Pointing In Bimodal Bilingual Language Development: Connections Between Distribution and Meaning

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Collaborators

- This presentation includes portions conducted in collaboration with the following scholars:

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Research Questions

General

- How does pointing function (linguistically and para-linguistically) in sign languages?

Specific

- What referents do bibibi children point to?
- How do they use eye gaze while pointing?
- What does the pointing of bibi children say about the analysis of pointing in SLs?

BACKGROUND

Pointing

- "The prototypical pointing gesture is a communicative body movement that projects a vector from a body part. This vector indicates a certain direction, location or object" (Kita 2003: 1)

- "Pointing is a deictic gesture used to reorient the attention of another person so that an object becomes the shared focus for attention (Butterworth 2003:9)"

Pointing in Sign Languages

- Pointing carries pronominal and other linguistic functions in sign languages.

I/me
(speaker)

you
(addressee)

she
(third person)

(Friedman 1975; Sandler and Lillo-Martin 2006; Meier & Lillo-Martin 2010, 2013)

Pointing in Sign Languages

[Mary and John are not present.]

MARY   IX(loc-a)   JOHN   IX(loc-b)
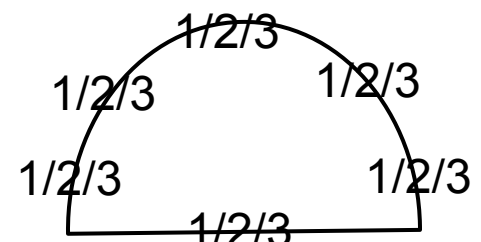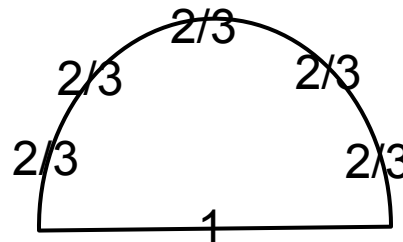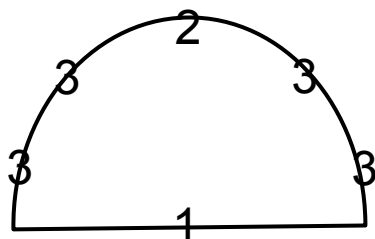
"Mary is here and John is here."

IX(she)   LOVE   IX(him)

"She loves him."

Theories of SL Pronouns

- Different proposals regarding person distinctions in sign language pronouns

Full range of 1st, 2nd, 3rd	Alibašić 2003; Alibašić and Wilbur 2006; Barberà 2012
1st vs. non-1st	Meier 1990; Lillo-Martin and Meier 2011
Single-form with referential index	Lillo-Martin and Klima 1990

Doubts about the analysis of pointing in SLs

- Typologically unusual not to have a full paradigm

- Form of pointing may not differ from that used in co-speech gesture (Johnston 2013)

- Pronominal signs have characteristics of both pronouns and gestures (Cormier et al. 2013)

Comparison: Pointing in sign and speech

- In both, pointing can be used with language and can be abstract

- In speech, pointing can complement spoken words

- In sign, pointing accomplishes the equivalent of speech+point

(Rathmann & Mathur 2002; Meier & Lillo-Martin 2013)

Spoken language	Sign language
Word (speech)	IX
Point (gesture)	

Insights from SL Acquisition

- Petitto (1987) – two Deaf signing children acquiring ASL
  - Both avoided pointing to self and addressee between 12 and 18 months
  - One child resumed such points at 21 months; the other at 26 months
- Lexical learning of pronouns is required despite apparent iconicity
- Avoidance period represents mental reorganization from pre-linguistic gesture to linguistic pointing
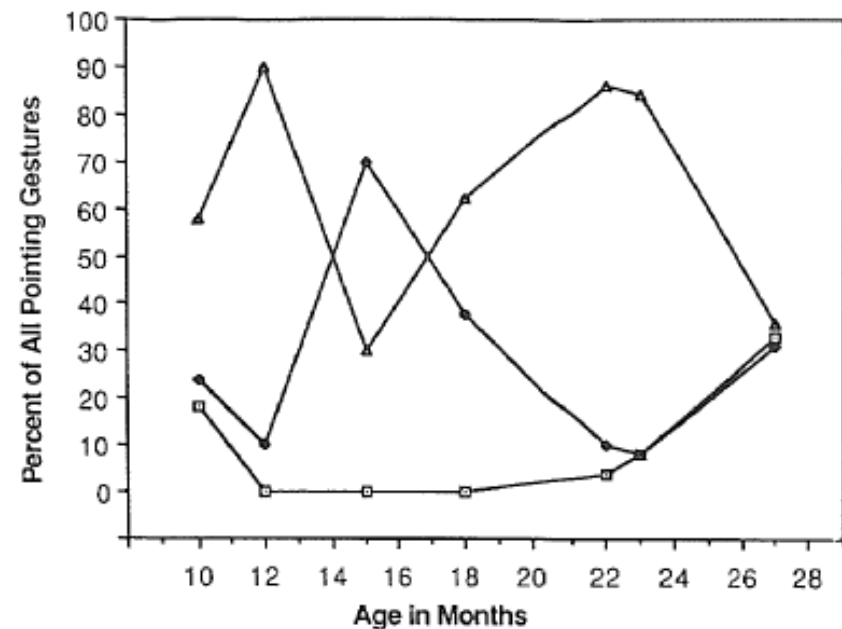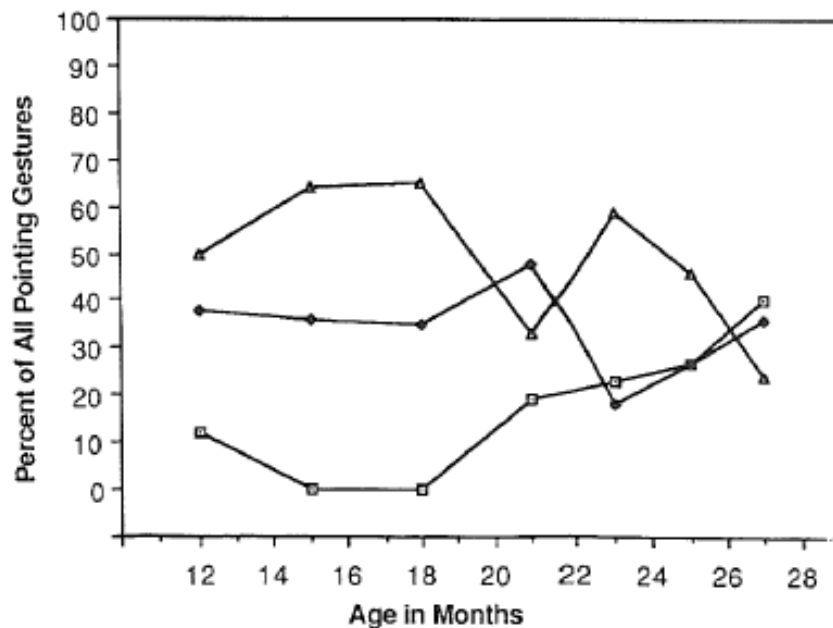
Development of pointing in SL

