

Lauren Sullivan CURS Transcript:

The research project I perform this past semester is titled comparison of measures of articulation between LSVT-LOUD and LSVT-ARTIC Treatments in individuals with Parkinson's disease

I wanted to provide a bit of background information about Parkinson's disease.

PD can be defined as a neurological disorder that affects body movements including speech voice production lymph function gait and balance which leads to changes in activities of daily living

I also wanted to provide some background about statistics regarding Parkinson's disease and how this affects speech and voice.

Approximately 90% of people with Parkinson's disease suffer from a speech or voice disorder.

And this statistic was found in a study performed in 2012

This project specifically focuses on treatment methods that are used to treat the speech and voice problems that are associated with Parkinson disease

The LEE Silverman voice treatment, LSVT, is a treatment method that has been created to treat speech and voice disorders and individuals with Parkinson's disease.

LSVT-Loud is a treatment that focuses on increasing vocal loudness and LSVT-ARTIC is a treatment designed to improve speech articulation

One treatment method, LSVT-LOUD had been studied thoroughly by many researchers in the motor speech field. However, the LSVT-ARTIC treatment has not been studied consistently across the field.

Since LSVT-ARTIC has not been consistently studied I chose to focus my study on the outcomes of the LSVT-articulation treatment method.

The data that I used was given by Dr. Ramig, the creator of LSVT.

She published a study titled speech treatment and Parkinson's disease randomized controlled trial.

In this study, the authors examined the outcomes of the LSVT-loud and LSVT-ARTIC. But only document changes in dB SPL, which is a measure of vocal loudness. The authors did not examine any measures of speech articulation.

I chose to use the same data but in this investigation, I examined the benefits of articulation from both treatment methods.

My research questions are listed in the slide, the first question states to what extent does LSVT-LOUD lead to changes in acoustic measures of articulation?

The second research question states to what extent does LSVT-ARTIC lead to changes in acoustic measures of articulation?

Lastly, are the changes in acoustic measures articulation greater for LSVT-ARTIC in comparison to LSVT-LOUD?

As I previously stated we were given data collected from Ramick at all 2018.

These data consisted of participants who had been diagnosed with Parkinson's disease and who also experienced a speech or voice disorder.

60 of these participants had been diagnosed with PD and displayed either reduced vocal loudness, a monotone voice, a breathy voice quality or imprecise articulation.

The participants were randomly assigned into a non-treatment control group which contain 20 participants and LSVT-LOUD group which contained 20 participants and an LSVT-ARTIC group which contain 20 participants as well

Each participant was asked to read the rainbow passage.

The participants did two readings before treatment two readings immediately following the completion of the treatment and two readings six months post-treatment

The acoustic analysis that I performed measured speech rate and syllables per second and the main pause time in seconds

The results yielded that the LSVT-articulation group exhibited a significant reduction in articulation rate it was retained in the six-month follow-up.

This is likely associated with longer and larger speech articulation movements which are the movements typically that are observed in a normal speaking style

However, in the LSVT-LOUD group and the non-treatment group, there were no changes in speech rate observed at any point in time

These data can be observed in figure 1 the red indicates the baseline data collection the green indicates the post-treatment data collection and the blue indicates the follow-up data collection

On the X-axis it can be seen that each group is listed, the untreated group, the LSVT-LOUD, and the LSVT-ARTIC group.

On the Y-axis articulation rate is labeled in syllables per second

These data indicate that LSVT-ARTIC may better treatment method for individuals who primarily exhibit articulatory impairments including fast rate and low speech intelligibility

These data also indicate the LSVT-LOUD may not be a good treatment method for individuals with articulatory impairments.

However, in previous studies, this treatment method has been proven to increase vocal loudness

These data also indicate that for both LSVT-LOUD and LSVT-ARTIC there was a small but significant reduction in a speech to pause ratio which means that the main pause time was decreased and in the untreated group there was no change.

This can be seen in figure 2 as well and the colors indicate each time point that data was collected and the groups are listed on the X-axis and a speech to pause ratio is listed on the Y-axis

Again this may indicate that the mean to pause ratio is decreased because of larger articulatory movements

Overall LSVT-LOUD and LSVT-ARTIC are both effective treatments but serve to benefit different impairments associated with speech and voice in individuals with PD

LSVT-LOUD would be a great treatment to use if an individual primarily exhibits problems with a decrease in vocal loudness and LSVT-ARTIC would be a great treatment used to improve speech articulation

It should be noted that when a Speech-Language Pathologist is choosing between the two methods to treat a speech and voice disorder that the SLP should identify which speech symptoms the client primarily exhibits.

Based on the primary impairments the SLP should and choose the method that will benefit the client most.

In many other types of dysarthria, speech articulation is one of the key speech features that is adversely affected.

And in future research, it may be informative to measure the outcomes associated with LSVT-ARTIC in other types of Dysarthria as well.

In previous literature outcomes associated with LSVT-ARTIC have only been investigated in individuals with Parkinson's disease and there is a possibility that this treatment may benefit other disorders as well.

Thank you for listening to my presentation please I