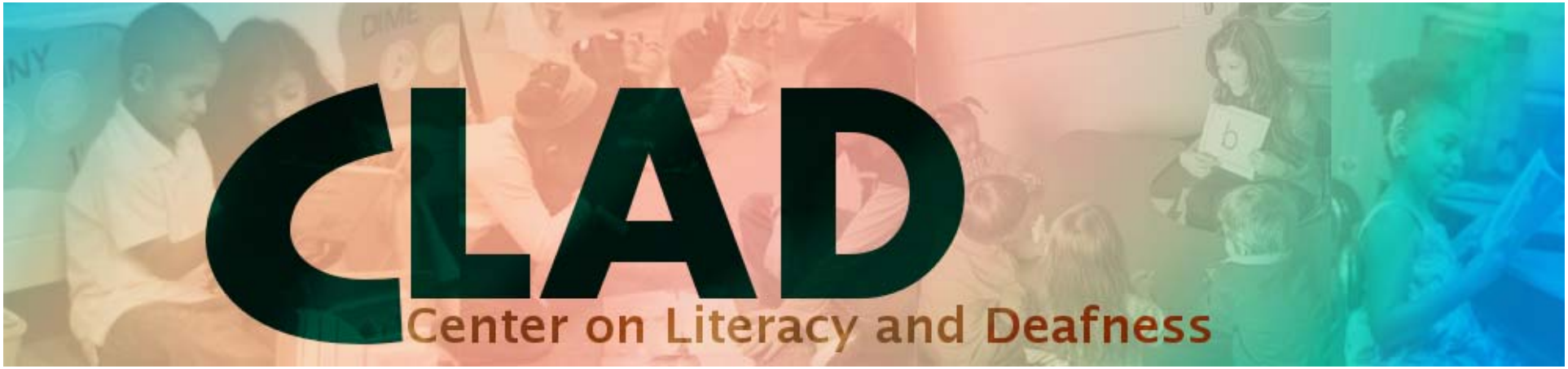

FOUNDATIONS FOR LITERACY: AN EARLY LITERACY INTERVENTION FOR DHH CHILDREN

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Foundations for Literacy

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Today's Talk

- Describe an intervention that was developed to teach DHH prekindergarten children early literacy skills

- Report on results for implementation by classroom teachers

Foundations for Literacy

An emergent reading intervention that was adapted to characteristics of DHH children

- Language delay and difference
- Weak speech perception abilities and phonological representation
- Need for visual, semantic, kinesthetic support

One hour a day for the school year

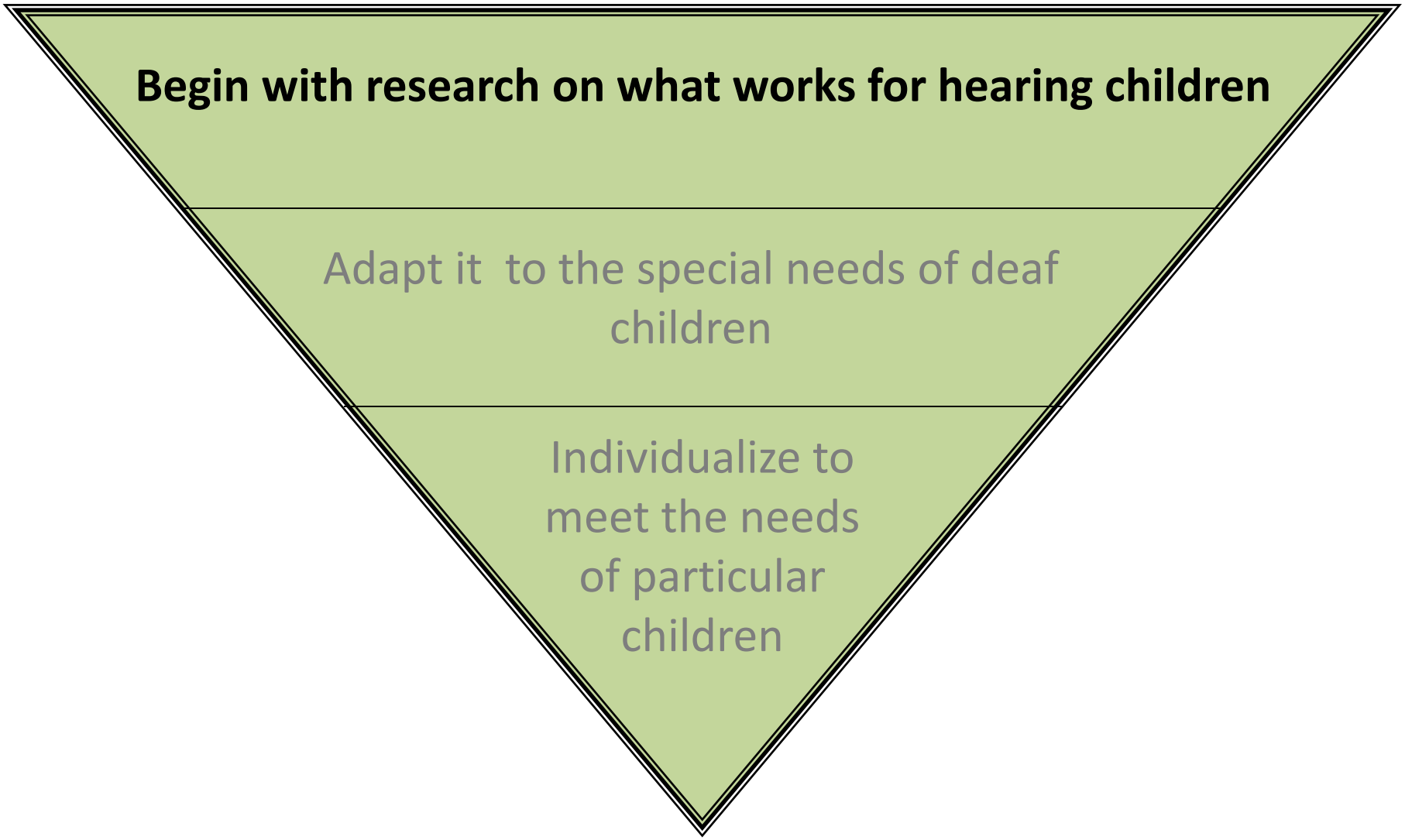
Two phases of development

1. Delivered by research teachers
2. Delivered by classroom teachers

Foundations for Literacy

- Developed through an iterative process
- One hour lessons four to five days a week

  for the school year
- 24 units, with 3 review weeks
- Units are organized around a story related to instruction of grapheme-phoneme correspondences-


