattern. Section 6 concludes and offers a discussion on whether psych-verbs are special in sign languages, too.

2.   Methodology of the corpus study

The corpus study gives a bird's-eye view of the types of psych-verbs that are in the NGT lexicon and the constructions in which they can be observed. Methodological details are given in Section 2.1. Section 2.2 discusses methodological challenges and limitations.

2.1 Methodology

The Corpus NGT consists of a collection of dialogues between deaf native signers of NGT (Crasborn et al. 2008). Of the more than 2000 video clips that the corpus consists of, 309 had been fully annotated for manual signs in ELAN by the Corpus NGT team at the time of the study, with a small portion of them also including translations.[7] These 309 clips were selected for analysis and amount to a total of approximately 12 hours and 20 minutes of material with 72 participating

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7. ELAN (EUDICO Linguistic Annotator) is a tool for the creation of complex multiple-tier annotations of audio and/or video (Sloetjes & Wittenburg 2008; URL: https://tla.mpi.nl/tools/tla-tools/elan/). The annotations tiers, of which there can be an unlimited amount, are time-aligned with the media.

signers in pairs of two. The signers represent all of the five major variants of NGT, although most signers use the Amsterdam or Groningen variants. Table 1 gives an overview of participant metadata. Video clips with discussions on deafness and sign language, free conversations, exchange of experiences, and retelling of fables and other stories were all included in the data set in order to capture as much variation in the data as possible.

Table 1. Metadata of the signers participating in the 309 video clips in the data set ($n = 72$)

Region	#
Amsterdam (Northwest)	18
Groningen (Northeast)	30
Sint Michielsgestel (Southeast)	4
Voorburg (West)	4
Rotterdam (West)	4
Mixed	10
Other	2
Age	**#**
17–20	6
21–30	13
31–40	15
41–50	13
51–60	4
61–70	12
71–80	6
81–84	3
Handedness	**#**
Left	5
Right	45
Both	9
Unknown	13
Sex	**#**
Male	34
Female	38

First, I manually checked a set of 30 randomly selected video clips for psych-verbs. I subsequently used the glosses for the psych-verbs found in the manual search as search terms in an automatic search of all video clips in order to identify all instances of each psych-verb. I entered additional search terms based on lists of psych-verbs that can be found in the literature (e.g. Levin 1993) in order to include verbs that did not occur in the 30 manually analyzed clips but may have occurred in any of the other clips. After the search process, I glossed and annotated all clauses with a psych-verb in a data file, assigning them a code indicating the video file number, the signer, and the time of occurrence, e.g. [0004-S003-04:57.20].

The data file includes annotations for important non-manuals such as those for role shift and negation. Role shift occurred frequently and especially often in the narrative stories. Most examples show non-quotative role shift, and are thus marked by non-manuals only. As pointed out earlier, the analysis was complicated by the fact that psych-verbs and role shift are both marked by facial expressions. As a guideline, an annotation for role shift was made when the facial expressions were clearly more pronounced than usual and matched with the emotion denoted by the psych-verb, and when at least one of the following occurred: (a) at least one other non-manual marker, i.e. shoulder shifting or change in the direction of eye gaze, was attested, or (b) the context of the example clearly suggested that role shift was likely to have been employed. For examples of psych-verbs with and without role shift markers, see Figures 3 and 4 in Section 3.2.

2.2 Challenges and limitations

Large-scale sign language corpora (such as the Corpus NGT and corpora for German and Italian Sign Language) have only recently become available, opening up new and exciting possibilities for research. An obvious advantage of corpus-based research is that it allows the researcher to investigate large amounts of data and extract patterns from them. In a field where research has often been based on very limited data sets due to a variety of sociolinguistic factors, this is a welcome step ahead. Corpus data generally reveal more linguistic variation than would be uncovered through controlled elicitation. If the aim of a linguistic theory is to account for all variation a language presents, then corpus analysis is undeniably useful for determining the extent of variation a language allows.

However, corpus research also comes with limitations. The most pressing one is that corpus data cannot provide any negative evidence. That is, it is not possible to observe what is not allowed in a language. While this is not so much of a problem for descriptive analyses of language, it is a clear limitation when constructing a theoretical account, as I intend to do. It is therefore important to point out that the theoretical analysis presented in Section 5 is meant primarily as a set of

predictions that need to be further investigated in future studies. Thus, this work is largely exploratory in nature, but nonetheless attempts to set out an elaborate theoretical agenda in the hope that it will stimulate further research into the topic. I also developed a small grammaticality judgment task in order to provide negative evidence where it is most achingly lacking. Details of the methodology and the test results are provided in Section 4. However, not all predictions are easily tested through elicitation. Some require sophisticated testing methods, and developing and applying them falls outside the scope of this paper. For instance, the corpus data reveal an intricate pattern that involves role shift, overtness of arguments, and grammatical person (see Section 3.2). Importantly, the data shows that one particular combination of these variables does not occur, which leads me to suggest that it might be ungrammatical. However, testing this prediction would require an elaborate experimental set-up due to the number of variables involved. A further considerable complication is that both use of role shift and use of non-overt arguments are more characteristic of longer, more spontaneous, stretches of discourse. Constructing such a discourse setting in an elicitation task is complicated and time-consuming. Thus, in this particular case, I take the pattern found in the corpus data at face value and build my analysis on this observation. Let me also remark here that such an intricate pattern likely would not have been discovered at all if not through corpus investigation, which again shows the merits of pursuing such research.

Another challenge more particular to the corpus used in this study is that the Corpus NGT includes several variants of NGT, and I chose to include data from all variants in order to broaden the (otherwise small) data pool. Indeed, the corpus data reveal extensive variation with regard to psych-verb constructions. However, such variation is (a) entirely expected in corpus research, and (b) more likely to be found in sign language data than in (majority) spoken language data due to the sociolinguistic circumstances in which sign languages are typically acquired. Social factors such as education type and whether a signer grew up in a deaf or hearing family can be sources of language variation (e.g. Sutton-Spence & Woll 1999; Lucas, Bayley & Valli 2001) that might weigh more heavily than the variant of NGT a signer uses. Finally, it has been claimed anecdotally that differences between NGT variants are mainly lexical and not grammatical in nature, although there is virtually no research to back up this claim.[8] In the current study, I found that there is clear lexical variation in psych-verb forms among variants, but I could not find evidence for any grammatical differences.

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8. However, see Oomen (2016) for the claim that there could be grammatical differences in the expression of aspectual distinctions between two variants of NGT.

Not only the methodology poses challenges. Another difficulty is that sign languages in general have not been as thoroughly researched as (some) spoken languages, and as such there are many gaps in our understanding of them. That means that there is very little research to build on for a wide range of topics. For instance, it is not known how to determine if a linguistic element is a direct object, or an adjective, while there is a whole battery of tests that can be applied to figure this out in (many) spoken languages. The lack of overt oblique markers in sign languages makes it difficult to check whether an object is a direct or an indirect one, or whether sign languages make a distinction at all. The issue of the potential adjectival nature of (psych-)verbs is discussed in the next section.

All these limitations need to be navigated in this study in some way or another. Whenever I make choices for particular terminology, I will justify them, and when I make theoretical claims based on corpus data only, I will be explicit about it. Again, the theoretical analysis should primarily be seen as a set of hypotheses, which I hope may guide future research.

3.   Results

The corpus search yielded a total of 181 examples with 16 different psych-verbs from 88 video clips. A superficial look at the data yields three striking observations. First, most psych-verb forms make, by means of body-anchoring, reference to either the metaphoric location of an emotion or a bodily action associated with the expression of an emotion. Observations on lexical forms of psych-verbs are discussed in Section 3.1. Second, the psych-verbs LOVE, HATE, and MISS typically select both an Experiencer and a Theme argument. All other psych-verbs usually only select an Experiencer, although a Theme appears to be optional for most verbs. Third, the corpus data indicate that the Experiencer occurs in subject position. The Theme, if present, occurs in object position. It thus appears that NGT does not have object Experiencer psych-verbs.

Table 2 indicates the frequency of occurrence of each psych-verb that was found in the corpus, and the number and type of arguments they select. Section 3.2 discusses examples with psych-verbs that occur without overt arguments or select only an Experiencer. Examples with psych-verbs that additionally select a Theme are discussed in Section 3.3. Finally, the auxiliary AUX-OP was attested in combination with a psych-verb in a small number of examples; these are discussed in Section 3.4.

The glosses in Table 2 might give the impression that many of the psych-verbs in the corpus are adjectival in nature. This goes in particular for the ones that usually select only an Experiencer argument, such as NERVOUS, RELIEVED, and

Table 2. Psych-verbs in the Corpus NGT and their arguments

Psych-verb	No overt arguments	Experiencer argument	(Experiencer and) Theme argument	Total
AFRAID	8	17	12	37
NERVOUS	12	13		25
ANGRY	5	11	3	19
SURPRISED	7	7	3	17
CONFUSED	6	5	2	13
ASHAMED		9	3	12
RELIEVED	7	3	1	11
SATISFIED	2	7	1	10
FRUSTRATED	1	3	1	5
BORED	1	3		4
PROUD		1	2	3
WORRIED	1		1	2
IN-LOVE		1		1
LOVE		3	12	15
MISS			5	5
HATE			2	2
Total	**50**	**83**	**48**	**181**

BORED. However, glosses can be misleading, as they are nothing more than English translations that most closely approximate the meaning of the signs. They should therefore not be taken as evidence for the adjectival status of the predicate. For instance, *angry* and *afraid* are clearly predicate adjectives in English, but they do not need to be in another language. To take one example, *ashamed* is adjectival in English, but the verb *schamen* in Dutch is a reflexive verb that occurs in combination with a reflexive pronoun (*zich*). It is not a simple task to determine whether NGT psych-verbs have adjectival status for a number of reasons. For one, NGT, like many other sign languages, does not have a copular auxiliary that could indicate the lexical category of the signs listed in Table 2. Furthermore, many standard syntactic tests cannot be applied to sign languages. Tense or mood inflection, for instance, which may attach to verbs but not adjectives, does not occur in NGT. In addition, while psych-verbs can be marked for aspect (see 10a), anecdotal evidence suggests that in NGT, other elements, such as adjective-like elements, can also undergo aspectual inflection.

On the other hand, psych-predicates in NGT can occur with an object but without an oblique marker (8), which might suggest that they are verbs. However, as I pointed out before, there are no known oblique markers in sign languages. Thus no definitive claims can be made about whether the objects in (8) are direct objects, and the psych-predicates therefore verbs, or rather oblique ones.

(8)   a.   <u>AFRAID INDEX$_3$ LITTLE AFRAID</u>
            rs (over the gloss)
       'I'm a little bit afraid of it [the truck].'   [0170-S009-03:52.05]

     b.   PU INDEX$_1$ WORRIED INDEX$_3$ FUTURE
       'I would be worried about his/her future.'   [0134-S008-03:50.50]

In the absence of clear evidence, I will simply assume that the psych-verbs that are discussed in this article are, in fact, verbs instead of adjectival predicates. Let me underscore that not much hinges on this in the analysis.

