

# Computer-Based Speech Perception Training for a Preschooler with Hearing Aids


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# Introduction

- Need for speech perception training.
- Make sense of the auditory information.
- Discriminate the acoustic features of suprasegmentals, vowels, and consonants to perceive speech.

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- A few studies have investigated the use of daily computer-based speech perception training to improve speech perception (Kosky & Boothroyd, 2001; Zwolan, McDonald, Connor, & Kileny, 2000; and Rhody, 2004).
  - This study systematically evaluated the effectiveness of a computer-based program on the speech perception abilities of a preschool child fit with hearing aids.

# Participant

- 4-year-old female with a moderate sloping to severe sensorineural hearing loss, bilaterally
- Identified with hearing loss at age 3
- Mild hearing loss with binaural amplification
- Enrolled in a multi-age total communication classroom
- Nonverbal performance IQ: above average

# Research Design

- A single-subject multibaseline across behaviors was used.
  
- Three speech perception skills were measured:
  - **syllable discrimination**
  - **consonant phoneme discrimination**
  - **vowel discrimination**

# Dependent Variable- Daily Probe Measure

- Three pictures (one target, two foils) were placed in front of the participant, and she pointed to the picture that represented the auditory signal presented.
- Once treatment started, the targeted skill, syllable discrimination or consonant discrimination, was measured daily, while the untargeted skill, vowel discrimination, was measured weekly.
- 20% of the daily measures were scored by a graduate clinician as well as the student investigator. Interjudge reliability was 100%.



# Dependent Variable- Pre- and Post-Treatment Test

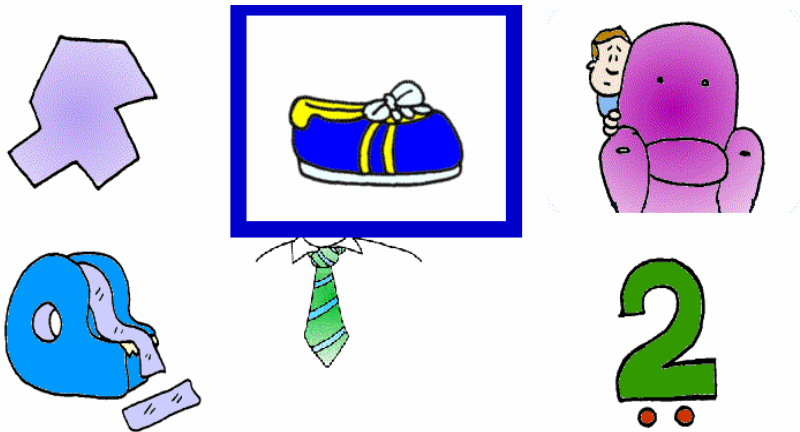
- *Speech Perception Instructional Curriculum and Evaluation (SPICE)*
  - Criterion-referenced checklist of auditory skills
- *Central Institute for the Deaf's (CID) Phonetic Inventory*
  - Speech production inventory of vowels, diphthongs, and initial consonants.

# Independent Variable- Computer Program

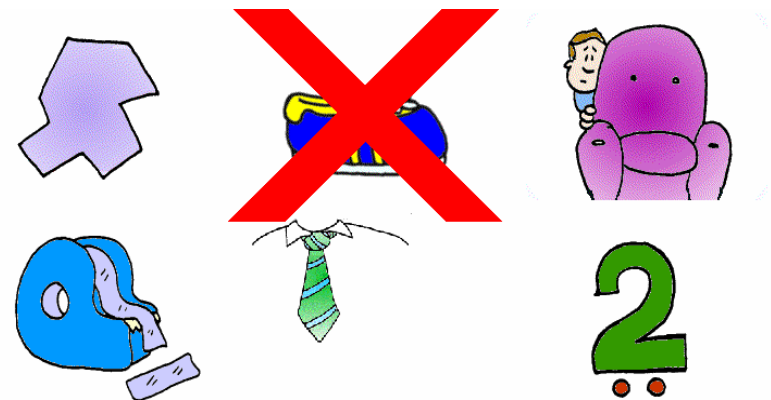
- *Listen-Hear* (Avaaz Corp.):  
Normal Hierarchy of Speech  
Sound Acquisition
- Sequence of module sections:
  - Syllable discrimination
  - Consonants discrimination
  - Vowel discrimination