Begin with research on what works for hearing children
Adapt it to the special needs of deaf children
Individualize to meet the needs of particular children

Early Literacy Skills

- **Code-based Skills**

  needed to “break the code” to decode or read written words

- **Meaning-based Skills**

  needed to understand at the word, sentence, and connected text levels

Hearing Children

The National Early Literacy Panel (2008)

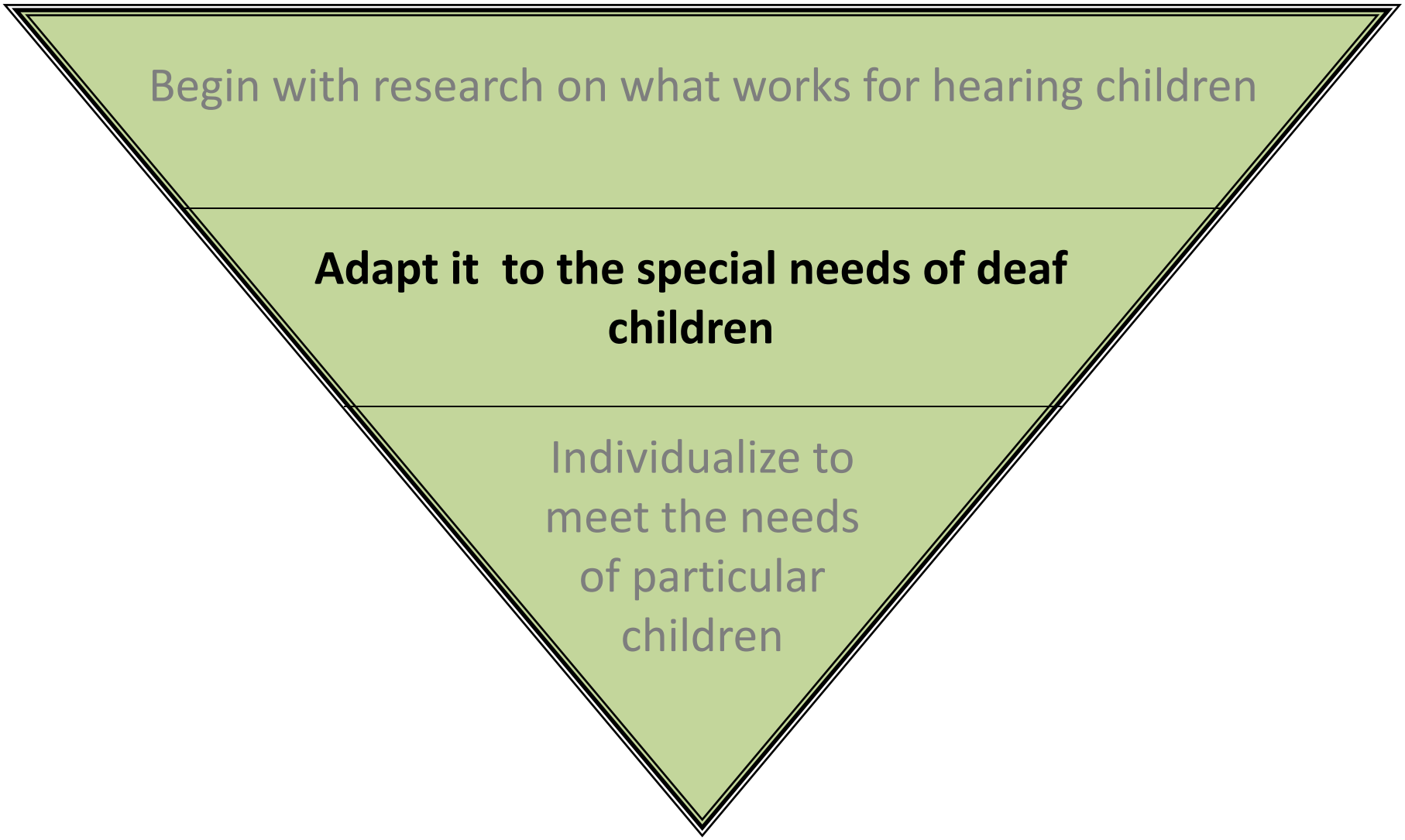
- Early **explicit instruction** in **alphabetic knowledge** and **phonological awareness** has long-term impact on reading success
- Children learn **phonological awareness** better if **integrated** with **learning letters**
- **Vocabulary** enrichment through both **explicit instruction** and **dialogic reading**

Foundations for Literacy

Code- based	Meaning - based
Phonological awareness	Vocabulary embedded in stories and language experiences
Alphabetic knowledge	Narrative
Word reading	Storybook reading
Letter-sound fluency	

