



<h1 style="margin: 0;">FINAL RESULTS OF THE WJ-IV ACH AND GORT-5 STUDY: A WOODCOCK INSTITUTE FUNDED PROJECT</h1> 	<p>R. Lanai Jennings, PhD Marshall University</p> <p>Conrae Lucas-Adkins, PsyD Marshall University</p> <p>Jeremy Lopuch, PhD Fort Mills Schools, NC</p> <p>Megan S. Edwards, EdS Emily D. Nestor, EdS Nicole Alessio, BA Marshall University</p> <p>Kentucky Association for Psychology in the Schools</p> <p>Fall Conference October 31, 2018</p>
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<h2 style="margin: 0;">A SPECIAL THANKS TO THE WOODCOCK INSTITUTE</h2>
<ul style="list-style-type: none"> ■ Small grants program aimed at advancing: ■ Interdisciplinary research into the cognitive profiles of individuals with diagnosed exceptionalities (learning disabilities, neuropsychological conditions, behavioral and psychiatric disorders, and giftedness), ■ Effective clinical assessment practices and the dissemination of research findings through direct professional development opportunities and publications and applied evidence-based assessment <p>■ https://twu.edu/woodcock-institute/</p>


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A SPECIAL THANKS TO OTHER CONTRIBUTORS

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 - Mallory Frampton
 - Paula King
 - Rachel James
 - Mary Toler
 - Becky Wendell
- Gallipolis City Schools, Ohio
 - Heidi Creamer
- Sandra Stroebel, PhD
- All Student Participants

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OVERVIEW OF TODAY'S PRESENTATION

- Purpose of Study
- Background Information
- Research Questions
- Method & Results
- Conclusion



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STUDY PURPOSE

- Evaluate the relationship between the GORT-5 and the WJ-IV ACH reading tests.
- Practice-driven study
- Initiated to fill gaps in STAR Reading data in one school district's multi-tiered system of support (MTSS)



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STAR READING

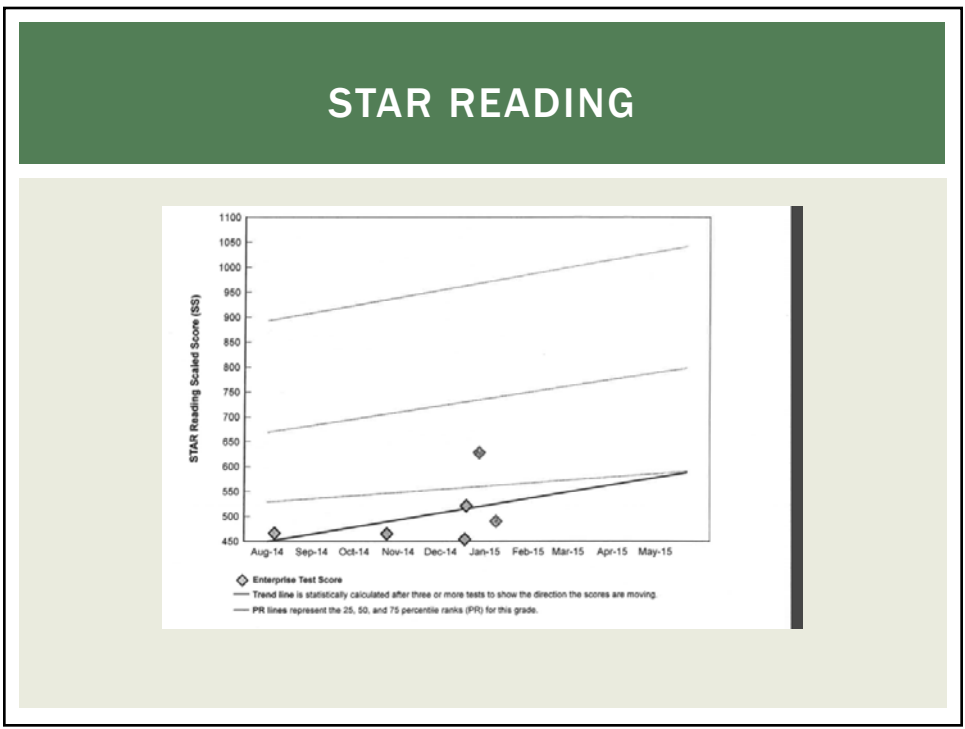
- Renaissance Learning™
- Computer Adaptive Testing available since 1996
- Assesses Five areas
 - Word Knowledge and Skills
 - Comprehension Strategies and Constructing Meaning
 - Analyzing Literary Text
 - Understanding Author's Craft
 - Analyzing Argument and Evaluating Text
- Generates scaled scores, percentiles, and lexiles
- STAR Early Reading used in grades K-2 in our district
- <http://www.renaissance.com/products/assessment/star-360/star-reading-skills/>

