Data collection methodology with particular reference to the acquisition of genitives

led by Sonja Eisenbeiss, University of Essex

with contributions by Nikola Koch, University of Stuttgart, and Sara Antoniou, Sophie Hayward, Erin Horgan, Funmilayo Olonipile, Sarah Wood, University of Essex

seisen@essex.ac.uk  http://essex.academia.edu/SonjaEisenbeiss/
Overview

- Possessives/Genitives
- Reliability and Validity
- Overview: Naturalistic Data, Semi-Structured Elicitation and Experiments
- Study Design and Method Combinations
- Naturalistic Data and CHILDES/CHAT
- Types of Semi-Structured Elicitation
- Types of Experiments
- Separate handouts:
  - Experiments: Variables, Experimental Designs, Stimuli and Fillers
  - Creating an experiment
Types of Possession

Adnominal Possessive Constructions (APCs; “genitives”)
Both Possessor (PR) and Possessum (PM) are encoded within the same noun phrase (e.g. my/daddy’s chickens, the chickens of our neighbours, ...);

Predicative
The possessive relationship is encoded by a two-place predicate such as have, own or belong or by be (e.g. I have a dog. The dog belongs to me.);

“External”
The PR and the PM are realised as arguments of a verb whose lexical meaning does not involve e.g. (hit him on the head)
Non-Possessive Genitives

Assigned by prepositions
• low frequency, typically formal
• often replaced by dative or P
• e.g. German *wegen* ‘because of’, *anstatt* ‘instead of’, *innerhalb* ‘inside’;

Assigned by verbs
• very rare, often replaced by other Acc, Dat or PP
• E.g. German *gedenken* ‘commemorate’
Research Topics for APCs/Genitives

- the factors involved in the choice of construction; e.g. 's for animate PR (John’s car), of for inanimate PR (the roof of the car)

- potential first language effects in second language learning

- processing and acquisition difficulties caused by recursion: John’s father’s mother’s dog’s tail …. and other constructions like the little brown spotty dog...

- the interpretation of coordination in APCs: John and Mary’s toy vs. John’s and Mary’s toy vs. John’s toy and Mary’s toy…..

- the generalisation of possessive ‘s to different nouns

- error patterns for genitive verbs/prepositions (default?)
Reliability and Validity

• Reliability: The consistency of a measurement/test
  • Test-re-test reliability
  • Inter-rater reliability
⇒ Strict control of variables, test situation, etc.

• Validity: the degree to which the test measures what it intends to measure (e.g. children’s knowledge of genitives or possessives vs. their ability to focus)
  • Ecological validity: capturing the use of an ability as closely to real-life use as possible
⇒ Natural test situation with minimal extra demands
Naturalistic Data

- other term: spontaneous speech data
- recording of ongoing communicative events (free play, dinner table conversation,...)
Advantages

- age-independent
- no special task-demands, thus high ecological validity
- frequency information available
- input-analysis possible
- analysable for different phenomena
Problems

- low comparability (potentially low reliability)
- potential underestimation of productivity due to recurrent situations which require similar linguistic encoding
- lack of data for low-frequency phenomena (morphemes, constructions,...)
### NPs in German Child Language (Eisenbeiss 2000, 2003)

<table>
<thead>
<tr>
<th>child</th>
<th>age</th>
<th>files (w. elicit.)</th>
<th>utterances</th>
</tr>
</thead>
<tbody>
<tr>
<td>AND</td>
<td>2;1</td>
<td>1</td>
<td>1.4500</td>
</tr>
<tr>
<td>ANN</td>
<td>2;4-2;9</td>
<td>6</td>
<td>1.977</td>
</tr>
<tr>
<td>CAR</td>
<td>3;6</td>
<td>1</td>
<td>1.795</td>
</tr>
<tr>
<td>HAN</td>
<td>2;0-2;8</td>
<td>8</td>
<td>1.399</td>
</tr>
<tr>
<td>LEO</td>
<td>1;11-2;11</td>
<td>15 (all)</td>
<td>4.383 (4.383)</td>
</tr>
<tr>
<td>MAT</td>
<td>2;3-3;6</td>
<td>18</td>
<td>1.978</td>
</tr>
<tr>
<td>SVE</td>
<td>2;9-3;3</td>
<td>15 (10)</td>
<td>3.811 (2814)</td>
</tr>
<tr>
<td>total</td>
<td>1;11-3;6</td>
<td>64 (20)</td>
<td>16.793 (7.197)</td>
</tr>
</tbody>
</table>