Overall Learning Principles

- Explicit instruction
- Repeated opportunities to practice skills
- Embed in fun and engaging activities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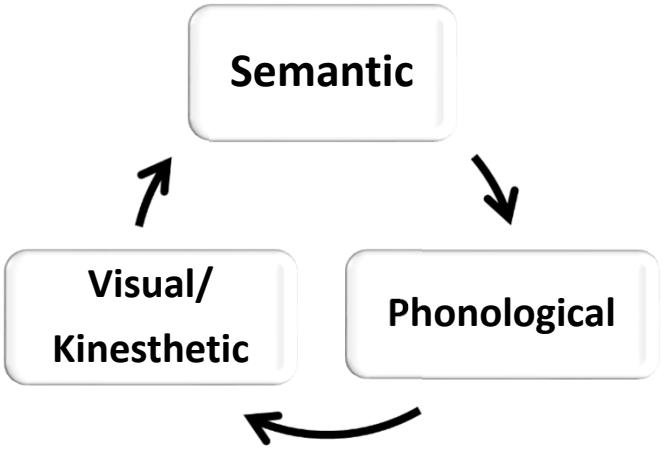
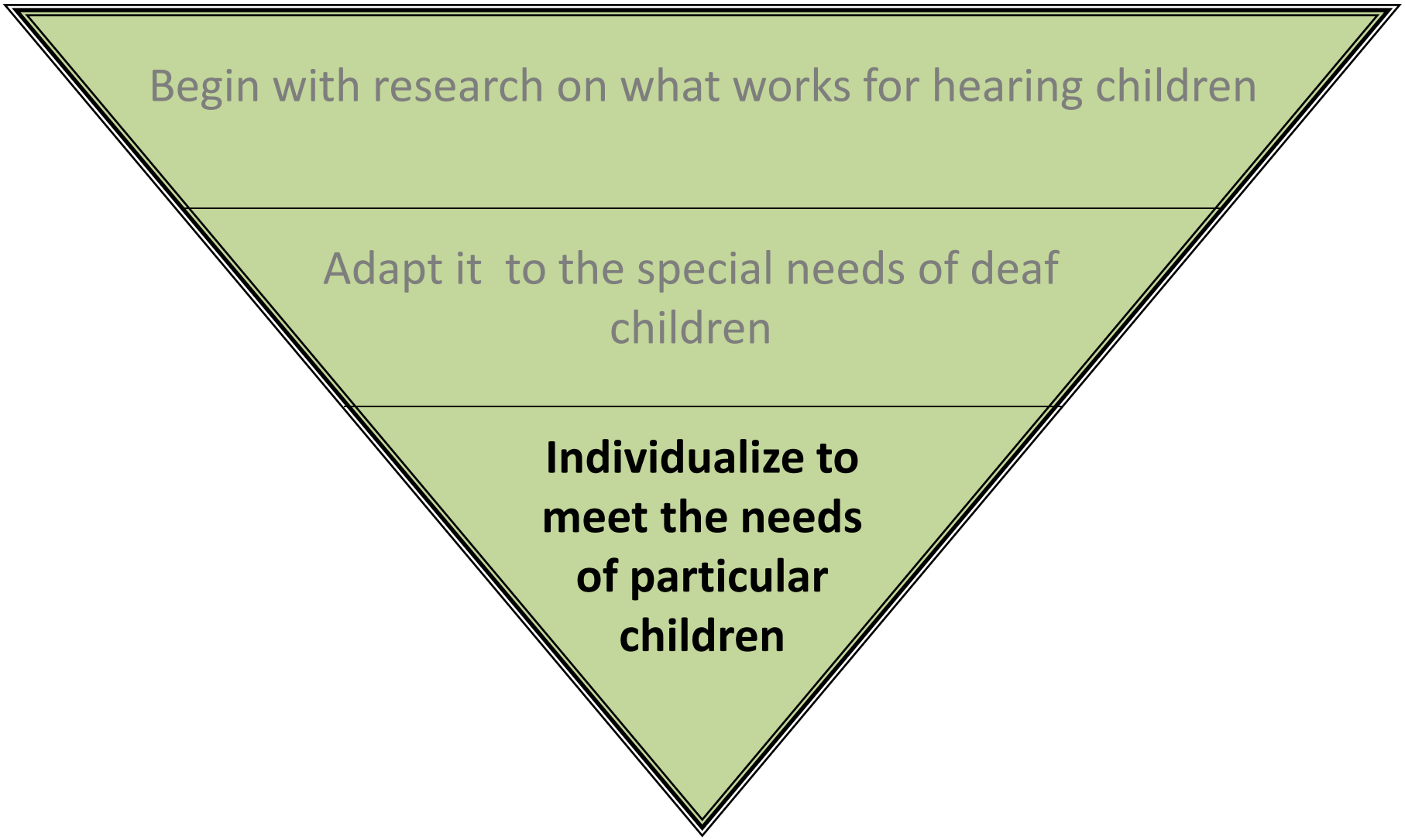
- Language Delay
  - Explicit instruction of instructional language
  - Vocabulary used in PA from vocabulary instruction
  - Embed all instruction in language rich context
- Weaker speech perception and phonological representation
  - Multi-modal representation

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Differentiation of Instruction

- **Presentation of words and sounds**
  - **Closed → Open Sets**
- **Response Expected**
  - **Identification → Production**
- **Visual Support: Pictures and Manipulatives**
  - **Visual/kinesthetic → auditory only**

Participant Selection

Children in special DHH preschool programs

Eligibility:

- Ages between 3.8 to 5.11 years in fall
- PTA $\geq$ 50 dB
- Functional hearing---Ability to select referent for spoken words presented with only auditory input (**Early Speech Perception test;** Moog and Geers, 1990)
- No major diagnosed or suspected disability (teacher report)

Initial Study

25 children taught by research teachers showed **more gains on measures of phonological awareness, alphabetic knowledge and expressive vocabulary** than gains of 33 comparison children.

Lederberg, A. R., Miller, E. M., Easterbrooks, S. R., & Connor, C. M. (2014). *Foundations for Literacy*: An early literacy intervention for deaf and hard-of-hearing children. *Journal of Deaf Studies and Deaf Education, 19*(4), 438-455

Current Study

- Over last four years, classroom teachers implemented *Foundations for Literacy* in 6 schools
- We provided a two-day professional development workshop, and classroom coaches
- Classes included both those with only spoken language and those that used both sign and speech. Typical specialized classrooms with range of ages, sizes, and hearing abilities

Current study

33 DHH children were taught by classroom teachers and met the eligibility requirements of the initial study

- Speech perception abilities
- Degree of hearing loss
- Age
- No severe disabilities

These children were in class with children who did not meet eligibility criteria

Research Questions

Do children taught by classroom teachers show significant increases in standard scores in vocabulary, PA, and reading?

