LSVT Global® Public Webinar Series

Title: **Application of LSVT LOUD to Neurological Conditions Beyond Parkinson's Disease**

Presenters: Elizabeth Peterson, MA, CCC-SLP

Angela Halpern, MS, CCC-SLP

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Webinar Presenters

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Instructor Biographies

Elizabeth Peterson, MA, CCC-SLP
Ms. Peterson received her master's degree in Speech, Language and Hearing Sciences from the University of Colorado-Boulder. She began working with Dr. Lorraine Ramig's research team while completing her master's thesis. Ms. Peterson is LSVT LOUD certified and primarily delivers LSVT LOUD in the research setting. She has worked as a research associate at the National Center for Voice and Speech-Denver and the University of Texas Health Science Center, San Antonio. Ms. Peterson is currently involved in Dr. Ramig's research investigating the short and long-term impact of LSVT LOUD on neural underpinnings of speech in Parkinson disease.

Angela Halpern, MS, CCC-SLP
Ms. Halpern is Chief Clinical Officer of LSVT LOUD and a research associate with Dr. Ramig's research team at the National Center for Voice and Speech in Denver, CO. She received her master's degree in the Department of Communication Science and Disorders at the University of Pittsburgh and has been LSVT LOUD Certified since 1997. Ms. Halpern has worked extensively in the area of neurogenic disorders with a specialty in Parkinson disease. She has presented at national and international conferences and authored and co-authored publications related to voice and speech in Parkinson disease.

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PLAN FOR WEBINAR

- Logistics (handouts)
- Presentation of content
- Address your questions
- Survey

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Disclosures

- All of the LSVT LOUD faculty have both financial and non-financial relationships with LSVT Global.
- Non-financial relationships include a preference for the LSVT LOUD as a treatment technique.
- Financial Relationships include:
  Ms. Peterson and Ms. Halpern are employees of and receive lecture honorarium and travel reimbursement from LSVT Global, Inc.

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INFORMATION TO SELF-REPORT CONTINUING EDUCATION ACTIVITY

- This LSVT Global webinar is NOT ASHA or state registered for CEUs, but it may be used for self-reported CEU credit as a non-registered CEU activity.
- If you are a speech therapy professional and would like to self-report your activity, e-mail webinars@lsvtglobal.com to request a certificate after completion of the webinar which will include your name, date and duration of the webinar.
- Licensing requirements for CEUs differ by state. Check with your state licensing board to determine if your state accepts non-ASHA registered CEU activities.
- Attendance for the full hour is required to earn a certificate.

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Learning Objectives

Upon conclusion of this webinar, speech-language pathology participants will be able to:

1. Discuss how a voice treatment based on principles of neural plasticity has the potential to improve voice and speech in individuals with dysarthria secondary to neurological diagnoses other than PD
2. Explain the process for determining if a client with a diagnosis other than PD may be a good candidate for LSVT LOUD
3. Discuss specific examples of the application of LSVT LOUD to conditions beyond PD

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EFFICACIOUS TREATMENTS FOR PEOPLE WITH DYSARTHRIA SECONDARY TO A NEUROLOGICAL DIAGNOSIS ARE NEEDED.

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NEGATIVE IMPACT OF DYSARTHRIA

- Decreased intelligibility
- Decreased naturalness
- Encounter negative attitudes or discrimination
- Diminished engagement in communication
- Complex – challenging to treat

Dickson, S., Barbour, R.S., Brady, M., Clark, A.M, & Paton, G. (2008) International Journal of Language and Communication Disorders, 2, 135-153.

Walshe, M, Peach, R.K., & Miller, N. (2009). Dysarthria impact profile: development of a scale to measure psychosocial effects. International Journal of Communication Disorders, 44, 693-715.

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TREATMENT OPTIONS

- Restore or improve function
- Promote the use of residual function (compensatory strategies)
- Maximize the communication environment
- Incorporate augmentative communication devices

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WHY LSVT LOUD?

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LSVT LOUD FOCUSES ON RESTORING RESIDUAL FUNCTION

OR ESTABLISHING SPEECH MOTOR CONTROL IN THE CASE OF DEVELOPMENTAL DIAGNOSES

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EXERCISE BASED TREATMENTS CAN WORK

BASIC SCIENCE EVIDENCE FOR THE **VALUE OF EXERCISE** IN PD (CLASSICALLY DRUGS, SURGERY)

IDENTIFIED **KEY PRINCIPLES OF EXERCISE** THAT DRIVE ACTIVITY-DEPENDENT NEURAL PLASTICITY

DEMONSTRATED THAT EXERCISE CAN **IMPROVE BRAIN FUNCTIONING** (NEURAL PLASTICITY) AND MAY **SLOW SYMPTOM PROGRESSION**

EXERCISE IS MEDICINE!