Percent of Kate and Carla's total number of pointing forms directed to self and addressee.
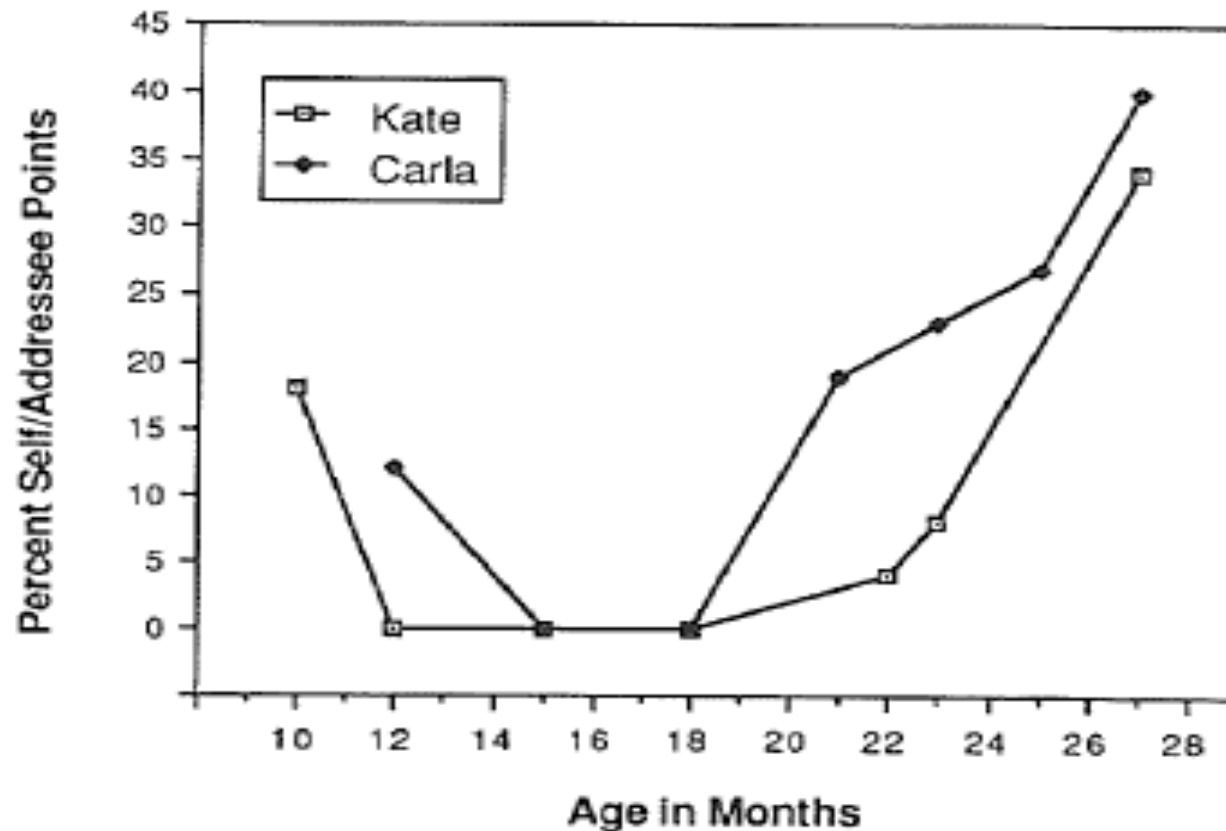
Petitto 1987:19

Development of pointing in SL

Relationship between the children's pointing to objects and non-objects and pointing to self and addressee (Top: Kate; Bottom: Carla); conventions in figure: △——△: object points; ◆——◆: non-object points; □——□: self/addressee points.

Development of pointing in SL

- Similar results for Greek Sign Language
- Hatzopoulou (2008) – one Deaf signing child acquiring Greek SL
  - Notable decrease in points to self/persons at 16-20 months (1% of all points)
  - Rate of points to persons increases to 10% at 20-27 months

Comparison:
Development of co-speech pointing

- Pointing in non-signing hearing children starts as early as 9-12 months (e.g., Lock et al. 1994)
- Few studies have reported the use of pointing to self, addressee, or non-addressed persons

What about bimodal bilinguals?

- Children acquiring both a sign language and a spoken language
  - (presumably) must differentiate pointing in co-speech gesture from linguistic pointing
- Common use of code-blending
  - co-occurrence of sign with speech

