Examining global patterns of universality through an explicitly diachronic lens

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Outline

Universals & Language Diversity

A Global Test of Universality

Diachronic Mechanisms

Thoughts on Universals

The search for language universals

The search for language universals

Universals are **strong patterns** that arise through constraints common to all human languages

Encoding information in **communication** (e.g. Croft 2003, Bybee 2010, Haspelmath 2021)

Human **cognitive capacities** for production, processing, acquisition (e.g. de Boer 2000, Haspelmath 2009, Culbertson et al. 2020)

The search for language universals

Implicational universals

If a language has trait A, it has a significantly greater probability to have trait B, but not vice versa (Greenberg 1963).

Implicational universals are central in theories linking universals to cognition, language acquisition, and language change (e.g. Hawkins 1979, 1983; Croft 2003)
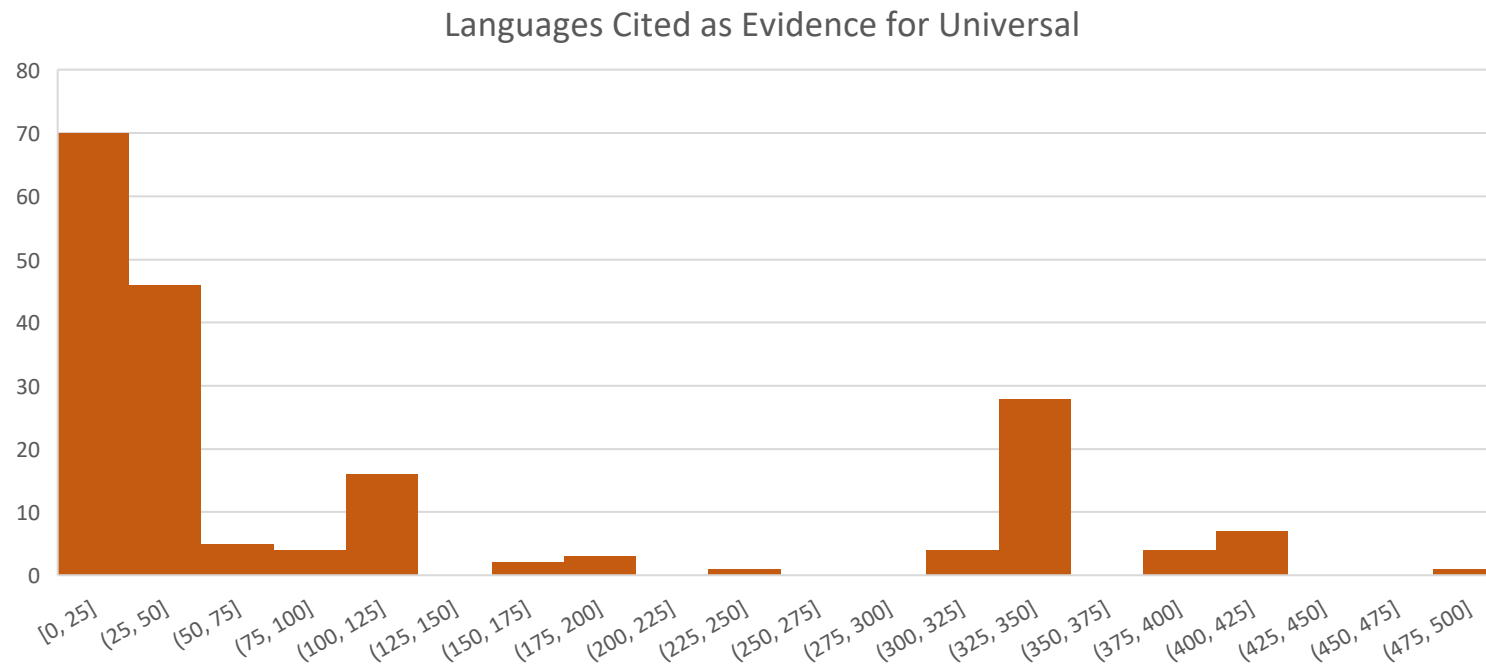
Our current understanding of universals

Our current understanding of universals

- Most universals arise out of **empirical observations**
  - e.g. Konstanz Universals Archive (Plank & Filimonova 2006)
    - 191 implicational morphosyntactic universals sampled

    - 6 are impressionistic (cite no empirical evidence)
    - 168 are supported with evidence from languages of the world
    - 17 have unrecoverable sources (cannot evaluate empirical evidence)

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Our current understanding of universals

- The basis of empirical observations is highly variable
  - **Sample size varies dramatically**, but is rarely large

Languages Cited as Evidence for Universal

Our current understanding of universals

- The basis of empirical observations is highly variable
  - **Regional biases** exist in most samples

  - 113 of 191 universals show overrepresentation of one region or family
  - 108 of those are biased toward Eurasia or single family of Eurasia
  - (for 21, insufficient information to assess bias)

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Our current understanding of universals

Universals may **vary in strength** across language families

Shaped by 'an evolutionary landscape with channels and basins of attraction that are specific to linguistic lineages' (Dunn et al. 2011)

Our current understanding of universals

Language universals may even be **a myth**

  e.g. Evans & Levinson 2009

Testing universality
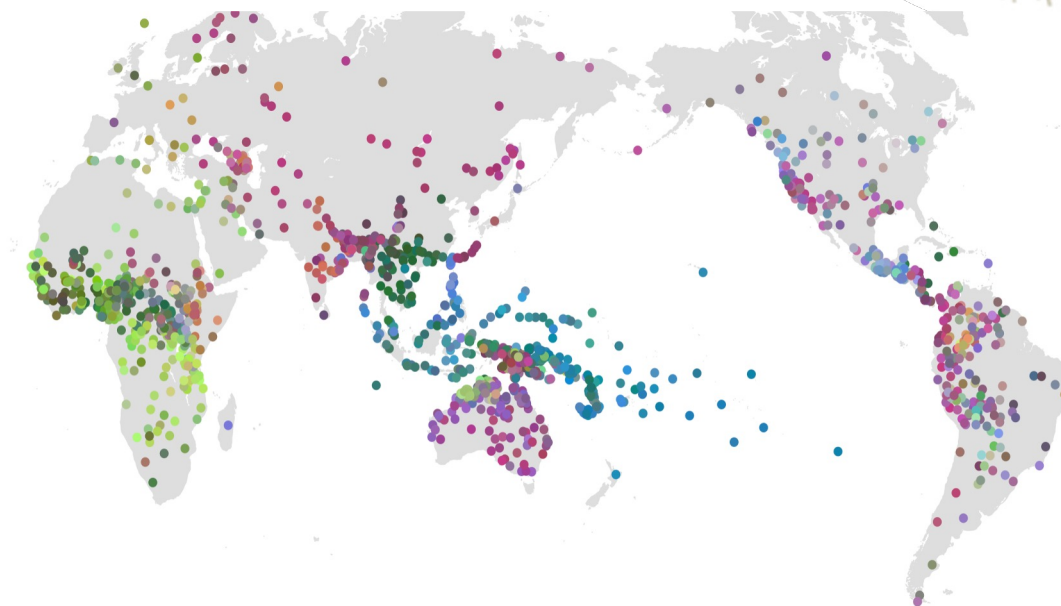# in a diverse, global language sample

