

Points of Comparison

What Pointing Gestures tell Us About the Origins of Signs
in San Juan Quiahije Chatino Sign Language





- 1** Research motivation: Does gesture provide input to emerging sign languages?

- 2** Indicating gestures: A window into emerging sign language input

- 3** Two linked studies of indicating gestures in San Juan Quiahije (Oaxaca, Mexico)
 - 3.1 Co-speech indicating gestures
 - 3.2 Indicating in sign

1

Research motivation: Does gesture provide input to emerging sign languages?

Input in the context of signed language emergence

Goldin-Meadow & Feldman (1977)

Morford (1996)

Goldin-Meadow (2007)

Morford & Kegl (2009)

Goldin-Meadow (2013)

Brentari & Goldin-Meadow (2017)

Input:

Not a conventional
linguistic system



Output:

A conventional
ling. system with:
syntax, morphology

Why do deaf signers of emerging languages develop **linguistic features** that are **absent from their input?**

Input in the context of signed language emergence

Goldin-Meadow & Feldman (1977)
Morford (1996)
Goldin-Meadow (2007)
Morford & Kegl (2009)
Goldin-Meadow (2013)
Brentari & Goldin-Meadow (2017)

Washabaugh (1986)
Volterra, et al (1994)
Osugi & Webb (1999)
Marsaja (2008)

Input:

Not a conventional
linguistic system



Output:

A conventional
ling. system with:
syntax, morphology

Formation features: do speakers and signers appear to use similar forms?

Input in the context of signed language emergence

Washabaugh (1986)
Volterra, Beronesi, and Massoni (1994)
Osugi & Webb (1999)
Marsaja (2008)
Franklin et al (2011)

Washabaugh (1986)
Volterra, et al (1994)
Osugi & Webb (1999)
Marsaja (2008)

Goldin-Meadow & Mylander (1990),
Goldin-Meadow et al. (1995, 2007)
Franklin, et al (2011)

Input:

Not a conventional
linguistic system



Output:

A conventional
ling. system with:
syntax, morphology

In exactly what ways do formalizational features differ between input & output?

2

Indicating gestures: A window into emerging sign language input

Indicating Gestures

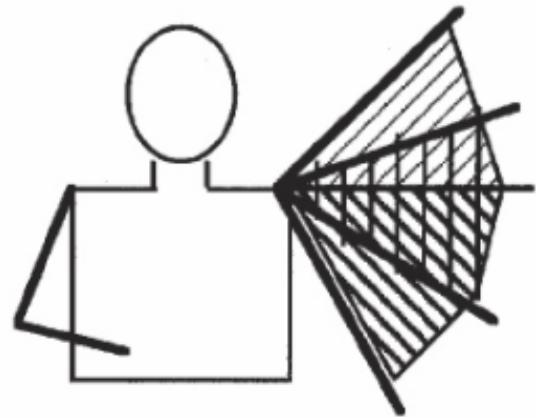


- direct the addressee's attention to a delimited area of space
- by extending or tracing an articulator in the direction of a focused area
- are a bedrock of face-to-face communication in **hearing and deaf** people



- Multiple formation components that map to meaning
- Stable mapping across use contexts

Eco (1976)
Kendon (1980, 2003, 2004)
Wilkins (2003)
Haviland (2003)
Ola Orie (2009)



▨ nhakwe (approx 90° - 140°)

□ yanhe (approx 60° - 110°)

■ nhenhe (approx 30° - 90°)

- Multiple formation components that map to meaning
- Stable mapping across use contexts

*Eco (1976)
Kendon (1980)
Wilkins (2003)
Haviland (2003)
Levinson (2003)
Ola Orie (2009)
Streeck (2009)
Le Guen (2011)*



de Vos, 2012,
p. 364

*Distal
locative point*



de Vos, 2014,
p. 155

“Vertical indeterminacy”— does pointing high represent a far target or a high target?

de Vos, 2012, p. 377

IGs are composites of multiple formational components.

- components mapped to meanings stably across use contexts
- gesturers and signers

van der Kooij, 2002
de Vos (2012, 2014)

3 Two linked studies of indicating gestures in San Juan Quiahije (Oaxaca, Mexico)

3.1 Co-speech indicating gestures

3.2 Indicating in sign



The San Juan Quiahije Municipality



The San Juan Quiahije Municipality

Pop. 3,628 (INEGI 2012)

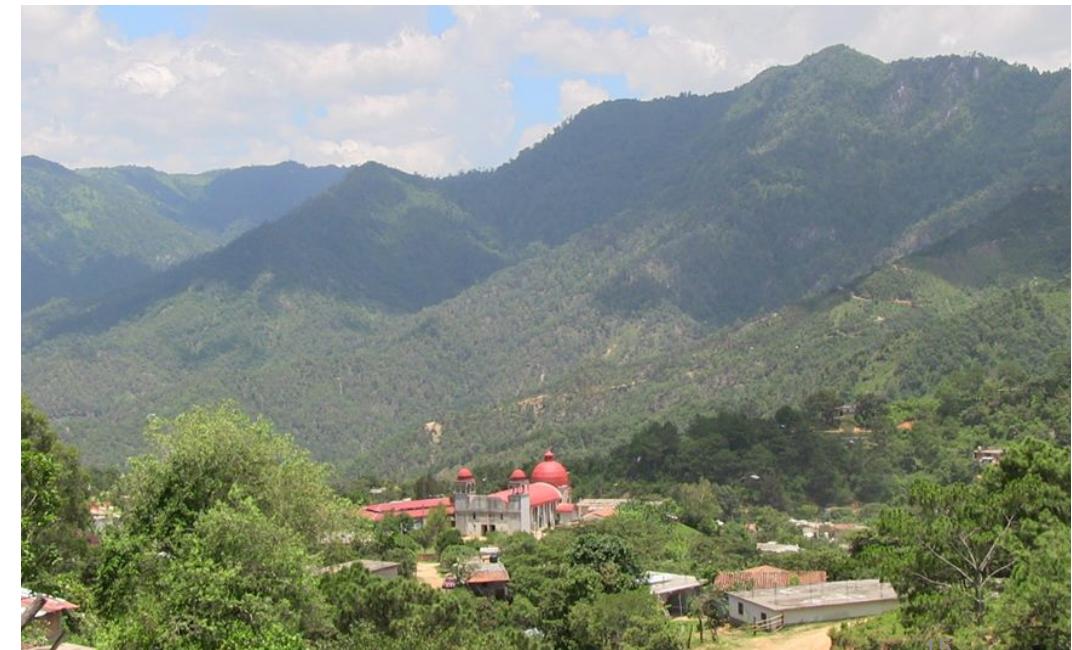
Spoken languages:

SJQ Chatino, Spanish

Deaf individuals: 11

6 adults (2 female), 5 children (all female)

Sign languages emerging in 6 families



Indicating Gestures of Quiahije



Points



Go gestures

3.1 Co-speech indicating gestures

1. Formational features of indicating gestures systematically covary with the **distance** of the indicated target
 - a. **Elbow Height:** increased distance -> increased height
 - b. **Arm Extension:** increased distance -> greater extension
 - c. **Handshape:** increased distance -> increased use of open hand
2. This systematicity holds regardless of the gesture type (pointing vs. go gestures)

Dataset

Filmed local environment interviews (Kita 2001)

- 29 hearing participants
- Six hr., 30 min. of footage
- **873 IGs**



Kinesic features investigated:

