The Effects of the LSVT on Vocal Quality on an Adolescent with Parkinsonian-Like Symptoms

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- The author does not have any relevant financial or nonfinancial relationship for the content presented in this presentation.

Introduction
Voice Disorders

- Voice disorders can arise from several etiologies meaning there are multiple causes pertaining to how a voice disorder arises.
- These categories include: functional, organic, and neurologic.
- A neurogenic disorder is caused by having damage to the brain or a part of the nervous system (Manasco, 2014).

Introduction
Flaccid Dysarthria

- The origin of damage for flaccid dysarthria is within the lower motor neurons. This damage can occur due to infections, autoimmune diseases, or neurodegenerative diseases (Manasco, 2014).
- Flaccid dysarthria is characterized by a weakness or paralysis in the musculature used for speech production (Manasco, 2014).
- For this particular study, the participant experiences characteristics indicative of flaccid dysarthria.

Introduction
Role of the LSVT on Parkinson's Disease

- Speech disturbances have been reported in up to 90% of people with Parkinson's or Parkinsonian like symptoms (Theodoros & Ramig, 2011).
- The LSVT is designed to help aid the high-effort loud phonation that is required for the respiratory, laryngeal, and articulatory functions during speech production (Ramig et al., 2001).
- The LSVT maximizes the phonatory aspect of speech by improving the vocal fold adduction and overall laryngeal muscle activation control through the process of loud phonation (Ramig et al., 2001).

Purpose

- Parkinsonian like symptoms mainly arise in individuals during their later years of life; therefore, this particular study was to investigate if the LSVT program would improve the vocal quality of an adolescent who experiences Parkinsonian like symptoms.

Methods

- Participant

- 14 year old, Caucasian female diagnosed with Parkinsonian like symptoms induced by an illness causing neurologic damage.

- The participant experienced deficits in her motor and speech functions.
- The speech characteristics she portrayed characterized her as flaccid dysarthria, due to weakness in her speech musculature.

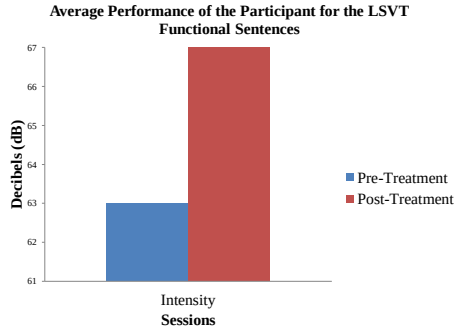
Methods: Experimental Procedure

- The LSVT (*Lee Silverman Voice Treatment)* was administered during or after school hours depending on the speech language pathologist who administered the treatment.
- Three different voice functions were implemented during treatment: “maximum duration of sustained vowel phonation", "maximum fundamental frequency”, and “maximum functional speech loudness drill”.
- Each speech exercise was implemented in her daily treatment sessions, as well as during her pre- and post-treatment sessions. The results were then recorded upon each designated treatment form. The treatment expanded over 3 weeks.

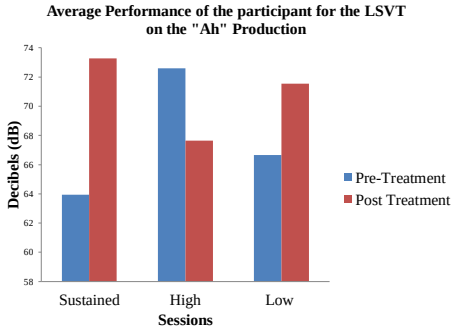
Methods: Data Analysis

- The study was implemented using an ABA -single subject design.
- The data was collected using a sound level meter to review decibel and fundamental frequency results.
- The average sound pressure levels from post-treatment measures were compared to the average of the sound pressure levels from pre-treatment measures.
- Improvement in the participant’s sound pressure levels would be determined if the combined average of the post-treatment measures were of higher intensity than the average of pre-treatment measures.

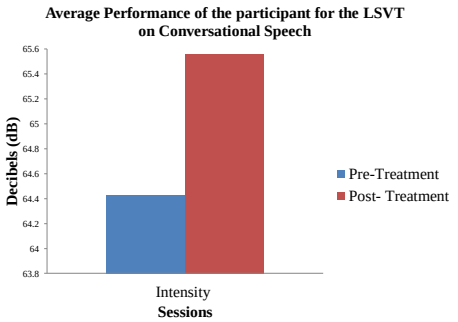
Results



Results



Results



Results

- A significant difference was found between the loudness levels that the participant produced during the pre-treatment and post-treatment sessions,

  $t(11) = -2.65, p = .023$
- The mean loudness levels that were obtained in the pre-experimental conditions (63.38 dB) were not as loud as those that were produced during the post-experimental conditions (67.08 dB).

Discussion

- The results in this experiment found an increase in the sound pressure levels the participant exhibited between pre-treatment and post-treatment measures, possibly due to the implementation of the LSVT.
- Before treatment, the participant produced lower sound pressure levels for the various speech exercises. After the treatment sessions were implemented, the post- treatment measures indicated higher sound pressure levels for the speech exercises.

Implications

- Parkinson's disease is uncommon in adolescents; however, there are other disease states that can result in Parkinsonian like symptoms. This can be improved with the implementation of the LSVT as recognized by the results of this study.
- By this, Speech-Language Pathologists can provide an effective therapy approach for future adolescent clients that experience Parkinson's disease or Parkinsonian like symptoms to help provide adequate vocal quality during speech.

Limitations

- The lack of participants gives notice to an inefficient reliability measure.
- Positive or negative mood swings of the participant affected treatment.
- The time the participant took the medication to facilitate her Parkinsonian like symptoms affected her abilities during treatment.

References

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