Evidence-Based Assessment and Intervention Approaches for Treating the Grammatical Weaknesses of Children

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  – NIH NIDCD, R03 (1R03DC011365-01)
  – NIH NIDCD, R01 (R01 HD 074346)
  – Internal Funding from The University of Minnesota

• All of the families and children who have participated in our studies and others!

Acknowledgements
• Child Language Intervention Lab:
  – Katherine Bangert
  – Timothy Huang

Conflict of Interest
• Received an honorarium and money for travel expenses.

Today’s Agenda
Introductions (10 min)
  Why Grammar? (30 min)
  Assessing Grammar (50 min)
    Goal Writing (30 min)
    Intervention (50 min)

Me...
Education    Research    Teaching
Pollev.com

- Text lfinestack316 to 37607
- Pollev.com/lfinestack316

More about today...

- Break as needed; 10 min stretch
- Ask questions!
- Use social media: Twitter: @lfinestack; Instagram: lfinestack
- Website: http://www.finestackclil.com/

Learner Outcomes

1. Learners will be able to identify five grammatical forms that children with language impairment commonly demonstrate weaknesses in mastering.
2. Learners will be able to describe three assessments that they can use to assess the grammatical skills of children with language impairment.
3. Learners will be able to identify three evidence-based techniques to treat grammatical weaknesses of children with language impairment.
4. And much, much more!

Today’s Agenda

Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (50 min)
- Goal Writing (30 min)
- Intervention (50 min)

Typical Language Development

- Produce First Words
- Begin Producing Morphemes

- 12 mo
- 24 mo
- 27-30 mo

Combining Words
Brown’s 14 Grammatical Morphemes
(Brown, 1973)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Morpheme</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Present progressive -ing</td>
<td>I’m playing.</td>
</tr>
<tr>
<td></td>
<td>Plural -s</td>
<td>They books.</td>
</tr>
<tr>
<td>III</td>
<td>On</td>
<td>Cookie Monster is in there.</td>
</tr>
<tr>
<td>V</td>
<td>Possessive -’s</td>
<td>Mommy’s shoes.</td>
</tr>
<tr>
<td></td>
<td>Regular past</td>
<td>He walked.</td>
</tr>
<tr>
<td></td>
<td>Irregular past</td>
<td>She came.</td>
</tr>
<tr>
<td></td>
<td>3rd person singular</td>
<td>She plays.</td>
</tr>
<tr>
<td></td>
<td>Articles a, the</td>
<td>The cat.</td>
</tr>
<tr>
<td>V+</td>
<td>Contractible copula be</td>
<td>That’s a puppy.</td>
</tr>
<tr>
<td></td>
<td>Uncontractible auxiliary be</td>
<td>They’re playing. I am coming.</td>
</tr>
<tr>
<td></td>
<td>Uncontractible auxiliary be</td>
<td>Who’s here? I am. Who’s playing. I am.</td>
</tr>
<tr>
<td></td>
<td>Irregular 3rd person singular</td>
<td>She has. He does.</td>
</tr>
</tbody>
</table>

Link Between Grammar and Reading

Link Between Grammar and Reading

English Language Arts Grade Pre K–5
http://dev-static.pdesas.org/content/documents/PA%20Core%20Standards%20ELA%20PreK-%205%20March%202014.pdf

Speech and Language Impairment - PA

A speech or language impairment is a communication disorder, such as stuttering, impaired articulation, language impairment or a voice impairment that adversely affects a student’s educational performance.
Examples of educational impact related to speech or language difficulties:

- **Grammatical errors** may create problems with a student’s orientation in time or impact written language products
- **Syntactic errors** may have an impact on a student’s oral or written expression
- **Morphological errors** may inhibit the student from using complete sentences or may interfere with the student’s ability to learn generative word parts, such as prefixes and suffixes

Other Disability Categories Commonly Associated with Language Impairment:

- ASD
- Developmental Delay
- Hearing Impairment
- Intellectual Disability
- Specific Learning Disability
- TBI

Why Grammar?

- One area of language that is particularly difficult for many children to master is grammatical language.
  - Specific Language Impairment/Developmental Language Disorder
  - Down Syndrome; Fragile X syndrome
  - Autism Spectrum Disorder

Developmental Language Disorder

SLI, PLI, LLD, or DLD?
A debate on terminology in child language research programs.

Amanda Owen Van Horne, Susan Ebbels, Sean Redmond, & Liza Finestack

ASHA 2018

https://sites.udel.edu/chs-tellfor-clinicians/info-slides-links/
3 terms over which the consensus panel was split:

Specific Language Impairment

Primary Language Impairment

Developmental Language Disorder

Specific Language Impairment (SLI)

**Advantages**
- Most common term in academic settings, though less widely used in clinical and educational practice in UK.

