Data types across linguistic subfields

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Our homework assignment

To find out what counts as “data”

In different linguistic subfields

For the purpose of making linguistic research reproducible.

In other words

What is the range of materials for which we need to standardize

how to store,

how to share,

how to cite

in a reproducible linguistics.

Our starting point

Himmelmann (2012)

Examines data levels in language documentation

Using an analogy to philology. Raw > Primary > Secondary

Data level	Examples from Philology	Example from LangDoc
Raw data *Particular, unique*	Inscription, original manuscript	Audio/video recordings, (Non-recorded) observations
Primary data *Particular, non-unique*	Critical edition	Transcript with translations, Field notes
Secondary/Structural data *General, replicable*	Statements about language history (e.g. Old High German *o* > Middle High German *ö*	Glossing, descriptive statement, dictionary entry, entry in a typological DB, implicational universal...

Our starting point

Hypothesis based on Himmelmann

Are data levels the key to cross-subfield reproducibility?

Can we identify data levels for all subfields?
Can we then postulate:
"Across the board, linguists should archive their raw/primary/secondary data."

(No, it's not that simple)

What we did

We kept our research close to home: Interviewed UHM linguistics faculty:

Victoria Anderson - Laboratory Phonetics
Robert Blust - Historical Linguistics
Kamil Deen - Language Acquisition
Katie Drager - Sociolinguistics/Sociophonetics
Patricia Donegan - Phonology
William O'Grady - Syntax & Acquisition
Yuko Otsuka - Formal Syntax
Amy Schafer - Psycholinguistics

What we did

We asked them

- What is your subfield's prototypical research? (Questions, Methods, Data)
- What is raw data to you? What is primary data to you?
- What level of detail of data do you wish was recoverable?
- What are practices for data sharing/reproducibility in your subfield?

Freeform interviews lasting 30-60 minutes

Summary findings

Most subfields would need a mixture of data levels and types

- Eg., natural language data + experimental measurements + scripts
- Need to work out hierarchical relationships between data types

Most subfields don't have a system in place

- but agree that having one would be beneficial to all
  - (less clear with sociolinguistics and syntax)

Our solution should be robust and broadly inclusive

- Having a flexible process in place will make ideology easier

Psycholinguistics: Eye tracking

Position of eyes (x- and y- axes) over time

Converted to attending to regions of interest

- Non-trivial calculation
- Script-based calculations

Analyzed with statistics

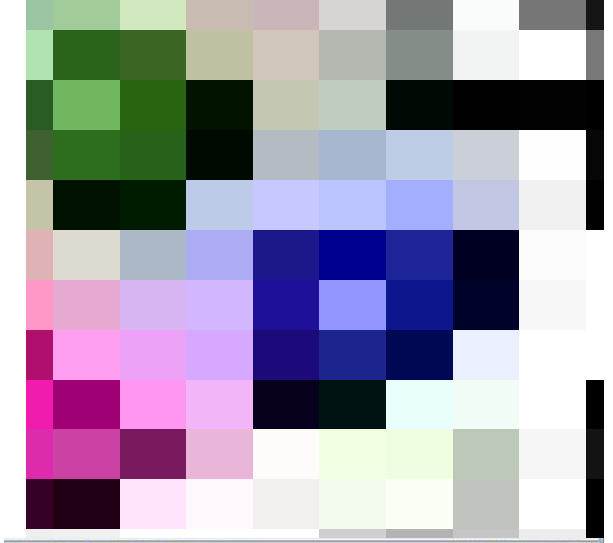
- Also script-based

Data not published, researcher obligated to maintain it

Could be asked to share with other researches

Would be useful to check statistical methods

Necessary data include: linguistic stimuli, visual stimuli



Sociolinguistics: Quantitative variation

Typical research question: How is the realization of a specific linguistic phenomenon affected by other linguistic and social variables?

