Doing language sample analysis can be easy:
A SALT Tutorial

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Language sample analysis: Commonly used types of language samples in our field

- Conversation
- Narrative
- Expository/Informational discourse
Why narratives?

- Cognitive-linguistic benefits
  - Complex ideas → complex language structures
  - Text-level language
- Academic benefits
  - Reading comprehension / Writing
  - Classroom listening

Collect a language sample

- What equipment and materials do we need?

http://www.saltsoftware.com/resources/elicaids/frogStories/FWAY_index.cfm
Collect a language sample (2)

- An excellent guideline for collecting language samples from school-aged children


(see Handout 01: Go to CDS webpage → Search → LSA)

http://cdswebserver.med.buffalo.edu/drupal/?q=node/675

Collect a language sample (2)

- An excellent source for collecting narrative samples from adults (see Handout 02)


http://cdswebserver.med.buffalo.edu/drupal/?q=node/675
Comparing the child’s narrative to the SALT database

- What materials do you need? (Handout 03)
  - Preschool - 1st Grade: *Frog, Where Are You?* (Mayer, 1969)
  - 2nd grade: *Pookins Gets Her Way* (Lester, 1987)
  - 3rd grade: *A Porcupine Named Fluffy* (Lester, 1986)
  - 4th, 5th, and 6th grade: *Doctor De Soto* (Steig, 1982)

Transcribe the language sample

- Always record and then transcribe the language sample (orthographically): **DO NOT** transcribe it online.
  - Use instruments to help you (e.g., Express Scribe).


Transcribe the language sample (2)

- If you want to use computer software to analyze language sample, such as *Systematic Analysis of Language Transcripts (SALT)*, you need to follow specific format.
  - What does SALT do for you?
  - What doesn’t SALT do?

http://www.saltsoftware.com/salt/downloads/demo.cfm

```
SALT - [0254GB07-language sample.SLT]

$ CHILD, EXAMINER
+ Name: 0254GB07
+ Gender: M
+ CA: 3;1
+ Context: CON
+ Language: English
+ Examiner: Allison
+ Transcriber: Hugo
- 0:00

E do you wanna come sit?
+ C ummhh.
E all right.
C I sit on my chair.
E okay that sounds good to me.
C there/'cs a spiderman.
E there is a spiderman.
E hmm.
C they/'cre spiderman dance.
E should we make him dance one more time?
C *I want *to play PlayDoh.
C there/'cs some Playdoh.
```
Transcription: Steps by steps

(See Handout 04 SALT Manual from CLL) - Demo
Transcription: Steps by steps (2)

- **Speaker lines**
  - Utterances spoken by the child or client begin with **C**.
  - Utterances spoken by the examiner begin with **E**.
  - Utterances spoken by the parent begin with **P**.

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Transcription: Steps by steps (3)

- Segmenting language samples by utterances: To determine the boundary of utterances, we use the following cues together
  - 1) intonation
  - 2) pause
  - 3) end of thought.

- For unintelligible words/phrases/sentences, put three X’s in the transcription, regardless of the size.
  - C xxx.
  - C I want xxx.
  - C I want xxx basketball.
Transcription: Steps by steps (4)

- **End of Utterance Punctuation:**
  - **Statements** should end in a period e.g., *C I see a truck.*
  - **Questions** should end with a question mark (?).
    
    *C What is that?*
  - When a speaker is **interrupted** by something, the utterance ends with a carat (^).
    
    *C I want ^
    
    *E What do you want?*
  - When the speaker **abandons** an utterance or fails to complete it, the utterance is marked with a final greater than sign (>), e.g., *C I was going >*

Transcription: Steps by steps (5)

- **Mazes:** Words that do not contribute meaning to the sentence. There are several types of mazes, including
  - Filled pauses: such as, *um, uh, ah*
    
    *C (um) he is (uh) at home.*
    
    *C The dog (um) is (ah) very happy.*
  - **Repetition**
    
    *C He is (ou*) out of the house.*
    
    *C (She) she is drinking (the) the water.*
  - **Revision**
    
    *C (She) the dog is in the house.*
    
    *C The dog is (out of the) in the house.*
Let’s practice – A child sample!

Let’s practice – An adult sample!
Coding/slashing grammatical morphemes

- Slash off the following morphemes
  - Inflectional morphemes
    - *C I want *candies*.  \(\rightarrow\) *I want *candy/s*.
    - *C He *wants that*.  \(\rightarrow\) *He *want/3s that*.
  - Contracted morphemes
    - *C *We’re fine*.  \(\rightarrow\) *We/’re fine*.
    - *C *He’s running*.  \(\rightarrow\) *He/’s run/ing*.
    - *C He *wasn’t home*.  \(\rightarrow\) *He *was/n’t home*.

