

# How Do We Best Measure Phonological Awareness?

## The Development of New Individual Growth and Development Indicators (IGDIs)

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### Introduction

- Research in assessment has highlighted the use of phonological awareness as a proxy for early literacy development. Early phonological awareness significantly correlated with later reading skills. **CORRELATIONS?** (Anthony & Lonigan, 2004).
- Specifically, one type of measure—General Outcome Measures (GOMs)—have been used to assess these skills using tools such as Individual Growth and Development Indicators (IGDIs; McConnell, McEvoy, & Priest, 2002).
- GOMs are brief, easy to use, cost-effective, sensitive to growth over time, and suitable for use over one academic year.
- Highlighted here is the development or revision of four measures of phonological awareness.
  - Rhyming (with revised directions)
  - Alliteration (revised presentation)
  - Sound Blending
  - Syllable Segmenting

### Methods

- A comprehensive literature review conducted to operationally define the domain of preschool phonological awareness and to examine how domain was measured in the past.
- Operational definition of phonological awareness:
  - Phonological awareness is the ability to detect and manipulate the sound structure of words independent of their meanings. (Phillips, Clancy-Menchetti, Lonigan, 2008).

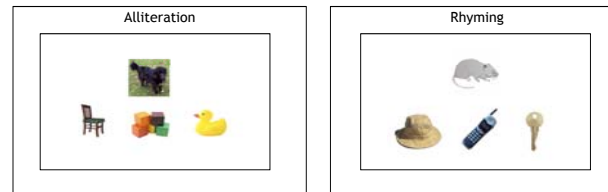
#### Phase 1:

- A series of 4 measures was developed, piloted, revised and subjected to field testing with a small sample of preschool aged children (n = 47).
- Three measures were then chosen for further piloting in Phase 2 (**Rhyming, Alliteration, Sound Blending**).
- Measures were selected using the following criteria:
  - GOM criteria (usability, sensitive to growth, etc.)
  - Percentage of children scoring a zero (floor effect)
  - Evaluation of descriptive statistics (mean, SD, skew, kurtosis, ratio of mean to SD)

#### Phase 2:

- Larger, more diverse sample from four states.
- Children given the 3 phonological awareness IGDIs
- 30% of sample given Test of Preschool Early Literacy (TOPEL)
- Results for Phase 2 are highlighted here.
- Rasch Modeling was used to determine difficulty of each item and place each item on the a trait scale.

### Measures



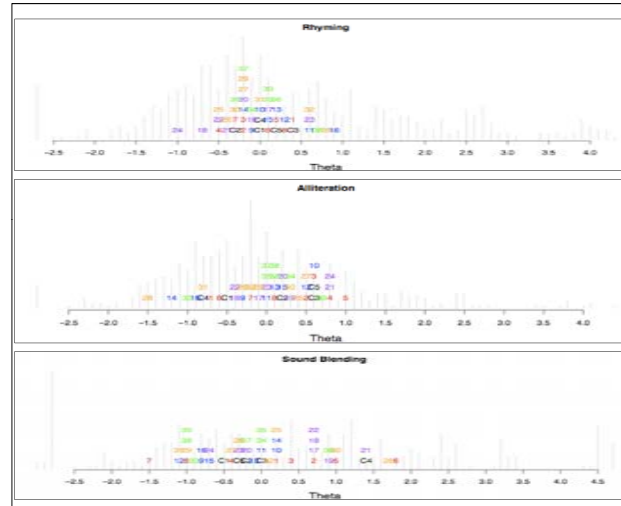
### Results

Measure	N	Mean	SD	Ratio SD/Mean	Children scoring zero (%)
Alliteration	706	4.02	3.27	.81	23.37
Rhyming	709	5.01	4.44	.89	24.54
Sound Blending	598	4.55	6.33	1.39	54.35

### Results Continued

- In Phase 1, 2 of the 4 measures were normally distributed.**
- Correlations with TOPEL—Phase 2:
  - Alliteration .28
  - Rhyming .40
  - Sound Blending .58
- Correlations with age—Phase 1 (.55-.67) or Phase 2 (.17-.19)?
- Rasch modeling scales indicate item difficulties are most variable for Sound Blending, followed by Alliteration and finally Rhyming.

### Rasch modeling ( $\theta$ ) scales for each measures



### Discussion

- The most robust measure may be Alliteration.
- Item-level Rasch Analyses indicate more items needed at easier levels of difficulty.
- Results indicate Sound Blending's distribution was skewed, with a significant proportion of children receiving a zero score, however item analyses revealed potential utility with students whose difficulty level is near a  $\theta=0$  (average).
- Rhyming's distribution was normal, however item analyses revealed items congregated toward the center of the scale, with little extension toward either extreme.
- Each measure demonstrates promise for an early childhood RTI model, specifically with Rasch items toward the least difficult portions of the traits (potentially encompassing Tier-3 and Tier-2 achievement levels).

### References

- Anthony, J.L. & Lonigan, C.J. (2004). The nature of phonological awareness: Converging evidence from four studies of preschool and early grade school children. *Journal of Educational Psychology*, 96(1), 43-55.
- McConnell, S.R., McEvoy, M.A., & Priest, J.S. (2002). "Growing" measures for monitoring progress in early childhood education: A research and development process for Individual Growth and Development Indicators. *Assessment for Effective Intervention*, 27(4), 3-14.
- Phillips, B.M., Clancy-Menchetti, J., & Lonigan, C. J. (2008). Successful phonological awareness instruction with preschool children: Lessons from the classroom. *Topics in Early Childhood Special Education*, 28(1), 3-17.