

# Language Sample Analysis

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How often do you obtain a LSA?

- 25%
- 6/10 students
- "at all initials or re-evaluations..."

Elicitation contexts include...narrative and play based (all respondees), and then conversation, expository, and persuasive

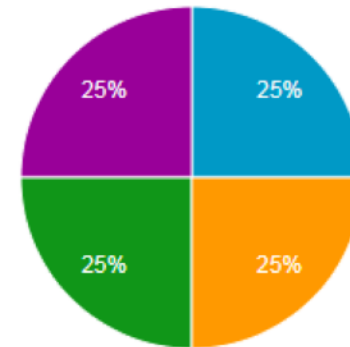
Describe your transcription process...  
- 4 different examples for how each sample is transcribed...

## Let's CHAT about LSA...

Do you use the report templates on the share drive to summarize your analysis findings?

- 100% response rate for "No, I mostly create my own thing..."

I want to learn more about:  
- "strategies to increase efficiency with LSA process..."  
- "programs to use to improve analysis abilities..."



- "How Will I Know" - Whitney Houston
- "Call On Me" - Starley
- "Soulmate" - Lizzo
- ALL OF THEM!
- All Tay Every Day
- Coconut Oil :)

# Agenda and Learning Objectives

What is language sample analysis (LSA)?

Why use LSA?

- Research supporting
- LSA in special populations

Programs: SALT and SUGAR Introductions

The LSA Process

- Elicitation
- Transcription
- Analysis

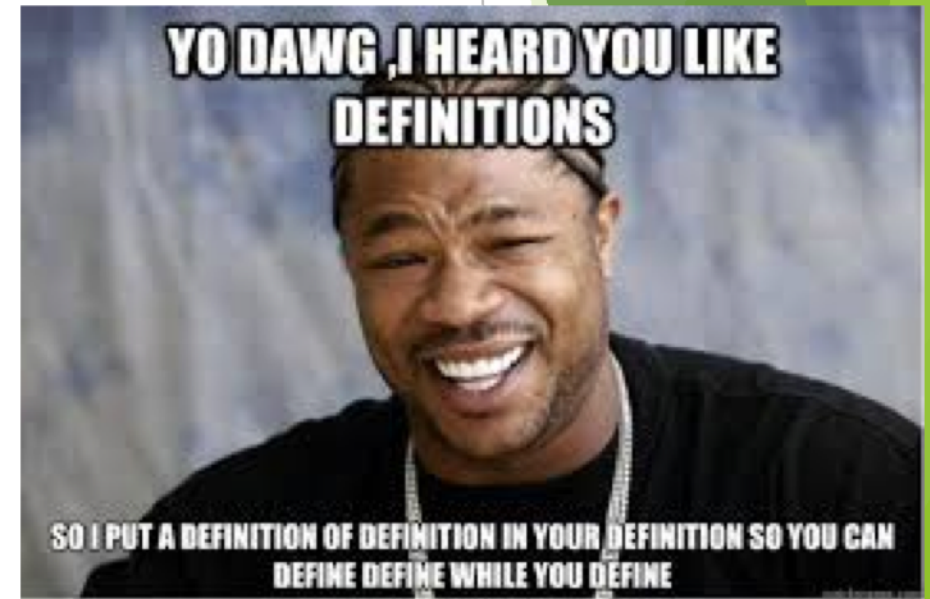
Intervention

Summary and Discussion

# What is Language Sample Analysis?

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- A language sample is a purposeful interaction in a functional, free communication context that allows SLPs to *analyze* a person's language features (phonology, morphology, syntax, semantics, (sometimes even) pragmatics) and ideally, to compare those features to age-matched peers based on research norms to assist with determining if that person has a language disorder. If appropriate, LSA then assists with designing intervention targets and goals.

