



# Comparing Phonological Awareness Skills for Children with Sensorineural Hearing Loss and Children with Normal Hearing

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# Reading Processes for Normal Hearing Children

- Stages of reading (Frith, 1980 & Chall, 1983)
  - Logographic
  - Alphabetic
  - Orthographic
- Phonological awareness
  - Strongly related to decoding reading skills (Gibbs, 2004; Paul, 1997; & Sterne & Goswami, 2000)
  - The more training in phonological awareness leads to better reading skills (Miller, 1997).

# Reading and Phonological Awareness of Deaf Children

- Average reading attainment levels (Bamford & Saunders, 1991)
- Dominated by top-down processing models
- Studies show phonological awareness skills are poorer and different in this population (Hanson, 1991; Miller, 1997; Tractenberg, 2001; & Leybaert, 2000).
- Characteristics of successful deaf readers
  - Phonological decoding (Scheetz, 2001)
  - Deaf individuals are able to acquire a sound-based strategy for reading.
  - The big question

# Hearing Impaired Children and Phonological Awareness



- Allman (2002)
- Gibbs (2004)
- Briscoe, Bishop, and Norbury (2001)



# Summary and Purpose

- Summary of research
- Purpose of current study

# Research Design



- Descriptive case study
- Compared hard-of-hearing children to age-matched normal hearing peers.

# Subjects

	Age	Gender	Degree of hearing loss
Child 1	6 yrs 2 mo	female	mod to mod-sev bilateral sensorineural hearing loss
Child 2	8 yrs 2mo	female	mild mixed hearing loss in the R ear and mod to mod-sev mixed hearing loss in the L ear
Child 3	8 yrs 9mo	female	sev sensorineural hearing loss in the R ear and mild sensorineural hearing loss in the L ear
Child 4	9 yrs 7 mo	male	mod-sev to sev sensorineural hearing loss
Child 5	6 yrs 10 mo	female	normal
Child 6	8 yrs 2 mo	male	normal
Child 7	8 yrs 10 mo	male	normal
Child 8	9 yrs 5 mo	female	normal



# Assessment

- *Phonological Awareness Test* (Robertson & Salter, 1997)
- Eight subtests:
  - Rhyming
  - Segmentation
  - Isolation
  - Deletion
  - Substitution
  - Blending
  - Graphemes
  - Decoding

# Independent and Dependent Variables

- The independent variable was the presence or absence of hearing loss.
- The dependent variables were the standard scores and raw scores from the *Phonological Awareness Test*.
- Reliability of the dependent variable
  - An agreement index:  $30/36=83\%$

