ASSESSING AND TREATING SENTENCE COMPLEXITY IN EXPOSITORY TEXTS

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Expository text is challenging

- Developmental trajectory: later and longer
- Usually in the written modality
- Underrepresented in early school years
- Content, form, and use is less familiar
- LI/LD look “more impaired” in expository text
- Several organizational schemes
- Unique grammatical features

US students are losing ground in several areas that reflect facility with expository text

- NAEP results in reading and writing
- Comparisons with other developed countries

People are worried

Resulting in analyses of the problem and thoughtful suggestions for remedies, e.g.,

Biancarosa & Snow (2006)
Graham & Perrin (2007)

One remedy

- Initiative arose from governors and state commissioners of education
- ELL standards released June 2010; adopted by 30+ states
- K-12 standards in listening, speaking, reading, and writing skills that HS graduates need to be successful in higher ed and in the workplace
- The notion of TEXT COMPLEXITY is at the core of the standards
  ✓ evidence of declining complexity of texts in K-12
  ✓ less independent reading of complex texts required
- COMPLEX SENTENCES CONTRIBUTE TO TEXT COMPLEXITY and are emphasized throughout the standards

Another remedy

Expand literacy instruction into higher grades in the form of DISCIPLINARY LITERACY

Instruction that helps students appreciate differences in how content areas create, disseminate, and evaluate knowledge and how these differences are instantiated in their uses of language (Shanahan & Shanahan, 2008)

Fang, 2008
Schleppegrell, 2004
Our remedy

as applied to children and adolescents with language and learning disorders

Teach these students to be “more fluent” recognizing, understanding (listening and reading), and producing (speaking & writing) complex sentences characteristic of ones found in school settings.

What are some of these unique grammatical features of informational text?

Feature 1: Long, complex nominal groups (noun phrases) that teach

1. The oldest known fossil skeleton of a human ancestor—a female Ardipithecus Ramidus specimen nicknamed “Ardi” has been found.

2. In the last week of the campaign, he hammered away at the gusher of secret money poured in by special interests to influence the outcome of the elections, arguing in effect that the elites of Wall Street and corporate America were trying to hoodwink everyday voters into casting ballots against their own interests to benefit the powerful.

Feature 2: Clausal subordination that conveys authority and organizes text by indicating the logical relations between propositions

1. The plants adapt by making sure when there is water they get as much of it as possible by having wide arms or tapping for water. (adverbial X3; coord)

2. The blood returning through the body through the right side of the heart and to the lungs contains cellular waste (relative)

Feature 3: Theme and information structuring patterns that enable focus on new information

1. When an elephant drinks, it sucks as much as 2 gallons (7.5 liters) of water into its trunk at a time. (left branching adverbial)

2. Almost from the moment the caffeine-heavy energy drink Red Bull was introduced in the late 1980’s, it was mixed with alcohol by revelers intent on blurriness without weariness.

3. Smaller dams uproot fewer people and do less harm to the environment, while still providing energy for a region to grow. (coord; adverbial X2)

4. But the new goal acknowledges that China also has other tools to increase spending at home and reduce external imbalances. (object complement; postmodifying nonfinite clause; coordination)
Combinations of the three

1. Once DNA’s structure was known scientists were able to figure out how it provides a library of instructions that control the cells that make up our bodies and those of other living things. (adverbal, object complement X2, relative X2)

2. The SLP needs to be “curriculum relevant”
3. Text (and sentence) complexity has finally arrived on the national agenda
4. SLPs need to participate in RTI at all levels, not just K-2 and not just phonemic awareness
5. SLPs bring “value-added” special expertise in language generally and syntax specifically, language development, and methods of assessing and treating these highly individualized problems with higher level language

SLP roles in this picture

1. Comprehending and producing complex sentences is particularly problematic for LI/LD, showing up as listening and reading comprehension and production of oral or written explanations, summaries, and reports.
2. An increasing research base highlights the poor comprehender (a particular type of reading disorder that may not “show up” until mid-elementary years).

ASSESSING SENTENCE COMPLEXITY IN EXPOSITORY TEXT

Reviewed several tests and subtests laden with complex sentences, but...