Pointing in a bimodal bilingual child

- Morgenstern et al. (2010) – points to self 1;00-2;00:
  - one LSF/French bilingual child (I) – infrequent
  - one LSF signing child (C) – often
  - one French speaking child (M) - never
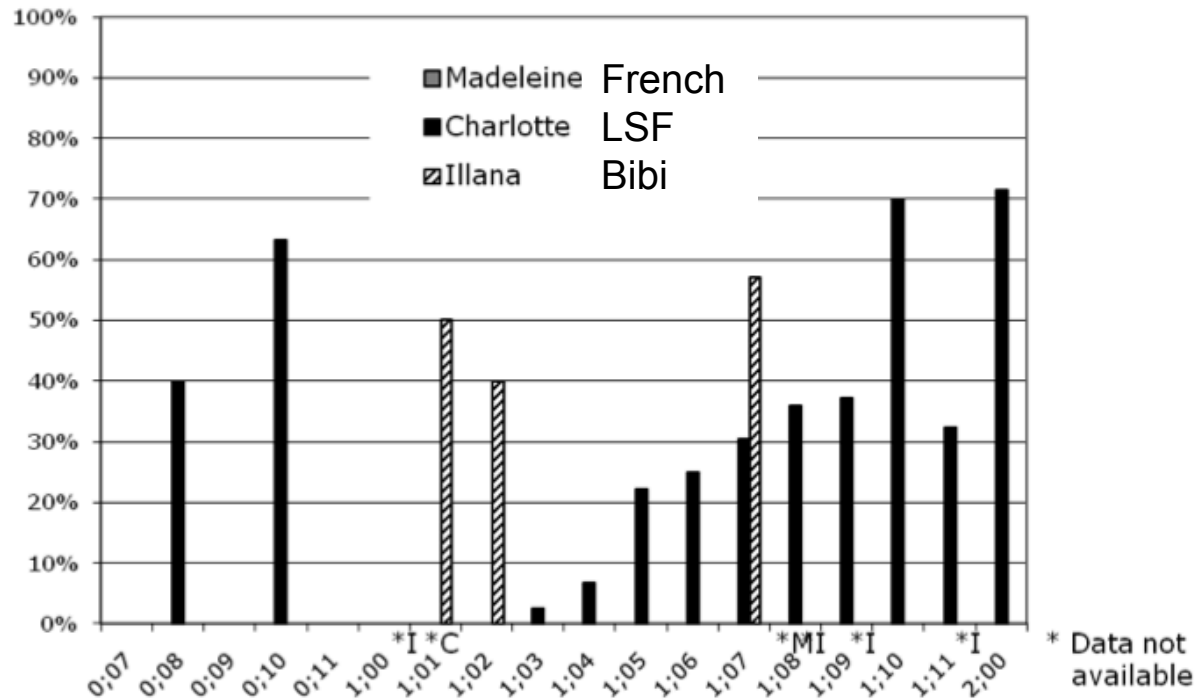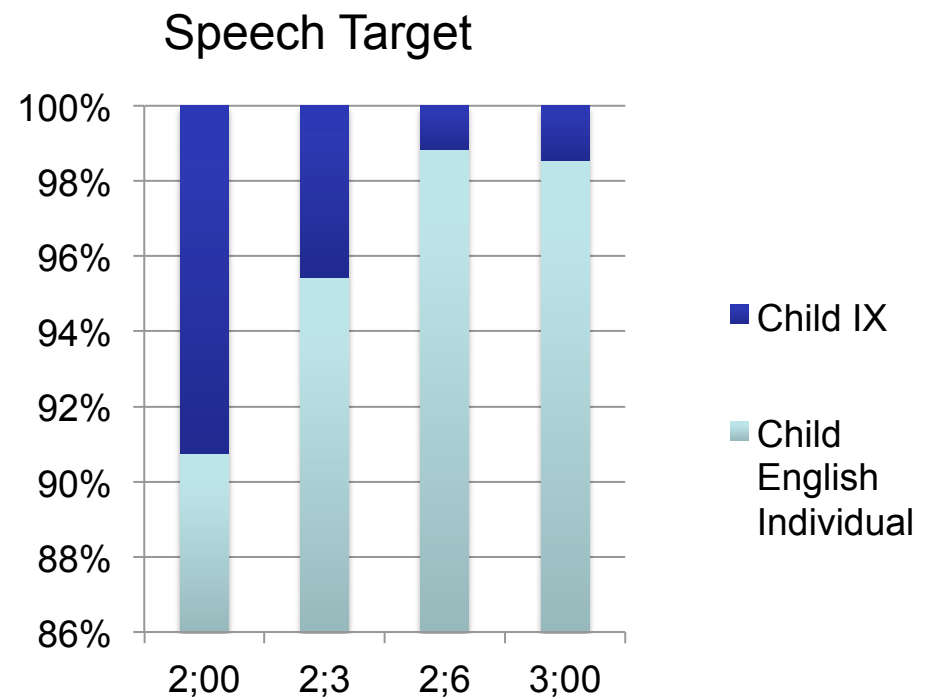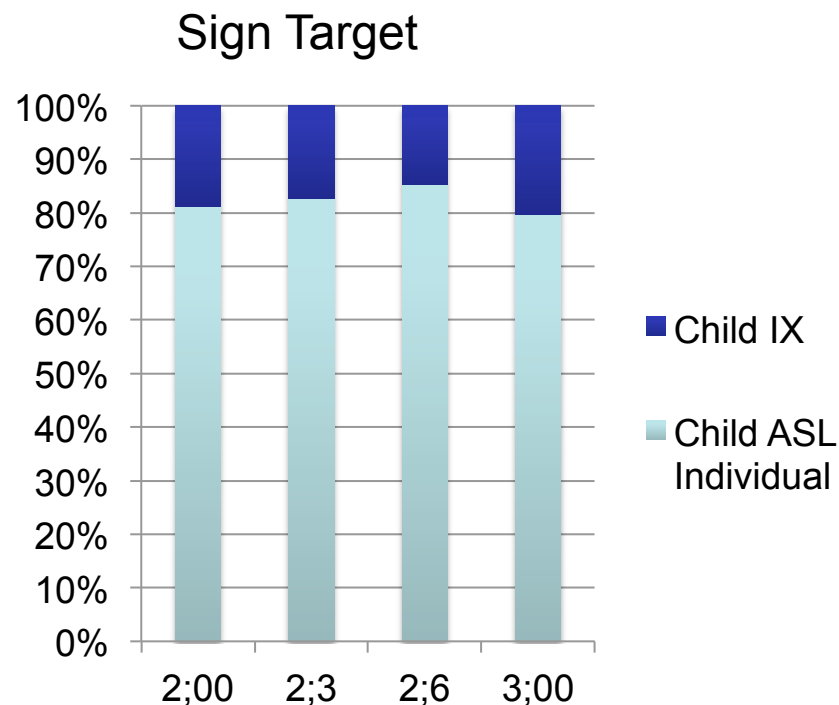
DATA

(Kökgöz et al. 2014, 2015, in prep)

Our Study: Participants

Child	Age	Target language	# Child IX	# Adult IX
Ben (US)	2;00-3;00	ASL	266	233
	2;00-3;00	English	192	103
Tom (US)	1;11-2;06	ASL	47	--
	2;00-2;06	English	31	--
Edu (BR)	2;02-2;07	Libras	30	139
	2;00-2;09	BP	26	54

- All child participants have at least one Deaf parent and relatively equal exposure to both sign and spoken languages.
- Adults in sign sessions are child's Deaf parent or a Deaf RA.
- Adults in speech sessions are hearing signers.
- (Different analyses use different subsets of the data)

Ratio

- The ratio of pointing with respect to the number of individual signs/words stays constant over time in child sign sessions while it decreases over time in child speech sessions. The ratios are significantly different at each age interval (χ^2s=7.69-245.57, all ps<.01).

Sign Target

Speech Target

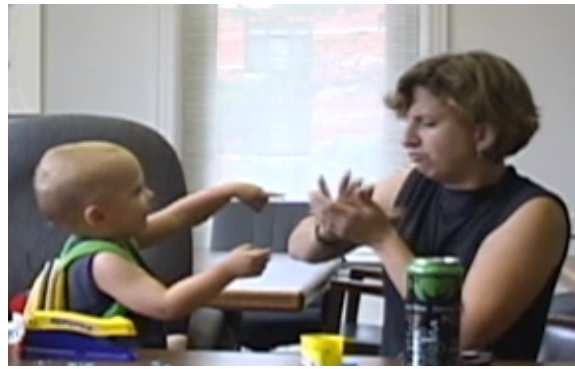Data from Ben only

DESIGNATUM

Questions

- What do points of bimodal bilingual children refer to?

