The Role of Gesture in ʔayʔaǰuθəm Determiners and Demonstratives

Marianne Huijsmans & Daniel K. E. Reisinger

huijsman@ualberta.ca • daniel.reisinger@ubc.ca

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LANGUAGE INFORMATION

ʔayʔaǰuθəm (a.k.a. Comox-Sliammon) is a Central Salish language spoken by the Tla'amin, Klahoose, and Homalco along the Northern Strait of Georgia in BC, Canada.

Currently, only 78 speakers report as fluent (FPCC 2022).

We are extremely grateful to Betty Wilson and Doreen Point of the Tla’amin Nation, Molly Harry of the Homalco Nation, as well as to Elsie Paul and Freddie Louie.

č’ɛč’ɛhatanapɛšt!

BACKGROUND

BACKGROUND

- Co-speech gesture is not a monolithic phenomenon: there are many different types of gestures. (e.g., McNeill 1992)

- In this talk, we'll particularly be concerned with two of the most common types of gesture:

Pointing gestures directly identify the target object, usually by the use of the index finger.
(e.g., Ebert et al. 2020)

Iconic gestures represent a property of the target object (e.g., shape, size).
(e.g., König & Umbach 2018; Ebert et al. 2020)

BACKGROUND

Ebert et al. (2020) propose that co-speech gesture typically carries **not-at-issue meaning** (analogous to appositives).

(1) I brought [a bottle of water] to the talk.
BIG

Imposes not-at-issue meaning:
'the bottle is big'

(2) I brought [the bottle of water] to the talk.
POINTING TO THE BOTTLE

Imposes not-at-issue meaning:
'the bottle is the entity pointed to'

BACKGROUND

In both cases, the co-speech gesture introduces a **gesture referent**.

(cf. Ebert et al. 2020)

(1) I brought [a bottle of water] to the talk.
BIG

Gesture introduces **an abstract bottle with property of being big**

(2) I brought [the bottle of water] to the talk.
POINTING TO A BIG BOTTLE

Gesture introduces **the big bottle pointed at**

BACKGROUND

However, the interpretation of gesture accompanying **definites** and gesture accompanying **indefinites** differs. (cf. Ebert et al. 2020)

(3) I brought [**a** bottle of water] to the talk.
POINTING TO BOTTLE

Gesture referent is **similar** to DP referent

(4) I brought [**the** bottle of water] to the talk.
POINTING TO BOTTLE

Gesture referent is **identical** to DP referent

BACKGROUND

Ebert et al. (2020) treat demonstratives as *dimension-shifters*:
With them, the not-at-issue contribution of a gesture becomes **at-issue**.

(5) DEFINITE DETERMINER (NOT-AT-ISSUE):
I didn't bring [the bottle of water]. **#**I brought a different one.
POINTING TO BOTTLE

(6) DEMONSTRATIVE (AT-ISSUE):
I didn't bring [that bottle of water]. I brought a different one.
POINTING TO BOTTLE

(7) ADJECTIVE (AT-ISSUE):
I didn't bring [the green bottle of water]. I brought a different one.

BACKGROUND

- ʔayʔaǰuθəm has a particularly rich landscape of D elements:
  - 8 gesture demonstratives (**GDEMs**)
  - 9 salience demonstratives (**SDEMs**)
  - 5 determiners (**DETs**)

22 D elements!

(cf. Reisinger et al. 2020; Reisinger & Huijsmans 2021; Huijsmans & Reisinger 2022)

- How these elements interact with co-speech gesture has not been systematically explored.
- In general, little is known about the role of gesture in Salish languages, apart from Webb's pioneering work on viewpoint gestures in Halkomelem. (cf. Webb 2021, 2022)

RESEARCH QUESTION

Q: What does co-speech gesture contribute when used alongside a **GDEM**, **SDEM**, or **DET**?

- Is co-speech gesture at-issue with DEMs and not-at-issue with DETs?
- Does co-speech gesture have a different interpretation with definite-like DETs vs. indefinite-like DETs?
- Is there a difference between pointing and iconic gestures?

MAIN CLAIMS

- Gesture contributes **at-issue content** when accompanying **GDEMs**.
- Gesture contributes **not-at-issue content** when accompanying **SDEMs** and **DETs**.
- Gesture is interpreted differently with **indefinite-like** and **definite-like DETs**.
- Pointing and iconic gestures have the same basic type of contribution, but iconic gestures are practically a bit vaguer.

THE FORMS

THE FORMS

- As mentioned earlier, ʔayʔaǰuθəm has 22 distinct determiner and demonstrative forms.
- This multitude of D elements is due to the paradigms encoding factors such as evidentiality, deictic distance, gender, and number.
  (cf. Reisinger et al. 2021; Reisinger & Huijsmans 2022)
- As these factors will not be directly relevant to the main claims here, we will only focus on an illustrative subset of forms.

THE FORMS

- In this talk, we focus on four forms representing all three paradigms:
  - **GDEM *təy'ta***
  - **SDEM *tan'***
  - **DET *tə***
  - **DET *k^{w}***
- ***təy'ta***, ***tan'***, and ***tə*** share evidential requirements and are gender and number neutral. ***təy'ta*** and ***tan'*** are both distal.
- ***k^{w}*** is neutral for evidentiality, gender, and number.

