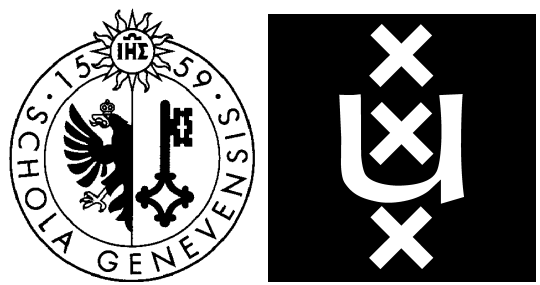
Indexicals under role shift in Sign Language of the Netherlands (NGT): Experimental insights

David Blunier, University of Geneva
Jenia Khristoforova, University of Amsterdam



FEAST 2023, University of Bergen
June 29, 2023

Outline

Outline

Role shift in sign languages

- **Role shift (RS)** is a construction commonly used in sign languages (SLs) to **report utterances or thoughts** from an agent's perspective (the attitude holder)
  - → Constructed Action is outside of the scope of this presentation
- RS signaled by non-manual markers (RS-NMMs: **eye gaze shift**, **body and head leans and turns**)

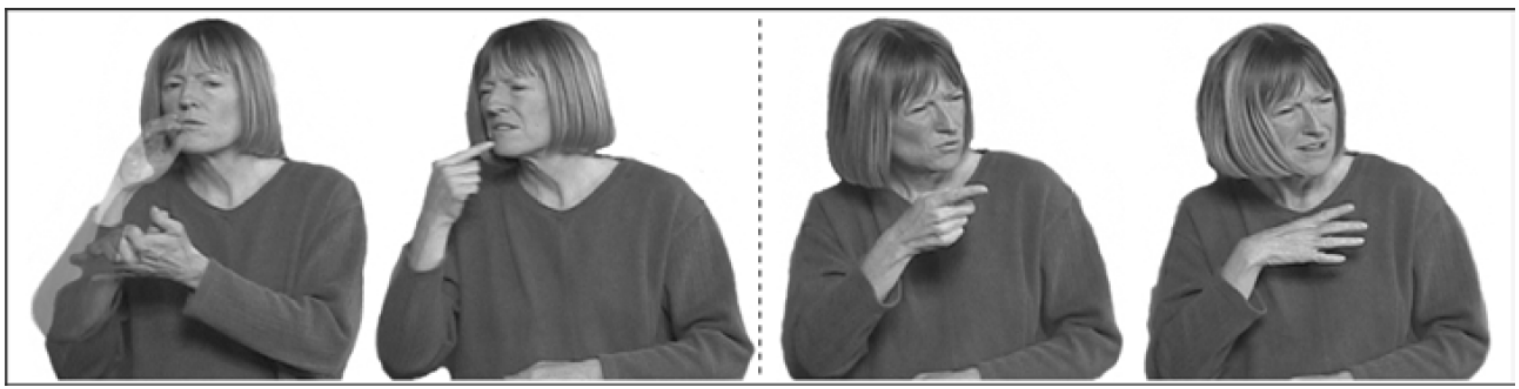


Figure 1: RS-NMMs in American SL (Lillo-Martin 2012: 369)

Indexical shift

- Indexicals (1st/2d person pronouns (IX-1 /IX-2), temporal (NOW) and spacial (HERE) deixis) can 'shift' under role shift, i.e. obtain their reference from the reported context (Friedman 1975, Meier 1990).
- similar to quotation in English, where indexicals are interpreted within the context of the original report, not the context of utterance

(1) My wife said (to me$_i$): 'Are you$_{i/\#j}$ fine?'

Role shift as context shift?

- A popular analysis of role shift – **context shift**, as in **indexical shifting languages** (Schlenker 2003, Anand and Nevins 2004).
- The matrix predicate introduces a **context-shifting operator** 👻 scoping over the embedded sentence (**overtly realized in SLs by RS-NMMs** (Lillo-Martin 1995, Quer 2005, Herrmann and Steinbach 2012, Schlenker 2017 a.o.)):

(2) [My wife said to me$_i$ 👻 [you$_i$ fine?]]

- Since all indexicals obtain their reference from the same set of context coordinates (Kaplan, 1989), **it is expected that every indexical within the scope of 👻 (RS-NMMs in SLs) will be interpreted relative to the reported context**. Accordingly, no shifted reading is outside of the scope of 👻/RS-NMMs.

Role shift as context shift?

- However, previous studies on Catalan SL (Quer, 2011), German SL (Herrmann and Steinbach, 2012), Russian SL (Kimmelman and Khristoforova, 2018) and Hong-Kong SL (Gan, 2021) have shown that (a) indexicals do no always "shift together" and (b) RS-NMMs are neither necessary nor sufficient for indexicals to shift:

(3) In Moscow (Msc):

IX-3_a WOMAN PAST ST.PETERSBURG TELL$_b$ MAN IX-3_b

$\overline{\text{IX-1 WORK HERE}}^{\text{RS-NMMS}}$

'A woman$_i$ when she was in St. Petersburg$_{SpB}$ told a man: "I$_i$ work here$_{SpB/Msc}$".'