(Clahsen 1982, Wagner 1985, Clahsen et al. 1990)
# NPs in Naturalistic Data

<table>
<thead>
<tr>
<th>Noun phrase with context for</th>
<th>number</th>
<th>% of utterances</th>
<th>correlation with mean length of utterance</th>
</tr>
</thead>
<tbody>
<tr>
<td>article</td>
<td>2.646</td>
<td>28</td>
<td>0.489; sign.</td>
</tr>
<tr>
<td>adjective + article article</td>
<td>249</td>
<td>3</td>
<td>0.274; n.s.</td>
</tr>
<tr>
<td>possessive ‘s</td>
<td>19</td>
<td>&lt;1</td>
<td>-0.097; n.s.</td>
</tr>
</tbody>
</table>
Problems for Naturalistic Corpus Studies on NPs

- Some NP types are comparatively frequent and become more frequent with increasing utterance length (MLU).
- BUT: Some NP types (e.g. those with contexts for adjective+article or possessive ‘s):
  - are rare
  - occur in some files, but not in others
  - do not become more frequent over time (though children’s utterances get longer)
Semi-Structured Elicitation

• encouraging speech production in a naturalistic (often game-like) setting
• e.g. eliciting complete sentences with the verb *to give* in an "animal feeding game": participants have to feed toy animals and explain which food items they would like to give to which animals (Eisenbeiss 1994)
• typically used as supplements to naturalistic data or experiments
Advantages

• appropriate for very young learners (<2)
• high comparability (good for reliability)
• no underestimation of productivity due to recurrent situations which require similar linguistic encoding
• no underestimation of productivity due to high task demands (high ecological validity)
• data for low-frequency phenomena (morphemes, constructions,...)
• analysable for different phenomena
NPs with possessive – *s* (Eisenbeiss 2003)

For instance:

- possession-matching game:
  assigning possessions (depicted on cards) to people (depicted on board)

*Whose bicycle is this? This is …*
NPs with possessive -s

% of analysable utterances

black symbols: files with elicitation
Problems

- age-dependent (usually at least 1;6 years)
- no frequency information available
- no input-analysis possible
- less control and comparability than in experiments with strict procedures and carefully controlled stimulus properties (potential problems for reliability)
Experiments

• systematic control of variables (properties of participants and stimulus materials)
• standardized procedures
• limited range of response options
Advantages

• high comparability (reliability!)
• data for low-frequency phenomena (morphemes, constructions,...)
• no underestimation of productivity due to recurrent situations which require similar linguistic encoding
Problems

- age-dependent (for production, act-out, picture-choice, grammaticality judgment etc. usually at least 3 years)
- underestimation of productivity due to comparatively high task-demands (potentially low ecological validity)
- no frequency information available
- no input-analysis possible
- analysis restricted to target phenomenon
Study Design

• longitudinal: one or more participants are studied over a longer period of time
• cross-sectional: a group of participants are studied at one point in time
• combinations:
  – Several groups of participants of different ages are studied for a short period of time.
  – A group of participants of the same age is studied over a longer period of time.
Study Design and Method

- Naturalistic sampling and semi-structured elicitation can be used in longitudinal studies.
- Experiments can lead to the development of task-specific or stimulus-specific strategies (low validity). They can thus not be used in longitudinal designs (or only at the end).
- Experiments require larger groups of participants (typically at least about 20 participants).
Combining Methods

• Try to provide converging evidence, using a combination of different data collection methods.

• If little is known about the acquisition of a phenomenon, start with one or two sessions with naturalistic sampling and semi-structured elicitation:
  – to build up a relationship with your participants
  – to test knowledge of words in experimental stimuli
  – to use information about spontaneous “errors” to fine-tune experiments (e.g. grammaticality judgment).