3.1 Lexical form of NGT psych-verbs

Due to lexical variation within and among different NGT variants, most of the psych-verbs that were found in the data have more than one lexical form. However, I did not find differences in morphosyntactic properties corresponding to different forms. In total, 37 psych-verb forms were attested. Since this section concerns lexical forms of psych-verbs, different forms are distinguished by means of a letter after the gloss (e.g CONFUSED-A). The letters correspond to those used in the Corpus NGT. From Section 3.2 onward, the glosses appear without the additional letters, unless the lexical form is relevant.

On the basis of their phonological characteristics, all psych-verb forms except two belong to one of two categories. First, 26 (70.3%) psych-verb forms in the data set are body-anchored.[9] These signs have in common that their articulation on the body or head iconically refers to (a) a metaphoric location of an emotion, or (b) some kind of movement or behavior that is typically associated with the expression of a particular emotion. For psych-verbs of the former type, the place of articulation on the body is a metaphor for the locus of the emotional experience, conform Taub's definition of metaphor as "the underlying mapping

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9. Note that not all body-anchored signs have body contact. The sign WORRIED, for instance, is articulated with a ✍-hand and a movement away from the side of the head, but usually does not involve contact with the head. However, the point is that by signing the verb near the side of the head, reference is made to the metaphoric location of the psychological state. For this, actual body contact is not required.

between conceptual domains" (2001: 95).[10] An example is the psych-verb LOVE, which is signed with a ⟨handshape⟩-hand on the chest, as in Figure 1a. Other psych-verbs that involve contact with the chest as a metaphor for the locus of the denoted emotion include SATISFIED-A, SATISFIED-B, ANGRY-A, AFRAID-A, AFRAID-B, AFRAID-C, and SURPRISED-B. The psych-verbs WORRIED and CONFUSED-A, CONFUSED-B, and CONFUSED-C are signed close to the head, again referring to a metaphoric location of these psychological states.

Psych-verbs that iconically represent a – typically involuntary – bodily action associated with the expression of a particular emotion are, among others, RELIEVED-A (Figure 1b), SURPRISED-A (Figure 1c), and ASHAMED-B (Figure 1d). The sign RELIEVED-A shows a tracing downward movement of a ⟨handshape⟩-hand across the chest while the signer sighs. The sighing is an obligatory component of the sign, and the movement of the hand refers to the movement of the upper chest that occurs during sighing. SURPRISED-A involves the extension of the index finger as a reference to the widening of the eyes; ASHAMED-B is articulated with the tips of the fingers of a ⟨handshape⟩-hand tracing the cheek in upward direction and refers to blushing.

Second, there are nine (24.3%) psych-verb forms in the corpus in which the hands represent either the hands or the legs. Examples are NERVOUS-A (Figure 2a),

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10. A reviewer questions whether the metaphoric location of e.g. *love* is necessarily the chest, and that of *confusion* necessarily the head. It is certainly conceivable that one psychological state can be tied to more than one metaphoric location. This can also be culturally determined. For instance, as Grushkin (1998) remarks, speakers of English, Japanese, and ASL use different metaphors for *anger* that may refer to different locations in the body. In English, *anger* is conceptualized as a fluid contained within the body that might cause the body to explode; think of 'He was bursting with rage' or 'I had reached the boiling point' (Lakoff & Kovecses 1987). In Japanese, on the other hand, the container of emotions is situated around the stomach and bowels, but it never bursts or explodes, perhaps reflecting the emotional restraint that is characteristic of Japanese culture (Matsuki 1995).

In ASL, some signs related to *anger* are articulated by the head and express an extremely high ('irrational') degree of anger, building on the mental image of anger as an 'exploding face'. Signs that are articulated on the chest and stomach, on the other hand, seem to exploit the same 'anger as fluid' or 'anger as inner explosion'-metaphor as in English (Grushkin 1998; Meir et al. 2013). Thus, the metaphoric location to which psych-verb forms refer can differ, even if the denoted emotion is the same. Similarly, different sign languages can exploit different metaphors. This is demonstrated by Meir et al. (2013), who show that similar concepts are sometimes signed on different body parts in ASL, ISL, and Al-Sayyid Bedouin Sign Language. Let me also point out that there are several examples of psych-verbs in NGT with lexical forms that refer to different 'physical' locations, i.e. body parts that are involved in the expression of an emotion. For instance, one form of NERVOUS refers to shaking hands, while another refers to trembling legs (Figure 2). The point is that reference to a particular body part in the articulation of psych-verbs is not arbitrary, but iconically motivated. Which body part a psych-verb form refers to is of less importance.

(a) LOVE

(b) RELIEVED-A
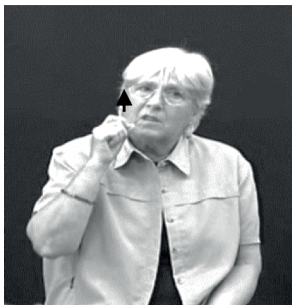
(c) SURPRISED-A

(d) ASHAMED-B

Figure 1. Body-anchored psych-verbs.

(a) NERVOUS-A refers to shaking legs.
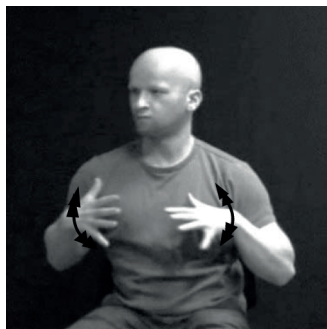
(b) NERVOUS-D makes reference to trembling hands.

Figure 2. Psych-verb forms in which the hands represent hands or legs.

where the hands represent the legs, and NERVOUS-D (Figure 2b), where the hands represent the hands. Both examples make reference to shaking or trembling limbs, which are common symptoms of nervousness.

Thus, all psych-verbs that fall in these first two groups are iconically motivated in that they make reference to the Experiencer in some way. Some verb forms refer

to the location where the Experiencer (metaphorically) experiences the emotion; others refer to the way an emotion is expressed by the Experiencer.

Only two (5.4%) of the 37 psych-forms in the corpus do not have any such iconic qualities. SATISFIED-C is signed with two ✎-hands, the middle finger of the dominant hand repeatedly making contact with the index finger of the weak hand in neutral signing space. ANGRY-C involves two ⬃-hands, fingers pointing upwards, making contact at the palms. Like all iconically motivated psych-verbs, they are plain verbs.

3.2 Examples with an Experiencer argument

A total of 83 examples in the corpus include an Experiencer but not a Theme. In addition, 50 examples do not include any overt (pro)nominal arguments. However, it appears that in these examples the Experiencer is non-overt, which, as I show later, is subject to certain constraints. As Table 2 already indicated, most psych-verbs except LOVE, HATE, and MISS predominantly occur without a Theme argument. In total, 82% of the examples without one of these three verbs do not include a Theme. Indeed, the contexts of many of the examples do not provide an obvious candidate for a Theme argument; often the examples are a simple state-ment of a psychological state of a referent while its cause or source is given little prominence. In some cases, the source is specified several clauses after the clause that includes the psych-verb; in others it is not specified at all. Nonetheless, for most verbs a Theme may optionally be added. Examples with a Theme are dis-cussed in Section 3.3.

An interesting pattern emerges when we compare clauses with overt and non-overt Experiencer arguments: in clauses with a non-overt third person Experiencer, role shift markers are present in 96% of the cases, whereas this is just 39% in clauses with an overt third person Experiencer.[11] This pattern is not mir-rored in clauses with first person Experiencers. Table 3 presents an overview. A discussion follows in the next two subsections.

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11. The intended referent was generally easily deduced from the context. There were no ex-amples with an overt second person argument, so I make a distinction between first and third person only. (i) shows the one example with a non-overt third person Experiencer where the psych-verb is not clearly accompanied by role shift markers.

(i)   lh: WHO [NAME-SIGN] INDEX$_3$ / NERVOUS
       rh: BEHIND   / NERVOUS
       '[Name] was behind me. He was nervous.'   [0319-S015-00:31.10]

Table 3. Frequency and percentage of overt and non-overt Experiencers in first and third person, with and without of role shift markers (n = 133)

Experiencer	Referent	Role shift	# of examples			
Overt	First person	No	30	77%	39	83
		Yes	9	23%		
	Third person	No	27	61%	44	
		Yes	17	39%		
Non-overt	First person	No	17	77%	22	50
		Yes	5	23%		
	Third person	No	1	4%	28	
		Yes	27	96%		

3.2.1   *Third person Experiencer arguments*

The examples with a non-overt third person Experiencer in (9) show two psych-verbs that are clearly marked for role shift, as the video stills in Figure 3 illustrate. In both examples, the psych-verb is accompanied by clear and appropriate facial expressions and body language. In example (9b), they extend over a longer stretch of signs. In addition, the movement of the sign ANGRY in example (9a) is enhanced. Role shift markers that were attested but are not observable from the figures are a shift in shoulder position (both) and a change in eye gaze direction (9a).

(9)   a.   MOTHER COME / $\overline{\text{ANGRY}}^{\text{rs}}$
'My mother came, she was angry.'   [0369-S020-00:58.05]

  b.   TREE $\overline{\text{CLIMB %climb\_up. NERVOUS AFRAID}}^{\text{rs}}$

'He climbed up the tree, he was nervous and afraid.'

In contrast, many of the examples with an overt third person Experiencer were unmarked for role shift. Take (10a) for instance, where the signer mentions her uncle's habitual anger (habitual aspect is marked by reduplication of the sign). She does not switch to the role of her uncle in the example nor at any other point in the discourse. (10b) provides a similar example. The video stills in Figure 4 depict the signers' relatively neutral facial expressions and body language in the articulation of the psych-verbs in (10). There is also no evidence of a shift in shoulder position or change in eye gaze direction. The signers in examples (10) are referring to a simple state-of-affairs. Contrast these examples with those in (9), which appear to describe an event.

(a) Articulation of the psych-verb ANGRY in example (9a) with role shift markers.

(b) Articulation of the psych-verbs NERVOUS and AFRAID in example (9b) with role shift markers.

Figure 3. Psych-verbs accompanied by role shift markers.

(10) a.   INDEX$_3$ ALWAYS ONE TIME MONTH ANGRY++
            'He always used to be angry once a month.'   [0132-S008-03:46.65]
      b.   ASHAMED HEAVY INDEX$_1$ FATHER
            'My father was deeply ashamed.'   [0418-S021-01:24.15]

Most of the examples with psych-verbs marked by role shift and with a third person Experiencer argument unsurprisingly came from video clips with retellings of fables. The use of role shift is obvious in most cases, with the signers using clear facial expressions, a change in shoulder position and direction of eye gaze, and also body movements. Two examples from different signers are given in (11).
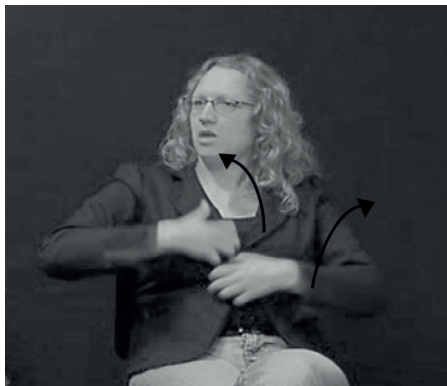
(a) Articulation of (a cycle of) the psych-verb ANGRY++ in example (10a) without role shift markers.