# Results

Total test standard scores and raw scores

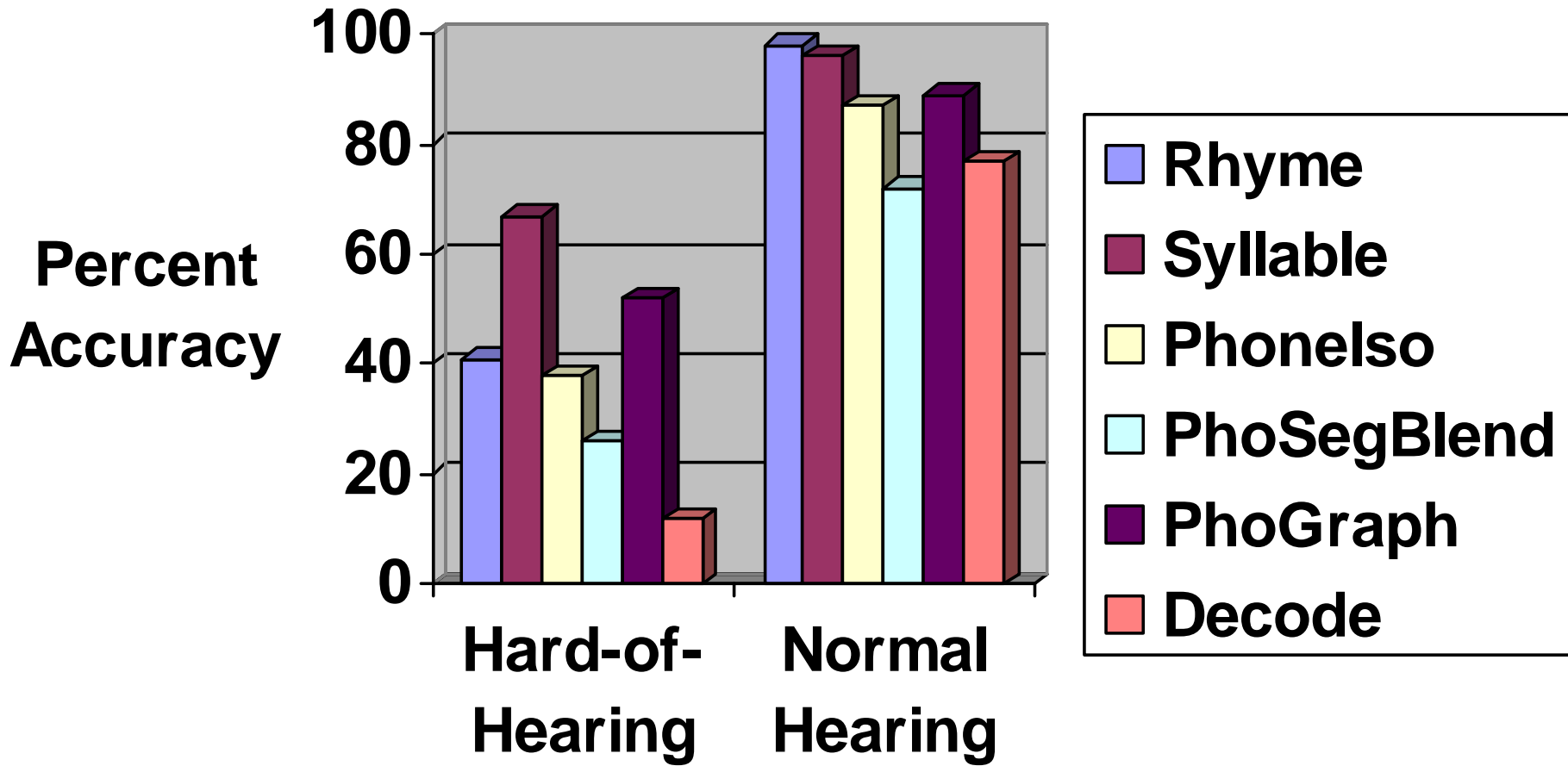
<b>Hard-of-Hearing Group Totals</b>	<b>Standard scores</b>	<b>Raw Scores</b>
Child 1	83	74
Child 2	49	127
Child 3	<48	85
Child 4	<48	115
Mean Score	<57*	100.25
<b>Normal Hearing Group Totals</b>		
Child 5	123	223
Child 6	117	264
Child 7	87	205
Child 8	105	245
Mean Score	108	234.25

\*Due to scores falling below normative values, the mean could not be calculated.

# Individual Standard Scores for Subtests within the PAT

	Rhyming	Syllable Blend/Segment	Phoneme Isolation	Phoneme Blend/Segment	Phoneme Grapheme	Decode
<b>Hard-of-Hearing Group</b>						
Child 1	68	64/83	92	96/98	86	90
Child 2	<54	50/111	73	51/77	55	55
Child 3	<54	<50/87	<50	<51/77	60	47
Child 4	<40	<32/63	<53	<50/81	76	53
<b>Normal Hearing Group</b>						
Child 5	103	112/120	117	117/101	120	121
Child 6	109	106/112	104	109/126	117	117
Child 7	109	104/111	96	111/83	91	83
Child 8	109	58/88	96	112/109	109	107

# Group Percent Accuracy



# Interpretation of Results



- Degree of hearing loss may have had an impact on the standard scores and raw scores.
  - The child with the most severe hearing loss received the lowest standard score for the majority of the subtests.
  - The child with the least amount of hearing loss had the highest raw scores on the rhyming, syllable blend/segment, phoneme isolation, and decoding subtests.

A decorative graphic at the top of the slide consists of two rows of circles. The top row has three circles: a solid light purple circle on the left, a white circle with a light purple outline in the middle, and a solid light purple circle on the right. The bottom row has three circles: a solid light purple circle on the left, a white circle with a light purple outline in the middle, and a solid light purple circle on the right. The word "Limitations" is written in blue text over the first two circles of the top row.

# Limitations

- Only a small number of subjects was included in the study.
- Only one measure was administered.
- Unknown factors made it difficult to interpret results.

# Future Research



- A larger number of subjects would allow for a better analysis of the relationship of degree and type of hearing loss and patterns of the strengths and weaknesses on phonological awareness skills.
- Research is needed to obtain a more detailed error analysis on specific items in the subtest.
- Research is needed on the instruction of phonological awareness with hard-of-hearing children.

# References

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