**JSHLR Kleim & Jones, 2008; Kleim et al, 2003; Zigmond et al, 2009

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LSVT LOUD KEY CONCEPTS

Incorporate principles of neuroplasticity

- **TARGET:** Amplitude - Vocal loudness
- **MODE**: Intensive and High Effort
- **CALIBRATION**: Generalization

These **Key Concepts** of LSVT LOUD are relevant for a variety of neurological disorders and a variety of dysarthria types

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TARGET OF TREATMENT: VOICE

Voice as a source

- Targets healthy vocal loudness
- Voice as "point of entry"
  - Carol Boliek

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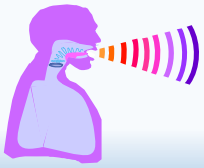
VOICE AS A TRIGGER

- Enhance effort and coordination across motor speech system
- "Loudness is a global variable"

  Schulman, 1989; Dromey, Ramig & Johnson, 1995; Sapir et al., 2008; Watson & Hughes, 2006
- Spread of effects!

  Mahler et al., 2015; Huber et al., 2003; Spielman et al, 2003; El Sharkawi et al., 2002, Sapir et al., 2003; Sapir et al., 2007



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SPEECH-LANGUAGE PATHOLOGIST SHAPES AND MODELS NORMAL LOUDNESS WITH HEALTHY QUALITY, WHICH CAN ALSO IMPACT…

- Deep breath
- Open mouth
- Improved articulation
- Reduced rate
- Naturalness
- And more!

Mahler et al., 2015; Huber et al., 2003; Spielman et al, 2003; El Sharkawi et al., 2002,Sapir et al., 2003; Sapir et al., 2007

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MODE OF TREATMENT: INTENSIVE AND HIGH EFFORT

- LSVT LOUD incorporates many key principles of neuroplasticity: repetition, specificity, complexity, saliency
- Important for both healthy and disordered motor systems
- Key to effecting behavioral changes that last over time
- Applicable for adults and children

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CALIBRATION IN TREATMENT

Parkinson's Disease

- Sensory mismatch
- Problem with internal cueing
- Subtle neuropsychological changes
  - Slower thinking
  - Slower learning
  - Problems shifting cognitive set

Other Neural Conditions

- Sensory disorders
- Vocal effort required for improved speech
- Social stigma
- Cognitive challenges
  - Language deficits
  - Abstract reasoning
  - Delayed expressive/receptive language

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HOW DOES A SPEECH-LANGUAGE PATHOLOGIST DETERMINE IF LSVT LOUD IS APPROPRIATE?

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EVALUATION

- Evaluate the clinical diagnosis and rationale for focusing on improving voice.
- Determine if there are medical contraindications (e.g. ALS, myasthenia gravis) by consulting with the patient's medical team.*
- If there is a good clinical rationale, based on the physiology of the communication disorder, then try stimulability testing.

*Handout: Physician Clearance Letter Template

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STIMULABILITY TESTING

Assessment of whether increased loudness has a positive impact on overall understandability for communication

Evaluation of the impact of increased healthy vocal loudness on:

voice quality | articulatory precision | prosody | rate

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STIMULABILITY TESTING

Variety of tasks

- Sustained phonation of "Ah", 3+ reps
- Fundamental frequency range (High/Low Ah), 3+ reps
- Phrases, 8+ reps, 1-3 words

Pull out all the stops!