(b) Articulation of the psych-verb ASHAMED (right) and the preceding transitional movement (left) from example (10b) without role shift markers; note that the signer's facial expression does not correspond with the emotion denoted by the verb.

Figure 4. Psych-verbs not accompanied by role shift markers.

(11) a. $\overline{\text{ONE }\text{AFRAID}}^{\text{rs}}$
        'One [of them] was afraid.'   [0512-S025-00:25.75]

   b.   INDEX$_3$ PERSON $\overline{\text{NERVOUS}}^{\text{rs}}$
        'The [other] person was nervous.'   [0047-S005-00:46.80]

3.2.2   First person Experiencer arguments

The majority of examples with psych-verbs that select a first person Experiencer do not display role shift, independent of whether the argument is overtly realized or not. Three examples, two without and one with an overt Experiencer, are

given in (12). There is a clear clause boundary between the psych-verb and the pronominal in example (12b), marked by a pause and hands in resting position on the signer's lap. Figure 5 shows video stills from examples (12ab), which do not display any role shift markers.

(12) a. ANGRY
          'I am angry.' / 'It makes me angry.'   [1916-S078-00:05.95]
      b. AFRAID / INDEX$_1$
          'I am afraid. I am.'   [0098-S002-03:38.00]
      c. INDEX$_1$ FRUSTRATED INDEX$_1$ FRUSTRATED
          'I was really frustrated.'   [0121-S007-00:05.60]

(a) Articulation of the psych-verb ANGRY from example (12a) without role shift markers.

(b) Articulation of the psych-verb AFRAID from example (12b) without role shift markers. The signer is facing one of the researchers of the Corpus NGT team.

Figure 5. Two more psych-verbs without role shift markers.

Nonetheless, there are 14 examples in total with a first person Experiencer that include role shift. Typically for these examples, the signer describes a past situation and shifts between the role of his/her 'past self' and another referent (13). For instance, in the context around (13b), the signer reminisces about a prank she once pulled when she dressed up as a ghost and scared her fellow classmates. The signer role shifts between herself and her classmates, and in (13b), she expresses her relief that she managed to run away before her classmates found out she pulled the prank.

(13) a. $\overline{\text{rs}}$
          INDEX$_1$ $_1$LOOK$_3$ SURPRISED
          'I looked at him, I was surprised.'   [0250-S013-05:13.90]

      b. $\overline{\text{rs}}$
          INDEX$_1$ RELIEVED
          'I was relieved.'   [0121-S008-01:47.85]

Finally, there are two examples that include role shift of the quotative type (14), as evidenced by the use of a first person pointing sign for a third person referent. In example (14a), the signer conveys the thoughts of a dog. Note that the example is made up of two clauses, of which only the second involves the use of first person pronominal signs to refer to the dog. There are no such pointing signs in the preceding clause with the psych-verb. However, the role shift markers are consistently present and do not change or pause between the two clauses. Therefore, the entire example is analyzed as exhibiting quotative role shift. In example (14b), the signer role shifts into a male referent who is afraid to be discovered by a bear to be alive.

(14) a. $\overline{\text{rs}}$
          ANGRY / WANT INDEX$_1$ HAVE INDEX$_3$ INDEX$_1$
          'I'm angry. I want to have it [the bone].'   [0279-S017-01:25.85]

                                        $\underline{\text{hs}}$

      b. $\overline{\text{rs}}$
          rh: NOT QUIET BREATHE-OUT
          lh: BUT INDEX$_1$ AFRAID SELF POUND----------------------------
          'But I am afraid that my heart is pounding, that I'm not breathing quietly.'
                                                            [0120-S007-00:42.70]

In summary, the corpus data indicate that an Experiencer argument is often non-overt in the case of a first person referent or when a psych-verb is accompanied by role shift markers, by means of which the point of view of the referent shifts to that of first person. In contrast, it is exceptional for a clause with a psych-verb to include a non-overt third person Experiencer but no role shift markers; it occurred only once in the analyzed data.

3.3 Examples with an Experiencer and a Theme argument

The data set includes 48 examples with a Theme argument. All examples except six – four with LOVE and two with AFRAID – also include an overt Experiencer argument. There are 19 examples with LOVE, MISS, or HATE, while 29 examples include one of the other 13 psych-verbs.[12] Generally, Experiencers occur in clause-initial position typical for subjects. Themes occur in object position, which may be pre- or postverbal in NGT, although the examples show a preference for the latter.[13]

3.3.1 LOVE, HATE, and MISS

Three psych-verbs usually select an Experiencer and a Theme argument (but see fn. 12): they are LOVE (12 occurrences), MISS (5), and HATE (2). Two representative examples with the latter two verbs are given in (15).

(15) a. INDEX$_1$ MISS SURROUNDINGS
          'I miss the surroundings.'   [0049-S006-04:31.30]
      b. INDEX$_1$ HATE INDEX$_3$ PU
          'I hated him.'   [0847-S039-00:50.45]

The examples with LOVE display more diverse patterns. Six examples include both an Experiencer and a Theme. (16a) presents an example with a clause-initial Experiencer, a verb, and a postverbal Theme; (16b) includes a preverbal Theme.[14]

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12. In addition, there are three examples with LOVE that lack a Theme argument, one of which is given in (i). The other two examples are similar and occur in the same video clip. They were analyzed along with the other examples in Section 3.2.

(i) INDEX$_1$ LOVE
     'I love it.'   [0094-S001-01:07.35]

In all three cases, the signer reacts to a comment from the experimenter, which is unfortunately not recorded or annotated. I treat these examples as exhibiting drop of the Theme argument, given the verb's preference for selecting two arguments.

13. In fact, there is some discussion about the basic position of the object in the literature. While some linguists argue for a basic SOV constituent order (Coerts 1994, Pfau & Bos 2008), others claim that both SOV and SVO are allowed (Van Gijn 2004). The data analyzed for the current study provide further evidence that SOV and SVO are both possible constituent orders.

14. As a reviewer points out, the first pointing sign could function as a possessive determiner, and the second, at the end of the sentence, as the Experiencer argument. This would give the sentence a marked constituent order. However, the corresponding video clip shows that there is a change in non-manual markers between INDEX$_3$ and FOLD BIKE (specifically, FOLD BIKE but not INDEX$_3$ is marked by means of a head tilt, presumably to check for understanding with the addressee), suggesting that they form two separate constituents. In addition, copied pronominal pointing signs are frequently observed in NGT (Bos 1995; Crasborn, Van der Kooij & Ros

(16) a. INDEX₁ LOVE LIVE INDEX₁
          'I love life.'   [0094-S002-03:54.55]
      b. INDEX₃ FOLD BIKE LOVE INDEX₃
          'He loves his folding bike.'   [0251-S013-01:48.30]

Four other examples include an overt Theme but a non-overt Experiencer, as in (17), where a clear prosodic break between the pointing sign and LOVE signals a clause boundary. SKIRT is the Theme.

$$\overline{\text{hs}}$$
(17) $\overline{\text{INDEX}_1}$ / LOVE SKIRT
      'Not me, I like skirts.'   [0094-S002-04:06.35]

Finally, two examples include a combination of LOVE and the auxiliary AUX-OP. They are discussed separately in Section 3.4.

The second column of Table 4 lists the constituent order frequencies of the examples with LOVE, MISS, and HATE with arguments expressed as thematic relations. Most examples (13 out of 17) demonstrate an (Experiencer-)V-Theme constituent order. Three examples have an (Experiencer-)Theme-V order, and one example shows topicalization resulting in a Theme-V-Experiencer order.

The data in Table 4 further strengthen the claim that Experiencers are subjects and Themes are objects: in clauses with two overt arguments, Experiencers overwhelmingly occur in sentence-initial subject position (12/13), while Themes almost always occur between the Experiencer and the verb (2/13) or postverbally (10/13), which are both object positions in NGT.

Table 4. Constituent order frequencies of examples with psych-verbs that select (an Exp[eriencer] and) a Th[eme] argument

Constituent order	LOVE, HATE, MISS	Other psych-verbs	Total
Exp-V-Th	10	17	27
Exp-Th-V	2	3	5
Th-V-Exp	1		1
Th-Exp-V		1	1
V-Exp-Th		4	4
Th-V	1		1
V-Th	3	2	5
AUX-OP	2	2	4
Total	19	29	48

2012), so the use of two first person pointing signs in example (16b) is certainly not uncommon or unexpected.

3.3.2   *Other psych-verbs*

While HATE, MISS, and LOVE generally select both an Experiencer and a Theme, only 29 of the 159 examples with one of the other psych-verbs include a Theme argument (18%). Some verbs, like NERVOUS, never appear with two arguments in the data set. For others just a few examples were attested. The third column in Table 4 indicates the frequencies of the different constituent orders found in the examples that do include a Theme argument. The most basic pattern is (Experiencer-) V-Theme (19 examples). Typical examples are given in (18).

(18) a.   INDEX$_1$ AFRAID DRIVE-CAR
           'I was afraid of driving a car.'   [0250-S014-02:35.90]
      b.   PU INDEX$_1$ WORRIED INDEX$_3$ FUTURE
           'I would worry about his/her future.'   [0134-S008-03:50.50]

Three examples have an Experiencer-Theme-V constituent order. A Theme-Experiencer-V order occurred once as a result of topicalization. Four examples have a V-Experiencer-Theme constituent order (19).

(19) ANGRY INDEX$_1$ INDEX$_3$
      'I was really angry with him.'   [0369-S020-01:04.15]

Thus, as illustrated in the third column of Table 4, in sentences with two overt arguments, Experiencers typically occur in sentence-initial (subject) position (20/25), while Themes usually occur directly before (3/25) or after (17/25) the verb in object position.

   Four examples appear to include a sentential complement functioning as a Theme. Two are given in (20); the subordinate clauses are put in square brackets. In (20a), the headshake, which is the non-manual marker of negation, spreads over the entire subordinate part of the sentence but not the matrix clause (cf. Van Gijn 2004). The construction in (20b) also appears to include a subordinate clause, although there are no non-manual markers to signal this overtly.

(20) a.   INDEX$_{3a}$ SURPRISED

                                                        hs
           _____
           [INDEX$_1$ KNOW INDEX$_1$ NOT-YET NOT-YET SEE INDEX$_{3b}$]

           'Others are surprised that I haven't seen it yet.'   [0340-S016-02:17.80]
      b.   INDEX$_1$ RELIEVED [FIND INDEX$_1$ SLEEP PLACE FIND]
           'I was relieved to find a place to sleep.'   [0049-S005-00:29.80]

Strikingly, role shift markers do not accompany the psych-verb in any of the examples with two arguments (excluding examples with quotative role shift). An explanation for this might be that psych-verbs that obligatorily select a Theme argument lexically reject role shift. However, the corpus data include 29 examples

with psych-verbs other than LOVE, HATE, or MISS that select a Theme argument, and none of these include role shift either. In contrast, role shift frequently occurs in clauses with only an Experiencer. Thus, it appears that the presence or absence of a Theme is a better predictor of (lack of) role shift use than the obligatoriness of a Theme with certain psych-verbs. Indeed, the examples with two arguments typically occur in descriptive discourse, where the identification of the source or cause of an emotion might be of relatively more importance, while examples with just an Experiencer more frequently occur in narrative discourse.