# Independent Variable-Computer Program



EXIT

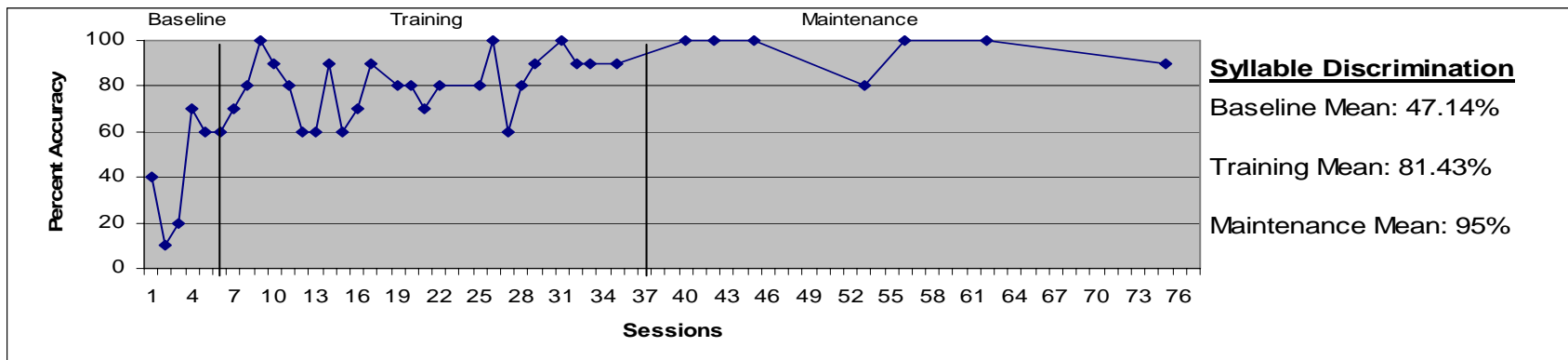


That's not it.

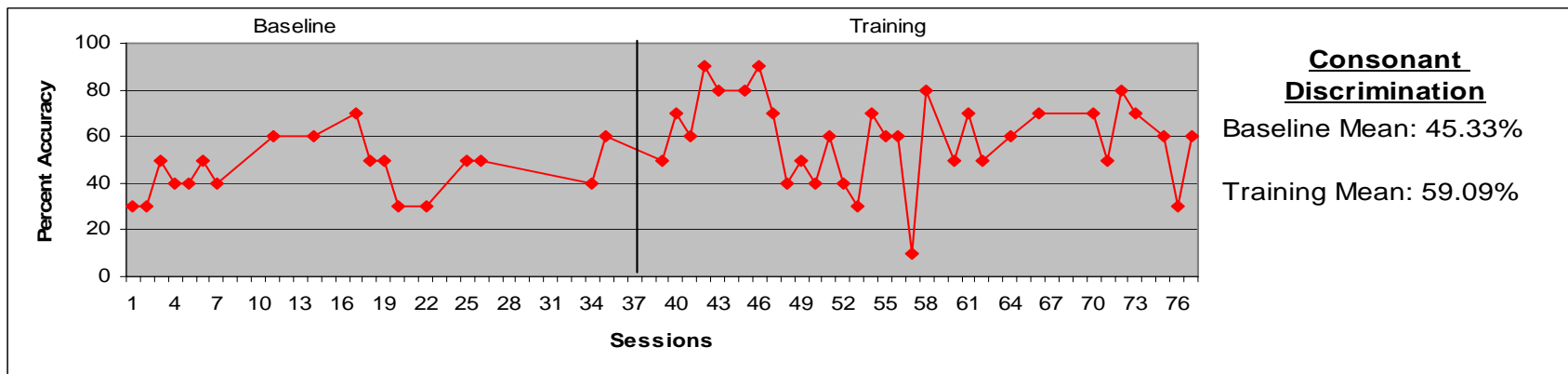
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# Percent Accuracy on Syllable Discrimination, Consonant Phoneme Discrimination, and Vowel Discrimination Measures

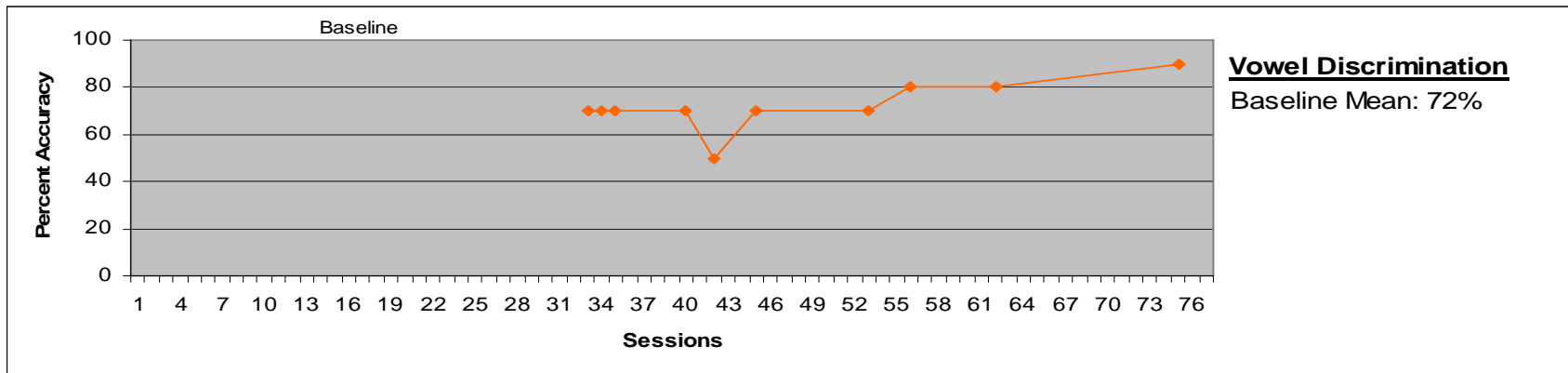
1.



