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Ergativity and the complexity of extraction: A view from Mayan

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Outline

① The processing of relative clauses (RCs)

   ✧ A question for ergative languages

② Relative clauses in Ch'ol and Q'anjob'al

   ✧ Basic facts and RC ambiguities

③ Experiment 1: Ch'ol

④ Experiment 2: Q'anjob'al

⑤ Discussion and Conclusions

   ✧ Ch'ol and Q'anjob'al display a subject preference in the processing of relative clauses

The Processing of Relative Clauses

Resolving Ambiguities

✧ In languages with ambiguous RCs, ambiguity is more likely to be resolved in favor of subjects

  ✧ Russian (Polinsky 2011; Levy et al. 2012)

  ✧ German (Schwarz 2007)

✧ We assume this comprehension strategy results from a general RC processing asymmetry
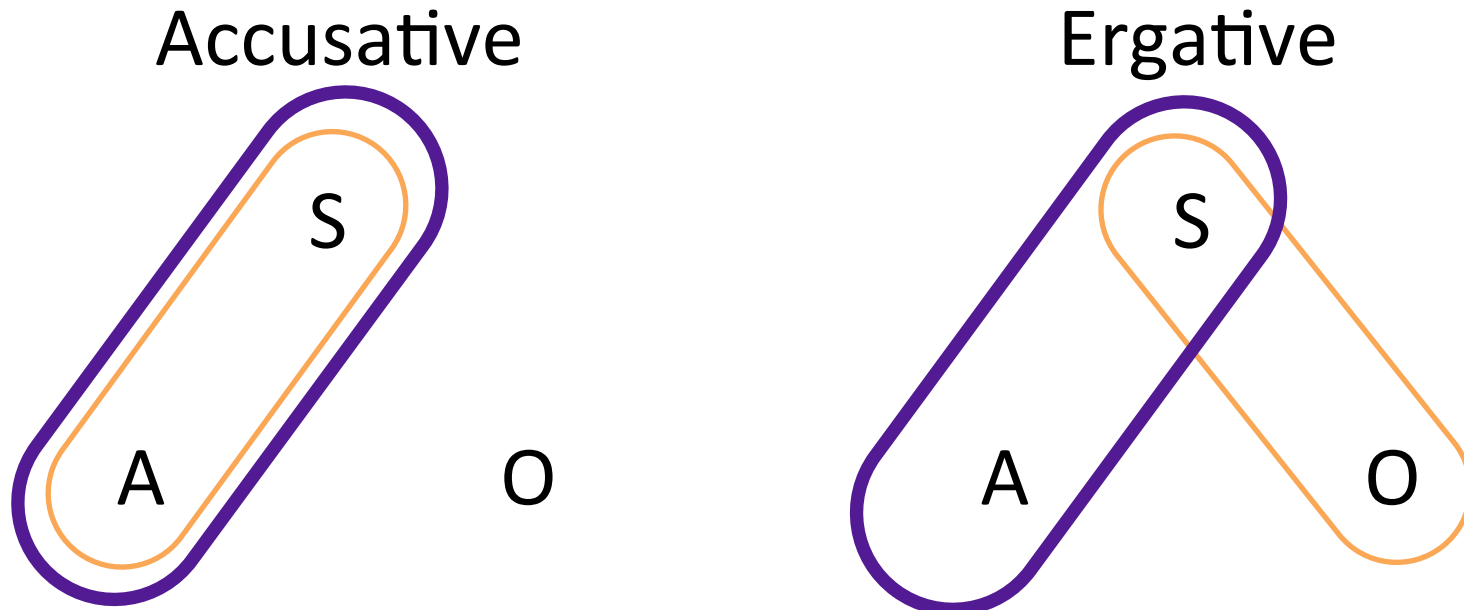
Asymmetries in RC Processing

✧ Subject relative clauses are easier to process than object relative clauses

  ✧ Different methodologies

  ✧ Different languages

  ✧ Results for head-final RCs are mixed

  ✧ Hsiao & Gibson 2003, Gibson & Wu 2012, B. Lin 2010; pace Lin & Bever 2006, C. Lin 2006, Kuo & Vashishth 2008

An Account of the Asymmetry

✧ **Phrase structural preference** Because subjects are structurally higher than other arguments, they are easier to extract

  ✧ Hawkins 1999; Keenan & Comrie 1977; Lin 2006; O'Grady 1997, 2011

✧ But is the phrase structural preference based on grammatical function or structural case?