• Collect naturalistic samples “around” blocks of elicitation/experiments, e.g. while (un)packing toys.
Naturalistic Data: Overview

• Representativeness
• Quantity
• Quality
• Research Assistants
• Bilingual Settings
• Technical Issues
Representativeness

- population
- individual child
- recording situation (home vs. school or day care)
- interactional setting (meal-time conversation, free play, routine activities, etc.)
- input sources
Quantity

- Individual naturalistic samples should include at least 100 child utterances (reliable calculation of mean length of utterance and statistical analysis).
- Many studies involve one-hour recordings.
- Longitudinal studies that follow participants over a period of time often involve at least 3 participants to ensure representativeness for the population.
- Many cross-sectional studies (each participant recorded at one point in time) involve at least 20 participants.
- High-density corpora involve several hours of recording per week for each participant, for at least a year. This allows for in-depth analyses of individual development.
Quality

- Observe participants in daily life, interview caretakers, and select recording situations where the child produces a lot of longer, non-imitative utterances.
- Check feeding and sleep schedules for timing.
- Ensure that caretakers do not provide models for imitation to make the child look good.
- When selecting games for free play, focus on games that require verbal negotiations, not on games that require manual skills.
- Include representative input samples (not the researcher, but caretakers, siblings, peers, etc.) and prevent researchers from talking to much in recordings.
- Avoid noisy toys and machines (dishwashers, dryers).
Research Assistants

- can make recordings easier, in particular when the camcorder has to follow participants
- can make participants’ behaviour less natural
- do not provide naturalistic input samples
- must interfere and talk as little as possible
- must be introduced to all participants before the first “real” recording
- must be friendly and approachable, but must not establish close personal bonds to children during long-term studies and then “abandon” these children
Bilingual Settings

- Provide interaction partners for each language.
- If you are interested in code-switching, include
  - participants from both languages or
  - switches between situations where one of the two languages is preferred.
- Select stimuli that the child encounters in all the different linguistic settings.
- Carry out interviews with caretakers about the language situation, but supplement this with your own observations whenever possible (participants are often not completely aware of their code-switching habits and language preferences for particular situations).
Technical Issues

- Guidance for equipment and recording:
  http://www.talkbank.org/
  http://www.mpi.nl/DOBES/help
  http://www.mpi.nl/world/corpus/a4guides/
  http://www.hrelp.org/languages/resources/

- Avoid compressed data formats (mp3, etc.)

- Video-recording is always advisable for recordings with children. If it is not possible, notes and photos of the recording site (without participants) and any toys, stimuli, etc. can make the interpretation of audio-recordings easier.
Information about CHILDES

- Child Language Data Exchange System

- http://childes.psy.cmu.edu/

CHILDES: Types of Data

- transcript data from child learners
- part of the data from clinical populations
- a broad range of languages, but focus on English
- individual recordings for groups of learners
- recordings over longer periods for some learners
- spontaneous interactions
- picture book descriptions (e.g. “frog story”)
CHILDES: Data Format

- some corresponding video/audio-files
- some time-linked video/audio-files
- encoding of linguistic information for some files (word class, syntax).
CHILDES and CHAT

- The most common format for transcribing child language data is the CHAT-format, developed for CHILDES (http://childes.psy.cmu.edu/).
- Digital CHAT-files can be searched using the CLAN tools provided by CHILDES.
- Files from various transcription programmes (ELAN) can be exported in CHAT-format.
Transcriptions in CHAT-Format

- Transcripts are written in a text editor and stored as unformatted ASCII files (text only or plain text).
- All lines are ended by a carriage return (ENTER).
- Every transcript must begin with the line: @BEGIN and end with the line: @End.
- Between @BEGIN and @End:
  - headers with information about the transcript (obligatory: @Participants)
  - main tier for transcription
  - dependent tiers for further annotations
CHAT-Format: Basic Structure

• @BEGIN
• @Participants
• [other headers]
• *JOE:  [spoken material]
• %mor:  [morpho-syntactic coding]
• *INT:  [spoken material]
• %mor:  [morpho-syntactic coding]
• @End
CHAT-Format: Headers