3.3.3   *Final remarks and summary*

Before concluding this section, it is worth briefly returning to Winston's (2013) account of psych-verbs in ASL. Remember from Section 1.2 that Winston argues for a bi-clausal analysis of caused psych-events, where a causing event is followed by a caused event including a psych-verb. The two clauses may be linked by LOOK-AT, analyzed as a light verb.

Most examples from the Corpus NGT are not bi-clausal constructions. However, there are three examples that include the sign LOOK, which is the NGT equivalent of LOOK-AT and can agree with two arguments. One example was given in (13a) and is repeated here in (21a); another is shown in (21b).

(21) a. INDEX$_1$ $_1$LOOK$_3$ $\overline{\text{SURPRISED}}^{\text{rs}}$
          'I looked at him, I was surprised.'   [0250-S013-05:13.90]

      b. TALK ONE SIGN INDEX$_3$ / INDEX$_1$ $_1$LOOK$_3$ $\overline{\text{SATISFIED}}^{\text{hs}}$
          'There was one sign I wasn't satisfied with.'   [0539-S026-03:30.95]

It seems that the three psych-verbs LOVE, HATE, and MISS represent uncaused psych-events. This is less clear, however, for the other psych-verbs, however. It is a possibility that they represent a caused psych-event. However, the use of a light verb like the ASL LOOK-AT is rather uncommon, as is the use of a clause indicating a causing event. Nonetheless, NGT seems similar to ASL in that there are two kinds of psych-verbs with different properties. In Section 5.1, I offer an alternative hypothesis about the difference between LOVE, HATE, and MISS on the one hand, and the other psych-verbs on the other.

To summarize, I have shown that in psych-verb constructions with two arguments, the Experiencer typically appears in subject, and the Theme in object position. The three psych-verbs LOVE, HATE, and MISS almost always select an Experiencer and a Theme argument. In contrast, a mere 18% of examples with one of the other 13 psych-verbs include a Theme argument. Thus, the corpus data provide some indication that there are two different kinds of subject Experiencer psych-verbs in NGT.

3.4 Psych-verbs in combination with AUX-OP

The NGT auxiliary AUX-OP marks agreement by means of a path movement from the locus of the subject to the locus of the object, or from a neutral locus to that of the object (Bos 1994). The psych-verbs in the data set are plain verbs and thus cannot agree with their arguments through this kind of directionality. Since AUX-OP can agree with arguments directly, it becomes especially worthwhile to study the use and function of AUX-OP in psych-verb constructions.

In total, there were four examples with AUX-OP and a psych-verb in the corpus. Two of these are with the psych-verb LOVE. In (22a), AUX-OP starts its trajectory at the locus of the first person subject, and ends at a locus that had been established earlier in the discourse, which is the sentential object. In (22b), AUX-OP agrees with a third person subject argument and a third person object argument.

(22) a. $\overline{\text{INDEX}_1 \text{ LOVE }_1\text{AUX-OP}_3 \text{ INDEX}_1}^{\text{hs}}$
          'I didn't love him.'   [0004-S003-04:57.20]

     b. PERSON DO INDEX$_{3a}$ INDEX$_{3b}$ / BECAUSE LOVE $_{3a}$AUX-OP$_{3b}$
          'He does that for her, because he loves her.'   [0062-S005-01:55.30]

In the example with PROUD in (23), the Theme, DEAF HISTORY, is topicalized and followed by a prosodic break marked by an eye blink ('bl'). Localization of the Theme occurs by means of a pointing sign at the end of the sentence. This point clearly refers to DEAF HISTORY, as it is directed somewhat upward and toward the opposite shoulder apparently to indicate 'something in the past'. The auxiliary is directed downward, meaning that the loci of AUX-OP and the pointing sign do not correspond on the vertical plane, however, they match on the horizontal plane.

(23) DEAF HISTORY REAL $\overline{}^{\text{bl}}$ REAL PROUD $_1$AUX-OP$_3$ INDEX$_{3up}$
      'I am really proud of Deaf history.'   [1915-S077-00:17.85]

The final example with AUX-OP is given in (24) and also shows locus establishment after the use of the auxiliary, but in a slightly different manner. GROUP is signed right after the auxiliary and at the same location at which the trajectory of AUX-OP ends.

(24) INDEX$_1$ ANGRY $_1$AUX-OP$_3$ GROUP$_3$
      'I was angry with the group.'   [0862-S039-03:41.85]

ANGRY and PROUD are two examples of psych-verbs that optionally take a Theme argument. The fact that AUX-OP can be used in combination with these verbs suggests that the Theme argument, when it is present, indeed functions as an object.

Despite the scarcity of examples, we can conclude that the use of AUX-OP is at least an agreement strategy that is available for these psych-verbs.

The observations described in the sections above form the basis for the theoretical analysis in Section 5. Since the corpus data do not provide negative evidence, I conducted a small grammaticality judgment task to verify a number of predictions. The complex nature of some of the patterns ask for a more sophisticated methodology and more extensive testing, which falls outside the scope of the present study.

4.   Grammaticality judgment task

The grammaticality judgment task was designed to test the following three predictions:

i.   Constructions with psych-verbs other than LOVE, MISS, and HATE, are (also) grammatical when they include both a subject Experiencer and an object Theme.
ii.   The auxiliary AUX-OP can be combined with psych-verbs that optionally select a Theme argument.
iii.   There are periphrastic object Experiencer constructions in NGT with the psych-predicate combining with the verb MAKE.

Predictions (i) and (ii) were meant to verify two infrequent patterns found in the corpus and were expected to be borne out. Somewhat unconventionally, the opposite result was expected for prediction (iii). Constructions with MAKE and a psych-verb were included in an attempt to further confirm that object Experiencer constructions are ruled out in NGT. The motivation for choosing this type of construction was that two sentences with MAKE and a psych-verb were found in the corpus, although both seemed to be borrowed expressions from Dutch. Methodological details are discussed in Section 4.1. Section 4.2 discusses the results.

4.1 Methodology

The grammaticality judgment task included a total of 11 sentence pairs. In each pair, the first sentence introduces the relevant referent(s) and provides some context. The second sentence is the target sentence. Examples of sentence pairs and their intended interpretation that were used to test predictions (i), (ii), and (iii) are given in (25), (26), and (27), respectively.

(25) a. BROTHER INDEX$_3$ VASE BREAK
          'My brother broke the vase.'
      b. INDEX$_1$ INDEX$_3$ ANGRY
          'I am angry with him.'

(26) a. GIRL INDEX$_{3a}$ SPIDER INDEX$_{3b}$ SEE.
          'The girl sees a spider.'
      b. INDEX$_{3a}$ AFRAID $_{3a}$AUX-OP$_{3b}$.
      b'. INDEX$_{3a}$ AFRAID $_{3b}$AUX-OP$_{3a}$.
          'She is afraid of it.'

(27) a. TODAY INDEX$_1$ ACCIDENT SEE
          'Today I saw an accident.'
      b. ACCIDENT INDEX$_1$ SAD MAKE
          'The accident made me sad.'

Four sentence pairs included constructions like (25) with two arguments and a psych-verb that usually selects one. The psych-verbs IN-LOVE, SURPRISED, ANGRY, and ASHAMED were included in the task. Two target sentences had an SVO order, as in (25b); the other two had an SOV order.

Example (26) illustrates two sentence pairs; (26a) was followed once by (26b) and once by (26b'). (26a) is the context sentence. AUX-OP in the first target sentence in (26b) has a trajectory from the Experiencer to the Theme; the second target sentence in (26b') shows the opposite pattern. Only (26b) was expected to be grammatical under the intended meaning. There were two sets of two sentence pairs with AUX-OP and a psych-verb (AFRAID and PROUD). These verbs were chosen in order to confirm that AUX-OP is free to combine with this type of psych-verbs. Sentences like (26b') were included to ensure that AUX-OP cannot reverse thematic roles by turning the Theme into a Causer, so that (26b') would be interpreted as 'The spider made the girl afraid', or 'The girl was made afraid by the spider'. Participants were therefore also asked who of the two referents was experiencing the emotion.

Finally, three sentences included a periphrastic construction with MAKE (27), which was chosen because two clauses in the Corpus NGT showed idiomatic constructions with the same verb, likely borrowed from Dutch. In the first construction, shown in (28a), the embedded clause MAKE CONFUSED is interpreted as taking a non-overt subject argument that refers to a situation that caused confusion. In the second example, given in (28b), there seems to be a non-overt first person subject. The construction appears to be borrowed from the Dutch *Ik maak me geen zorgen* (lit. 'I make me no worries'). Since the two examples are periphrastic constructions, they were excluded from the analysis of the corpus data. With the judgment task, I simply attempted to find out if constructions like the ones in (28)

are productive, in which case it would show that there is an object Experiencer construction available in NGT.

(28) a. UNDERSTAND MAKE CONFUSED
         'I understand that makes it confusing.'   [0824-S036-00:16.60]

                                                            rs, hs
      b. OTHER PERSON NEVER-MIND MAKE WORRIED
         'Another person thinks: "Never mind, I'm not worried.'
                                                                [0532-S025-00:32.25]

All sentence pairs were signed by a 55-year old female signer of NGT. She was born deaf in a hearing family and first learned NGT when she attended a deaf school in Sint-Michielsgestel early in life. NGT is her primary language. The signer was provided with a list of the sentence pairs in sign language glosses. The signer and the author additionally went through each sentence pair before the start of the recordings, which were made and edited using a webcam and Windows Movie Maker. During the recordings, the author stood opposite the signer and signed each sentence pair in turn, which the signer was then asked to repeat.

Three native deaf signers of NGT participated in the grammaticality judgment task. Each had acquired the language from birth as one or both of their parents are deaf signers. The first participant was male, 35 years old, and indicated he uses the Amsterdam variant of NGT. The second participant was female, 32 year old, and uses the Groningen variant. The third participant was female, 24 years old, and indicated she uses the Amsterdam variant but with some influences from Groningen.

The recordings of the sentence pairs were shown to each participant in random order. For each target sentence, I asked participants to make a grammaticality judgment. In the case of an ungrammatical sentence, I asked them to give an explanation and an alternative.

4.2 Results

Two signers considered all sentences like (25b) with an Experiencer and a Theme to be grammatical, although they suggested several times that target sentences with an SOV order should be changed into SVO. The third signer did not accept any of the four sentences. Instead, she offered that the Theme argument should be dropped or replaced by AUX-OP. Thus, taking together the corpus data and judgment task results, we can conclude that a Theme argument is allowed but possibly marked for most NGT psych-verbs, excluding LOVE, HATE, and MISS, which take two arguments.