Grammatical Function or Case?

✧ In ACC languages, Function and Case align

✧ In ERG languages it is possible to separate grammatical function and case

Accusative

Ergative

S

A   O

S

A   O

A Question for ERG Languages

✧ ERG Languages allow us to tease apart the role of grammatical function and structural case in a way that ACC languages do not

✧ Mostly European and East Asian languages have been investigated, i.e. ACC languages

✧ See also Carreiras et al. 2010 for Basque, Polinsky et al. 2012 for Avar

Current Study

✦ RC processing in Ch'ol and Q'anjob'al

✦ Disassociate grammatical function and case

✦ Eliminate a confound within the phrase structural preference hypothesis

Research Questions

✧ Are subjects privileged in the processing of RCs in Ch'ol and Q'anjob'al?

　① Subject preference in resolving RC ambiguities?

　② Subject preference in processing RCs?

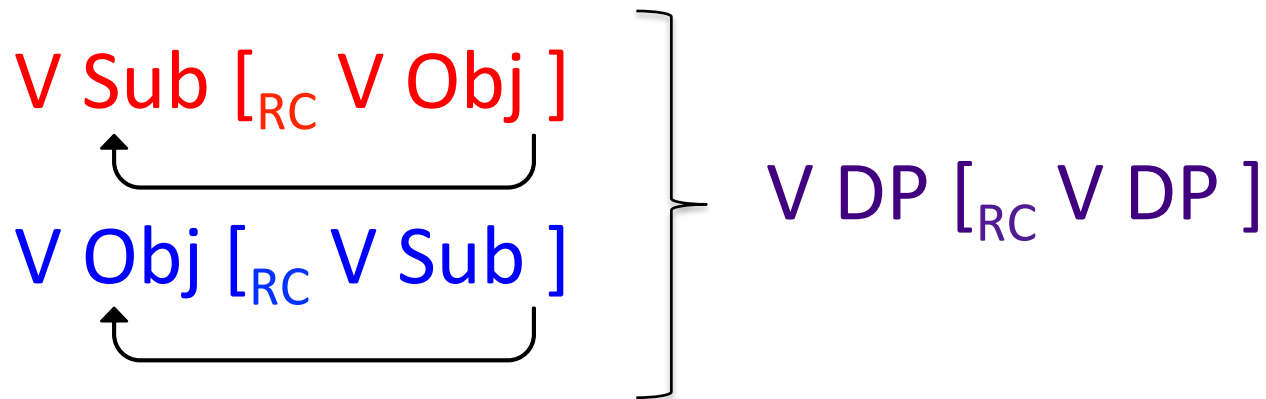✧ If so, we can confirm that the hypothesis in question is based on grammatical function.

The Structure of Relative Clauses in Ch'ol and Q'anjob'al

Mayan Language Family

✧ Verb-initial & pro-drop (England 1991)

✧ Different types of ergative patterns in the family: morphological, syntactic and splits

✧ Head-marking (ergative agreement not case)

✧ ERG DP structurally superior to ABS DP

✧ Word order, φ-features, and absence of overt case on DPs can lead to ambiguous RCs

Relative Clauses: Word Order

- ✧ Verb-initial languages
  - ✧ Ch'ol has both VSO and VOS word orders
  - ✧ Q'anjob'al is pretty strictly VSO
- ✧ Subject relatives and object relatives have identical word order:

V Sub [$_{RC}$ V Obj]

V Obj [$_{RC}$ V Sub]

V DP [$_{RC}$ V DP]

Relative Clauses: Φ-Features

- Both core arguments co-referenced on verb

- When core arguments have the same φ-features either could be interpreted as cross-referenced by the ERG or ABS marker

- In practice this ambiguity only arises with 3rd person DPs

Disambiguating RCs

✧ Different ɸ-features on arguments

✧ The subject or object may not be plausible agent or theme

✧ Syntactic ergativity and "agent focus" morphology (Q'anjob'al not Ch'ol)

Ambiguous Relative Clauses

⑤ **Ambiguous Relative Clause – Q'anjob'al**

Max w-il   ix   ix   [lanan[y-ante-n   naq winaq]]

PRF 1ERG-SEE the woman PROG 3ERG-cure-AF the man

'I saw the woman [who was curing the man].' *or*

'I saw the woman [who the man was curing].'