**Disadvantages**
- Too exclusive: ‘Specific’ often taken to mean that child:
  1. has a substantial discrepancy between language and nonverbal ability and
  2. has no other difficulties
- This excludes many children from services
- Research on genetics and intervention does NOT support distinguishing children with and without verbal-nonverbal discrepancy

Primary Language Impairment

**•** Used by Boyle et al (2007) to refer to language difficulties that are not secondary to another condition, without requiring a discrepancy with nonverbal ability; otherwise, not commonly used (362 Google Scholar hits)

**Problems**
- People may think ‘primary’ refers to primary school-aged
- Not always easy to judge if a language problem is secondary to another problem
- Potential for confusion with ‘pragmatic language impairment’

Developmental Language Disorder

**Advantages**
- Descriptive, without implying anything about causes
- This term will be used in ICD-11 (and also more compatible with DSM-5 ‘language disorder’)

**Disadvantages**
- Objections to ‘disorder’: too medical, disease focused; implies qualitative rather than quantitative differences between children
- May encourage old idea of ‘delay’ vs. ‘disorder’
- Affected children grow up: ‘developmental’ may be seen as inappropriate for teenagers/adults

3 terms over which the consensus panel was split:

Specific Language Impairment

Primary Language Impairment

Developmental Language Disorder

Developmental Language Disorder

**•** Consensus Term

- DLD includes Specific Language Impairment

- SLI not equal to DLD: DLD includes those with IQ<85 and with other conditions (e.g., ADHD, dyslexia)
Developmental Language Disorder

Current Practice 2018

Current Practice

- 23 Question online survey
- Completed by 338 SLPs
  - 114: Early Education
  - 224: Elementary

Table 1: Demographic Information

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 0-3</td>
<td>40</td>
</tr>
<tr>
<td>Ages 3-5</td>
<td>60</td>
</tr>
<tr>
<td>Elementary</td>
<td>100</td>
</tr>
<tr>
<td>Preschool</td>
<td>26</td>
</tr>
<tr>
<td>Grade School</td>
<td>26</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>26</td>
</tr>
<tr>
<td>Middle School</td>
<td>26</td>
</tr>
<tr>
<td>High School</td>
<td>26</td>
</tr>
</tbody>
</table>

Percent of Caseload with Expressive Grammatical Language Goals

Treatment Time Spent Targeting Grammatical Forms

Clinicians must identify, develop, and monitor progress of grammatical goals.
Today's Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (50 min) – 12:55
- Goal Writing (30 min)
- Intervention (50 min)

Assessing Use of Grammatical Forms

Purposes of Assessment

- Screening
- Diagnose
- Treatment Planning
- Monitoring Progress
- Functional Outcomes

Diagnosis

- Standardized, norm-referenced, assessments

Structured Photographic Expressive Language Test – 3 (Dawson, Stout, & Eyer, 2003)

- Ages 4 through 9-11
- Requires ~20 min to complete
- Includes 54 full color photographs of everyday situations and objects paired with simple verbal questions and statements
- Elicits specific morphological and syntactic structures
Sensitivity & Specificity

- Sensitivity = \( \frac{a}{a+c} \): reflects the ability of the measure to give a positive result when the child truly does have the disorder (+ on both measures)

- Specificity = \( \frac{d}{b+d} \): reflects the ability of the measure to give a negative result when the child truly does not have the disorder (- on both measures)

Want both scores to be as high as possible. .90 is considered good .80 is considered fair

Previous Dx

<table>
<thead>
<tr>
<th>New Dx</th>
<th>+</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>d</td>
<td></td>
</tr>
</tbody>
</table>

SPELT-3 has .90 sensitivity and 1.0 specificity with a 95 cutoff for 4-5 year old children with language impairment (Perona, Plante, & Vance, 2005).

SPELT-P-2 has .91 sensitivity and 1.0 specificity with a 87 cutoff for 4-5 year old children with language impairment (Greenslade, Plante, and Vance, 2009).

Rice Wexler Test of Early Grammatical Impairment

(Rice & Wexler, 2001)

https://cldp.ku.edu/rice-wexler-tegi

TEGI

- Ages 3 through 9-11
- Requires ~20 min to complete
- Three core probes:
  - Third Person Singular Probe
  - Past Tense Probe
  - Be/Do Probe
Sensitivity & Specificity

- Average .91 sensitivity (range = .86-.94) and .82 specificity (range = .80-.84) for 4 through 8 year olds
Diagnosis

- Many other comprehensive language assessments include grammar-focused receptive and expressive subtests
  - Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  - Comprehensive Evaluation of Language Fundamentals (CELF; Semel, Wiig, & Secord, 2003)
  - Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999)
Assessing Use of Grammatical Forms

Purposes of Assessment

- Screening
- Diagnose
- Treatment Planning
- Monitoring Progress
- Functional Outcomes

Monitoring Progress

Current Practice

- More than 80% of clinicians use standardized tests at least some of the time to monitor treatment progress.
  - Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  - Comprehensive Evaluation of Language Fundamentals (CELF; Semel, Wiig, & Secord, 2003)
  - Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999)

- Clinicians indicated that they use language sampling to monitor progress approximately 75% of the time.
  - MLU
  - TTR

- Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2012)
  - Bound Morpheme Table
  - Developmental Sentence Scoring (DSS; Lee, 1971)

Table 4. Use of standardized assessments by participants.

