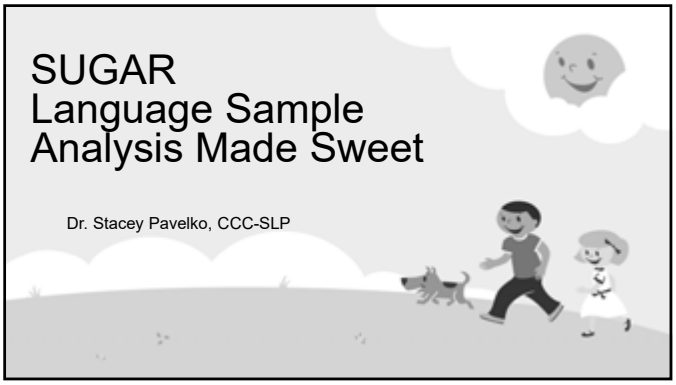
SUGAR
Language Sample Analysis Made Sweet

Dr. Stacey Pavelko, CCC-SLP

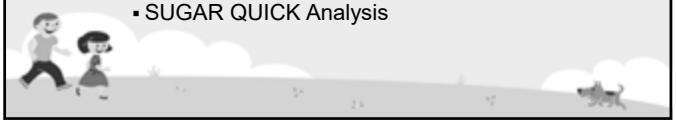


How we define a problem usually determines how we analyze it. It sends us in a particular direction. And how we analyze a problem — the direction we take — absolutely determines whether we find a solution and what the quality of that solution is.

Jones, 1998

Advance Organizer

- A **BRIEF** LSA History
- LSA use
- Changes to LSA
- What is robust sampling and how do you do it?
- What is SUGAR
- SUGAR QUICK Analysis



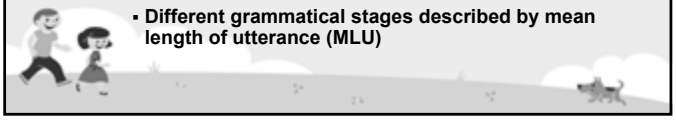
Roger Brown

- Seminal study of early language development, entitled *A First Language* (1973) *
- Revolutionized the study of child language language development studies
- Changed the assessment of communication abilities of children with language impairment (LI).
- SLP's have changed the basic methodology very little in the intervening four decades.

*Taken from: Brown, R. (1973). *A first language the early stages*. Cambridge, MA: Harvard University Press.

Brown

- Collected extensive language samples
- Each sample consisted of at least 700 utterances per month
- Sample size only included 3 children
- Documented information on early language form between ages 2 and 4
- Different grammatical stages described by mean length of utterance (MLU)



Brown's Participants

- Three typically developing (TD) children
  - Adam: 27 months old; parent's education level- *college*
  - Eve: 18 months old; father's education- *college*; mother's education- *high school*
  - Sarah: 27 months old; parent's education level- *high school*
- Children were typically developing (TD)
- All from Cambridge, Massachusetts
- Parent occupations: Minister, Harvard graduate student, and clerk

Methods

- **Transcriptions of the mother and child were collected**
- **Samples were collected in the home**
- **A minimum of two hours of transcription per month**
- **Two examiners per language sample**
- **Examiners used a video recorder to collect the samples**

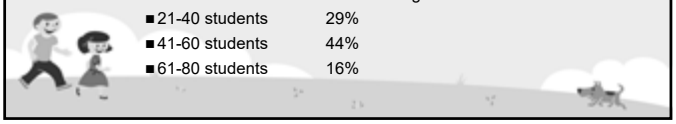
How do SLPs conduct LSA?

Pavelko, Owens, Ireland, & Hahs-Vaughan, 2016

1,399 school-based SLPs

- 88% were ASHA certified
- 95% held a master's degree in CSD

- Over 75% had caseloads of 21 or larger
  - 21-40 students 29%
  - 41-60 students 44%
  - 61-80 students 16%



LSA Research Questions

- Do school-based SLPs use LSA in their clinical practice
- What are the characteristics of the language samples SLPs collect?
- What are the methods of analysis?
- What are the barriers that school-based SLPs identify in using LSA?

Do SLPs use LSA?

