Using Syntax to Support Reading Comprehension

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Disclosure

Neither of the presenters has any related financial or nonfinancial relationships with the products or services mentioned.
This session will:

- Discuss how SLPs can apply syntax to value added assessment (VAA) & ASHA’s PACE
- Discuss the relationship of syntax to reading comprehension
- Focus on research-based strategies for syntax intervention, including comprehension & production
- Present seven general strategies with suggestions for intervention
Learner Objectives

- Participants will be able to explain the relationship of syntax to reading comprehension and reading fluency.
- Identify 2 syntactic factors that may present difficulties to struggling readers.
- Identify 3 possible intervention strategies focusing on teaching syntax to older students.
Value-added assessment (VAA)

- Based on an individual student’s improved test results over the previous year’s.
- Problems if schools include SLPs in VAA: We typically address foundational skills, not specific subjects & serve a variety of students across different teachers.
- Language: more difficult to assess than math/science.
- One way for SLPs to deal with VAA: Syntactic structures are easier to measure. Student gains in syntax when SLPs & teachers collaborate can indicate our role’s effectiveness.
Performance Assessment Contributions Effectiveness (PACE) (For SLPs)

- ASHA’s suggested method to determine contributions SLPs make to individual students. Objective based PACE outcomes are linked to evidence based strategies that facilitate progress within the curriculum.
- Outcomes demonstrated by teachers/parent/student surveys, qualified supervisor observation notes, PACE matrix results & IEP documents.
- PACE encourages SLP/teacher collaboration, eg syntax, improved student complex sentence comprehension/use illustrates our positive impact.
Common Core State Standards

- Hierarchy of student skills in K-12 to streamline educational standards in US. Standards are designed to ensure consistency & quality
- Address linguistic & metalinguistic foundation of curricular learning for student with disabilities
- Include ELA and literacy in history/social studies, science and technological subjects
- These rely on students’ communicative competence
- SLPs focus on the language underpinnings & can work collaboratively with teachers.
Current Status of Reading for older students

- NAEP (2008): 27% of 4th graders & 6% of 8th graders do not read at the basic level (simple informational paragraph).
- NAEP (2008): 37% of 8th graders were not able to interrelate ideas and make generalizations.
- 2006 study of 9th graders 57% were below the 40 percentile for decoding, vocabulary, fluency & comprehension (Deshler, Hock & Catts)
Reading Comprehension

- In a study of 8 year old children with poor reading comprehension, Nation et al (2004) found that when compared to children in the control group, those with poor reading comprehension demonstrated deficits in the language areas of semantics and morphosyntax.
Model of Adolescent Reading

WORD RECOGNITION

- Phonological Awareness
- Decoding
- Sight word reading
- Fluency (phrasing)
Model of Adolescent Reading

LANGUAGE COMPREHENSION

- Background Knowledge
- Syntax
- Vocabulary
- Text Structures
Model of Adolescent Reading

EXECUTIVE PROCESSES

- Cognitive strategies
- Metacognitive strategies

*From Deshler, Hock & Catts (2006)*
• Cain and Oakhill (2007) reviewed studies looking at syntax (sentence level skills and processes) and reading comprehension.
• They noted stronger relationships with reading comprehension with syntactic awareness (identifying or correcting errors) than syntactic knowledge, which is more unconscious.
A study of 7th graders looked at the impact of syntax (sentence complexity) on 3 types of readers:

- independent, (57% and above)
- instructional-level (44-56%) and
- frustration-level, (43 % and below)

The students read four grade level texts matched for readability but with different levels of syntactic difficulty. Sentence complexity did not affect the comprehension scores of the independent or frustration-level readers, but had a significant effect on the instructional level readers. As the level of syntactic difficulty increased, their scores decreased.
SLI and reading fluency

- Puranik et al (2008) studied the growth curves for reading fluency from 1st - 3rd grades of 1,991 children initially diagnosed with speech or language impairments.
Findings...