• None contained a systematic distribution of complex sentence types and subtypes
• Measures seemed weighted toward particular types of complex sentences
• Complex sentences were not the only possible responses in some of the production tasks
• No apparent attempt to sample informational language specifically
• Tasks presented sentences in isolation, not in discourse

Assessing in sentence complexity in expository tasks is important

• Discourse genre and modality make a difference in performance of both LI and TD school-age children (Scott & Windsor, 2000) with written expository being the most challenging
• Expository tasks may be more sensitive to disordered performance in adolescents (Nippoldt, Mansfield, Billow & Tomblin, 2008) and bring to light continuing language needs.
• Complex sentences play a large role in expository language.
Inertia
When a ball flies through the air, it keeps moving until a force stops it. The push of a fielder's hand is a force that can stop a ball. Force is also needed (in order) to make a ball move once it stops. Throwing or hitting the ball can provide that force. An object either remains in motion or stays at rest until a force acts on it. The tendency of objects to stay in motion or to stay still is called inertia. Every object, whether it is moving or at rest, has inertia. In moving, you need to use a force (in order) to overcome its inertia. Examples of inertia are all around you. Find an object in the classroom that is at rest, such as a book (that is) on your desk. (In order) To make the book move across the desk, you would have to apply a force. Unless a force, such as a push or a pull, acts on the book, inertia keeps it still. Your muscles can provide the push or pull to overcome the book's inertia and make it move.

Goals of developing alternative assessment strategies

- Systematically sample wider range of complex sentences in greater detail
  - Relative Clauses (4 types)
  - Object Complements (3 types)
  - Adverbial Clauses (8 semantic categories)
- Sample from authentic expository tasks that mimic those in curriculum, relating assessment to classroom performance

Relative Clauses

Modifying the subject noun
1. Many national historical sites that relate to the founding of the United States are to be found in Philadelphia.
2. The sculpture of Benjamin Franklin that James Peniston created is located in the Old City neighborhood.

Modifying the object noun
3. Philadelphia is an important center for medicine, a distinction that has held since the colonial period.
4. During the spring that followed the Phillies loss in the World Series, the Flyers unexpectedly reached the Stanley Cup Finals, which they lost to the Chicago Blackhawks.

Object Complements

- Historians claim that Penn's treaty of friendship with Lenape chief Tammany under an elm tree at Shackamaxon is a legend.
- Question word clauses
  - In 1681, in partial repayment of a debt, Charles II of England granted William Penn a charter for what would become the Pennsylvania colony.
- Nonfinite clauses (bare infinitive, infinitive, gerund)
  - Construction of roads, canals, and railroads helped turn Philadelphia into the United States' first major industrial city.
  - Penn had experienced religious persecution and wanted his colony to be a place where anyone could worship freely despite their religion.
  - Penn tried keeping roads laid out so that there would be space between homes for gardens and orchards, but the city's inhabitants crowded by the Delaware River and subdivided and resold their lots.

Adverbial Clauses

The city's professional teams went without a championship from 1983, when the 76ers won the NBA Championship, until 2008, when the Phillies won the World Series. (time x 2)

Since Philadelphia's name is derived from the Greek for philos, “love” or “friendship,” and adelphos, “brother,” it is often referred to as “the city of brotherly love.” (reason)

While other Northern industrial cities were electing Democratic mayors in the 1930s and 1940s, Philadelphia did not follow suit until 1951. (contrast)

Need assessment strategies for sentence complexity in expository text

- Need types of expository tasks that utilize a wider range of complex sentence types
- Need to systematically represent the various complex sentence types
- Need to look at how students are parsing complex sentences when encountered in text
Sentence completion
Sentence combining ability is developmental (Scott, Nelson, Andersen, & Zielinski, 2006), but doesn’t always obligate particular complex sentences
A variation on sentence combining - provide kernel sentences and a starter phrase to obligate a particular structure (ala Levy & Friedmann, 2007)

Sample Sentence Combining / Completion (Object Complements)

1. Amo, queen of the sea. The fig had received her尽力的王
   from on___day. I don’t know her name.
2. Dated several men/women the President Kennedy’s term. She had received his help.
   I was/ didn’t have ___day.
3. By the 1700’s, Washington and the president were the greats.
   He had learned my ___day.
4. The Cabin had very dirty chairs. She had received treatment for the rest of his ___day.
   I was/ didn’t have ___day.
   My sister/ I, don’t go out much.
5. She couldn’t/ couldn’t see the basic. I don’t know her name.
   I was/ didn’t have ___day.

Sentence completion
used for progress probes...
• Female, age 13, 6th grade
• 6 sessions per sentence type over 9 weeks
• “B” phase is treatment on the structure
• Captured improvements during the treatment period
• Allowed comparison between baseline, treatment, and post-treatment

Written Summary
Summarization is an expository task commonly employed in academic settings (for note-taking, essays, etc.).
Assessing complex sentence structure in a discourse context has shown promise for eliciting a large number of complex sentences (Gummersall & Strong, 1999).
Written expository summaries may pose the greatest challenge for school-age students with LLD (Scott & Windsor, 2000) and offers potential for distinguishing LLD from age peers (Scott & Lane, 2008).
Sample can be analyzed using readily available metrics relating to sentence complexity: MLTU and SI.

Written Summarization
Students watch a 12-minute educational video and are then instructed to write about it, as in Scott & Windsor (2000).