<table>
<thead>
<tr>
<th>Standardized assessment</th>
<th>Early education</th>
<th>Elementary</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLU</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>PLS</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>CELF</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>CASL</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>MLU</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>PLS</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>CELF</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>CASL</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>MLU</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>PLS</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>CELF</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>CASL</td>
<td>1%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Figure 4. Language sampling analyses reported to be used most frequently to monitor progress. DL = developmental language analysis; DSS = developmental sentence scoring; PLU = rate of productive utterance; MLU = mean length of utterance; MLU = mean length of conjugated; MLU = mean length of phonemes; MLU = mean length of words; MLU = mean length of sentences;
Using Standardized Assessments to Monitor Progress

- Advantage: Efficiently identify grammatical weaknesses that may not occur in language samples
- Disadvantage: Each grammatical form is only assessed with a limited number of opportunities

Preschool Language Scale

- **Expressive Communication**

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plural - s</td>
<td>a, b, c</td>
</tr>
<tr>
<td>Progressive - ing</td>
<td>a, b</td>
</tr>
<tr>
<td>Possessive 's</td>
<td>a, b</td>
</tr>
<tr>
<td>Regular past - ed</td>
<td>a, b</td>
</tr>
<tr>
<td>Irregular past tense</td>
<td>c, d</td>
</tr>
<tr>
<td>Irregular plural</td>
<td>a, b, c</td>
</tr>
</tbody>
</table>

Clinical Evaluation of Language Fundamentals

- **Word Structure**

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Form</th>
<th>Target</th>
<th>Test Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular plural</td>
<td>1, 2</td>
<td>Objective pronouns</td>
<td>21, 26</td>
</tr>
<tr>
<td>Irregular plural</td>
<td>3, 4</td>
<td>Future tense</td>
<td>19, 20</td>
</tr>
<tr>
<td>3rd person singular - s</td>
<td>5</td>
<td>Comparative and superlative</td>
<td>23, 26, 29</td>
</tr>
<tr>
<td>Progressive - ing</td>
<td>8</td>
<td>Uncontracted verb</td>
<td>25, 30</td>
</tr>
<tr>
<td>Infinitive</td>
<td>10, 21</td>
<td>Future perfect verb</td>
<td>37, 47</td>
</tr>
<tr>
<td>Future modal &quot;will&quot;</td>
<td>11, 12, 13, 14</td>
<td>Simple future tense</td>
<td>20, 21, 22</td>
</tr>
<tr>
<td>Past tense copula be</td>
<td>13, 16, 19, 20</td>
<td>Pseudocomplement</td>
<td>39</td>
</tr>
<tr>
<td>Future subjunctive &quot;will&quot;</td>
<td>17, 18</td>
<td>Future subjunctive verb</td>
<td>38, 43</td>
</tr>
<tr>
<td>Future perfect verb</td>
<td>19, 20</td>
<td>Future perfect verb</td>
<td>37, 47</td>
</tr>
<tr>
<td>Passive</td>
<td>29, 30</td>
<td>Reflective pronoun</td>
<td>41, 42</td>
</tr>
</tbody>
</table>

Comprehensive Assessment of Spoken Language

- **Syntax Construction**

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Form</th>
<th>Target</th>
<th>Test Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepositional phrases</td>
<td>1, 4, 7, 10</td>
<td>Subject complement clause</td>
<td>31, 34, 39</td>
</tr>
<tr>
<td>Progressive - ing</td>
<td>8, 11, 13, 16</td>
<td>Subject complement clause</td>
<td>31, 34, 39</td>
</tr>
<tr>
<td>Past tense - ed</td>
<td>13, 16, 19</td>
<td>Subject complement clause</td>
<td>31, 34, 39</td>
</tr>
<tr>
<td>Past tense singular - s</td>
<td>17, 20</td>
<td>Past participles</td>
<td>36, 38</td>
</tr>
<tr>
<td>Present tense singular - s</td>
<td>18, 21</td>
<td>Uncontracted verb</td>
<td>25, 30</td>
</tr>
<tr>
<td>Negative</td>
<td>22, 25</td>
<td>Future perfect verb</td>
<td>37, 47</td>
</tr>
<tr>
<td>Regular past tense</td>
<td>24, 25, 28</td>
<td>Subject complement clause</td>
<td>39</td>
</tr>
<tr>
<td>Irregular past tense</td>
<td>26, 29</td>
<td>Subject complement clause</td>
<td>39</td>
</tr>
<tr>
<td>Verb</td>
<td>30, 31, 34</td>
<td>Subject complement clause</td>
<td>39</td>
</tr>
</tbody>
</table>

Structured Photographic Expressive Language Test

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Form</th>
<th>Target</th>
<th>Test Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive perfect verb</td>
<td>27, 28</td>
<td>Future perfect verb</td>
<td>37, 47</td>
</tr>
<tr>
<td>Present perfect verb</td>
<td>29, 30</td>
<td>Past perfect subjunctive</td>
<td>35, 36</td>
</tr>
<tr>
<td>Prepositional phrase</td>
<td>31, 32, 34</td>
<td>Subject complement clause</td>
<td>39</td>
</tr>
</tbody>
</table>

Structured Photographic Expressive Language Test
Test of Early Grammatical Impairment

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Item</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd person singular -s</td>
<td>II</td>
<td>10</td>
</tr>
<tr>
<td>Regular past -ed</td>
<td>II</td>
<td>14, 16, 18, 22, 36, 38, 40</td>
</tr>
<tr>
<td>Irregular past tense</td>
<td>II</td>
<td>3, 4, 5, 6, 8, 9, 11, 13, 14, 17, 18, 20, 21, 23, 24, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36</td>
</tr>
<tr>
<td>Copula be</td>
<td>II</td>
<td>10</td>
</tr>
<tr>
<td>Auxiliary be</td>
<td>II</td>
<td>4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35</td>
</tr>
</tbody>
</table>

Using Standardized Assessments to Monitor Progress

What about using clinician-designed probes?

Let us help!