- Model
- Cue
- Motivate!
- Try all the tools you would during tx sessions

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STIMULABILITY CONSIDERATIONS

- Don't be discouraged if client is minimally stimulable in the initial testing session
- Consider a week of trial treatment as extended stimulablity testing – some clients it takes a few days
- Follow your clinical intuition – give it a chance
- Many times these are clients where nothing else has worked
- Sometimes clients may need some preconditioning before they are ready for LSVT LOUD
  - -E.g., establish sensory tolerance

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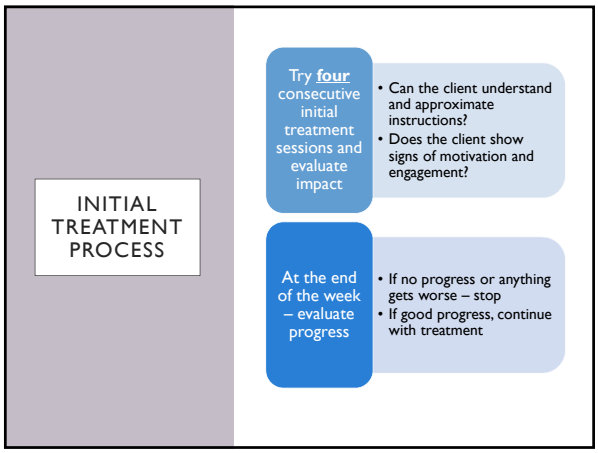

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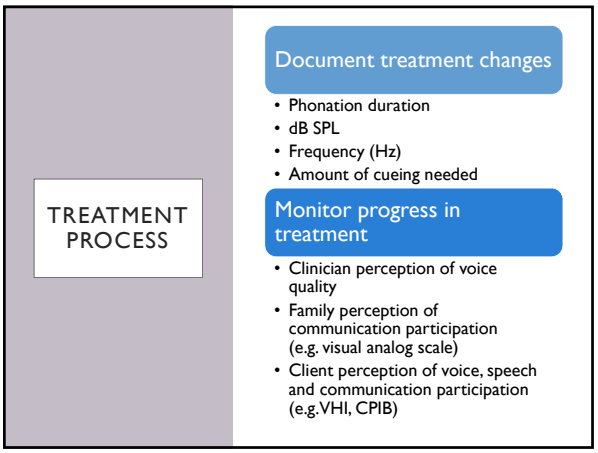

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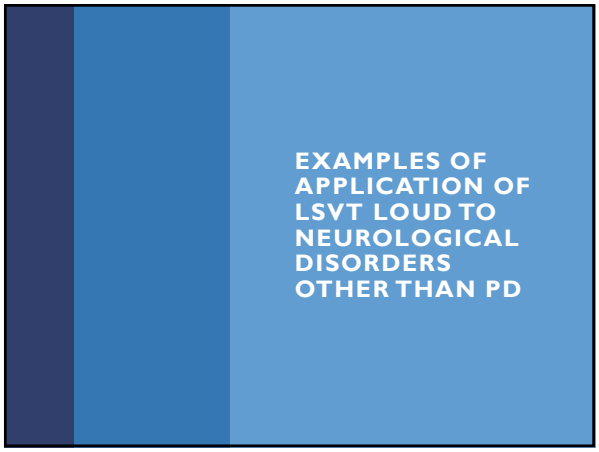

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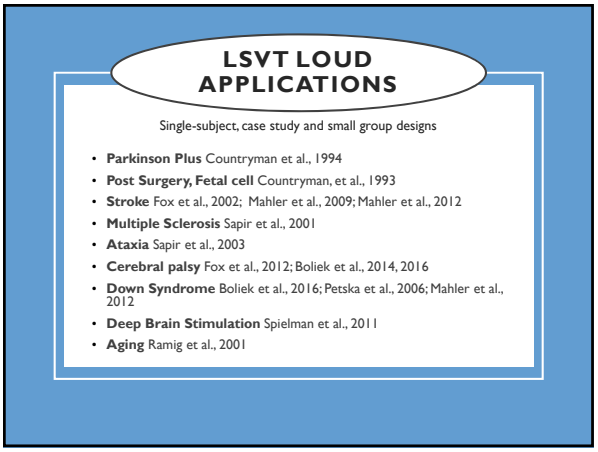

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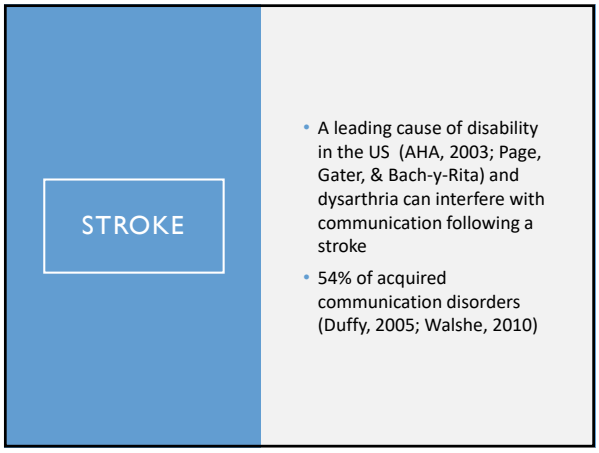

