

Morphemic Awareness and Reading Comprehension: A Descriptive Study

Deborah S. Stryker, Ph.D.
 Bloomsburg University of Pennsylvania
 Diane Nielsen, Ph.D.
 University of Kansas
 Barbara Luetke, Ph.D. & Megan McLean, M.A.
 Northwest School for Hearing Impaired Children

Association of College Educators-Deaf/Hard of Hearing
 Washington, DC
 February 2014

We believe . . .

- Reading achievement of elementary and middle school deaf students need not plateau and can be commensurate with that of hearing peers.
- And we will outline the results of a descriptive study of 17 deaf students, who demonstrate this ability.

Rationale

- The ability to access and understand the meaning of multi-morphemic English words is essential for the development of age-appropriate reading comprehension for all students.
- The purpose of this poster is to report the correlations between the language and reading skills of a sample of students who are deaf or hard of hearing (N=17) and who are encouraged to speak and sign standard English grammar, which is constantly modeled for them as their first language. Test results are compared to hearing norms provided by standardized measures.

Participants

- 17 Deaf/hard of hearing children (8 boys, 9 girls)
- Preschool - 8th grade school school for the deaf
- 7;6 years (2nd grade) to 13;9 years (8th grade)
- Diversity among the participants
 - 11 of 17 Caucasian, 3 Asian, 3 biracial and
 - socio-economic status varied and
 - other background variables: family structure, factors related to the parents (level of education and signing with their child, and school involvement).

Data collected on . . .

Table 1
Student age, information on hearing loss, language assessment (CELF) scores

| Student | Age | Unaided Hearing Loss | Aided PTA | Equip. (number of years with it) | CELF Core Lang. | CELF Recog. Lang. | CELF Exp. Lang. |
|---------|-------|----------------------|-----------|----------------------------------|-----------------|-------------------|-----------------|
| 1 | 7.6 | Moderate to severe | 43 | HA (6) | 78 | 86 | 77 |
| 2 | 8.11 | Severe to profound | 83 | HA (6) | 54 | 73 | 55 |
| 3 | 9.5 | profound | 10 | CI (9) | 64 | 76 | 71 |
| 4 | 9.5 | profound | 20 | CI (6) | 62 | 83 | 61 |
| 5 | 9.11 | profound | 20 | HA (8) | 112 | 116 | 110 |
| 6 | 10.7 | severe | 20 | HA (6) | 97 | 96 | 96 |
| 7 | 10.8 | profound | 20 | CI (5)* | 96 | 102 | 96 |
| 8 | 10.9 | profound | 13 | CI (8)* | 72 | 79 | 77 |
| 9 | 10.11 | profound | 73 | HA (7) | 94 | 90 | 101 |
| 10 | 11.2 | profound | 20 | CI (10) | 98 | 90 | 99 |
| 11 | 11.5 | profound | 27 | CI (9)* | 62 | 67 | 53 |
| 12 | 11.8 | profound | 20 | CI (5)* | 91 | 96 | 89 |
| 13 | 11.8 | profound | 20 | CI (6)* | 64 | 79 | 57 |
| 14 | 11.11 | profound | 13 | CI (8)* | 58 | 76 | 61 |
| 15 | 12.5 | profound | 15 | CI (10)* | 69 | 85 | 63 |
| 16 | 13.7 | profound | 10 | CI (12)* | 112 | 121 | 108 |
| 17 | 13.9 | severe to profound | 40 | HA (12) | 118 | 107 | 110 |

Data collected on . . .