⑥ **Ambiguous Relative Clause – Ch'ol**

Ta' juli   jiñi x'ixik   [ta'-bä   i-tsäk'-a]

PRF arrive the woman PRF-REL 3ERG-cure-TV

'The woman [who cured him/her] arrived.' *or*

'The woman [who he/she cured] arrived.'

Experiment 1: Ch'ol

Ch' Research Questions

① How do Ch'ol speakers resolve ambiguities in relative clauses?

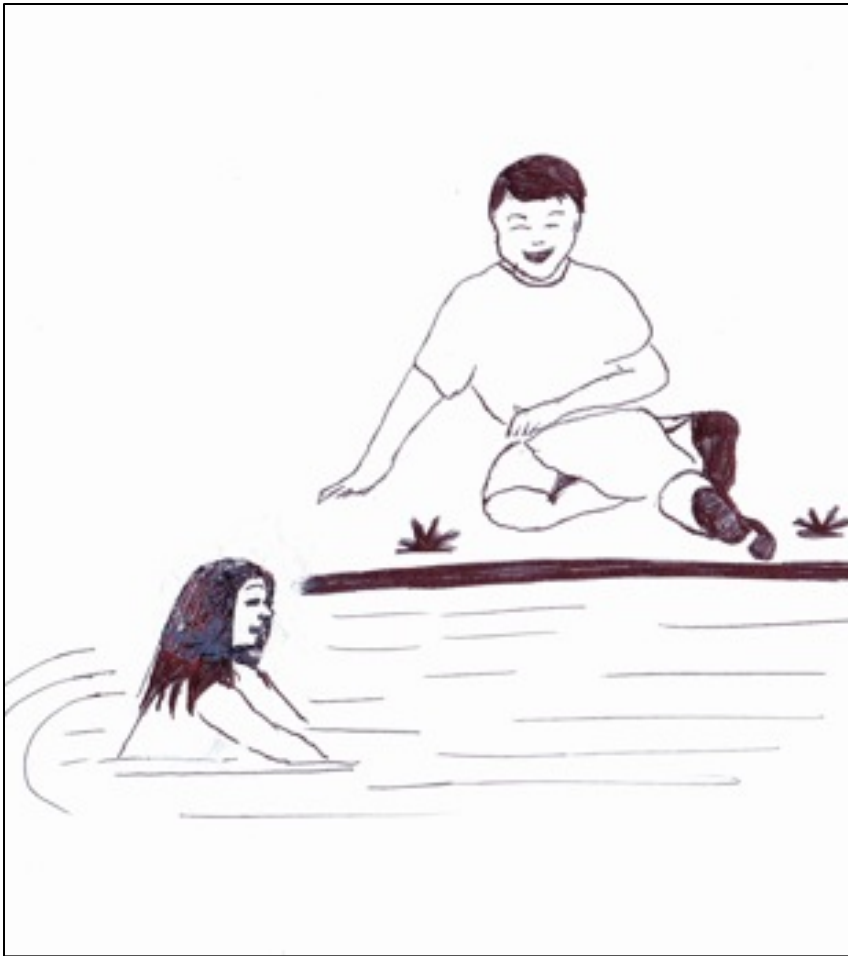② Do Ch'ol speakers demonstrate asymmetrical processing of subject and object relative clauses?