- Not so much…
  - 33% did not use LSA AT ALL the 2013-2013 school year…

Frequency of LSA

10 or fewer Samples	**55%**
11-20 Samples	**23%**
21-30 Samples	**9%**
> 30 Samples	**11%**

* Of the 67% who reported using LSA during the 2012-2013 school year

Length of Samples Collected

1-5 Minutes	27%
6-10 Minutes	46%
11 minutes or longer	27%

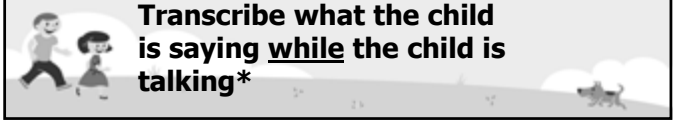
Number of Utterances Collected

Less than 25 utterances	11%
26-50 utterances	42%
51-100 utterances	35%
More than 100 utterances	12%

Recording Sample

Audio	43%
Video	17%
Neither*	52%

Transcribe what the child is saying <u>while</u> the child is talking*



Method of Analysis

Method/Protocol	*Frequency (%)*
Assigning structural stage	3%
Lahey's content/form analysis	10%
Computerized language analysis	0%
Developmental sentence scoring	9%
Index of productive syntax	0%
Local/district language sample protocol	14%
Systematic analysis of language transcripts	24%
State language sample protocol	5%
Self-designed protocol	45%
Other	23%

Barriers to LSA

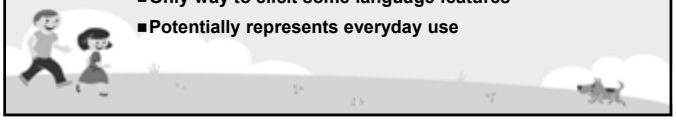
Too Time Consuming	**79%**
Limited Resources	**35%**
Limited Training/Expertise	**20%**
Limited Recognition as a Valid Assessment Measure	**17%**

Pavelko, S.L, Owens, R., Ireland, M., & Hahs-Vaughn, D.L. (2016). Use of language sample analysis by school based SLPs: Results of a nationwide survey. *Journal of Speech, Language, and Hearing Services in Schools, 47,* 246-258. doi:10.1044/2016_LSHSS-15-0044

SAMPLING

An Alternative Method

- Best general indication of language use
- More naturalistic than testing
- Correlates well with results from many test formats
- Only way to elicit some language features
- Potentially represents everyday use



So… how do we make LSA more clinician friendly?

SUGAR!!

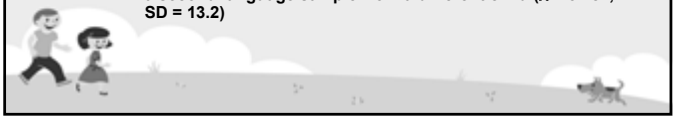
SUGAR changes

- Robust Sample
- Transcription Rules
- Analysis Rules

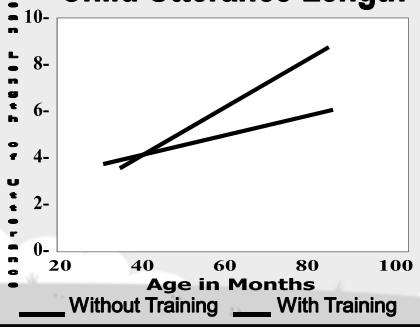
Robust Sampling Study

Can we change the quality of samples?

- **22 students each collected a language sample from a child ($\bar{x}$ = 51.36 months, SD = 12.14)**
- **Small group of student trainers**
  - **Prepared handout on collecting sample emphasizing narrative elicitation**
  - **Trained same 22 students via role-playing in elicitation techniques**
- **Six months after 1st sample, same 22 students each collected a second language sample from a different child ($\bar{x}$ = 57.81, SD = 13.2)**

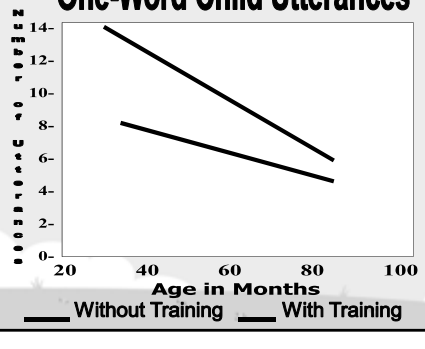


Child Utterance Length



Yes/No Adult Questions

One-Word Child Utterances



Conversational Strategies

- Turnabouts = Comment + Cue for child to talk
- Process Questions
  - *How did…*
  - *What happened…*
  - *Tell me…*
  - *I wonder what you…*
  - *Why did…*
    - More than one-word "why" questions
    - Not appropriate for kids below 4.5 yrs