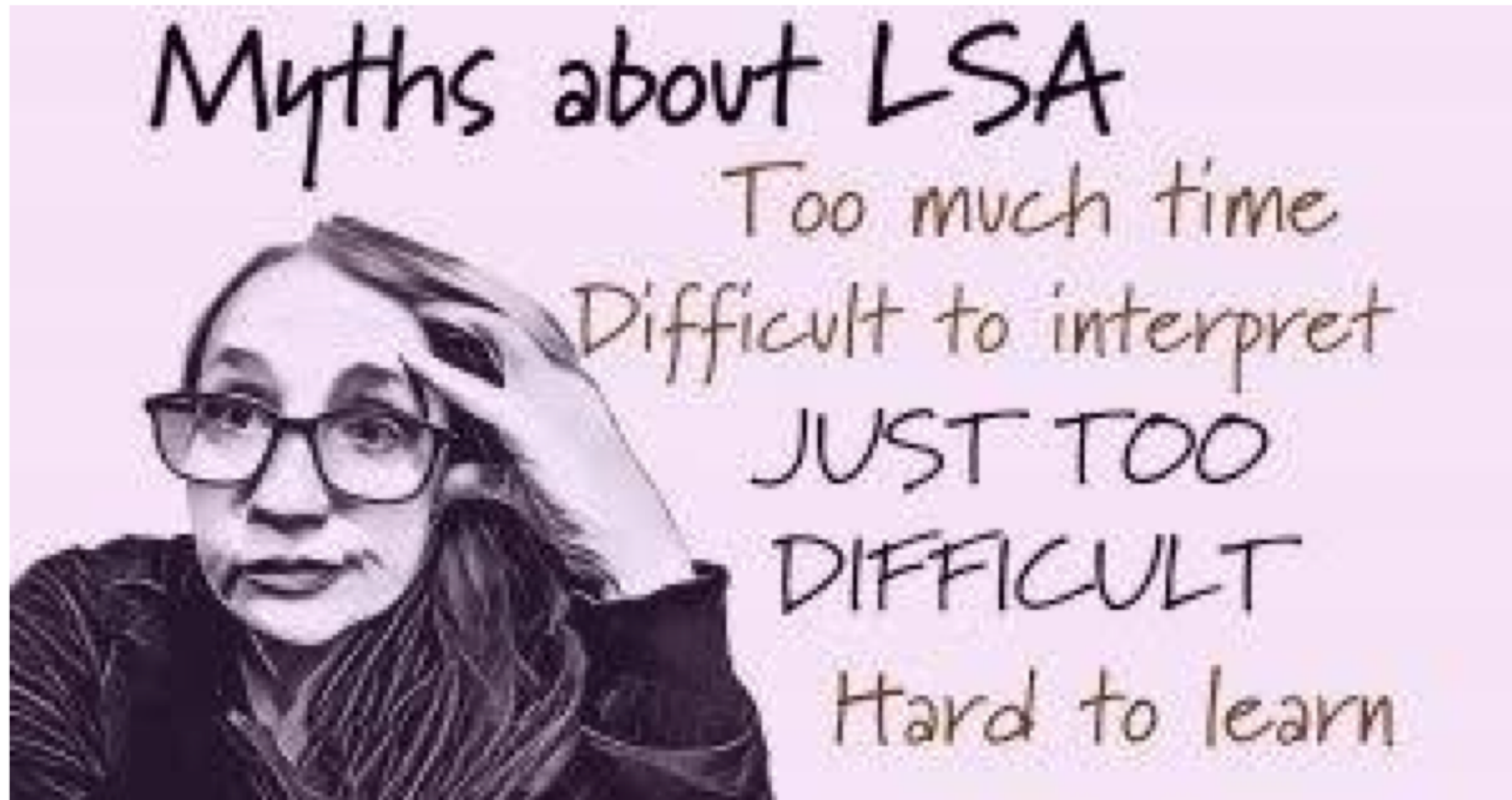


# Why Use Language Sample Analysis?

- Non-biased and culturally responsive
- Valid, reliable, repeatable
- Augments standardized assessments (assists with identifying difference vs disorder)
- Sensitive to change over time
- Aligns with Common Core Standards and RTI
- Appropriate for special populations
  - LSA for AAC users:
  - LSA for severe speech sound disorders
  - LSA for bilingual speakers



...so why isn't language sample analysis an automatic add into an assessment battery?!