Structured Photographic Expressive Language Test

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Item</th>
<th>Target</th>
<th>Test Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepositional phrases</td>
<td>3, 4</td>
<td>Preposition</td>
<td>2</td>
</tr>
<tr>
<td>Progressive -ing</td>
<td>11, 13, 17, 19, 20, 36, 38</td>
<td>Negative</td>
<td>20, 30, 49</td>
</tr>
<tr>
<td>3rd person singular -s</td>
<td>16</td>
<td>Negation</td>
<td>5</td>
</tr>
<tr>
<td>Auxiliary be</td>
<td>13</td>
<td>Pronoun</td>
<td>10</td>
</tr>
<tr>
<td>Irregular past -ed</td>
<td>14</td>
<td>Interrogative</td>
<td>30, 33, 44</td>
</tr>
<tr>
<td>Infinitive</td>
<td>24, 25, 26</td>
<td>Direct/indirect object</td>
<td>11</td>
</tr>
<tr>
<td>Reflexive pronoun</td>
<td>5, 30</td>
<td>Embedded clause</td>
<td>11</td>
</tr>
</tbody>
</table>

Reflexive Pronoun Probes

- Potential targets: himself, herself, themselves
- Standard and additional prompts
  - “The boy looks in the mirror. Who does he see?”
  - “Start with He…”
- Structure analysis: Subject + Verb + target
- Think of 10-12 verbs/actions that are appropriate in this context!
Reflexive Pronoun Probes

- **Demonstration**
  - “Look at the picture. Who does the boy see?”
  - “He sees himself.”

- **Practice 1**
  - “Look at the picture. Who does the girl hug?”
  - “Start with She...”

- **Question 1**
  - “Look at the picture. Who does the boy hurt?”
  - “Start with He...”

Past Tense Copula Be Probes

- **Potential targets: was and were**
- **Standard and additional prompts**
  - “Why did the girl go to bed?”
  - “She was tired.”
- **Structure Analysis**
  - Subject + target + complement
- **Think of 10-12 adjectives!**
Past Tense Copula Be Probes

• Example 1
  – “Why did the girl wear a sweater and a scarf?”
  – “She was cold.”

• Example 2
  – “Why did the children cry?”
  – “They were sad.”

Relative Clause Probes

• Example 1
  – “Look at the pictures. One boy reads a book, and the other plays video games. Who wears glasses?”
  – “The boy who plays video games.”

• Example 2
  – “Look at the pictures. One girl rides a bike, and the other rides a horse. Who wears a helmet?”
  – “The girl who rides a bike.”

More Probes

• Reflexive pronoun
• Past tense copula
• Relative clause
• Passive
• Negative wh-question
• Prepositional clause
• 3s+infinitive
• Auxiliary+verb+infinitive

Advantages to Using Probe?

• More opportunities of target
• Can use repeatedly (within reason)
• Quick to administer

http://www.finestackdoll.com/presentations/
Current Practice

• More than 80% of clinicians use standardized tests at least some of the time to monitor treatment progress.
  – Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  – Comprehensive Evaluation of Language Fundamentals (CELF; Semel, Wiig, & Secord, 2003)
  – Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999)

• Clinicians indicated that they use language sampling to monitor progress approximately 75% of the time.
  – MLU
  – TTR
  – Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2012)
    – Bound Morpheme Table
    – Developmental Sentence Scoring (DSS; Lee, 1971)

Language Sampling Benefits

• Can assess how close to mastery, or if grammatical structures are emerging vs. absent
• Can select contexts/settings in which child is more successful with language
• Can be used to assess language outcomes.
  – Standardized tests are not designed for repeated testing intervals.
  – Language sample features can be administered repeatedly and normative comparisons can be made.

Sample Length

• Samples should range from 50-100 utterances

Expressive Language Sampling in Children with ASD

• Currently conducting a longitudinal study with children with ASD.

• Research Aim: Can we use language samples as an outcome measure in clinical trials for children with ASD?
ASD Study: Context

- Narrative
- Conversation
- Autism Diagnostic Observation Schedule-2 (ADOS)


Conversational Language Sample

<table>
<thead>
<tr>
<th>Idiosyncratic topic</th>
<th>After school</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>School day</td>
<td>Playing games</td>
<td>TV show</td>
</tr>
<tr>
<td>Pets</td>
<td>Vacation</td>
<td>Hobbies/Interests</td>
</tr>
</tbody>
</table>

Conversational Language Sample

- Idiosyncratic topic
  - I was talking to your Mom/Dad/Teacher and they told me that you... [TOPIC]
  - That sounds so interesting/like so much fun. Tell me about that.

Conversational Language Sample

- School Day
  - So, what grade are you in?
    - It's been a long time since I was in school so I really don't remember very much about the [participant's grade level].
    - Tell me what you did in school yesterday [or the last day the participant was in school].
    - Tell me everything you can remember.

Conversational Language Sample

- School Day: follow-up
  - What's your favorite part of school?
    - Tell me all about that.
    - Tell me why you like doing that.
  - What's the first thing you do when you get to school?
    - Tell me about what you do first
  - What's the last thing you do at school before you go home?
  - Is there anything you don't like about school?
    - Tell me why you don't like that.
• The goal of the clinician is to give as little input as possible
• 2 passes through the book
  – First pass: no talking just, look at pictures
  – Clinician always turns the pages

• 2nd pass: Child tells the story
  – 5-7 seconds per page (no matter what!)
• 1st page
  – How does the story start?
  – Hierarchy of prompts

• PROMPT A [If no response or IDK]
  – What’s happening in this part of the story?