Elbow Height



placeholder
for photo

Handshape



placeholder
for photo

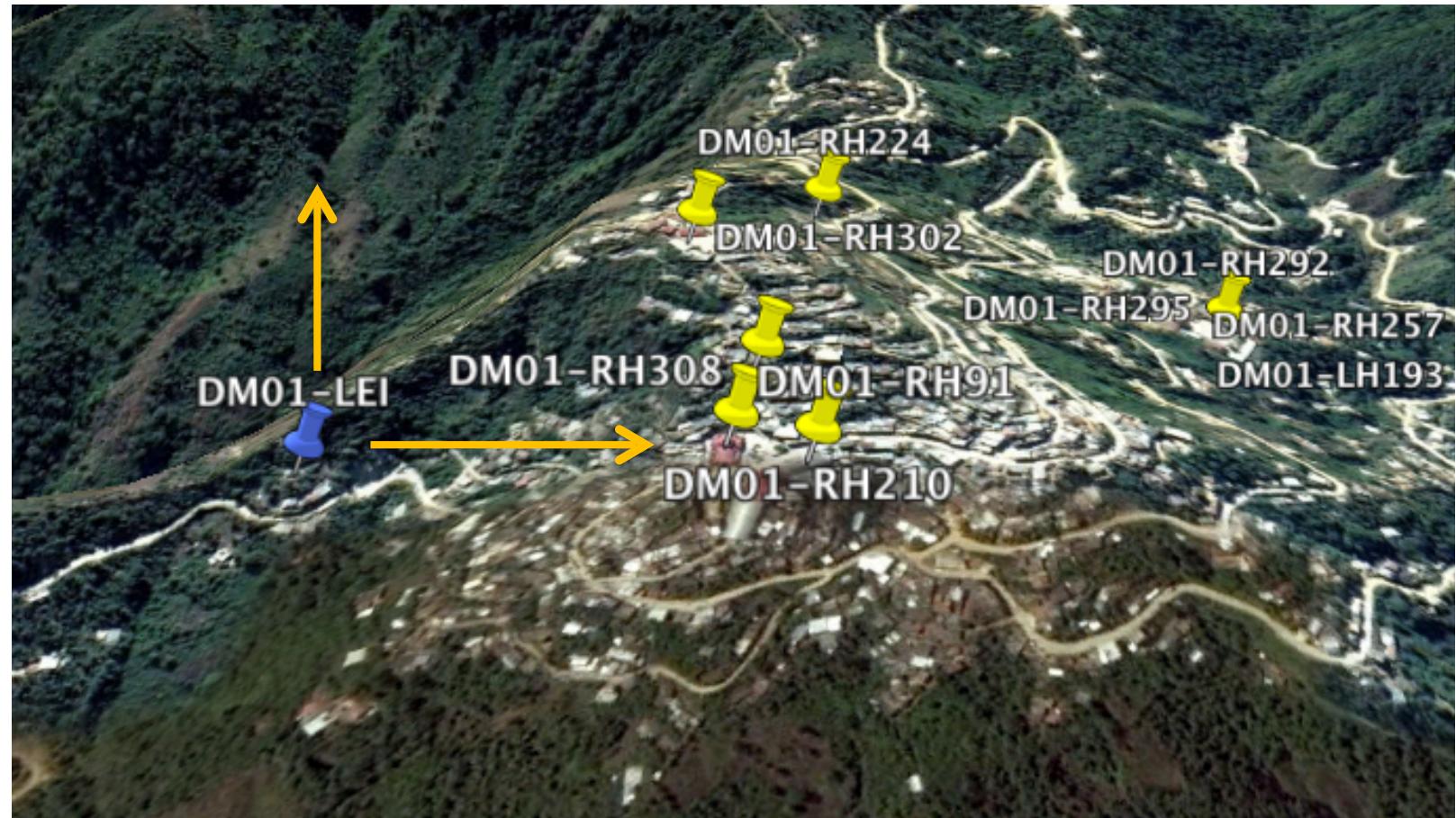
Arm Extension



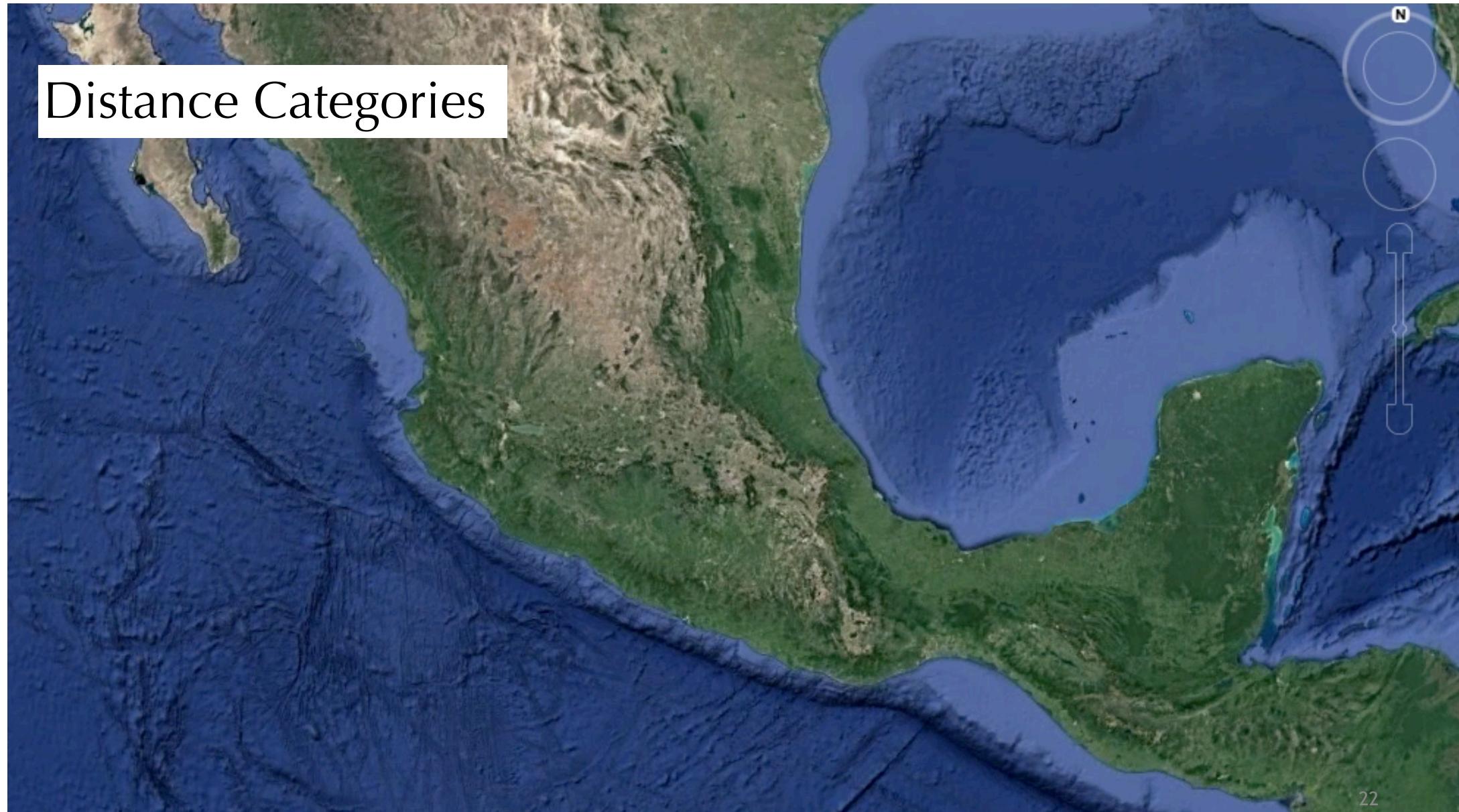
placeholder
for photo

Indicating
Target
Features
Coded:

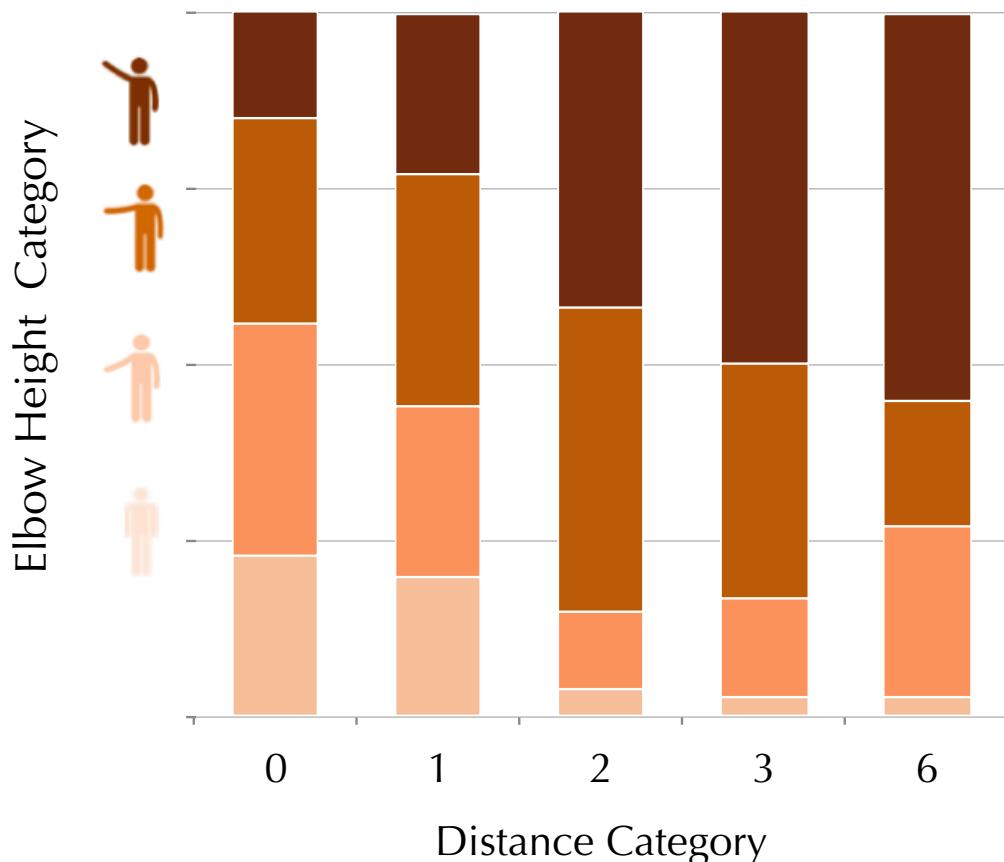
Distance
(relative to
gestureer)