# Completing LSA: Where to Begin?

Inconsistent, variable guidelines for conducting LSA, some options more involved than others...not all include age-matched, normalized comparisons

## Heilmann (2010) and LSAT-3

- "7 Myths About Language Sample Analysis"
- Language Sample Analysis Training-Third Edition: ...breaks down NP and VP as well as simple vs complex sentences...no training guide listed

## CLAN (Computerized Language Analysis)/CHILDES (Child Language Data Exchange System)

<https://childes.talkbank.org/>

- software program available for FREE (with training book)...grounded in TalkBank research data base that assesses 6 areas of communication...pro: free and offers data in different languages...con: reportedly challenging (time consuming) to learn

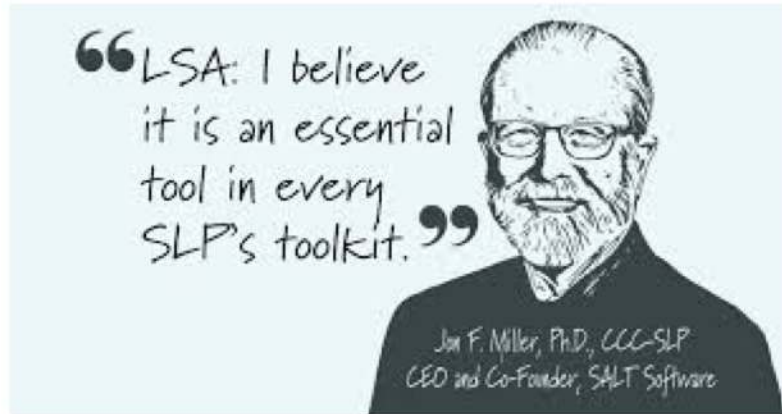
## Clinician Perspective: Scott Prath MA CCC-SLP

- created **Assessment of Fictional Narratives** to analyze language features in narrative samples (both telling and retelling)

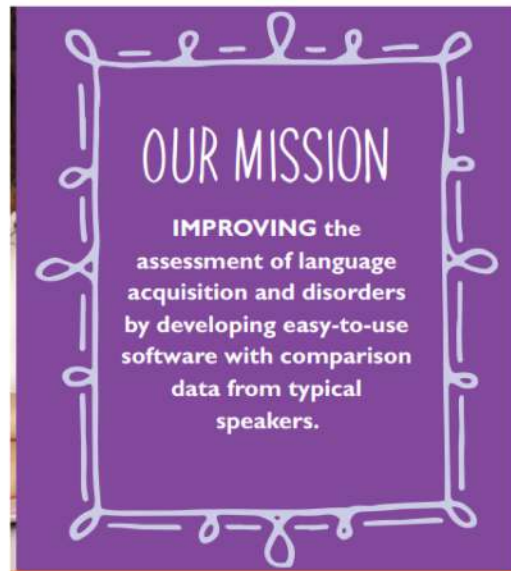


# Systematic Analysis of Language Transcripts (SALT)

<https://www.saltsoftware.com/>



- Dr. Jon Miller contributed to "Assessing Language Production in Children" (1980) which compared language performance of children with language disorders to norms of same aged peers
- Sought a more efficient way to analyze language samples—collaborated with WI computer science major to establish the first SALT prototype in his lab at the Waisman Center



## Why SALT?

- SALT standardizes the LSA process
- SALT compares results to typical peers
- SALT provides performance levels across syntax, morphology, semantics, discourse, and verbal facility
- SALT provides data for goals and progress
- SALT generates user-friendly assessment results
- SALT supports bilingual assessment
- SALT supports quick sample collection with minimal training
- SALT yields comprehensive results with short samples
- SALT is criterion referenced