- Are there differences in the distribution of points across sign and speech target sessions?

- Are there differences in the distribution of points when speaking and signing?
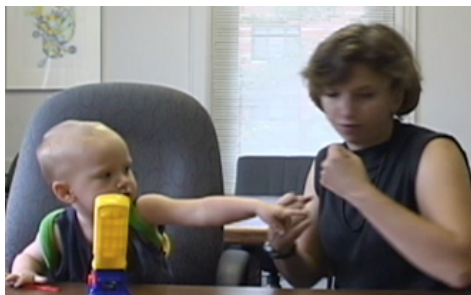
Methodology:
Coding for pointing

IX-speaker

IX-addressee

IX-3rd-person
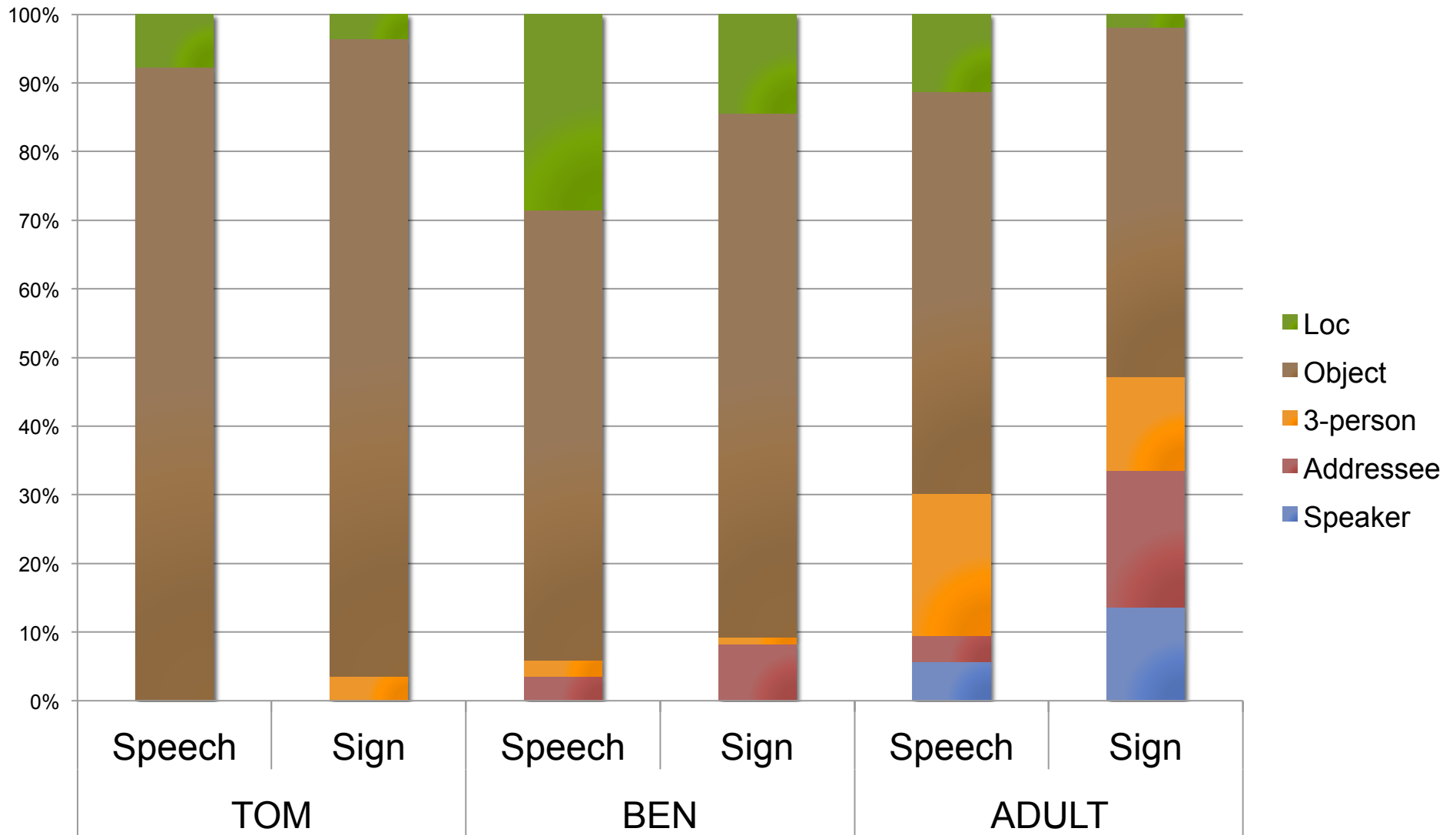
(She is referring to BEN)
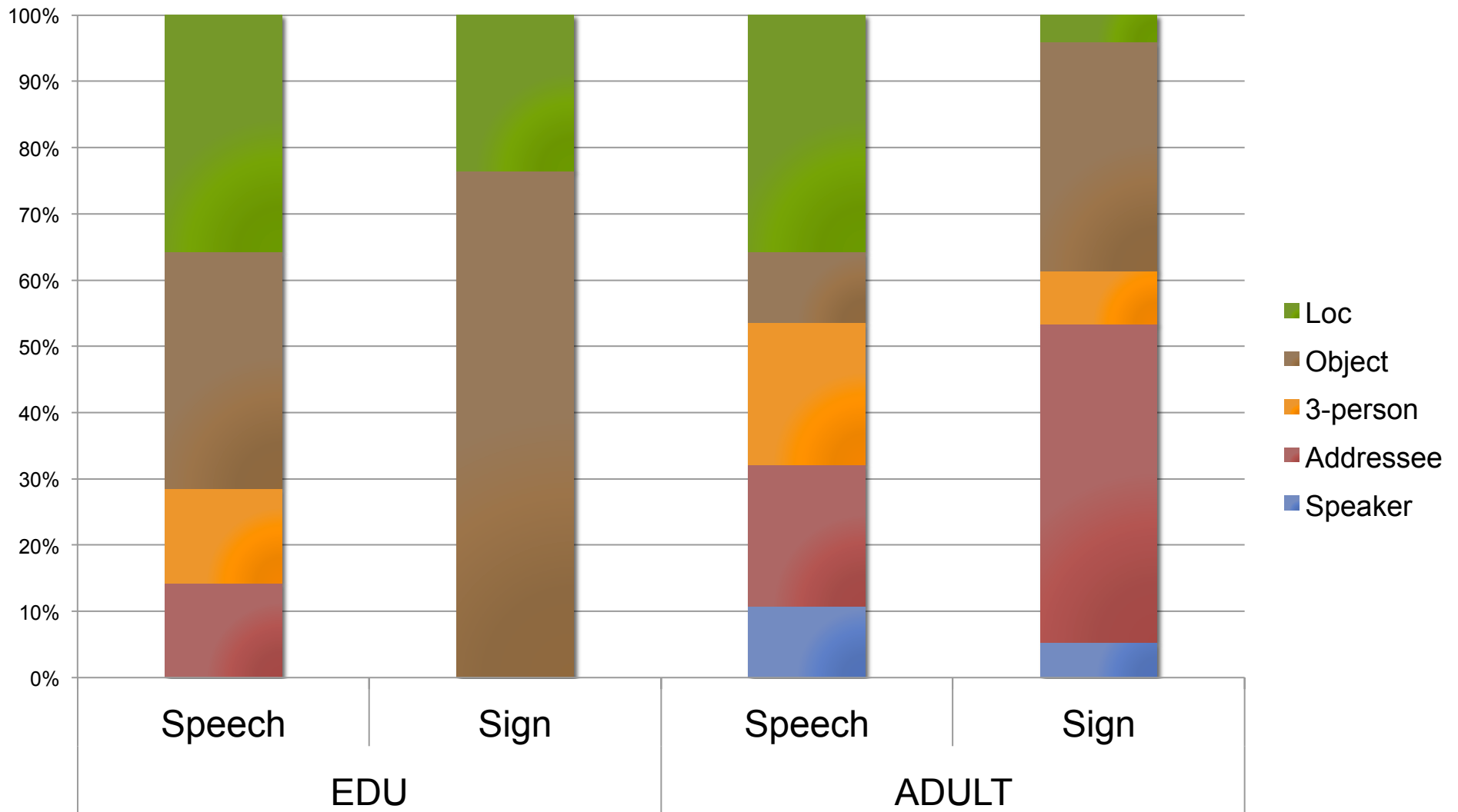

