Clinical Assessment of Grade-Level Reading Abilities: Focus on Fluency and Comprehension

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Overview

• This webinar describes how to perform clinical assessments of grade-level reading fluency and reading comprehension of elementary aged and adolescent students. It provides information regarding how professionals can conduct a thorough analysis of the student’s reading rate, accuracy, and prosody. It also reviews in detail appropriate text selection for reading fluency and comprehension purposes as well as discusses the type of questions professionals can create based on text content in order to perform a deep assessment of reading comprehension abilities.
Learning Objectives

- At the end of this webinar learners will be able to:
  1. Conduct thorough grade level assessments of reading fluency and comprehension of elementary aged and adolescent aged students
  2. Appropriately select text complexity based on the students' grades
  3. Calculate reading fluency rates based on the latest reading fluency data (Hasbrouck and Tindal, 2017 ORF Measures)
  4. Analyze reading fluency error types for intervention purposes
  5. Determine the students’ reading comprehension error types for intervention purposes
Reading Stages

Core Reading Systems
- Phonemic Awareness
- How Reading Works
- Word Identification
  - Sight Words
  - Phonics
- Vocabulary
- Comprehension
- Fluency

Mental Systems
- Attention
- Perception
- Memory
  - General Knowledge
  - Domain Knowledge
  - Word Meaning
- Language
  - Syntax
  - Semantics
- Thinking and Reasoning
  - Comprehension
  - Inferencing
  - Interpretation
  - Understanding

Pre-reading
Initial Reading
Confirmation and Fluency
Reading for Learning
Multiple Viewpoints
Construction and Reconstruction

Internalization of a Meta-language for Reading and Thinking

Proficient Reading:
Skill in coordinating core reading systems to accomplish reading tasks.
Reading Fluency

• Fluent reading is an essential academic skill that serves as a foundation for many other aspects of learning, including comprehension of written language in academic textbooks, as well as fiction and non-fiction texts.

• Fluent word recognition requires automatic word recognition of orthographic patterns, including patterns in words with irregular spellings.

• Fluent reading is accomplished without hesitations, omissions, repetitions, additions, fillers, rereading of words or any other forms of inaccuracies.

• Fluent reading can be separated into two basic categories:
  • Simple meaningful syntactic context (basic reading competence)
  • *Reading of complex grade level texts (incl. esoteric vocabulary, orthographically opaque words, etc.)

• Reading fluency is not enough - as it is only the foundational basis for reading comprehension
  • It is necessary but not sufficient for the comprehension of text (Jan Hasbrouck)
Reading and Cognition: Memory

• Working memory (WM) is the memory used for temporarily storing and manipulating information so we can perform a particular task. Subcomponents are
  • Phonological loop that stores verbal information
  • Visuospatial ‘sketchpad’ stores visual and spatial information (Baddeley & Hitch, 1974).
    • Responsible for the acquisition of sound-letter correspondence, phonemic awareness, and ultimately reading comprehension
• Students with poor working memory will expend all their capacity on basic tasks such as decoding, which leaves them with very little capacity to devote to the comprehension of read text (Nouwens, Groen, & Verhoeven, 2017)
  • Following directions tasks of tests such as TILLS correlate with working memory functioning and are sensitive to reading deficits (Lahey & Bloom, 1994; Cowan, 1996; Baddeley, 2003)
If one “zones out” during reading tasks, becomes distracted, and attends poorly to text, their comprehension of read text will be adversely affected.

Studies on reading abilities of children with ADHD consistently identify their reading comprehension abilities as being poorer as compared to peers without the ADHD diagnosis (Miller et al, 2013)
Reading and Cognition: Processing Speed

• Rapid automatized naming (RAN) (rapidly naming colors, numbers, letters) has been found to be a consistent predictor of reading fluency in all orthographies (Landerl, et al, 2019)
  • Children with slow processing speed may take a significantly longer time decoding text (Landerl et al, 2018)

• Poor rapid automatized naming abilities (on alphanumeric and non-alphanumeric tasks) have been found to be a long-term and universal symptom of reading deficits (Araújo & Faísca, 2019)