Ch' Materials

- Four gap types under investigation
  - ① ABS subject gaps
  - ② Semantically biased ERG subject
  - ③ Semantically biased ABS object
  - ④ Ambiguous ERG subject / ABS object

Ch' Methodology

- ✧ Conducted in Tabasco and Chiapas, Mexico
- ✧ Presented in Linger (Rohde 2007)
- ✧ Sentence-Picture Matching with audio stimuli
- ✧ Participants received instructions in Ch'ol
- ✧ Instructed to 1) listen to each item to completion and 2) select the picture that best represented the item
- ✧ Binary button box used to indicate choice

"Where is the girl who is swimming near the boy?"

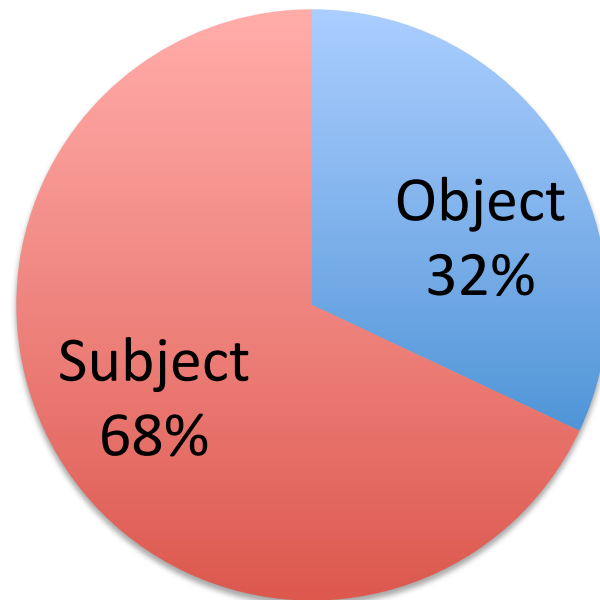# "Find the priest that dragged the nun"

Ch' Participants

- ✧ 63 participants completed the study
- ✧ Data from 56 participants were analyzed
- ✧ 40 Ch'ol-Spanish bilingual and 16 Ch'ol monolingual
- ✧ Age range 15-54, with a mean of 29
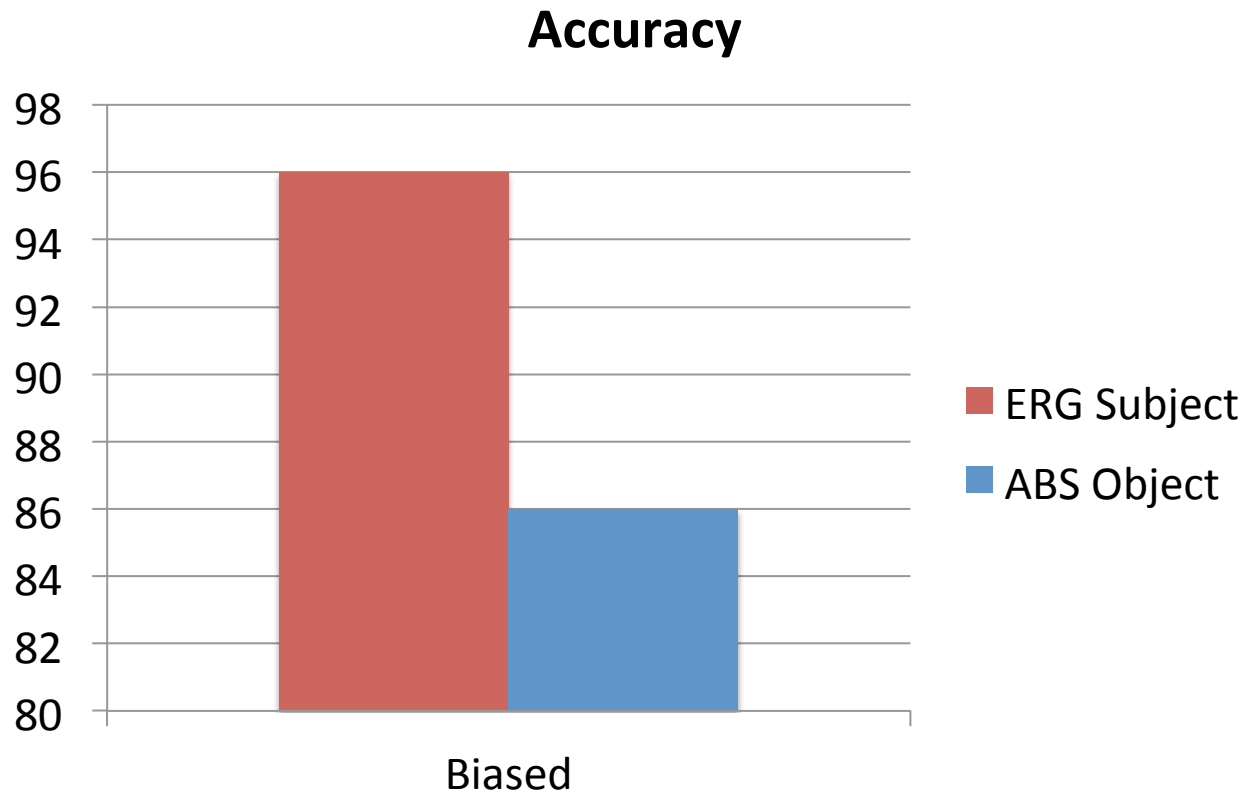
Ch' Results: Resolving Ambiguity