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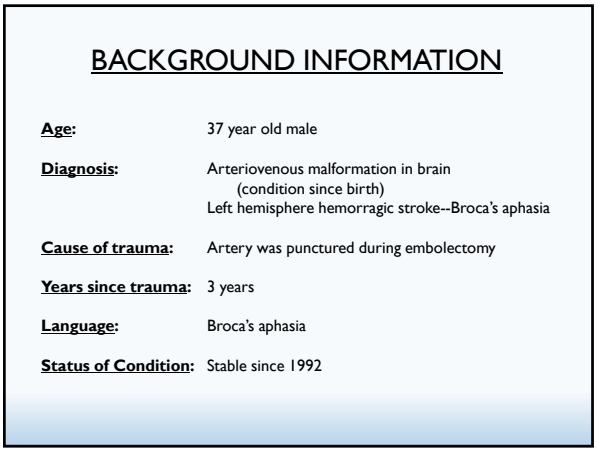

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LESSONS WITH STROKE

- Shaping good quality loudness can be challenging
- Change may occur more slowly than in people with PD
- Considerations if aphasia is present
- Outcomes expectations

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CEREBRAL PALSY

- Dysarthria is common in people with CP and is typically characterized by:
  - Hypernasality
  - Breathy voice quality
  - Reduced loudness
  - Rate abnormalities

Workinger, M.S. & Kent, R.D. (1991) Perceptual analysis of the dysarthrias in children with athetoid and spastic cerebral palsy.

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5 kids with predominately spastic CP (all 4 limbs) 5-7 years of age

Pre-post samples

1 2 3 4 5

Male 7 yrs, 10 mos | **Female 5 yrs, 10 mos** | **Male 6 yrs, 1 mos** | **Male 7 yrs, 7 mos** | **Female 6 yrs, 7 mos (No Treatment)**

Fox & Boliek (2012), JSLHR

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VIDEO EXAMPLE: TREATMENT WITH CHILD WITH CP

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DOWN SYNDROME

- Communication disorders are common, frequently including dysarthria
- Therapy typically focuses on cognitive-linguistic deficits
- Speech treatments in DS have received little attention even though speech deficits may have a negative impact on quality of life and social participation (Stoel-Gammon, 2001).

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LESSONS WITH CP AND DS

- Shaping good quality loudness can be challenging
- Change may occur more slowly than in people with PD
- Considerations if language and cognitive impairment is present
  - E.g. Structured dialogues
- Timing of treatment

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MULTIPLE SCLEROSIS

- About 40-45% of individuals with MS suffer from dysarthria (Darley et al., 1972)
- Most commonly spastic-ataxic dysarthria (Darley et al., 1975)
- Prominent features: impaired loudness, breathy or harsh voice quality, vocal instability, imprecise articulation (Darley et al., 1975; Fitzgerald et al., 1987; Hartelius et al., 1997, 1995)
- More treatment research needed!

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BACKGROUND INFORMATION

Age: 46 year old female

Diagnosis: Progressive MS with superimposed exacerbations

Time since diagnosis: 12 years since initial diagnosis

Physical involvement: Motorized cart

Cognition: Within normal limits

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PRE-TREATMENT VOICE AND SPEECH SIGNS

- Weak voice
- Intermittent breathy voice
- Observed deterioration of vocal loudness with extended use
- "No laryngeal anomalies, good speech production, no lesions"

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POST-TREATMENT VOICE AND SPEECH CHANGES

- Increased loudness
- Decreased fatigue
- Improved singing strength
- Confidence
- "Marked improvement in both the strength of voice and the adductor tone"

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CONSIDERATIONS WITH MS

- Treat with LSVT LOUD during periods of remission, not relapse
- Timing of treatment
- Case by case basis

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CASE REPORT: YOUNG ADULT WITH AUTISM

- 18-year-old male
- Severe cognitive, language, and sensorimotor disorders; CAS
- Significantly limited use of functional, intelligible vocabulary prior to intervention (Severe mixed receptive-expressive language disorder)
- Parent-reported speech and voice concerns: "weak breath control, reduced loudness, very limited clarity when attempting to speak, not having enough breath, soft speech, monotone, no confidence with speaking"