IX-object
(He wants the car)

IX-location
(He wants the bear to sit there/on the chair)

Findings:
Pointing – US data

Findings:
Pointing – BR data

Findings:
Pointing with speech, sign

- BEN's pattern differed according to modality

Legend: IXlocation, IXthing, IXperson, IXaddressee, IXspeaker

Categories: speech only, speech+sign, sign only
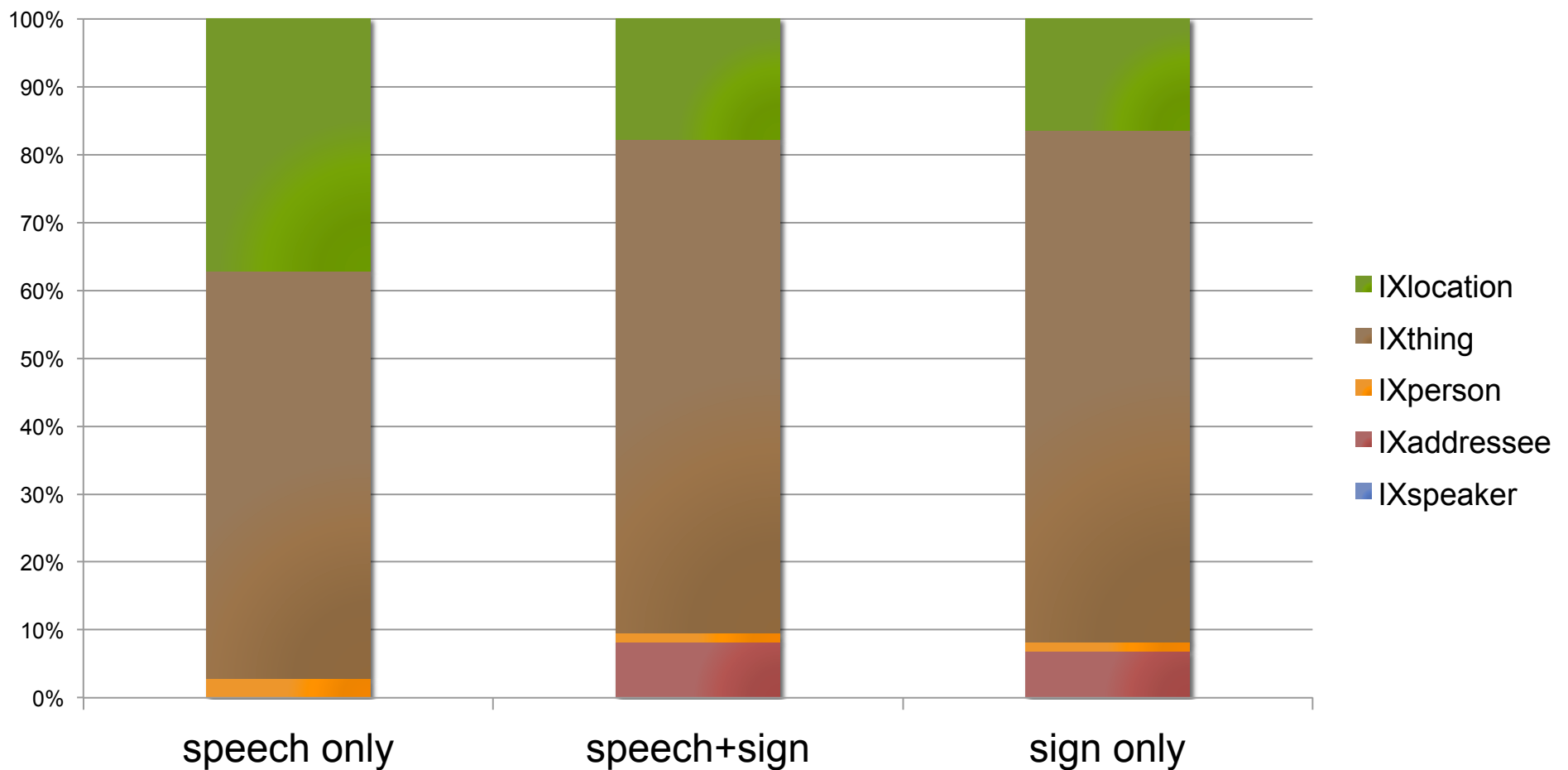
Discussion

- There are no points to self for any of the three children studied here

- For BEN, the few points to addressee are all produced while signing

- EDU's points to addressee come from his latest observation (2;09)

- Points to persons are infrequent – extending previous findings to *even older children*