**\*\*Includes Bilingual Spanish/English and Monolingual Spanish databases for entire LSA process**





# SALT: How It Works

- 1) Obtain sample following elicitation protocol
- 2) Transcribe sample within transcription editor according to transcription training
- 3) Analyze sample via "summary report" (Syntax, Semantics, Verbal Facility, and Errors) which compares to aged or grade-matched peers from normative database.
- 4) Generate a "performance report" (NEW to SALT 18) that interprets results

## *An important note...*

SALT provides **FREE** resources via their website (e.g. elicitation protocols and transcription guides); however, the fully calculated analysis in the sample report and the performance report are only available after purchase of the software.

## CASE STUDIES

<https://www.saltsoftware.com/case-studies/>

- 2 narrative retell samples, 1 expository sample, 1 bilingual

# Sampling Utterances and Grammatical Analysis Revised (SUGAR)

*"A spoonful of SUGAR helps the sampling go 'round'"*

<https://www.sugarlanguage.org/>



- Owens and Pavelko (2016) found that surveyed SLPs collected few LSA and expressed concerns that LSA was too time consuming, seemed to lack validity, and required special expertise
- GOAL: create LSA analysis system that was "quick, based on valid research, and was easy to understand and use"

## ***An important note...***

SUGAR is designed to be completely **FREE**, including its analysis and sub-analysis portions. Additional **FREE** handouts re: the LSA process, training videos, and intervention resources are available through SUGAR website.

# SUGAR: How It Works



- 1) Obtain a 50-utterance language sample in either a narrative retell or conversation context
- 2) Transcribe sample in Microsoft Word according to transcription training
- 3) Analyze sample for valid language measures (MLU, TNW, WPS (words per sentence), and CPS (clauses per second)
  - Database normed ages 3;0-7;11 (working on 8;0-10;11)
- 4) Interpret results to formulate goals and intervention targets

**FREE resources: Training Videos, Handouts, Sub Analysis Forms, Intervention Resources, Practice Samples**

# The LSA Process: Elicit It!

- Short conversational samples and structured narratives take less time to elicit and transcribe, and they produce consistent linguistic outcomesm contrary to older research that supported 100 utt or 15 min (Miller, Andriacchi, Nockerts (2016))
- **Context:** consider transcription program, child's skill level, etc.
- **Robust** sampling: make the most out of every utterance!
- **Audio:** best practice is for "quality" recording system
  - Digital recording and digital playback system
  - Some suggested programs: Audacity; Quick-time pro;

< = >

LESS IS MORE.



<https://www.saltsoftware.com/resources/linkstoequipment>





# SALT: Elicit It!

- ▶ **Reference databases** outlining participant makeup, examiner's role, and coding measures like the Subordination Index and the Narrative Scoring Scheme
- ▶ **Protocols** for the following Elicitation Contexts
  - ▶ Play-based
  - ▶ Narrative Retell: \*available **Comprehension Questions**\* to assess listening comprehension
  - ▶ Conversation
  - ▶ Expository
  - ▶ Persuasive
- ▶ **Trainings** focused on Elicitation- earn ASHA CEUS

## Story Retell Elicitation Kit (\$101)

The Narrative Story Retell database procedures require seven books to elicit samples; one wordless picture book, three book with text, and three books with text covered. This kit includes:

- Laminated elicitation protocols
- *Frog, Where Are You?* (M. Mayer, 1969)
- *Pookins Gets Her Way* (H. Lester, 1987)
- *A Porcupine Named Fluffy* (H. Lester, 1987)
- *Doctor De Soto* (W. Steig, 1982)
- Laminated comprehension question protocol
- Scoring pads for the comprehension questions

## Expository & Persuasion Elicitation Kit (\$16)

The Expository and Persuasion database procedures use specific protocols to elicit samples. This kit includes:

