Impact of Vocabulary Knowledge and Decoding Skills on Reading Comprehension in Individuals with Down syndrome

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Introduction

• Down syndrome (DS) is a chromosomal disorder where the individual has an additional copy of chromosome 21. This can be discovered in utero (Diamandopulos & Green, 2018).

• Physical traits include, but are not limited to, a short neck and small mouth with a large tongue.

• Some developmental areas that are delayed include pragmatic language abilities, syntax complexity, decoding skills, vocabulary knowledge, and reading comprehension.

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Introduction

• Decoding refers to the process of transforming print into speech (Kostewicz, Lemons, Mrachko, & Paterra, 2012).

• It is vital for an individual to have adequate decoding abilities in order to demonstrate effective reading comprehension because the main goal of reading is to extract meaning from the written text.

Introduction

• Vocabulary is defined as the knowledge of word meanings.

• This knowledge is critical for reading comprehension as well.

Purpose

• The aim of this study is to examine the relative impact that vocabulary knowledge and decoding skills have on reading comprehension in individuals with Down syndrome.

• This knowledge would impact how a speech-language pathologist would provide therapy as well as evaluate the literacy abilities of an individual with DS.

Methods: Experimental Procedure

• Participant was an 11 year old female with Down syndrome

• Three tests were administered during one session which lasted 1 hour and 30 minutes
Methods:
Experimental Procedure
• The Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4) was administered to assess the participant’s receptive vocabulary.
• The Gray Oral Reading Test-Fifth Edition (GORT-V) was administered to measure the participant’s oral reading fluency and comprehension.
• The Test of Word Reading Efficiency-Second Edition (TOWRE-2) was administered to measure the participant’s ability to pronounce printed words and phonemically regular nonwords accurately and fluently.

Data Analysis
• Data collected from each test was examined. The standard scores and scaled scores were compared between the PPVT-4, GORT-5, and TOWRE-2.
• The data from each test was compared to determine the relative contribution of vocabulary knowledge and decoding abilities toward reading comprehension in individuals with Down syndrome.

Results
• The participant obtained a standard score of 54 on the PPVT-4 (average is 100). She scored 3.7 standard deviations below the mean in vocabulary which is described as an extremely low score.
• On the GORT-V, the participant obtained a scaled score of 7 for reading accuracy which is described as low average (average is 7-13). She obtained a scaled score of 1 for comprehension which is described as very poor (average is 7-13). She scored 3 standard deviations below the mean in reading comprehension.

Discussion
• Vocabulary knowledge, decoding skills, and reading comprehension were all below the mean for her age level.
• This supports the hypothesis that the individual with Down syndrome would have delayed reading comprehension due to a decrease in vocabulary knowledge and decoding skills.
• This also supports the hypothesis which states that vocabulary will have a more severe impact on comprehension than decoding.
Implications

• These findings indicate that individuals with DS are able to decode words while reading, however, there is a disconnect between decoding and comprehending material.

• This is important to consider when providing therapy as well as evaluating an individual with DS.

• When providing therapy to an individual with DS, one should consider targeting vocabulary knowledge first in order to improve reading comprehension.

Limitations

• The study lacks generalizability because it involved only one participant.

• More participants would allow for more advanced statistical procedures to be completed.

References