Necessary data include:
Natural language data + transcripts + speaker meta data (c.f. documentation)
- Plus coding for individual tokens

Processing of raw data (natural language) can include:
- Coding (non-trivial and hard to automate)
- Acoustic analysis (both scripting and manual measurements)
- Auditory judgements

Sociolinguistics: Quantitative Variation

Data shared “in house”

Scripts might be viewed by some as a type of value added intellectual property

Example of online database: SOLIS

Anonymity is especially relevant for sociolinguists

Larger amounts of publicly available data make it easier to ID individuals

Acquisition: Picture tasks

Often combines natural language and experimental data

Production vs perception tasks

Common example: Picture tasks

Production: describe this scene /

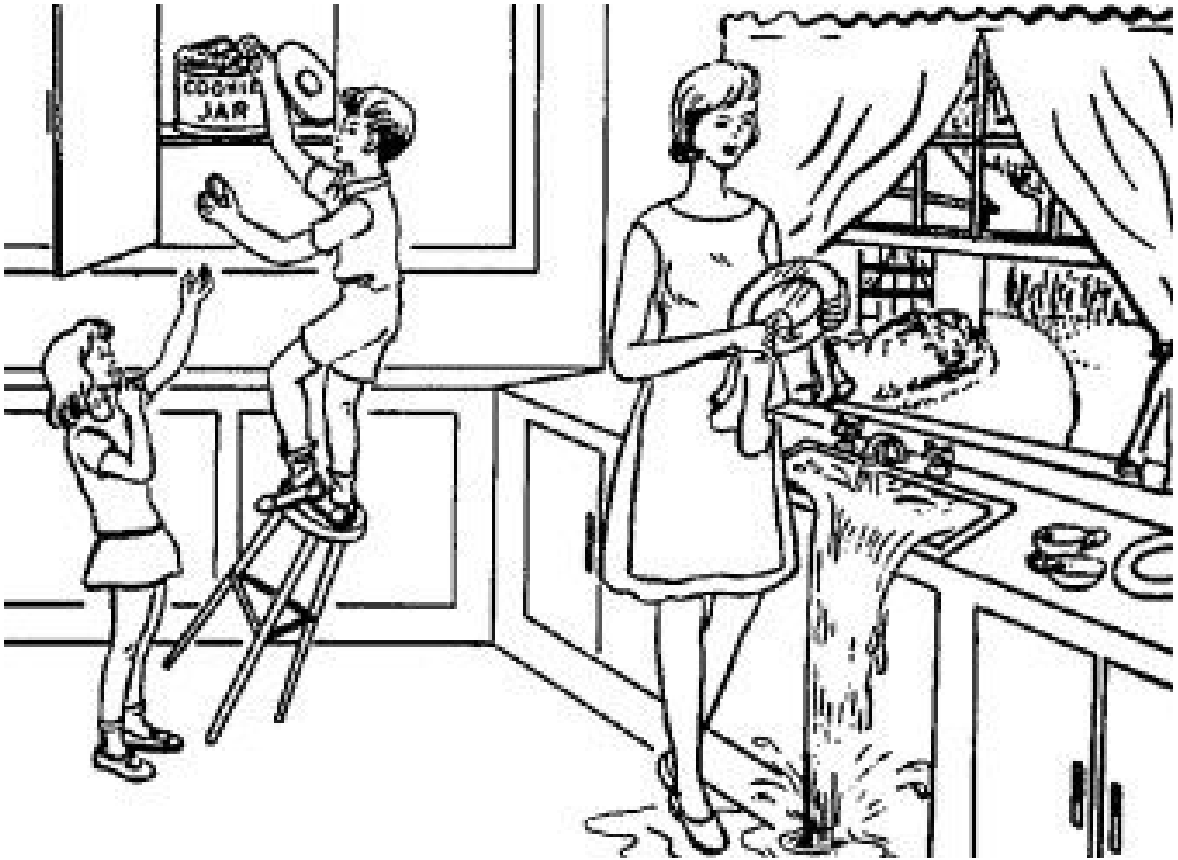
describe the specific relationship between these objects

Perception: which picture in this group corresponds to the linguistic stimulus?

Necessary data for perception example: visual stimuli, linguistic stimuli, responses

Consultants by definition include children

Resources exist for natural language data (CHILDES), but not experimental


COOKIE
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Conclusion: Data bundles?

Data *levels* is too simplistic a concept to really achieve reproducibility.

Data are multiple and varied.

A data bundle seems to make sense.

All the necessary raw and/or primary data

plus everything used in the derivation.

The bundle would (could?) be

A digital object with a DOI

Containing recordings, images, scripts, measurements, descriptions, etc.

With a usage guide

And standardized metadata

...lodged in a digital repository.

Conclusion: Data bundles?

Our task here could be

- To provide guidelines/instructions for creating bundles
  - Flexible for all subfields
- To provide advice for finding a repository
- To develop standardized metadata for linguistics research bundles
- To develop citation formats for the entire bundle
  - And for subparts of the bundle
    - And for subparts of subparts of the bundle…?