- Laminated database descriptions and elicitation protocols
- Pads of expository and persuasion planning sheets

Database	Context (Subgroup)	Age Range	Grade in School	# Samples	Location	Special Coding
Narrative Story Retell	Nar (FWAY)	4;4 – 7;5	P, K, 1	145	WI & CA	SI, NSS
	Nar (PGHW)	7;0 – 8;11	2	101		
	Nar (APNF)	7;11 – 9;11	3	53		
	Nar (DDS)	9;3 – 12;8	4, 5, 6	201		

# SUGAR: Elicit It!

## CONVERSATION SAMPLE

- Aim for 10 minutes of conversation (need 50 utterances)
  - Clinician's role= active participant
- **Avoid Y/N or product (wh-) questions**; instead, **ask process questions or use narrative context expansions**

Process Questions	Narrative Context Expansions
<ul style="list-style-type: none"><li>• <i>How did...</i></li><li>• <i>What happened...</i></li><li>• <i>Tell me...</i></li><li>• <i>I wonder what you...</i></li><li>• <i>Why did...</i></li></ul>	<ul style="list-style-type: none"><li>• <i>Your mom says you.... That sounds like fun. Tell me what happened.</i></li><li>• <i>I know that you.... Tell me what happened.</i></li><li>• <i>Did you ever.... Tell me what you did.</i></li></ul>

# The LSA Process: Transcribe It!

- Orthographic transcription, like phonetic transcription, takes training, practice, and reliability review (feedback)!

*If transcribing by hand without use of program conventions...*

**Use the "big 4" measures**

**MLU** (mean length of utterance) = total number of morphemes divided by total number of utterances

- Make sure transcription matches norms!

- Brown's Stages
- Miller and Chapman (1981) and Mabel (2010) outline how MLU was calculated in methods

**NDW** (number of different words)

**TNW** (total number of words)

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**TTR** (type token ratio) = NDW (types) divided by TNW (tokens)

- Templin (1957) is most frequently cited for calculation guidelines



# SALT: Transcribe It!

## Summary of Transcription Conventions

- Bound Morphemes
- Codes
- Omission: I (w\* w\*) want it. / Give it \*to me. / The car go/\*3s fast.
- Linked Words: Mr\_Jones
- Sound Effects + Idiosyncratic Forms: %woof / it/'s a %vroom {car}.
- Spelling Conventions: UHHUH, etc.

## Summary of C-Unit Segmentation Rules

C-unit= an independent clause with its modifiers”

Clause= subject (noun phrase) + predicate (verb phrase)

## Transcription Conventions for WRITTEN Language

Free Trainings- Earn ASHA CEUs!

\*\*Conventions based on programming required for analysis in software—word process in “transcription editor”

### English only

/Z Possessive inflection. Examples: dad/z, Mary/z

Do not mark any possessive pronouns (e.g., mine, his, hers, ours, yours, its, theirs).

/S/Z Plural and Possessive. Example: baby/s/z

/3S 3<sup>rd</sup> Person Singular verb form. Examples: go/3s, tell/3s, try/3s

Do not mark irregular forms (e.g., has, was) or when the sound of the root changes (e.g., do→does, say→says).

/ED Past tense. Examples: love/ed, die/ed

Do not mark irregular forms (e.g., did, grew, had, sank) or predicate adjectives (e.g., was tired, are bored, got fixed).

*Transcription hint:* regular past tense /ED verbs never follow a BE or GET verb.

/EN Past participle. Examples: take/en, eat/en, prove/en

Do not mark irregular forms (e.g., gotten, spoken, seen, been) or when the sound of the root changes (e.g., write→written).

*Transcription hint:* Regular form: present tense + EN as separate syllable. /EN verbs always follow HAVE, HAS, or HAD.

/ING Progressive verb form. Examples: go/ing, run/ing, bike/ing

Do not mark the gerund use of the verb form (e.g., went swimming, reading is fun).