Table 2
Aided hearing, CELF receptive standard score, grade/testing level, and reading assessment standard scores

| Aided RTA | Equip. (number of years with it) | CELF Recog. Lang. | Grade Level & GMRT Test Level | GMRT Vocab | GMRT Comp | GMRT Total | GMRT CoreLang | MA |
|-----------|----------------------------------|-------------------|-------------------------------|------------|-----------|------------|---------------|----|
| 43 | HA (6) | 86 | 2 | 29 | 32 | 28 | 1.9 | 12 |
| 83 | HA (6) | 73 | 3 | 34 | 34 | 33 | 2.6 | 34 |
| 10 | CI (9) | 76 | 3 | 48 | 55 | 52 | 3.9 | 31 |
| 20 | CI (6) | 83 | 3 | 29 | 35 | 32 | 2.5 | 18 |
| 20 | HA (8) | 116 | 4 | 72 | 75 | 75 | 8.6 | 40 |
| 20 | HA (6) | 96 | 4 | 51 | 42 | 46 | 4.3 | 38 |
| 20 | CI (5)* | 102 | 4 | 54 | 55 | 55 | 5.3 | 36 |
| 13 | CI (8)* | 79 | 4 | 42 | 51 | 46 | 4.3 | 34 |
| 75 | HA (7) | 90 | 5 | 58 | 68 | 62 | 7.4 | 37 |
| 20 | CI (10) | 90 | 5 | 77 | 81 | 80 | 12 | 37 |
| 27 | CI (9)* | 67 | 5 | 32 | 35 | 26 | 3.6 | 32 |
| 20 | CI (5)* | 96 | 5 | 67 | 68 | 67 | 8.4 | 39 |
| 20 | CI (6)* | 79 | 5 | 36 | 27 | 31 | 3.8 | 38 |
| 13 | CI (8)* | 76 | 6 | 24 | 52 | 38 | 5.4 | 34 |
| 15 | CI (10)* | 85 | 6 | 50 | 38 | 43 | 5.8 | 35 |
| 10 | CI (12)* | 121 | 8 | 66 | 75 | 74 | 13 | 40 |
| 40 | HA (12) | 107 | 8 | 71 | 77 | 80 | 13 | 40 |

Data collected on . . .

Table 3

Self-esteem ratings based on Rosenberg (1965)

| Score range | Number of Students |
|------------------|--------------------|
| below >15 | 0 |
| scoring 15 to 19 | 6 |
| scoring 20 to 24 | 2 |
| scoring 25 to 29 | 8 |
| score of 30 | 1 |

Data Analysis /Results

Table 4

Correlations between English-language proficiency and reading achievement (N=17)

| | CELF Core Language | CELF Receptive | CELF Expressive |
|--------------------|--------------------|----------------|-----------------|
| GMRT Vocabulary | .861** | .754** | .855** |
| GMRT Comprehension | .789** | .709* | .849** |
| GMRT Total | .859** | .771** | .882** |

Note: Clinical Evaluation of Language Fundamentals-4 (CELF-4); Gates MacGinitie Reading Test (GMRT). Two-tailed Pearson correlations - **significant at .01 level * significant at .05 level

Data Analysis/Results

Table 5

Correlations between Gates MacGinitie Reading Test and Morphemic Awareness Measure

| | GMRT Vocabulary | GMRT Comprehension | GMRT Total |
|---------------------|-----------------|--------------------|------------|
| Morphemic Awareness | .622** | .523* | .593* |

Note: Two-tailed Pearson correlations: **significant at .01 level, *significant at the .05 level

Data Analysis and Results

Table 6

English-language proficiency and reading achievement (GMRT)

| | Range of Scores | Mean (sd) |
|-----------------------|-----------------|-------------|
| CELF Core Language | 54-118 | 82.4 (21) |
| CELF-4 Receptive | 67-121 | 89.5 (15.1) |
| CELF-4 Expressive | 53-110 | 81.4 (20.8) |
| Morphology Assessment | 12-40 | 33.9 |
| GMRT Vocabulary | 24-77 | 49.4 (17.1) |
| GMRT Comprehension | 25-81 | 52.4 (18.9) |
| GMRT Total | 26-80 | 51.1 (18.9) |

Note: Mean standard score for the Clinical Assessment of Language Fundamentals (CELF-4) is 100. Mean standard score for the Gates MacGinitie Reading Test (GMRT) is 50.