• PROMPT B [minimal response]
  – That’s a good start. Tell me a little more about happening in this part of the story.

• PROMPT C [If no or minimal response to prompt A or B]
  – What about the boy? What’s he doing?
  – What about the frog? What’s he doing?
  – What about the turtle? What’s he doing?
• Anything else? (use sparingly)
  – Okay, here’s the next page.
Throughout the ADOS session, examiner is looking for opportunities for conversation.

- Jump into topics as they come up by the child.
- Also provide opportunities with general questioning.
- Examiner “leads”
  - “I did something really cool yesterday…”
  - “Oh that reminds me of something funny…”
ADOS: Structured Conversation

- Description of a Picture:

- Interview: Relationships, school, emotions

ADOS: Play

- Make Believe Play
- Joint Interactive Play

ADOS: Play

- Free Play: younger children (does not yet use complex grammar, 5 years or younger)

ADOS: Expository

- Demonstration Task
  - “Pretend like I don’t know how to brush my teeth, you are going to show and tell me how to do it.”

Transcribe the Sample

- Systematic Analysis of Language Transcripts
  - [https://www.saltsoftware.com/](https://www.saltsoftware.com/)

SALT

- Software designed to improve the efficacy and accuracy of language sampling analysis.
- Once a language sample is transcribed, run it through SALT software to get a variety of language measures
  - MLU, TTR, NDW, mazes, bound morphemes table

Madison, WI: University of WI Madison, Language Analysis Lab.
SALT

• Also, will compare your student’s performance to normative data.
• Database of over 2,000 children’s narrative and conversational language samples.

Transcription Conventions

• Utterance Segmentation
  – C-units: Independent clause and its modifiers

  C. The frog was sitting on a lily pad.
  C. And then it jumped in.
  E. Now we can’t find my cat who always runs away.
  E. That’s too bad!

SALT

• Also, will compare your student’s performance to normative data.
• Database of over 2,000 children’s narrative and conversational language samples.

Standard Measures

![Standard Measures Table]
Brown’s Stages (Paul & Norbury, 2013)

Brown’s Stages (Paul & Norbury, 2013)

Brown’s Stages (Paul & Norbury, 2013)
Developmental Sentence Scoring (Lee, 1971)

DSS Categories
- Indefinite Pronouns or Noun Modifiers
- Personal Pronouns
- Main Verbs
- Secondary Verbs
- Negatives
- Conjunctions
- Interrogative Reversals

DSS
- Each category has scores ranging from 1-8
- Each utterance with subject + verb scored
- Need at least 50 utterances; ideally, 100
Automated DSS

- CHILDES:
  - https://childes.talkbank.org/

- CLAN

A Clinician’s Complete Guide to CLAN and PRAAT

Nan Bemstein Ramer
University of Maryland

Shelley B. Breslau
George Washington University

Updates by David Fromm, Carnegie Mellon University
Last update: September 2018

CONVERTING SALT FILES

Are you a SALT user? If we have won you over to the extent that you wish you could analyze OLD files using CHAT/CLAN, we can still help you. If you have a SALT file, the SALTIN command will turn the file into CHAT and then, typically with few flaws, you can then start from the point at which you ran MOR, P Odd, etc. to get EVAL or KENAND output to compare. If you have totally unformatted text, the TEXTIN command takes it as input, no matter how many sentences or lines, or whole paragraphs, and generates a rough CHAT transcript that you can clean up and work with using the information in this guide.
Language Sampling Benefits

- Can use over and over!
- Informs generalization

Syntactic Assessment Guidelines

(Balthazar & Scott, 2007)

- Combine detailed assessment of a student’s syntactic knowledge and performance when there are any signs that a student may have syntactic weaknesses.
- Use scores on norm-referenced tests of syntax as a starting point.
- Analyze test performance for known patterns associated with syntactic difficulties.
- Examine syntactic performance in written language as well as oral language.
- Review samples of student assignments and analysis of written language for functional problems related to syntax.
- Select appropriate criterion-referenced measures to thoroughly examine any problematic patterns and establish baseline performance.

When should I use probes and when should I use language samples?

Assessing Use of Grammatical Forms

Purposes of Assessment

- Screening
- Diagnose
- Treatment Planning
- Monitoring Progress
- Functional Outcomes

Today's Agenda

Introductions (10 min)

Why Grammar? (30 min)

Assessing Grammar (50 min)

Goal Writing (30 min) 1:55

Intervention (50 min)
Grammatical Goals

“The basic goal of all grammatical interventions should be to help the child to achieve greater facility in the comprehension and use of syntax and morphology in the service of conversation, narration, exposition, and other textual genres in both written and oral modalities” (Principle 1; Fey, Long, & Finestack, 2003).

Grammatical Goals

“Grammatical form should NOT be the only aspect of language and communication that is targeted in a language intervention program” (Principle 2; Fey, Long, & Finestack, 2003).

Intermediate Goal

- To increase the child’s use of particular grammatical categories such as:
  - obligatory use of grammatical subjects
  - pronominal case pronouns (e.g., he/she vs. him/her)
  - auxiliary forms (e.g., do/does; am/are/is)
  - subject–auxiliary inversion for interrogatives
  - subject–verb agreement (e.g., Leo walks home)
Intermediate Goal

– Select intermediate goals in an effort to stimulate the child’s language acquisition processes rather than to teach specific language forms (Principle 3).