/N'T, /'T Negative contractions. Examples: can/'t, does/n't

Do not mark irregular forms (e.g., won't) or when the sound of the root changes (e.g., do→don't).

/'LL, /'M, /'D, /'RE, /'S, /'VE Contracted → WILL, AM, WOULD, ARE, IS, HAVE

Examples: I/'ll, I/'m, I/'d, we/'re, he/'s, we/'ve

/H'S, /H'D, /D'S, /D'D, /'US Contracted → HAS, HAD, DOES, DID, US

Examples: He/h's been sick. We/h'd better go. What/d's he do for a living? Why/d'd the boy look there? Let/'us go.

### a) Codes used to mark errors in the reference database samples:

[EO: __] used to mark overgeneralization errors.	C He falled  fall[EO:fell].
[EP: __] used to mark pronoun errors.	C And them[EP:they] found the frog.
[EW: __] used to mark other word-level errors.	C He were[EW:was] look/ing.
[EW] used to mark extraneous words.	C And then the boy is a[EW] sleep/ing.
[EU] used to mark utterance-level errors.	C And they came to stop/ed [EU].
[FP] used to mark non-standard filled pause words.	C The dog (um like[FP]) fell down.



# SUGAR: Transcribe It!

- Transcribe in Microsoft Word and only transcribe the child's utterances...can limit the number of utterances in Word by turning on the "numbering" function in "paragraph"

SUGAR focuses on **RAPID TRANSCRIPTION**

- "gonna" is "go ing to" (3 morphemes)
- no filled pauses
- typed out contractions
- no repeated words, unless for emphasis
- no disfluencies
- omit utterance only if 3 or more XX
- If an utterance contains more than two clauses joined with *and*, consider it a run-on sentence



- SUGAR utterance def: a sentence (or less) separated by a pause (2 sec or more), an inhalation, or a drop in voice or a combination

# A Live Look...

SALT

I HAD SO MUCH FUN AT C\_H\_A\_T FUNDRAISER.

BUT I WAS TIRED ON THURSDAY.

(UM) I HAPPILY TALK/ED TO DONOR/S (AND) AND CLINICIAN/S.

I LIKE/ED MINGLING WITH PEOPLE.

(W\*) WE ARE SO LUCKY TO LEARNED[EO: LEARN] FROM  
PHYLLIS\_KUPPERMAN/Z LEGACY BECAUSE SHE CAN'T BE BEAT

AND YOU BETCHA C\_H\_A\_T WILL KEEP BEING THE BESTEST[EO:  
BEST].

SUGAR

I HAD SO MUCH FUN AT CHAT FUNDRAISER

BUT I WAS TIRED ON THURSDAY

I HAPPILY TALKED TO DONORS AND  
CLINICIANS

I LIKED MINGLING WITH PEOPLE

WE ARE TOO LUCKY TO LEARNED FROM  
PHYLLIS KUPPERMAN'S LEGACY BECAUSE  
SHE CAN'T BE BEAT

AND YOU BET YOU CHAT WILL KEEP  
BEING THE BESTEST

# The LSA Process: Analyze It!

If transcribing by hand  
without use of program  
conventions...

Use the "big 4" measures

**MLU** (mean length of utterance) = total  
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outline how MLU was calculated in methods

**NDW** (number of different words)

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---

**TTR** (type token ratio) = NDW (types) divided by TNW (tokens)

- Templin (1957) is most frequently cited for calculation guidelines

- <https://www.usingenglish.com/resources/text-statistics.php> calculates this equation  
(exclude other speakers and numerical values)
- Typically functioning 3-8 year old children should have a TTR of .45-.55. Scores below .45 indicate that the child is using the same words over and over. Be cautious because TTR is situationally variable. If you are playing a game, the word "Turn" may occur many times.