Grammatical Data: Grambank 1.0

Skirgård et al. 2023: Global survey of morphosyntactic structure of languages

Statistics	
Languages	2,335
Features	195
Datapoints	412,585

Phylogenetic Relationships: EDGE Tree

Bouckaert et al. 2020: Global language phylogeny

Global language diversification is linked to socio-ecology and threat status

Bouckaert, R. B.[† 1], Redding, D.[† 2, 3], Sheehan, O.[4,5], Kyritsis, T.[4], Gray, R. D.[4,5], Jones, K.E.[3], Atkinson, Q. D.*[4,6]

1. Department of Computer Science, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand
2. Institute of Zoology, Zoological Society of London, Regent's Park, London, NW1 4RY, United Kingdom.
3. Centre for Biodiversity and Environment Research, Department of Genetics, Evolution and Environment, University College London, Gower Street, London, WC1E 6BT, United Kingdom.
4. School of Psychology, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand
5. Department of Linguistic and Cultural Evolution, Max Planck Institute for Evolutionary Anthropology, Jena, Germany
6. School of Anthropology and Museum Ethnography, University of Oxford, Oxford, OX2 6PE, UK
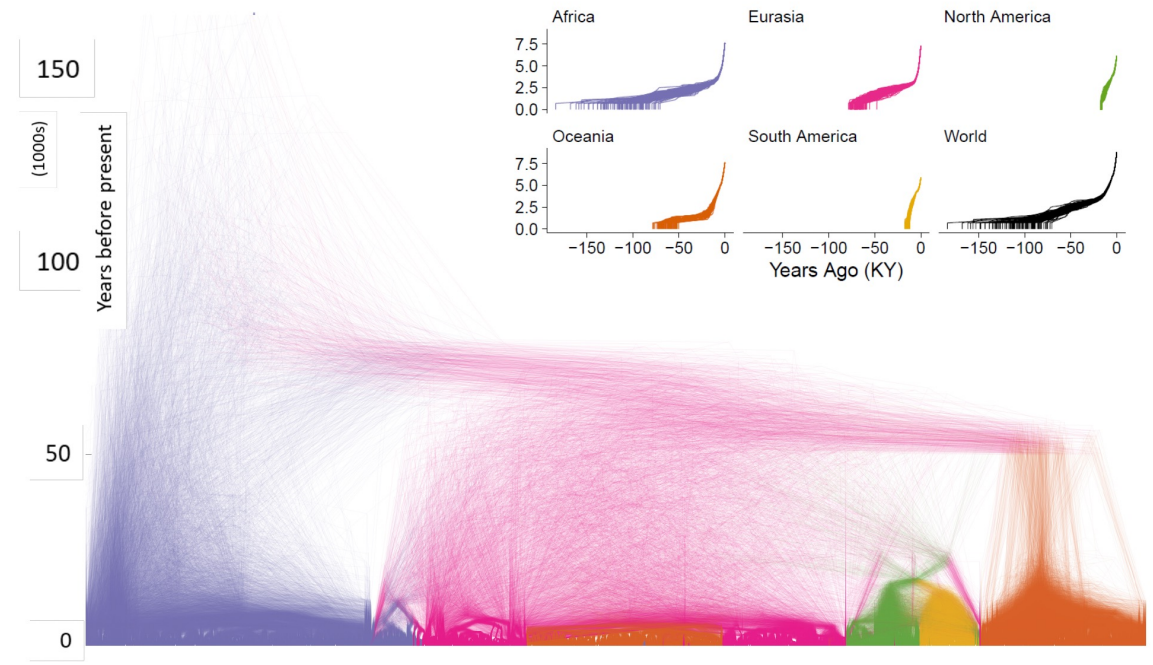
Geographic Data: Glottolog

Hammarström et al. 2020: Catalog of languages and locations (lat, long)
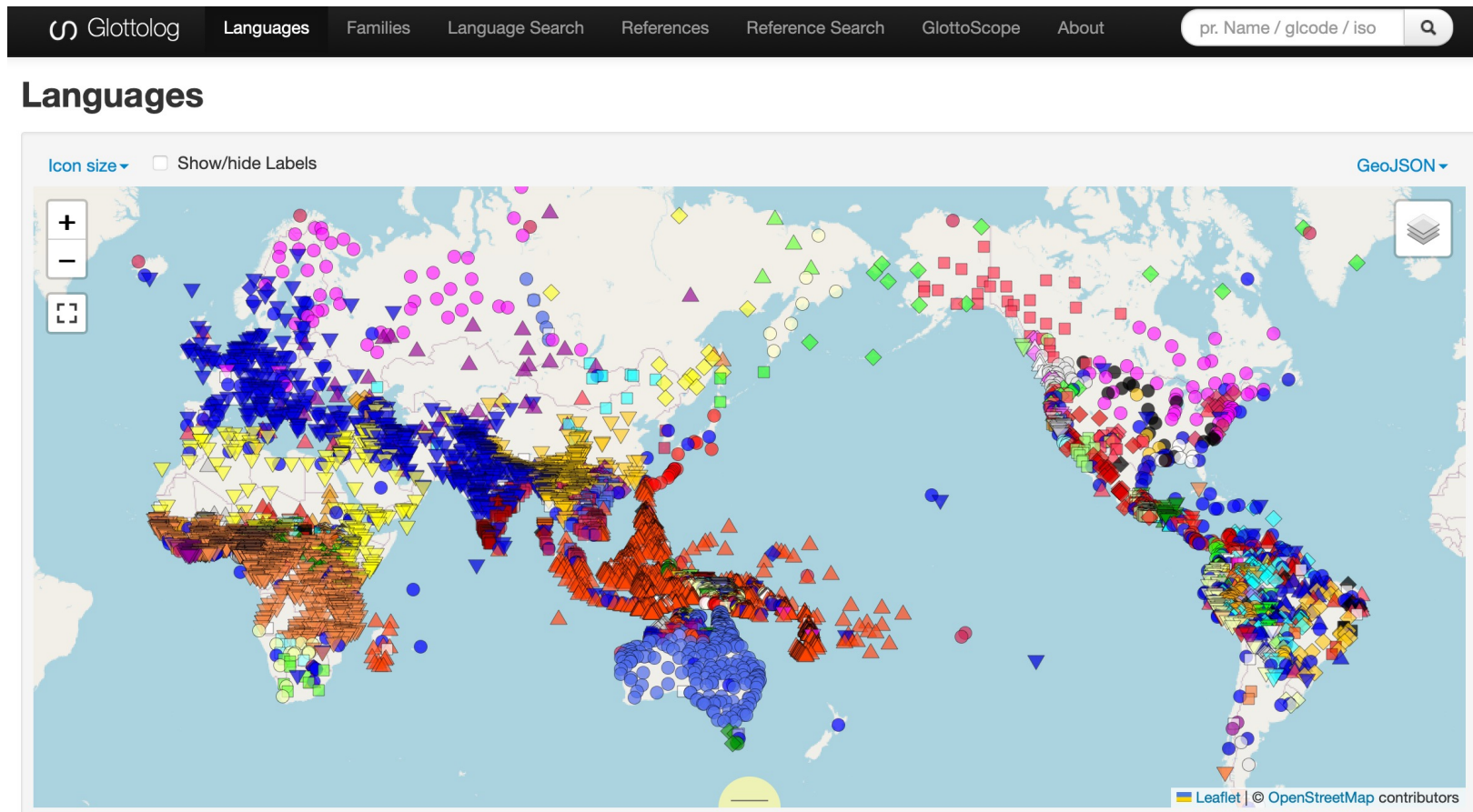
Do we see evidence of universals synchronically?