Secondly, as expected, all signers uniformly agreed that sentences like (26b) are grammatical, while sentences like (26b') were judged ungrammatical for the

intended interpretation. Participants indicated that a reading where the Theme is a subject Causer and the Experiencer is an object was not available for (26b'). The results confirm that the combination of AUX-OP and a psych-verb is a strategy that is available to signers and further strengthens the intuition that the Theme functions as an object in these constructions. Given these results, one might be tempted to additionally draw the conclusion that the Theme is a *direct* object of the psych-verb, given that agreement (instantiated by AUX-OP) may only occur with direct, and not oblique, objects. However, such a conclusion would be premature, since it has not been confirmed that AUX-OP functions in the same way as conventional auxiliaries in spoken languages. An alternative analysis, for instance, is that the function of AUX-OP is to extend argument structure – that is, the Theme is an argument of AUX-OP but not of the psych-verb. While such an analysis would be unconventional for spoken languages, it appears more plausible for sign languages: unlike auxiliaries in spoken languages, the only function of auxiliaries in sign languages seems to be to express agreement (Steinbach & Pfau 2007). One would need to show that the second argument in constructions with psych-verbs like AFRAID is a true direct object, but this is problematic precisely because of the lack of direct agreement marking on the verb. This thus remains an outstanding issue.

Finally, two of the three participants in the task indicated that sentences like (27b) are ungrammatical and offered alternatives taking the standard form of subject Experiencer and psych-verb (i.e. INDEX$_1$ SAD). None of the signers proposed alternative constructions that promoted the cause or source of the emotion to subject position. One of the signers even stated that the fact that a thing or a person causes a certain emotion in an Experiencer is not of particular relevance. However, one signer judged two of the three sentences with MAKE in the task grammatical, although she offered the same alternative as the two other signers for the example in (27). It is possible that influence from spoken Dutch played a role. Overall, no convincing evidence was found for the existence of a productive object Experiencer construction in NGT.

5.   Theoretical analysis

Analysis of the corpus data and the grammaticality judgment task yielded three main results. Firstly, LOVE, HATE and MISS obligatorily select a Theme, while this is optional for the other psych-verbs. Secondly, almost all psych-verbs in NGT are body-anchored. That is, they are signed on or close to the body – be it the head, chest, or some other body part – as a way of representing a metaphoric location of an emotion or a bodily action associated with the expression of an emotion. Thirdly, all evidence suggests that Experiencers are subjects, while Themes occur

in object position. Constructions with a subject Theme and an object Experiencer are not attested in the corpus. Fourth, non-overt Experiencer arguments are attested in the corpus in situations where there is (a) a first person referent, or (b) a third person referent, provided that role shift markers accompany the psych-verb. A non-overt third person Experiencer was attested only once.

The results thus present us with an interesting puzzle of patterns. I discuss the first observation in Section 5.1, where I speculate about what might underlie the difference between the two subclasses of psych-verbs. In subsequent sections, I attempt to offer a unified theoretical analysis that integrates the other three observations mentioned above. To lay the groundworks for the analysis, I discuss in Section 5.2 Meir et al.'s (2007) claim that the body represents an argument of body-anchored verbs. For psych-verbs, this would entail that the body represents the Experiencer. However, I show that this account violates the theta-criterion. I also briefly return to Landau's (2010) proposal that Experiencers are mental locations. Integrating insights from both accounts, I propose in Section 5.3 that the articulation of psych-verbs on the body automatically leads to the projection of a locative adjunct that reflects the iconic components of psych-verbs in NGT. I argue in Section 5.4 that the signer's body, as one part of the adjunct, is a variable co-indexed with the Experiencer argument. This variable always receives an iconic specification specifying the body as container, and sometimes additionally receives a specification for first person, which is again iconically motivated but, crucially, also fulfils a grammatical function. The latter feature may license a null subject, but only in the case of a first person referent. The proposal is meant to account for the pattern with overt and non-overt Experiencers found in the corpus, which I argue suggests that body-anchoring leads to a default first person interpretation.

The analysis I propose is syntactic in nature and assumes that psych-verbs have underlying syntactic structure. This theoretical choice merits some discussion. First, it is important to emphasize that syntactic analyses of argument structure are generally easily transposed to lexical analyses and vice versa (see Levin & Rappaport Hovav (2005) and, more recently, Williams (2015) for detailed discussions). It only becomes possible to tease the two approaches apart when there is some linguistic material present in a clause that could affect either the predicate or an argument, or both. A syntactic account would predict that this material, which could be an operator, takes only one of the expressions in its scope. Williams (2015) calls this intervening material a *semantic wedge*. A lexical account, on the other hand, would predict that predicate and argument are treated as a unit, and thus that the intervening material cannot scope over just one of the two elements. The difficulty is that there are only a few expressions that can act as a semantic wedge, and thus convincing arguments that favor the one approach over the other are rare. Thus, the choice for a syntactic or lexical approach remains, to a large extent, just that: a choice.

Nonetheless, I would argue that there is reason to favor a syntactic account of psych-verb constructions in NGT. Based on patterns found in the corpus data, I claim that psych-verb constructions with a non-overt Experiencer yield a default first person. If this can be backed up by further empirical research, then it would offer an argument for the hypothesis that the iconic properties of psych-verbs need to be visible in the syntax. If they were not, then the syntax would not be able to tell when a null argument is licensed.

Finally, there is also an independent reason to favor a syntactic approach: it forms the stronger claim for a Universal Grammar. Under the offered approach, iconicity is given a place in the syntactic structure rather than being treated as a non-linguistic quirk of (primarily) sign languages. The extent to which iconicity is exploited in sign languages presents one of the most obvious differences with spoken languages. As previously mentioned, the use of iconicity is not just limited to the lexicon, but is also found in other linguistic domains (Sandler & Lillo-Martin 2006). Modality differences pose a potential challenge to Universal Grammar, yet the claim that sign languages adhere to the same universal principles has often been made (most notably in Sandler & Lillo-Martin 2006). Thus, from this perspective, a theoretical analysis that argues that iconicity is syntactically relevant is very welcome.

5.1 Two subclasses of psych-verbs

All psych-verbs in the corpus data are of the subject Experiencer-type. However, some select a Theme obligatorily, while others do it optionally. This could hint at a further subdivision within the class of subject Experiencer psych-verbs in NGT. In this section, I speculate that event structure plays a key role. The issue deserves further (experimental) investigation; here, I will limit myself to presenting two hypotheses based on corpus data patterns and relevant literature.[15]

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15. Experimental testing of eventivity in sign languages is a tricky business for a number of reasons, not in the least because there is very little research to build on. Rathmann (2005) describes a number of syntactic tests for stativity in ASL, but some of them are only applicable to permanent states (e.g. 'know', but not 'fear'), and others test agentivity rather than stativity. The development of appropriate syntactic tests is a complex and time-consuming task, which I leave to future research. The hypotheses presented in this section may nonetheless be helpful in guiding future investigation.

In this context, it is also worth mentioning Wilbur's Event Visibility Hypothesis (2003, and later work), which states that "[i]n the predicate system, the semantics of event structure is visible in the phonological form of the predicate sign" (Wilbur 2010). However, while this hypothesis has been tested fairly extensively for ASL (Wilbur 2003; Grose, Wilbur & Schalber 2007; Grose 2008) and Austrian Sign Language (Schalber 2004), I am not aware of any research on NGT. A thorough application of this hypothesis to NGT falls outside the scope of this paper.

Firstly, it seems plausible to assume that, like the 'prototypical' subject Experiencer verbs described by Belletti & Rizzi (1988), LOVE, HATE, and MISS are unambiguously stative, since they are not compatible with eventive interpretations. The other verbs, on the other hand, are semantically compatible with both stative and eventive interpretations. For instance, example (29a), repeated from (10a), appears to represent a state. In contrast, example (29b), repeated from (11b), appears to represent an event, since the referent's nervousness in example (29b) is a reaction to an approaching bear. This causing event is not part of the sentence.

(29)   a.   INDEX$_3$ ALWAYS ONE TIME MONTH ANGRY++
              'He always used to be angry once a month.'   [0132-S008-03:46.65]
        b.   INDEX$_3$ PERSON NERVOUSrs
              'The [other] person was nervous.'   [0047-S005-00:46.80]

Following the above, let us hypothesize that:

(30)   *LOVE, HATE, and MISS are always stative, while all other psych-verbs are*
        ambiguous between a stative and an eventive reading.

Closer inspection of the corpus examples reveals an additional correlation: role shift is frequently used in contexts where an eventive reading is more plausible, while it is generally lacking in contexts where a stative reading is more likely.[16] Indeed, none of the examples with LOVE, HATE, or MISS include (non-quotative) role shift, while this frequently occurs with other psych-verbs. Let us therefore additionally propose that:

(31)   *For psych-verbs that are ambiguous between a stative and an eventive reading,*
        stative readings are correlated with lack of role shift, while eventive readings
        are correlated with use of role shift.

The development of syntactic tests for stativity and eventivity are vital for a proper evaluation of the hypotheses in (30) and (31). Still, at this point, it at least seems evident that subject Experiencer psych-verbs in NGT should not all be collapsed into one category. Some spoken languages have also been argued to have two subclasses of subject Experiencer psych-verbs (Alexiadou & Iordăchioaia (2014) on Greek and Romanian; Reinhart (2001) on Hebrew). Alexiadou & Iordăchioaia (2014) show that, in addition to a subclass of 'prototypical' subject Experiencer verbs, Greek and Romanian have a subclass of verbs that can participate in a causative alternation. An example from Greek with an anti-causative, derived subject Experiencer form is shown in (32d).[17] (32a–c) illustrate agentive, non-agentive

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16. I thank an anonymous reviewer for this suggestion.

17. Abbreviations in (32): GEN 'genitive'; ACC 'accusative'; NACT 'non-active voice'.

eventive, and non-agentive stative readings of its object Experiencer counterpart (Alexiadou & Iordăchioaia 2014: 54). The authors also point out that some verbs of this type are stative in the subject Experiencer construction, others eventive (change-of-state), and in Romanian – and in a few sporadic cases in Greek – a number of them are ambiguous between both. This sets them apart as a group from prototypical subject Experiencer verbs, which are stative.

(32)   a.   O   Janis *enohlise* ti   Maria epitides / me   ena bastuni.
            the John annoyed the Mary intentionally / with a   stick
            'John annoyed Mary intentionally / with a stick.'

        b.   O   Janis / to   pehnidi *enohlise* ti   Maria se deka lepta.
            the John / the game   annoyed the Mary in ten   minutes
            'John / the game annoyed Mary in ten minutes.'

        c.   I   Maria/to kurema tis Marias   ton *enohlise* to Jani   ja mia
            the Mary/the haircut tis Marias   him annoyed the John.ACC for an
            ora.
            hour
            'Mary / Mary's haircut annoyed John for an hour.'

        d.   O   Janis *enohlithike*   (*epitides / *me   ena bastuni) me   to
            the John annoyed.N-ACT intentionally / with a   stick   with the
            pehnidi.
            game
            'John got annoyed with the game.'