✧ Participants gave 68% (2% s.e.) of ambiguous relative clauses a subject interpretation
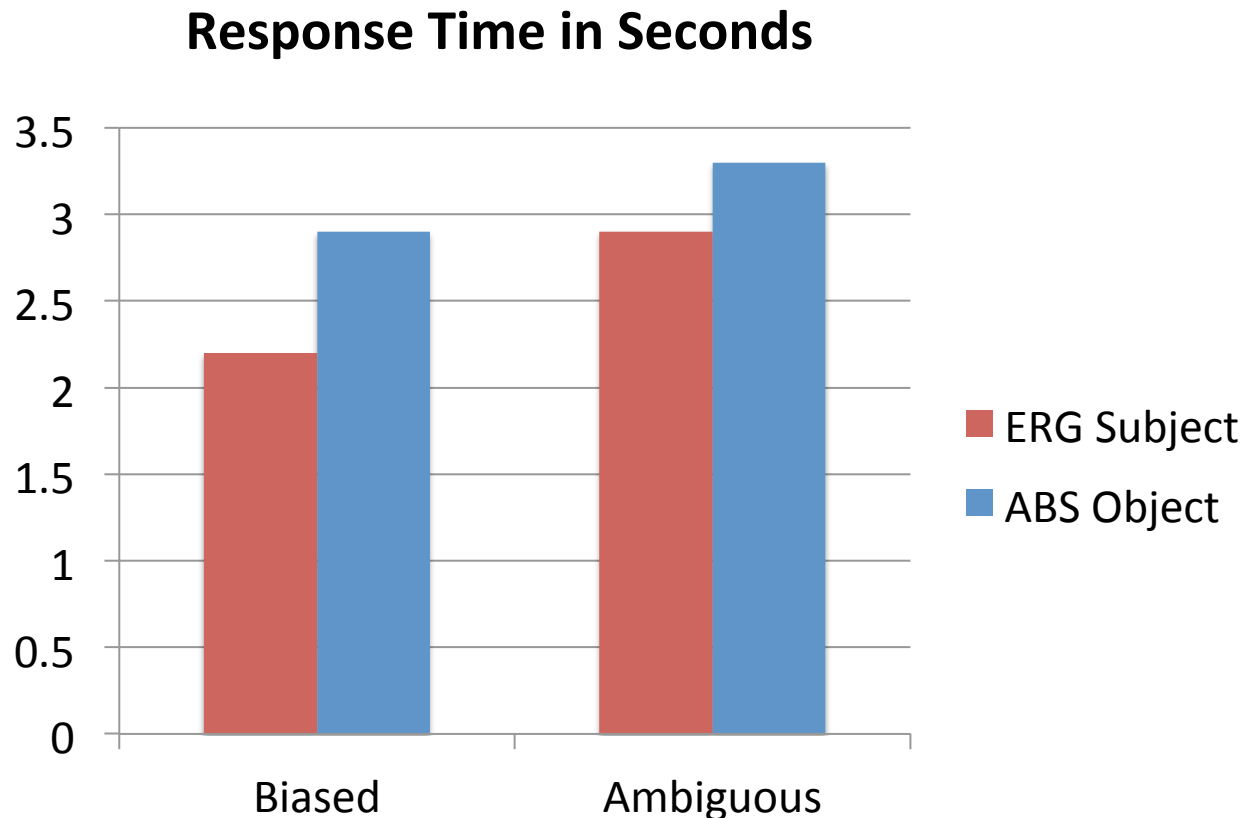
Resolving Ambiguities