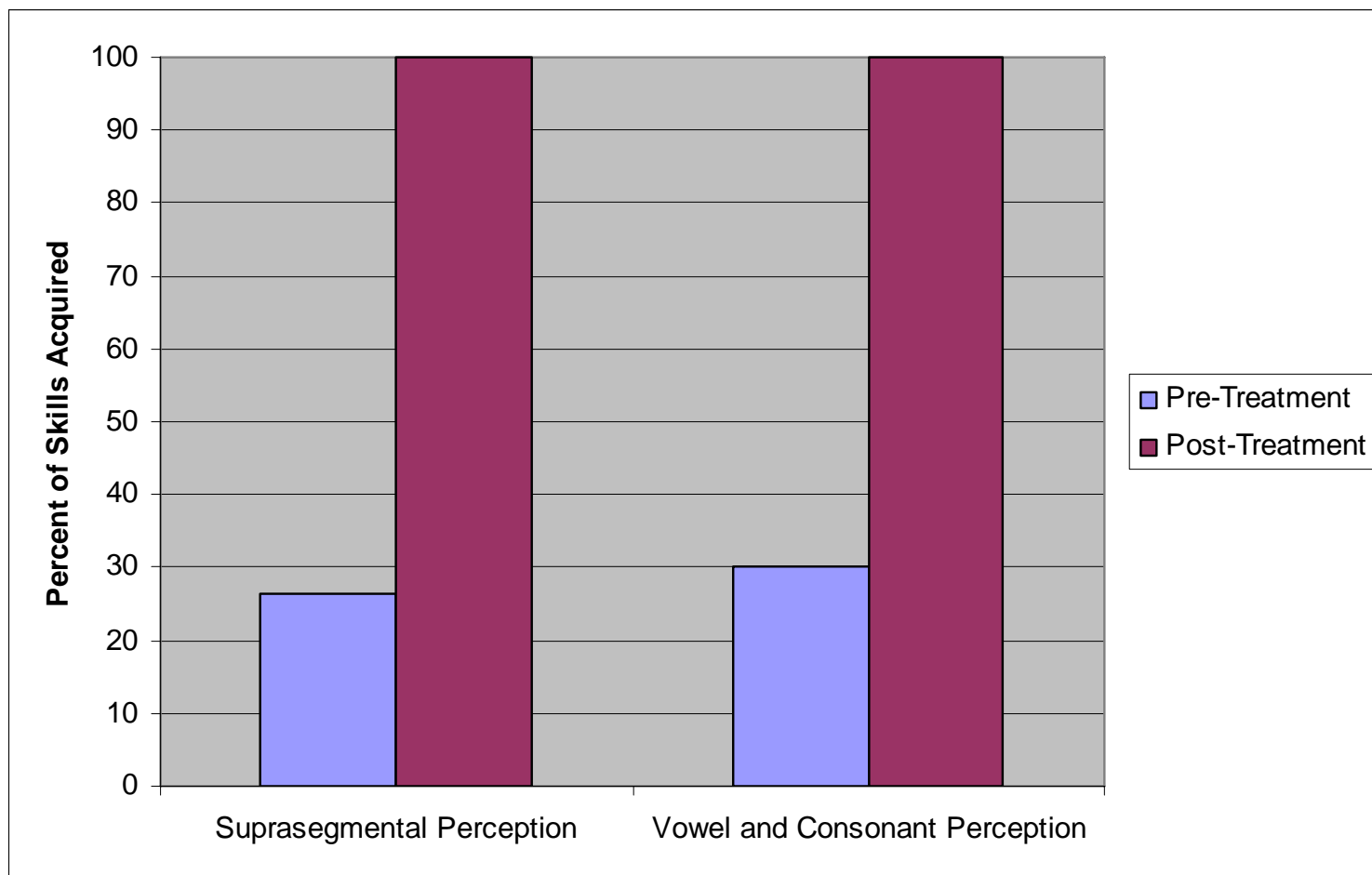
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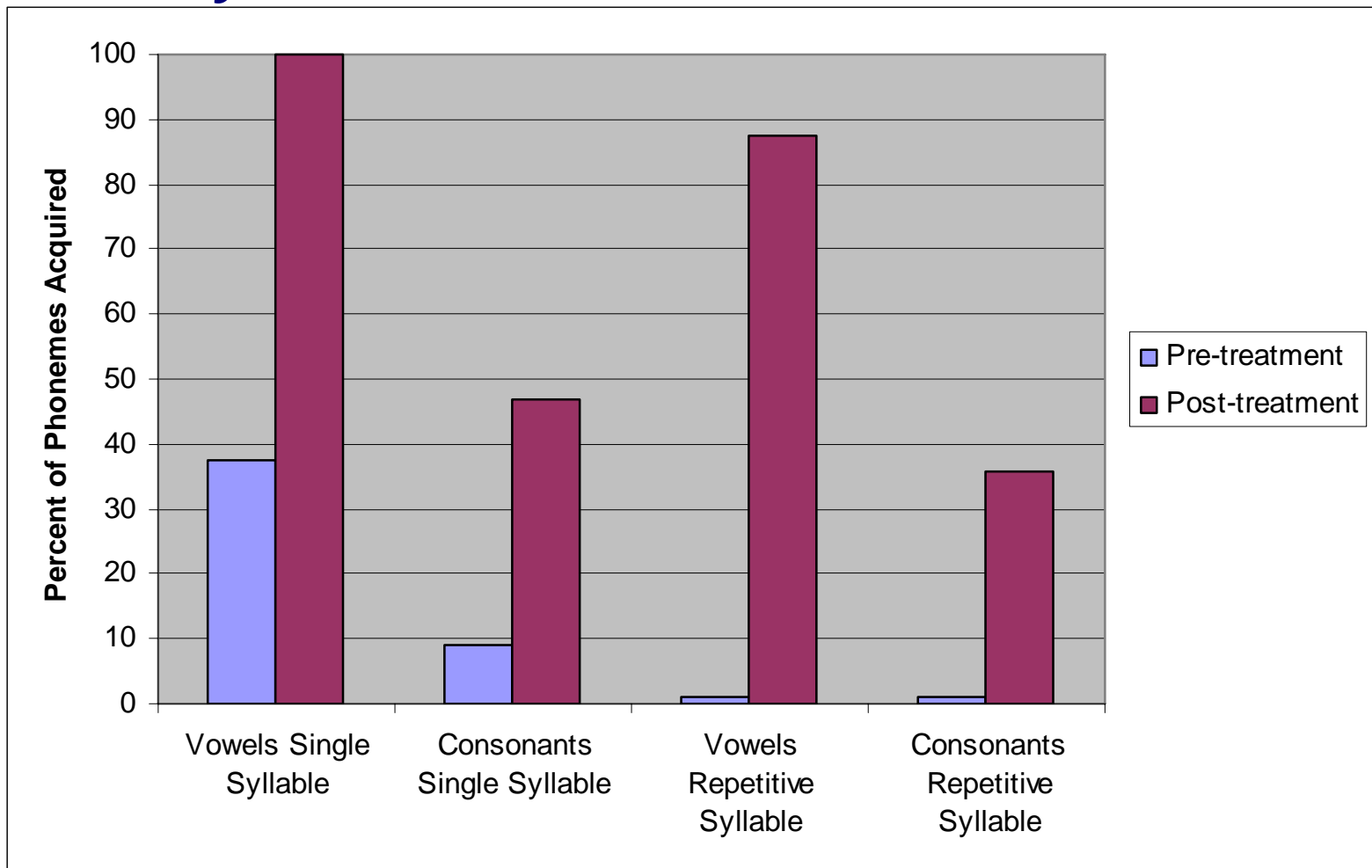
3.



# Percent of Skills Acquired on the *Speech Perception Instructional Curriculum and Evaluation*



# Percent of Phonemes Acquired on the *Central Institute for the Deaf Phonetic Inventory*



# Discussion

- Speech perception improved.
  - Syllable discrimination daily training probe
  - *SPICE*
- Articulation skills have improved.
  - *CID's Phonetic Inventory*
- Viable alternative to traditional speech perception training



# Impressions of the Computer Program

- Easy to administer
- Used male and female voices
- Small number of words
- Vocabulary
- Field size
- Negative reinforcement animations

# Future Research

- Replication
- Wider variety of ages, hearing losses, and cognitive levels
- Effects on language



Questions???