Analysis: synchronic patterns

Linear mixed effects model using brms package in R (Bürkner 2017)

```
formula = Var1 ~ Var2 +
(1|gr(lang_name, cov = phylo_covar_mat)) +
(1|gr(lang_name, cov=spatial_covar_mat)) +
(1 + Var2 |macroarea)
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intercepts & slopes for macro area

(Hammarström et al. 2020)

Results: `brms` analysis of trait correlations
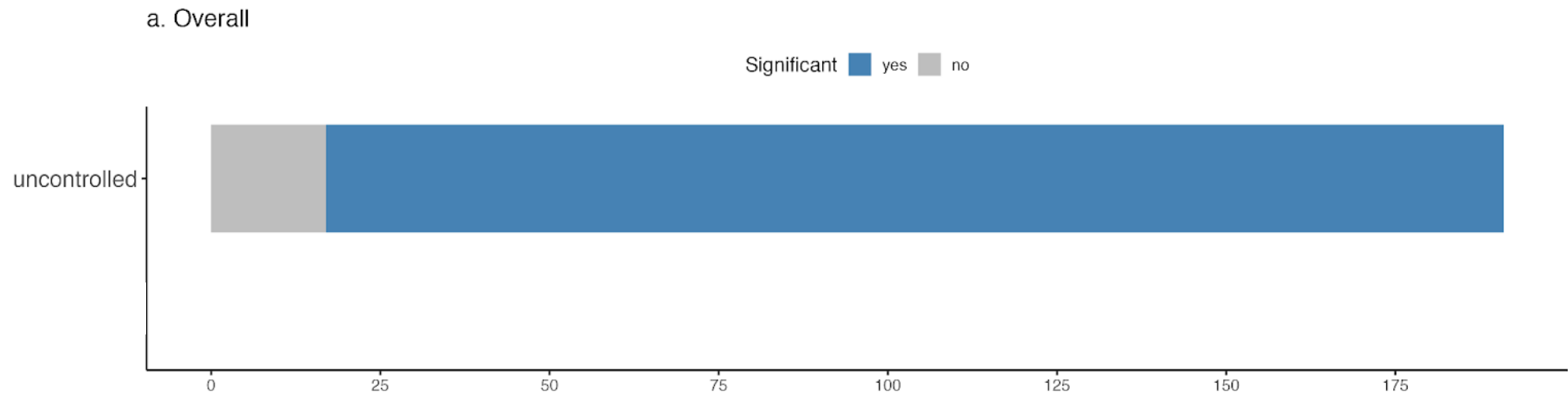
a. Overall

Significant ■ yes ■ no

Results: `brms` analysis of trait correlations

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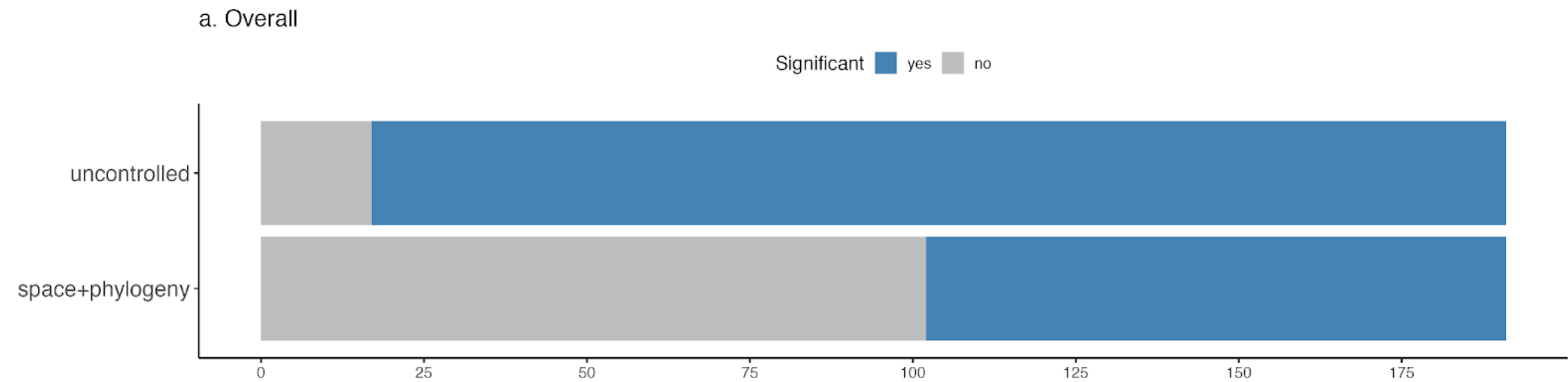
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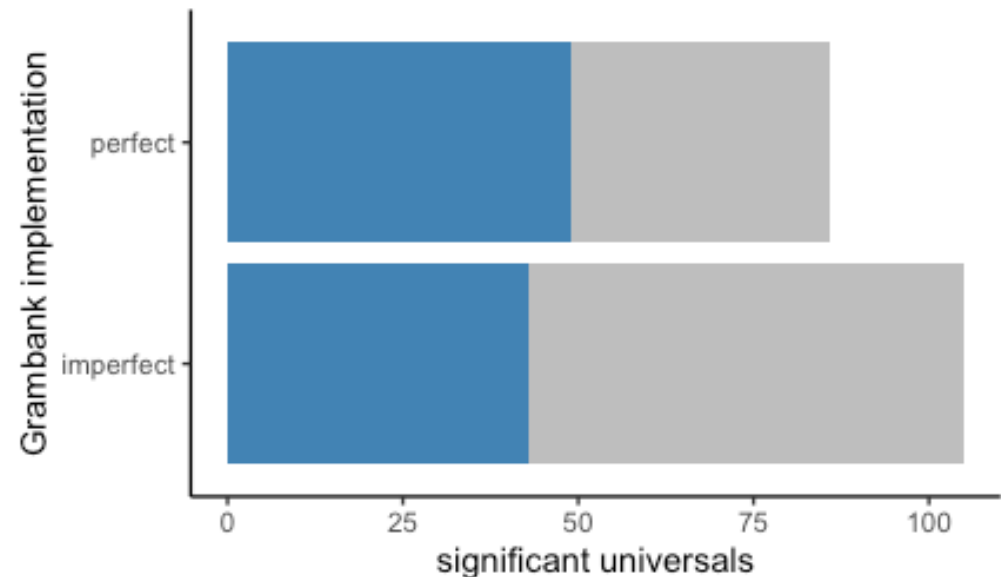
Sample Size

Bias

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- Are inferences from small or biased samples less secure?