Distance Categories



Results: Elbow Height, all indicating gestures



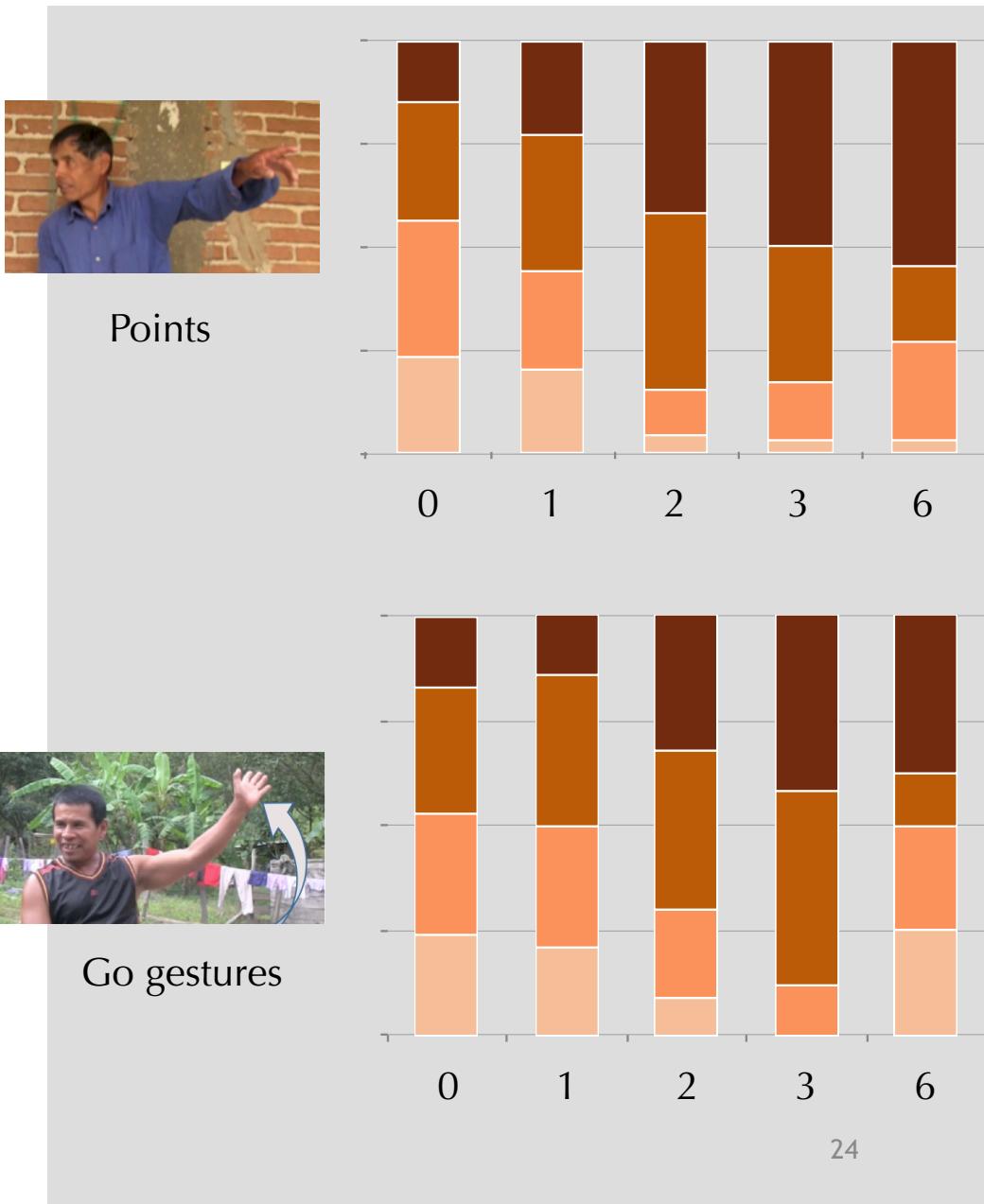
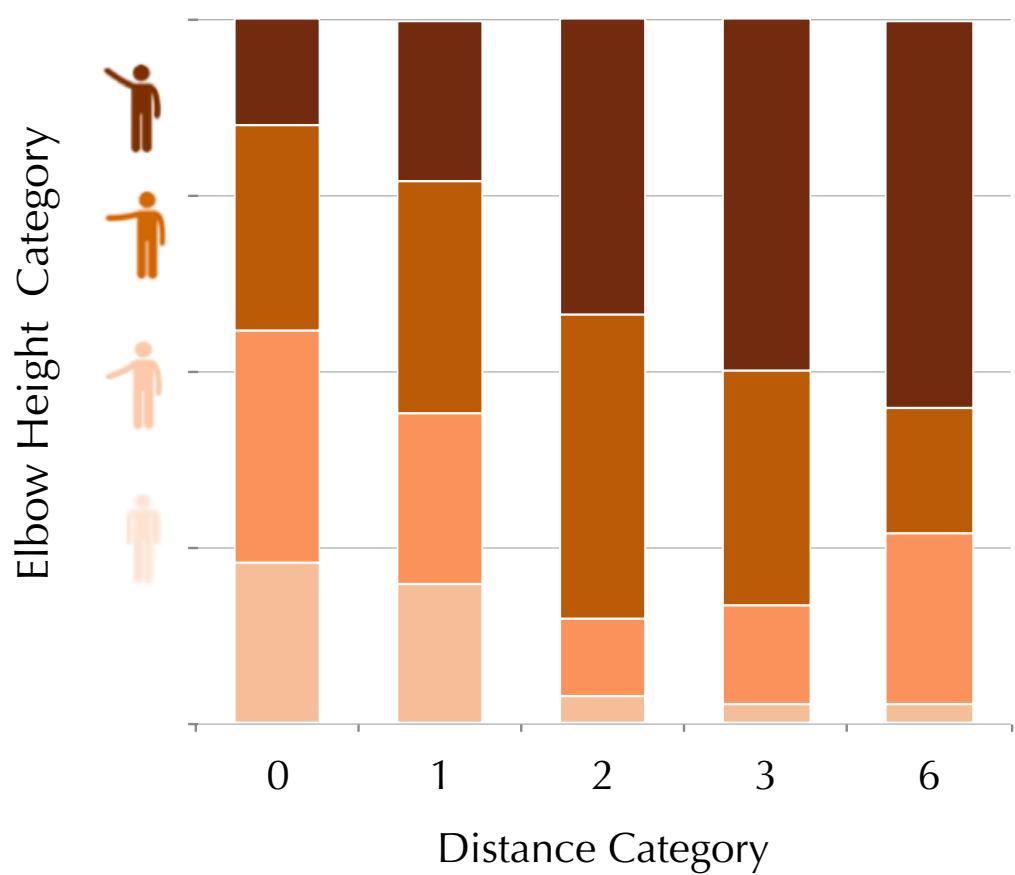
Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.04	0.20	< 0.001
Distance	0.18	0.02	< 0.001
Altitude	0.02	0.02	0.13

Random Effects	Variance
Person (Intercept)	0.36
Residual	0.76

Mixed effects linear regression analysis

- Significant effect of **distance** alone

Results: Elbow Height, by gesture type



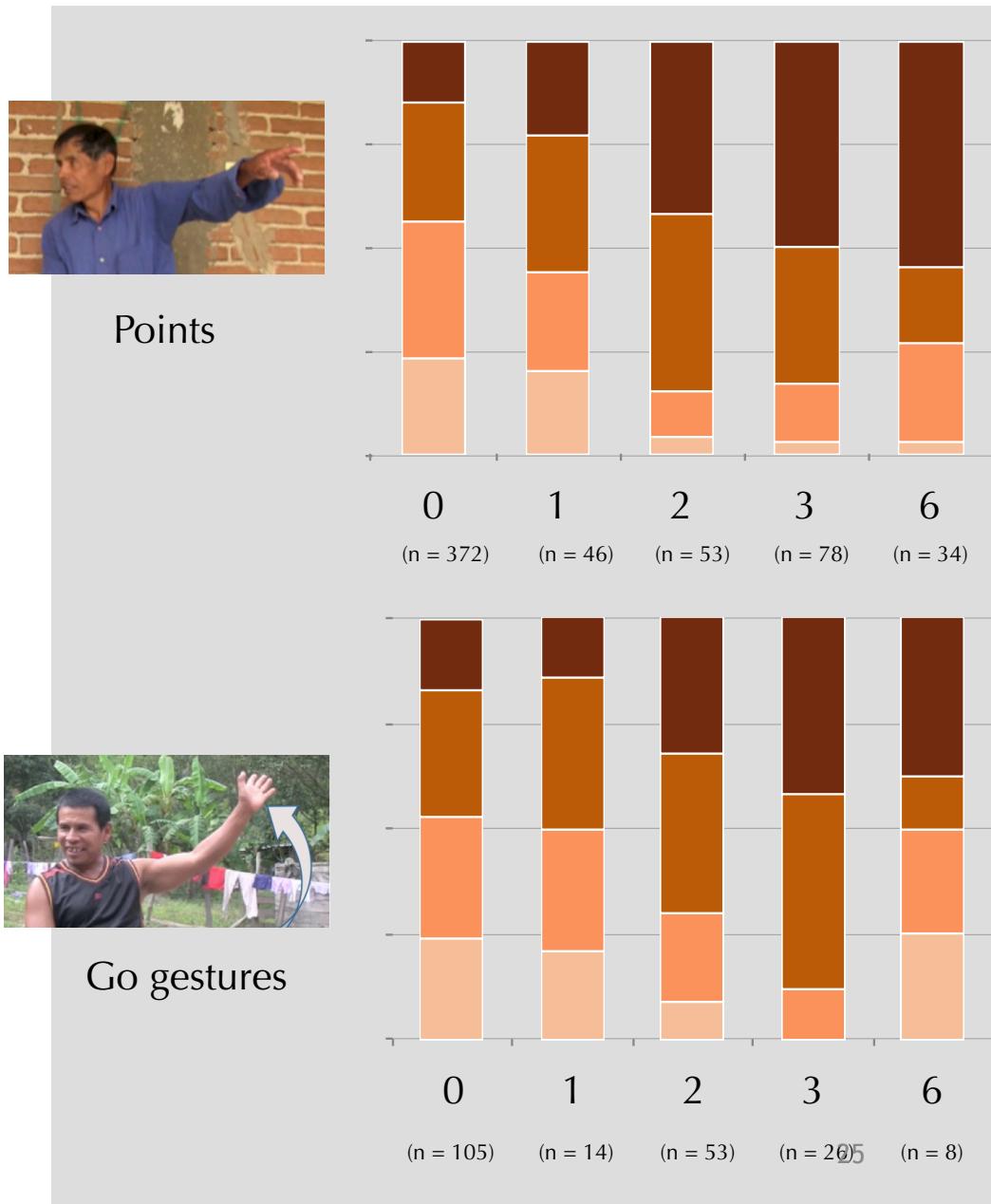
Results: Elbow Height, by gesture type

Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.23	0.13	<0.001
Distance	0.17	0.02	< 0.001
Gesture Type:			
Go gest.	(ref)		
Points	0.12	0.07	0.3