• Can be assessed via:
  • RAN/RAS
  • CTOPP-2 (portions)
  • Arkansas Rapid Naming Screener (FREE)
Fluent Readers (NAEP)

“Naturalness” of reading

A. Grouping or **phrasing** of words as revealed through the intonation, stress, and pauses exhibited by readers

B. Adherence to author’s **syntax** &

C. **Expressiveness** of the oral reading-interjecting a sense of feeling, anticipation, or characterization

<table>
<thead>
<tr>
<th>Fluent Level</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Level 4</td>
<td>Reads primarily in larger, meaningful phrase groups. Although some regressions, repetitions, and deviations from text may be present, these do not appear to detract from the overall structure of the story. Preservation of the author’s syntax is consistent. Some or most of the story is read with expressive interpretation.</td>
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<tr>
<td>Level 3</td>
<td>Reads primarily in three- or four-word phrase groups. Some small groupings may be present. However, the majority of phrasing seems appropriate and preserves the syntax of the author. Little or no expressive interpretation is present.</td>
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<tr>
<td>Nonfluent Level 2</td>
<td>Reads primarily in two-word phrases with some three- or four-word groupings. Some word-by-word reading may be present. Word groupings may seem awkward and unrelated to larger context of sentence or passage.</td>
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<tr>
<td>Level 1</td>
<td>Reads primarily word-by-word. Occasional two-word or three-word phrases may occur—but these are infrequent and/or they do not preserve meaningful syntax.</td>
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Calculating Oral Reading Fluency (ORF)
(Hasbrouck & Tindal, 2017)

To obtain a words-correct-per-minute (WCPM) score, students are assessed individually as they read aloud for one minute from an unpracticed passage of grade-level text.

To calculate the WCPM score, the examiner subtracts the total number of errors from the total number of words read in one minute.

- Errors are words that are omitted, misread, or substituted for other words.
- Word transpositions in a phrase count as two errors (e.g., reading “worked and studied” instead of “studied and worked”).
- Each time a word is read incorrectly it is counted as an error.
- *Word repetitions, self-corrections, as well as word insertions (words which do not appear in the text) are not counted.
- *Dialectal mispronunciations and speech production deficits are not counted as errors
- *Hesitations, repetitions, lack of pausing for punctuation, etc., do affect reading prosody and do impact the final WCPM score because they (1) slow the student down and, (2) reduce the number of words that are read correctly in one minute (Shinn, 1989).

How Fast is Fast Enough?
Recent research on reading fluency has indicated that as early as by 4th grade reading faster than 90 WCPM will not generate increases in comprehension for struggling readers (O’Connor, 2017)
The Role of Reading Prosody in Reading Comprehension

• Prosody reflects linguistic features (sentence structure) and text features (punctuation)
  • Pauses at commas, sentence boundaries, raising pitch at questions, lowering it at the end of declarative sentences, etc.
  • Pauses need to reflect text grammar (Miller & Schwanenflugel, 2006)

• Miller and Schwanenflugel (2006) compared students’ reading prosody in first and second grades with their reading comprehension at the end of third grade and found that, “early acquisition of an adult-like intonation contour predicted better comprehension”

• Álvarez-Cañizo, Suárez-Coalla, & Cuetos, 2015 found that children with poorer reading comprehension make:
  • Inappropriate pauses (including inter-sentential pauses before comma)
  • Made more mistakes on content words (as compared to peers with good reading fluency)
  • Struggle with using appropriate pitch at the end of sentences (e.g., pitch declination in declarative sentences)
    • Prosody plays an important part not just on reading fluency but also reading comprehension

• Schwanenflugel, Hamilton, Wisenbaker, Kuhn, & Stahl, 2004 found that Inefficient word reading is a major barrier to attaining good prosody for most young readers
Reading Prosody Checklist 
(Hudson, Lane and Pullen, 2005, p. 707)

1. Student placed vocal emphasis on appropriate words.
2. Student's voice tone rose and fell at appropriate points in the text.
3. Student's inflection reflected the punctuation in the text (e.g., voice tone rose near the end of a question).
4. In narrative text with dialogue, student used appropriate vocal tone to represent characters' mental states, such as excitement, sadness, fear, or confidence.
5. Student used punctuation to pause appropriately at phrase boundaries.
6. Student used prepositional phrases to pause appropriately at phrase boundaries.
7. Student used subject-verb divisions to pause appropriately at phrase boundaries.
8. Student used conjunctions to pause appropriately at phrase boundaries.
Text Selection
Text complexity matters. Expository texts are much harder to monitor for coherence as compared to fictional narrative texts (Currie, et al, 2020)
## Analyzing Error Types: Word Level

### Phonological
- Omissions and/or additions of sounds
- Omission of letters that represent less salient sounds (e.g., unstressed syllables)
- Letter reversals when reading (e.g., reads ‘fold’ as ‘flod’, etc.)