• three letters followed by a colon and a tab
• obligatory: @ Participants, on the second line of the transcript; e.g.:
  @Participants:   JOE Joe child, INT Interviewer
• optional; e.g.:
  – @Birth of Learner:  …
  – @Age of Learner:  …
  – @Date:  …
  – @Language:  …
  – @Transcriber:  …
CHAT-Format: Main Tiers

- what was actually said, one utterance per tier
- introduced by "*", the three-letter code for the participant and a tab; e.g.: *JOE: the boy put the leash on the cat.
- orthographical transcription in lower case Latin letters; except for proper nouns (e.g. John) and "I"
- numbers spelled out (ten, not 10)
- normalisation of phonetically deviant forms (phonetic information about forms can be presented on a %pho dependent tier)
Main Tiers: Markers

- unfilled pauses: #
- filled pauses: eh@fp
- interruption: +/.
- self-interruption: +//.
- repetition w/o correction: [//]
- repetition with correction: [///]
- unintelligible speech: xxx
- material coded on phonol. tier: yyy
- doubtful material: [?] or [=? text]
- omitted parts of words: ( )
- to refer to more than one word: < >
CHAT: Dependent Tiers

further annotations, e.g.

- %mor [morphosyntactic coding]
- %pho [phonological coding]
- %syn [syntactic coding]
- %err [errors]
- %com [comments]
- %spa [speech acts]
CLAN: Windows

- the commands window where you specify the folders, files, and commands you want to use
- the CLAN output window, where you will see the results of your searches. If you have not specified an output file, your results will be displayed in this window. If you have saved your outputs into a file (as you will be asked to do for this exercise), you will not be able to see it in the output window, but the name and location of the output file will be displayed in the output window.
CLAN: Steps

- specify your WORKING DIRECTORY, where the files you will be working with are stored
- specify your output directory, where any output files will be stored
- select a command (type of select from CLAN)
- select one or more transcription files for analysis (type name or select from FILE IN)
- optionally use some so-called switches to modify the commands.
CLAN: Core Commands

- **FREQ:** will provide you with type and token frequency information

- **COMBO:** will find utterances matching a given set of criteria

- **MLU:** will calculate the MLU (mean length of utterance; morpheme-based MLU requires morphological coding on \%mor)
CLAN: Useful Switches

+f saves output to file. For each transcription that you have chosen to analyse, an output file will be generated. By default, this output file will have the name of the transcription file and an extension that will show you which command was used to create the output (e.g. frq, mlu or cmb).

+s searches for a string in a file.

+t restricts the search to a particular tier – e.g. the tier of a particular speaker.

+u treats all files together.

+o orders FREQ lists according to token frequency

+w –w1 and +w1 provide one preceding/following line, -w2 and +w2 will provide two preceding/following lines, etc.
CLAN: Search Strings

^ immediately followed by
+ inclusive OR
! logical NOT
* “joker”
“” strings including blanks, etc. should be put in quotes
Some examples

freq sarah009.cha (frequency list of all words)

combo +sof* +t*CHI sarah134.cha
(all child utterances with *of*)

combo +s"*'s*" +t*MOT sarah134.cha
(all maternal utterances with *'s: John’s hat/here)

combo +s*-POSS* +t*CHI +t%MOR sarah*.cha
(all Poss-coded s-nouns produced by child)
Using Search Term Lists

• If you do not want to carry out FREQ or COMBO commands for a list of words, you create a file (simple ASCII format, not doc or docx format), with all the relevant word forms, one per line. E.g., your file could contain German genitive prepositions:

  wegen
  anstatt
  waehrend

• Save this file as text only and give it a memorable name (e.g. genitive_prep.txt). Then, you can search for all the words in this file:

  +s@genitive_prep.txt
Quantitative Analysis

- **Type Frequency**: How many different types of this element do occur in the corpus; e.g.:
  - How many different genitive verbs does the corpus contain?
  - How many different nouns are marked with 's?
- **Token Frequency**: How many individual instances of this element do occur in the corpus; e.g. for
  - genitive verbs
  - possessive ‘s do we
- **Relative frequencies** (percentages) should be accompanied by absolute frequencies (totals).
Semi-Structured Elicitation: Overview

• types of semi-structured elicitation
  • interactional setting
  • target type
  • three tasks
• the role of contrasts

Eisenbeiss (2010)
Interactional Setting

- **Director/matcher (or “confederate description”):**
  A “director” describes a scene/object etc. and a “matcher” who is not able to see this scene/object, has to recreate it. E.g.: The matcher has to build a toy house identical to the one created by the director.