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HTTP://WWW.RTI4SUCCESS.ORG/RESOURCES/TOOLS-CHARTS/SCREENING-TOOLS-CHART

Tool	Area	Classification Accuracy Rating	Generalizability	Reliability	Validity	Disaggregated Reliability, Validity, and Classification Data for Diverse Population	Efficiency			
							Administration	Administration & Scoring Time	Scoring Key	Benchmarks / Norms
	Reading		Broad				Individual Group	10 Minutes	Computer Scored	Yes

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INCONSISTENT PROGRESS MONITORING DATA

- Make it difficult to:
 - 1) interpret individual student performance in a MTSS framework
 - 2) subsequently recommend appropriate interventions and special education referrals.
- Support need for an additional diagnostic instrument to guide referral decisions
 - For select students at Tier 2 / Tier 3



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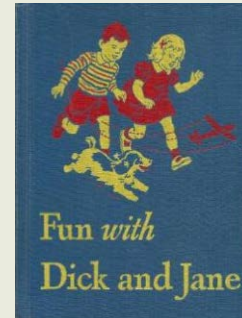
	Null hypothesis (H_0) is, in fact, true NO DISABILITY	Null hypothesis (H_0) is, in fact, false SUSPECTED DISABILITY	STATISTICAL CONCLUSION VALIDITY
<u>Referral Decision:</u> Reject null hypothesis.	Type I error False positive	Correct outcome True positive (Sensitivity) ★	
<u>Referral Decision:</u> Accept null hypothesis.	Correct ★ outcome True negative (Specificity)	Type II error False negative	



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GRAY ORAL READING TESTS - FIFTH EDITION (GORT-5)

- Requires direct interaction between the examiner and examinee
- Informs intervention and the extent to which attention and motivation impact reading results
- First published in 1963 by Dr. William S. Gray
- Selected for use because it was commonly used in initial referrals by two local school psychologists



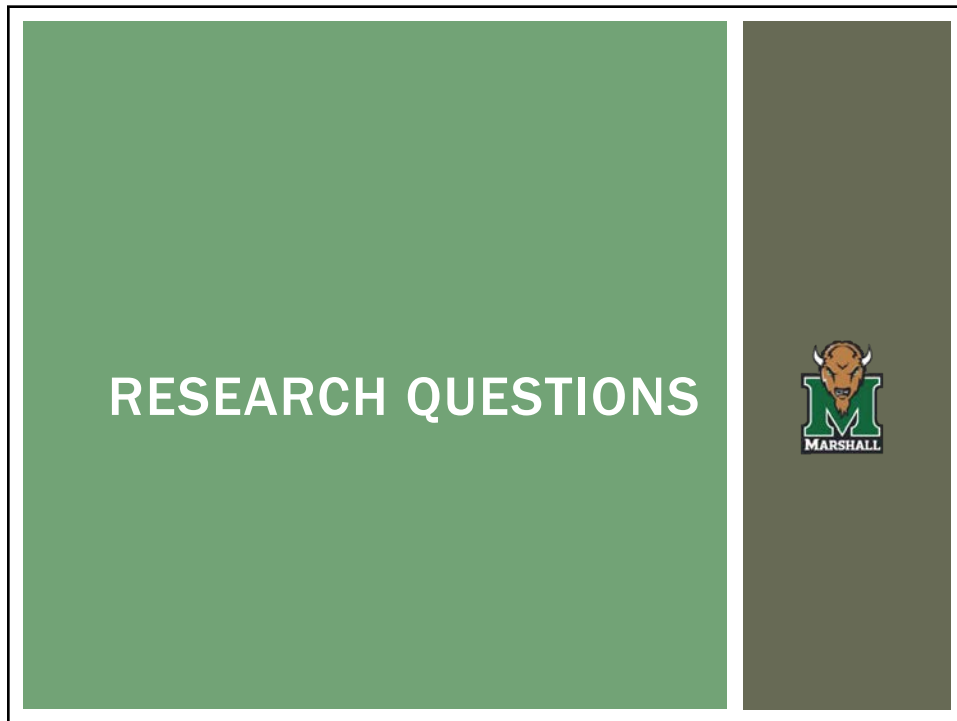
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GRAY ORAL READING TESTS - FIFTH EDITION (GORT-5)