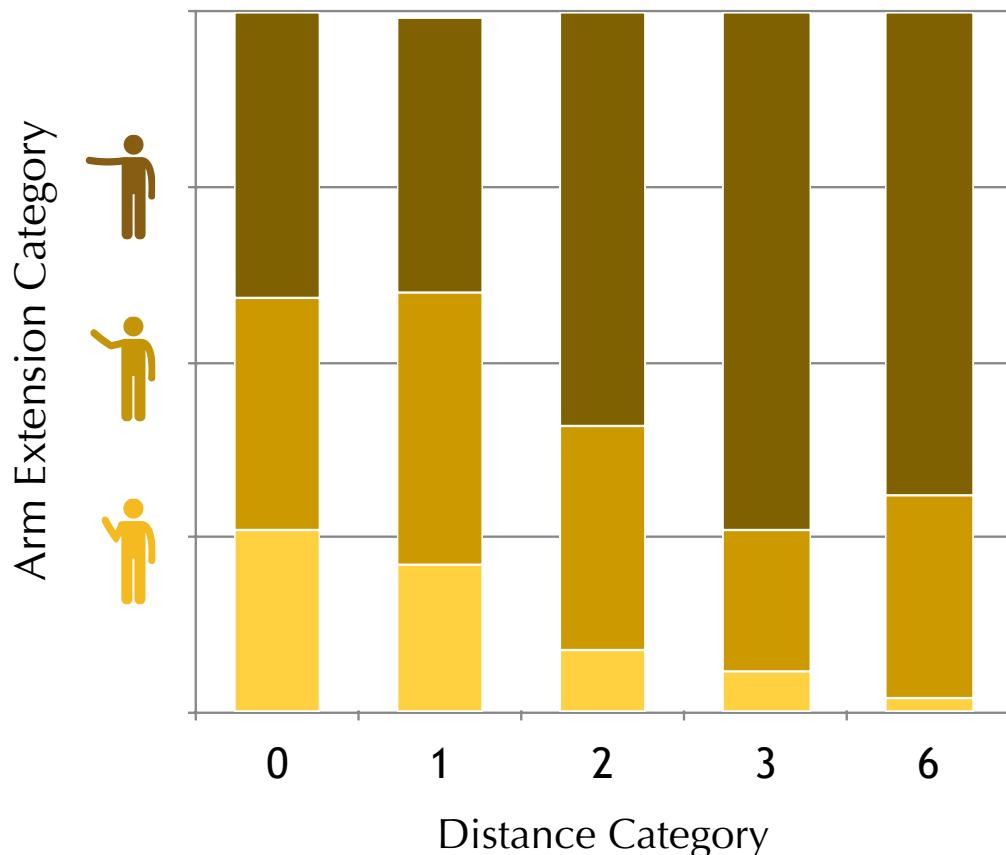
Random Effects	Variance
Person (Intercept)	0.35
Residual	0.76

Mixed effects linear regression analysis

- No significant effect of gesture type



Results: Arm Extension, all indicating gestures

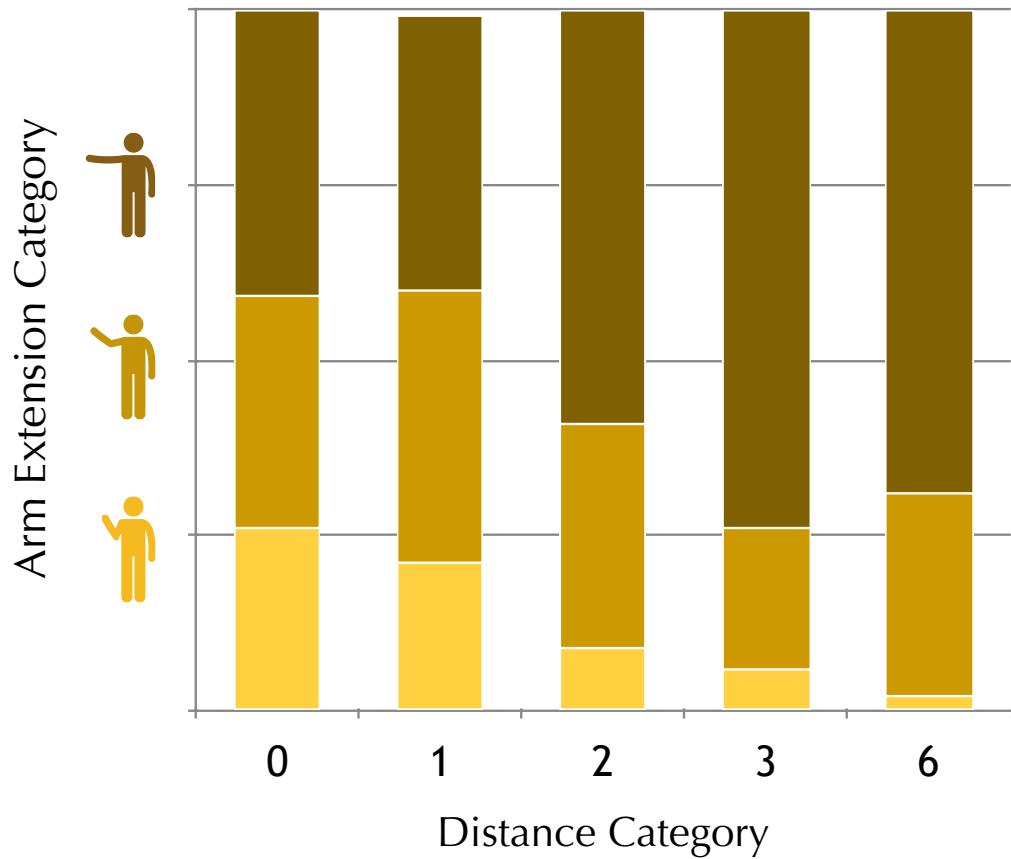


Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.10	0.15	< 0.001
Distance	0.11	0.01	< 0.001
Altitude	-0.01	0.01	0.6

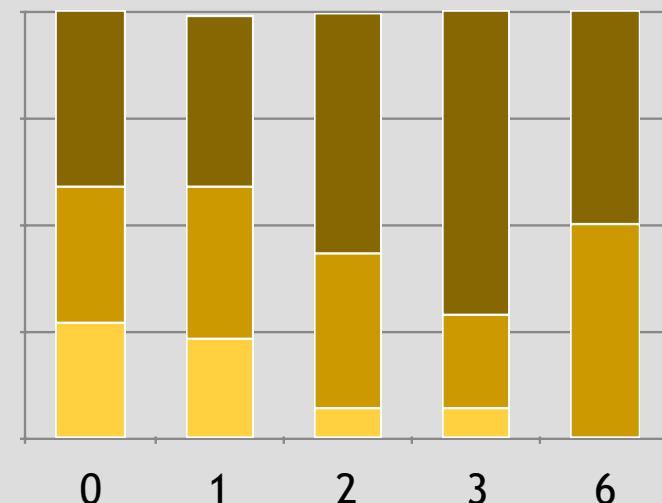
Random Effects	Variance
Person (Intercept)	0.20
Residual	0.41

Mixed effects linear regression analysis
• Main effect of **distance** alone

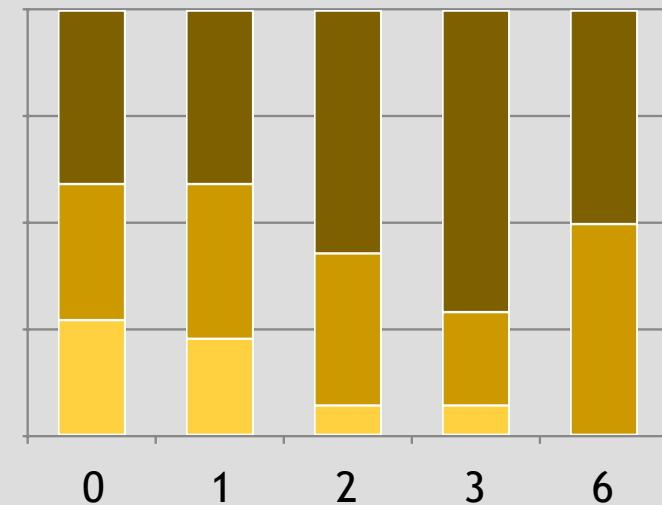
Results: Arm Extension, by gesture type



Points



Go gestures



Results: Arm Extension, by gesture type

Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	0.00	0.10	< 0.001
Distance	0.06	0.05	< 0.001
Gesture Type:			
<i>Go</i> gest.	(ref)		
Points	0.06	0.03	0.02

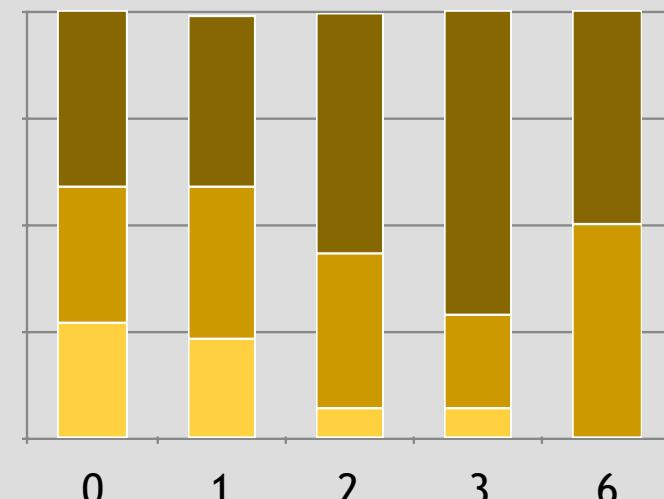
Random Effects	Variance
Person (Intercept)	2.64

Mixed effects linear regression analysis

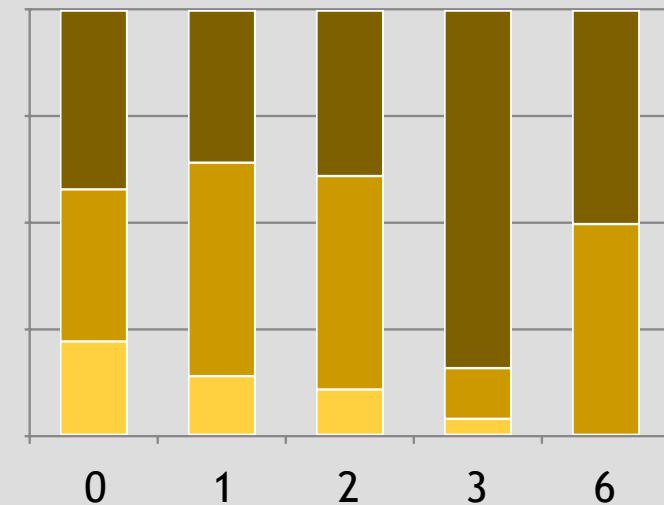
- No significant effect of gesture type on elbow height