It is possible that psych-verbs like AFRAID in NGT are comparable to the psych-verbs that can participate in a causative construction in Greek and Romanian. While such an analysis cannot be excluded on the basis of the data, I have two objections. Firstly, and most importantly, subject Experiencer forms like the one in (32d) always have a causative object Experiencer counterpart. There is no evidence at all that such constructions exist in NGT, nor that subject Experiencer constructions are derived. Secondly, Alexiadou and Iordăchioaia state that there are only a few subject Experiencer forms that are ambiguous between a stative and an eventive reading in Romanian, and in Greek they are usually non-ambiguous. If the hypothesis in (30) is borne out, then this would be markedly different in NGT.

In the analysis in the sections below, I will not concern myself further with the issues raised above. Instead, the focus will be on the iconic properties of psych-verbs and their interaction with sentence structure and the Experiencer argument in particular. What underlies the subdivision of subject Experiencer psych-verbs is a matter separate from the account proposed in the upcoming sections.

5.2   The body as an argument of the verb

As is widely known, sign languages are able to make use of iconicity to a much greater extent than spoken languages due to the use of the visual modality for the transmission of linguistic expressions (see e.g. Taub 2001; Sandler & Lillo-Martin 2006). Iconicity is found in the lexical form of signs, but also in morphological processes like classifier predicates or aspectual inflection, and it has even been argued to affect sign language phonology through its potential to override certain phonological constraints (Sandler & Lillo-Martin 2006).

As I described in Section 3.1, the phonological form of NGT psych-verbs makes reference to a metaphoric location of an emotion or a bodily action associated with the expression of an emotion by means of body-anchoring. In the next few sections, I investigate what this might mean for the constructions they appear in. To set the stage, I first review two accounts, one specific to sign languages and one proposed on the basis of spoken languages, that might help in the quest to pinpoint the role of iconicity and metaphor in psych-verb constructions in NGT.

5.2.1   'Body as subject'

Meir et al. (2007) observe that many verbs in Israeli Sign Language (ISL) and other sign languages are body-anchored. They identify several subsets of body-anchored verbs which include, among others, psych-verbs (LOVE, SUFFER), 'verbs of mental activities' (KNOW, REMEMBER), 'verbs of perception' (SEE, LOOK), 'verbs of saying' (SAY, ANSWER), and change-of-state verbs' (BLUSH, GET-WELL).[18] While the list is based on ISL verbs, the authors claim that similar lists can be found in other sign languages as well.[19]

Meir et al. show that the place of articulation may differ for each class of verbs (e.g. the chest for psych-verbs; the temple or forehead for verbs of mental activi-

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18. Meir et al. point out that ISL psych-verbs are articulated on the chest, which corresponds to "the symbolic location of emotions of the experiencer argument" (2007:543). However, the ISL sign WORRY, the NGT version of which is analyzed as a psych-verb in this article, appears in the 'verbs of mental activities'-category, which are articulated on or near the temple or forehead. It seems that the desire to group verbs together according to their place of articulation motivated the authors' inclusion of WORRY in another verb category. While this creates a neat picture, I see no reason why individual verbs that are part of one semantic category, like psych-verbs, may not have different places of articulation. Indeed, as I have shown, the location that is referred to in psych-verb forms is sometimes the chest, and sometimes the head. Nothing hinges on this in their analysis.

19. Of course, this does not mean that each sign language has the same vocabulary of body-anchored verbs. The sign UNDERSTAND, for instance, is a body-anchored verb in ISL and NGT, but it is an agreement verb in LSC.

ties), as may the thematic role the body associates with (e.g. the Experiencer for psych-verbs; the Agent for verbs of saying). Crucially, however, the authors claim that for all these verbs, the body "represents, or corresponds to, some property of the subject argument" (2007:544). They describe this hypothesis, which they refer to as *body as subject*, as follows:

> When examining patterns of iconicity in lexical items denoting states of affairs, a regularity emerges: there is a division of labor between the body and the hands in encoding the various facets of the state of affairs. This division of labor is revealed by the way the hands move in relation to the body. The body encodes properties of one argument participating in the event, whereas other facets of the state of affairs (the event and other arguments) are encoded by the hands. The argument encoded by the body may bear a variety of thematic roles, depending on the specific lexical item; however, it is always the most prominent argument (the argument associated with the highest-ranking thematic role), and the argument which the verb is predicated of, that is, the subject.   (Meir et al. 2007: 532–533)

Note that the authors define 'subject' as an external argument that is assigned under predication and not under government. It is also claimed to be part of the lexical structure of the verb. Mapping of the thematic role is argued to occur according to general mapping principles (see e.g. Fillmore 1968; Jackendoff 1972, 1990; Van Valin 1990). That is, the highest-ranking thematic role maps onto subject position. Thus, in the case of psych-verbs, the body represents the subject, and the Experiencer – as the highest-ranking thematic role – maps onto this position. To put it more generally, the claim is that there is a component of a psych-verb's denoted meaning reflected in its form that affects the verb's argument structure. This component is the metaphoric location of a psychological state, which can be directly represented in sign languages due to the visual-spatial modality they use for linguistic expression. Interestingly, in his monograph on psych-verbs in spoken languages, Landau (2010) argues that the same meaning component accounts for the peculiar behavior of object Experiencers in spoken language psych-verb constructions. I summarize the main points of his proposal in the following subsection.

5.2.2   'Experiencer as location'
In his analysis of data from a variety of spoken languages, Landau (2010: 6) pursues the intuition that Experiencers are mental locations (33). His proposal is an attempt to synthesize previous accounts into one basic principle that is both conceptually and grammatically explanatory.

(33)   Experiencers are mental locations, that is, locatives.

From the hypothesis in (33) follow two main predictions that apply to the behavior of object Experiencers, outlined in (34) (Landau 2010: 6). Below, I will discuss only the first prediction.

(34)   a.   All object experiencers are oblique (or dative).
       b.   Experiencers undergo "locative inversion".

Landau claims that all object Experiencers are oblique locative arguments because they are assigned inherent Case by a preposition. I should point out here that, for obvious reasons, Landau explicitly refrains from making the stronger statement that standard subject Experiencers as in e.g. the sentence 'I love cats' are also oblique, although he offers that "at some grammatically relevant level of lexical semantics, subject experiencers are indeed associated with (mental) locations" (2010: 20).

The preposition that precedes the Experiencer (or succeeds, in the case of a postposition) may be null, which explains why many object Experiencers do not appear to have a locative character. Note that Landau's definition of inherent Case differs from that of Belletti and Rizzi (1988), since the latter argue that it is lexically assigned to an argument bearing a particular thematic role, while for Landau inherent Case is a structural notion. Thus, according to Landau, Class III verbs select an oblique object Experiencer not because the argument is lexically assigned dative Case, but because a preposition assigns Case. Similarly, Experiencers of Class II verbs are assigned inherent Case by a null preposition.[20]

5.2.3   *Does the body represent the Experiencer?*

Let us briefly return to Meir et al.'s claim that the body represents an argument of the verb in body-anchored (psych-)verbs. If we take this at face value and assume that the body *is* an argument of the verb, then we run into serious trouble when we are confronted with a sentence that includes an overt Experiencer, such as (35), repeated from (13b). Such a sentence would include two subject Experiencer arguments – one overt and one represented by the body. This would be a clear violation of the theta-criterion.

(35)   INDEX₁ $\overline{\text{RELIEVED}}^{\text{rs}}$
       'I was relieved.'   [0121-S008-01:47.85]

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20. Landau furthermore argues that Class II and Class III psych-verbs differ from one another in that the former are transitives projecting a light *v* and an external Causer, and the latter are unaccusatives which select a Target/Subject Matter (Theme) instead of a Causer. This structural distinction reflects a distinction between eventive and stative psych-verbs. See Landau's monograph (2010) for details.

In other words, Meir et al.'s hypothesis apparently predicts that body-anchored verbs cannot select an overt argument that bears the thematic role that is supposedly already represented by the body. The data presented in this article show that this prediction is – at least for NGT – not borne out. Landau's proposal for object Experiencers, in turn, also does not seem to be applicable to the data: all evidence indicates that psych-verbs in NGT select subject Experiencers, for which Landau proposes a regular transitive construction.

Nonetheless, there are valuable insights that can be drawn from both proposals. Meir et al. offer that the body plays a grammatically relevant role in constructions with psych-verbs and other body-anchored verbs. Landau offers the insight that the relation between psych-verbs and Experiencers can be characterized in locative terms. These two intuitions form the basis for an alternative account of psych-verb constructions in NGT, which I lay out in the next two sections.

5.3 The body as part of a locative adjunct

In a nutshell, the proposal entails that the body does not represent an argument of the verb, but that it is part of a locative adjunct that is adjoined to the VP. The semantics that this adjunct contributes might best be illustrated by a paraphrase. To take an example of a psych-verb that usually does not select a Theme, AFRAID (as articulated in Figure 5b) can be paraphrased as '[Experiencer] fears/has fear *in the chest of the (signer's) body*'.[21] For a psych-verb like LOVE, the paraphrase would be '[Experiencer] loves/has love for [Theme] *in the heart of the signer's body*'. Thus, there are three meaning components that the locative adjunct contributes: (a) a spatial relation, (b) the container of a psychological state, and (c) the mental location. The place of articulation of a psych-verb expresses a locative relation and functions as a preposition. The body of the signer represents the container of an emotion and functions as a kind of possessive determiner, which selects as its complement the location on the body representing a mental location. Note that the place of articulation merely indicates an abstract locative relation, but it does not in itself represent a specific mental location. That is, although this location is singled out by the place of articulation, it is a specific place on the body and not part of the manual articulation of the psych-verb itself.

Figure 6 represents the VP-internal part of the syntactic structure of psych-verb constructions that captures the ideas presented above. Note that the element in the head of the DP, labeled as [*signer's body*] is not a complex phrase. If it

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21. In this and the next section, I will not be concerned with the difference between LOVE, HATE, and MISS and the other psych-verbs. The focus is on the Experiencer and (its connection to) the psych-verb.

appears to be, it is because the phrase 'signer's body' in English is, of course, complex. In sign languages, however, the signer's body is a single non-complex 'entity', for which I argue that it is a structurally meaningful component in constructions with iconically motivated psych-verbs. I come back to this in Section 5.4, where I propose that [signer's body] functions linguistically as a variable that is specified for a first person feature under certain circumstances.

Let me emphasize that the structure in Figure 6 is argued to apply to constructions with iconically motivated psych-verbs only. These include body-anchored verbs and verbs forms where the hands represent the hands or legs, i.e. verbs that, in one way or another, make iconic reference to the Experiencer. They exclude the verbs SATISFIED-C and ANGRY-C, which are both signed in neutral space and do not have any iconic properties that can be interpreted as referring to the Experiencer. Constructions with these verbs are hypothesized not to have a locative adjunct.

The proposed account does not violate the theta-criterion. The body does not represent an argument but the 'container' of a psychological state. The next step to consider is where Experiencers are merged into the structure. I postpone this discussion until Section 5.4, where I also attempt to account for the observed interaction pattern between overt and non-overt Experiencers and role shift. It is also this pattern that forms the strongest argument for an analysis in which the iconic components of psych-verbs play a syntactic role.