(Kimmelman and Khristoforova 2018: 9)

Role shift as context shift?

(3) In Moscow (Msc):

IX-3_a WOMAN PAST ST.PETERSBURG TELL$_b$ MAN IX-3_b

$\overline{\text{IX-1 WORK HERE}}^{\text{rs-nmms}}$

'A woman$_i$ when she was in St. Petersburg$_{SpB}$ told a man: "I$_i$ work here$_{SpB/Msc}$".'

(Kimmelman and Khristoforova 2018: 9)

- IX-1 is shifted (refers to the women)
- HERE is ambiguous between a shifted (St. Petersburg) and unshifted (Moscow) readings despite RS-NMMs.

Role shift as demonstration

- Kimmelman and Khristoforova (2018) adopt *demonstration analysis* by Davidson (2015): RS denotes depiction involving a broad range of linguistic actions (e.g. quotation), but also non-linguistic (e.g., gesture and facial expressions).
- Under *demonstration analysis*, signers are free to choose how precisely they want to report the utterance, hence variation in RS.

Demonstration analysis (Davidson 2015)

(4) $[\![\text{John said "I am happy"}]\!] =$
$\exists e.[\text{agent}(e, \text{John}) \wedge \text{demonstration}(d[\text{"I am happy"}], e) \wedge \text{saying}(e)]$

- We will not discuss Davidson's analysis in this presentation, but see the upcoming paper for detailed comments and discussion.

Outline

Research questions

- Corpus NGT (Crasborn and Zwitserlood, 2008): NGT patterns together with other SLs in that RS-NMMs are frequent but neither sufficient nor necessary for indexical shift and sign reports in general

- Our research questions for the experiment:
  1. Do RS-NMMs influence the interpretation of the indexicals?
  2. Do indexicals IX-1 and IX-2 respond to RS-NMM similarly?
  3. How availability of the context influence felicity of reports with and without RS-NMMs?

Experiment

- 13 native NGT signers (26 - 58 y.o; 5 males)
  - Phase I: 13 participants
  - Phase II: 10 participants
- Stimuli presented by two pairs of signers
  - In the first pair, signer T tells signer C the original utterance.
  - In the second pair, signer M reports T's utterance to signer J.
- The questionnaire form developed in JSPsych (de Leeuw 2015).
- For each stimulus, signer first had to provide a felicity score and suggested interpretation for an indexical element in a stimulus choosing from T, C, M, J or none (one or more possible)

Experimental conditions in Phase I: IX-1 and IX-2

IX-1

(5) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. T. SAY IX-1 LOVE CYCLING — M to J
'T. said I love cycling'
videos

IX-2

(6) a. IX-2 SIGN VERY.WELL — T to C
'You sign very well!'

b. YESTERDAY T. C. MEET. T. SAY IX-2 SIGN VERY.WELL — M to J
'T. said You sign very well!'

videos

Experimental conditions in Phase II: IX-1 and IX-2

IX-1 + IX-2

(7) a. IX-1 MISS IX-2 — T to C
'I miss you'

b. YESTERDAY T. C. MEET. T. SAY IX-1 MISS IX-2 — M to J
'T. said I miss You' *videos*

Experimental conditions in all Phases: RS-NMMs

No RS-NMMs

(8) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. T. SAY IX-1 LOVE CYCLING — M to J
'T. said I love cycling' *videos*

RS-NMMs

(9) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. $\overline{\text{T. SAY IX-1 LOVE CYCLING}}^{\text{RS}}$ — M to J
'T. said I love cycling' *videos*

Experimental conditions in Phases I and II: context

Context

(10) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. T. SAY IX-1 LOVE CYCLING — M to J
'T. said I love cycling' *videos*

No context

(11) YESTERDAY T. C. MEET. $\overline{\text{T. SAY IX-1 LOVE CYCLING}}^{\text{RS}}$ — M to J
'T. said I love cycling' *videos*

Experimental set-up for a single session

- 2 IX cond * 2 RS cond * 2 context cond * **3 lexical variants** = 24 stimuli
  - Phase I: IX-1; IX-2
  - Phase II: IX-1 + IX-2
- + 6 fillers
- + training phase
- First all stimuli without context, than with context; otherwise stimuli randomized
- within participant design