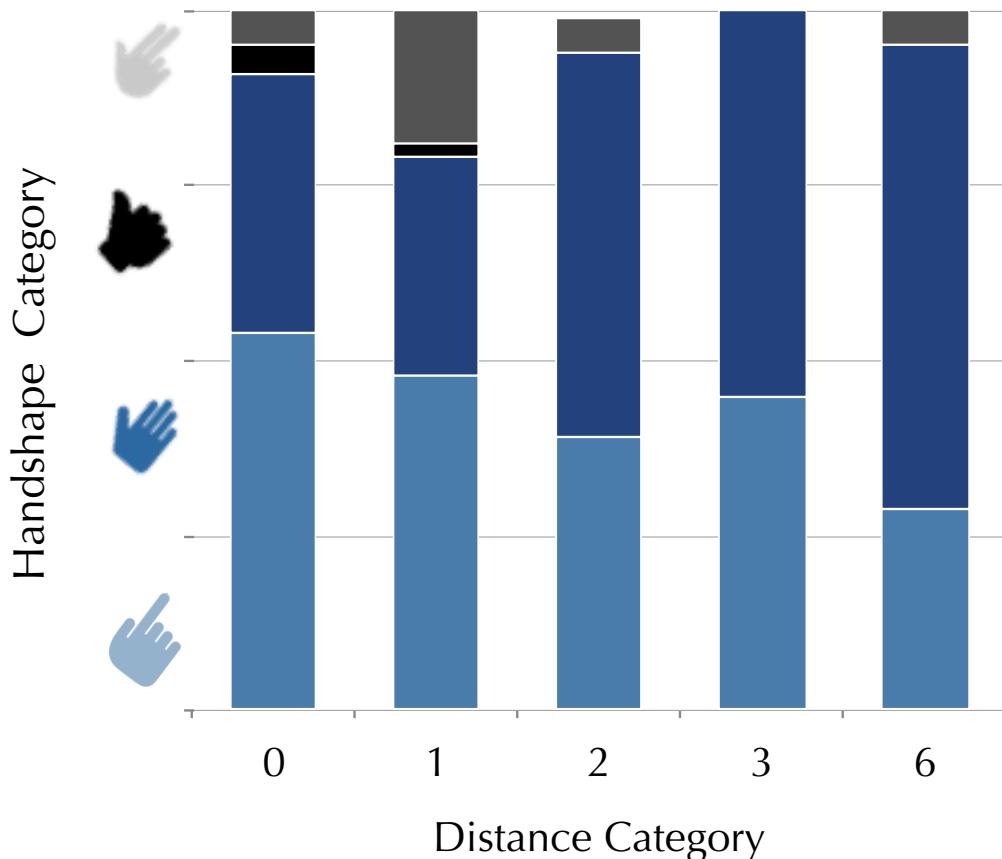
Points



Go gestures



Results: Handshape, all indicating gestures



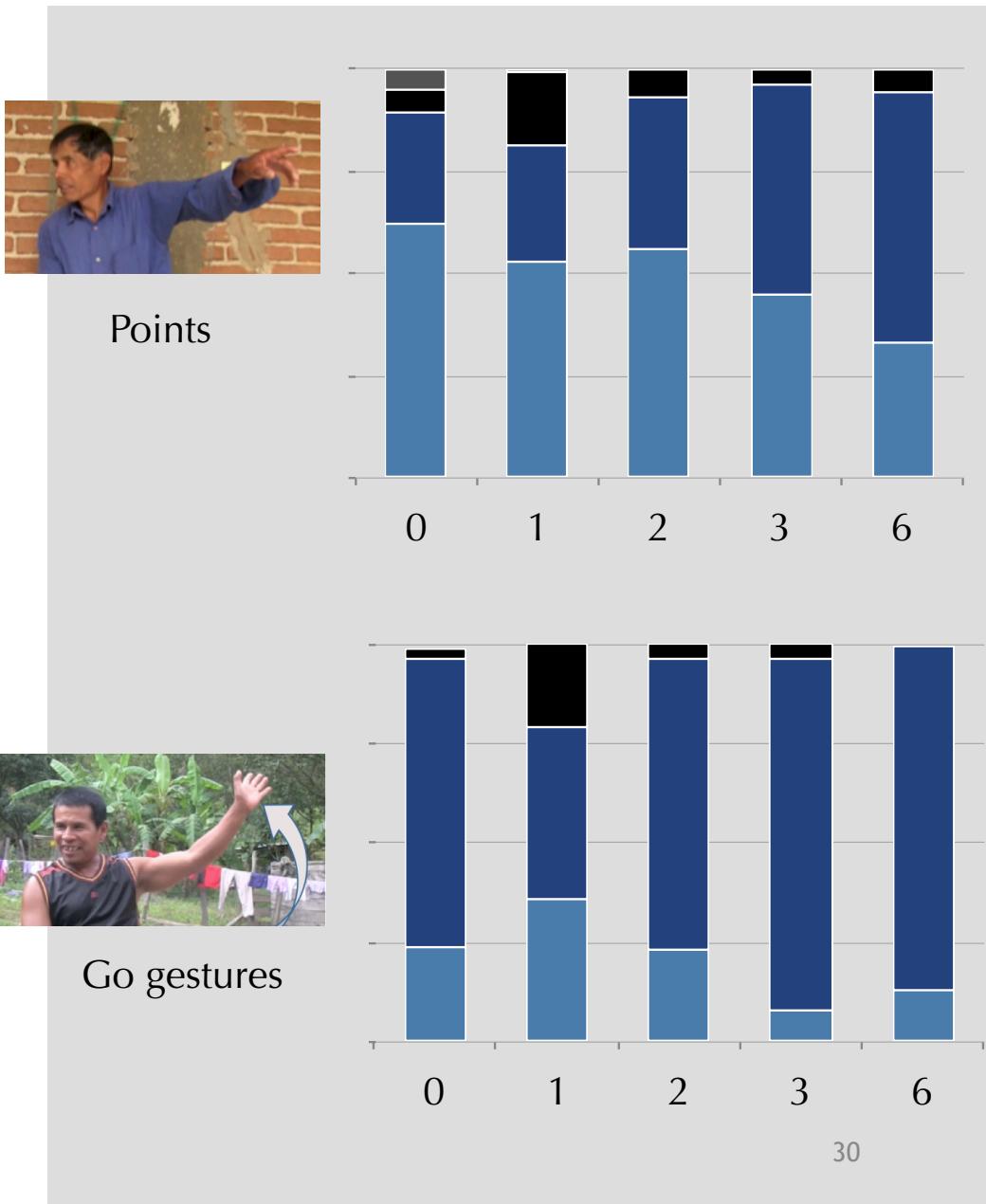
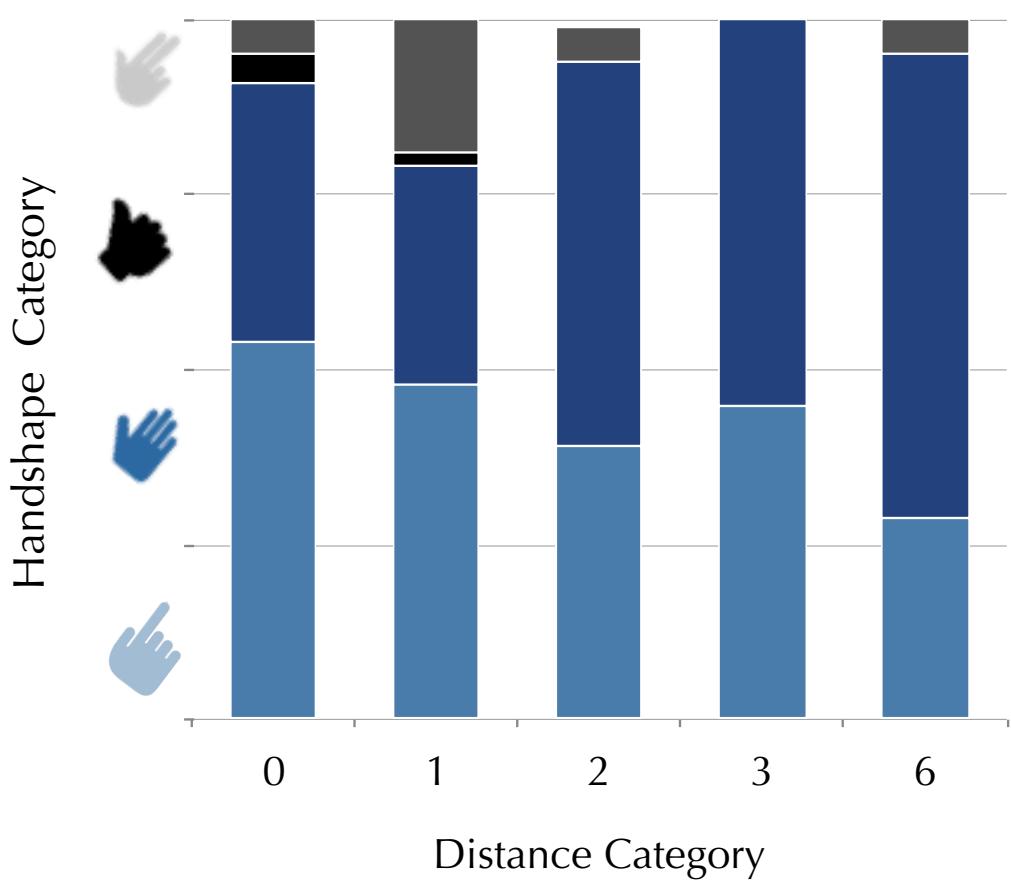
Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	0.67	0.39	0.51
Distance	1.38	0.08	< 0.001
Altitude	0.97	0.45	0.56