Conversational Strategies

- **Use narrative elicitations instead of yes/no questions**
  - **Build on what the child says or on what you know**
  - **Begin with…**
    - ***Your mom says you…. That sounds like fun. Tell me what happened.***
    - ***I know that you…. Tell me what happened.***
    - ***Did you ever…. Tell me what you did.***

Example of Robust Sample

- Listen to the following sample (transcript of examiner's utterances will be on the next slide)
- What do you notice about how the adult interacts with the child?
  - How long does she wait?
  - How many comments does she make?
  - How many examiner utterances?

Example of Robust Sample

- Listen to the following sample (transcript of examiner's utterances will be on the next slide)
- What do you notice about how the adult interacts with the child?
  - How long does she wait?
  - How many comments does she make?
  - How many examiner utterances?

What is a more robust sample?

- Engages the child in a conversation that gives the child the opportunity to produce complex language
- Allows the child to control the interaction
  - Children are more communicative and use more complex language

(Lapadat,1983; Norris & Hoffman, 1990)

Conversational Strategies

- **Turnabouts = Comment + Cue for child to talk**
- **Process Questions**
  - ***How did…***
  - ***What happened…***
  - ***Tell me…***
  - ***I wonder what you…***
  - ***Why did…***
    - **More than one-word "why" questions**
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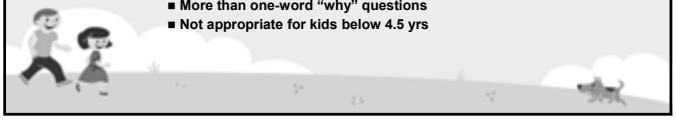

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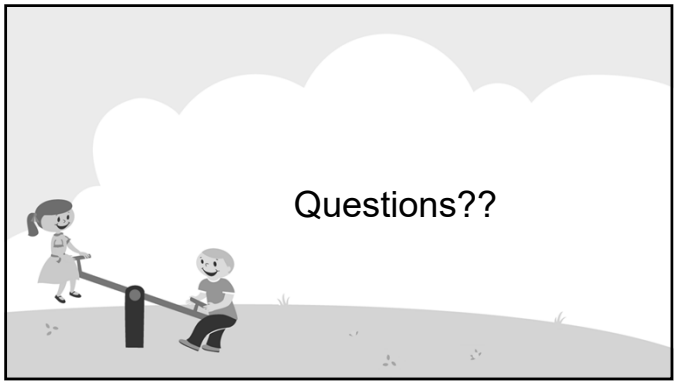
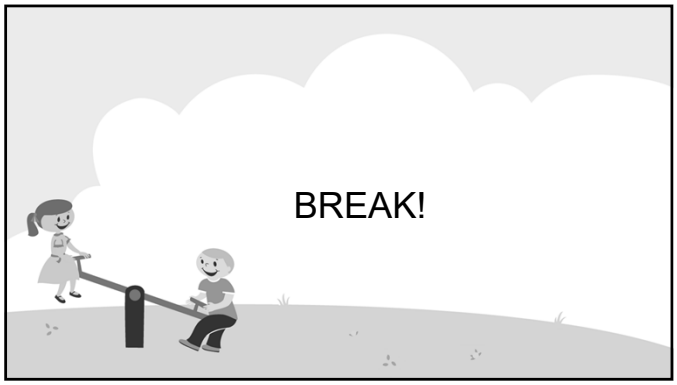
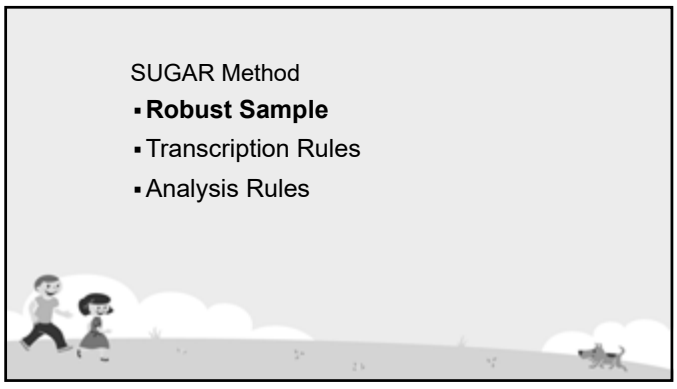
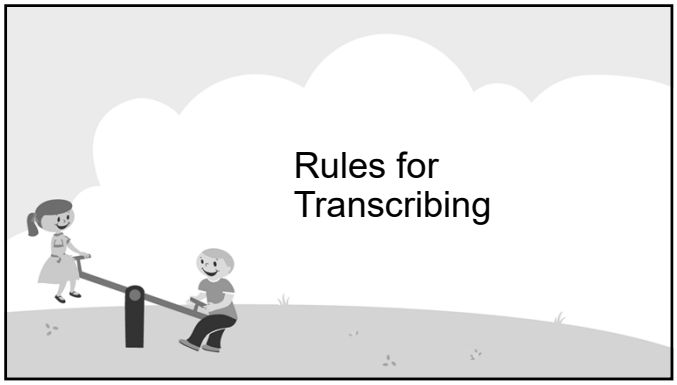