- **Speaker/Listener:**
  A speaker provides information for someone who does not have access to this information. E.g.: The speaker retells a story (s)he heard/read while the listener was not in the room.

- **Co-Players:**
  All participants are involved in a game and provide each other with information to co-ordinate their actions. E.g.: The players are involved in a construction or puzzle game where not everyone has access to all pieces.
Target Type

- **broad-spectrum**: generally encouraging participants to speak
- **form-focused**: the use of a particular form or construction
- **meaning-focused**: the linguistic encoding of a particular function or meaning (which can be encoded in different ways)
Broad-Spectrum

• frog story: a picture book w/o words used to elicit narratives (Berman/Slobin 1994)

• interview techniques

• re-telling of videos or stories
Form-focused

- **picture-matching game:**
  aimed at the elicitation of noun phrases with adjectives in different case contexts (Eisenbeiss 1994), see part I

- **Possessor-possession-matching-game:**
  aimed at the elicitation of adnominal possessive constructions (Eisenbeiss 1994)
Meaning-focused

- “circle of dirt”: a picture book w/o words used to elicit descriptions of part-whole relationships and actions affecting (body) parts (Eisenbeiss and McGregor 1999)
- “cut-and-break”: video stimulus created for cross-linguistic studies of “separation and material destruction” events (Bohnemeyer, Bowerman and Brown 2001)

http://fieldmanuals.mpi.nl/
3 Tasks (Eisenbeiss 2009, 2010, 2011)

- Bag Task: broad-spectrum
- Picture-Pairing Task: form-focused
- Puzzle Task: form-focused or meaning-focused
The Bag Task

• a bag with bag for blocks and animals of different sizes and colours. The bag has pockets that match the animals in colour and have coloured buttons, ties, etc.; and children frequently refer to colours, sizes and locations when they ask other players to help them hide or find animals in the pockets

• alternative: sets of small bags that are not attached as pockets to a big bag, but can be carried in a big bag (requires fewer skills and allows for a more flexible use of different bags)
The Picture-Pairing Task

- Children have to find pairs of matching pictures
- Similar to “memory”, but the pictures are not identical, but matched
- Memory load can be reduced by visible pictures
- Variants
  - contrast-oriented: The child has to describe what is on the two pictures and to say whether they match (e.g. small green bananas vs. large yellow bananas)
  - combination-oriented: The child is asked to form a phrase or an utterance with components that are depicted on the matching pictures (e.g. the hairdresser’s sheep or the sheep is helping the hairdresser).
The Puzzle Task (Eisenbeiss 2010)

- A task with co-players: child describes contrasting pictures on a puzzle board, adult finds the matching pieces, child puts them into the correct cut-out.
- Exchangeable pictures and puzzle pieces.
- Can be used to elicit particular forms or to elicit the linguistic encoding of particular meanings.
The Role of Contrasts (Eisenbeiss/Matsuo 2005)

- **German:**
  39 recordings (picture descriptions and asking for pieces)
  1286 utterances with/without V
  21 children (3;7-6;6)

- **Japanese:**
  67 recordings (asking for pieces)
  421 utterances with V
  16 children (2;11-6;5)
Elicitation Material: give
Elicitation Material: bite
Elicitation Material: wash
Elicitation Material: put on
German: The Use of Verbs (%)

<table>
<thead>
<tr>
<th>Verb</th>
<th>GIVE</th>
<th>BITE</th>
<th>WASH</th>
<th>PUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIVE</td>
<td>60</td>
<td>0</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>BITE</td>
<td>0</td>
<td>62</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>WASH</td>
<td>0</td>
<td>0</td>
<td>70</td>
<td>0</td>
</tr>
<tr>
<td>PUT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>other</td>
<td>25</td>
<td>16</td>
<td>14</td>
<td>27</td>
</tr>
<tr>
<td>no V</td>
<td>14</td>
<td>22</td>
<td>15</td>
<td>25</td>
</tr>
</tbody>
</table>

Target verb use is enhanced by contrasts between puzzles with different verbs and V-prompting (*This puzzle has pictures of V-ing*).
Validity?