- **Administration:** Individual.
- **Time:** 15-45 minutes.
- **Publisher:** PRO-ED.
- **Two Parallel Forms:** A and B
- The Gray Oral Reading Tests, Fifth Edition (GORT-5) provides an objective measure of oral reading Rate, Accuracy, Fluency, and Comprehension.
- Consists of **14 developmentally sequenced reading passages** with five comprehension questions following each story.
- **Vocabulary** in the questions was **controlled** to ensure the vocabulary would not be more difficult than that in the stories.
- Age Range: 6 years 0 months to 23 years 11 months
- **Wiederholdt & Bryant, 2012**



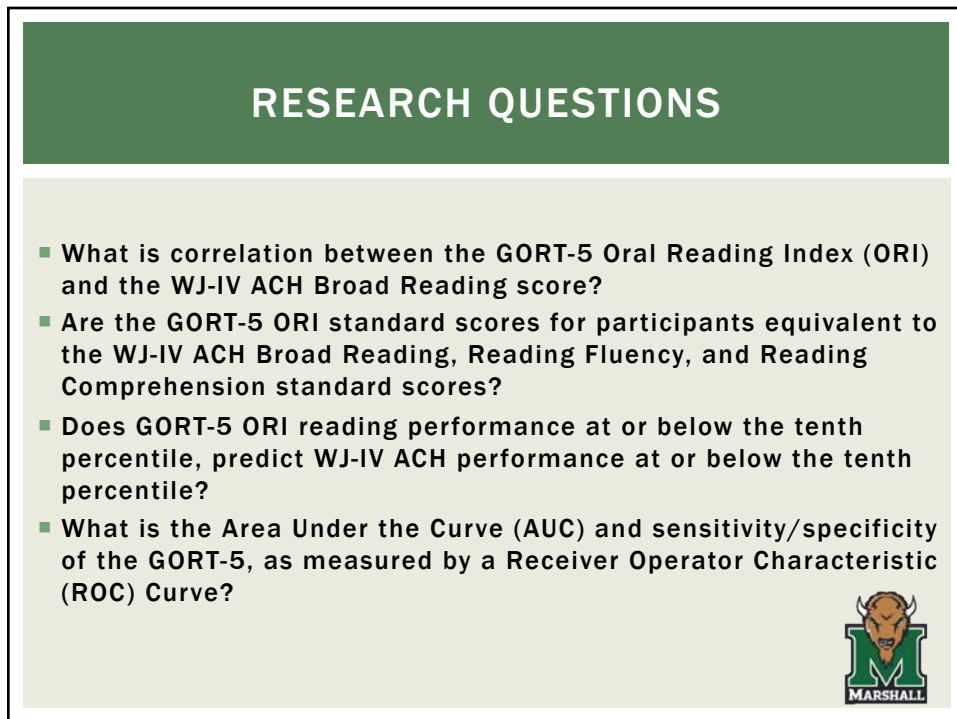
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RESEARCH QUESTIONS




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RESEARCH QUESTIONS

- What is correlation between the GORT-5 Oral Reading Index (ORI) and the WJ-IV ACH Broad Reading score?
- Are the GORT-5 ORI standard scores for participants equivalent to the WJ-IV ACH Broad Reading, Reading Fluency, and Reading Comprehension standard scores?
- Does GORT-5 ORI reading performance at or below the tenth percentile, predict WJ-IV ACH performance at or below the tenth percentile?
- What is the Area Under the Curve (AUC) and sensitivity/specificity of the GORT-5, as measured by a Receiver Operator Characteristic (ROC) Curve?



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 A slide titled "METHOD" with a green header. The body is light green and contains a list of participant details. In the bottom right corner, there is the Marshall University logo.

METHOD

Participants

- 118 students
- Referred sample
 - Includes gifted exceptionalty in West Virginia
- Females (n=41; 34.7%), Males (n=77; 65.3%),
- Elementary participants
 - Grades 2-5 (n=60; 50.8%)
- Middle level participants
 - Grades 6-8 (n=34; 28.8%)
- High school participants
 - Grades 9-12 (n=24; 20.3%)

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METHOD

Participants

- 1.7% Hispanic
- 5.0% Multiple Races
- 90.8% White, non-Hispanic
- 2.5% Other Race/Ethnicities



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METHOD

Measures

- GORT-5
- WJ IV Tests of Achievement (all reading tests)