  - Not necessarily!

- Are the comparative features of Grambank simply not compatible with formulations of universals?

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- Are inferences from small or biased samples less secure?
  - Not necessarily!

- Are the comparative features of Grambank simply not compatible with formulations of universals?
  - Perhaps sometimes, but most of the variation in universality remains unexplained.

- Are some types of relationships between traits more meaningful than others?

Types of universals

Narrow word order: 63 universals

Broad word order: 74 universals

Hierarchies: 30 universals

'Other': 24 universals

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"In the languages where the verb agrees with subject and object if only suffixal agreement is possible, then the dominant order is SV" (Kozinsky 1981)

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"If in a language the verb agrees with anything, it agrees with some or all subjects." (Moravscik 1974)

"If nouns inflect for case, then verbs inflect for some inflectional category." (Campanella 1638)

Results: `brms` analysis by category
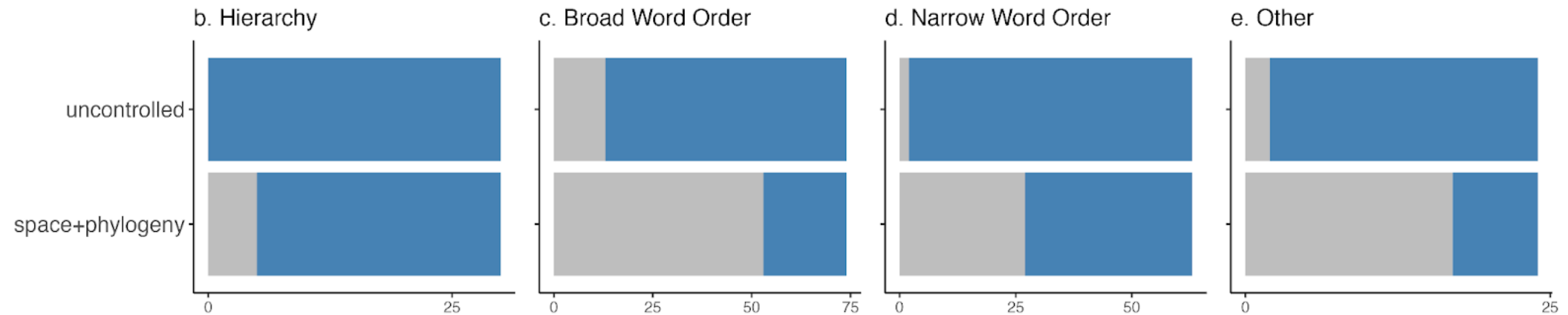
Categories of universals and mechanisms of language change

Analysis: binary trait evolution
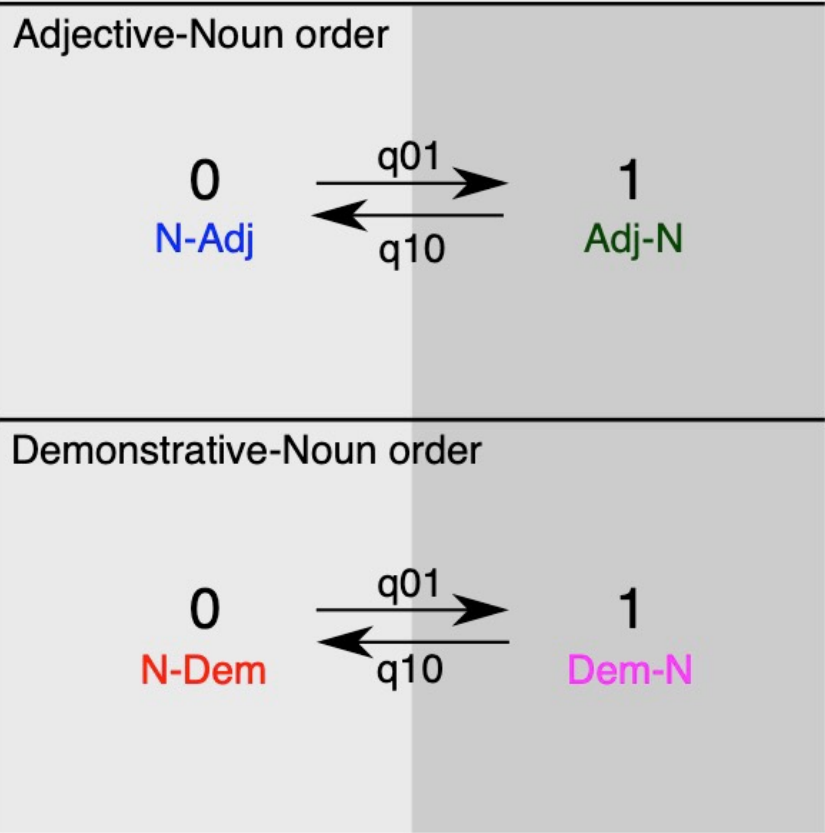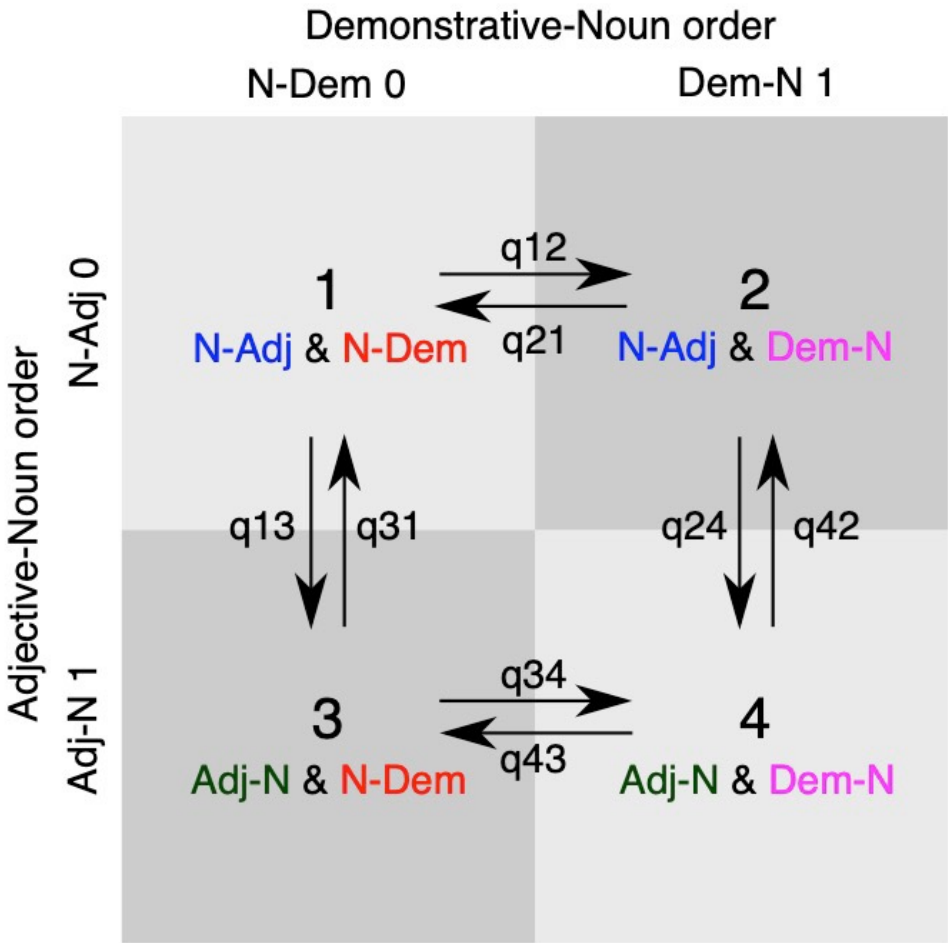
Independent model:

Dependent model:

Implemented with
BayesTraits
DISCRETE
(Pagel 1994, Pagel
and Meade 2006)