### Decoding
- Impaired knowledge of letter-sound relationships
- Difficulty blending sounds (vowel and consonant digraphs; diphthongs, consonant clusters, etc.) to form disyllabic and multisyllabic words

### Semantic
- Vocabulary substitutions such as ‘father’ for ‘dad’

### Morphological
- Alteration of affixes: prefixes and suffixes
- Inflectional (time/quantity but doesn’t change words) and derivational morphemes (change word meaning/word class)

### Mental Graphemic Representations
- Opaque/Nontransparent
Reading Fluency Case Study 1: 10-7-year-Old Male

- Oral reading rate 60 WCPM = 10th percentile bracket for the 4th grade Fall WCPM (Hasbrouck & Tindall, 2017) – very low for the 4th grade Spring WCPM expectations

- Rereading words
- Hesitations (at the beginning of words)
- Frequent insertions of fillers (e.g., ‘ah’, ‘um’, etc.)
- Lack of pausing for end punctuation
- Alters morphological endings of words (read, ‘burst’ as ‘bursts’, ‘buildings’ as ‘building’, etc.)
- Substitutions of similar looking words in text (e.g., read ‘took’ as ‘look’; ‘plates’ as ‘plants’, ‘runaway’ as ‘runway’, ‘sent’ as ‘spent’, etc.)
- Difficulty decoding unfamiliar multisyllabic words (e.g., determined, gradually, Oregon, etc.) resulting in failed correction attempts
**Reading Fluency Case Study 1: 12-5-year-Old Male**

- Reading rate 106 WCPM in 15\textsuperscript{th} percentile bracket for the 6\textsuperscript{th} Grade Spring WCPM (Hasbrouck & Tindall, 2017)
- Research on reading fluency has indicated that as early as 4\textsuperscript{th} grade reading faster than 90 WCPM will not generate increases in comprehension for struggling readers (O’Connor, 2017)
- Increase in rate is not merited (focus on prosody, accuracy, comprehension)
- Lack of pausing for punctuation
- Same word rereading
- Word reading hesitations
- Intrapsentential pauses
- Insertions of extra words in text (e.g., read “moved west” as “moved out west”)
- Addition of morphological word endings (e.g., added –s to the word ‘folk’; ‘folks’)
- Substitutions of similar looking words in text (e.g., read ‘for’ as ‘of’; ‘Northeast’ as ‘Northwest’, ‘this’ as ‘his’, ‘had’ as ‘has’, etc.)
- Omission of words from text (e.g., read the “New York game” as the New game”)
- False starts (typically marked by reading the first syllable of an unfamiliar word before reading the word again in its entirety correctly such as ‘Pur’ in ‘Puritans’, etc.)
Reading Comprehension Skills

• Not a unitary skill but rather a collection of skills (Gray, 2017)

• Solid reading comprehension abilities are heavily reliant on phonology, morphology, syntax, semantics, and pragmatics

• Studies show that students diagnosed with Developmental Language Disorder (DLD) show reading comprehension weaknesses, which is why it would be important to improve reading comprehension explicitly in the context of language and literacy therapy services (Gough Kenyon, Palikara, & Lucas 2018)
Impact of Oral Language on Reading Comprehension

- Strong discourse and narrative abilities significantly positively correlate with reading comprehension abilities (Catts, Fey, Tomblin, & Zhang 2002; Dickinson & McCabe, 2001; Griffin, Hemphill, Camp, & Wolf, 2004)

- Knowledge of literate vocabulary words (abstract nouns, metacognitive verbs, etc.), in isolation and in context of read text (Nippold, Hegel, & Sohlberg, 1999; Nippold, 2006) is very important as well as