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CASE REPORT: YOUNG ADULT WITH AUTISM

- Observed speech and voice signs by three speech-language pathologists included:
  - reduced breath support and control
  - reduced intelligibility of attempted utterances
  - reduced loudness
  - monotone
  - fast rate
  - output limited to word or short phrase approximations, imprecise articulation, prosodic abnormalities

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CASE REPORT: YOUNG ADULT WITH AUTISM

- Negative prognostic variables:
  - Not initially stimulable for LSVT LOUD
  - Unable to inhale volitionally or in response to models or cues
  - Unable to respond to cues to increase loudness
  - Child's age (Age at time of initial assessment: 16 years)
  - Severity of speech and language disorders
- Positive prognostic variables:
  - Client and parent level of motivation to attempt to acquire functional, verbal communication
  - Open to trial week of treatment to determine candidacy; feasibility

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CASE REPORT: YOUNG ADULT WITH AUTISM

When asked about his general speech goals, Joey used his letter board to express….

"Have to be honest. My finding the ability to start and carry full conversations is my intent for the future."

When asked about his 1st LSVT eLOUD session, Joey used his letter board to express,

"My first LSVT pleasant video session with Jessica was more successful than I thought it would be. The security of the sounds I was making was much clearer. The letter board still gives me confidence."

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CASE REPORT: YOUNG ADULT WITH AUTISM

RESULTS

- Significant gains made across several acoustic measures during performance tasks, such as maximum phonation time, and speech loudness
- Improvements were also observed for speech, though variability due to behavior and cognitive-linguistic disorder was noted
- Parent rated great improvement across several perceptual variables, including "Breathing associated with Speech, Speech Intelligibility, Initiates Conversation, and Participates in a conversation" from baseline to post-treatment.
- Client noted improvements in ease of speech production, an ability to breathe and control speech, and confidence speaking with people, as evidenced by speech handicap scale ratings and his preferred method of augmentative communication.

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CASE REPORT: YOUNG ADULT WITH AUTISM

DISCUSSION

Several adaptations to accommodate difficulties with behavior and cognitive-linguistic delays were necessary to administer LSVT LOUD while maintaining treatment fidelity:

- breaks in motor practice
- longer sessions
- additional week(s) of treatment
- behavior management
- modifications for language and reading level
- additional feedback, reinforcement, and counseling to increase confidence as a speaker

Findings provide exciting, preliminary support for intensive voice treatment to improve select aspects of voice and speech functioning in this population

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CASE REPORT: YOUNG ADULT WITH AUTISM

DISCUSSION

When asked about his progress since starting the intensive LSVT LOUD program, Joey used his letter board to express,

"For years, to tell people my needs was almost impossible. Now make no mistake; now I'm virtually making verbal chatting with my loved ones."

http://www.huffingtonpost.com/jim-luce/voice-of-hope-the-joey-lo_b_7667976.html

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ATYPICAL PARKINSONISMS

- Comprise about 12% of Parkinsonian disorders (Stacy & Jancovic, 1992)
- Typically speech/voice deficits are more severe and deteriorate faster than idiopathic Parkinson's disease (IPD) (Quinn, 1989)

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CONSIDERATIONS WITH ATYPICAL PARKINSONISMS

- Don't discount potential based on initial impressions! (e.g. cognitive involvement, lack of interest, physical condition)
- Long-term goals may be less than IPD (e.g. phrase/sentence level; cued loudness)
- May need more frequent follow-up (e.g. 2 months post-treatment)

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GENERAL CONSIDERATIONS

- LSVT LOUD is not for everyone – another tool in the toolbox
- Stimulability testing results, clinical judgment and client/family discussions should guide the decision on whether or not to progress with treatment
- Diagnoses that are contraindicated
  - Myasthenia Gravis
  - ALS
  - Multiple Sclerosis in exacerbation

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HOW TO ASK QUESTIONS LIVE:

1. **Type in the QUESTION BOX on your control panel**
2. **Raise your hand!** ***(Click on the hand icon.)***
   - Your name will be called out
   - Your mic will be unmuted (make sure your mic is unmuted as well)
   - Then ask your question out loud
3. **Email info@lsvtglobal.com if you think of questions later**

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August Public Webinar

Application of LSVT BIG to Advanced and Atypical Parkinson's Disease
Wednesday, August 21, 2:00-3:00pm (EDT)

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THANK YOU!

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