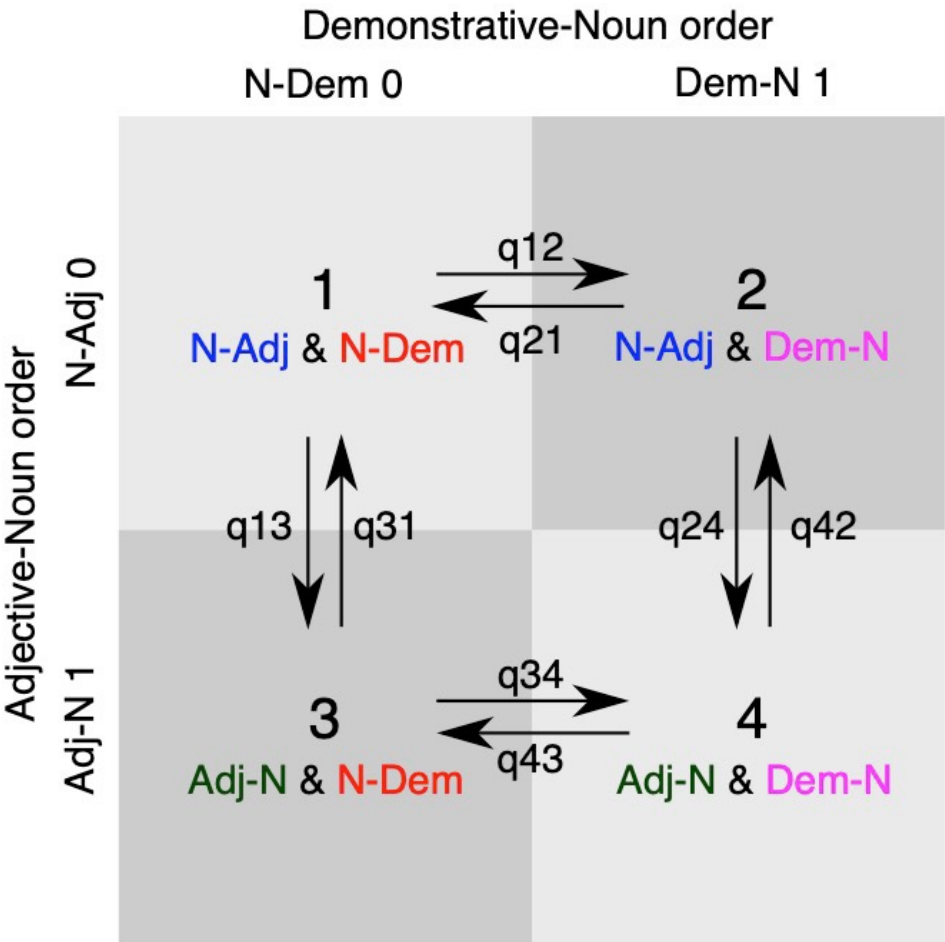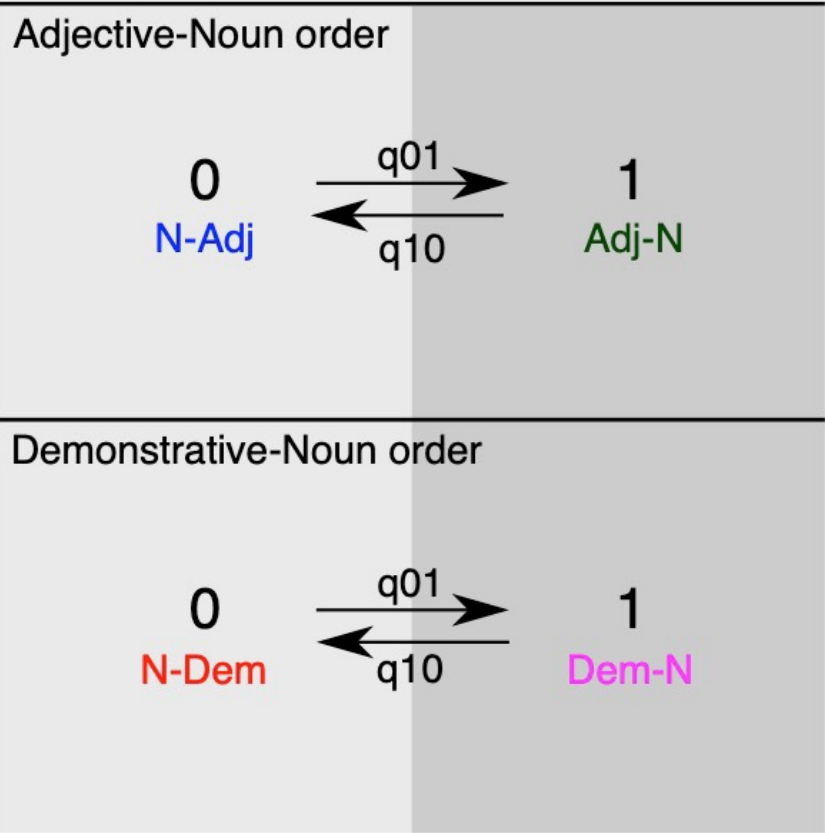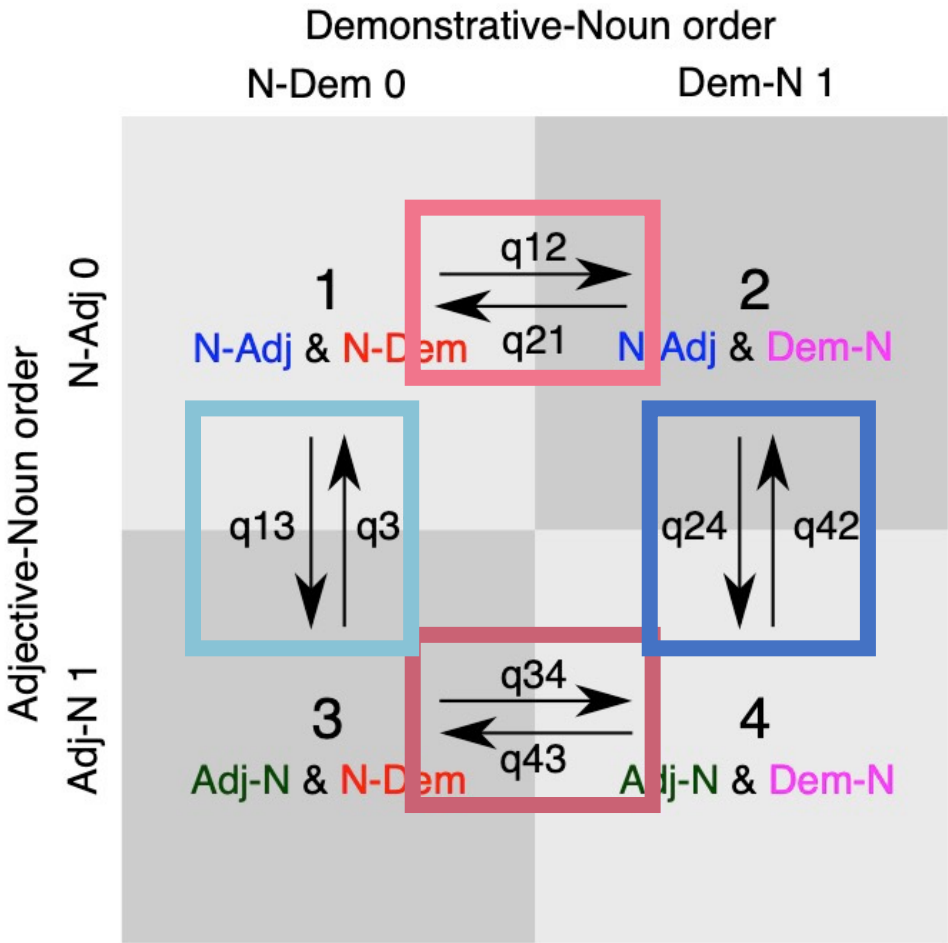Model comparison
with Bayes Factors

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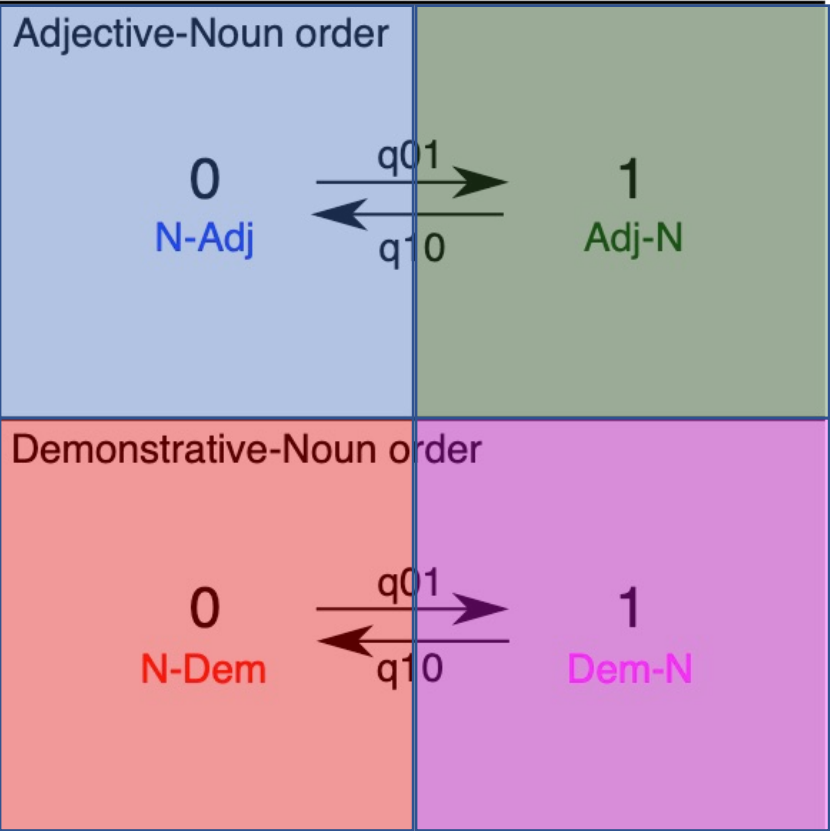
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Results: preliminary *BayesTraits* analysis

- Support for a universal: dependent model BF >10

- We tested:

- 63 Narrow word order universals
- 74 Broad word order universals
- 30 Hierarchical universals
- 24 Other universals

Results: preliminary *BayesTraits* analysis

- Support for a universal: dependent model BF >10

- We tested: Dependent model
                                supported for:

- 63 Narrow word order universals   33 supported
- 74 Broad word order universals   19 supported
- 30 Hierarchical universals   27 supported