Specific Goals

• To increase the child’s use of specific forms in specified contexts such as:
  – auxiliaries is and are or do and does in conversational language
  – pronouns he and she when retelling a story

Specific Goals

• The specific goals of grammatical intervention must be based on the child’s “functional readiness” and need for the targeted forms (Principle 4).

Specific Goals

• AKA: Sort-term Goals, Behavioral Objective, Short-term Objectives (STO)

• Series of measurable steps for getting from here to there

Specific Goals

• 3 components (D-C-C)
  – “Do” statement
    • specifies action client is to perform
    – Yes – point, label, match, ask, name, identify, swallow, explain, produce,
    – No – learn, remember, comprehend, discover, know, understand
  – “Condition” statement
    • situation in which target behavior is to be performed
  – “Criterion” statement
    • how well target behavior must be performed
Do-Condition-Criterion?

- Judy will point to "yes" or "no" cards in response to simple clinician questions related to the immediate environment with 90% accuracy across three consecutive sessions.

Possible Grammatical Goal??
When Selecting Language Goals, Consider...

- Absent and/or emerging (but not mastered!) targets
- Phonetic composition of the targets
- Developmental appropriateness of the targets
- Functionality of the targets

<table>
<thead>
<tr>
<th>Absent and/or emerging (but not mastered!) targets</th>
<th>Phonetic composition of the targets</th>
<th>Developmental appropriateness of the targets</th>
<th>Functionality of the targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregivers’ preferences</td>
<td>Generalizability</td>
<td>Addressing 2-3 semantic-syntactic relations at a time</td>
<td></td>
</tr>
</tbody>
</table>

Today’s Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (50 min)
- Goal Writing (30 min)
- Intervention (50 min) – 2:25

Treatment Approaches

- Discrete Trial Practice
  - Drill based approach
    - Clinician elicits imitation of linguistic form, provides corrective feedback or gives reinforcement
  - Highly structured
  - Often use:
    - Flashcards
    - Extrinsic reinforcement
Discrete Trial Practice

- Why do they work?
  - LOTS of practice
  - Clinician controls focus on the target behavior
  - Criticism because it is unnatural, however, research shows improvements are made
    - Criticism greatest for generalization to functional settings

Imitation

- Clinician shows a visual stimulus (picture, story book, toys acting a situation, etc.)
- Clinician tells child to describe the stimulus a PARTICULAR way
  - Say......
  - Tell me.....
- Child repeats clinician utterance
- Clinician controls opportunities

- Modified imitation
  - Clinician first creates opportunities using elicited production
  - If child’s response is incorrect, clinician provides additional opportunity using imitation

Imitation

- Why does it work?
  - Follows general principles of priming
  - Can focus on target form without other difficult forms or semantic items interfering
  - Provides lots of practice in short amount of time

Focused Stimulation

- Child is exposed to multiple exemplars of a specific linguistic target (e.g., 10 models of each target per session)
- The child is never required to imitate models
- Focused vs. General Stimulation?

Focused Stimulation

- Must have deliberate manipulation of target to increase saliency of input
  - Multiple repetitions of targets
  - Increased stress by placing the form at the beginning or end of a phrase (may use to highlight a contrast)
  - Manipulate environment to create opportunities to produce target
Target: ARE
Neil and Warren liked to play in the attic. It was fun up there, but it was a little scary, too. They always turned on the light so they could see. One day Neil and Warren started to go upstairs.

"Where are you going?" asked Dad.
"Are you going to the attic?"
"Yes, we are!" shouted Warren.
"Neil and I are going up there now."
"We are going to play up there."
"Oh you are, are you?" thought Dad.

Focused Stimulation (Cleave & Fey, 1997)

<table>
<thead>
<tr>
<th>Variations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling only</td>
</tr>
<tr>
<td>Modeling with opportunities for the child to produce the target form</td>
</tr>
<tr>
<td>Modeling with recasts</td>
</tr>
</tbody>
</table>

Recasting

<table>
<thead>
<tr>
<th>Why does it work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased ability to focus on the target because:</td>
</tr>
<tr>
<td>Clinician and child produce the same meaning</td>
</tr>
<tr>
<td>Shared context</td>
</tr>
<tr>
<td>No change in topic</td>
</tr>
<tr>
<td>Easier generalization because recasting occurs in a more natural setting</td>
</tr>
</tbody>
</table>

Recasting

<table>
<thead>
<tr>
<th>Why does it work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child produces an opportunity for the target</td>
</tr>
<tr>
<td>Clinician responds by either</td>
</tr>
<tr>
<td>Correcting an error on the target</td>
</tr>
<tr>
<td>Creating a more complex utterance</td>
</tr>
<tr>
<td>Child’s original meaning is maintained but FORM changes</td>
</tr>
<tr>
<td>Child is indirectly in control of the opportunities</td>
</tr>
</tbody>
</table>

Recasting

<table>
<thead>
<tr>
<th>Using Recast Intervention for Grammatical Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-30 Sessions</td>
</tr>
<tr>
<td>5 Recast per Minute</td>
</tr>
<tr>
<td>Child, adult, and clinician all produce the same opportunities for the target.</td>
</tr>
</tbody>
</table>

Using Recasts...