• More contexts for errors but no error types that were not observed in naturalistic data, indicating high ecological validity.

• For instance, prepositional instead of indirect objects:
  • naturalistic (Carsten 3;6):
    *für'n papa sollste aber den schenken*
    for the daddy shall PART this-one give
  • elicited (Jannik 6;4):
    *da gibt das baby fuer das schaf ehm den gras.*
    there gives the baby for the sheep ehm the grass
Optionality in Japanese

- Subjects and objects can be omitted if their referents can be established on the basis of verbal or non-verbal context.
- Markers for direct objects can be omitted if
  - the object appears in its default position and
  - it is obvious “who did what to whom”.
- Markers for subjects can be replaced with the topic marker if the subject is the discourse topic.
• Contrasts between participants on different puzzle pieces lead to more overt subjects/objects in the puzzle task.
• Subjects were omitted more than objects due to
  • fewer agent-contrasts than patients/goal-contrasts
  • subject=introduced tendency of discourse)
More agent-contrasts in puzzle task than in naturalistic data lead to more overt subject marking and less topic marking.

Object marking was, however, rare as base word order was common and it was obvious “who did what to whom”.
Conclusion

• Contrasted elements are more likely to be encoded linguistically (e.g. event participants)

• Non-contrasted aspects of the event (e.g. who does what to whom) do not necessarily get encoded (e.g. by case).
Elicitation of Possessive Constructions: *whose balloon is red?* (Bevan 2010)
Elicitation of Complex Possessor Phrase
Findings

- Contrasted elements are more likely to be encoded linguistically (e.g. possessor).
- Non-contrasted aspects of the event (e.g. the balloons) do not necessarily get encoded.
- This can lead to simple animal naming.
- Contrasts for ALL relevant elements (possessor AND possessum) need to be built in.
Experiments: Overview

- Selecting an Experiment:
  - What is measured?
  - Which linguistic abilities / modalities are tested?
  - Is the measurement time-sensitive?
- Types of linguistic experiments
- Standardizing procedures
- Controlling for stimulus properties
What is measured?

- the behaviour of participants, e.g.:
  - correctness rates
  - reaction times
  - eye-movements (show shifts in speakers’ focus of attention)

- the neural activity during the neuro-imaging experiments, e.g. brain waves in ERPs, blood flow to regions of the brain with increased activity, e.g. PET
Which Modalities Are Tested?

- Production
- Comprehension
- Grammaticality Judgements
Is the measurement time-sensitive?

- Off-line experiments (e.g. acceptability judgment task with a questionnaire): no information about the time-course of processing.
- On-line measurements: information about the time-course (e.g. neuro-imaging experiments, eye-tracking, reaction-time experiments).
- Some reaction time experiments only measure how long it takes to complete a process without providing information about individual steps of this process (e.g. speeded grammaticality judgment).
Common Experiment Types

• production
  • elicited imitation
  • elicited production
  • syntactic priming

• comprehension
  • act-out
  • picture-choice/pointing
  • truth-value judgment

• grammaticality judgment
  • individual sentences
  • minimal pairs
  • speeded forced choice
Elicited Imitation

Participants are asked to imitate spoken sentences. Thus, it is clear what learners should say; and when stimuli are sufficiently long and complex, participants cannot simply memorise them as a whole, but have to employ their own grammar to recreate them. Thus, a comparison of the target utterance and the learner’s actual production can shed light on the grammatical knowledge that learners employ to express a given meaning.