Object 32%

Subject 68%

Ch' Results: Accuracy

✧ Higher accuracy with ERG extractions than ABS extractions (p <.05)

Accuracy

Ch' Results: Response Time

✧ Subject responses quicker than object responses (p < .05).

Response Time in Seconds

ERG Subject
ABS Object

Ch' Results: Bilingualism

- ✧ Bilinguals are more accurate ($p < .05$)

- ✧ Bilinguals gave more subject responses in the ambiguous condition ($p < .005$)

- ✧ The preference for interpreting ambiguous RCs as subject relatives is still significant for monolinguals ($p < .05$)

Summary of Ch'ol Results

① Responses from bilinguals and monolinguals pattern in the same way, but effects are stronger for bilinguals

② Faster and more accurate with subject-biased transitives than with object-biased transitives

③ Prefer subject interpretation for ambiguous RCs and chose subject interpretations faster

Experiment 2: Q'anjob'al

Q' Research Questions

① How do Q'anjob'al speakers resolve ambiguities in relative clauses?

② Do Q'anjob'al speakers demonstrate asymmetrical processing of subject and object relative clauses?

Q' Materials

✧ Six gap types under investigation

   ① ABS subject gaps

   ② Unambiguous subject extraction(AF)

   ③ Unambiguous object extraction

   ④ Semantically biased ERG subject

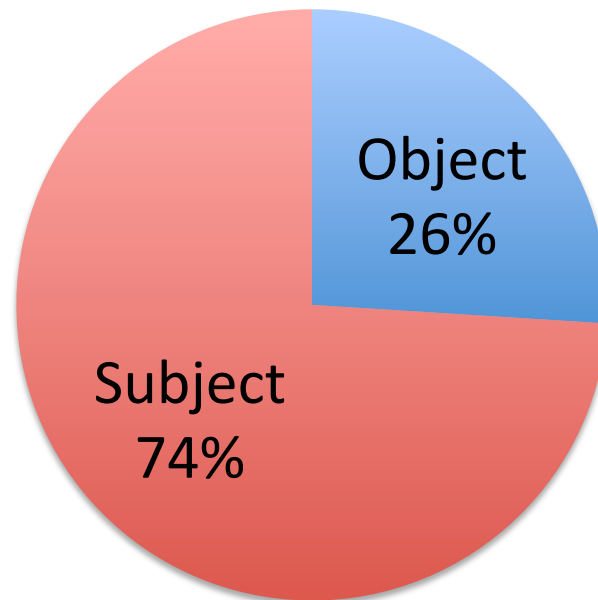   ⑤ Semantically biased ABS object

   ⑥ Ambiguous ERG subject/ABS object

Q' Participants

- Experiment run Huehuetenango, Guatemala
- 100 participants completed the study
- Data from 94 participants were analyzed
- 47 Q'anjob'al-Spanish bilingual and 47 Q'anjob'al monolingual
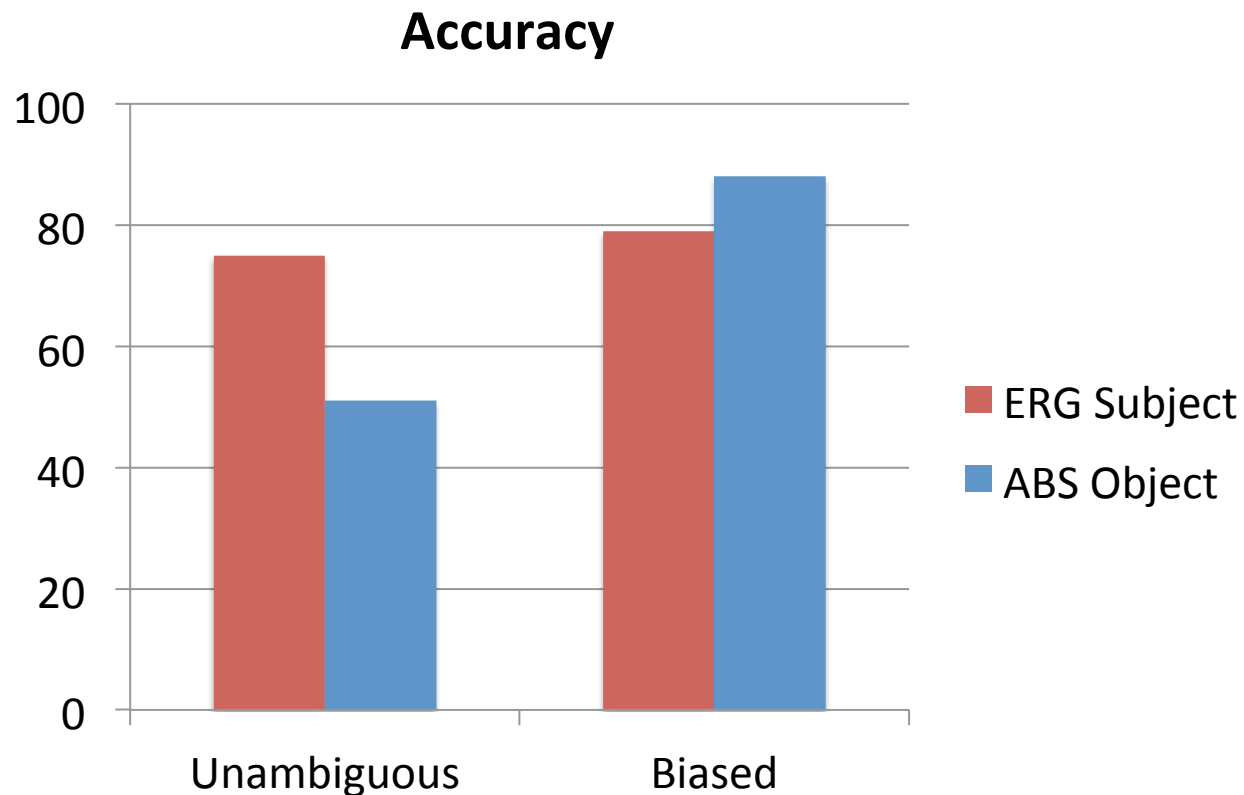- Age range 16-65, with a mean of 30