A potential problem for the account is that adjuncts are optional by definition, yet I am arguing that they are always part of constructions with body-anchored psych-verbs in NGT. In principle, however, it is not required for a psych-verb in a sign language to specify the kind of information that I argue makes up the locative adjunct. The non-iconic verbs SATISFIED-C do not, for instance. The same applies
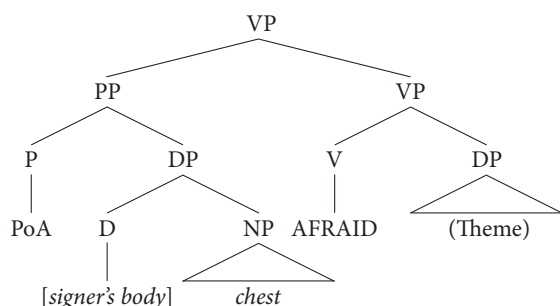

Figure 6. Structural representation of the VP-internal structure of clauses with psych-verbs in NGT, with the psych-verb AFRAID taken as an example. The head of the PP is occupied by the place of articulation (PoA) of the psych-verb. It takes a DP as its complement, which is headed by a possessive determiner, represented by the body of the signer. Its complement specifies the mental location of AFRAID, which is the chest. A potential Theme is situated in the complement of the VP.

to psych-verbs that agree with their arguments through directionality. No such verbs were attested in NGT, but the psych-verb HATE in both ISL (Meir 1998) and ASL (Christian Rathmann, personal communication, 9-12-2015) is of this type. Thus, a locative adjunct is not required or necessary in psych-verb constructions, but is merely a result of body-anchoring.

I conclude this section with a brief discussion of two smaller issues. Firstly, in order to draw parallels with Landau's proposal, I have argued that the location singled out by the place of articulation of a psych-verb specifies a mental location. However, I pointed out in Section 3.1 that not all psych-verbs refer to the metaphoric location of a psychological state. Instead, a fair number of verbs iconically represent a type of behavior associated with the expression of an emotion. One form of ASHAMED, for instance, refers to blushing and is signed next to the cheek. Clearly, the cheek is not the mental location of the psychological state. Nonetheless, it remains a location, which in this case corresponds to where the emotion is expressed physically. I believe there is nothing that prohibits the application of the same logic applied to psych-verbs that refer to a mental location – namely, that place of articulation, the signer's body, and the mental location form a locative adjunct – to this type of verbs. 'Mental' location in such cases merely needs to be substituted by 'physical' location. The compositional meaning of a verb like ASHAMED is then something along the lines of 'shame [expressed] on the (signer's) body's cheek'.

Secondly, there are several psych-verb forms that are not strictly body-anchored: in three forms, the hands represent body parts that fall outside of the signing space, while in six forms the hands represent a manual action. All of these verb forms, however, are signed in neutral space. Meir et al. mention similar examples from ISL and argue that such lexical forms obscure the basic pattern because "the body is not part of the phonological structure of the verb" (2007:547). They add that "[o]nce the hands take on the role of the body themselves, […] then the body is free to express a variety of nuances, and the basic pattern of 'body as subject' is no longer apparent" (ibid.). The 'variety of nuances' that the authors refer to may be, for instance, the attitude of an outside observer. The relevant examples from the Corpus NGT, however, do not give any indication that the body takes on a different function. In addition, while the relevant verbs are signed in neutral space, they appear to always be signed at the default location directly in front of the chest. Informal consultation with a deaf signer of NGT indicates that this is indeed the case. That is, a psych-verb form like NERVOUS-A, where the hands represent the legs, cannot be signed at a location more towards the left or the right of the body, for instance as a way of agreeing with a third person Experiencer. This is quite telling, since other verbs signed in neutral space do allow for such single argument agreement, as was pointed out earlier in Section 1.3. Thus, I would argue that the

body still plays the same role – i.e. that of container of an emotion – in psych-forms where the hands represent the hands or body parts that fall outside of the signing space. In these cases, it is the hands that represent the (physical) location of the psychological state. The only element that is different is the place of articulation, which does not point to a certain location. I would argue that psych-verbs of this type involve a null preposition instead.

5.4 The role of the body

There is one key observation from the corpus data that has not yet been accounted for. In Section 3.2, I showed that there is an interaction between the overtness of Experiencers, the grammatical person of the referents they refer to, and the use of role shift. In order to account for this pattern, I argue in this section that, as another consequence of body-anchoring, the body can carry a first person feature, which licenses drop of a first person Experiencer argument.

5.4.1 *The paradigm*

Remember from Section 3.2 that Experiencer drop regularly occurs in psych-verb constructions when the Experiencer is in first person (36a), or when role shift markers are present, regardless of who the referent is (36b). However, when there is a third person referent but the psych-verb is not marked for role shift, the Experiencer is, almost without exception, overtly realized (36c).[22] Thus, with the exclusion of just one example, drop of a third person Experiencer argument is observed only when role shift markers accompany the psych-verb, which essentially causes the locus of the signer to represent that of another referent.

(36) a.   CONFUSED. $INDEX_1$ $INDEX_3$ NAME FORGET
           'I'm confused. I forgot his name.'   [0371-S019-00:56.75]

                    rs
      b.   ‾R‾E‾L‾I‾E‾V‾E‾D   [0119-S008-00:18.90]

      c. $INDEX_3$ ASHAMED $INDEX_3$ PU+$INDEX_3$
           'S/he is ashamed.'   [0094-S001-02:41.80]

The full paradigm is illustrated in Table 5. Sentences with a non-overt Experiencer have a default first person interpretation. In sentences with an overt Experiencer, of course, grammatical person corresponds with the referent denoted by the argument, unless role shift causes a referential shift.

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22. Again, in the absence of negative data or judgments on interpretation, no definitive conclusions can be drawn. Nonetheless, the pattern described is striking and fairly robust, which, in my view, justifies exploring how to account for it.

Table 5. Person interpretation of the Experiencer in psych-verb constructions, as dependent on (overt realization of) the referent and role shift marking on the verb

Referent	Role shift	Interpretation
Non-overt	✓	First
	✗	First
First person	✓	First
	✗	First
Third person	✓	Third
	✗	First

5.4.2   *Full representation of psych-verb constructions in NGT*

Figure 7 illustrates the full structural representation of psych-verb constructions in NGT, taking the clause INDEX$_3$ AFRAID ('He is afraid') as an example. The Experiencer is merged in [Spec,vP] as an external argument.[23] It may move to [Spec,IP] for independent reasons, for instance when a clause includes AUX-OP. The head of the vP can optionally be filled by e.g. the verb LOOK. When role shift is used, an operator taking (at least) the VP and the locative adjunct in its scope accounts for the shifted interpretation of the indexical signs that fall in its scope, following Lillo-Martin (1995) and Quer (2005, 2011). This is not depicted in the figure.

Importantly, the part of the structure in Figure 7 adopted from Figure 6 differs in one respect: the element in the head of the DP in the locative adjunct is represented as a variable x instead of [*signer's body*]. This variable is co-indexed with the subject DP. In the next subsection, I will argue that the default first person interpretation of the Experiencer in sentences with a non-overt argument is the result of a first person feature being present on x.

5.4.3   *An iconically motivated variable*

Remember that the variable x is situated in the head of the DP that forms part of a locative adjunct and that it functions as a possessive determiner. It represents the signer's body. I suggest that there are two kinds of specifications that x can

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23. Note that it is not unusual to assume that subject Experiencers are external arguments, even if they are the argument of a stative psych-verb. As mentioned earlier, Belletti & Rizzi (1988) made such a claim, and Kratzer (1996), Arad (2002), and Bennis (2004), among others, arrived at the same conclusion. In addition, several of the abovementioned authors argue that the thematic role of the external argument indicates a possession or holder relationship. This appears to fit well with the analysis proposed here, since I claim that there is a relation of possession between the signer's body, which is anteceded by the Experiencer, and the (mental) location of the emotion denoted by the psych-verb.
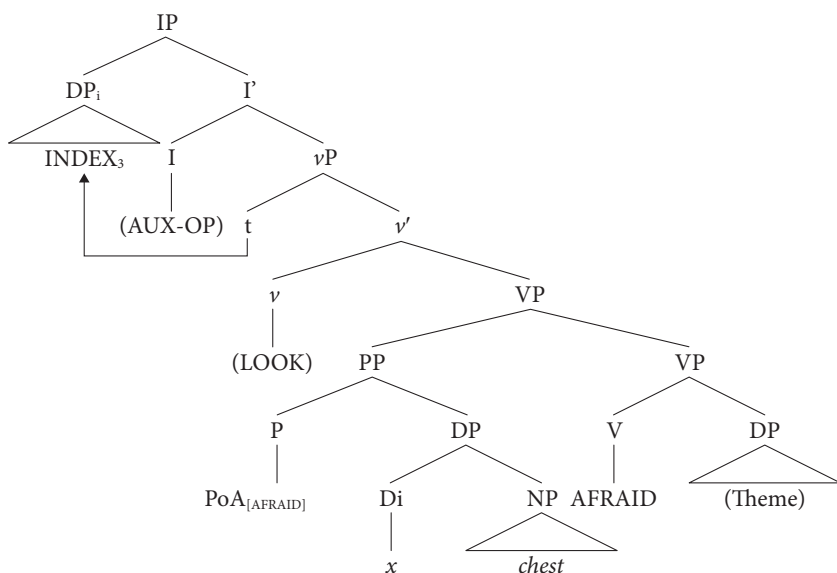
Figure 7. Revised structural representation for constructions with psych-verbs in NGT. (Pro)nominal Experiencers (INDEX$_1$) are merged in [Spec,*v*P] and may move to [Spec,IP] under certain circumstances, e.g. when an auxiliary (AUX-OP) is present. *x* in the PP is a variable co-indexed with the subject DP (INDEX$_3$).

receive. The first is exclusively iconic and specifies that *x* represents the body as container of a psychological state (x_b). This feature is always attached to the variable. The second feature is also iconically motivated but additionally has a grammatical function. Specifically, a first person feature can become associated with *x* as a consequence of body-anchoring.[24] After all, the body is also the locus of first person pronominals. In contrast to the body-as-container specification, the first person feature can be separated from the variable. Thus, *x* is specified either for both body-as-container and a first person feature (37a), or body-as-container only (37b).

(37) a. x_{b+1}
      b. x_b

Just like other grammatically relevant elements, the variable is part of the numeration. The numeration will include the variable x_{b+1} in cases where (i) the

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24. Meir et al. (2013) also make the point that, in addition to functioning as subject as previously argued in Meir et al. (2007), the body can also express grammatical first person. The authors show that these functions are sometimes in competition. However, although Meir et al. argue that the body can represent first person in agreement verbs, no such claim is made for body-anchored verbs, as I do here.

numeration also includes a first person pronoun (i.e. a pronoun that is specified for [+signer]) (38a), or (ii) the numeration does not include any lexical item carrying a person feature (38b). Only in case the numeration includes a lexical item with a second or third person feature (i.e. an item that is specified for [–signer]), the variable x_b is selected instead (38c). The variable x is able to enter the numeration because it abides by the principle that it should affect the output (Chomsky 1995). The fact that the selection of the variable depends on another element in the numeration is in line with Chomsky's assumption that "output conditions enter into determination of the numeration itself; they affect the operation that constructs the numeration from the lexicon" (1995: 294). Many analyses of EPP, for instance, are built on the same assumption.