This could be used for complex recursive APCs.
Elicited Imitation: Pro & Con

Advantages

• easy to carry out
• clear target for comparisons

Problems:

• good performance might be due to simple memorisation.
• errors might be due to a lack of vocabulary knowledge, memory limitations, etc.
Elicited Production

Participants receive a prompt to produce a form or sentence type. For instance, learners can be instructed to turn a given sentence into:

a question:
*The dog is eating something. Ask the puppet what!*

a negated sentences:
*I'll say something and then you say the opposite.*
Some Experiments involve novel words. Such experiments allow us to determine whether speakers can use a construction or grammatical marker with words that they have never heard before (e.g. s-possessives).

This allows us to distinguish between productive use of a marker/construction and imitation or rote learning of individual sentences or formulas.
The Classic: Berko (1958)

1.

This is a Wug.

Now there is another one.

There are two of them.

There are two _____.

---

THIS IS A WUG.

NOW THERE IS ANOTHER ONE.

THERE ARE TWO OF THEM.

THERE ARE TWO _____.

---
Koch (2010): Elicited Production of *s/of* - Animacy and Type Of Relation

- 32 pictures
- Animacy of PR:
  - Inanimate: house, tower
  - Animate: boy, girl
- Type of relationship:
  - Part of (window, door, face, foot)
  - Not part of:
    - animate: ownership (bike, tennis-racket)
    - inanimate: physical association (path, fence)
- Verbs: *wash, touch*
Koch (2010): Sample Stimuli
Elicited Production: Pro & Con

Advantages

independence of memorised models

Problems:

• requires reliable prompts
• unclear influence of participants’ earlier experience - unless novel words are used
• performance errors due to task difficulties (especially with novel words)
Syntactic Priming

• Speakers tend to repeat syntactic structure across otherwise unrelated utterances (Branigan 2007). For instance, speakers are more likely to use an s-possessive target after hearing or producing an s-possessive prime than after an of-possessive prime. This suggests pre-activation of a grammatical representation for s-possessives.

• If learners show this effect, this indicates that they have acquired a grammatical representation that can be activated by priming.

• If this effect occurs even when prime and target sentence include different words, this suggests that the respective grammatical representation is an abstract construction.
Syntactic Priming: Pro & Con

Advantages:
provides insights into representations

Problems:
requires pairs of alternative structures that speakers could use (e.g. s/of-possessive, active/passive, dative/prepositional construction for possession-transfer verbs like give, etc.)
Act-Out

Participants hear a sentence and have to act out what they hear. For instance they are told:

- *show me: The cat is chasing the dog*
- *show me: The cat is being chased by the dog*

Note: usable for possession-transfer constructions, not appropriate for APCs/genitive Ps/Vs, due to lack of corresponding concrete action
Act-out: Pro & Con

Advantages:
no limitations on interpretation, researchers do not have to predict how children might interpret the sentence

Problems:
high task demands frequently lead to unexpectedly low performance: memorizing stimulus sentence + action planning + handling of toys, etc.
Picture-choice/Pointing

Participants hear a sentence and have to select a matching picture out of a set of at least two pictures and a distractor picture with other participants. Eisenbeiss (1994):

*The bear is sewing (a pillow).*
*The bear is being sewn (by a girl)*
*The bear is sewn (result with stitches)*

(plus distractor picture with bear and other toy)

Alternative: colouring/pointing to object in picture
Koch (2010): coordinated PRs

*John and Mary’s bear; John’s bear and Mary’s bear; John and Mary’s bear,*...
Picture-choice/Pointing: Pro & Con

Advantages:
lower task demands than act-out: children can look at pictures while they hear sentences; and they do not have to plan and carry out actions

Problems:
limited options for interpretation
only appropriate if corresponding semantic differences can be found and depicted
Truth-value Judgment

Participants are shown a picture or told a story and then asked for truth-value judgements, e.g.:

*The cat is being chased by the dog. Is this true?*
Truth-value Judgment: Pro & Con

Advantages:
comparatively low task demands: no action-planning, only one picture or story to look at

Problems:
often difficult to determine why a participant says yes or no (but you can ask participants to justify responses)
Grammaticality Judgment

- **individual sentences**
  Participants are asked whether a given individual sentence is grammatical/acceptable/correct/good; e.g. a genitive-assigning P with a
  - Genitive NP
  - Dative NP
  - PP

- **minimal pairs**
  Participants are asked which of two sentences or phrases is grammatical/acceptable/correct/better:
  - *the lady’s leg* vs. *the leg of the lady*
  - *the table’s leg* vs. *the leg of the table*
Grammaticality Judgment: Pro & Con

Advantages:
provides insights into meta-linguistic abilities
provides insights into speaker’s sensitivity to grammatical markers, word order, etc.