Random Effects	Variance
Person (Intercept)	2.52

Mixed effects logistic regression analysis

- Main effect of **distance** alone

Results: **Handshape**, by gesture type



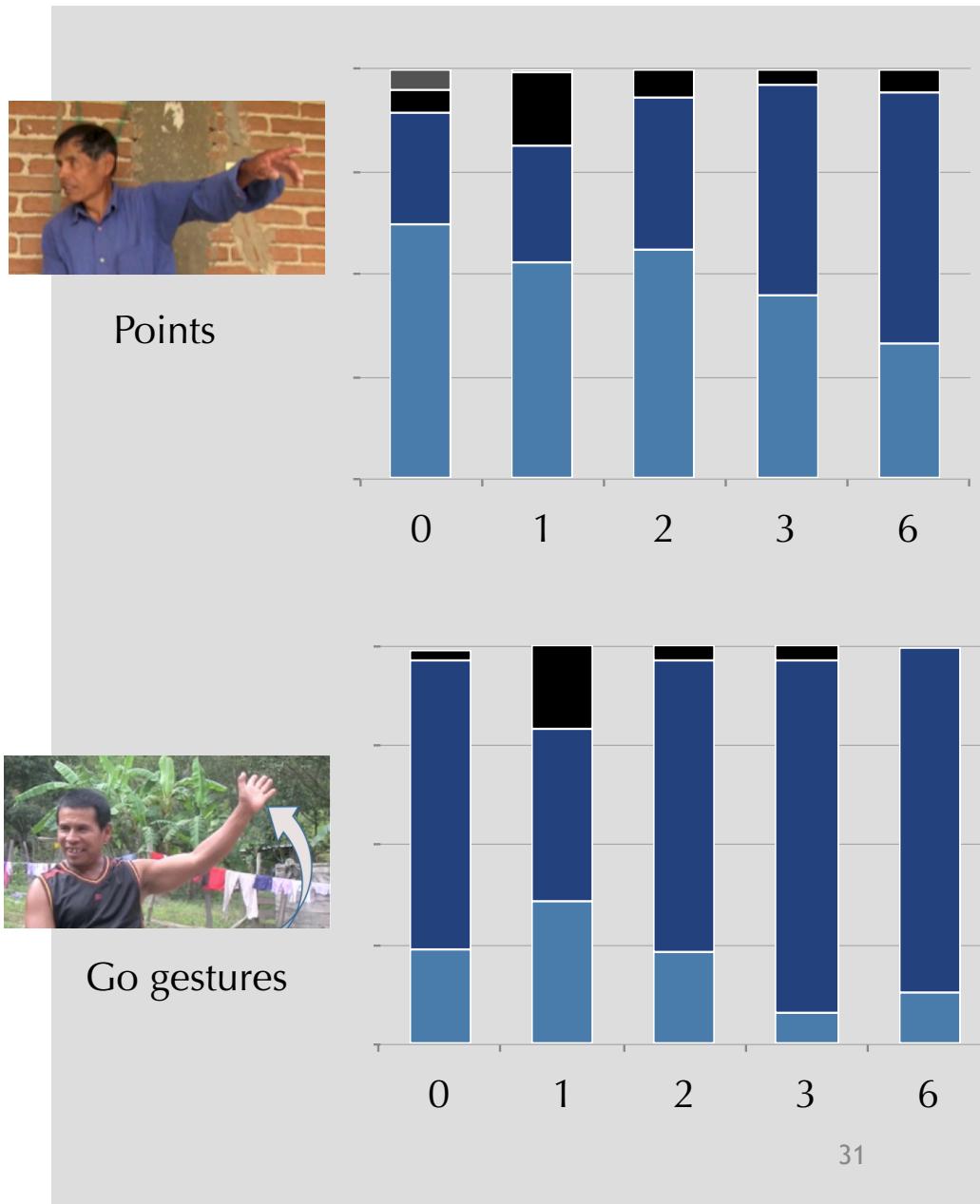
Results: **Handshape**, by gesture type

Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	2.44	0.93	<0.05
Distance	1.38	0.08	< 0.001
Gesture Type:			
Go gest.	(ref)		
Points	0.12	.03	<0.001

Random Effects	Variance
Person (Intercept)	2.64

Mixed effects linear regression analysis

- Main effect of **gesture type**



Summary: Points

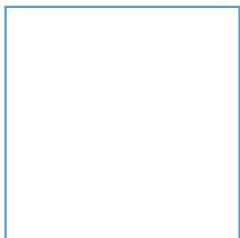


Summary: Go Gestures

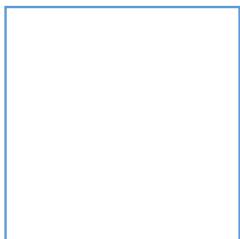




1. Formational features of indicating gestures systematically covary with the **distance** of the indicated target



- a. **Elbow Height:** increased distance -> increased height
- b. **Arm Extension:** increased distance -> greater extension
- c. **Handshape:** increased distance -> increased use of open hand



This systematicity holds regardless of the gesture type
(pointing vs. go gestures)

3 Two linked studies of indicating gestures in San Juan Quiahije (Oaxaca, Mexico)

3.1 Co-speech indicating gestures

3.2 Indicating in sign

1. Signers of SJQCSL, like speaker-gesturers in Quiahije, modulate features of indicating gestures to convey the distance of the indicated target.
 - a. **Elbow Height:** increased distance -> increased height
 - b. **Arm Extension:** increased distance -> greater extension
 - c. **Handshape:** increased distance -> increased use of open hand

Dataset

Filmed local environment interviews (Kita 2001)

- 29 hearing participants
- Six hr., 30 min. of footage
- 873 IGs
- 2 deaf participants
- 31.5 min. of footage
- **222 Indicating signs**





Koyu

51 years old

*1 deaf older
sibling*

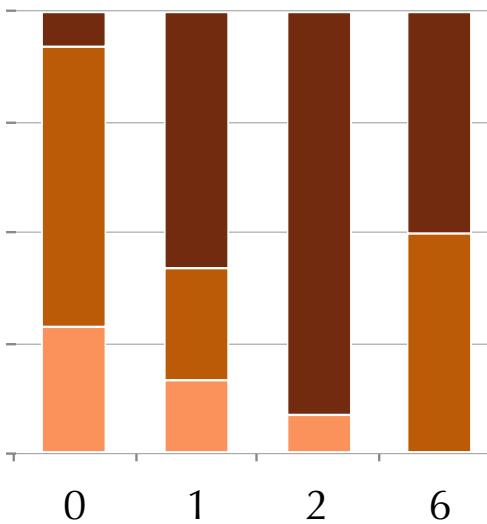
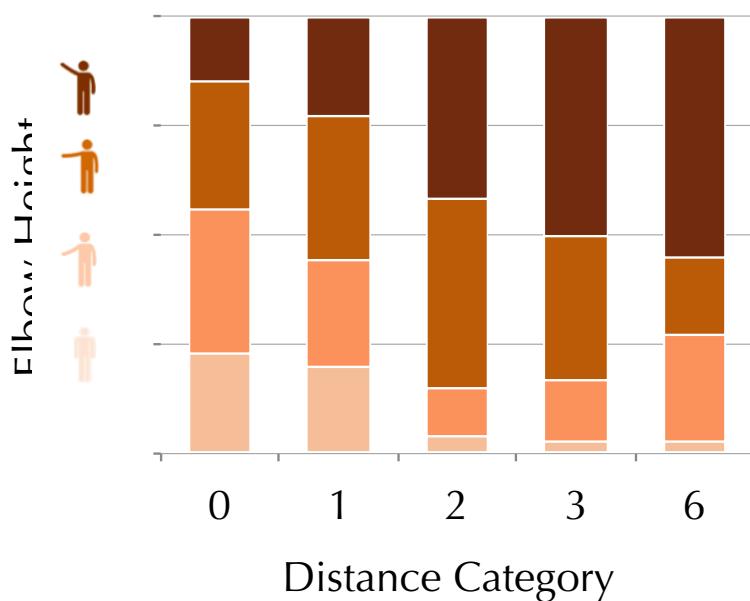


Sendo

30 years old

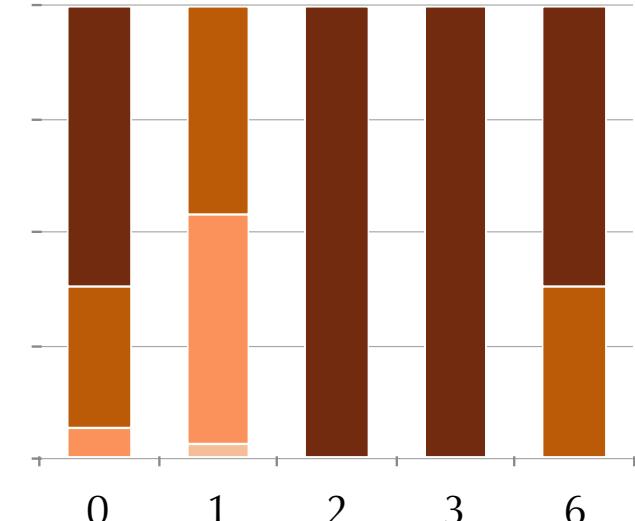
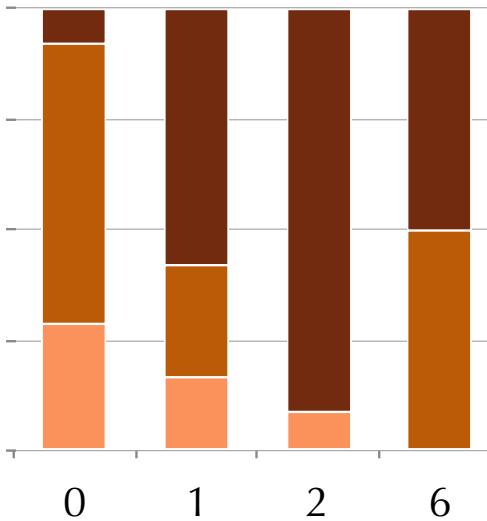
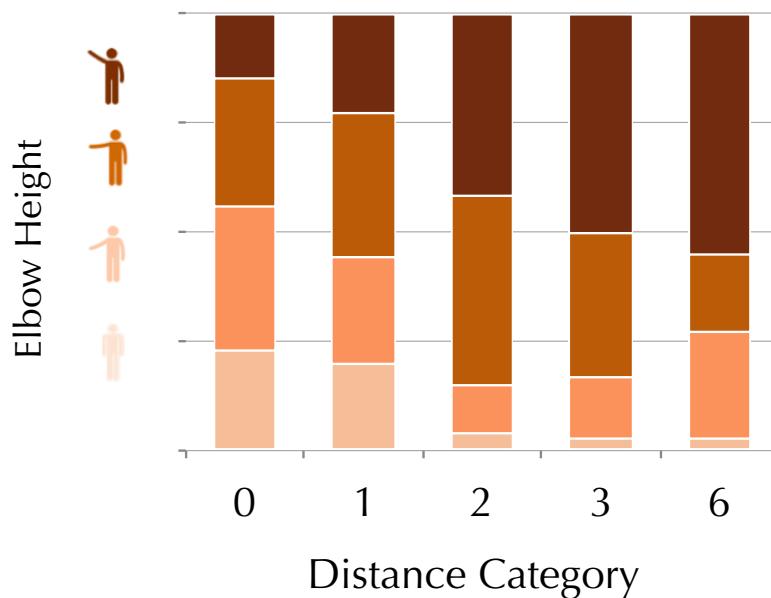
*No deaf
siblings*

