

The Effect of Hearing Loss on Second Language Comprehension

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Disclosure Statement

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Introduction

- Hispanic children in the school systems has increased from 18 to 24 percent and have been enrolled as English language learners.
- Acquiring a second language is complex in nature due to the numerous components of language and the rules related to them.
- Comprehending a message begins with the receiver perceiving an acoustic signal, processing the message conveyed, and reaching a conclusion.
- A number of conditions can inhibit the effectiveness of this process, such as second language processing difficulties or hearing loss.

Purpose

- The purpose of this study was to determine if hearing loss has a greater effect on second language comprehension.
- It is hypothesized that hearing loss will affect second language comprehension more so than first language comprehension.
- This is hypothesized due to the fact that second language learners can undergo interference when processing stimuli of the second language and exhibit complications when distinguishing between the different language domains.

Methods: Participants

- The participants used in this study were English Language Learner (ELL) children with normal hearing, and their primary language was Spanish.
- The first participant was an 8 year old female, and the second participant was a 12 year old female.
- Both children received speech services from the Valdosta Speech and Hearing Clinic.

Methods: Procedures

- The subtest, Concepts and Following Direction (C&FD), was used from the CELF-4 in this study.
- This subtest consists of 54 questions; however, the study utilized 52 of the 54 questions.
- The last 2 questions from this subtest were excluded in order to achieve the desired number of total stimuli.
- The 52 questions were assigned to one of the four experimental conditions, and the assignment of each question to the experimental conditions were counterbalanced.
- Stimuli from the CF&D consisted of four conditions: English presentation with normal hearing, Spanish presentation with normal hearing, English with dampened hearing, and Spanish with dampened hearing.

Methods: Analysis

- The administration of the Concepts and Following Direction subtest was used to determine if the participants were able to comprehend directions administered in four different conditions:
 - First language comprehension with normal hearing to first language comprehension with dampened hearing
 - Second language comprehension with normal hearing to second language comprehension with dampened hearing
 - First language comprehension with dampened hearing to second language comprehension with dampened hearing
 - First language comprehension with normal hearing to second language comprehension with normal hearing.

Results

- Screening Results:
 - First participant:
 - Exhibited normal responses to pure tones presented at 20 dB at 1000 Hz, 2000 Hz, and 4000 Hz
 - Perceived dampened pure tones for 1000 Hz at 30 dB and 2000 Hz and 4000 Hz at 35 dB.
 - Second participant:
 - Exhibited normal responses to pure tones presented at 20 dB at 1000 Hz, 2000 Hz, and 4000 Hz
 - Perceived dampened pure tones for 1000 Hz at 25 dB, and 2000 Hz and 4000 Hz at 40 dB.
- Analysis revealed a significant main effect for hearing level $F(1,1) = 2.53$, $p = .034$ with higher mean accuracy proportions being obtained in the non-dampened conditions (50.65) than in the dampened conditions (9.50).

Results:

Accuracy Proportions for the Four Experimental Conditions

	Mean	Standard Deviation
English with Normal Hearing	54.5	44.5
Spanish with Normal Hearing	46.8	55.4
English with Dampened Hearing	11.5	16.3
Spanish with Dampened Hearing	7.5	10.6

Discussion: Relation of Data to Hypothesis

- It was hypothesized that second language comprehension would be effected by dampening to a greater extent than first language comprehension, because a number of difficulties can occur with second language processing and comprehension that is not characteristic of primary language comprehension.
- Contrastively, results indicated that hearing loss has a similar effect on both first and second language comprehension

Discussion: Interpretations

- It is possible that transference occurred in the processing stage of comprehension rather than interference for both participants, which may have been the cause for similarities between primary and second language comprehension.
- As the complexity of tasks increased the comprehension and storage decreased, which could have caused the participants to use greater cognitive and attentional capacities than they were able to perform.

Discussion: Implications

- In a school setting, children should get frequent and accurate hearing checks.
- In addition, the students or the teachers should receive some form of amplification.

Discussion: Limitations

- This study should have been presented in a sound attenuated booth with sound being transmitted through sound-field audiometry at 60 dB.
- Lack of participants
- The language proficiency of each participant's first and second languages should be obtained prior to administering the study.

Conclusions

- This study revealed that hearing loss did not have a greater effect on second language comprehension, but rather dampened hearing affected comprehension overall.
- Although these results used a small amount of participants, implications for the school setting are evident.

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