Do we see similar gains in learning for children taught by **classroom teachers** and as those taught by **research teachers**, and more than "business as usual" **comparison children**?

Demographics

Mean age = 4.5 years

80% in spoken language only classrooms

Maternal education: 35% high school or less

55% college graduates

Race/Ethnicity: White 52%; Black 28%; Hispanic 12.7%

No Group differences on these variables

About 60% of sample had CI; rest moderate-severe loss with hearing aids—No difference in outcomes

Assessment Procedures

- Children assessed at the beginning and end of the school year
- For those children who used sign in their school, directions were presented in speech and sign
- Speech perception and phonological awareness test items presented in spoken English only

PA and Reading Assessments

1. **Phonological Awareness Test (PAT)** – (Robertson & Salter 1997)
2. **Test of Preschool Early Literacy (TOPEL-PA Subtest) (**Lonigan, Wagner, Torgesen, & Rashotte 2007).
3. **Letter-Sound Knowledge**
4. **Letter-Name Knowledge**
5. **Woodcock Johnson Letter-word ID**

Vocabulary

Peabody Picture Vocabulary Test (PPVT)

Expressive One Word Picture Vocabulary Test (EOWPVT)

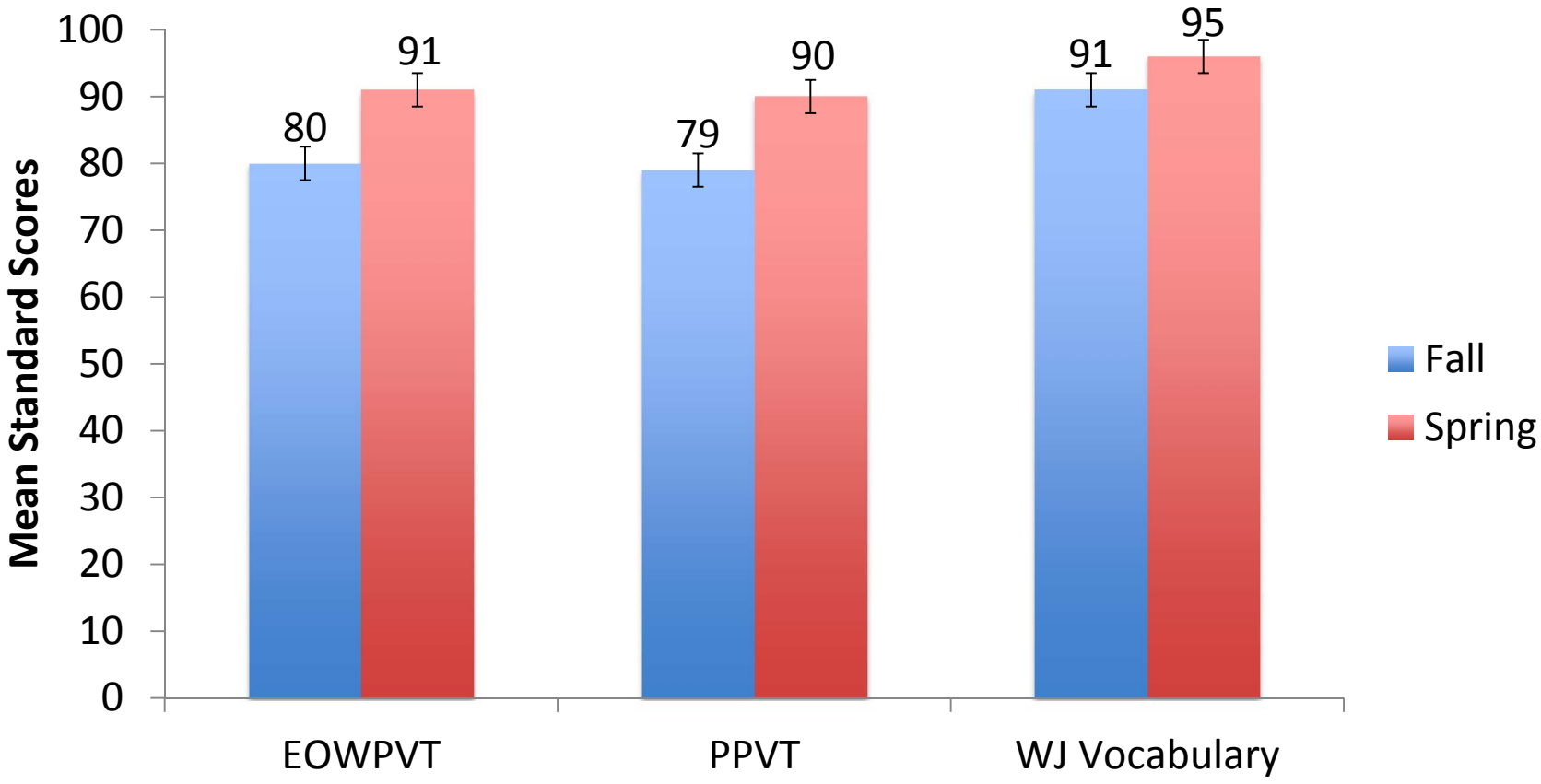
WJ Expressive Vocabulary Test

Results: First Analyses

Repeated measures *t*-tests comparing fall and spring standard scores for children taught by classroom teachers