# SALT: Analyze It!

Coding Aids

Subordination Index (SI) Guide

Narrative Scoring Scheme (NSS) Guide

Expository Scoring Scheme (ESS) Guide

Persuasion Scoring Scheme (PSS) Guide

Coding Disfluencies

Free Training

Analysis Aids

Guide to Standards Report

SALT and Common Core

Free Training

State Standard – 2 <sup>nd</sup> Grade		Elicitation Protocol	SALT Measures/Reports to Document Standard
CCSS.ELA-Literacy.SL.2 Presentation of Knowledge and Ideas	SL.2.4 Tell a story or recount an experience with appropriate facts, relevant descriptive details, using coherent sentences.	<ul style="list-style-type: none"><li>• Narrative SSS</li><li>• Narrative Story Retell</li></ul>	<ul style="list-style-type: none"><li>• NSS</li><li>• Grammatical Categories Lists: adjectives, adverbs, prepositions...</li><li>• SI</li><li>• SMR: MLU, NDW, abandoned utterances</li><li>• Maze Summary</li></ul>

## Recommended codes to mark disfluent speech production

SALT contains a default list of fluency codes which may be edited to suit your purposes. They include:

- [FL] used to mark any unspecified type of disfluency
- [FLR] used to mark repetitions
- [FLP] used to mark prolongations
- [FLB] used to mark silent blocks



# SUGAR: Analyze It!

**Quick Analysis-** *outlines specific steps within Microsoft Word, do these in order*

- Word Count (TNW)

- MLUsugar: indicate bound morphemes by a space...counts derivational morphemes-- **they happi ly observ ed the gala (7)**

- Words Per Sentence (WPS): per SUGAR, a sentence needs a subject and a verb...single word responses ("me," "what,") are NOT counted as sentences

- Clauses Per Sentence (CPS): same def as sentences, clauses marked off by "enter" in the transcript...may be conjoined or embedded

**Latest Sugar Procedures-** provides specific examples  
**Videos** (rec to watch repeatedly)

**Sub-Analysis** (outlined in **NPs and VPs** and **Sub Analysis Video**)

- Noun phrase elements
- Verb phrase elements
- Infinitive and prepositional phrases
- Brown's 5 bound inflectional morphemes (ing, possessive s, plurals, 3s, past-ed)

**Sub Analysis (excel) Forms**

Use Pavelko, Owens (2017) norms (**New Norms**) to interpret the metrics based on evidence (\*only ages 3;6 to 7;11\*)  
Also, **LSA FAQs**

# A Live Look...

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BUT I WAS TIRED ON THURSDAY.

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AND YOU BETCHA C\_H\_A\_T WILL KEEP BEING THE BESTEST[EO:  
BEST].

SUGAR

I HAD SO MUCH FUN AT CHAT FUNDRAIS  
ER

BUT I WAS TIR ED ON THURSDAY

I HAPPI LY TALK ED TO DONOR S AND  
CLINICIAN S

I LIKE ED MINGL ING WITH PEOPLE

WE ARE TO LUCKY TO LEARN ED FROM  
PHYLLIS KUPPERMAN S LEGACY BECAUSE  
SHE CAN'T BE BEAT

AND YOU BET YOU CHAT WILL KEEP  
BEING THE BEST EST

# LSA: Intervention Targets



**\*\*Use results to create intervention targets/goals!!\*\***

- ▶ SUGAR's intervention handouts
- ▶ SALT 18 \*New\* feature: **Performance Report**
  - ▶ Complete report write-up that summarizes Standard Report
  - ▶ Connect to Common Core Standards
- ▶ LSA in treatment without *transcription analysis*—ecologically valid activities
  - ▶ Narrative about past weekend/events (targeting regular past tense)
  - ▶ "Sports announcer" activity targeting third person singular verbs
  - ▶ Other examples?