THE FORMS: SUMMARY

- The **definite-like DET *tə*** is used in referential contexts but does not require familiarity. (cf. Reisinger et al. 2021)
- The **indefinite-like DET *k*^{w}** can be used in nonreferential contexts. (cf. Reisinger et al. 2021)
- **GDEMs** are used when introducing a new referent into the discourse via gesture.
- **SDEMs** are used for referents that are already salient. (cf. Reisinger & Huijsmans 2021; Huijsmans & Reisinger 2022)

DETERMINERS

- The **definite-like DET *tə*** is used in referential DPs but does not require familiarity.

(8) *Context: A short storyboard showing a dog walking, noticing a cat, and then chasing it.*

huθu **tə**=č'an'u. k'^{w}ən-əx^{w}-as **tə**=mimaw'.
PROG~go **DET**=dog see-NCTR-3ERG **DET**=cat

ʔaq'-at-as **tə** mimaw'.
chase-CTR-3ERG **DET**=cat

'A dog is going along. It sees a cat. It chases the cat.'

- This is consistent with Salish languages lacking common ground restrictions (Davis & Matthewson 2009, and references therein).

DETERMINERS

The **indefinite-like DET *k*^{w}** can be used where there is no reference to a specific individual.

(9) *Context: At a ring shop, I walk up to a display case with the type of thing I want and tell the salesperson:*

ʔətᶿ=χ̣aƛ’ tᶿ=yəq-ʔəm
1SG.POSS=desire 1SG.POSS=buy-ACT.INTR
ʔə={**#tə** / **k**^{w}}=t’ᶿagatiqʷuǰatən
OBL={**DET** / **DET**}=ring
‘I want to buy one of these rings.’

DETERMINERS

The **indefinite-like DET *kʷ*** can be used when discussing things that do not exist:

(10) *Context: Marianne is about to start weaving a basket with Betty, but she doesn't have an awl. She tells Betty:*

xʷukʷt {**#tə** / **kʷ**}=ətᶿ=χ̣ʷuχ̣ʷp'
not.exist { **DET** / **DET**}=1SG.POSS=awl
'I don't have an awl.'

GDEMs vs. SDEMs

GDEMs introduce a new referent into the discourse via gesture, creating joint attention. (cf. Diessel 2006)

(11) *Context: Marianne and Daniel just arrived at Gloria's place. Gloria is just in the kitchen getting them something to drink, and Marianne admires the flowers she has on her table in the living room. Daniel hasn't noticed them, so Marianne* ***points at the flowers*** *and tells him:*

ʔu, k'ʷə[n]-t=gi {**təy'ta** / **#tan'**} qʷasəm.
oh see-CTR=DPRT {**GDEM** / **SDEM**} flower
hihiw ʔaǰ-umiš-mut.
really good-appearance-INT
'Oh, look at those flowers. They're really beautiful.'

GDEMs vs. SDEMs

SDEMs refer to a referent that is already salient in the context.

(12) *Context: I see you examining a picture of a young man, and I'm curious who it is.*

gat=ga {#**təy'ta** / **tan'**}?
who=DPRT {**GDEM** / **SDEM**}
'Who is that?'

GDEMs vs. SDEMs

- **GDEMs** identify the referent via gesture and therefore only occur with exophoric referents.
- **SDEMs** are compatible with non-exophoric referents.

(13) *Context: From a narrative on traditional teachings.*

hiɬ=ga	ʔə=xʷ=nəm’=s	**tan’**
COP=DPRT	CLF.PRT=OBL.NMLZ=be.like=3POSS	**SDEM**
tə=θ=θu	su~suh-uθut	paya?.
DET=2SG.POSS=go	PROG~do.traditional.ritual	always

‘That's why you always do your morning ritual.’

(Watanabe 2014:090)

THE EXPERIMENT

What does gesture contribute?

INTRODUCTION

- We decided to examine the role of gesture with a matching task, modelled after similar work by Ebert et al. (2020) on German demonstratives.
- Our participant “pool” consisted of three female Elders, all above the age of 70 (= 3.85% of fluent speakers).
- Two of them speak the Tla’amin dialect, the other one the Homalco dialect.

MATERIALS

- The experiment encompassed 85 test items in randomized order, interspersed by 14 filler items in regular intervals.
- Each test item consisted of one video clip and one picture.
- In the video, Marianne would ask a yes/no question in the language about the object depicted in the picture.
- These questions would vary along the following parameters:

FORM	GESTURE	OBJECT	MATCH
təy'ta	POINTING	BOOKS	MATCH
tə	ICONIC	BOTTLES	MISMATCH
kʷ	NONE (ADJ)	CUPS	
		KNIVES	
		PAPER	

CHOICE OF FORMS

- In the experiment, we only focussed on the following forms:
  - **GDEM *təy'ta***
  - **DET *tə***
  - **DET *k^{w}***
- We chose ***təy'ta*** because it is the GDEM that is most commonly used when pointing at visible objects in one's surroundings.
- For the DETs, we chose ***tə*** for its definite-like behaviour, and ***k^{w}*** for its indefinite-like behaviour.
- We did not include any **SDEMs** in the investigation as they would have required a more complex experimental setup.

PROCEDURE

- We told the participants that the experiment explores how to talk about objects.
- The test items were then presented to them on a laptop, using PowerPoint.
- We asked the participants to answer the questions in the videoclip using a provided scale of potential answers:

  ʔɛ/**yes** (= match) xʷaʔ/**no** (= mismatch) xʷač toχʷnɛxʷən/**unclear**

- To make the procedure less repetitive, the experiment was split into two blocks. In between, other fieldwork was conducted.

GESTURE MISMATCH

tałusa Daniel **təy’ta** puk^{w}?

‘Is Daniel reading **that** book?’