Pre-video viewing instructions
You will be watching a science video. Pay close attention while you are watching because when you finish I will ask you to summarize the video. This simply means that you’ll write down the important and interesting information that you learned in your own words.

Post-video viewing instructions
Now write a summary of the important and interesting things that you learned from the video. Pretend that I am one of your classmates who has not seen the video but needs the information to do some classwork. I want you to try to write for at least fifteen minutes but you can have more time if you need it.
Written summary response from male, age 10, with language impairment

Text Paraphrase

Passenger Cars

TREATMENT PRINCIPLES IN COMPLEX SENTENCE INTERVENTION
Intervention Studies: Review of literature in brief

- Recent lit review on K-5 language intervention by Cirrin & Gillam (2008) uncovered few studies focused on syntax (morphosyntax only)
- Many studies on improving expository language skills emerge from education literature and are focused on macrostructure (Biancarosa & Snow, 2006; Graham & Perin, 2007)
- Few studies across disciplines have targeted intervention at the complex syntax level

How should treatment for complex sentences in expository text be addressed?

Treatment Principle 1:
Repeted exposure and practice
- Repeated exposure and practice increase the production of subordinate clauses (Gummersall & Strong, 1999; Johnson, Marinellie, Cetin, Marassa, & Correll, 1999)
- Frequency of treatment sessions (Warren, Fey, & Yoder, 2007)

Treatment Principle 2:
Explicit instruction is a necessity
- Metalinguistic training/Visual coding (Ebbels, van der Lely, & Dockrell, 2007; Hirschman, 2000; Levy & Friedmann, 2009)
- Metalinguistic training/Sentence combining (Neville & Searles, 1985; Saddler & Graham, 2005; Wilkinson & Patty, 1993)

Treatment Principle 3:
Intervention activities should engage all modalities
- Incorporating reading, writing, listening, and speaking activities enriches student learning (Graham & Perin, 2007; Lesaux et al., 2010; Moats, 2009; Munro, Lee, & Baker, 2008)

Treatment Principle 4:
Materials should reflect the real life curricular demands of students
- Research supports the implementation of complex sentence intervention in the context of curriculum based activities (Fey, Long & Finestack, 2003; Hirschman, 2000; Nelson & Van Meter, 2007)
Treatment Principles Applied

Treatment Schedule

<table>
<thead>
<tr>
<th>Adverbials 1</th>
<th>Adverbials 2</th>
<th>Adverbials 3</th>
<th>Adverbials 4</th>
<th>Adverbials 5</th>
<th>Adverbials 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(time) Videotape</td>
<td>(causal, purpose)</td>
<td>(contrast)</td>
<td>(condition)</td>
<td>(concession)</td>
<td>(mixed types)</td>
</tr>
<tr>
<td>1. Warm-up</td>
<td>2. Lesson &amp; practice</td>
<td>a. ID clause (reading)</td>
<td>b. Deconstruction</td>
<td>c. Combining (writing)</td>
<td></td>
</tr>
<tr>
<td>3. Application</td>
<td>a. Clause Hunt</td>
<td></td>
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Warm-up Reading Passage
Storms: Tornados

Scientists define a tornado as "a violently rotating column of air that extends from a thunderstorm to the ground." The most violent tornadoes are capable of tremendous destruction. Traveling at 100 kilometers per hour with wind speeds up to 400 kilometers per hour, they can cut a path of 1.5 kilometers wide and 80 or more kilometers long in minutes. The United States is where the most tornados occur. The U.S. is home to an average of 800 tornadoes a year. Although they cause fewer than a hundred deaths, thousands of injuries occur and many millions of dollars in damage result.

Decontextualized activity:
Identification of clauses

Decontextualized activity:
Sentence generation

Decontextualized activity:
Sentence combining
Contextualized Activities:
Clause hunt
Can the National Zoo’s new pandas help their endangered Chinese cousins to survive?
They earn a million bucks a year. They live in a posh new home. They make headlines across America. Yet they don’t seem to care about being rich and famous.
"They" are giant pandas who are named Mei Xiang (may SHONG) and Tian Tian (tea YEN tea YEN)...
Mei Xiang and Tian Tian were born in China, which is the only country where wild pandas live. China has lent the pair to the National Zoo in Washington, D.C., for ten years. In exchange, the zoo will contribute a million dollars each year to help protect wild places, plants, and animals in China.

Summary and Questions
• Complex sentences are an important feature of expository/academic language
• The language of specific academic disciplines poses a challenge for older children and adolescents, particularly those with language impairment
• By analyzing curriculum content and student performance for sentence complexity, SLPs can make a valuable contribution – identify and treat structures that are problematic
• Evidence is being generated to improve our understanding of the amount and type of treatment necessary and the scope of its effect
Stay tuned...
References and Bibliography