Section 3. Performance Summary					Score
	Raw Total	Age Equivalent	Grade Equivalent	%ile Rank	Scaled Score
Rate	35	11.0	5.2	37	9
Accuracy	42	13.3	7.4	63	11
Fluency	77	12.0	6.2	50	10
Comprehension	27	8.9	3.4	16	7
					+
					Sum of Scaled Scores
					77
Sum of Scaled Scores		Oral Reading %ile Rank	Oral Reading Index (ORI)		SEM
77		30	92		3



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METHOD

- **Procedure**
 - Trained professionals including school psychologists, diagnosticians, and school psychology candidates
 - Administered both assessments under standard conditions as outlined by tests manuals
 - Attempted to counterbalance but unable to do so in all situations due to constraints of implementing in a natural setting
 - Recorded days between testing



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METHOD

- **Mixed method approach to analysis**
 - Pearson product-moment correlation coefficients
 - T-tests as an estimate for score equivalence
 - Chi-square like tests
 - ROC Curves



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BENEFIT OF ROC CURVES

- Receiver Operating Characteristic
- Used frequently in the medical field
- Curve that visualizes the trade off or relationship between sensitivity and specificity of a test or multiple assessments
- Additionally helps us understand the benefit of using an assessment to diagnose a problem
- Provides the best cut-off to ensure the highest rate of true positives with the lowest rate of false positives.
- The Area Under the Curve (AUC) shows how well the test can differentiate students with disabilities from those without disabilities (or the condition of interest)

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RESULTS



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RESEARCH QUESTION I: CORRELATIONS

WJ IV TESTS	GORT-5 ORI	GORT-5 Fluency	GORT-5 Comprehension
Broad Reading	.893*	.894*	.791*
Reading Fluency	.852*	.872*	.725*
Basic Reading Skills	.869*	.865*	.784*
Reading Comprehension Ext.	.874*	.808*	.855*

Note: *pp < .001

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RESEARCH QUESTION II: SCORE COMPARABILITY

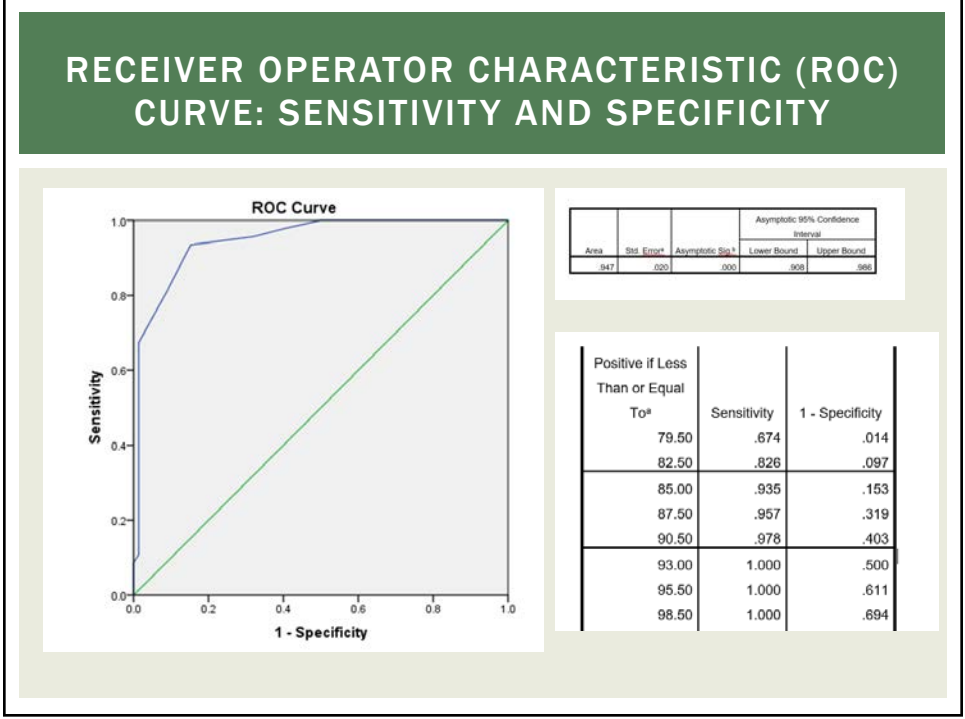
		Mean	Std. Deviation	Std. Error Mean
Pair 1* n=118	GORT-5 ORI	87.2	14.6	1.3
	WJ IV Broad Reading	83.6	17.4	1.6
Pair 2* n=113	GORT-5 ORI	86.7	14.2	1.3
	WJ IV Reading Comp Ext	83.9	15.9	1.5
Pair 3* n=117	GORT-5 ORI	87.4	14.6	1.3
	WJ IV Reading Fluency	85.0	17.8	1.6