Data Analysis / Results

Table 7

Gates MacGinitie Reading Test Standard Scores Within Grade-Level Bands

| | Grades 2-3 (n=4) | Grades 4-8 (n=13) |
|--------------------|------------------|-------------------|
| GMRT Vocabulary | 35.0 | 53.8 |
| GMRT Comprehension | 39.0 | 56.5 |
| GMRT Total | 36.3 | 55.6 |
| Morphol. Awareness | 24 | 37 |

Note: Mean standard score for the Gates MacGinitie Reading Test (GMRT) is 50.

Research Questions and Answers

1. Are there significant correlations between participants' English language skills and their reading achievement?

- YES, English language skills correlated to all reading achievement.

2. How does the reading achievement of this sample of students who are D/HH compare to their hearing peers on standardized measures of language proficiency and reading achievement?

- Students in this study did not plateau at the fourth grade reading level. This is in contrast to data reported by Mahoney et al. (2000), as well as Spencer and Marschark (2010).

3. Are there background characteristics of this sample of students that appear to impact their reading progress?

- YES, Variables examined included the potential role of listening devices, language development, and other personal and parental related variables. The use of CIs did not result in age-appropriate reading comprehension for all students with CIs, a result reported by an extensive study of 105 Scottish children (Archbold, et al., 2008) and in the critical review of the literature on this topic by Marschark, Rhoten and Fabich (2007).

Background Characteristics of Students Reading within or above grade level

Table 8
Background Characteristics of Students Reading Within or Above Grade Level

| Grade | Usable Hearing Loss | Age Loss ID | Acquisition Age HA or CI | Aided Loss dBs HA or CI | CELF Core Skills Within Average | Parent Sign Ability | Parental Involvement |
|-------|---------------------|-------------|--|-------------------------|---------------------------------|---------------------|----------------------|
| 3 | profound | @ birth | CI @ 2 yrs | 10 CI | No | Medium | High |
| 4 | profound | @ 3 yrs | HA @ 3 yrs | 20 HA | Yes | Medium | High |
| 4 | severe | @ 5 mths | HA @ 5.5 mths | 20 HA | Yes | Medium | Medium |
| 4 | profound | @ 13 mths | HA @ 1.5 yrs CI @ 6 yrs (dull) CI @ 7 yrs | 20 CI | Yes | High | High |
| 4 | profound | @ 15 mths | HA @ 2 yrs CI @ 4 yrs | 13 CI | No | Medium | Medium |
| 5 | profound | @ 4 yrs | HA R @ 4 yrs HA L @ 5 yrs | 75 HA | Yes | Low | Medium |
| 5 | profound | 13 mths | HA @ 15 mths CI @ 2 yrs | 20 CI | Yes | High | High |
| 5 | profound | 2 mths | HA @ 4 mths CI @ 8 yrs | 20 CI | Yes | Medium | Medium |
| 8 | profound | 9 mths | HA @ 9 mths CI (L) @ 2 yrs CI (R) @ 11 yrs | 10 CI | Yes | High | High |
| 8 | severe to profound | 6 weeks | HA @ 6 weeks | 40 HA | Yes | High | High |

- ### Outcomes
- Overall, the English language development of these students is comparable to the hearing norms on the standardized tests.
 - A potential reason for this finding, even as the students mature, is that these students know how to represent the morphology of words in everyday communication and can access the morphemic understanding and use it to identify words independently in print, critical to decoding and understanding multi-morphemic words in English (Carlisle, 2004).
 - Such words are present to a greater degree in reading materials in grades four and higher, particularly in the content areas of mathematics, social studies and science.
 - The fact that some students, especially those in earlier grades, are still behind their age mates in both language and reading may be explained by less proficiency in language, possibly due to limited access to sign support at home.

- ### Conclusion / Importance to the membership of ACE-DHH
- As demonstrated in this study, the reading achievement of elementary and middle school students who are Deaf/hard of hearing need not plateau and can be commensurate with that of hearing peers. Deaf students can reach the same levels of reading achievement as their hearing peers.
 - Deaf students who fall behind their peers in reading development have a difficult time ever catching up (Juel, 1988; Stanovich, 1986).
 - For this reason, it is imperative that we in the profession examine the variables that may affect the achievement of deaf students and advocate for changes in professional development and instructional practice in order for more students to reach their full potential as readers.