- Semantic Awareness (Taylor, Duff, Woollams, Monaghan, & Ricketts, 2015)
  - Semantic processes are associated with word reading skills, namely children read words better when they know their meanings

- Morphological Awareness (James, Currie, Xiuli Tong, & Cain, 2020)
  - Plays a crucial role in supporting higher-level text processing
  - It is partly mediated by vocabulary knowledge
  - Becomes an increasingly important predictor of reading comprehension between 6 and 11 years of age
  - Makes a unique contribution to reading comprehension ability beyond oral vocabulary and word reading skill
Types of Oral Language Deficits

- **Phonology** (understanding and use of speech sounds - phonemes)
- **Morphology** (understanding and use of word parts including morphemes, affixes, etc.)
- **Vocabulary and Semantics** (understanding how to define and manipulate words)
- **Syntax** (understanding and use of complex sentence structures)
- **Pragmatics** (understanding and use of language in social contexts)
- **Children with reading deficits can have difficulties in some or all of the above areas**

Research indicates that oral language deficits place children at a higher risk for dyslexia (Catts et al, 2005; Adlof et al, 2017). Research also shows that having a Developmental Language Disorder (DLD) places children at a high risk of developing reading deficits (Adlof, 2017).

*This is why a comprehensive language assessment should be a necessary component of all literacy evaluations.*

[SOR Certificate in Literacy]
Children with language based literacy deficits are impaired in multiple areas of language including their effective use and interpretation of language in written texts.

Studies have found that children with language disorders present with difficulty understanding and using abstract, ambiguous, as well as figurative language during speaking, reading, and writing tasks (Bühler, Perovic, & Pouscoulous, 2018; Freed, Adams, & Lockton, 2011; Troia, 2011).

Impaired abstract emotion comprehension as well as ability to describe mental states in stories has also been reported (Ford & Milosky, 2003; Brinton, Fujiki, & Asai, 2019).

Children with pragmatic difficulties will exhibit poorer comprehension of read text.
Effect of Impaired Pragmatics on Reading Comprehension

- Comprehension of central themes and main ideas
- Effective summarization of read text
- Interpretation of abstract language and double meaning of texts
- Interpretation of ambiguous and figurative language
- Analysis of author’s tone as related to story development
- Comprehension of different types of irony (verbal including sarcasm, situational, dramatic)
- Comprehension of paronomasias (puns/play on words) metaphors, and exaggeration
- Comprehension of metonymy (use of linked terms to substitute for objects/concepts such as crown=king; suit=business executive, etc.)
- Comprehension of twist endings and dramatic story plots
- Multiple interpretations of text meaning
- Difficulty engaging in text analysis and evaluation
- Difficulty working with a variety of complex literary texts (e.g., poetry, prose, comedies, dramas, etc.)
“Inference making is the process of integrating information within text and between the text and one’s general knowledge of the topic” (O’Brien, Cook, & Lorch, 2015 in Barth & Elleman, 2017, pg. 31)

Good readers make two types of inferences during reading to help them fill the gaps in text.

Text-based inferences link current information to previously read information

Knowledge-based inferences integrate currently read information with one’s prior knowledge of the topic (Barth & Elleman, 2017, pg. 31).

Making inferences also allows readers to make sense of adjacent sentences as well as of the overall text (local and global coherence respectively) (Kendeou, 2015; McNamara & Magliano, 2009 in Barth & Elleman, 2017, pg. 31)

Students with difficulties in the areas of inference making are at a significant disadvantage with respect to comprehension of read text (Cain & Oakhill, 1999).
Background Knowledge and Reading Comprehension

• The knowledge threshold or “precisely how much knowledge is necessary to understand a text and whether there is a specific amount of knowledge required before understanding is compromised” (O’Reilly, Wang & Sabatini, 2019, p. 1)
  
  • Identified that 59% correct on a knowledge test “resulted in a qualitative change in the relationship between background knowledge and reading comprehension” (pg. 5)
  
  • Found that certain vocabulary words (activation words) were more predictive of exceeding the knowledge threshold than others.
  