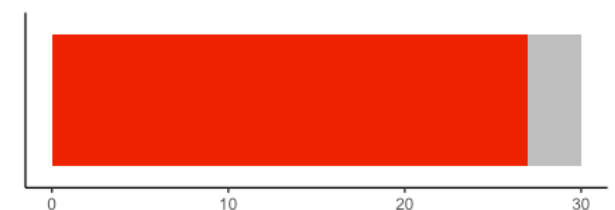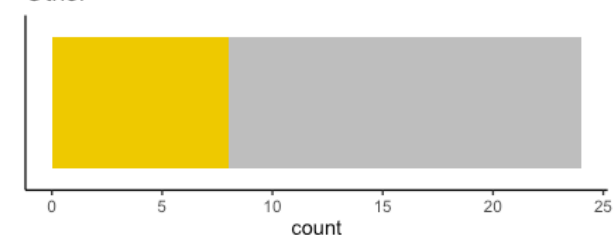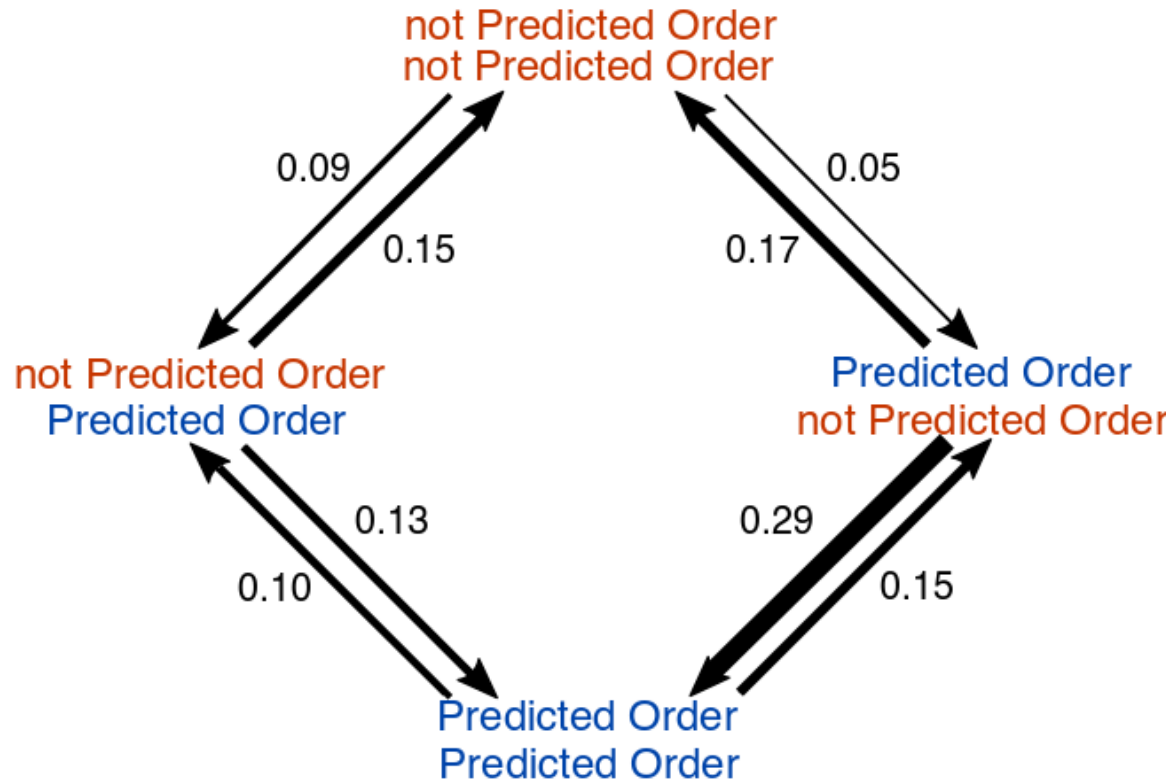- 24 Other universals   8 supported
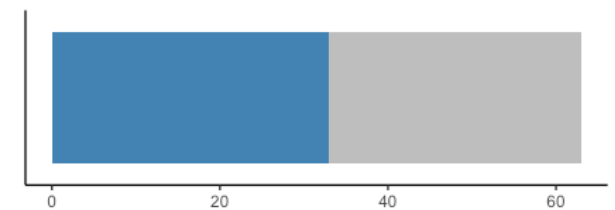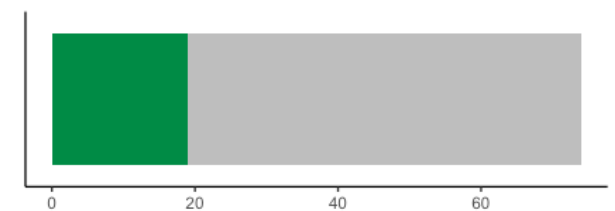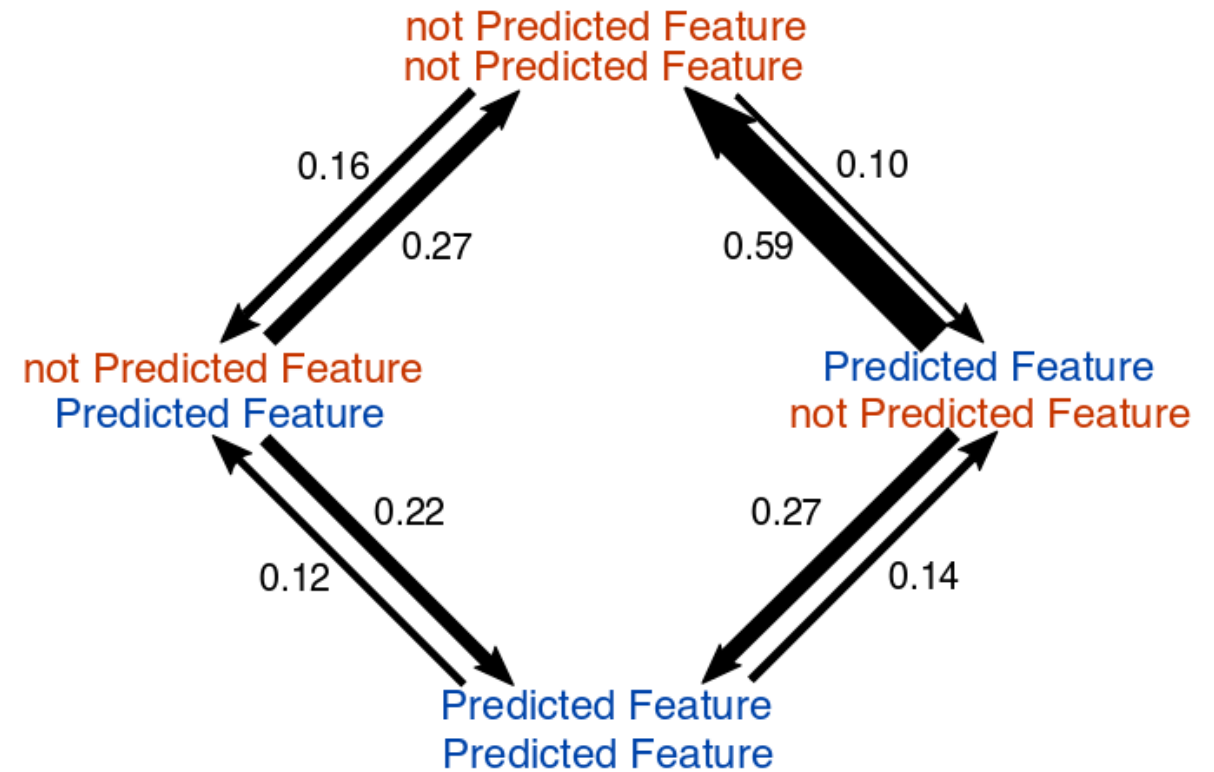
Mapping results onto theory

- Does the support we find for hierarchies and narrow word order universals reflect theories that link universals to mechanisms of change (e.g. Croft 2003)?

- Are languages that have combinations of traits that violate universals likely to change in ways that resolve these violations?

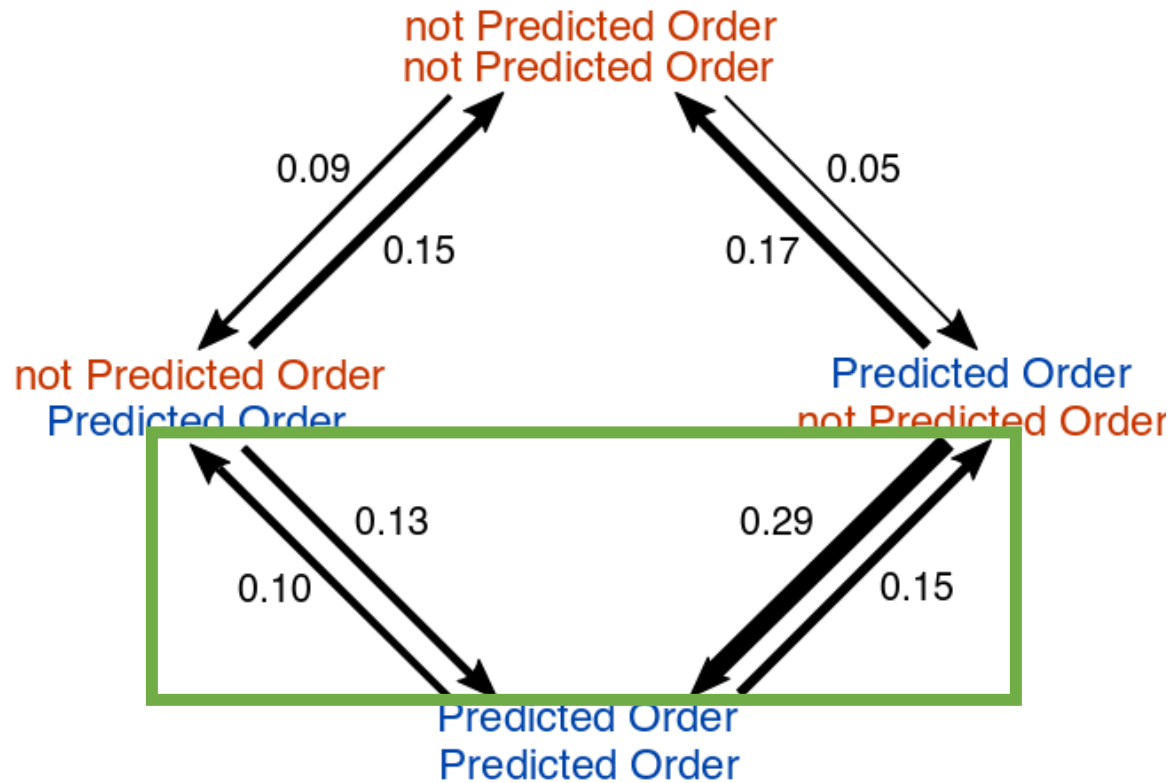# Diachronic change and harmonic states

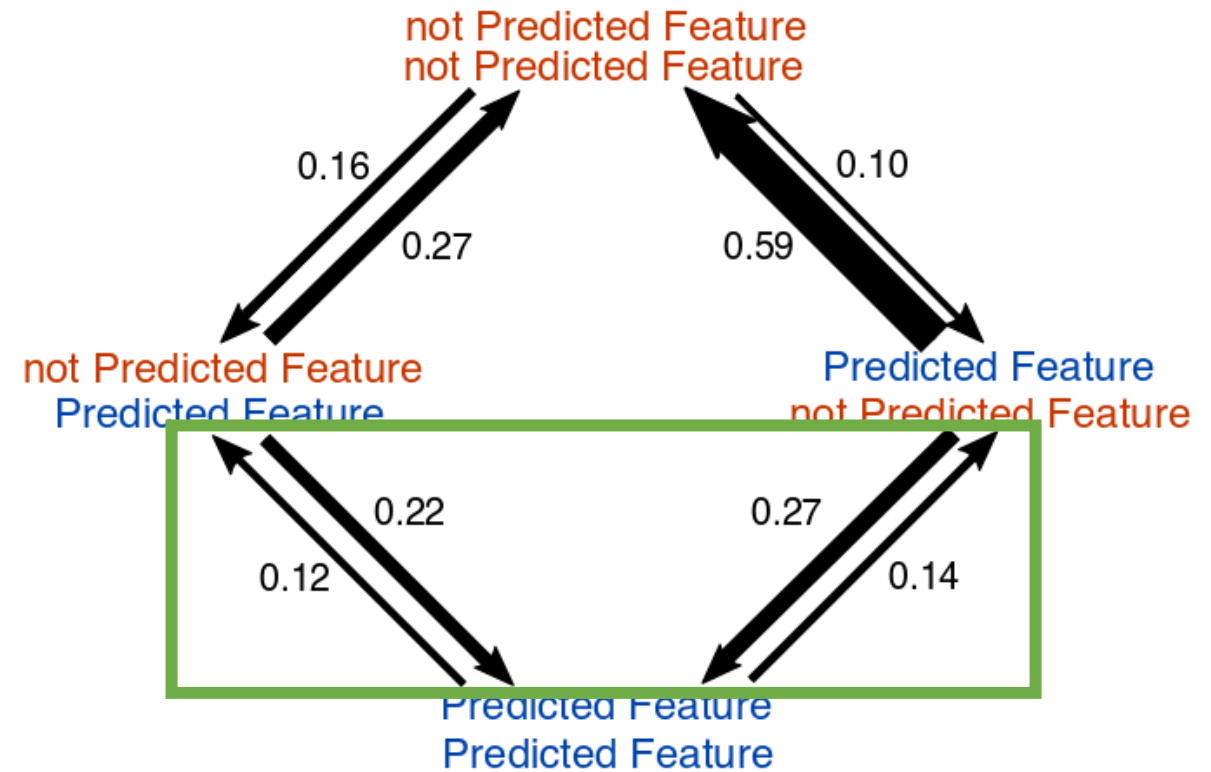Word order universals

Hierarchical universals