ADJ MISMATCH

kʷinatəma Bailey kʷ **t’atʼᶿɛm** kʷasta?

‘Is Bailey holding a/the **red** cup?’

GESTURE MATCH

yiq’əma Gloria **tə** č’ətqamin?

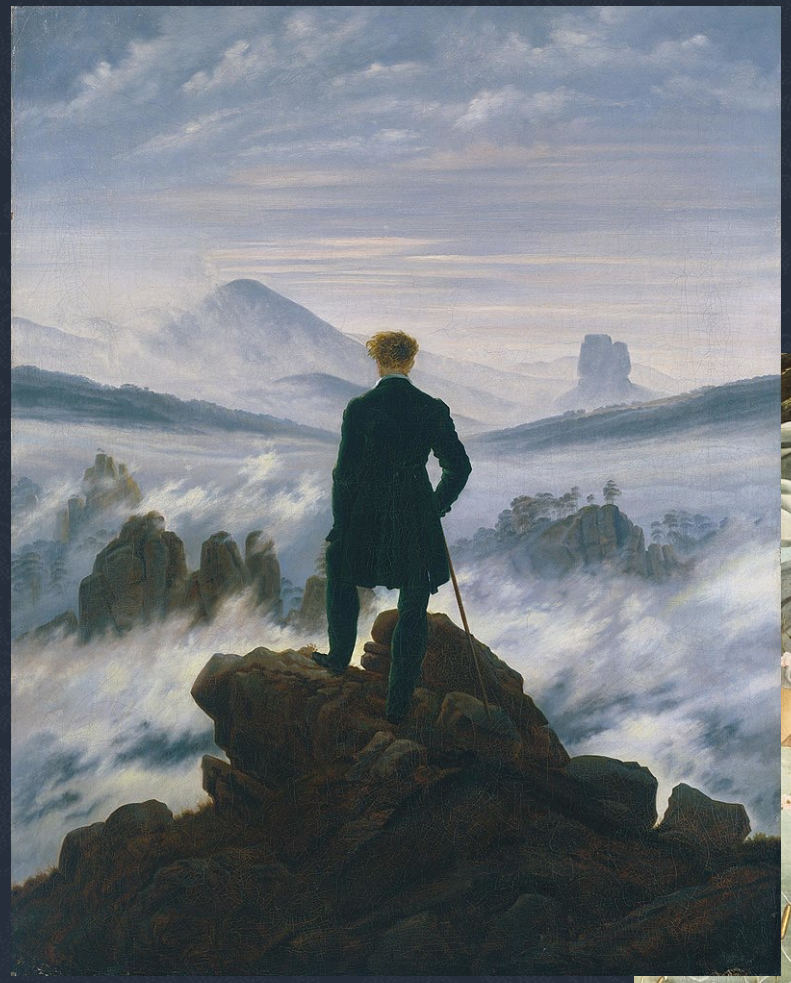
‘Is Gloria using **a/the** knife?’

NO GESTURE

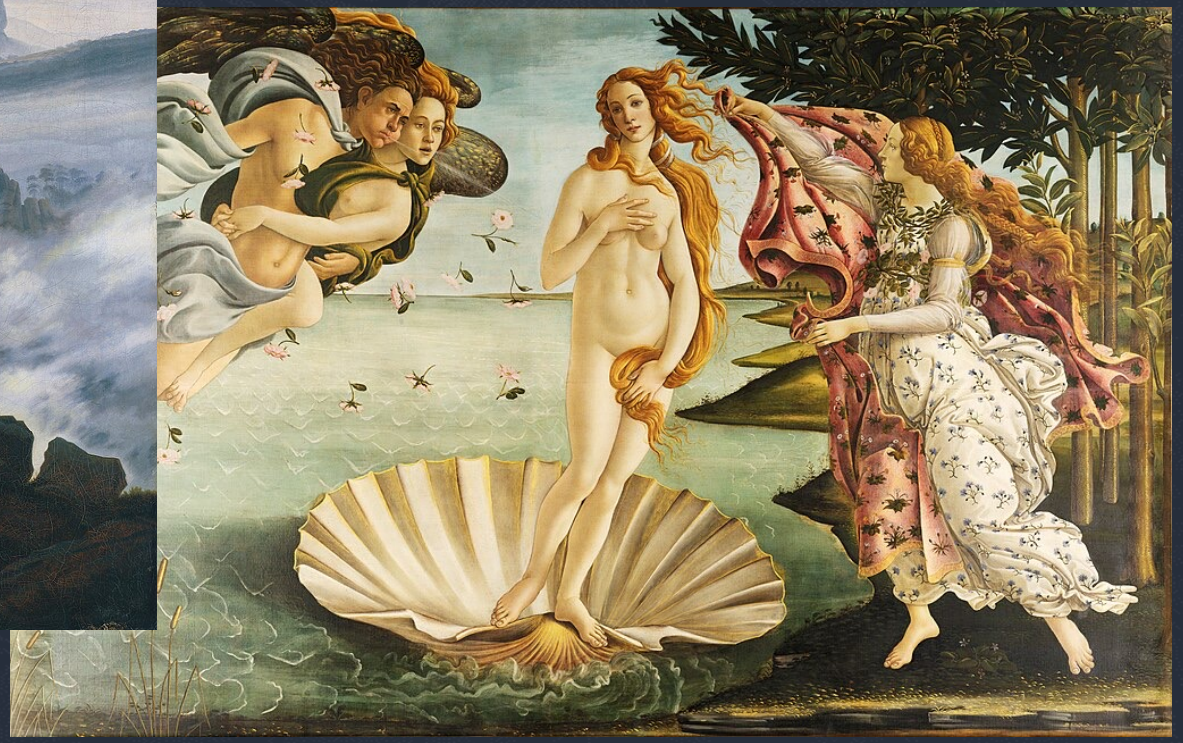
tałusa Daniel **təy'ta** puk^{w}?