  • Students who attained the highest, above threshold scores, had knowledge of all the activation words, which the authors hypothesized “activated information described previously in the text as well as relevant background knowledge not included in the texts” (pg. 6).
  
  • Interpret with significant caution
  
Study limitations

• Tested students on only one topic (ecology) (What about other topics?)
• Student performance was measured only by “topical-vocabulary choice and factual multiple choice” questions
• Concern because given certain texts and tasks, even students who perform poorly on tests of reading comprehension can perform well.
• If poor readers are asked to take a multiple-choice test about a passage they are familiar with; poor readers can perform better than good readers who are asked to read and summarize a topic they know nothing about (e.g., Recht & Leslie, 1988 in Catts & Kamhi, 2014).
Gestalt Processing and Reading Comprehension

• The ability to coherently and cohesively state the main ideas of read texts, as well as cogently summarize read texts.

• Monumental area of difficulty for children with language as well as social communication disorders (Fitch, Fein, & Eigsti, 2015) secondary to deficits in the area of Gestalt Processing (the ability to grasp the “big picture” vs. over-focusing on irrelevant details) (Brosnan et al, 2004)

• Grade level text difference fourth grade-level language arts passages may contain far simpler literate vocabulary words as compared to social studies and science texts containing esoteric vocabulary and explaining technical topics (e.g., electricity)

• Not all fictional texts are alike

• Poetry contains numerous literary devices and as such is much more difficult to analyze than a simpler fictional text.
Clinical Assessment of Reading Comprehension

- Allows the clinicians to determine the student’s reading abilities on a deep vs. shallow level
- Term coined by Sven Birkerts in *The Gutenberg Elegies* (1994)
- Includes inferential and deductive reasoning, analogical skills, critical analysis, reflection, and insight
  - Rereading of text
  - Making it comprehensible (e.g., writing on margins)
  - Ask questions about text
  - Form opinions about text
  - Link texts to other texts or personal experiences
- Source: https://www.thoughtco.com/what-is-deep-reading-1690373
Types of Questions

• Questions assessing deep text knowledge
  • Ask abstract verbal reasoning questions
  • Ask to define literate vocabulary words
  • Ask to state the main idea of the passage
  • Ask to summarize the passage

• Questions assessing shallow text knowledge
  • Multiple-choice questions
  • Factual open-ended questions
  • Yes/no questions
    • Result in an illusion that the student understands the passage, but are not adequate enough to ascertain true comprehension of passage content
Hierarchy of Question Complexity

• Basic/concrete questions (who, what, where, when)
• Vocabulary questions (Definitions, synonyms, antonyms, idioms, multi-meaning words, etc.)
  • Concrete vs. literate
• Abstract/thinking questions (answer requires advanced thinking- why, how)
• Gestalt processing (main ideas of paragraphs, summary of passage)
• Analysis Questions (compare and contrast, what evidence can you cite, can you classify these, etc.)
• Synthesis questions (combine info, solutions, predictions)
• Evaluative questions (agree/disagree due to..., the most important thing..., etc.)
• Hypothetical questions (responses require justification and elaboration)
Reading Comprehension Sample Questions and Answers: Part I

• 17-6 Year old in 11th Grade – Fiction Text: Hearts and Hands” by O’Henry
  • When asked to discuss the character traits of the real marshal (“glum faced man”) and criminal (Mr. Easton), student stated that Mr. Easton is prideful, and noble and that the marshal is quiet and disinterested. However, the correct answer needed to reference that Mr. Easton is ambitious and reckless and will readily commit a crime to gain money. In contrast, the marshal is very humane with a deep sympathy for others, including his own prisoner.

• 12-5 year old in 6th Grade – Nonfiction Text: “The Sporting Life” by Continental Press
  • When asked to identify the main idea of the text, student vaguely stated, “That um, I think the main ah I think the main idea was um sports like once they were created they were ah very like ah they were like very popular immediately and are still today so its very consistent I guess.” The correct response needed to coherently and cohesively reflect that the story tells about the evolution of sports in United States beginning with the formation of professional baseball clubs in 1876.