Diachronic change and harmonic states

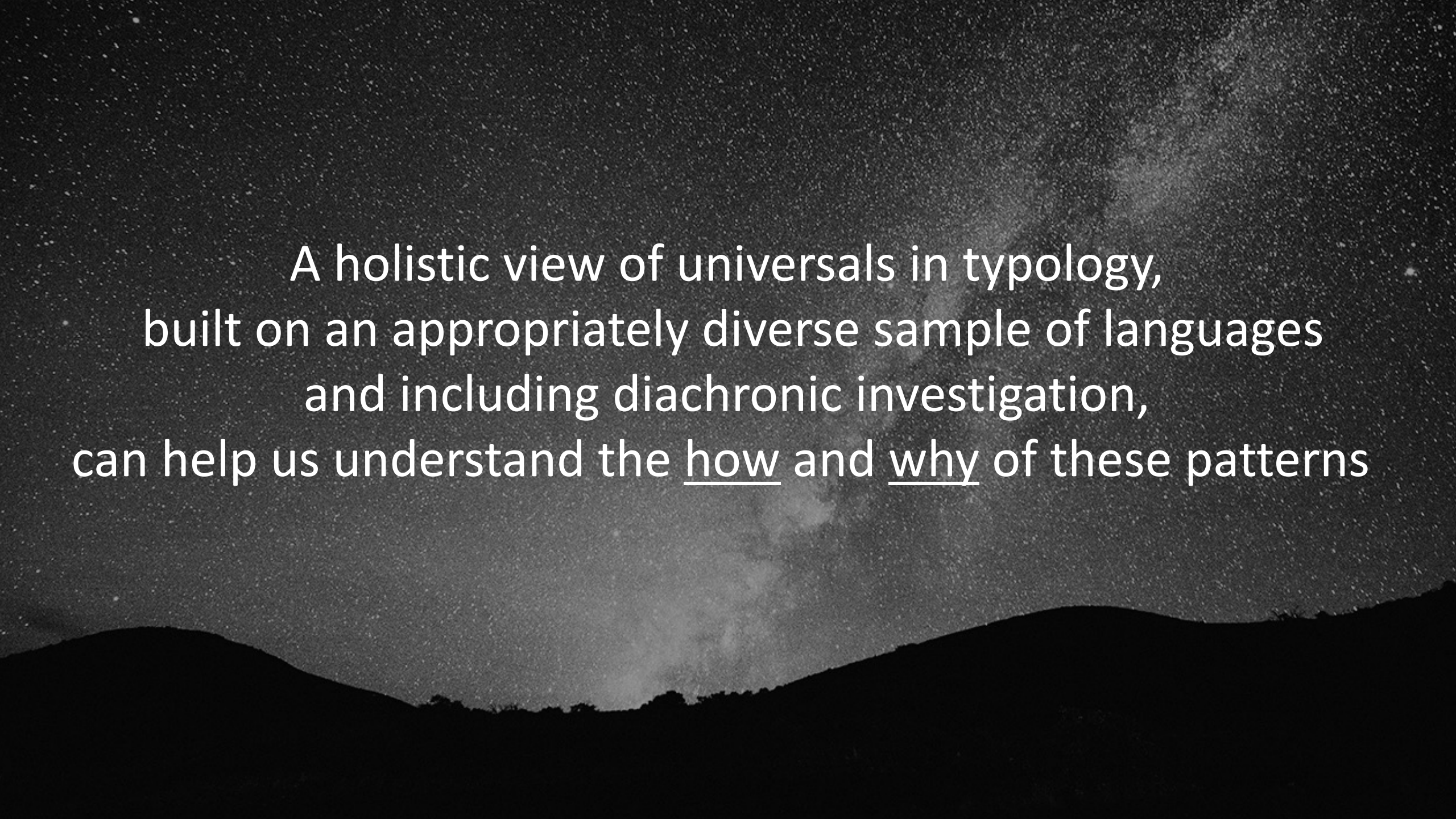Word order universals

Hierarchical universals

Discussion

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- but being able to incorporate more linguistic diversity into empirical research on universals makes more rigorous testing possible.

Discussion

- Explicitly diachronic methods give us more purchase on the mechanisms that have been proposed to understand how cognitive and communicative pressures shape grammatical change.

A holistic view of universals in typology,
built on an appropriately diverse sample of languages
and including diachronic investigation,
can help us understand the <u>how</u> and <u>why</u> of these patterns

Thank you!

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