'Is Daniel reading **that** book?'

FILLER ITEMS



In regular intervals,
we showed participants a
picture and asked them to
describe what they’re seeing.



HYPOTHESES & PREDICTIONS

H1: Gesture is **at-issue** for **GDEMs** but not **DETs**.

➡ P1: Mismatch effects will be strongest for ***təy'ta***.

We expect participants to answer 'no' when the objects don't match and the **GDEM** is used.

HYPOTHESES & PREDICTIONS

H2: **GDEMs require** gesture whereas **DETs** do not.

➡ P2: The use of ***təy'ta*** without gesture will be infelicitous.

We expect participants to answer 'unclear' when the **GDEM** is used without gesture.

HYPOTHESES & PREDICTIONS

H3: Gesture with the **definite-like DET** encodes **identity** between gesture and DP referent

Gesture with the **indefinite-like DET** encodes **similarity** between gesture and DP referent.

➡ P3: Mismatch effects will be stronger for ***tə*** than for ***kʷ***.

We expect participants are more likely to answer ‘yes’ when the objects don’t match and ***kʷ*** is used.

HYPOTHESES & PREDICTIONS

H4: Iconic gestures can't **perfectly** represent the targeted property, and so are more easily accommodated.

➡ P4: Mismatch effects will be weaker for iconic gestures.

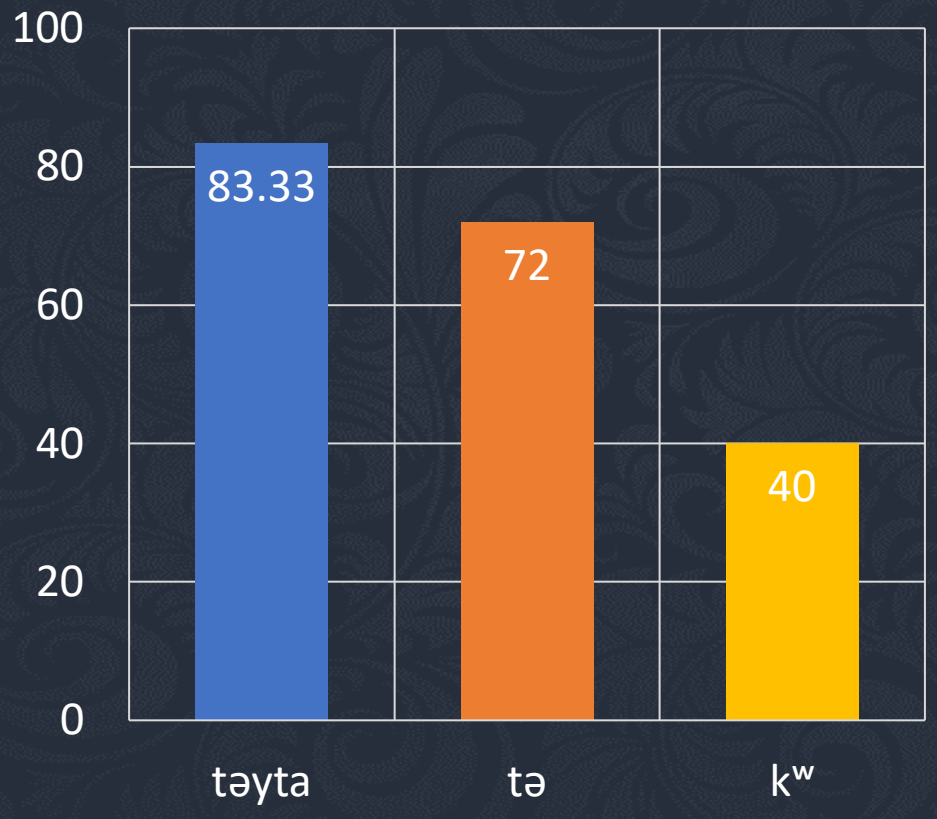
We expect participants will be more likely to answer 'yes' when the objects don't match and an iconic gesture is used.

DATA FILTERING

- Overall, we gathered 255 judgments (3 speakers x 85 items).
- For one participant, 4 of these judgments had to be discarded because her answers were ambiguous.
- For another participant, 42 judgments had to be discarded because she did not pay attention to the videos at first, until being instructed again.
- Thus, we were left with 209 judgments in total.