- Differences in subgroups (speech vs. language and persistent vs. resolved) indicated that children with language impairments performed more poorly than those with speech deficits and those with persistent language problems performed more poorly than those with resolved problems.
Strategy # 1
Sentence Combining

- Combination of 2 or more simple clauses.
- Andrews et al (2006) noted 16 studies that had positive results using sentence combining to increase the complexity of syntax.
- Scott and Nelson (2009) stress the importance of sentence combining in writing tasks and its possible relation to metalinguistic awareness.
SC - O’Hare (1973)

- 83 students in 7th grade
- Design: random assignment to tmt. & control
- Treatment: 8 months
- Measures: 3 types of writing- narrative, descriptive, expository; 6 measures of syntactic maturity used
- Results: p<.0001 for words/T unit, clauses/T unit, words/clause, Noun clauses/100 T units, Adverb clauses/100 T units & Adj. clauses/100 T units
- The treatment group showed significantly better gains on all 6 measures.
SC – Combs (1976, 1977)

- 7th graders (100 students)
- Control and treatment groups
- Delayed post testing
- Measures: two types of writing- narrative & descriptive
- Results: significant for words/T units and words/clauses
- Gains were approximately two grade levels
SC – Sandler & Graham (2005)

- 44 students in 4th grade (9 -11 years). 22 more skilled & 22 less skilled writers
- Less skilled writers scored – 1 SD or lower on the TOWL-3
- Design: individualized random controlled trial with stratified randomization;
- Treatment: 30 lessons (3 x/wk for 25 min. each); used peer assisted program with more & less skilled writers;
- Example: read the pair, decide how to combine, read the new sentence. Progresses to paragraphs and writing tasks. Then progresses to stories.
Measures: writing – 1st draft and later drafts (global evaluation 0 to 4) & TOWL-3 subtest

Results: both groups made gains; draft x treatment interaction – with the treatment group having better quality of writing with later drafts.

TOWL-3 Sentence Combining subtest: less skilled writers increased their scores by nearly 2 standard deviations. Skilled writers made a gain of slightly less than 1 standard deviation.
Example

- Three Students
- One – first clause (give topic)
- Second – conjunction
- Third – second clause
- Then group repeats the sentence
Strategy #2  Think alouds

- Students are asked to comment about each sentence that they read.
- Earlier study: Laing & Kahmi (2002)
• 40 4th graders (20 typical language and 20 SLI)
• Design: 2 conditions for all students: Listen-through & Think aloud
• Expository text
• Results: Both groups used paraphrases more than exact repetitions or implicit statements.
90% of paraphrases for the TL group were accurate, while 65% of the paraphrases of the SLI group were accurate. Ability to paraphrase accurately related to comprehension of expository text.

Relates to other research relating paraphrasing and summarizing facilitating reading comprehension of expository text.
Example – expository text

- “Hummingbirds move their wings very quickly when they fly. When they fly, you cannot see their wings at all.” (from study)

- “Plants lack a nervous system. They cannot make a quick response to stimuli.” (Zwaan & Singer, 2003)
Strategy #3  Metalinguistics

- Hirschman (2000)
- 3rd and 4th grade students with LLD/SLI
- Classrooms as treatment group; control group in separate school
- Treatment: 55 ½ hour sessions; The first 10 sessions focused on sentences, V+VP, S & O, simple and complex sentences & subordinating conjunctions
Later sessions used fables – focused on: 1) macroorganization; 2) identification of sentence types and components; 3) rewriting sentences – placing conjunctions at the beginning & in the middle of sentences; 4) class feedback.

Results: Increase in subordination ratio for oral & written expression; the lower the pre-test score, the higher the gains.
Hirschman (2000)

- Posttesting completed 3 months after intervention. (after summer vacation)
The Fox and the Crow

One day a crow was flying to her nest when she spied a bit of cheese on a windowsill. She flew down and sat on a fence near to the cottage. When she was there no one was about, so she swooped down to grab the cheese, and flew with it to a nearly tree. A hungry fox, who had been hiding behind a nearby tree, had seen the crow take the cheese and was wondering how he could get hold of it.
Suddenly, he had a clever idea. “Hello, Mrs. Crow!” He called to the bird. “How are you?”

