Planning Ergativity: Cross-linguistic Implications of Morphological Variation

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Core Questions

Speakers adapt processing strategies to fit the morphology/ syntax of their language

1. What level of grammatical variation determines processing variation?

- Is it enough to know ERGative vs NOMinative?
- Do we need to know the type of ergative case?

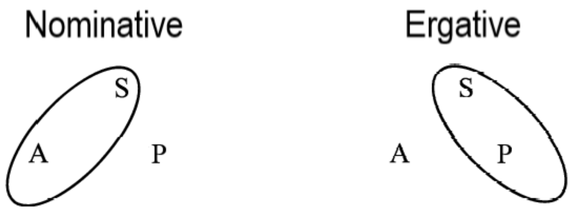
2. What processing principles/strategies can vary?

- Attention to different cues? (case, agreement, etc) ✓
- Incrementality? (i.e., just-in-time planning)

Ergativity and Planning

Ergative Case: Transitive agents (A) have a dedicated case marker

Intransitive subjects (S) are marked like transitive patients (P) → Absolutive case



ERGative and NOMinative have different planning commitments:

NOM subject requires:

- Existence of a predicate

ERG subject requires:

- Transitive predicate licensing ERG
- Existence of an object
- Any other language-specific conditions for ERG

→ How do speakers manage the information ergative needs in planning?

Option 1: **Verb Co-Planning**

- Verb planned alongside ERG

Option 2: **Patient Co-Planning**

- Patient planned alongside ERG

Option 3: **Transitivity-Based (Incremental)**

- No co-planning

Known Patterns:

- NOM planning is Incremental (Option 3) (Momma et al. 2016)
- Hindi ERG uses Verb Co-Planning (Option 1) (Zafar & Husain, 2022)

Shipibo

Highly ERG language (Peru; ISO: SHP; Valenzuela, 2003)

- All ergative languages are *split* (Dixon, 1994)
  - → Some parts follow ERG and some NOM
- But Shipibo split is very minor
  - A desiderative and an optional progressive
  - All others ERG

→ As ergative as you can get

References

Momma, Slevc, Phillips (2016). *JEP: LMC*; Zafar & Husain (2022). *AMLaP Poster.*; Valenzuela (2003). *University of Oregon Dissertation*; Momma & Ferreira (2019) *Cognitive Psychology*; Dixon (1994). *Cambridge University Press*

Acknowledgements

Many thanks are due to Albert Maroto, Erlich Mori, Margarita Rodríguez Flores, Glendy Rosario Sanchez Diaz, Bogdan Pricop, Jorge Sato, Pilar Valenzuela, and Mariana Poblete.

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Extended Picture-Word Interference

(Momma & Ferreira, 2019)

Example stimuli image

Semantic interference effect: Semantically related distractor *interferes with retrieval* of the correct name of the image compared to unrelated distractor condition

- Timing sensitive: Distractor is always at the beginning of the sentence, and can only impact the agent and elements planned with it
- Current experiment uses auditory distractors
- Distractors are drawn from target words on other trials

Two Sub-Experiments

Verb Sub-Experiment: Verb/ERG × Semantic Relatedness (N=48)

Patient Sub-Experiment: Patient/ERG × Semantic Relatedness (N=27)

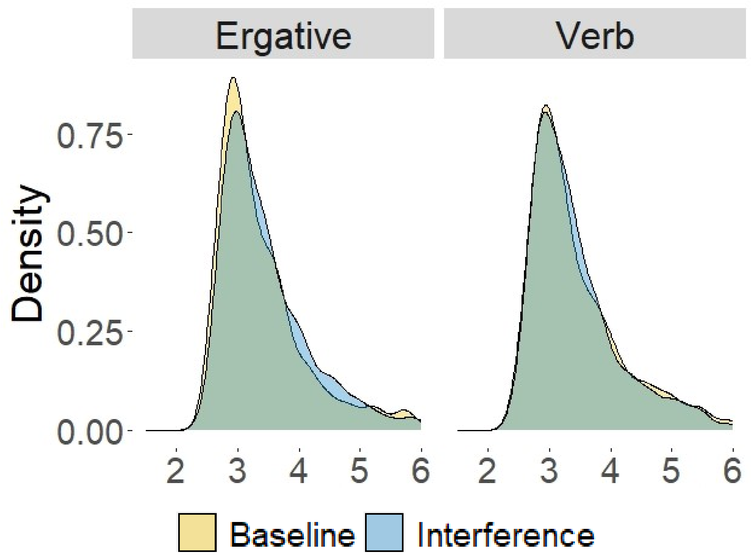
Ergative	Verb Sub-Experiment	Patient Sub-Experiment
Baseline condition	Verb Co-Planning Test	Patient Co-Planning Test
'child' vs 'deer'	'break' vs 'write'	'flower' vs 'iguana'