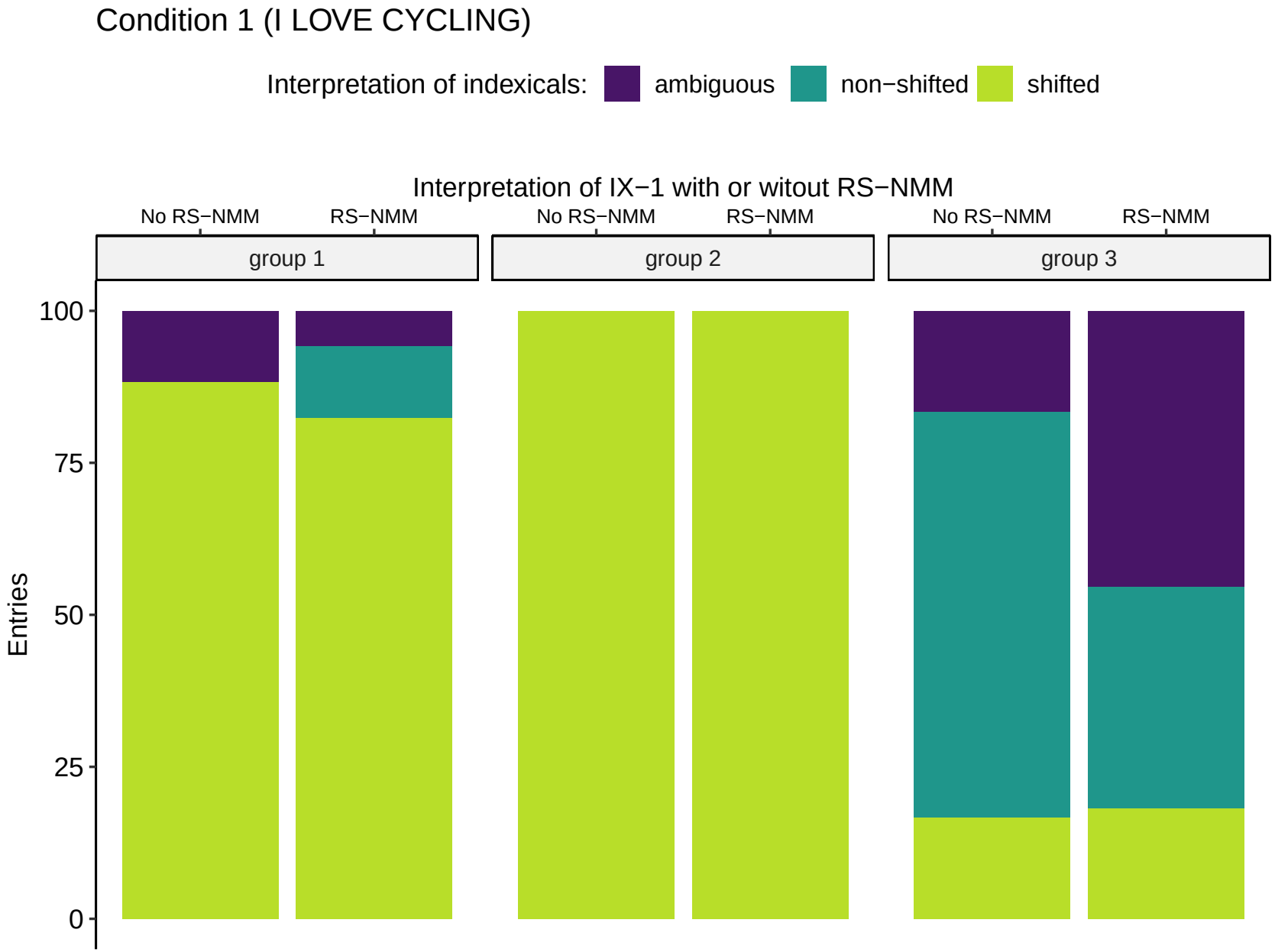
Outline

Results: crutial points

- Based on the responses, we dstributed 13 participants across **3 groups** (5/4/4), with consistently similar patterns of responses within each group.
  - **NB!** groups were formed after the experiment; no formal cluster analysis involved
  - **NB!** across all conditions same participants stayed in the same groups
  - **NB!** no socio-linguistic predictors observed, albeit not enough data for a proper analysis
- Context variable did not influence the interpretation but affected the felicity score (ask us in Q&A)

Stimuli
More data
Fancy plots

Interpretation of IX-1: I love cycling



Interpretation of IX-1: I love cycling

Group 1 and 2 for IX-1

(12) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. $\overline{\text{T. SAY IX-1 LOVE CYCLING}}^{\varnothing/\text{RS}}$ — M to J
'T.$_i$ said I$_i$ love cycling'
#'T. said I$_M$ love cycling'

