

How did we get here?

- Oral reading rate is one of the criterion used to assess reading fluency. It provides a measure of automaticity and has been used as an indicator of potential reading ability and a predictor of academic success (Wise et al., 2010).
- Reading fluency is composed of three components: accuracy, automaticity, and prosody (Wise et al., 2010). Accuracy refers to correct word identification. Automaticity entails the immediate recognition of words without the decoding process. Prosody refers to the ability of students to read with appropriate expression of intonation, stress, and timing.
- Research has paid limited attention to how reading fluency should be assessed (Pikulski and Chard, 2003) .
- Some stuttering experts have presented concerns that children who stutter may not be provided with necessary accommodations during administration of standardized oral reading tests. Many of the standardized oral reading fluency tests are timed measures and most do not allow time adjustments for school-age students with speech fluency problems.
- Children who stutter might experience challenges in timing due to the presence of blocks, repetitions, prolongations, slower-than-normal speech rate and speech breakdowns from reading or speaking under pressure (Scaler Scott, 2010).
- Given the concerns that students who stutter may not be receiving necessary accommodations during reading tests that have oral reading rate as an integral component of the assessment, the American Speech-Language-Hearing Association (ASHA) established the Committee on Reading Fluency for School-Age Children who Stutter.
- The committee's first task was to further investigate the current status of oral reading fluency testing and existing accommodations during such testing for children who stutter.
- The committee developed and fielded a survey to investigate the following two questions:
 - (A) What tests are being administered to measure academic benchmarks in oral reading fluency across the United States?
 - (B) What accommodations, if any, are being implemented during the administration of oral reading fluency tests to account for problems due to stuttering (e.g., blocks, repetitions, prolongations, slower-than-normal speech rate, speech breakdowns from reading/speaking under pressure, hesitations)
- As outlined in Games, Paul, and Reeves (2014), an email invitation to participate in the survey was sent to 12, 229 ASHA-certified SLPs residing in the United States and employed full- or part-time. The invitations were sent to those who either indicated that they provided clinical services in a school setting in some capacity; "fluency" was an area of expertise for them; and/or those who belonged to special interest groups on Fluency and Fluency Disorders and Language Learning and Education. Response rate was 2.0%.

Survey Findings

As reported by the ASHA Committee in *The ASHA Leader* (2014, July), the survey indicated that:

- 36.1% of students who stutter did not receive accommodations for oral reading fluency testing
- Many SLPs had misconceptions about when students might require accommodations for testing, especially considering the variable nature of stuttering across reading and speaking contexts
- Respondents indicated their support of this study and its implications for addressing barriers to students receiving appropriate accommodations when needed. Barriers included:
 - Administrative procedures
 - Lack of understanding of the potential negative impact test administration policies could have for children who stutter.

General Clinical Implications

1. SLPs require more education to understand that stuttering can have a negative impact on children's performance on oral reading fluency tests and that appropriate accommodations need to be enforced.
2. SLPs can provide their expertise to help reading assessors understand and implement specified reading accommodations for the child who stutters
3. Accommodations such as working one-on-one with the assessor, and using alternate measures such as silent reading fluency tests would allow the child who stutters full participation in taking the same standardized tests that the school district gives to nondisabled peers.
4. Unintended consequences, such as placing the child in an inappropriate reading group or failing to promote the child to the next grade, can be prevented when appropriate accommodations are provided to the child who stutters.

A case illustration

As part of a larger study, a 14-year-old male with diagnoses of stuttering, cluttering, and a language-based learning disability was administered the following literacy battery: Gray Silent Reading Test; Test of Silent Contextual Reading Fluency; the Elision subtest of the Comprehensive Test of Phonological Processing, Second Edition; and the Gray Oral Reading Test, Fifth Edition. The following scores were obtained on the first three subtests:

Test	Raw score	Age Equivalent	Grade Equivalent	Percentile Rank	Scaled or Standard Score
Comprehensive Test of Phonological Processing – Second Edition (Elision Subtest only)	26	9-0	4.0	25	8
Test of Silent Contextual Reading Fluency	93	11-0	5.7	25	90
Gray Silent Reading Test	31	10-6	4.8	19	87

The GORT-5 was attempted to be scored by three different raters. Moments of stuttering negatively impacted the scores for Rate, and moments of cluttering negatively impacted scores for Accuracy. The following illustrates differences in Rate scores when time for moments of stuttering are included or removed, and differences in Accuracy scores before and after moments of cluttering are considered.

Story	Rate Score with Stuttering time Included	Number of seconds due to moments of stuttering	Rate Score with Stuttering Time Excluded	Change/No change
2	5	1	5	No change
3	5	0.5	5	No change
4	4	11	5	Change
5	5	9	5	No change
6	5	6	5	No change
7	2	5	3	Change
8	0	14	1	Change
9	1	8	1	No change

Story	Accuracy Score not accounting for cluttering	Number of moments of cluttering	Accuracy score accounting for cluttering	Change/No change
2	4	1	3	Change
3	5	3	4	Change
4	2	2	4	Change
5	4	3	4	No change
6	2	1	3	Change
7	0	1	3	Change
8	0	2	1	Change
9	0	2	1	Change

Overall implications

In this case example, four out of eight scores for Accuracy alone changed. No scores changed for Rate alone. Three changed for both Rate and Accuracy.

Story	Rate Change	Accuracy Change
2	N	Y
3	N	Y
4	Y	Y
5	N	N
6	N	Y
7	Y	Y
8	Y	Y
9	N	Y

In seven out of eight stories, the participant's scores for either Rate, Accuracy, or both changed by accounting for moments of stuttering and/or cluttering. Moments of stuttering added extra time to the participant's rate score as he often would block on a sound and go back several words to restart what he was reading. The restarts also resulted in penalties for addition of words. Restarts are a common compensatory strategy seen in children who stutter. Moments of cluttering also often caused confusion in scoring, as due to the participant's over-coarticulation, raters had difficulty discerning whether the participant included all words or skipped a word or two. After moments of over-coarticulation, the participant would go back to the phrase and emphasize all words. This was a strategy the participant is practicing in weekly speech sessions. By applying this strategy to the GORT-5, the participant was penalized for addition of words. Thus, attempting to compensate for stuttering and cluttering resulted in an inaccurate assessment of the participant's true oral reading fluency skill.

It is important to note that in order to obtain a true analysis of the client's reading fluency level, the stories from the GORT-5 needed to be recorded, played back, and analyzed multiple times, resulting in hours of analysis. Scores were also obtained as the testing was taking place; however, when recordings were analyzed, adjustments always had to be made for items that moved too quickly for online analysis. The amount of time needed to obtain an accurate score for reading fluency in a participant with fluency disorders is unrealistic using oral reading fluency measures. Furthermore, it is unrealistic to expect most school personnel administering oral reading fluency tests to have enough familiarity with stuttering and/or cluttering and compensatory strategies students may use to obtain a valid assessment of reading fluency. Due to the unrealistic time and analysis constraints of oral reading fluency measures, and the large margin for error with online scoring, for children who stutter and/or clutter, other reading fluency measures, such as silent reading fluency, should be considered.

Selected References

- American Speech-Language-Hearing Association. Ad Hoc Committee on Reading Fluency for School-Age Children who Stutter. (2014, July). Quick: Talk fast and don't stutter! *The ASHA Leader*, 19, 44-48. Retrieved from <http://leader.pubs.asha.org/Article.aspx?articleid=1885600>.
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