

Center on Literacy and Deafness Research summary report



In this document we describe initial research findings of The *Center on Literacy and Deafness* (CLAD) to which you have contributed. CLAD is a multi-university effort funded by the Institute on Education Sciences (#RC24C120001) for five years. The overall purpose of the Center is to determine the structure of language and literacy in young Deaf and Hard of Hearing (DHH) children and to develop interventions to enhance literacy learning in this population. During the first two years, Center staff conducted in-depth assessments on a large sample of young DHH children. During years 3 – 5 we will develop and test effective literacy and language interventions for DHH children who are in kindergarten through 3rd grade and who are delayed in reading.

This document reports on results of the initial study based on the first two years of data collection. In this study we attempted to answer the following questions:

- What is the current status of language and literacy abilities in young students who are deaf or hard of hearing?
 - How does DHH students' language and literacy functioning compare to students with typical hearing?
 - What progress do DHH students make in language and literacy across the school year?
- What is the role of phonological awareness and language in early literacy development?

Findings in a nutshell. In the area of language, vocabulary development was a relative strength, while English grammatical structure (syntax) was a relative weakness. Children improved in vocabulary expression and English comprehension over the course of a school year. Children who used American Sign Language (ASL) showed steady gains in ASL syntactical structures from Kindergarten to Second grade.

In the area of literacy, letter and single-word reading was a relative strength while reading comprehension was a relative weakness. Children improved in reading letters and single words over the course of a school year. Reading comprehension scores decreased over the course of a school year.

Phonological awareness was demonstrated through speaking or fingerspelling. For all children phonological awareness (spoken or fingerspelled) was related to reading.

Who were the children in the study? We obtained data on 334 DHH students in grades K-2 with hearing loss. They came from 27 different schools and 103 different classrooms in 9 different U.S. states and one province in Canada. The sample included 133 Kindergarteners, 110 first graders, and 91 second graders. In terms of communication modality, 131 (39%) used sign language only and had no functional hearing; 101 (30%) used spoken language only, and 102 (31%) were bimodal/bilingual (i.e., used both sign and spoken language).

What information did we obtain? We gathered background information on children, their families, and their teachers. Trained assessors tested children's language and literacy skills using a battery of standardized tests. The tests were given to children using their preferred or most-used communication mode. Because the standardized assessments are meant for hearing children, we developed appropriate testing protocols for signing, oral, and bimodal DHH children. We assessed both American Sign Language (ASL) and English abilities as appropriate. Each child was assessed at the beginning and end of the school year. The list of assessment instruments is available at our website: <http://clad.education.gsu.edu>.

For each child we recorded literacy instruction (classroom based and/or individual) at the beginning, middle and end of the school year. These data have not yet been analyzed and are not reported here. We hope eventually to use the literacy instruction observations to examine the interaction between child progress and literacy instruction.

Results

What is the current status of language and literacy abilities in young students who are deaf or hard of hearing?

Language

In the area of language we assessed expressive vocabulary and expressive and receptive ASL and English syntax including sentence structure, word structure, and understanding connected language.

Functioning levels.

- On at least one test of expressive vocabulary DHH students achieved within the low average range.
- Children were delayed in all areas of English syntax.
- No norms are available for the ASL syntax test.

Progress from Fall to Spring.

- Standard scores for vocabulary and understanding of English complex sentences increased significantly from Fall to Spring. This means that children made gains in both these areas at a faster rate than the hearing children in the test norming samples. There appears to be good support for children's vocabulary learning, especially in Kindergarten classrooms.
- In the area of ASL syntax, students who signed made steady and significant progress from grade to grade increasing from 50% correct during Fall testing for Kindergarteners to 82% correct during Spring testing for 2nd graders. Thus, by the end of second grade, children who signed had become quite proficient in understanding complex ASL utterances.
- Despite annual progress, gaps remained between the DHH and the hearing children in the test norming samples in vocabulary and understanding of English complex sentences.

Literacy

In the area of literacy we assessed DHH children's ability to read isolated letters and words, reading comprehension, reading fluency and writing fluency.

Functioning levels.

- Kindergartners scored within the average range in knowing the names of letters and reading single words.
- Second graders scored below the mean in reading words.
- Second graders scored below the mean in reading comprehension.
- Twenty-seven percent of first graders and 34% of second graders were able to read passages at grade level.
- Forty-one percent of first graders and 23% of second graders were non-readers.
- Children were better at reading single words than understanding what they read.
- Writing was weaker than reading.

Progress from Fall to Spring.

- DHH children made progress similar to that of hearing children in the test norming samples on naming letters and reading single words.
- Reading comprehension scores decreased over the year at each grade level.

Phonological Awareness

One important ability that allows DHH children to learn to read is phonological awareness. For children acquiring spoken language this is measured by their ability to manipulate spoken phonemes. For children acquiring sign language, this is measured by their fingerspelling abilities.

Functioning levels.

- Children acquiring spoken language scored one standard deviation below the hearing norms.
- Kindergartners who signed received an average of 54% correct on fingerspelling imitation and 9% on fingerspelling blending.
- Second-graders who signed achieved 78% correct on fingerspelling imitation and 38% correct on fingerspelling blending

Progress from fall to spring

- Children who used oral language showed significant improvement in spoken phonological awareness over the school year.
- Children who signed made progress at each grade level on fingerspelling imitation and blending.

What is the role of phonological awareness and language in early literacy development?

For hearing children the foundations of reading include spoken phonological awareness, the ability to decode and read words, and language. We hypothesized that DHH children with functional hearing would use spoken phonology to decode print, while those without functional hearing would use fingerspelling as an alternate means to

decode print. We also hypothesized that language ability, whether in ASL, English or both would positively influence reading comprehension. Our results confirmed these hypotheses.

- For all children reading single letters and words, reading fluency and reading comprehension were good indicators of reading ability.
- For all children language ability was highly related to reading ability
 - For children acquiring spoken language, vocabulary and English syntactical structure were good indicators of language ability.
 - For children who signed, vocabulary, comprehension of English sentences and ASL sentences were good indicators of language ability.
- For all children phonological awareness (spoken or fingerspelling) was related to reading ability
 - For children acquiring spoken language sound blending, sound matching, and the ability to decode nonsense words were good indicators of spoken phonological awareness.
 - For children who signed fingerspelling imitation, elision, and blending were good indicators of fingerspelled phonological awareness

Summary

- ❖ Vocabulary, letter reading, and single-word reading were areas of relative strength for young DHH children.
- ❖ English syntax was an area of weakness.
- ❖ Phonological awareness skills (spoken or fingerspelled) increased over the school year.
- ❖ Reading comprehension decreased from Kindergarten to second grade.
- ❖ Phonological awareness (either spoken or fingerspelled) *and* language competence (English, ASL, or both) contributed significantly to reading comprehension.