videos

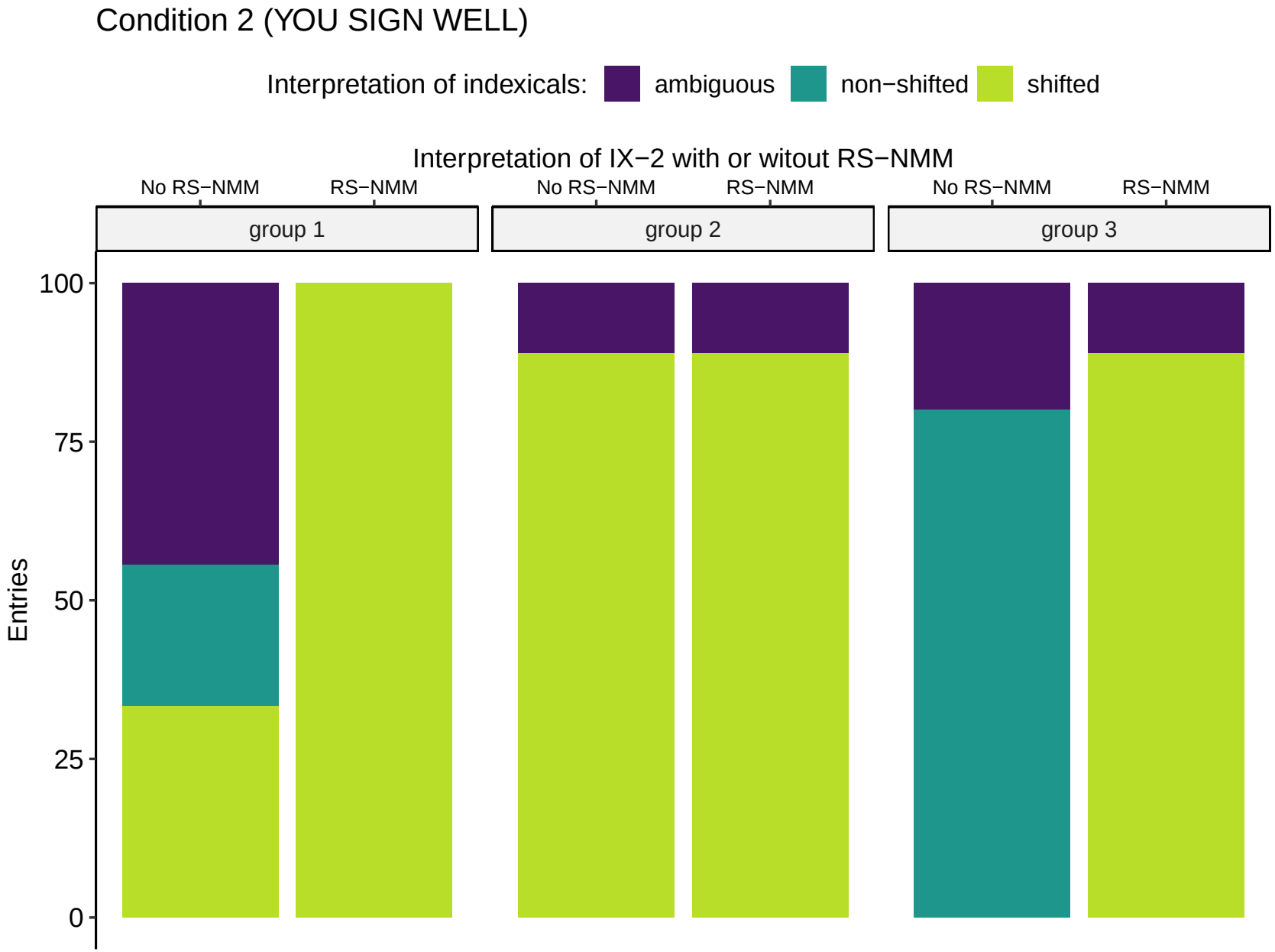
Group 3 for IX-1

(13) a. IX-1 LOVE CYCLING — T to C
'I love cycling'

b. YESTERDAY T. C. MEET. $\overline{\text{T. SAY IX-1 LOVE CYCLING}}^{\varnothing/\text{RS}}$ — M to J
#'T.$_i$ said I$_i$ love cycling'
'T. said I$_M$ love cycling'

videos

Interpretation of IX-2: You sign very well!



Interpretation of IX-2: You sign very well!

Groups 1 and 3 for IX-2

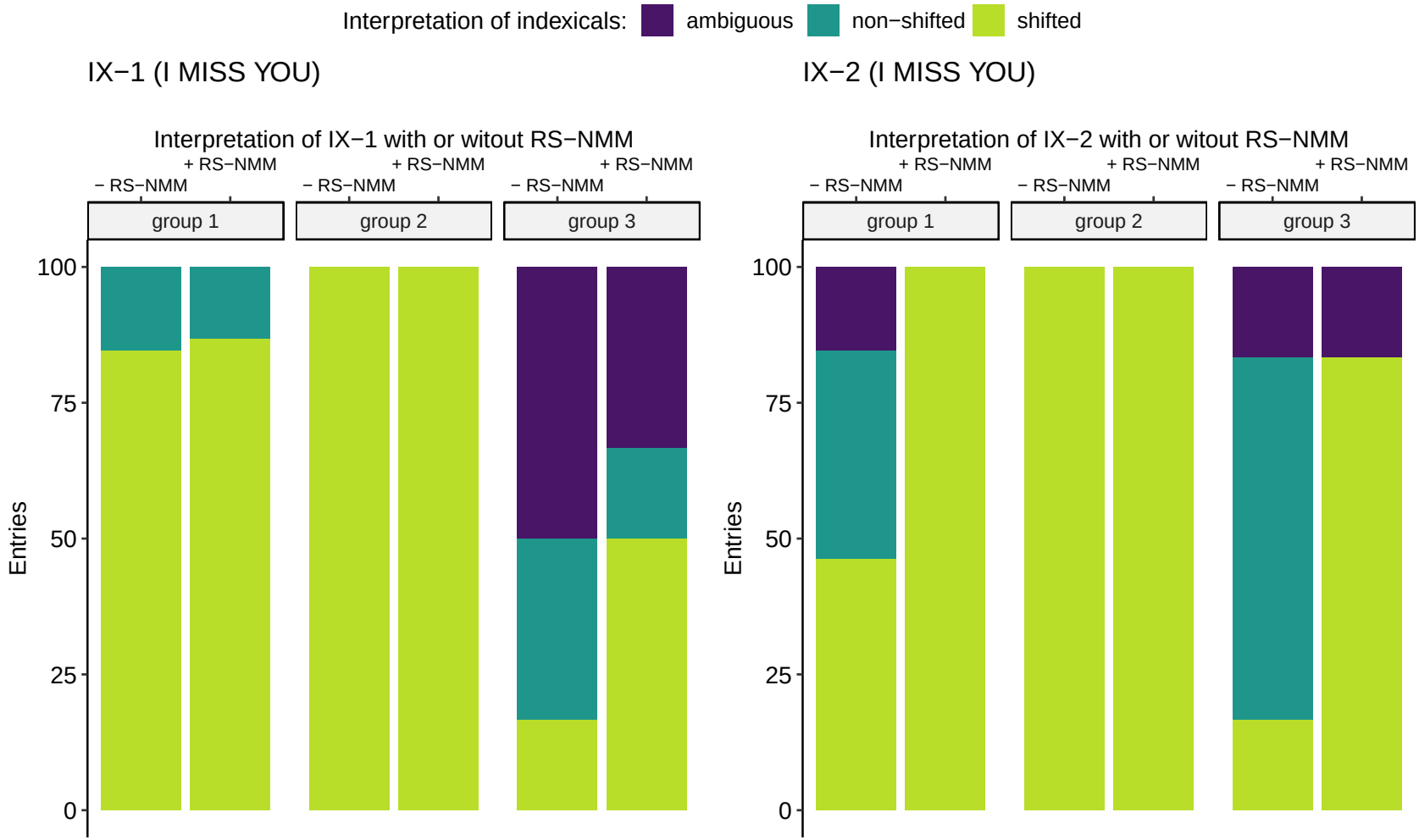
(14) a. IX-2 SIGN VERY.WELL — T to C
'You sign very well!'