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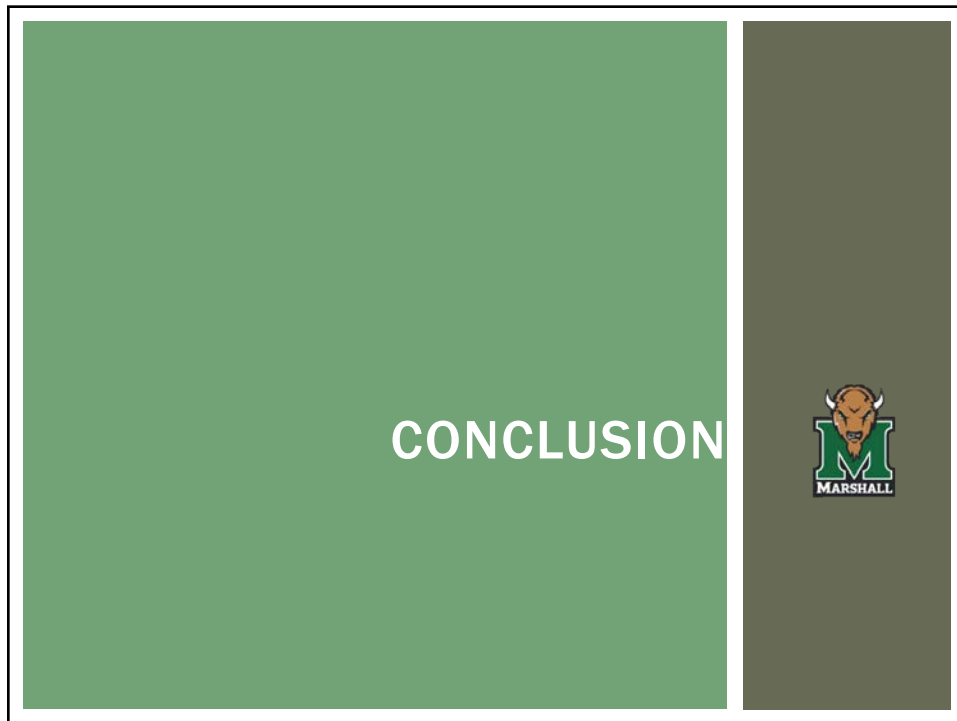
RESEARCH QUESTION III: WILL KNOWING GORT-5 ORI HELP US PREDICT WJ IV PERFORMANCE?

		WJ IV BROAD READING	
		At or below 10 th percentile	> 10 th Percentile
GORT-5 ORI	At or below 10 th percentile	32.2% (38 students)	6.8% (8 students)
	> 10 th Percentile	6.8% (8 students)	54.2% (64 students)

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CONCLUSION

- Very large correlations (.725- .893)
- Average GORT-5 ORI is 3.6 points higher than WJ IV Broad Reading Score.
- Floor on WJ IV is lower and better discriminates students with extreme reading struggles.
- Lowest possible GORT-5 ORI score is 52, whereas WJ IV standard scores minimum is <40



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CONCLUSION

- In the current sample, the addition of the GORT-5 as a diagnostic screener would enhance our statistical conclusion validity as practitioners
- May reduce need for unnecessarily lengthy special education evaluation for students whose Tier 2 / Tier 3 progress monitoring results are inconclusive, yet GORT-5 ORI is $>$ or $=$ 81.
- However, if the 10th percentile were used as the cut score, eight students (6.8%) would be overlooked when, they, in fact, performed significantly below the age expected range on the WJ IV in Broad Reading.



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CONCLUSION

Sensitivity & Specificity

- AUC value of .947 indicates the GORT-5 reliably distinguishes among students with satisfactory and unsatisfactory reading performance on the WJ IV, whereas values at 0.50 indicate the predictor is no better than chance.
- Thus, for students whose STAR Reading (or other progress monitoring results) are unclear or highly variable, the GORT-5 can be a strong predictor of performance on the WJ IV.



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PRACTICAL CONSIDERATIONS

- **When to add additional assessment into MTSS process?**
- **Who will assess?**
- **How can we maximize instructional benefit from assessment, in addition to informing referral decision?**

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LIMITATIONS

- **Regional sample was not a representative of national demographics**
 - **Results will need to be cross-validated by other studies**
- **More participants needed without any referral concerns**
- **Differential classification accuracy has not been examined yet across demographic groups**
 - **Currently have students examining classification accuracy by programmatic level and disability status.**

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MORE ABOUT THE WOODCOCK INSTITUTE GRANT PROGRAM



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