# In Summary...

- ▶ Many benefits to incorporating LSA into assessment battery, but the process and application of LSA can be daunting.
- ▶ Important to align measures in the LSA process with clinical questions (know your tx outcomes) and with a research-backed norms presented in the literature.
- ▶ Cannot become "efficient" at transcription and analysis without training and continued practice.
- ▶ Using SALT and/or SUGAR is an evidence-based method to collect, transcribe, analyze, and interpret a language sample.
- ▶ SALT vs SUGAR? Factors to consider...
  - Counter-evidence
  - Level of details
  - ▶ Cost benefit analysis
  - ▶ Time for training
  - ▶ Other?

you do not just wake up and become the butterfly

*growth is a process - rupi kaur*





## References

- ▶ Pavelko, S.L, Owens, R.E., Ireland, M., & Hahs-Vaughn, D.L. (2016). Use of language sample analysis by school based SLPs: Results of a nationwide survey. *Language, Speech, and Hearing Services in Schools*, 47(3), 246-258. doi:10.1044/2016\_LSHSS-15-0044.
- ▶ Owens, R. E., Pavelko, S. L., & Babinelli, D. (2018). Moving beyond mean length of utterance: Analyzing language samples to identify intervention targets. *Perspectives ASHA SIGs*, 3(SIG 1), 5-22. doi:10.1044/persp3.SIG1.5
- ▶ Miller, J. F., Andriacchi, K., & Nockerts, A. (2016). Using Language Sample Analysis to Assess Spoken Language Production in Adolescents. *Language, Speech, and Hearing Services in Schools*, 47(2), 99-112. doi: 10.1044/2015\_Lshss-15-0051
- ▶ Heilmann, J., Nockerts, A., & Miller, J. F. (2010). Language Sampling: Does the Length of the Transcript Matter? *Language, Speech, and Hearing Services in Schools*, 41(4), 393-404. doi: 10.1044/0161-1461(2009/09-0023)
- ▶ Schuele, C. M. (2010). The Many Things Language Sample Analysis Has Taught Me. *Perspectives on Language Learning and Education*, 17(1), 32. doi: 10.1044/lle17.1.32
- ▶ Ahmad, H. B., & Weldon, F. (2018, July 10). The How and Why on Collecting a Language Sample. Retrieved from <https://blog.asha.org/2018/06/20/the-how-and-why-of-collecting-a-language-sample/>
- ▶ SALT Software LLC (2019). *SALT Software Computerized Language Sample Analysis*. Retrieved from <https://www.saltsoftware.com/>
- ▶ Owens, R., Pavelko, S.L (2019, August 28). *SUGAR: Sampling Utterances and Grammatical Analysis Revised*. Retrieved from <https://www.sugarlanguage.org/home>
- ▶ Kovacs, T., & Hill, K. (2017). Language samples from children who use speech-generating devices: Making sense of small samples and utterance length. *American Journal of Speech-Language Pathology*, 26, 939-950.
- ▶ Binger, C., Ragsdale, J., & Bustos, A. (2016). Language Sampling for Preschoolers with Severe Speech Impairment. *American Journal of Speech-Language Pathology*. Advance online publication. doi: 10.1044/2016\_AJSLP-15-0100.
- ▶ Brydon, M. (2018, September). "Why Standardized Tests May Not Be Enough." *The Informed SLP*. Retrieved from <https://www.theinformedslp.com/qa-15-09-18/>
- ▶ Bowen, C. (1998). Brown's Stages of Syntactic and Morphological Development. Retrieved from [www.speech-language-therapy.com/index.php?option=com\\_content&view=article&id=33](http://www.speech-language-therapy.com/index.php?option=com_content&view=article&id=33) on [insert the date that you accessed the file here].
- ▶ Kapantzoglou, M., Fergadiotis, G., & Restrepo, M. A. (2017). Language sample analysis and elicitation technique effects in bilingual children with and without language impairment. *Journal of Speech, Language, and Hearing Research*. Advance online publication. doi: 10.1044/2017\_JSLHR-L-16-0335.