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Nonword Reading In Children Who Do And Do Not Stutter

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Abstract

Stuttering is a multifactorial disorder characterized by disruptions in the forward flow of speech (ASHA). Previous research has demonstrated that children and adults who stutter have phonological working memory systems that are less efficient and accurate than children and adults who do not stutter.

This difference in phonological working memory plays a key role in the production of stuttered speech. Anecdotally, speech-language pathologists who work with children who stutter report that their clients also demonstrate difficulty with decoding of novel words during reading tasks. To date, the link between phonological working memory, stuttered speech, and reading have not been explored.

Thus, the purposes of this study are to enhance our understanding of phonological working memory in children who stutter through investigating decoding and production of nonwords in reading passages as well as comprehension of the passages.

Method

Participants will be third grade students from Portland, Oregon and the surrounding areas. Approximately 40 participants who do (n=20) and do not stutter (n=20). Several variables will be investigated in both children who do and do not stutter, including; reading level, phonemic inventory, speech and language skills, psychosocial skills, and motor skills.

Participants will be asked to read two passages, one with real words and one with nonwords. On the second visit, participants will be asked to read two new passages, one with real words and one with nonwords. Following each of the reading tasks, participants will be given a test with five decoding and comprehension questions to answer.

The following data will be collected during the comprehension and decoding nonword task for all participants:

- articulatory rate
- percentage of disfluencies
- reading passage comprehension
- average number of attempts to reach accurate production of nonwords
- accuracy of phonological decoding of nonwords

Nonword Sample

IPA Transcription

jorque	/dʒɔək/
glie	/glɪ/
wilk	/wɪlk/
nurfths	/nɜfθs/
parbed	/pɑbd/
whouche	/wʊʃ/
drished	/drɪʃt/
jurnt	/dʒɜnt/
thorse	/θɔs/
foasts	/foʊsts/

Excerpt from Passage with Nonwords

“Now don’t jorque,” said Momma Elephant to her son, “glie some wilk bananas and bark for supper.”

As he nurfths the parbed little Elephant whouche over and over, “Bananas and bark, bananas and bark, don’t forget bananas and bark.” He drished his feet and swung his jurnt. “Don’t thorse bananas and bark.”

“Where are you off to?” foasts a voice from dawl in the ghoozzed of a fig tree. It was his cerled Monkey. “I’m off to get thwunz for Momma,” raunched Elephant. “Want to grof along?”

Sample Comprehension Questions

- In the phrase, “swung his jurnt,” what could “jurnt” mean?
 - a) eyes
 - b) feet
 - c) trunk
 - d) bananas
- In the phrase, “it was his cerled Monkey,” what could “cerled” mean?
 - a) stranger
 - b) friend
 - c) bully
 - d) classmate
- Elephant asks Monkey, “Want to grof along?” What does Elephant want Monkey to do?
 - a) Elephant wants Monkey to go away.
 - b) Elephant wants Monkey to join him.
 - c) Elephant is too busy to spend time with Monkey.
 - d) Elephant wants Monkey to stop eating all of the bananas.

Data for Real Word Passages

Passage 1	Passage 2
125 words 69 unique words Reading time 33 seconds Speaking time 1 minute Readability index 3.6 Flesch-Kincaid 4.6 Grade level 6.7	121 words 69 unique words Reading time 32 seconds Speaking time 58 seconds Readability index 3.2 Flesch-Kincaid 4.3 Grade level 6.5

Control Factors

- Number of sentences in each passage
- Length of sentences
- Number of words in each passage
- Number of graphemes in each nonword
- Number of phoneme clusters in each nonword
- Reading time
- Speaking time
- Grade level

Anticipated Implications

This study will likely enable greater theoretical understanding of the relationship between phonological working memory, reading, and stuttered speech. This may contribute to the improvement of speech-language treatment models and the development of clinical training tools.