(38)   a. $N = \{\ \text{INDEX}_1\ x_{b+1}\ \text{AFRAID} \dots \}$
       b. $N = \{\ x_{b+1}\ \text{AFRAID} \dots \}$
       c. $N = \{\ \text{INDEX}_3\ x_b\ \text{AFRAID} \dots \}$

The variable, with its one or two features, is merged into the structure as the head of the DP in the locative adjunct. I schematically illustrate in Figure 8 what happens. In sentences with an overt first person Experiencer, the argument is merged in the specifier of the *v*P. The argument and the variable enter in a co-indexing relation, and the Experiencer's person feature is valued by the variable (Figure 8a). The first person feature on the variable licenses a null subject, deriving a sentence with a non-overt first person Experiencer (Figure 8b). In contrast, the variable x_b lacks any person specifications, and thus does not function to value features on the subject Experiencer (INDEX_3 in Figure 8c). In this case, a null argument is not licensed because x_b does not carry features that would allow for its recoverability. Thus, only first person Experiencers can be non-overt. Note that I thus predict that such a non-overt argument is not licensed in constructions with the verbs SATISFIED-C or ANGRY-C, since these do not have iconic properties and thus do not project a locative adjunct.

The analysis presented above has parallels with the analysis of height specifications of (referential) loci put forward in Schlenker et al. (2013) and Schlenker (2014). Schlenker et al. (2013) make the claim that some iconic geometric properties of signs are preserved in formal semantics. Schlenker (2014) goes on to argue that some iconic specifications in sign languages can have featural status, thus reconciling formalist and iconic views on sign language structure. Specifically, he demonstrates that height specifications of loci have a strong iconic component, but nonetheless can be disregarded by rules, in which case they remain uninterpreted. This suggests that iconic specifications and features either both share a characteristic property (Strong View) or that they are both separable from the variable they appear on (Weak View). Schlenker shows that the Strong View best describes
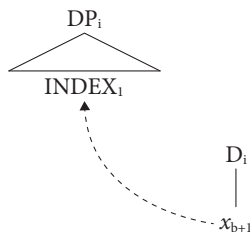
(a) Psych-verb constructions with an overt first person Experiencer contain a variable x in a locative adjunct that is specified for body-as-container and first person.
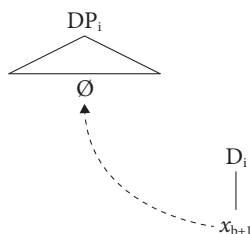
(b) The person specification on the variable x licenses drop of the (first person) Experiencer argument.
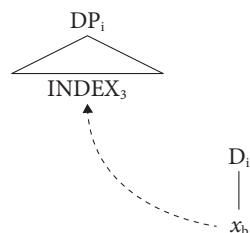
(c) Psych-verb constructions with an overt third (or second) person Experiencer contain a variable x in a locative adjunct that is specified for body-as-container but not first person. Drop of the argument is not licensed, because it would not be recoverable.

Figure 8. Schematic representations of the co-indexing relation between the subject Experiencer and the variable x.

data from ASL, while the Weak View can be applied to French Sign Language. In a similar manner, I argue that in the articulation of psych-verbs, the body represents a variable that can be iconically specified for a first person feature. Note that the iconic specification for body-as-container (x_b) does not have grammatical status, but its presence on the variable explains why the articulation of a psych-verb remains unchanged, i.e. still body-anchored, in constructions with a third instead of a first person Experiencer.

To sum up, in this section, I have taken the pattern with regard to overt and non-overt Experiencers in the data as indication that the iconic properties of psych-verbs are relevant at the structural level by arguing that (a) the Experiencer and the body in the locative adjunct are in a co-indexing relation, and (b) the default interpretation of the Experiencer when it is not overtly realized is first person as a result of body-anchoring. In specific terms, the body functions as a possessive determiner that can be specified for a person feature. Crucially, as a direct consequence of iconicity, this feature can be first person only.

6.   Conclusions and discussion

To recapitulate, I have shown that psych-verbs in NGT are body-anchored, and I have subsequently argued that the location on the body singled out by the place of articulation of a psych-verb refers to a mental location contained within the body, which in turn functions as a possessive determiner. Together with the verb's place of articulation, a preposition-like element, they form a locative adjunct. I thus depart from Meir et al.'s proposal that the body represents an argument of body-anchored verbs, which I have shown cannot be upheld in clauses with overt Experiencers. Landau's intuition that there is a locative relation between the Experiencer and a psychological state is preserved, although its formal realization in NGT differs, as described above.

Furthermore, I have attempted to account for the fact that, barring one case, Experiencer arguments are consistently overt in examples with a third person Experiencer referent but without role shift markers accompanying the psych-verb. I argued that the Experiencer and the body are in a co-indexing relation. The body is always iconically specified for body-as-container (x_b) and may receive an additional specification for first person, which is again iconically motivated. This specification licenses a null argument, but only in case of a first person referent. This is thus a modality effect resulting from iconicity. I thus align myself with recent efforts to incorporate iconicity into the formal grammar system (Schlenker 2014; Schlenker et al. 2013; Kuhn & Aristodemo 2015, but also Benedicto & Brentari 2004; Grose et al. 2007; Wilbur 2003 and later work; Rathmann 2005).

If the analysis presented in the previous section is on the right track, one might wonder whether it could extend to psych-verbs in other sign languages. It seems that the answer is positive, since much of the analysis hinges on the fact that NGT psych-verbs are body-anchored, and it appears likely that the same applies to psych-verbs in other sign languages. Indeed, it is evident from Meir et al.'s (2007) work that this holds for psych-verbs in ISL, and they point out that similar patterns are found in other sign languages. Obviously, more research in necessary in

order to determine the similarities and differences between psych-verb constructions in NGT and other sign languages, as well as within sign languages. I already mentioned in Section 5.3 that the proposed analysis does not apply to two psych-verbs that were found in the corpus data, since they are not iconically motivated. A different analysis might therefore be needed for these verbs.

Considering the importance given to the fact that psych-verbs are body-anchored, another question that can be raised is whether the analysis also applies to other types of iconically motivated body-anchored verbs.[25] One could think of verbs like KNOW (head), EAT (mouth), or SEE (eyes). The predictions for all of these verbs would be that (a) the thematic relation that is most closely linked to the body is always realized as subject due to a co-indexing relation with the body, and (b) the use of non-overt arguments would be constrained in similar ways as in psych-verb constructions. If these predictions are borne out, then we might argue that psych-verbs in sign languages are not grammatically 'special', as they are often claimed to be for spoken languages. Instead, they form part of a larger group of verbs of which the grammatical characteristics are influenced by their iconic properties.

The apparent interaction between body-anchoring, role shift, and overtness of arguments also invites more in-depth investigation, both by means of corpus analysis and elicitation. In the analysis presented in Section 5, I argued that a co-indexing relation between the subject and a variable representing the signer's body explains the pattern found in the corpus. If this is correct, then no such pattern should be found in constructions with (a) body-anchored verbs that are not iconically motivated, such as LIVE (cheek), REQUEST (chin), or TRY (nose), and (b) verbs that are not body-anchored, since there would be no basis for such a relation.

Finally, and related to the previous point, corpus data, while very useful for exploratory research, also have obvious limitations. More controlled experimental data is necessary in order to further investigate the claims that flow out of the investigation presented in this article. For instance, phenomena like constituent order and spreading of non-manual markers are notoriously variable in corpus data

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25. A reviewer suggests that the term *embodied cognition*, originally a philosophical concept but since applied in other academic fields including linguistics, might capture the semantics of body-anchored verbs, including psych-verbs. Embodied cognition refers to the idea that the body or human experiences influence the mind and cognition, which includes language. In spoken language, as Lakoff & Johnson (1980) show, this is reflected in extensive use of metaphor. Taub (2001) demonstrates the same for sign languages. From these works, it appears that *embodied cognition* can apply much more widely than to psych-verbs and other body-anchored verbs only. In an agreement verb like ANSWER in NGT, for instance, the starting location of the verb in its canonical form is the chin, in clear iconic reference to where speech (in spoken language) originates from: the voice or mouth. As such, the term is not specific enough to capture the semantics of body-anchored verbs exclusively.

due to the interference of all kinds of linguistic and non-linguistic factors, for some of which it is not quite clear how they function or how they should be characterized. Furthermore, some constructions hardly appear in corpus data even though they might be perfectly grammatical and thus could help refining analysis. For instance, in the data set for the current study, only very few examples include the auxiliary AUX-OP, while a clearer picture of how it may function in sentences with psych-verbs could further shape the analysis presented in Section 5. Moreover, it is not completely clear from the corpus data if psych-verbs other than LOVE, HATE, or MISS may participate in some sort of alternation between constructions with an Experiencer and constructions with an Experiencer and a Theme, if constructions with two arguments are merely optional under certain circumstances, or if such type of constructions are in fact not particularly well-formed. I have not focused much on the Theme argument in the analysis, and I leave it up to future research to further explore its properties and behavior. Finally, I have not attempted to account for different constituent orders in the structural analysis of psych-verb constructions. For instance, the structure in Figure 7 puts the Experiencer in sentence-initial and the Theme in sentence-final position. While the most common constituent order was found to be SVO, SOV order was also occasionally attested. I leave a more in-depth discussion of constituent order and the way different orders can be accounted for structurally to future research.

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Appendix.   Notational conventions

SIGN	Signs are glossed in small capitals and with an English gloss that most closely approximates the intended meaning.	PU	The gloss PU represents the 'palm up'-sign, which may fulfil a variety of mostly discourse-related functions.
SIGN-SIGN	Sometimes more than one English word is needed to represent the meaning of one sign, in which case the words are separated by hyphens.	++	Indicates reduplication cycles of a sign. (Habitual) aspect is marked by means of reduplication.
INDEX$_x$	INDEX refers to a pointing sign. The subscript indicates whether the sign is directed towards the signer's body ('1'), the addressee ('2'), or another present or non-present referent ('3').	/	Indicates a clause boundary, typically marked by a pause and other prosodic cues.
$_x$VERB$_y$	Subscripts with agreement verbs and auxiliaries indicate person agreement.	lh/rh	In examples where the left hand and right hand produce different signs, 'lh' and 'rh' are added before the glosses to indicate which signs are signed by which hand.

<u> xx</u>	Non-manual markers are indicated by a line above the signs over which the markers extend. 'hs' stands for headshake, which is a marker of negation; 'rs' refers to role shift markers; 't' refers to raised eyebrows as the marker for topicalization.
%action	Anything that follows % is a constructed action.
SIGN- -----	A dashed line following a sign indicates that the sign is held by one hand while the other hand goes on with signing.

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