Coding/slashing grammatical morphemes (2)

<table>
<thead>
<tr>
<th>Morphemes</th>
<th>Use</th>
<th>Omission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plural –s</td>
<td>/s (dog/s)</td>
<td>*/s</td>
</tr>
<tr>
<td>Possessive -s</td>
<td>/z (my cat/z food)</td>
<td>*/z</td>
</tr>
<tr>
<td>Third person –s</td>
<td>/3s (He jump/3s)</td>
<td>*/3s</td>
</tr>
<tr>
<td>Past tense -ed</td>
<td>/ed (He jump/ed)</td>
<td>*/ed</td>
</tr>
<tr>
<td>Contracted BE verbs</td>
<td>/’s, /’re, /’m</td>
<td>*/’s, */’re, */’m</td>
</tr>
<tr>
<td>Present Participle -ing</td>
<td>/’ing</td>
<td>*/’ing</td>
</tr>
<tr>
<td>Others</td>
<td>/’d, /’ve, /’ll,</td>
<td>--</td>
</tr>
</tbody>
</table>
Let’s practice

- C The boy cried in the man’s bookstore, which embarrasses both of his parent.

- C While I running, she’s eating.

- C The boy and the girl is happy.

A child narrative
1 C once upon a time, there was a boy who had a dog and a pet frog.
2 C one night the frog crept out of the jar and climbed out of an open window.
3 C (in the) in the morning the boy and the dog did not see the frog.
4 C the boy looked everywhere.
5 C the boy even looked in his boots.
6 C the dog tried to look in the jar.
7 C the dog got the jar stuck on his head.
8 C (and) and the boy called out of the open window.
9 C the dog still with the jar on his head (went out the window) went to the window with him.
10 C (he) the jar was so heavy and the dog fell out of the window.
11 C the boy came out too to make sure he was okay.
12 C he was okay but the jar was broken.
13 C the boy and the dog came outside to look.
14 C the boy looked down (to) into a hole and crawled down.
15 C the dog who wasn’t paying any attention barked at some bees.
An adult narrative

1 J (uh There’s a) There’s (a) a brother and a sister.
2 J They wanted cookies.
3 J But the son here he’s gonna be falling down because (he was he) he sitting on the chair.
4 J And (it’s too) it’s too>
5 J It should be bigger.
6 J Something (shouldn’t) shouldn’t use that kind of chair anymore.
7 J And at the same time the mother there cleaning (the) the dishes but she didn’t turn off the water.
8 J So it’s all (roll) running down (on the) on the floor.
9 J (And) and she’s just like {duhuhuh} (cleaning the) cleaning things and the water is just pouring.
10 J And >

Basic language sample measures

- Productive measures
  - Number of utterances
  - Total number of words
- Fluency measures
  - Maze words as % of total words
- Lexical measures
  - Number of different words
  - Type token ratio
- Morphological/Syntactic measures
  - Mean length of utterances
  - % correct of grammatical morphemes
Getting the numbers from SALT

- To obtain the basic measures (except % correct of grammatical morphemes), please click **Analyze → Standard Measures Report**

<table>
<thead>
<tr>
<th>STANDARD MEASURES</th>
<th>Child</th>
<th>Examiner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRANSCRIPT LENGTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Utterances</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td># Analysis Set (Kid’s Verbal Utta)</td>
<td>38</td>
<td>0</td>
</tr>
<tr>
<td>Total Completed Words</td>
<td>622</td>
<td>0</td>
</tr>
<tr>
<td>Elapsed Time (sec)</td>
<td>6.67</td>
<td></td>
</tr>
<tr>
<td><strong>SYNTAX/MORPHOLOGY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># MLU in Words</td>
<td>9.97</td>
<td>---</td>
</tr>
<tr>
<td># MLU in Morphemes</td>
<td>10.09</td>
<td>---</td>
</tr>
<tr>
<td><strong>SEMANTICS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># Number Different Words</td>
<td>131</td>
<td>0</td>
</tr>
<tr>
<td># Number Total Words</td>
<td>379</td>
<td>0</td>
</tr>
<tr>
<td># Type Token Ratio</td>
<td>0.25</td>
<td>---</td>
</tr>
<tr>
<td><strong>INTELLIGIBILITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Intelligible Utterances</td>
<td>100%</td>
<td>---</td>
</tr>
<tr>
<td><strong>MAZES AND ABANDONED UTTERANCES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># Utterances with Mazes</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td># Number of Mazes</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td># Number of Maze Words</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td># Maze Words as % of Total Words</td>
<td>10%</td>
<td>---</td>
</tr>
</tbody>
</table>

How to use the SALT norm?