Discussion: Theoretical Implications

- Our results support 1st vs. non-1st view
  - There are no points to self for any of the three children studied here
  - There are a few points to addressee and 3rd-person humans, and many to 3rd-person objects and locations
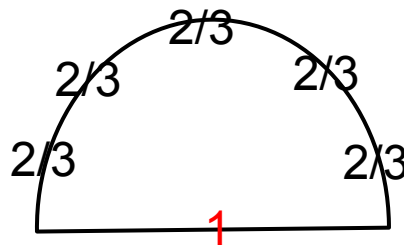
EYE GAZE
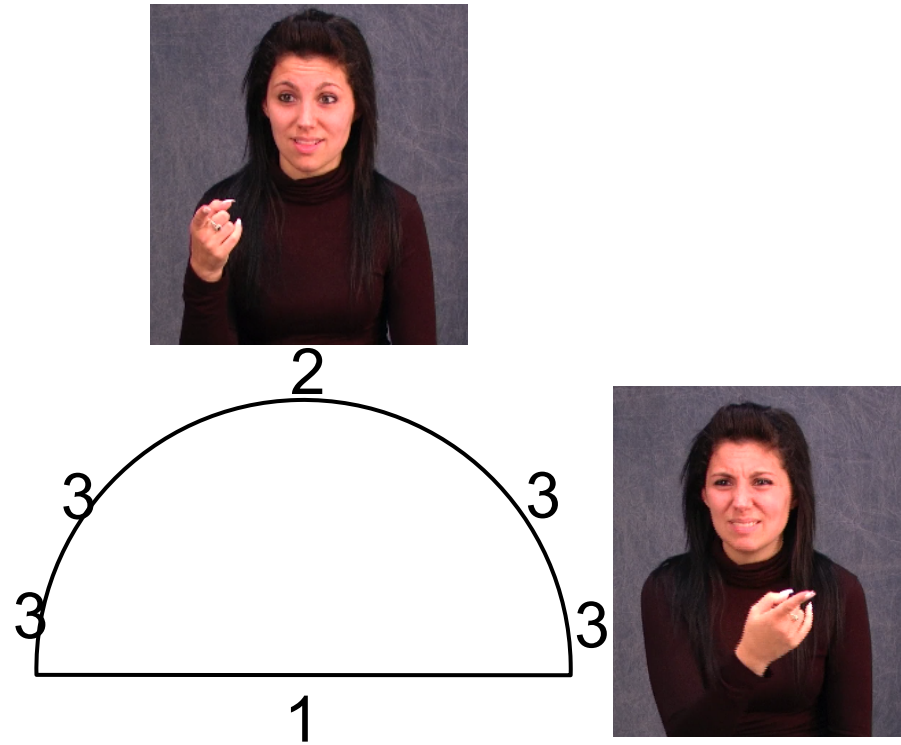
Person Distinctions

Person Distinctions
1st vs. 2nd vs. 3rd

- Perhaps alignment between gaze and hand is a marker of second person

(Berenz 2002 – Brazilian Sign Language; Alibašić, Ciciliani and Wilbur 2006 – Croatian SL)