The crow just nodded her head while she held onto the cheese in her beak. The fox then told her how pretty she looked, but she still didn’t reply, although she felt very pleased. When the fox told her that he thought she must have a wonderful voice, the bird could not stop herself. The silly crow felt so proud that she
immediately tried to show the fox just how well she could sing. Of course, as soon as she opened her beak, the precious cheese fell to the ground. At once, the clever fox dived in, snapped up the cheese and ran off with it into the forest.

Although the crow felt extremely foolish because she realized she had been tricked, she learned a valuable lesson. Never again would she be fooled by flattery.
Ebbels & van der Lely (2001)

- 4 students ages 11-14 years with severe SLI
- Taught passives
- Treatment: comprehension & production of passives; 1) identified gap in sentence; 2) found moved words; 3) assigned role of S or O
- Results: 3 of the 4 subjects significantly improved
- The **dog** was **hit** by the **car**.
Ebbels, van der Lely, & Dockrell (2007)

- 27 adolescents (ages 11-0 to 16-1) with SLI
- Design: random assignment; 3 groups – control therapy (not focused on verbs) & two types of treatment (syntactic vs. semantic & semantic)
- Assessment: videos and listened to sentences. Then used the verb in a sentence.
Ebbels, van der Lely, & Dockrell (2007)

- Treatment: 9 30 minute session (1x/week) 2 treatment groups focused on verbs (Semantic – verb meanings; syntactic-semantic – verb meaning & syntax. Sentences were coded with shapes, colors & arrows. Different parts of speech were in different colors
Ebbels, van der Lely, & Dockrell (2007)

- Results: Post testing immediately after treatment & 3 months later showed significant gains for the 2 treatments groups compared to the control
Strategy # 4  Questioning

- Includes asking the child questions and teaching the child to ask questions.

- 40 students ages 6-6 to 9-11 years
- Two groups (skilled & less skilled comprehenders), cross matched for word accuracy and reading comprehension
- Treatment: for 3 weeks in groups (2x/wk. for 20 min.) Taught to look for clue words for inference & to generate questions and answer them.

• Results: Both groups increased in reading comprehension, with less skilled readers benefiting more.
Strategy # 5
Focused Stimulation

- Provide multiple models of a specific structure in meaningful contexts, similar to auditory bombardment. Most of the research is with younger children on specific morphosyntactic errors. Research indicates that this strategy does work with younger children. (Eisenberg uses the term “observational modeling” (p.165, 2005).

- Johnson et al (1999) small research study
Gummersall & Strong (1999)

- 2 studies ( #1 & 2)
  - Students: #1: 30 typical 3rd graders (8-9 years); #2 12 students 8-11 years with SLI
  - Design: random assignment; listening or maximum support -listening then listening & repeating the sentences
  - Dynamic assessment model targeting modals, verb complements, relative cl.
Gummersall & Strong (1999)

Results: #1- treatment groups used more words/Tunits, Tunits, # of correct subordinate clauses: #2 results for SLI with maximum support compared to subjects from study #1. SLI with max. support used more subordination and greater variety of subordinators. (Only descriptive statistics done. Subjects not matched.)
6. Identification of Signal Words

- Finding key words that related to the structure of information
- Subjects: 5\textsuperscript{th} graders
- Design: random assignment to control group or strategy groups (one using computers and the other using tutors)
Meyer et. al. (2002)

- Treatment: identification of signal words for 5 types of structure (description, sequence, causation, problem/solution and comparison)
- Strategy groups recalled more important information on reading comprehension measures. The group with the tutors tended to make more progress.
Signal words

- **Description:** for example, for instance, such as
- **Sequence:** later, before, after, finally, last, to begin with, afterwards, as time passed...
- **Causation:** as a result, because, since, consequence, in order to, therefore....
- **Problem/solution:** problem, question, issue, prevent/solution, answer, response...
- **Comparison:** alike, in common, different...
Meyer et. al. (2002)