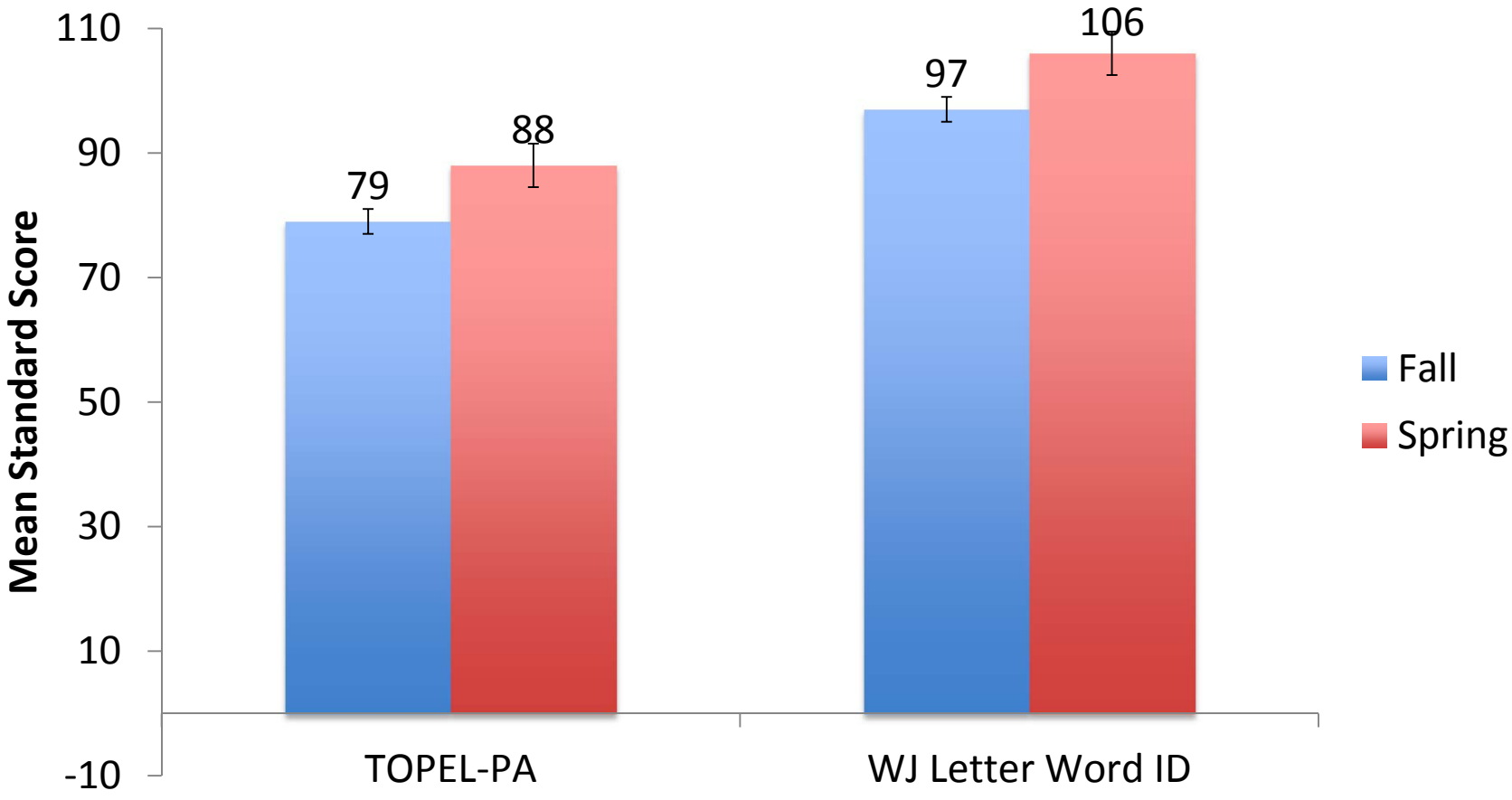
Gains in standard scores

Vocabulary: Gains in Standard Scores



All gains statistically significant

Literacy: Gains in Standard Scores



All gains statistically significant

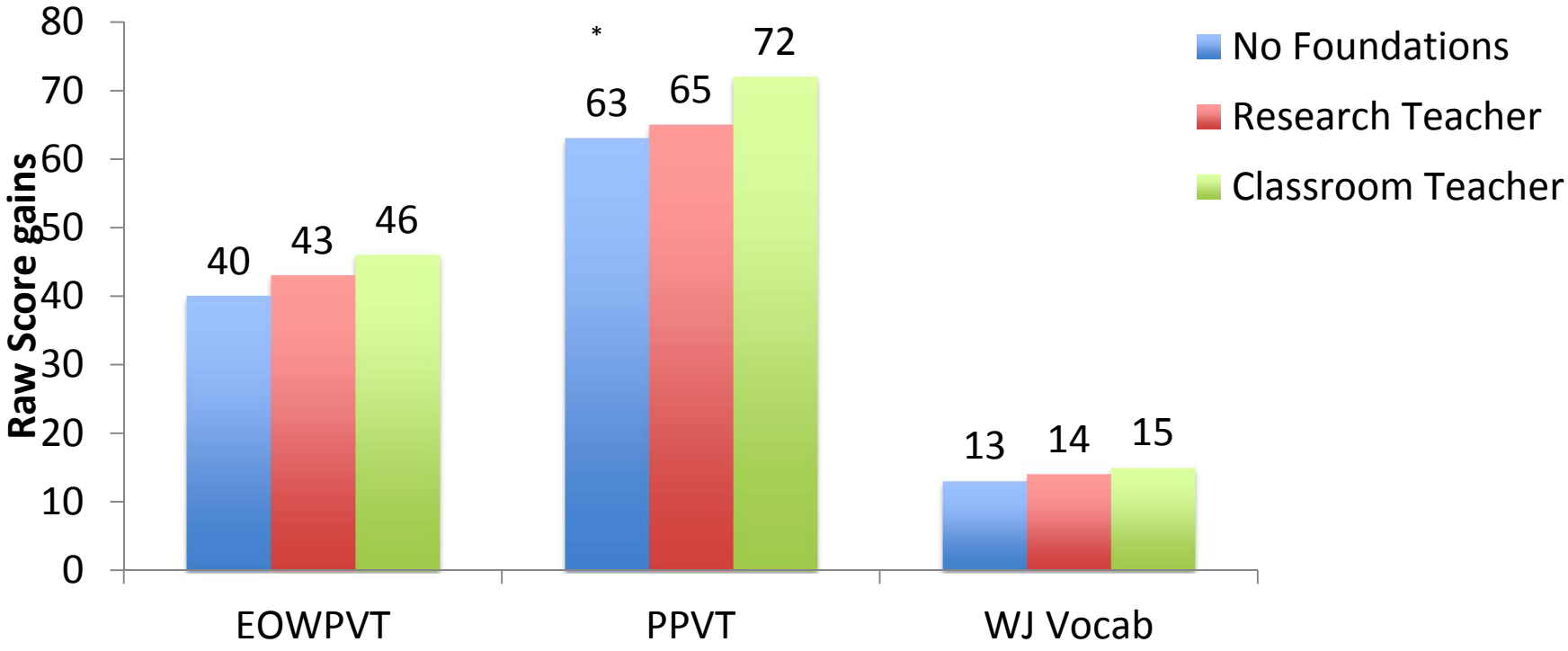
Results

Compared gains by three groups

Three multivariate ANCOVAs with pretest scores as covariate

- Effects for Intervention