RESULTS

Gesture mismatch (overall)



‘no’ answers when objects didn’t match (in percent)

The mismatch effect was …

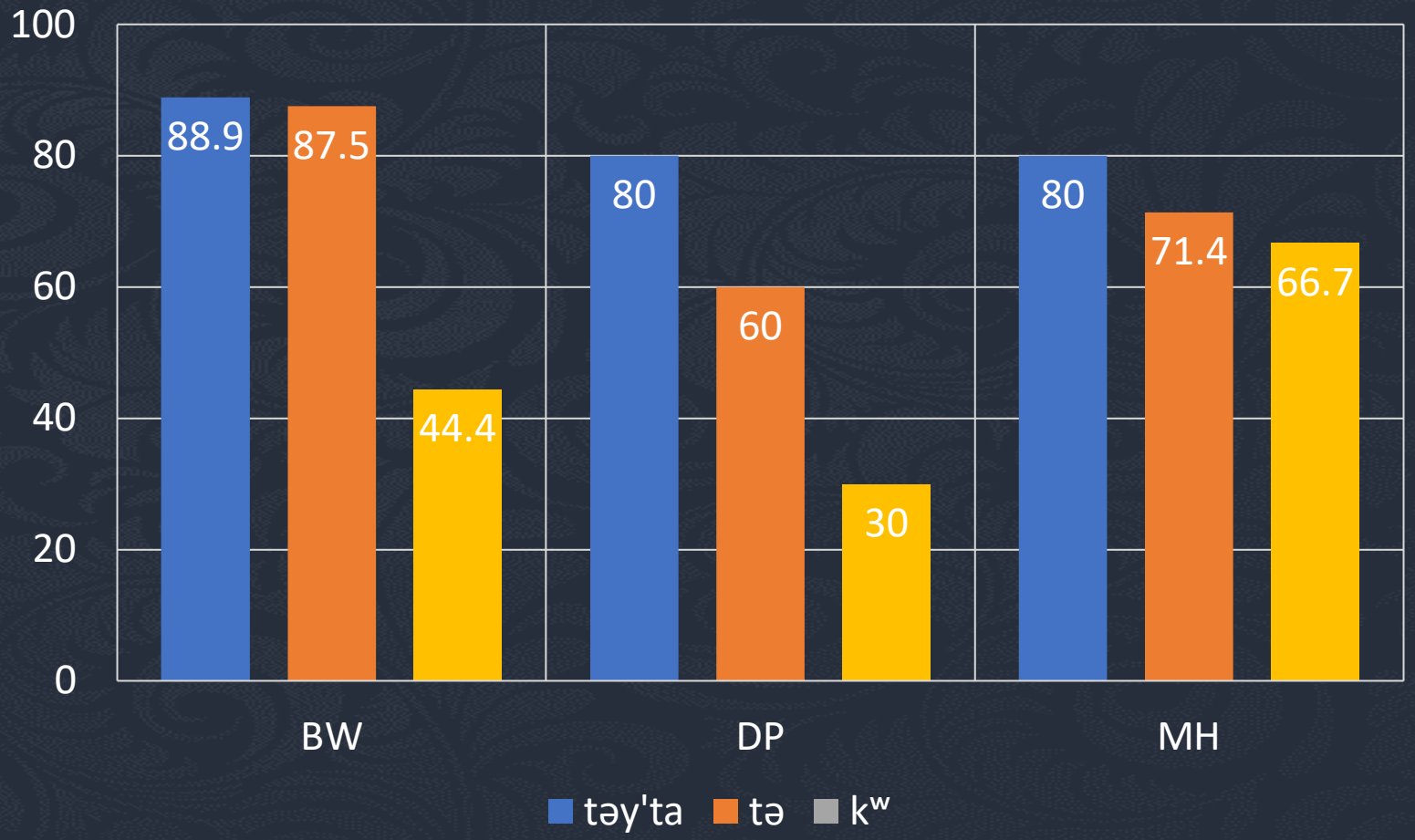
… strongest for the **GDEM *təy’ta***

… slightly weaker for the **DET *tə***

… and weakest for the **DET *kʷ***

RESULTS

Gesture mismatch (by participant)