• **Variety:**
  – Children learn better with more variability of verbs (24 different verbs better than 12) (Plante et al., 2014)

• **Telegraphic:**
  – Avoid telegraphic language; no advantage, only possible disadvantage (Bredin-Oja & Fey, 2014)

### Treatment Approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Clinician Directed</th>
<th>Child Directed</th>
<th>Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discrete Trials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imitation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modeling/Focused Stimulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recasting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hybrid Approach

- Clinician Directed
  - Preselected targets
  - Manipulation of input
- Child-Centered
  - Natural context
  - Following the immediate interest of the child

### Blending

- Modeling + elicited imitation + recast
  - Adult: I’m bouncing the ball. It bounces up and down. You try it. Can you make it bounce?
  - Child: Bounce, bounce.
  - Adult: Tell Lisa what you’re doing.
  - Child: Bounce ball.
  - Adult: You are bouncing the ball.

### Principles to Consider

- Saliency
- Highlighting Correct Form
- Context
- Modality
Increasing Saliency

• Acoustic characteristics
  – Longer (decreased speech rate)
    • Studies with 3 speaking rates
      – 2.8 syllables per second
      – 4.4 syllables per second
      – 5.9 syllables per second
  – Louder (focus increased loudness on target)
  – More pitch changes

Increasing Saliency

• Position of the target
  – Move target to the end of utterance rather than in medial position

Who is your brother? The big man is.

The big man is my brother.

Increasing Saliency

• Contrast target form with related forms
  – Use acoustic or position saliency
    • The kangaroo hops.
    • The kangaroos hop.
    • The cat is inside
    • The dog is outside

Increasing Saliency

• Why does it work?
  – Focuses attention on the target form
  – Decreases cognitive load for attending to the target form

Highlight the Correct Form

• Compare correct form to the child’s form
  – Clinician produces an intentional error
  – Create opportunities to hear the adult and child form in close proximity
    • As in recasting
  – Discrete trials
    • Child detects errors / corrects errors
    • Child underlines correct forms

Principles to Consider

- Saliency
- Context
- Highlighting Correct Form
- Modality
Highlight the Correct Form

- Why does it work?
  - Focuses attention not only on the target form but the error the child makes
  - If used in context (recasting) can highlight the meaning-functional difference between the correct and incorrect forms

Choose Appropriate Context

- Types of contexts
  - Sentence/phrase level
    - Most unnatural
  - Conversation-based
  - Literature-based
    - Use age/classroom relevant literature to develop themes

Choose an Appropriate Modality

- Types of modalities
  - Auditory
  - Written
- Why does it matter?
  - "Face" validity of natural contexts suggests increased generalization to functional settings
  - Target behaviors might occur in different frequencies in different contexts
    - Past tense more likely in narratives
    - Present tense more likely in expository contexts

Why does it work?
- Focuses attention not only on the target form but the error the child makes
- If used in context (recasting) can highlight the meaning-functional difference between the correct and incorrect forms

Choose Appropriate Context

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  - Target behaviors might occur in different frequencies in different contexts
    - Past tense more likely in narratives
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Principles to Consider

- Saliency
- Context
- Modality

Choose an Appropriate Modality

- Types of modalities
  - Auditory
  - Written
- Why does it matter?
  - Auditory - typical acquisition
  - Written
    - Older children may show written deficits
    - Some targets may occur in writing but are rare in spoken language
Also Consider...

- Input based on level of explicitness

Continuum of Explicitness...

Evidence Supporting Rule Presentation

Finestack & Fei, 2009
32 6-9 year-olds with DLD, 5 sessions; 1 novel form
Implicit: 19% “Pattern-users”, Explicit: 63% “Pattern-users”

Finestack, 2018
25 5-8 year-olds with DLD, 5 sessions per form; 3 novel forms
Implicit: 23% “Pattern-users”, Explicit: 83% “Pattern-users”

Finestack, in Preparation
3 3-5 year-olds with ASD, 6-17 20-min sessions; 1 true form
All participants learned target form
Dosage

- Dosage (how much treatment you are providing)
- Can be measured as:
  - Number of sessions
  - Length, in time, of sessions
  - # of opportunities per session
- No set guidelines
  - “Think outside the box”

Dosage - current

**Early Education**
- 21 teaching opportunities per session
- 21 to 40 min in length
- 3-4 sessions per month

**Elementary**
- 11–20 teaching opportunities per session
- 21 to 40 min in length
- 3-4 sessions per month

Dosage - ideal

**Early Education**
- 39 teaching opportunities per session
- Increase by 24 min = 45 to 64 min in length
- Increase by 4 sessions = 7-8 sessions per month

**Elementary**
- 41 teaching opportunities per session
- Increase by 16 min = 37 to 56 min in length
- Increase by 4 sessions = 7-8 sessions per month

How can I do ALL of this??
One Idea

Grammatical Targets
- Cyclical approach to teaching true grammatical forms
  - 3rd person singular – s
  - Past tense – ed
  - Auxiliary is/are in statements
  - Auxiliary do/does in questions

Cyclical Approach

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Target</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>3rd – s</td>
<td>Cycle 1</td>
</tr>
<tr>
<td>5-8</td>
<td>Past – ed</td>
<td></td>
</tr>
<tr>
<td>9-12</td>
<td>Aux is/are</td>
<td></td>
</tr>
<tr>
<td>13-16</td>
<td>Q-do/does</td>
<td></td>
</tr>
<tr>
<td>17-20</td>
<td>3rd – s</td>
<td>Cycle 2</td>
</tr>
<tr>
<td>21-24</td>
<td>Past – ed</td>
<td></td>
</tr>
<tr>
<td>25-28</td>
<td>Aux is/are</td>
<td></td>
</tr>
<tr>
<td>29-32</td>
<td>Q-do/does</td>
<td></td>
</tr>
</tbody>
</table>

