

LOUD

The Science and Practice of “Speaking LOUD”

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“If you don’t talk loud enough – people stop listening.”
“If I have no voice, I have no life.”

These are direct quotes from two individuals who live with Parkinson disease (PD). They reflect the devastating impact that a speech and voice disorder can inflict on the quality of a person’s life. Eighty-nine percent of people with PD will suffer from speech and voice disorders, including soft voice, monotone, breathiness, hoarse voice quality and imprecise articulation. In contrast to historical observations suggesting a mid or late-stage onset of speech symptoms, more recent investigations consistently report speech symptoms early in the course of PD with such notable consequences as exclusion from conversations, loss of dignity, and feelings of misery. Even people who are clinically asymptomatic for speech deficits report feelings of embarrassment, social stigma and isolation due to speech concerns. As a result, people with PD report that they are less likely to participate in conversations, or to have confidence in social settings, than healthy individuals in their age group.

For years, speech and voice disorders in people with PD were resistant to treatment. The effects of conventional treatments – whether medical or surgical – were neither significant nor lasting. The recognition that speech therapy could be tailored to the specific problems of people with PD led to the development of

a method aimed at improving vocal loudness: the Lee Silverman Voice Treatment (LSVT LOUD™) method. This technique has helped many individuals with PD and speech problems, giving them new hope for improved communication for work, family and social activities.

Speech and voice disorders in PD

There are several reasons why people with PD have reduced loudness, monotone and hoarse, breathy voice. One is directly related to the disordered motor system that accompanies PD, including rigidity, slowness of movement and tremor. For example the inadequate muscle activation that leads to bradykinesia (slow movement) and hypokinesia (small movements) in the limbs can also trigger a speech disorder. For speaking, the problem with muscle activation can result in reduced movements of the respiratory system (reduced breath support), larynx (reduced vocal loudness), and articulation (reduced clarity of speech).

Another cause of speech and voice impairment in PD is a deficit in the sensory processing that is related to speech. Clinical observations suggest that people with PD may simply not be aware that their speech is getting softer and more difficult to understand. When “soft speaking” people are told of this, they will often reply “No! My spouse complains all the time, but he/she needs a hearing aid!” Furthermore, if people in this



situation are asked to bring their voice to normal loudness, they will often complain that they feel as though they were shouting, even though they are perceived by listeners to be speaking normally.

A third cause of this condition is that people with PD may have a problem with “cueing” themselves to produce speech with adequate loudness. Individuals with PD can respond to an external cue (e.g., an instruction from someone else to “speak loudly!”), but their ability to cue themselves internally to use a louder voice is impaired. These problems can be frustrating both for the person and for their families. People with PD may feel that they are speaking loudly enough and do not understand why others keep asking them to repeat. And because the speech loudness responds to external cueing – sometimes soft, sometimes normal – the family may feel that the person with PD can be louder and clearer if they would only try harder.

These sensorimotor and cueing problems have made people with PD particularly resistant to speech treatment. The conventional wisdom for years has been that people with PD can improve their speech during the speech therapy session, but the improvement “disappears on the way to the parking lot.” As a result, conventional speech therapy has not led to sustained benefit, and has not been considered a valuable addition to the treatment of Parkinson disease.

Speech therapy: LSVT LOUD

“My voice is alive again!” - A person with Parkinson’s from Denver, CO

Over the past 20 years with support from the National Institutes of Health, our research team has developed and advanced an efficacious speech treatment for people who live with PD. This intensive, exercise-based intervention, known as LSVT LOUD, is a Parkinson-specific, neuroplasticity-principled, standardized protocol. Published data have documented improvements in key speech symptoms of PD including improved vocal loudness (as measured by sound pressure level, SPL) and improved pitch variability (as measured by fundamental frequency

variability) during reading and conversational monologue tasks. These improvements were maintained for at least 24 months post treatment. Such increases in vocal loudness and pitch variability in people with PD have been shown to positively impact speech intelligibility. In addition, improvements in physiologic, acoustic, perceptual and psycho-social measures as well as changes in neural functioning have been reported post-LSVT.