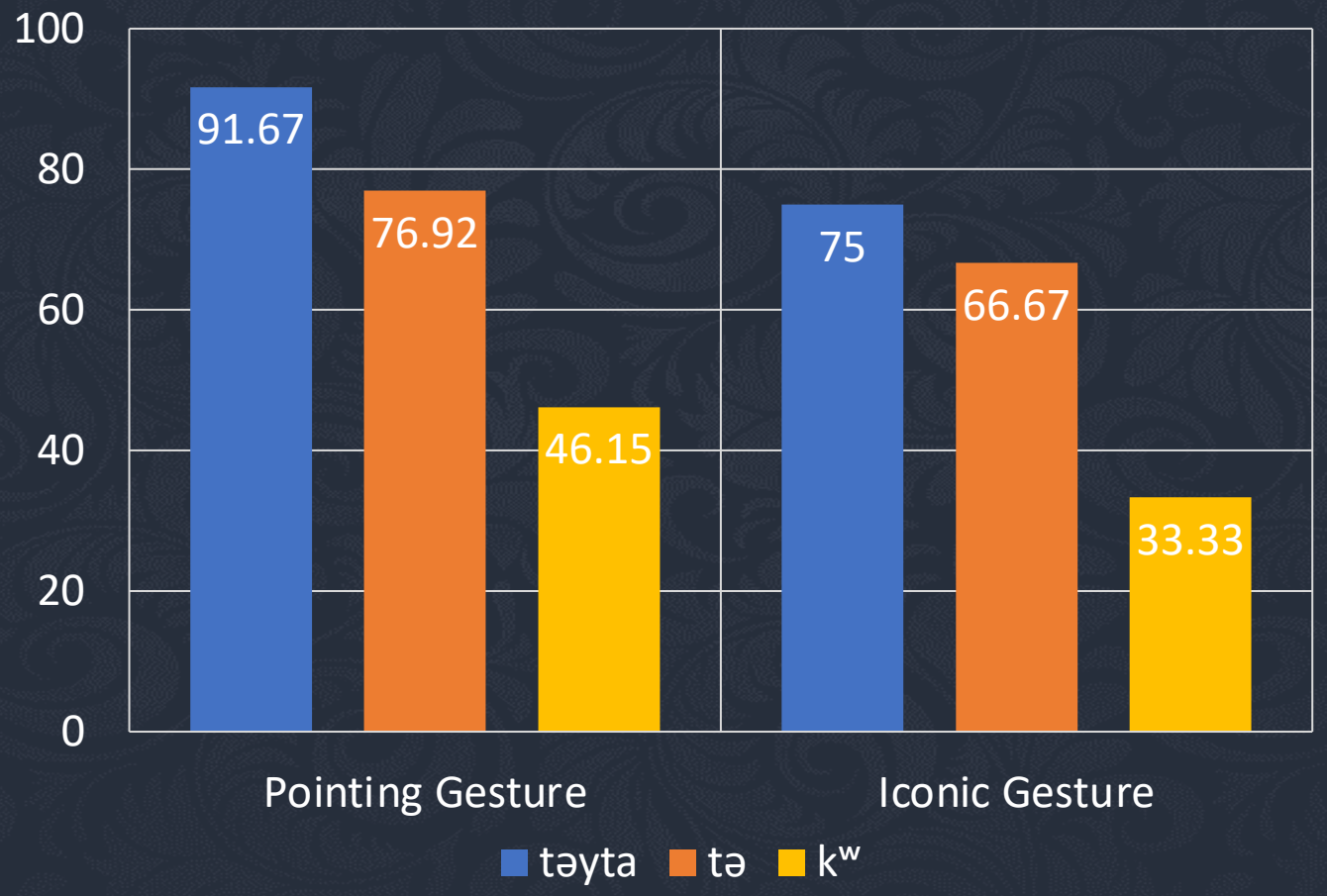


'no' answers when objects didn't match (in percent)

This trend also holds when we look at the participants individually.

RESULTS

Gesture mismatch (by gesture type)



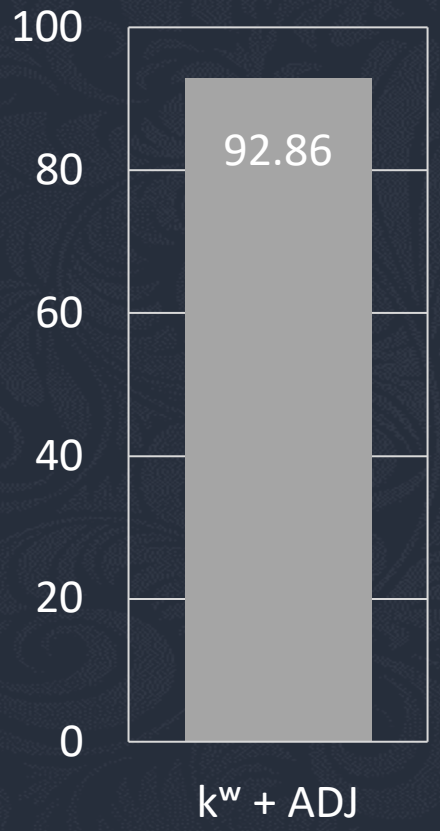
'no' answers when objects didn't match (in percent)

When we separate pointing gestures from iconic gestures, we find the same pattern.

However, participants were generally a bit more lenient towards mismatches involving iconic gestures.

RESULTS

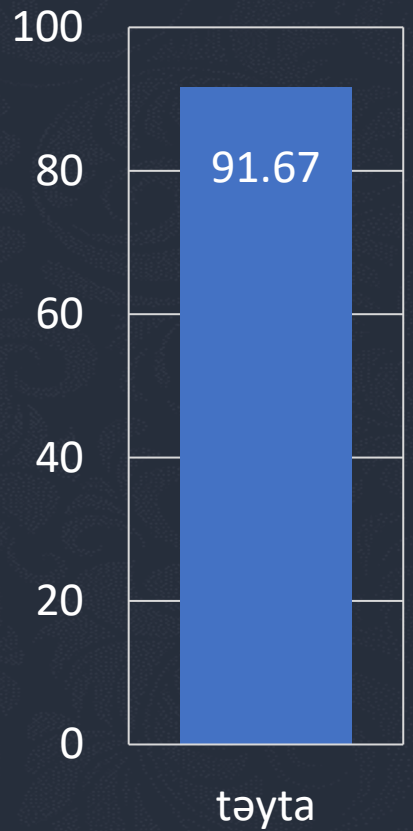
ADJ mismatch (no gesture)



‘no’ answers when objects didn’t match (in percent)

As a control, we tested how participants would judge sentences that do not involve a gesture mismatch, but an ADJ mismatch.

The mismatch effect was expectedly high for this condition and close to the score for the pointing mismatches with the **GDEM *təy’ta***.