Each 30-min session

Sentence Imitation
- Model Story 1
- Post-story Production 1
- Model Story 2
- Post-story Production 2
- Auditory Bombardment

Hybrid Approach

Plus! Rule Presentation

Modeling
Imitation
Recasting

Rule
Modeling
Recasting
Imitation
The Stimuli

• High verb variability: 24 different verbs used in each session (Plante et al., 2014)
• Begin with “hard” verbs (Owen Van Horne et al., 2017)
  – Highly atelic (i.e., without a clear end point),
  – Rarely inflected with 3rd person singular/past tense
  – Frequently heard in the bare stem form
  – End in obstruent and alveolar consonants.

“Hard” Verbs

• Owen Van Horne & Green Fager, 2015

Rules

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Explicit Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Person -s</td>
<td>When you talk about what one person or thing does, you add an /s/ sound to the end of the action word. Listen, ‘He walks to the store.’ When you talk about what more than one person or thing does, you don’t add anything to the end of the action word. Listen, ‘They walk to the store.’</td>
</tr>
</tbody>
</table>

Past Tense -ed

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Explicit Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past tense -ed</td>
<td>When you talk about something that already happened, you added a /t/ sound or a /d/ sound to the end of the action word. Listen, ‘He jumped.’ ‘They paddled.’</td>
</tr>
</tbody>
</table>

Aux is/are Statements

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Explicit Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux is/are Statements</td>
<td>When you talk about what one person or thing is doing you use ‘is’ and add /ng/ to the action word. Listen, ‘She is walking.’ When you talk about what more than one person or thing is doing, you use ‘are’ and add /ng/ to the action word. Listen, ‘They are walking to the store.’</td>
</tr>
</tbody>
</table>

Aux do/does Questions

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Explicit Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux do/does Questions</td>
<td>When you ask a question about one person or thing, begin with ‘does.’ Listen, ‘Does he want more?’ When you ask about more than one person or thing begin with ‘do.’ Listen, ‘Do they want more?’</td>
</tr>
</tbody>
</table>

Each 30-min session

Sentence Imitation

Model Story 1

Post-story Production 1

Model Story 2

Post-story Production 2

Auditory Bombardment

Sentence Imitation: 5 min

• Drill activity
• Participants imitate 7 contrastive sentence pairs
• Pairs will vary in the syntactic platform so target is in medial or final position
Example Sentence Imitation Items

<table>
<thead>
<tr>
<th>Target</th>
<th>Sample Presentation Platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past Tense</td>
<td>The kangaroo hops. The kangaroos hop.</td>
</tr>
<tr>
<td>Aux are Statements</td>
<td>The dogs are growling. The dog is growling.</td>
</tr>
<tr>
<td>Aux do/does Questions</td>
<td>Does he exercise? Do they exercise?</td>
</tr>
</tbody>
</table>

Sentence Imitation: 5 min

- **Child Correct**: Clinician provides positive feedback and hear the sentence again (e.g., “That was right. The kangaroo hops”).
- **Child Not Correct**: Clinician provides corrective feedback, repeats the sentence, and asks the participant to try again (e.g., “That wasn’t what I said. Listen. The kangaroo hops. Try it again.”).

Sentence Imitation: 5 min

- Clinician also provides the child with the rule (e.g., “That was right. When you talk about what one animal does, you add an /s/ sound to the end of the action word. Listen, ‘The kangaroo hops.’”).

  ➢ **Dosage**: 7 unique verbs; at least 28 models or recasts of target; 14 rule presentations.

Model Story: 4 min

- Clinician models model target forms using a naturalistic story-sharing focused stimulation approach.
- Each short story contains at least 5 unique verbs following the Owen Van Horne “Hard to Easy” verbs assigned to the session.

Model Story: 4 min

- Clinician uses toys to model elements of the story and to help maintain the participant’s attention during the story presentation.
- Only demand placed on the child is to pay attention to the story as best as possible.

  ➢ **Dosage/story**: 5 unique verbs; at least 5 models of target
Each 30-min session

Sentence Imitation

Model Story 1

Post-story Production 1

Model Story 2

Post-story Production 2

Auditory Bombardment

Post-story Production: 5-7 min

- Clinician creates at least five opportunities for child to produce the target form using a play format.
- Prompt child to attempt to produce the target form using one of the “Easy/Hard” verbs:
  - Directly related to the story (e.g., “What does the kangaroo do to get attention?”)
  - Related to the play toys (e.g., “Look at the kangaroo. What does he do?”)
  - Related to another area of interest directed by the child.

Dosage: at least 10 models or recasts of target; 5 rule presentations
Auditory Bombardment: 3 min

• Clinician present child with sentence pairs containing the target and a contrast (similar to those in Sentence Imitation activity).
• Child prompted to listen carefully; no other demands will be placed on the child.

Auditory Bombardment: 3 min

• Clinician also presents the guiding rule at the beginning of the activity and after the second and fifth sentence set.

Dosage: 7 unique verbs; at least 14 models of target or contrast; 3 rule presentations

Dosage per Session

• 24 unique verbs
• At least 72 models or recasts per session
• 27 rule presentations

• Note: Can fade the rule prompts across sessions as child gains mastery.

THANK YOU!!

Questions?

finestack@umn.edu

Key References


Key References