  - **Phonological Awareness.** *F(4,172) = 4.795,* p < *.001,* $_{partial}\ \eta^2 = .10$
  - **Vocabulary**, F(6, 176) = 2.380, p<. 03, $_{partial}\ \eta^2$ = .075
  - **Alphabetic knowledge**, *F (6,144)* = 4.746, *p* < .000, $_{\text{partial}}\ \eta^2 = .17$

Vocabulary



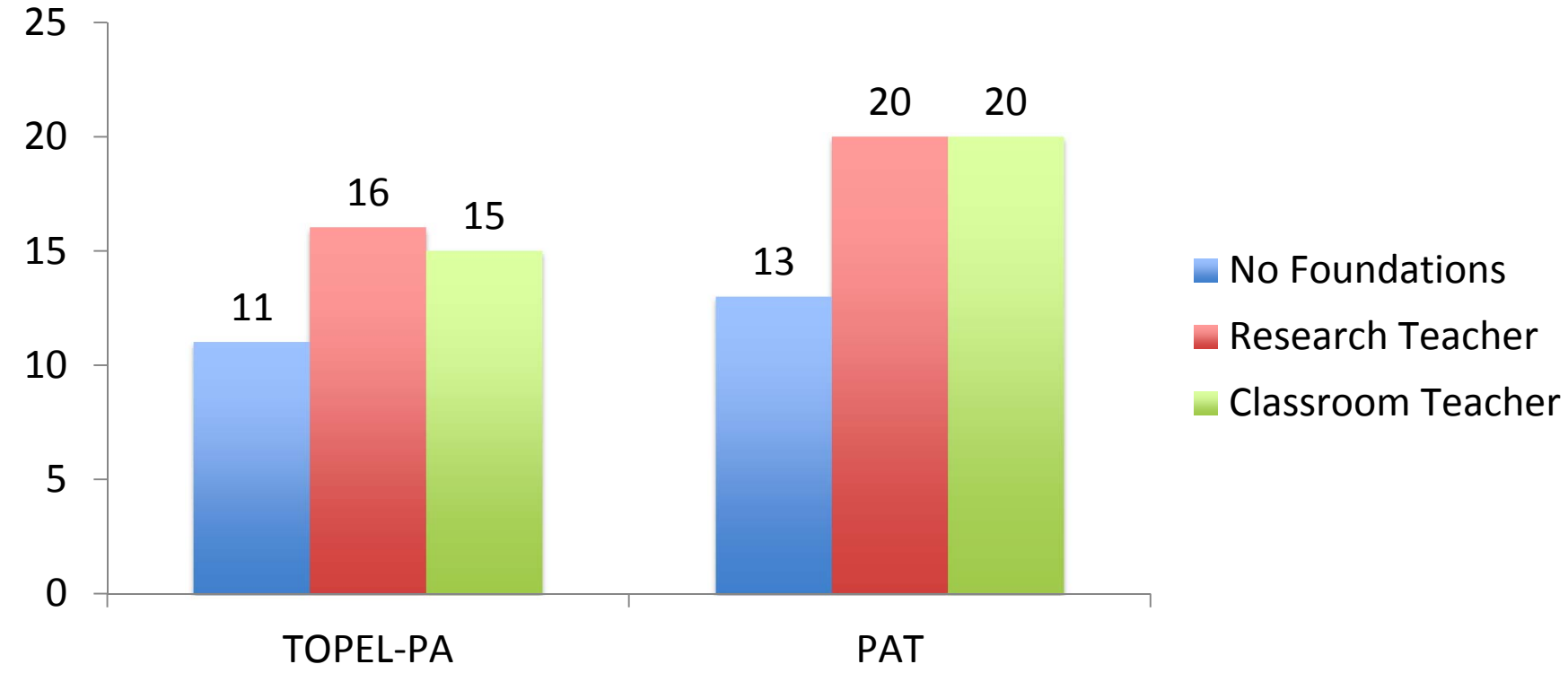
Effects of Intervention based on Univariate ANOCOVAs