b. YESTERDAY T. C. MEET. T. SAY IX-2 SIGN VERY.WELL (RS) — M to J
#'T. said you$_J$ sign very well'
'T. said you$_C$ sign very well'

c. YESTERDAY T. C. MEET. T. SAY IX-2 SIGN VERY.WELL (RS) — M to J
'T. said you$_J$ sign very well'
#'T. said you$_C$ sign very well'

videos

Interpretation of IX-1+IX-2: I miss you!



Interpretation of IX-1+IX-2: I miss you!

Predictions:

IX-1 and IX-2: mixed indexicality

(15)

YESTERDAY T. C. MEET. T. SAY IX-1 MISS IX-2 M to J

Group 1: 'T. said I_T miss $you_{J(/C)}$'

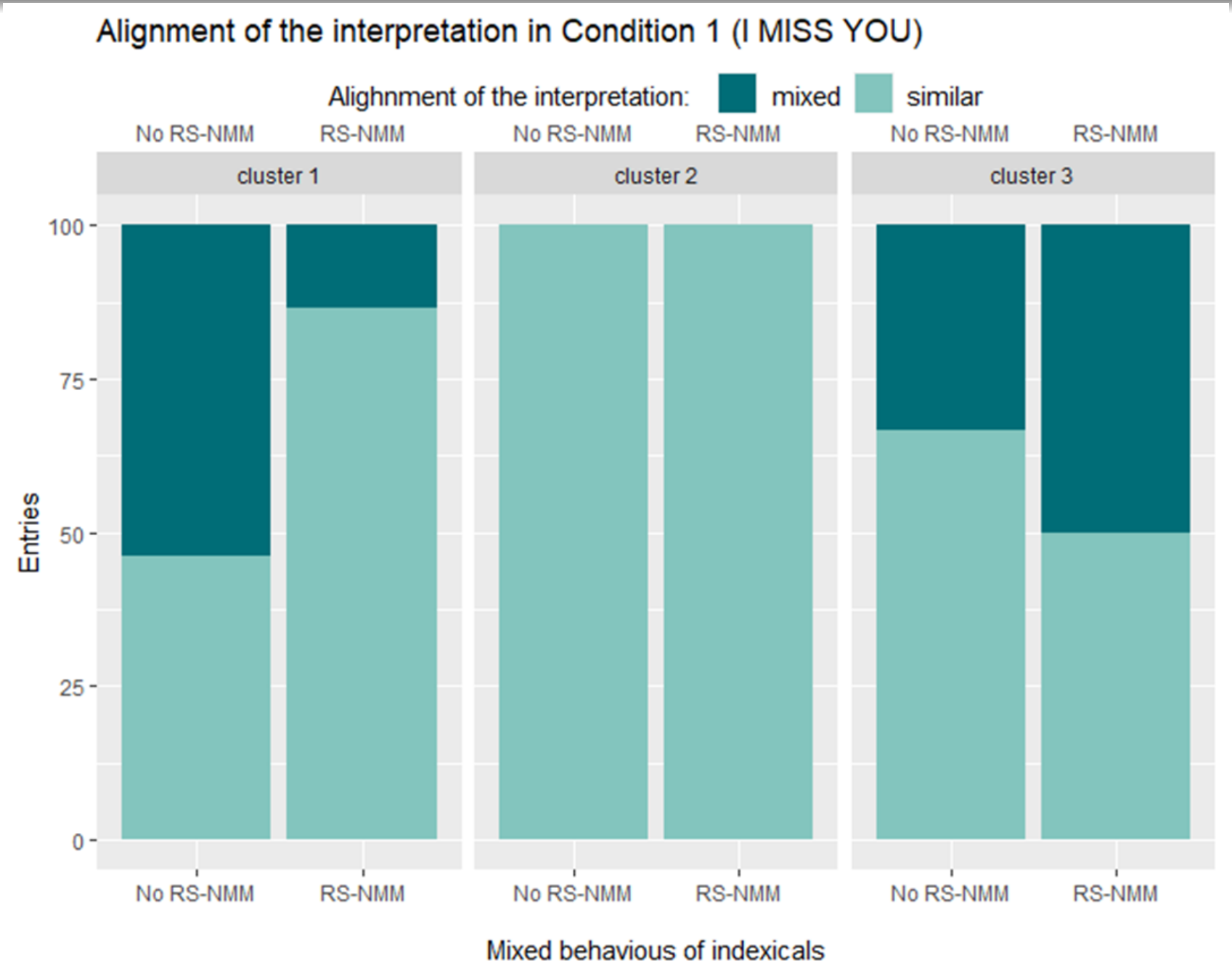
Group 2: 'T. said I_T miss you_C'