Problems:
often not clear whether participants focus on grammaticality or base judgments on plausibility, etc., in particular for individual utterances.
Speeded Forced Choice

- Speakers have to read two phrases or sentences and press a button to indicate which phrase/sentence they prefer.
- Measurements:
  - choice of phrase/sentence
  - response/reaction time
- Investigation of variables determining choice
- E.g. Hayward (2012): animacy and s/of-choice

*The lady’s back*
*The back of the lady*
*The chair’s back*
*The back of the chair*
Speeded Forced Choice: Pro & Con

Advantages:
provides insights into meta-linguistic abilities
provides insights into speaker’s sensitivity to grammatical markers, word order, etc.
reaction-times give some indication of difficulty

Problems:
high task demands
unclear whether long reaction times indicate general processing problems or decision difficulty
Standardizing Procedures

- Experiments should take place in similar settings and at similar times of day (mornings preferred).
- Instructions should be identical for all (written script, recording played from inside a toy, etc.).
- Stimuli should be presented in random order to prevent strategies and ordering effects.
- It should be ensured that not too many items of the same condition are presented in a row (pseudo-randomisation).
- The (pseudo-)randomised order of stimuli and the order of experiments should be the same for all participants - or systematically varied (50% of children order A, 50% of order B,...)
Controlling for Stimulus Properties

The following should be kept the same across conditions, counterbalanced or systematically varied:

- length of stimulus sentences, video clips, etc.
- colourfulness or attractiveness of pictures or toys: how many items are depicted, is one toy “cuter” than the other, etc.
- presentation order for pictures on the screen: systematically vary what appears on the right/left or top/bottom of screen
- frequency and familiarity of words
- intonation of auditory stimuli (use pre-recorded stimuli)
- syntactic and semantic complexity
Correlations with other Measurements

Olonipile (2012):
recursive s-possessives in English and corresponding constructions in Yoruba

- Production: what is number 19?
- Comprehension: what is the number for ....?
- Correlation with results of a working memory task (non-verbal)
The boy’s mother’s father’s
teacher’s mother’s moon.
Training Experiments

- Pre-test – training – re-test
- Comparison of pre-test and re-test performance
- Typically with a comparison of
  - different training schemes
  - training schemes and a baseline (e.g. unrelated game or activity)
- Used to evaluate the effects of training on children:
  - input (e.g. repetition and variation of the target structures)
  - feedback (e.g. repetitions, corrections or expansions of the target structures)
Pre-Test with the Koch (2010) version of the whose-balloon-is-red task: comprehension and production of complex possessive constructions

*The boy’s mother’s father’s balloon.*

Puzzle task training with repetition and variation:

- Group I: complex possessives (target)
  - the *lady’s son’s girl’s balloon*
- Group II: complex coordination (not the target)
  - *the woman and the daughter and the son and the girl*

Re-Test with variant of the Koch (2010) tasks
Whose Balloon is red? (Koch 2010)
Puzzle Pictures for Training (Horgan 2012)
Training with Repetition and Variation

- Complex Possessive Group:
  
  *This is the lady’s son; and this is the son’s girl; and this is the girl’s balloon. So, this is the lady’s son’s girl and her balloon. So, this is the lady’s son’s girl’s balloon.*

- Coordination Group:
  
  *This is the lady and the son; and this is the son and the girl; and this is the girl and the balloon. So, this is the lady and the son’s girl and her balloon.*
Take-Home Message

- Converging evidence from different data types:
  - naturalistic data
  - a variety of Semi-structured elicitation tasks
  - a variety of experiment types, covering comprehension/production/judgment

- Contrasts are crucial for elicitation.