Bayesian distributed Exgaussian model:

$$\mu \sim Accuracy + Interference * Constituent$$
$$\sigma \sim Interference * Constituent$$
$$\beta \sim Accuracy + Interference * Constituent$$

Results

Verb Sub-Experiment

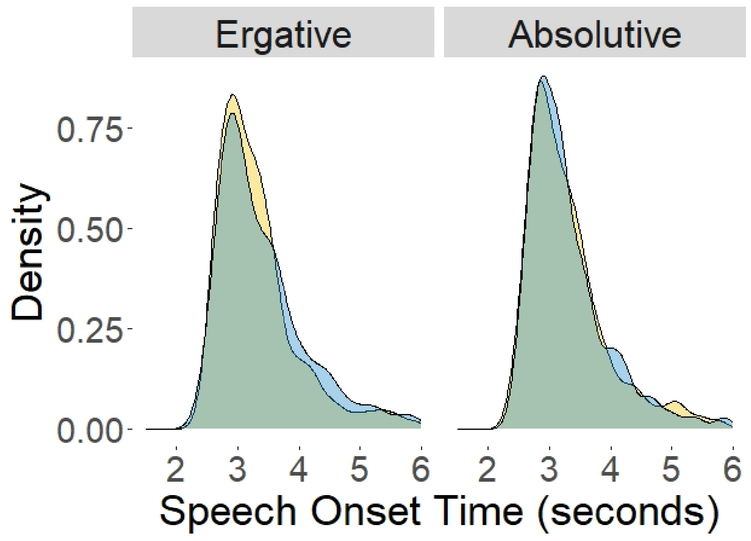


	Mean	95% HPD	Directional $p(posterior)$
ACCURACY	0.18	[0.11, 0.24]	1
INTERFERENCE	0.02	[-0.02, 0.07]	0.87
INTER.×CONSTITUENT	-0.09	[-0.18, -0.01]	0.98
σ INTERFERENCE	0.31	[0.10, 0.51]	1
σ CONSTITUENT	0.22	[-0.09, 0.56]	0.91
β ACCURACY	0.21	[-0.12, 0.31]	1
β INTER.×CONSTITUENT	-0.08	[-0.22, 0.04]	0.9

MARGINAL MEANS	Estimate	95% CI
$ERG_{Interference-Baseline}$	0.071	[0.013, 0.132]
$VERB_{Interference-Baseline}$	-0.022	[-0.084, 0.039]

- Interference for ERG but not Verb
  - → Verb Co-Planning ✗

Absolutive/Patient Sub-Experiment



	Mean	95% HPD	Directional $p(posterior)$
ACCURACY	0.28	[0.19, 0.39]	1
INTERFERENCE	0.05	[-0.00, 0.09]	0.98
CONSTITUENT	-0.04	[-0.10, 0.02]	0.90
INTER.×CONSTITUENT	-0.03	[-0.12, 0.06]	0.74
σ × CONSTITUENT	0.33	[-0.18, 0.86]	0.90
β ACCURACY	0.36	[0.23, 0.51]	1
β INTER.×CONSTITUENT	-0.11	[-0.27, 0.05]	0.91

MARGINAL MEANS	Estimate	95% CI
β $ERG_{Interference-Baseline}$	0.059	[0.014, 0.115]
β $ABS_{Interference-Baseline}$	0.014	[-0.029, 0.059]

- Slightly more complex results than for Verb
  - Likely due to lower power
- Interference for ERG but not Patient
  - → Patient Co-Planning ✗

Conclusions

- Shipibo speakers plan ERG NPs independently
  - Consistent semantic interference for ERG shows that the experiment was sensitive enough to find interference if it was present
  - No evidence for co-planning of either the Verb or Patient

  → Transitivity-Based (Incremental) Hypothesis ✓
- Shipibo is planned more like NOMinative languages than Hindi
  - Hindi ERG is co-planned with the Verb (Zafar & Husain, 2022)
  - NOMinative in Japanese and English is planned incrementally (Momma et al., 2016; Momma & Ferreira, 2019)
- There is variation in planning strategies between languages, based on morphological/syntactic type
  - But broad types (ERG vs NOM) is not enough
  - Planning strategies depend on the whole language context, not just the individual sentence