Group 3: 'T. said $I_{\mathbf{M(/T)}}$ miss $you_{\mathbf{(J/C)}}$'

videos

As shown further the mixed indexicality was indeed observed!

Interpretation of IX-1+IX-2: I miss you!



Results: summary

- High level of variation! But not random/free variation.
- **RS-NMM did not influence** the interpretation of **IX-1** in all groups:
  - **Groups 1 and 2** - shifted IX-1
  - **Group 3** - unshifted IX-1
- **RS-NMM did influence** the interpretation of **IX-2** in Groups 1 and 3 but not Group 2

Deep asymmetry between the shifting behavior of IX-1 vs.IX-2

- Sentences with both IX-1 and IX-2 yield **mixed indexicality** in Groups 1 and 3

Outline

Results: summary

- High level of variation! But not random/free variation.
- **RS-NMM did not influence** the interpretation of **IX-1** in all groups:
  - **Groups 1 and 2** - shifted IX-1
  - **Group 3** - unshifted IX-1
- **RS-NMM did influence** the interpretation of **IX-2** in Groups 1 and 3 but not Group 2

Deep asymmetry between the shifting behavior of IX-1 vs.IX-2

- Sentences with both IX-1 and IX-2 yield **mixed indexicality** in Groups 1 and 3

Questions for the analysis

- IX-2 behaves as theory predicts, i.e. sensitive to RS-NMMS
- IX-1 doesn't; *what goes wrong with IX-1*?

IX-1 as a logophor

- Our solution: IX-1 is actually a *logophoric form* in NGT, sharing some features with a genuine 1st person (see also Lillo-Martin (1995))
- This assumption is motivated by a large number of cases in both spoken and sign languages.

IX-1 as a logophor in spoken languages

- A number of languages exhibit 'first-person logophoricity', whereby 1st person can be used in reported speech constructions to refer to the author of the reported speech act (Curnow 2002; Deal 2021).
- Aqusha Dargwa (Caucasus) uses 1st person agreement on the verb as a logophoric marker:

(16) a. ʔlis hanbikib [nu q'an **iub-ra** ili]
Ali think.PST.3SG 1SG late became.**1** COMP
✓'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'
[Aqusha Dargwa, adapted from Ganenkov 2021: (10-11)]

IX-1 as a logophor in spoken languages

(17) a. ʔlis hanbikib [nu q'an **iub-ra** ili]
Ali think.PST.3SG 1SG late became.**1** COMP
✓'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'

b. ʔlis hanbikib [nu q'an **iub** ili]
Ali think.PST.3SG 1SG late became.**3** COMP
✗'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'

[Aqusha Dargwa, adapted from Ganenkov 2021: (10-11)]

- (17a) is ambiguous between an indexical reading (where the embedded 1SG pronoun and agreement marker both refer to the actual speaker) and a shifted reading (where they refer to the author of the report, Ali).
- Crucially, (17b), where the embedded subject is 1SG but the verb is inflected for third person, lacks the shifted interpretation.

IX-1 as a logophor: implementation

- Blunier (2023) proposes an analysis of both indexical-shifting and logophoric systems based on the idea that logophoric pronouns are essentially 1st personal element that lack an ACTUAL feature, allowing them to remain underspecified with respect to the context in which they are interpreted (cp. Schlenker 2003).