SUGAR Method

- **Robust Sample**
- Transcription Rules
- Analysis Rules



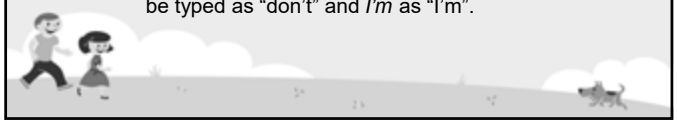


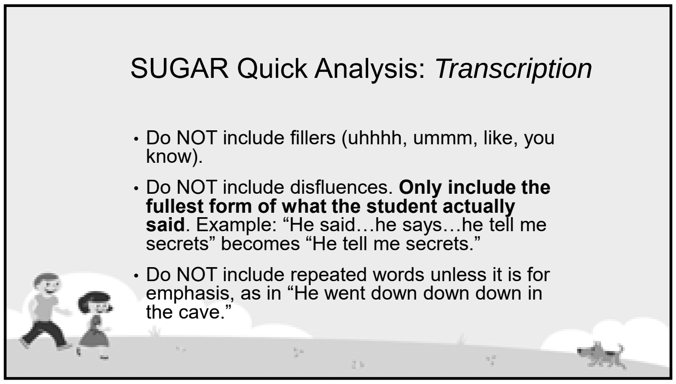
SUGAR Quick Analysis: *Transcription*

- Type in plain English as spoken.
- Omit punctuation to save time.
- Do NOT embellish the student's utterance. In other words, don't add morphemes that are missing.

SUGAR Quick Analysis: *Transcription*

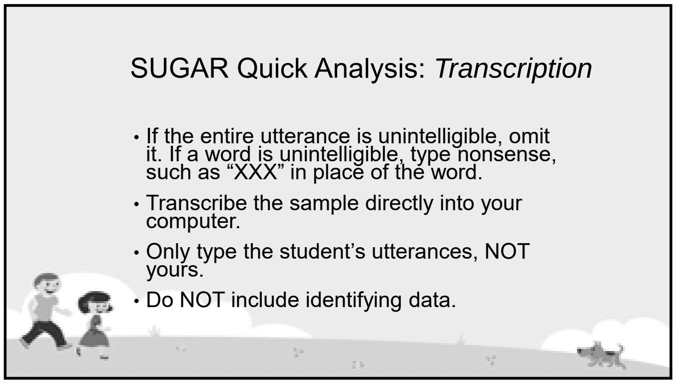
- Type words in full even when pronunciation omits portions as follows:
  - *Talkin'* should be transcribed as "Talking"
  - *Gonna, wanna, gotta, hafta* should be transcribed as "going to, want to, got to, have to".
- Type contractions as is. In other words, *don't* should be typed as "don't" and *I'm* as "I'm".





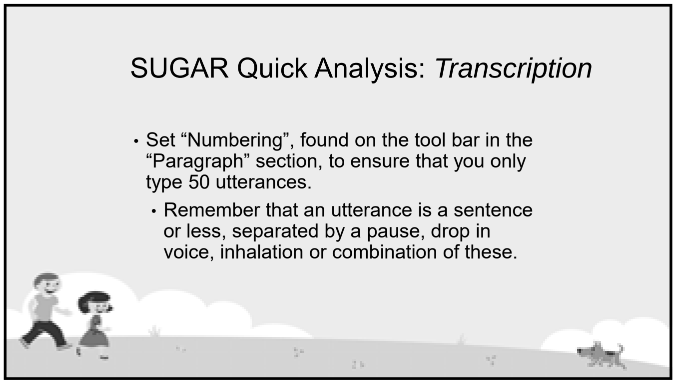
SUGAR Quick Analysis: *Transcription*

- Do NOT include fillers (uhhhh, ummm, like, you know).
- Do NOT include disfluences. **Only include the fullest form of what the student actually said**. Example: “He said…he says…he tell me secrets” becomes “He tell me secrets.”
- Do NOT include repeated words unless it is for emphasis, as in “He went down down down in the cave.”