Q' Results: Resolving Ambiguity

✧ Participants gave 74% (2% s.e.) of ambiguous relative clauses a subject interpretation
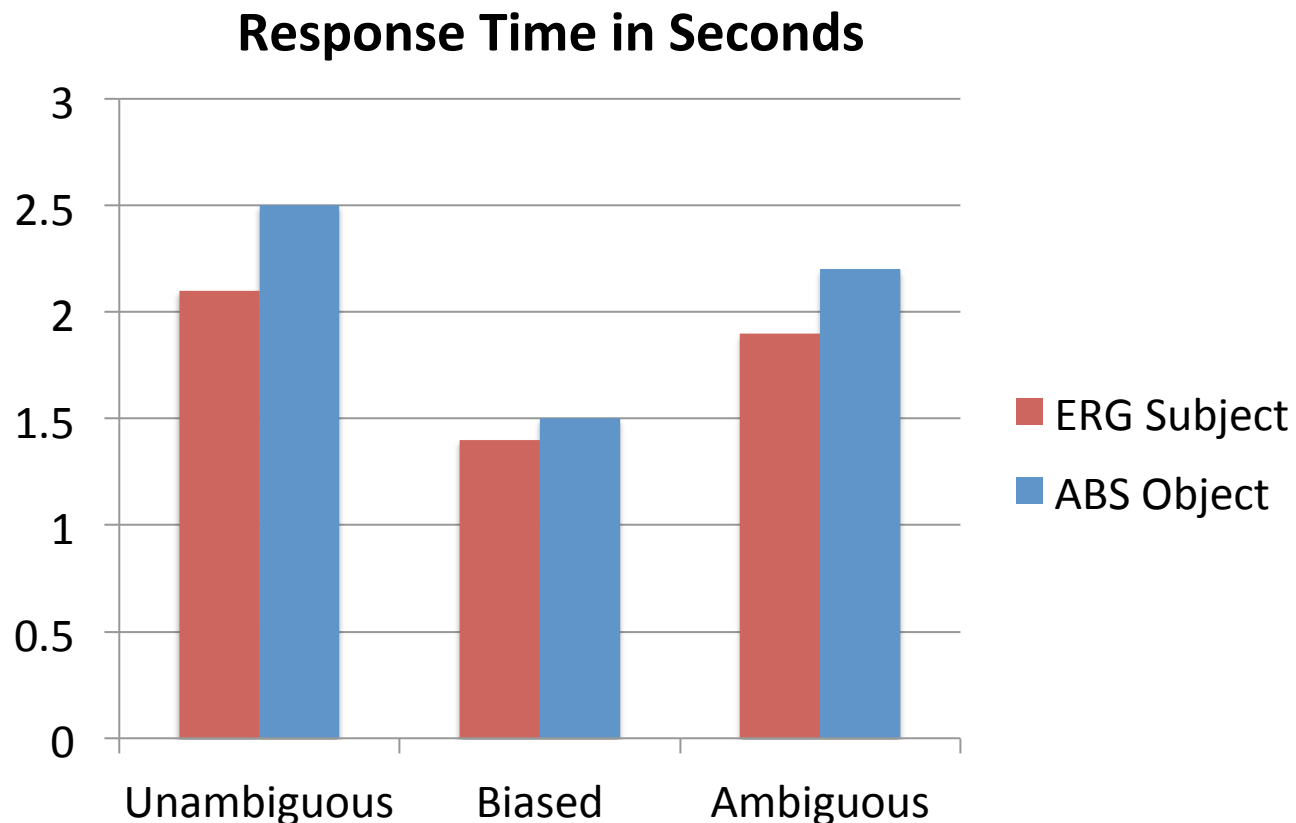
Resolving Ambiguities

Object 26%

Subject 74%

Q' Results: Accuracy

✧ Higher accuracy with (AF) and biased ERG than ABS extractions (p <.001)

Accuracy

Q' Results: Response Time

✧ Subject-compatible responses given quicker, but this trend did not reach significance

Response Time in Seconds

Legend:
- ERG Subject
- ABS Object

Categories: Unambiguous, Biased, Ambiguous

Q' Results: Bilingualism

✧ Bilinguals gave more accurate responses (p <.001)

✧ Bilinguals gave more subject responses in the ambiguous condition (p <.001)

✧ The preference for interpreting ambiguous RCs as subject relatives is still significant for monolinguals (p <.05)

Summary of Q'anjob'al Results

① Bilinguals and monolinguals pattern in the same way, but effects stronger for bilinguals

② More bias congruent responses in the case of object as compared to subject extractions

③ Still, more accurate with subject relatives than object relatives overall

④ Prefer subject interpretation for ambiguous items with no bias

Conclusions

Research Questions Revisited

① How do Ch'ol and Q'anjob'al speakers resolve ambiguities in relative clauses?

   ✓ In favor of subject interpretations

② Do they display asymmetrical processing of subject and object relative clauses?

   ✓ Yes, in favor of subject relatives

Subjects are privileged in the processing of RCs in Ch'ol and Q'anjob'al

In Sum

- ✧ Asymmetries in RC processing may be the result of structural superiority

- ✧ Processing literature has mostly considered ACC languages, where case and grammatical function overlap

- ✧ A preference for NOM over ACC would look exactly like a phrase-structural preference

Conclusions

✧ These ergative languages show a subject preference in relative clause processing

✧ Our results support basing the phrase-structural account as stated

Wokox awälä' & Yuj wal tyoxh

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  - Municipality of Santa Eulalia, Huehuetenango
  - Daniel Pedro Mateo (Qʾanjob'al artist)
  - Participants in the experiment

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