- Progress notes in testing two months after intervention completed.
- Relates to Silliman & Scott’s (2008) suggestion to use classroom science texts to work on conjunctions.
7. Reading Fluency

- With repeated reading with phrase cues (related to syntax)
- LeVasseur, Macaruso & Shankweiler (2007)
- Subjects: 2\textsuperscript{nd} graders
- Three intervention groups reading under different conditions
LeVasseur, Macaruso & Shankweiler (2007)

1) repeated reading of word lists; 2) repeated reading of text (with conventional layout), and 3) repeated reading with spaces between phrases and at the end of clause boundaries.

Results: Repeated reading with text (groups 2 & 3) had greater gains in reading fluency. Group 3 (using text with phrase cues) had the most natural prosody.
Other considerations when working with syntax...

- Meaningful context
- Collins et. al. (2006)
- 320 students in a low performing school in Louisiana
- Classroom intervention: 2 groups – 1) Explicit Teaching (traditional worksheets) and 2) Embedded Language
Collins et. al., (2006)

- Embedded Language (used paragraph with target sentence to teach vocabulary, sentence type, parts of speech, punctuation and grammar). Cue cards were used for parts of speech.
- 24 sessions (15-20 min.) over 6 weeks
- Results: Embedded Language group showed significant gains in Combining Sentences on TOWL-3.
Use of expository text

- Nippold et. al., (2008)
- 444 students ages 12-10 to 15-5 who were SLI, NLI (non-specific language impairment) and TLD (typical language development).
- Language samples collected in 2 genres – conversational and expository.
Nippold et. al., (2008)

- All groups produced longer sentences and greater subordination in the expository genre.
General suggestion #1

- Teach the concept of subject and verb.
- Why?
- Use color coding.
- General Washington led the troops in battle.
- Benedict Arnold was a traitor.
General suggestion #2

• Teach the concept of “connections.”
• Have the students think of ways to connect physical items.
• Relates to Sentence Combining and Signal Words
General suggestion #3

- Teach signal words
- Use color or shapes to identify signal words
- Make lists of signal words and definitions
- Teach relationships
Spitting to Survive
by Liana Mahoney

Spit keeps our mouths moist and softens our food when we chew. Without spit in our mouths, we would have a hard time talking. We would find it even harder to swallow. But for some animals, spit works better after it has left the mouth. Some animals are experts at surviving because they are expert spitters.
General suggestion #4

- Teach sentence combining
- Consider using focused stimulation when beginning
- Try color-coded cue cards
- Use a baseball analogy
  - 1st base: think of a simple sentence
  - 2nd base: select a conjunction
  - 3rd base: think of a 2nd related clause
Baseball – 4 steps to a 2 clause sentence
#4 continued

- Home run: say the completed sentence.

- To aid reading fluency, have the students read the sentence several times with proper phrasing.
General suggestion #5

- Use material that interests the students and has a meaningful context
- Curriculum-based material
- Expository discourse
And finally...

- Use a metalinguistic approach
- (teach analysis skills)
- Teach self-analysis
- Use think alouds (paraphrasing)
- Use self-questioning (Have students generate questions and answers.)
Other resources

- Uses sentences from well-known authors to teach sentence parts.
- Uses guided practice.
Additional resource

- Conversations with Conjunctions: Assessment and Activities for Oral Language by Catherine Hawkins May
- Pre and Post testing
- Worksheets for conjunctions and sentence combining
- Pro-ED
Web Resources

- Grammar Glossary
  http://www.harcourtschool.com/glossary/grammar/index_t.html

- Grammar Gorillas
  http://www.funbrain.com/grammar/index.html

- Language Arts – Go Grammar
  http://classroom.jc-schoo.pdfs.net/basic/la-grammar.html
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- National Assessment of Educational Progress (NAEP). Available at
  
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