SUGAR Quick Analysis: *Transcription*

- If the entire utterance is unintelligible, omit it. If a word is unintelligible, type nonsense, such as “XXX” in place of the word.
- Transcribe the sample directly into your computer.
- Only type the student’s utterances, NOT yours.
- Do NOT include identifying data.



SUGAR Quick Analysis: *Transcription*

- Set “Numbering”, found on the tool bar in the “Paragraph” section, to ensure that you only type 50 utterances.
  - Remember that an utterance is a sentence or less, separated by a pause, drop in voice, inhalation or combination of these.

SUGAR Quick Analysis: *Transcription*

- Make three copies
  - One for TNW and MLU
  - a second for words per sentence and clauses per sentence
  - a third for complete analysis

SUGAR Quick Analysis: *Transcription*

- If an utterance contains more than two clauses joined with *and*, consider it a run-on sentence and divide as follows:

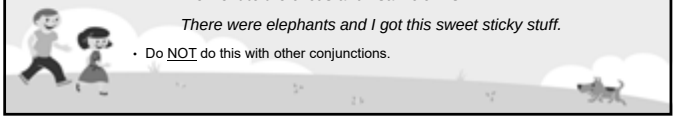
  We went to the circus and I saw clowns and there were elephants and I got this sweet sticky stuff.

  Becomes…

  We went to the circus and I saw clowns.

  There were elephants and I got this sweet sticky stuff.

- Do NOT do this with other conjunctions.



Example

Example

HOW TO ANALYZE

FOUR METRICS

Quick Analysis Metrics

- Quick Analysis Includes
  1. Total Number of Words
  2. Mean Length of Utterance (MLU_S)
  3. Words per Sentence
  4. Clauses per Sentence

Total Number of Words (TNW)

On copy 1

- Before doing any actual analysis, make sure the "Numbering" function is off.
  - Turn "off" the "Numbering function by highlighting the entire document(Control-A or Apple-A), going to the "Paragraph" section of the Toolbar and clicking on "Numbering".

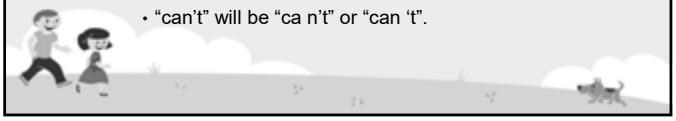
Total Number of Words (TNW)

On copy 1

- Nothing else should be on the page except the child's 50 utterances.
- Word count is on the tool bar at the bottom of your screen.
- Record the number of words before moving on.

SUGAR Quick Analysis: MLU_s

- Words are already separated by a space.
- Now set off bound morphemes in the same way.
  - Examples:
    - "unhappily" would be "un happi ly,"
    - "bunnies" would be "bunnie s,"
    - "can't" will be "ca n't" or "can 't".



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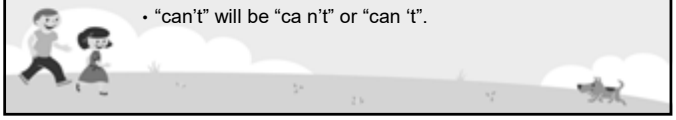
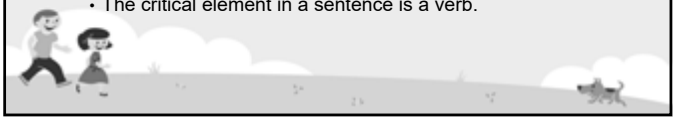


SUGAR Quick Analysis: MLU_s

- Record the number of morphemes, double it and add two decimal places.
- Example: 203 x 2 = 406 = 4.06 MLU
- Close the document
- DO NOT SAVE THE CHANGES!