Eye-gaze – Predictions
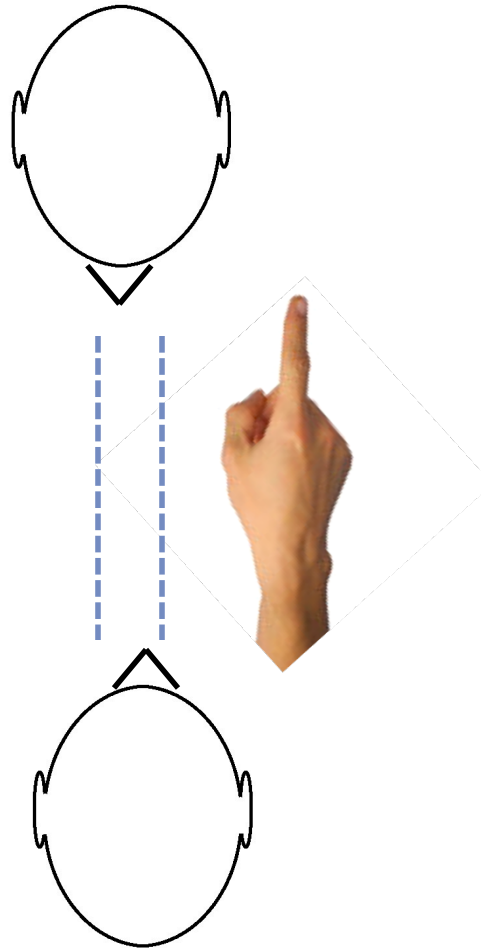
2nd person

Eye-gaze – Predictions
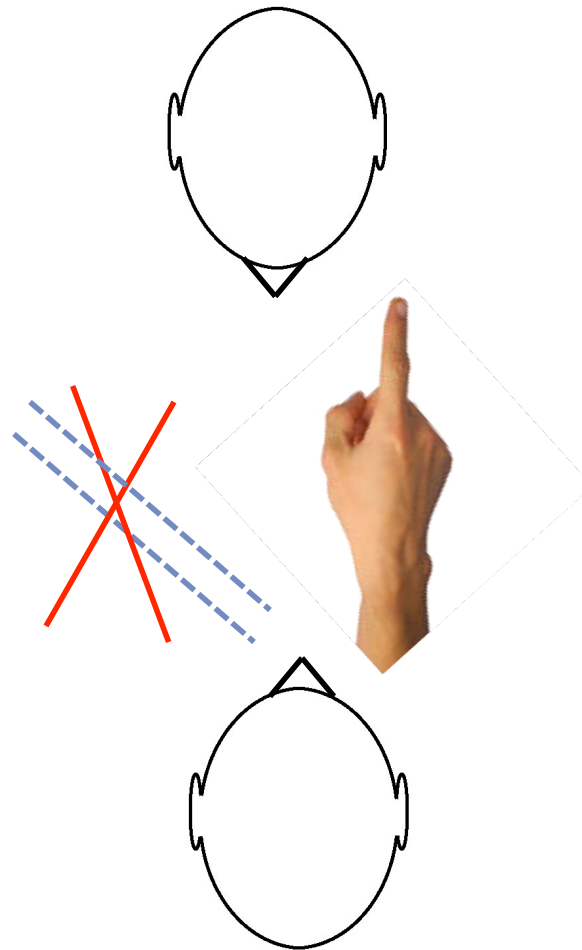
2nd person

Eye-gaze – Predictions
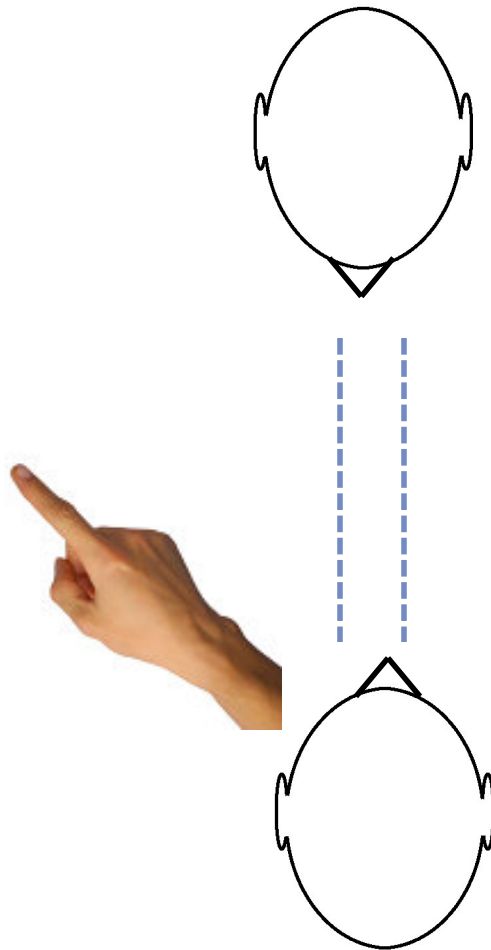
3rd person

Eye-gaze – Predictions

3rd person
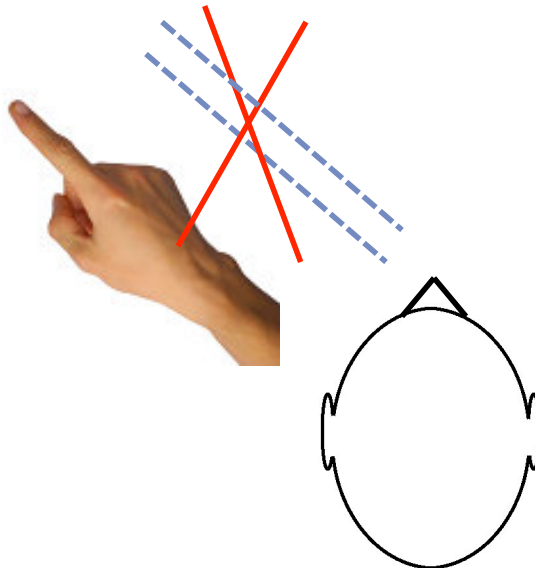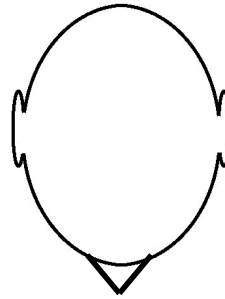
Eye-gaze – Findings

Ben and Adults, 2;00-3;00

	Sign-Adult (167)	Sign-Child (114)	Speech-Adult (72)	Speech-Child (98)
Predicted	0.69	0.83	0.89	0.92
Not Predicted	0.31	0.17	0.11	0.08

For adults, the difference between sign and speech is highly significant (*z*=-3.196, *p*< .005 two-tailed).
For Ben, the difference between sign and speech is marginal (*z*= -1.852, *p*=.064 two-tailed, *p*=.032 one-tailed)

Eye gaze and Person distinctions

- Points to addressee usually occur with gaze to addressee – but …

- Alignment of point and gaze is not a marker of 2nd person.

- Alignment between point and gaze is also common in points to non-addressee (cf. Johnston 2013)

- The 'predicted' pattern is even stronger in speech!

Discussion: Why is 1st late?

- Two kinds of child behavior support the analysis that divides pointing between 1st person and non-1$^{st.}$

- But why do we see late development with the 1st person form rather than the non-1st form?

- What the explanation CANNOT be:
  - Lack of the first person pronoun in adult input cannot be the reason.
  - In our study and others, adults do use points to themselves (Petitto 1987; Johnston 2013)

Discussion: 1st in adult signing

- Johnston (2013) – Auslan corpus (*n=5797*)

	Questionnaire	Retell	Narrative	All texts
Other	3	1.8	0.9	2.5
PT:POSS	8.2	3.5	11.7	6.7
PT:LOC/PRO	0.6	10.8	0.9	4
PT:LOC	3.3	25.9	14.3	11.4
PT:DET	4.2	19.5	3	9.4
PT:PRO3	22.4	24.1	15.7	22.7
PT:PRO2	8.1	5.7	3	7.1
PT:PRO1	50.3	8.6	50.4	36.2
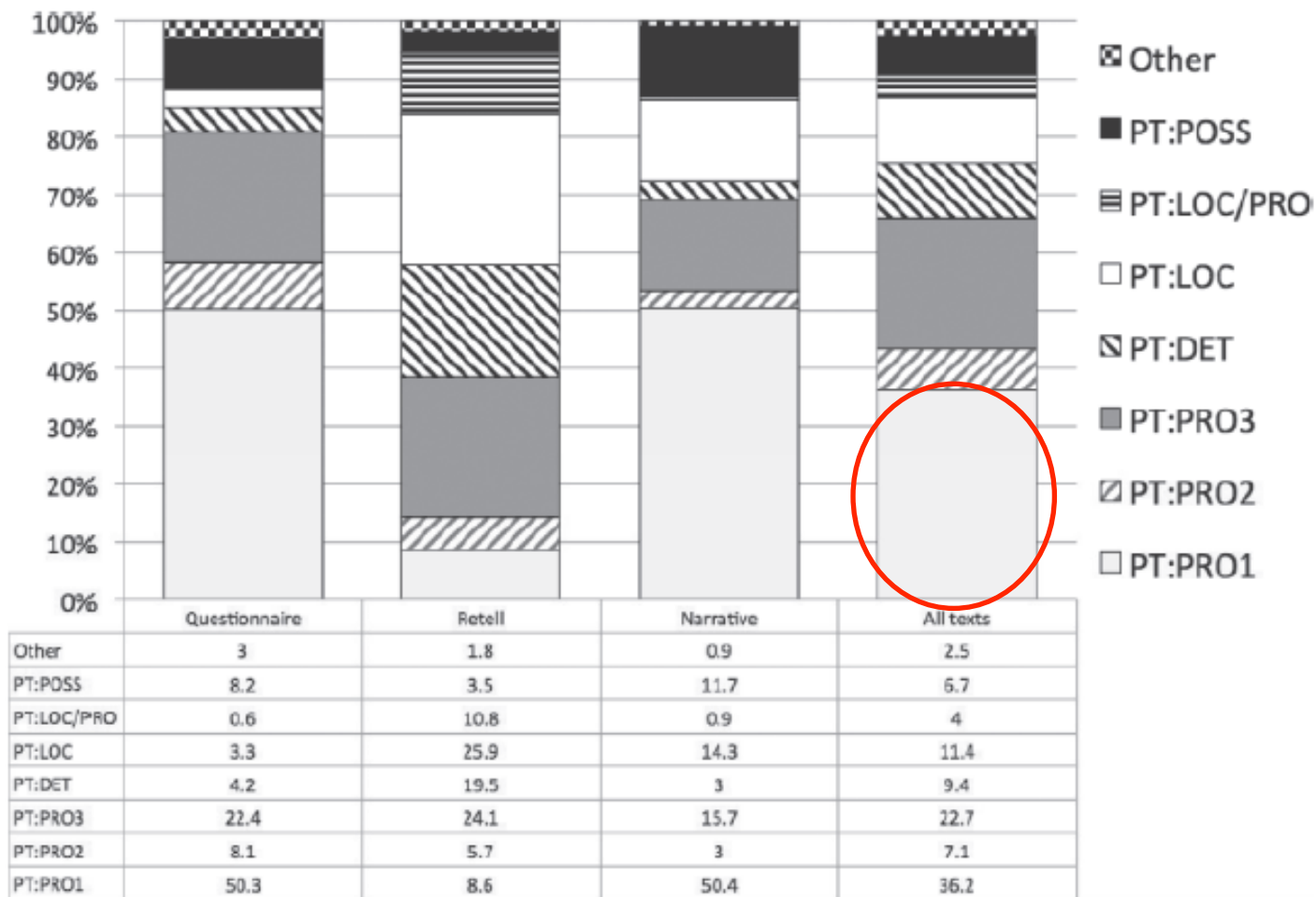
Discussion: Person distinctions in speech?