IX-1 as a logophor: implementation

(18) **Semantics of features**

a. $[\![\textsc{Actual}]\!]^{g,c,i} = \lambda x : x \sqsubseteq s(c) \vee a(c).x$

b. $[\![\textsc{Author}]\!]^{g,c,i} = \lambda x : s(c) \sqsubseteq x \vee s(i) \sqsubseteq x.x$

c. $[\![\textsc{Participant}]\!]^{g,c,i} =$
$\lambda x : s(c) \sqsubseteq x \vee a(c) \sqsubseteq x \vee s(i) \sqsubseteq x \vee a(i) \sqsubseteq x.x$

- ACTUAL ensures that the referent of the variable is included or equals a participant coordinate (author or addressee) of the actual context (or utterance context).
- ACTUAL and AUTHOR can be distributed over distinct pronominal forms (e.g. in languages like Ewe, which possess a logophoric pronoun in addition of a 1st person form).
- They can also be **syncretic**: in that case, the 1st person is only specified with an AUTHOR feature, and can be both interpreted as the speaker/author of both index and context. This is the case of systems such as Aqusha Dargwa and other 'shifty' languages.

IX-1 as a logophor: implementation

(19) **Languages with dedicated logophoric pronouns (e.g., Ewe)**
   a. 1: [Author, Actual]
   b. Log: [Author]
   c. 2: [Part(icipant)]
   d. 3: [ ]

(20) **'Unshifty' languages (English)**
   a. 1: [Author, Actual]
   b. 2: [Part, Actual]
   c. 3: [ ]

IX-1 as a logophor: implementation

(21) **'Shifty' languages (Aqusha)**
   a. 1: [Author]
   b. 2: [Part]
   c. 3: [ ]

(22) **NGT**
   a. 1: [Author]
   b. 2: [Part, Actual]
   c. 3: [ ]

$\rightsquigarrow$ 1SG unspecified; 2SG a genuine indexical, being shifted by RS-OP

IX-1 as a logophor: implementation

- The behavior of the IX-1 in NGT under RS suggest that it could be given a similar semantics as the 1st person in indexical-shifting languages such as Aqusha Dargwa.
- Namely, a variable presuppositionally restricted with AUTHOR compatible with both the author of the actual context (the current signer) and the author of the index (the author of the reported speech act).

(23) **The NGT logophor**

a. $[\![\text{IX}_{1i}]\!]^{g,c,i} = \lambda x.g(i) \sqsubseteq s(c) \vee s(i).g(i)$

b. $[\![\text{T. SAY IX}_1 \text{ LOVE CYCLING }]\!]^{g,c,i} = 1$ iff $\forall i'$ compatible with what T. said in i, $auth(i')$ loves cycling in i' **or** $auth(c)$ loves cycling in i'.

(24) **The NGT 2sg indexical**

a. $[\![\text{IX}_{2i}]\!]^{g,c,i} = \lambda x.g(i) \sqsubseteq s(c) \vee a(i).g(i)$

b. $[\![$  $\text{IX}_{2i}]\!]^{g,c,i} = \lambda x.g(i) \sqsubseteq \mathbf{s(i)} \vee a(i).g(i)$

Referential ambiguity

- This analysis therefore posits that the 1st person form is *ambiguous between a genuine indexical and a logophor*.
- This ambiguity is reflected by the morphononology of IX-1 realized on the chest of the signer in NGT.
- Under RS, **the sign stays anchored to the body of the signer**, *contra* what happens for the 2d person (cp. Meier 1990, Lillo-Martin and Meier 2011), hence different strategies for IX-1 and IX-2.

Referential strategies

- After the experiment, we informally asked participants from Groups 1 and 3 about the missing interpretation.
- Instead of IX-1, Group 3 prefers a **null pronoun $\emptyset$ or the anaphoric form Self** to refer to the attitude holder instead of IX-1 as in the stimuli
- Group 1 choose **either a proper name (the sign name of the actual speaker)** or fingerspelling of the name to refer to the actual speaker.

Competition between forms

- This is in line with Ahn's (2019) analysis that the use of anaphoric expressions in a language L is constrained by the range of anaphoric expressions available in L.
- In ASL, for instance, the use of pronominal forms associated with a locus IX_{loc} is infelicitous in contexts where simpler forms, such as $\emptyset$ or a bare noun, could be used:

(25) a. BOY ENTER CLUB. { $\emptyset$, IX$_{neut}$ } DANCE.
b. BOY ENTER CLUB. SEE GIRL READ. { $^{\#}\emptyset$, $^{\#}$IX$_{neut}$, BOY } DANCE.

[Ahn 2019]

- Ahn (2019) assumes the following scale for ASL:

ASL anaphoric forms

(26) $\emptyset < \text{IX}_{neut} < \text{NP} < \text{IX}_{loc}$

Competition between forms

- Assuming an economy principle such as Grice's maxim of brevity or the efficiency principle of Meyer (2013) will enforce speakers to select the element on the scale that can unambiguously circle out the intended referent compatible with its features (in that case, person features).
- Roughly, if ψ and ψ are anaphoric elements and that ψ is part of the set of 'stronger' (in a way to be defined) alternatives to ϕ, the use of ϕ will trigger the inference that the referent of ψ is disjoint in reference with the NP (i.e., co-reference does not obtain).

Competition between forms

- Similarly, in NGT, null forms and *SELF* forms could compete with the indexical *IX-1* in RS-constructions when reference to the attitude holder is needed:

NGT anaphoric forms (partial)

(27) $\emptyset < \text{SELF} < \text{IX}_1 < \text{NAME} \ / \ \text{N-A-M-E}$

- Given the scale, elements on the left should be preferred over elements further right and used whenever possible.