Results: Elbow Height, all indicating signs



Sendo

Results: Elbow Height, all indicating signs



Mixed effects linear regression analysis

- Main effect of **distance** alone

- No gesture type effect

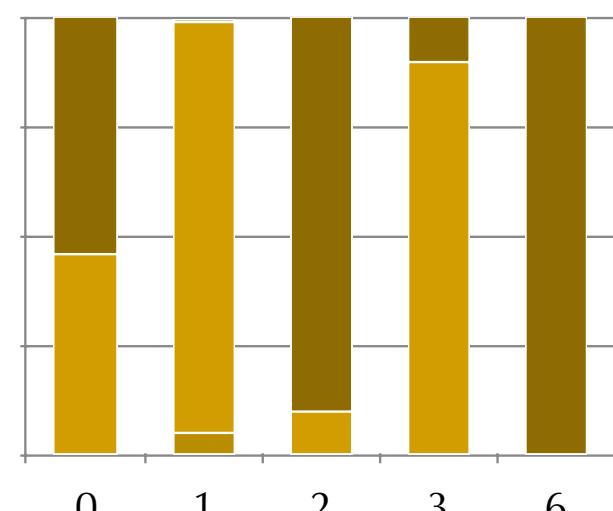
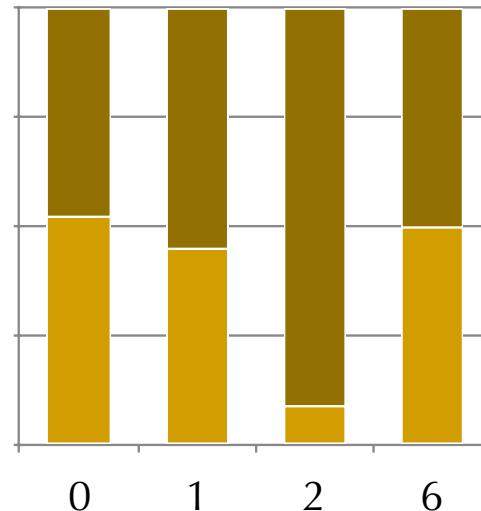
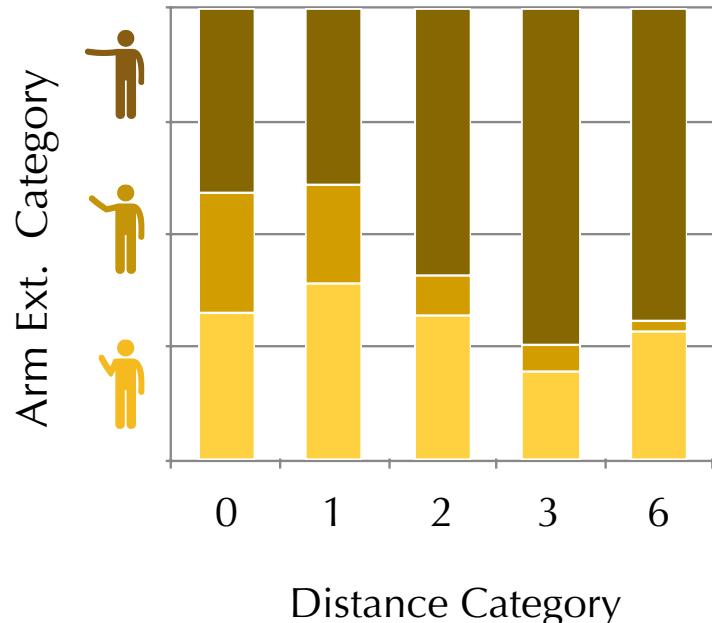
Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.11	0.75	0.14
Distance	0.15	0.05	< 0.01
Altitude	0.09	0.07	0.17

Sendo

Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.87	0.09	< 0.001
Distance	0.18	0.03	< 0.001
Altitude	-0.01	0.02	0.59

Koyu

Results: Arm Extension, all indicating signs

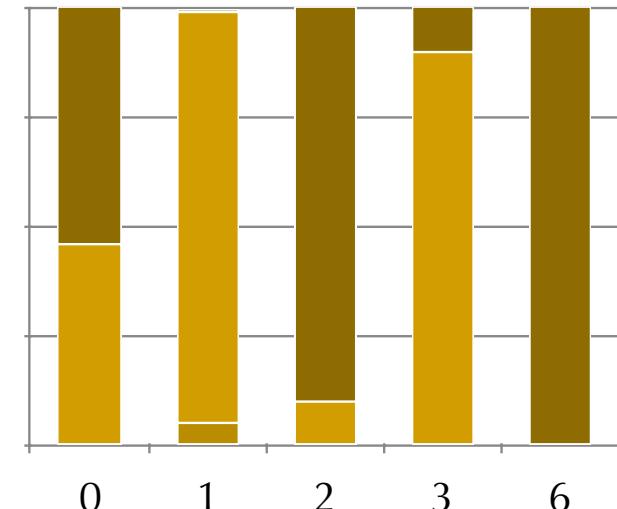
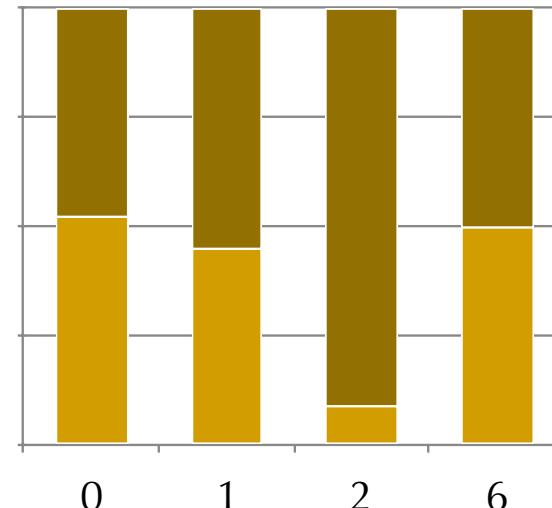
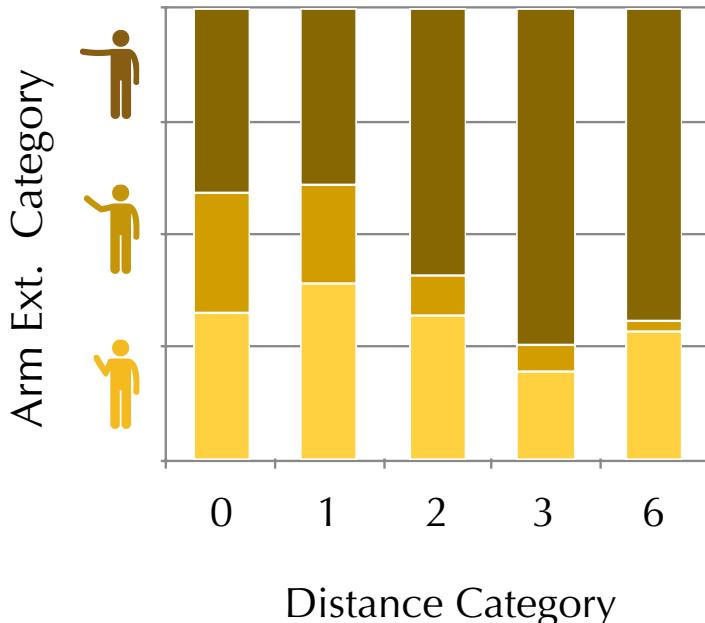