PPVT *Classroom>Researcher, Comparison*

EOWPVT Classroom, Researcher> Comparison

Covariates appearing in the models are pretest scores

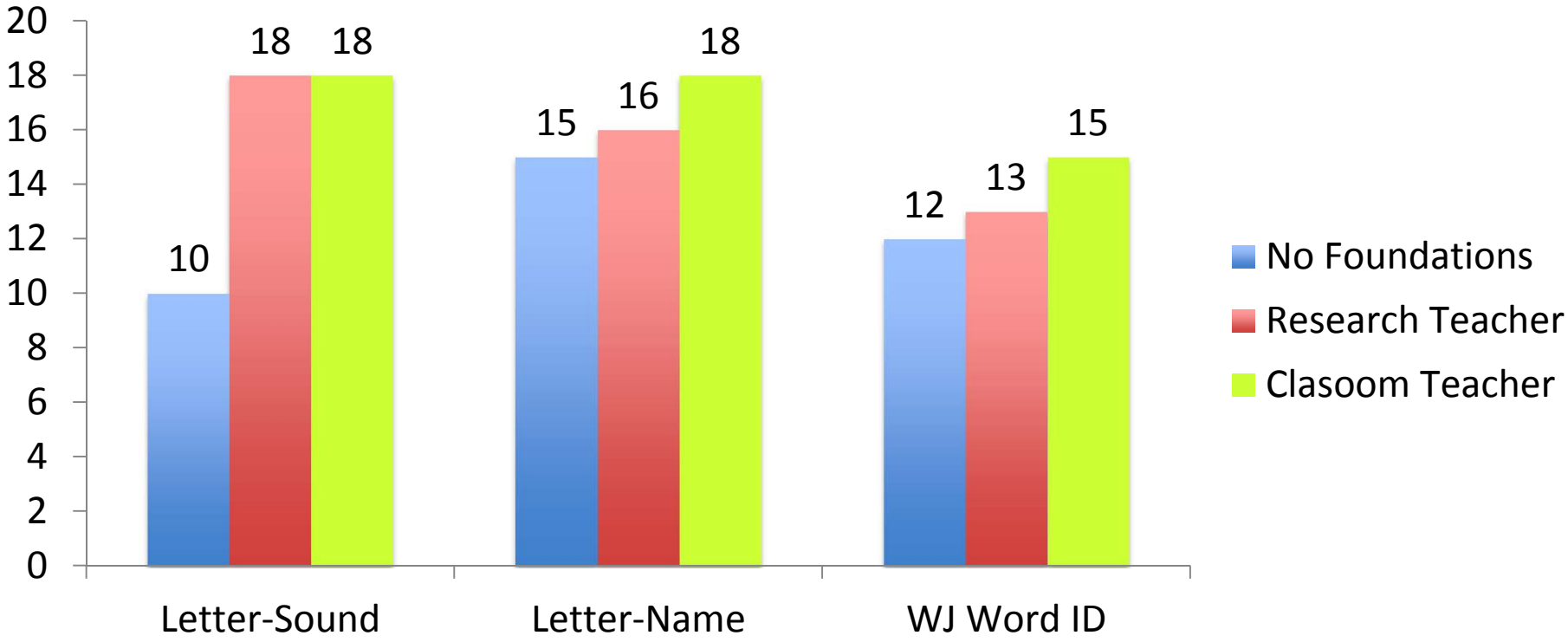
Phonological Awareness



Effects of Intervention

TOPEL-PA, PAT: Classroom, Research Teacher > none

Alphabetic Knowledge



Effects of Intervention based on Univariate ANCOVAs

Letter-Sound: Classroom ,Research > No intervention
WJ Word ID. Classroom > No Intervention