LSVT LOUD improves vocal loudness by stimulating the muscles of the voice box (larynx) and speech mechanism through a systematic hierarchy of exercises. Focused on a single goal - “speak LOUD!” – the treatment improves respiratory, laryngeal and articulatory function to maximize speech intelligibility. It does not train people for shouting or yelling; rather, the treatment uses loudness training to bring the voice to an improved, healthy vocal loudness level with no strain.



The unique aspects of the LSVT LOUD protocol include the combination of: (a) an exclusive target on increasing amplitude (healthy vocal loudness) to override bradykinesia/hypokinesia, (b) a focus on sensory recalibration to help people with PD recognize that voice with increased vocal loudness is within normal limits, even if it feels “too loud,” and (c) training self-cueing and attention-to-action to facilitate long-term maintenance of improved vocal loudness. The program is administered in 16 sessions over a single month (four individual 60 minute sessions per week). This mode of administration – much more intensive than is the case with conventional programs – is consistent with theories of motor learning and skill acquisition, as well as with principles of neural plasticity (i.e., the capacity of the nervous system to change in response to signals), and it is critical to attaining optimal results. In addition to stimulating the motor speech system, the treatment incorporates sensory awareness training to help individuals with PD recognize that their voice is too soft, convincing them that the louder voice is within normal limits, and making them comfortable with their new louder voice.

People with PD are trained to self-generate (that is, internally cue) the adequate amount of loudness to make their speech understood. While LSVT LOUD has been successfully administered to individuals in all stages of PD, current research data indicate it has been most effective among those who are in the early or middle stages of the condition.

Although LSVT LOUD has been successful for improving communication for people with PD, challenges, such as geographical barriers limiting access to speech-language clinicians, and the time, effort and expense of travel to treatment sessions can make access prohibitive. As a result, people with PD suffer with speech impairments and the associated health and economic consequences for years. Advances in computer and web-based technology offer potentially powerful solutions to the problems of treatment accessibility, efficacious dosage delivery, and long-term maintenance in rehabilitation. Preliminary studies have documented the impact of telepractice and software programs on treatment availability for LSVT LOUD and suggest that such technology may be effective and increase the feasibility of intensive dosage and long-term follow-up. The use of technology is not LSVT

specific and may have the ability to increase accessibility, enhance effectiveness, and reduce financial burden of many intensive rehabilitation programs for people with PD.

Gaining Access to Speech therapy

If you are experiencing any changes in your speech or voice, be sure to tell your doctor. Ask for a referral and a prescription for a speech evaluation and treatment. If you have not noticed changes in your speech, but a spouse, caretaker, or friend has – pay attention to their comments. One aspect of the speech disorder is that the person with PD is often “unaware” of the changes in speech or voice. The sooner you obtain a speech evaluation and start speech therapy, the better.

Speech therapists work in a variety of settings, including hospitals, out-patient rehabilitation centers, and private practice offices. To locate one in your area, contact the American Speech-language and Hearing Association (ASHA) www.asha.org, or find an LSVT-certified speech therapist by visiting www.lsvtglobal.com.

Ideally, you should see a speech therapist face-to-face for a complete voice and speech evaluation and treatment. However, if a speech therapist is not available in your area, LSVT LOUD is now being offered in select states via internet and webcam technology. The speech therapist interacts with you in your home or office “live” through your computer screen.

Speech disorders can progressively diminish quality of life for a person with Parkinson’s disease. LSVT LOUD empowers people with PD to participate in their treatment in fundamental ways and to gain control over one important and burdensome aspect of their PD – the ability to communicate. The earlier a person with PD receives a baseline speech evaluation and speech therapy, the more likely he or she will be able to maintain communication skills as the disease progresses. Communication is a key element in quality of life and can help people with PD maintain confidence and a positive self-concept as they deal with the challenges of the disease.

L. Ramig and C. Fox receive lecture honoraria and have ownership interest in LSVT Global, Inc. They are in full compliance with Federal Statute (42 C.F.R. Part 50. Subpart F) and the University of Colorado-Boulder Policy on Conflict of Interest and Commitment.