Sendo



Koyu

Results: Arm Extension, all indicating signs



Mixed effects linear regression analysis

- No effect of distance or altitude
- No gesture type effect

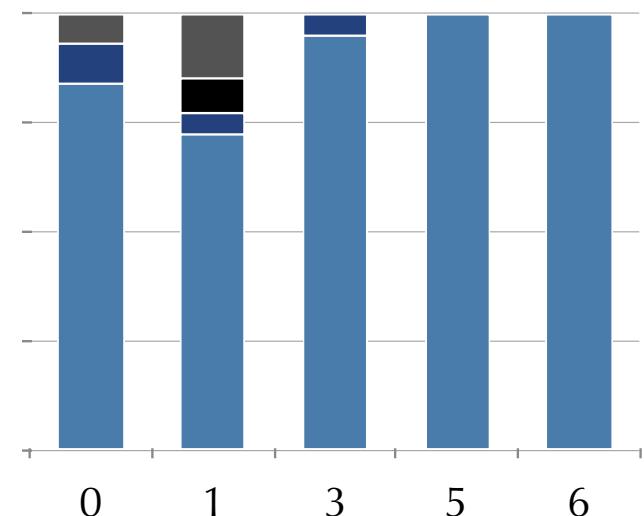
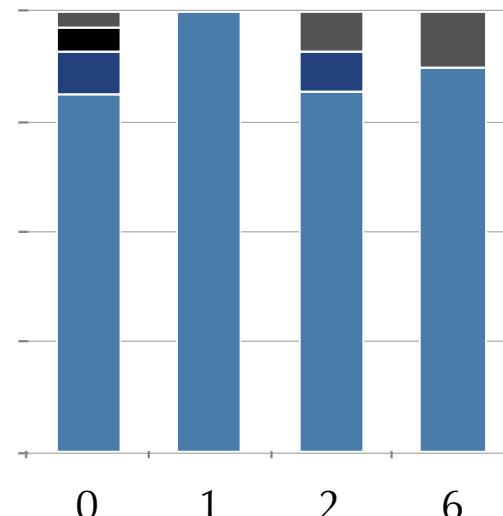
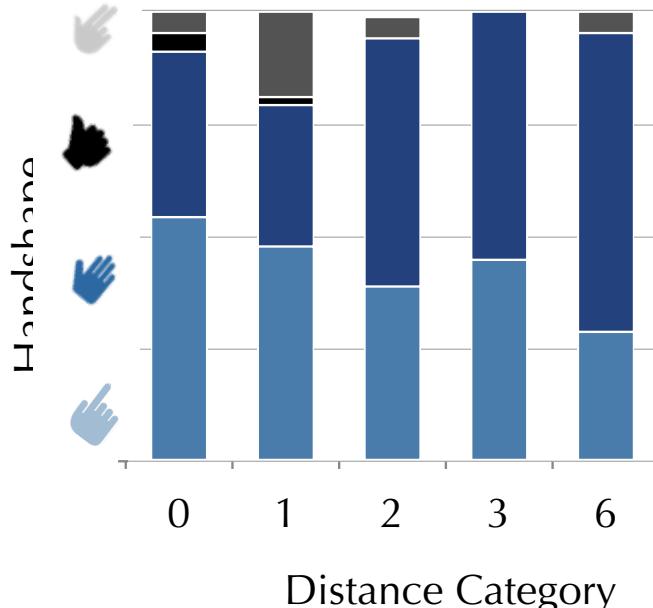
Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.79	0.57	0.003
Distance	0.02	0.03	0.48
Altitude	-0.02	0.05	-0.47

Sendo

Fixed Effects	Estimate	SE	Pr(> t)
(Intercept)	1.09	0.14	< 0.001
Distance	0.01	0.02	0.68
Altitude	0.02	0.01	0.19

Koyu

Results: **Handshape**, all indicating signs



No regression analysis



Sendo



Koyu

Summary: Signer vs. Gesturer comparison

Elbow Height



- Community conventions for modulating the height of indicating gestures are shared across speakers and signers
- Transmission of the height modulation practice takes place for **hearing and deaf** community members

Summary: Signer vs. Gesturer comparison

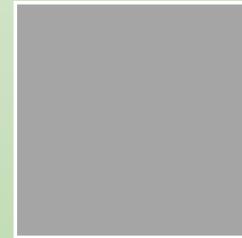
Elbow Height



- **Community conventions** for modulating the height of indicating gestures are shared across speakers and signers
- Transmission of the height modulation practice takes place for **hearing and deaf** community members

Summary: Signer vs. Gesturer comparison

Elbow Height



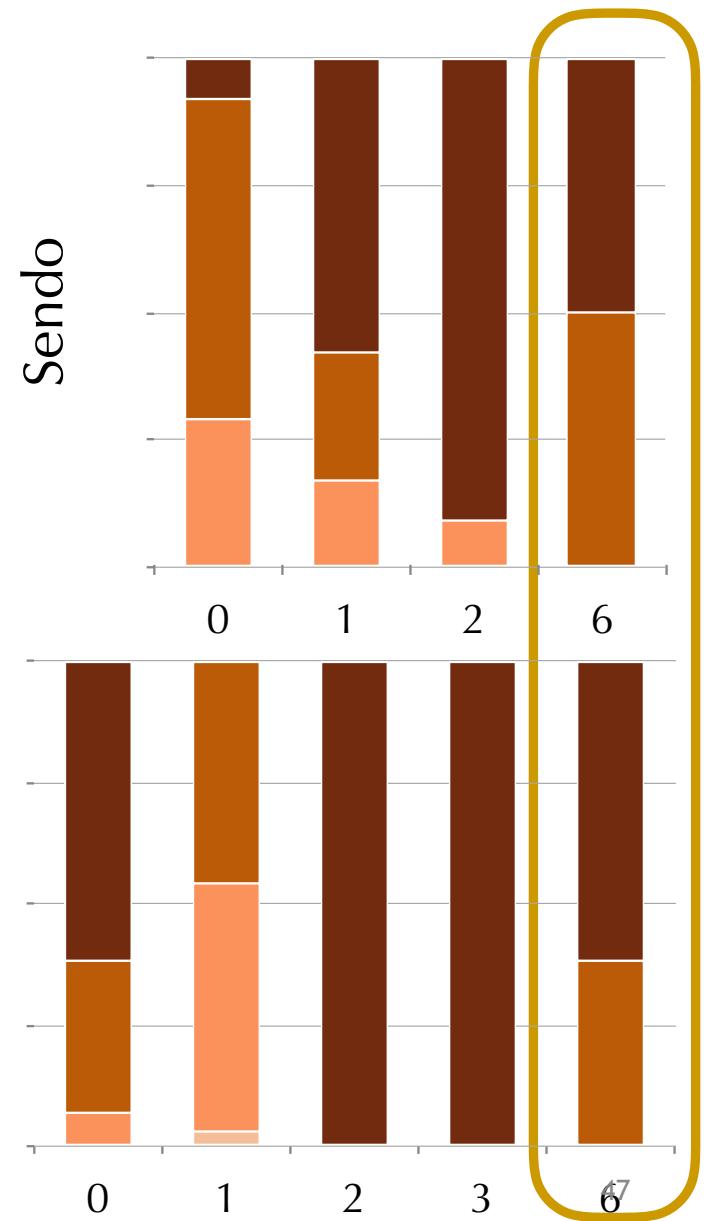
Arm Extension



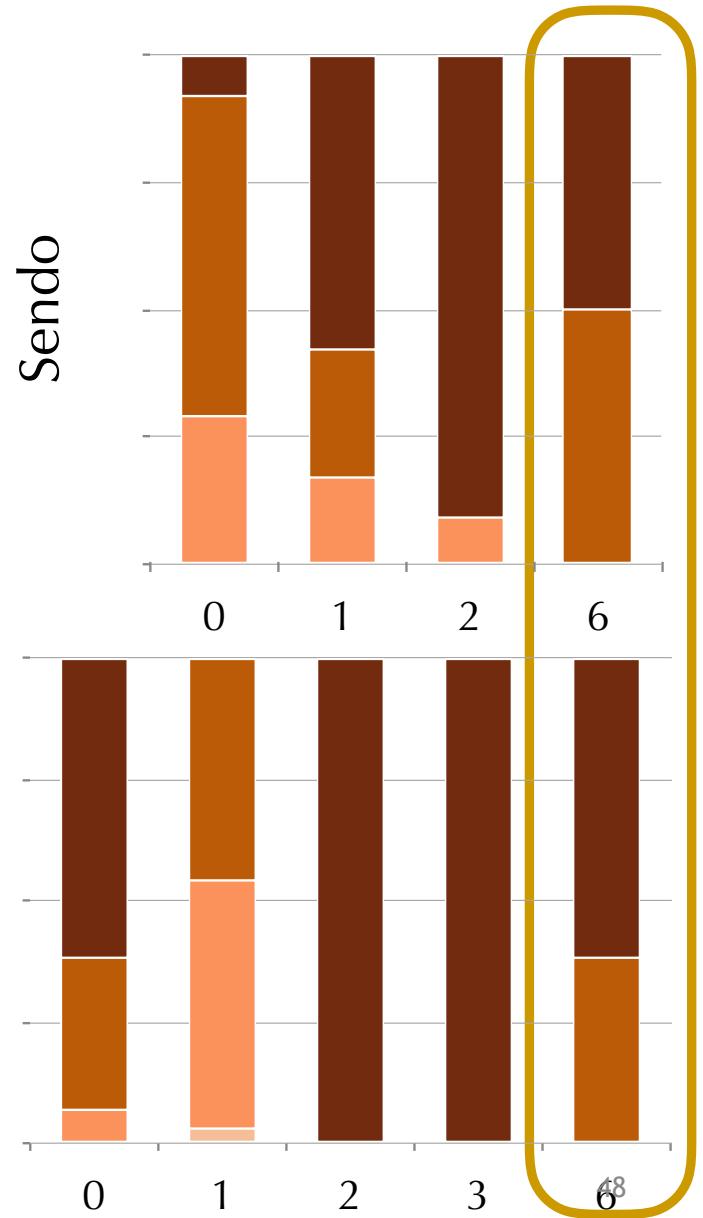
Handshape



Signers' Unique Indicating Features: **Pointing**



Signers' Unique Indicating Features: **Pointing**



Signers' Unique Indicating Features: **Go gesture**



Summary and Future Directions

In San Juan Quiahije,

- Some practices for meaningful modulation of pointing are shared between gesturers and signers
- Where signers diverge from the larger community pattern, they replace features rather than simply omitting them

Creators of signed languages do not merely “borrow” gestural practices:

- They are recipients of a process of cultural transmission, like their hearing counterparts
- They modify the practices that they receive, in ways that are evident when signers and gesturers are systematically compared



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