

Oral Presentation

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Phonological processing skills in children with myelomeningocele and shunted hydrocephalus

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Background

On-going studies at our hospital, and elsewhere report difficulty with reading comprehension despite adequate word decoding skills in children with myelomeningocele and shunted hydrocephalus (MM/SH). In trying to determine likely origins of comprehension failure, our research team is presently examining the integrity of cognitive and language contributors to the understanding of written text. A potential contributor of interest is phonological processing. Phonological processing (processing of the sound structure of language) is strongly related to mastery of written language (reading and spelling), and has been clearly implicated in reading disabilities. This study reports preliminary data regarding phonological processing skills in a group of children with MM/SH.

Materials and Methods

17 children with MM/SH (age range: 6–16 years) with average intelligence, and monolingual English-speaking backgrounds participated. Exclusionary criteria were: prior history of shunt infection, history of seizure or shunt malfunction within the previous three months, prior diagnoses of attention disorders and/or clinical depression.

Subtests of the Comprehensive Test of Phonological processing were administered to each child individually. Standard scores were obtained within three domains: phonological awareness, phonological memory and rapid naming.

Results

One sample *t*-tests revealed comparable performance for the MM/SH group and their age-matched norms for phonological awareness tasks. In contrast, the MM/SH group differed from the population norms in the following

ways: poorer phonological memory, and difficulty with rapid naming tasks ($P < 0.05$).

Conclusions

Findings begin to explain the reading strengths and weaknesses in children with MM/SH. Adequate awareness of the sound structure of language (phonologic awareness) puts these children at some advantage for being able to read written language (decode) efficiently. Inefficient retrieval of phonological information from long-term or permanent storage, reflected in poor performance on rapid naming tasks decreases automaticity of word identification. Consequently, this potentially prevents freeing up of cognitive resources for efficient and timely comprehension of written text. Similarly, deficient phonological memory constrains the ability to learn new written and spoken vocabulary. Beyond reading, phonological processing issues reported here have theoretical implications for better understanding of memory and learning differences in this population.