Competition between forms

- Group 3 may judge *IX-1* sentences alongside their formal alternatives, i.e., their null- and *SELF*-counterparts, to unambiguously refer to the reported signer:

(28) *M. to J.*:

$$\text{T.}_i\ (\text{C.}_j)\ \text{SAY}\ \overline{\emptyset_i\ /\ \text{SELF}_i\ \text{SIGN BETTER IX-2}_j}^{\text{RS-NMMs}}$$

'T.$_i$ said (to C.) that he$_i$ signs better than her$_j$'

- Similarly, Group 1 may adopt the same strategy, preferring to use the more complex expressions NAME / N-A-M-E to unambiguously refer to the actual speaker:

(29) *M. to J.*:

$$\text{T.}_i\ (\text{C.}_j)\ \text{SAY}\ \overline{\text{M.}_{sn}\ \text{SIGN BETTER IX-2}_j}^{\text{RS-NMMs}}$$

'T.$_i$ said (to C.) that M. / I sign better than her$_j$'

Conclusion

- Our study revealed **a deep asymmetry** between the shifting behavior (sensitivity to RS-NMMs) of the 1st and 2d person indexicals IX-1 and IX-2.
- While the 2d person was well-behaved (i.e., received a shifted interpretation only when under RS-NMMs), 1st person showed a significant discrepancy between participants.
- This discrepancy can be explained by assuming that IX-1 is inherently ambiguous in NGT (due to its featural makeup), and that NGT signers resort to alternative 'anaphoric strategies' to resolve the ambiguity.

Please ask anything!

Thank You

Feedback much welcome:

david.blunier@unige.ch
e.khristoforova@uva.nl

References I

Ahn, D. (2019). *THAT thesis: A competition mechanism for anaphoric expressions*. PhD thesis, Harvard University.

Anand, P. and Nevins, A. (2004). Shifty operators in changing contexts. In *Semantics and Linguistic Theory*, volume 14, pages 20–37.

Blunier, D. (2023). A unified analysis of shifted indexicals and logophoric pronouns. *Ms., University of Geneva*.

Crasborn, O. A. and Zwitserlood, I. (2008). The corpus NGT: an online corpus for professionals and laymen. In *Proceedings of the 3rd Workshop on the Representation and Processing of Sign Languages*. Paris: ELRA.

Curnow, T. J. (2002). Three types of verbal logophoricity in african languages. *Studies in African linguistics*, 31(1 & 2):1–25.

Davidson, K. (2015). Quotation, demonstration, and iconicity. *Linguistics and Philosophy*, 38(6):477–520.

Deal, A. R. (2021). Person features and shiftiness. *Ms., University of California Berkeley*.

Friedman, L. A. (1975). Space, time, and person reference in american sign language. *Language*, pages 940–961.

Gan, L. E. (2021). Shifted indexicals in hong kong sign language with (-out) role shift. *Proceedings of FEAST*, 4:74–86.

Ganenkov, D. (2021). Agreement shift in embedded reports. *Linguistic Inquiry*, pages 1–50.

References II

Grice, H. P. (1975). Logic and conversation. In *Studies in the Way of Words*. Harvard University Press.

Herrmann, A. and Steinbach, M. (2012). Quotation in sign languages. *Quotatives: Cross-linguistic and Cross-disciplinary Perspectives. Amsterdam: John Benjamins*, pages 203–228.

Kaplan, D. (1989). Demonstratives. In Almog, J., Perry, J., and Wettstein, H., editors, *Themes From Kaplan*, pages 481–563. Oxford University Press.

Kimmelman, V. and Khristoforova, E. (2018). Quotation in russian sign language: insights from corpus and elicitation. In *Proceedings of FEAST*, pages 93–102.

Lillo-Martin, D. (1995). The point of view predicate in american sign language. In Emmorey, K. and Reilly, J., editors, *Language, Gesture, and Space*, pages 155–170. Lawrence Erlbaum Associates, Inc.

Lillo-Martin, D. (2012). Utterance reports and constructed action. In Roland Pfau, Markus Steinbach, B. W., editor, *Sign Language: an International Handbook*, pages 365–387. De Gruyter Mouton.

Lillo-Martin, D. and Meier, R. P. (2011). On the linguistic status of 'agreement'in sign languages. *Theoretical linguistics*, 37(3-4):95–141.

Meier, R. P. (1990). Person deixis in american sign language. In Susan D. Fischer, P. S., editor, *Theoretical Issues in Sign Language Research, Volume 1: Linguistics*, volume 1, pages 175–190. The University of Chicago Press.

References III

Meyer, M.-C. (2013). *Ignorance and grammar*. PhD thesis, Massachusetts Institute of Technology.

Quer, J. (2005). Context shift and indexical variables in sign languages. In *Semantics and linguistic theory*, volume 15, pages 152–168.

Quer, J. (2011). Reporting and quoting in signed discourse. *Understanding quotation*, 7:277.

Schlenker, P. (2003). A plea for monsters. *Linguistics and philosophy*, 26(1):29–120.

Schlenker, P. (2017). Super monsters I: Attitude and action role shift in sign language. *Semantics and Pragmatics*, 10.