• 10-7 year old in 4th grade- Nonfiction Text “The Great San Francisco Earthquake” by Continental Press
  • When asked, ‘Why do you think the earthquake destroyed so much property?’ student incorrectly responded, ‘Because they probably weren’t thinking they get an earthquake there.’ However, the correct response needed to reflect that the houses of San Francisco were build out of wood, and thus easily destroyed.
Reading Comprehension Sample Questions and Answers: Part II

• 10-8 year old in 5th grade - Nonfiction Text “The Power of the Printed Word” by Continental Press
  • When asked, ‘What did the President Lincoln mean by the words: “So this is the little lady who started this big war?”’ Student imprecisely responded, “Um, I think he he meant like he meant it like in a mean way”. However, a correct response needed to allude to the powerful effect of the book on its readers and how it was one of the contributing factors to the start of the Civil War.

• 7-10 year old in 2nd grade - Nonfiction Text “Why Cities Build Skyscrapers” by Continental Press
  • When asked, “What was the main (big) idea of this story?” student nonspecifically stated, “Skyscrapers and tall buildings.” The correct response needed to include the reasons why cities started to build skyscrapers.

  • When asked, (9) How did the Trojan War affect the building of Rome?” student replied, “Ah, (pause) I don’t know.” The correct response needed to reflect that it was because of the Trojan War that Aeneas left Troy and traveled to Italy to (supposedly) build Rome.
Creating Targeted Goals for Intervention Purposes

• Do not make broad statements “The student has dyslexia”
  • Label means different things to different professionals and does not inform treatment
  • See CEU Smart Hub webinar entitled: “A Reading Program is NOT Enough: A Deep Dive into the Dyslexia Diagnosis” (Available after 8/25/21)

• Analyze available assessment data with respect to affected areas and error types
  • Student’s phonemic awareness and phonics related deficits are characterized by weaknesses in the areas of phoneme isolation, segmentation and substitution, as well as inconsistent alphabetic knowledge for more complex consonant and vowel digraphs and trigraphs.
  • Student’s reading fluency deficits are characterized by impaired prosody, rate, and accuracy, as well as decreased orthographic, semantic and morphological competence.
  • Student’s reading comprehension difficulties are characterized by impaired ability to comprehend pragmatically related nuances of age/grade level texts including ambiguously phrased information, puns and double meanings, irony and sarcasm, advanced figurative language, as well as grasp gestalt ideas and subtle messages of texts.

• Prioritize goal selection (e.g., focus on the underlying skills affecting fluency and comprehension- PA, OK, MA, etc.)

• Long Term Goals (sample): Student will improve his reading comprehension abilities for academic and social purposes.
  1. Student will improve his reading accuracy for academic purposes (self-monitor for errors)
  2. Student will effectively define literate, text-embedded vocabulary (abstract nouns and metacognitive verbs) using text context
  3. Student will identify main ideas in read text.
  4. Student will improve his morphological awareness abilities via effective recognition of stems and affixes (prefixes and suffixes) of presented words
  5. Student will answer abstract reading comprehension questions pertaining to the presented text (make text based and knowledge based inferences)
Conclusion

• Because students with reading difficulties continue to be underserved in the schools it is highly important to assess not just their basic reading competence but also their grade-level comprehension of both fiction and non-fiction texts

• Clinical reading assessments appropriately reflect the learner’s difficulties in school setting
  • Ability to independently read, comprehend and engage with text in an age appropriate manner such as write book reports, provide verbal summaries, answer abstract questions etc.

• For children who struggle with reading but who pass common standardized reading tests (e.g., TORC-4, GORT-5, etc.) clinical assessments will yield diagnostic information needed to formulate relevant and targeted treatment goals

• Students with reading related deficits no matter how young or old (from kindergarten through 12th grade) need to receive fair and appropriate literacy assessments which will result in targeted and relevant therapeutic services

• Anything less is a denial of Free Appropriate Public Education (FAPE) to which all students are entitled to

• It is NEVER too late to help!
References


References (cont.)

References (cont.)


Our Programs and Certificates

• Power Up August 2021 Literacy Conference
  • https://www.laviinstitute.com/power-up-august-2021/

• SOR Literacy Certificate
  • http://www.laviinstitute.com/literacy-certificate/

• CEU Smart Hub
  • https://www.laviinstitute.com/smarthub-pricing/
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