RESULTS

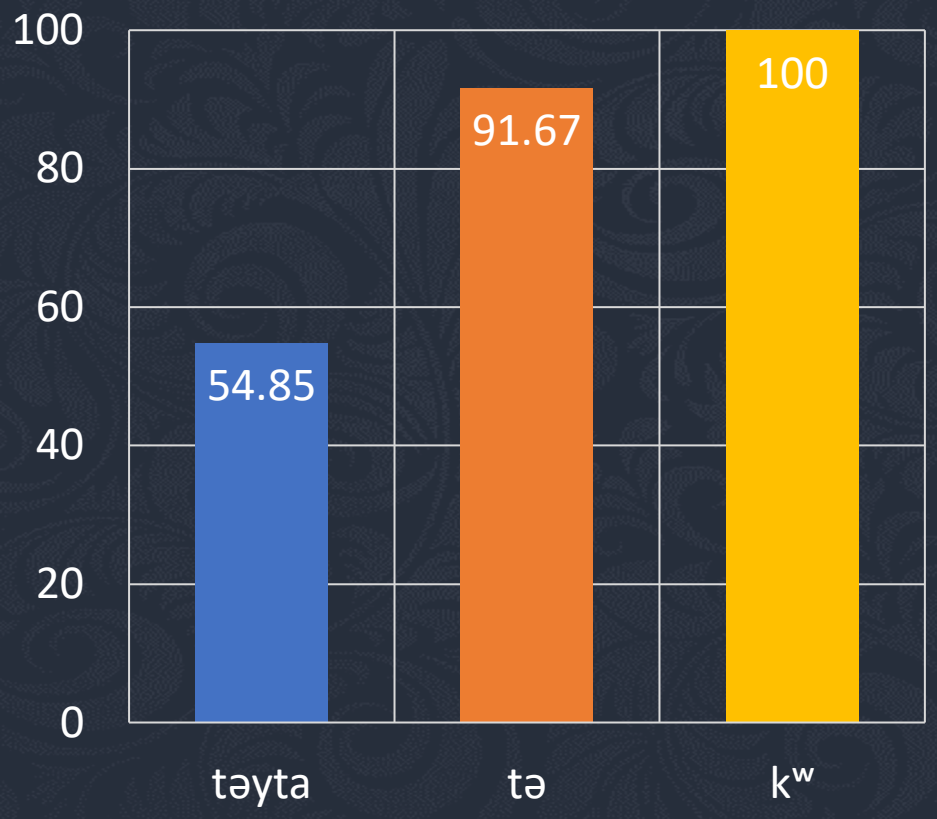
Gesture match

‘yes’ answers when objects matched (in percent)

Participants judged 100% of the match cases as good.

RESULTS

No gesture



‘yes’ answers when gesture was missing (in percent)

For the **DET *tə*** and the **DET *kʷ***, participants accepted matches even when there was no gesture involved.

For the **GDEM *təy’ta***, in contrast, the lack of gesture was judged as more problematic.

PREDICTIONS REVISITED

P1: Mismatch effects are strongest for the **GDEM *təy'ta***. ✓
(just as strong as the effects for the ADJ mismatches)

P2: The use of the **GDEM** without gesture is not *completely* infelicitious, but notably worse than the use of gestureless DETs. ⚠

P3: Mismatch effects are stronger for the **definite-like DET *tə*** than for the **indefinite-like DET *k*^{w}**. ✓

P4: Mismatch effects are weaker for iconic gestures than for pointing gestures. ✓

HYPOTHESES REVISITED

H1: Gesture is at-issue for the **GDEM** but not-at-issue with DETs. ✓

H2: The **GDEM** requires gesture. ⚠

H3: Gesture with the **DET *tə*** encodes **identity** between gesture and DP referent, and with **DET *k*^{w}** encodes **similarity**. ✓

H4: Iconic gestures can't perfectly represent the targeted property, and so are more easily accommodated. ✓

A NOTE ON H2

- Since we hypothesized that **GDEMs** **require** gesture, their acceptance in the no-gesture condition was, with ~ 54%, unexpectedly high.
- As it turns out, this value reflects some striking inter-speaker variation.
- Only one participant treated gestureless uses of the **GDEM** as ‘unclear’ (as predicted):
  - *“I don’t really know which cup you are looking at. You didn’t say.”*
  - *“I’m not sure what knife you said, it’s the big one she’s using.”*

A NOTE ON H2

- The other two participants consistently accepted **GDEMs** without gesture (not as expected).
- We hypothesize that these participants might have accommodated the missing gesture, perhaps by wrongly assuming that there must have been some subtle gesture towards the correct target object in the video (such as a quick gaze).

SDEMs

What does gesture contribute?

SDEMs

- In the videos for the experiment, Marianne introduces an entity into the discourse via gesture.
- This context supports the use of **GDEMs** but not **SDEMs**, which require reference to an individual already salient in the context.
- Because **SDEMs** did not fit the experimental context, we have not yet discussed what gesture adds with them.

SDEMs

SDEMs identify an individual that is uniquely salient in the context.

(14) *We've been at a bazaar, and I bought a mirror from one gentleman. He keeps it at the stand for me, so I don't have to carry it until I'm ready to go. When we walk back to collect it, he doesn't remember which mirror I bought since he had a few.* ***He holds one up*** *to give me.*

xʷa hiy=əs {tan' / #tə} məmk'ayustən
NEG COP=3SBJV {SDEM / DET} window
ʔə=yəq-t-an-uɬ. hiɬ tə=titul'
CLF.PRT=buy-CTR-1SG.ERG-PST COP DET=small
šuʔ-ut-an-uɬ.
choose-CTR-1SG.ERG-PST
'I didn't buy {that / #the} mirror. I bought a smaller one.'

SDEMs

- Though **SDEMs** do not **require** gesture, they are **compatible** with it.

(15) *Context: Daniel and I are on a ferry approaching an island in an area with many islands. We're both on the deck gazing at it. I point to it and tell Daniel:*

hiɬ **tan'** məƛnač.
COP **SDEM** məƛnač
'That is məƛnač (island).'

- Since gesture only adds additional information, we propose that it has a not-at-issue, appositive-like contribution (like for DETs).