- Go to **Database → Standard Measures Report**

[Database screenshot showing selection options for comparison set]
How do I compute % correct of grammatical morphemes?

- There is an easy way: Go to **Analyze → Bound Morpheme Table**
From SALT data to report writing

- What information should I include?
  - Explain the elicitation procedure.
  - Provide the productivity information.
  - Describe the lexical, morphological, and syntactic measures.
  - Summarize the narrative language

Example of a narrative sample report

A narrative sample was collected through story retell using the book “Frog, Where Are You”. RS produced 36 utterances and 379 words in the narrative. In addition, RS produced 131 different words and an MLU of 10.89 in retelling the story. All of these measures were within typical range. Among all of the words that RS produced, only 10% were maze words, which was also within age expectations. Overall, RS demonstrated age-expected productivity, lexical, and syntactic skills in retelling the story. Thus, RS was categorized as a typical child.
A case study: Jay

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td># of utterances</td>
<td>39</td>
<td>34</td>
</tr>
<tr>
<td>Total # of words</td>
<td>239</td>
<td>255</td>
</tr>
<tr>
<td>Maze words/Total words</td>
<td>22%</td>
<td>27%</td>
</tr>
<tr>
<td>Abandoned utterances</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>MLU in morphemes</td>
<td>6.74</td>
<td>8.71</td>
</tr>
<tr>
<td># of different words</td>
<td>127</td>
<td>122</td>
</tr>
<tr>
<td>Type-token ratio</td>
<td>0.53</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Advanced language sample measures

- Syntactic Measures
  - Subordination Index (see Handout 05)
  - Percent grammatical utterances
- Discourse Measures
  - Narrative Scoring Scheme (see Handout 06)
  - Expository Scoring Scheme (see Handout 07)
  - # of inadequate cohesive ties per utterance (see Handout 08)
Percent grammatical utterances (PGU)

- Rules:
  - **Include only utterances that has a verb**, except those that had an omission of copula BE (e.g., *He sad. I at home*). For utterances that are excluded for analysis, mark [XU] at the end of the utterance.
  - Determine whether an included utterance is **grammatical** or not. If ungrammatical, mark that utterance as [EU] at the end of the utterance.
  - **PGU = total number of grammatical utterances/ total number of utterances included for analysis**

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Let’s practice.

C the boy is clean.
C nice and clean.
C he just took a bath.
C I think and (eek) >
C the boy rode his bicycle and had a hole popped in it.
C and he fell down.
C now the boy was dirty.
C dirty like and dirty.
C and the boy wash his everything.
How to use SALT to compute PGU?

- Go to Analyze → Standard Measure report, and find out “# of Analysis Set”.

- Go to Analyze → Code summary, and find out the # of [XU] and [EU].

- PGU = (# of Analysis Set - # of [XU] - # of [EU]) / (# of Analysis Set - # of [XU])

Cohesion

- Cohesion can be done by using lexical or syntactic means (i.e., cohesive markers) to create links between utterances.

  - The markers signal that the interpretation of some elements is outside of the current utterance.

  - e.g., *The woman lost her purse. She was worried.*
Cohesion markers: Reference (1)

- **Pronominal / Pro-form** reference
  - Pronominal reference involves the use of subject pronouns, object pronouns, possessive pronouns, and/or possessives.
    - e.g., *The woman lost her purse. She was worried.*
    - e.g., *Shrek ate his food. And Fiona ate hers.*
  - Pro-form reference involves the use of an alternative, nonspecific expression (e.g., one, none, some, many)
    - e.g., *My computer is too slow. I need a new one.*
    - e.g., *I want some coffee. And she wants some too.*

Cohesion markers: Reference (2)

- **Demonstrative** reference:
  - Use of *definite article the*, signaling that information about the referent is present in the preceding text or is known to both the speaker and listener.
    - e.g., *I saw a man yesterday. The man looked like Shrek.*
  - Use of *demonstrative pronouns* (e.g., this, that, these, those) to point to some person, event, or thing
    - e.g., *I saw some lions and elephants. Those are my favorites animals.*
  - Use of *adverbs* (e.g., there, then) to refer to a place or time
    - e.g., *I spent my holiday in my uncle’s house in Bali. I do like staying there.*
Let’s practice!

C Once **the** horse met an elephant.
C And then **they** saw a ball in a pool.
C And then **the** horse tried to swim and get **the** ball.
C And (**the**) then **the** elephant gave **them** **the** ball.
C And **the** horse was wet.
C And **the** elephant was holding **the** ball.
C **The end.**

(Note: [CT] = complete tie; [IT] = Inadequate tie)