Question:

- Maybe first person forms develop late altogether both in speech and sign?

Answer:

- First person forms are present in speech (alongside 2nd and 3rd persons)

Discussion: Person distinctions in speech

Examples of first person in speech (BEN):

I want get it (BEN, 2;00)
We're playing (BEN, 2;00)
more ball to **me** (BEN, 2;3)
I find this one (BEN, 2;3)
oh **I** don't know (BEN, 2;3)
me cut it (BEN, 2;3)
I'll cut (BEN, 2;3)
I cut first (BEN, 2;3)
me babies **me** baby (BEN, 2;3)
I stuck it no more (BEN, 2;3)

I dropped my cookie[?] (BEN, 2;3)
I see the cow (BEN, 2;6)
I see the big helicopter (BEN, 2;6)
I see doggie (BEN, 2;6)
I put it right in the trashcan (BEN, 2;6)
I did it (BEN, 2;6)
I hear it my[/] my mommy (BEN, 2;6)
I found this (BEN, 2;6)
I help this (BEN, 2;6)

Discussion: Person distinctions in speech

Examples of first person in speech
(TOM):

I no[=?don't] want one (TOM, 1;11)
I sweeping[?] (TOM, 1;11)
I'm all# done done (TOM, 1;11)
I mo(re)[_] (TOM, 1;11)
I jump (TOM, 2;6)
I no reading (TOM, 2;6)
I looked around# the plate (TOM, 2;6)
me stir spoon (TOM, 2;06)
me Batman[?] (TOM, 2;06)
I need to stirring it (TOM, 2;6)
I want chicken (TOM, 2;6)
I make chicken (TOM, 2;6)
I baking[?](TOM, 2;6)

I didn't this (TOM   , 2;6)
I go on bicycle me (TOM, 2;6)
I build a house (TOM, 2;6)
I'm stuck (TOM, 2;6)
I put in there's pot (TOM, 2;6)
I fixed[?] it[_] (TOM, 2;6)
fish **I** xxx want (TOM, 2;6)
it match[?] **me** (TOM, 2;06)
I love fish (TOM, 2;6)
and **I** stirred it up (TOM, 2;6)
look[?] at[?] **me** (TOM, 2;06)

Discussion: Null arguments

- ASL is a null-argument language (Lillo-Martin 1986 et seq.)
    - Dropping an argument requires recoverability; recovering 1st person may be generally easier
    - However, we don't expect complete absence of 1st person
    - We are in the process of checking this

Discussion: What has to be learned

- Petitto (1987) observed "U-shape" development of pointing
  - Early start with an un-analyzed gestural period, where person forms are not analyzed.
  - A transition period when children discover that pointing is integral in their sign linguistic system. They avoid pointing to persons during this period.
  - Ultimately they display fully developed person distinctions.
- Kodas must learn this … *and* how 'pronouns' in SL work

IX AS DEMONSTRATIVE

(Koulidobrova & Lillo-Martin in press)

The Issue

- For American Sign Language (ASL) - and possibly all sign languages - the form commonly considered to be a personal pronoun is a (deictic) point, IX.

- A similar (identical?) form is apparently used for many other functions (article, demonstrative, locative, predicate).

- Can IX be given a uniform analysis?
- PROPOSAL: IX is a *demonstrative*.

IX as a 'pronoun' …

- does not behave as a bound variable

- relies on a demonstrat*ion/-um*

- is vague with counterfactuals

- needs a non-empty denotation

IX with an NP…

- is not a definite article (weak or strong)

- evokes alternatives to the NP it precedes
  (similar suggestion in Winston 1995, McBurney 2002)

- does not co-vary where [*the NP*] does

A Unified Analysis

Pointing signs -- IX – with pronominal, locative, determining
  functions are *demonstratives*.

- uniquely referring   --   *definite*
- familiar
- one out of a set of potential alternatives   --
  contrast
- demonstration   --   *referential*

Others have suggested the same

- Ahlgren (1990), (p. 167)
  - "In Swedish Sign Language persons are deictically referred to by their location, not by their conversational roles. … It is perfectly reasonable to treat pointing to the location of referents as pronominal. This pointing can be compared to demonstrative pronouns in spoken languages."

- McBurney (2002), (p. 365)
  - "the class of signs traditionally referred to as personal pronouns may, in fact, be demonstratives."

- Numerous spoken languages (Japanese, Korean, German *der*, etc.)

Learnability

- How does the child developing a language determine whether apparent personal pronouns are really demonstratives?

- In general, demonstratives are acquired quite early

- Are there differences between sign and spoken language development in this area?

CONCLUSION

- Bibi children distinguish between pointing while signing and pointing with speech at an early age
- The distribution of pointing used by Bibi children is consistent with the analysis of pointing as marking 1st vs. non-1st person
- Eye gaze while pointing by children and adults does not support the proposal that alignment marks 2nd person
- Children may go through a period of reorganization in which points to self are avoided
- Further research on child language may contribute further to understanding how the adult language works

THANK YOU