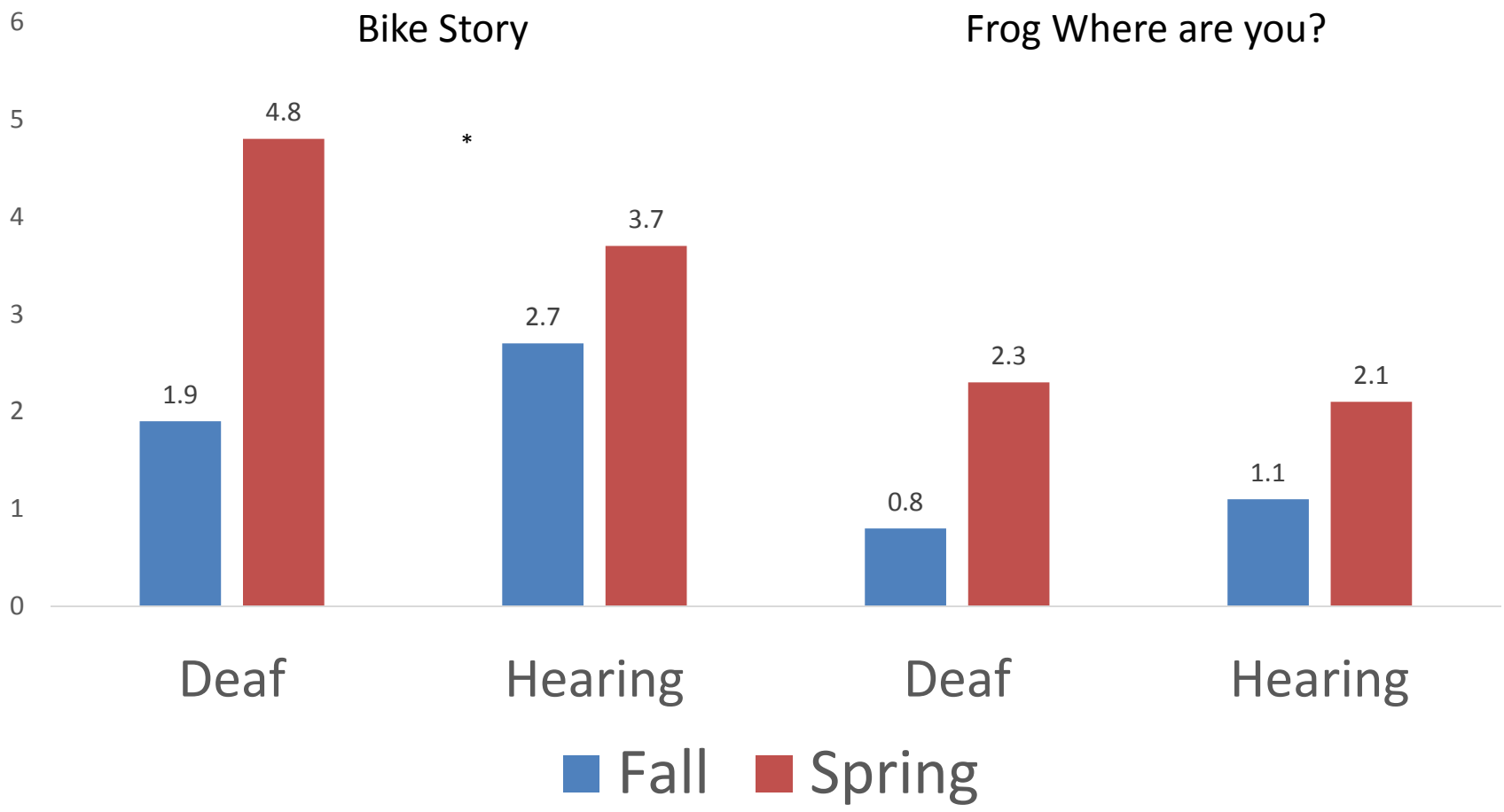
Narrative Understanding

Goal added to Foundations with implementation by classroom teachers

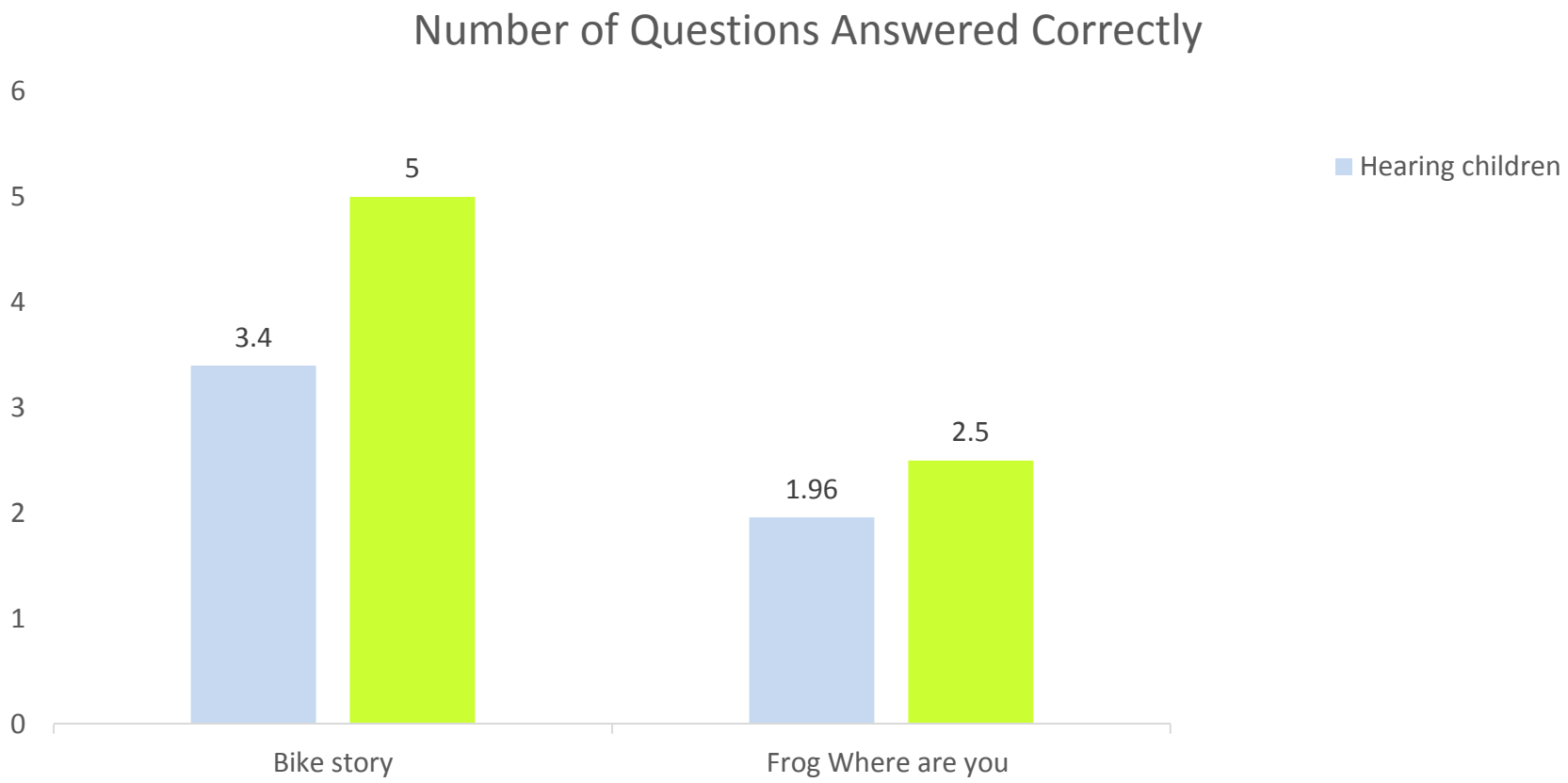
Assessed through two story retell tasks

- Number of questions answered correctly

Narrative Understanding



Narrative Understanding



DHH children taught by classroom teachers made significantly more gains in narrative understanding than hearing children matched on PPVT scores

Effect of hearing status. $F(2,87) = 11.04$, $p < .000$, partial $\eta 2 = .20$

Conclusion

- DHH children who begin the year delayed can acquire age-appropriate phonological awareness skills, vocabulary, and alphabetic knowledge with explicit instruction in these skills

- *Foundations* shows promise for in promoting early literacy skills of DHH children who are acquiring spoken language

Future directions

Randomized control trial

Recruiting schools to implement Foundations

If interested in discussing participation, contact me at alederberg@gsu.edu

Research Articles

Beal-Alvarez, J. S., Lederberg, A. R., & Easterbrooks, S. R. (2011). Grapheme–phoneme acquisition of deaf preschoolers. *Journal of Deaf Studies and Deaf Education*, *17*(1), 39-60.

Bergeron, J. P., Lederberg, A. R., Easterbrooks, S. R., Miller, E. M., & Connor, C. M. (2009). Building the alphabetic principle in young children who are deaf or hard of hearing. *Volta Review, 109*(2-3), 87-119.

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Miller, E.M., Lederberg, A.R., & Easterbrooks, S.R. (2013). Phonological awareness: Explicit instruction for young deaf and hard-of-hearing children. *Journal of Deaf Studies and Deaf Education, 18, 206-227.*