FORMAL ANALYSIS

Formal analysis

- We adapt the analysis in Ebert et al. (2020), where both pointing and iconic gesture refer to a gesture referent.
- The gesture referent is a rigid designator, symbolized as: ⌜ ☛ / ⌝.
- Following Ebert et al. (2020), we analyze gesture as often contributing not-at-issue content analogous to appositives.
- This not-at-issue content is imposed on the common ground/context set whereas at-issue content is proposed as an update to the common ground/context set (Farkas & Bruce 2010).

Formal analysis

- Ebert et al. (2020) adopt a unidimensional, dynamic system from Anderbois et al. (2013).
- Not-at-issue content is computed with at-issue content, allowing reference to be established across these dimensions.
- At-issue and not-at-issue content are interpreted relative to two propositional variables:

p – proposed as an update to the context set

*p** – imposed on the context set

GDEMs

- The **GDEM *təy'ta*** introduces a discourse referent *x* and the obligatory co-speech gesture introduces a discourse referent *z* equivalent to the gesture referent ⌜ ☛ / ⌝.

⟦ **təy'ta** NP ⟧^{w,g}
POINTING TO ⌜ ☛ / ⌝

Gesture is **essential** to reference for GDEMs

$$\exists z \wedge z = \ulcorner \text{☛} / \urcorner \wedge \exists x \wedge NP_p(x) \wedge x =_p z \wedge NP_{p^*}(z)$$

Presupposition: there is a unique entity matching the NP description and equivalent to the gesture referent .

SDEMs

- We propose that **SDEMs** have a null index argument *i*, adapting Schwarz's (2009) analysis of German strong-article definites.

- This index is associated with a discourse referent established through prior mention or through salience in the context (Roberts 2002).

⟦ i **tan'** NP ⟧^{w,g}
POINTING TO ⌜ ☛ *I* ⌝

Gesture optionally helps identify referent for SDEMs.

$$\exists z \wedge z = \ulcorner \text{☛ } I \urcorner \wedge \exists x \wedge NP_{p}(x) \wedge x =_{p} i \wedge x =_{p^*} z \wedge NP_{p^*}(z)$$

Presupposition: there is a uniquely salient discourse referent i in the domain of familiar discourse referents and i matches the NP description. (adapted from Roberts 2002:23)

DETs

- The **DET *tə*** is used to refer to the unique individual with the NP property in the context.
- It optionally co-occurs with gesture, which refers to a gesture referent equivalent to the unique individual identified by the DP.

⟦ **tə** NP ⟧^{g,w}
POINTING TO *x*

Gesture optionally helps identify referent for DET *tə.*

$\exists z \wedge z = \ulcorner$ ☛ *I* $\urcorner \wedge \exists x \wedge NP_{p}(x) \wedge x =_{p^*} z \wedge NP_{p^*}(z)$

Presupposition: There is a unique entity matching the NP description in the context.

DETs

- The **DET k^w** simply introduces the variable x with the NP property.
- Gesture optionally accompanies k^w to encode similarity between the gesture referent and *x*.

⟦ **k^w** NP ⟧
Pointing to ⌜ ☛ / ⌝

Gesture optionally adds information about properties of *x*.

$$\exists z \wedge z = \ulcorner \text{☛} / \urcorner \wedge \exists x \wedge NP_p(x) \wedge SIM_{p^*}(z)(x) \wedge NP_{p^*}(z)$$

Final notes

- We assume that the **GDEM *təy'ta***, **SDEM *tan'***, and **DET *tə*** carry existence presuppositions.
- Even under negation, they refer, unlike **DET *k^{w}***.
- BUT presuppositions for Salish languages are preconditions without placing common ground restrictions (Matthewson 2006, 2008; Davis & Matthewson 2009; Reisinger et al. 2021).
- This doesn't fit the model where presuppositions are checks on the context set/common ground.
- Perhaps contributions we have previously called 'presuppositions' are better modelled as appositive-like. This is for future research.

CONCLUSION

SUMMARY

- Gesture is obligatory and contributes **at-issue content** when accompanying **GDEMs**.
  - Absence of gesture leads to infelicity if not accommodated.
  - Mismatch between a gesture and a DP referent is as bad as mismatched adjective.

- Gesture is optional and contributes **not-at-issue content** when accompanying **DETs** and **SDEMs**.
  - Absence of gesture is fine.
  - Mismatch between gesture and DP referent is less bad with DETs than with GDEMs.

SUMMARY

Gesture is interpreted differently with indefinite-like and definite-like **DETs**.

- With **definite-like *tə***, the gesture referent is interpreted as **equivalent** to the DP referent.
- Mismatches with ***tə*** are almost as bad as with **GDEMs**.
- With **indefinite-like *k^{w}*,** the gesture referent is interpreted as similar to the DP discourse referent.
- Mismatches with ***k^{w}*** are judged less bad, since there are multiple dimensions on which items can be similar (making mismatches easier to accommodate).

NEXT STEPS

- Further tests for (not-)at-issueness for gesture contribution with Ds of different types.
- As we ignored SDEMs for the experiment we presented today, the next logical step will be to design an experiment which examines the contribution of gesture for these forms.
- Secondly, it would be worthwhile to conduct a follow-up experiment which explores to what extent judgments depend on the strength with which the gestures are realized (e.g., a brief casual pointing gesture vs. a more emphatic and directed pointing gesture).
- Incorporating Salish-style 'presuppositions' into the model.


Thank you!

THANK YOU!

- We'd like to once again thank all those who shared the language with us: *č'ɛč'ɛhatanapɛšt*!
- Thank you to the Salish Working Group for helpful feedback on an earlier presentation of this work.
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