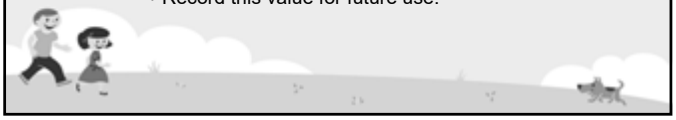
SUGAR Quick Analysis: *Words Per Sentence*

- Make sure the "Numbering" function is off.
- Delete all utterances that are NOT sentences.
- Both a sentence and a clause contain a subject and a verb, as in *Mommy walked*. A sentence can have more than one clause, as in "*Mommy walked* but *I ran"*. (2 clauses, 1 sentence).
- The critical element in a sentence is a verb.



SUGAR Quick Analysis: *Words Per Sentence*

- Once you have only sentences represented, record the total words from the word count section on the toolbar at the bottom of the screen.
- Switch on the "Numbering" function again.
- With this on, you can tell how many sentences you have.
  - Record this value for future use.



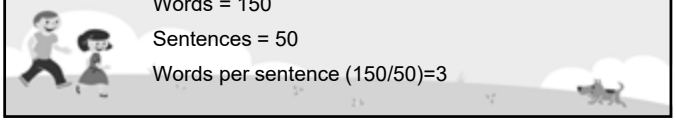
SUGAR Quick Analysis: *Words Per Sentence*

- Divide the number of words by the number of sentences to get the mean words/sentence. Record this value somewhere. This is the number of words per sentence

Words = 150

Sentences = 50

Words per sentence (150/50)=3

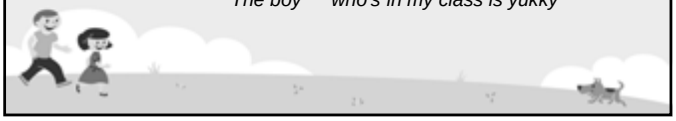


SUGAR Quick Analysis: *Clauses Per Sentence*

Time is of the essence. No one is looking over your shoulder to see if each clause is exactly correct or that the remainder may be a partial clause.

Example: "*The boy who's in my class is yukky*" consists of two clauses, "*The boy is yukky*" and "*Who is in my class*." Separate these as follow:

The boy *who's in my class is yukky*



SUGAR Quick Analysis: *Clauses Per Sentence*

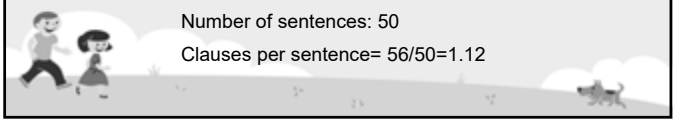
- When you have separated the clauses, note the number and divide it by the number of sentences from the previous step.

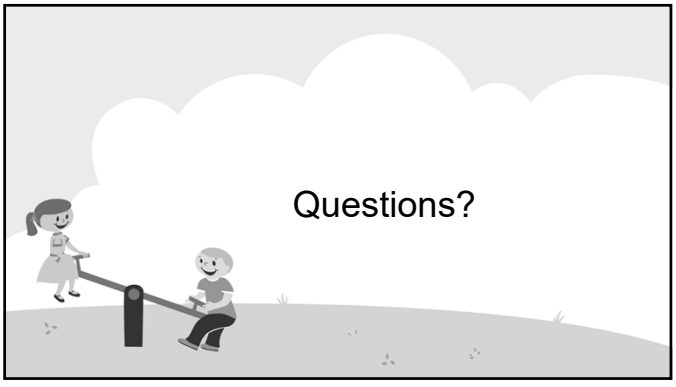
  Example:

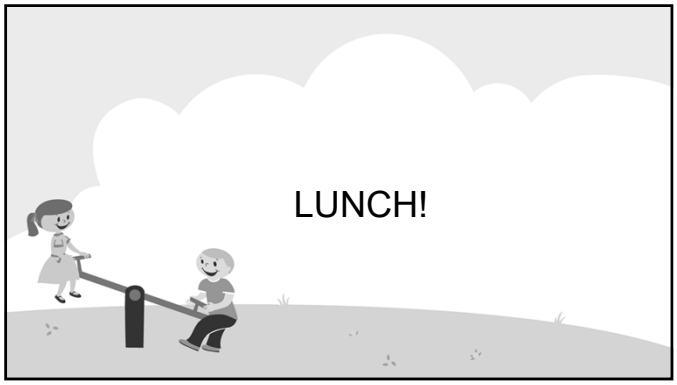
  Number of Clauses: 56

  Number of sentences: 50

  Clauses per sentence= 56/50=1.12






LUNCH!