How to Create a Strong and Creative Poster Submission

TSHA Call for Proposals

Poster presentations can be an effective way to share your expertise with others in the field and help build your professional experience with presenting at the TSHA Annual Convention. Poster presentations are an important part of the Convention experience and can spark conversations that lead to collaboration, innovation, and contribute to the advancement of the field! Read more below for tips on how to create a strong poster submission.

1. **Choose a Meaningful Topic**
    - Relevant to the field of speech-language pathology or audiology
    - Timely and connected to current challenges or innovations
    - Engaging for a diverse audience of clinicians, researchers, and students

    💡 ***Examples***:
        - **Case Study**: A poster that presents a detailed look at a single client or a small group with a unique or illustrative condition, treatment approach, or outcome.
            - Purpose: To share clinical insights, challenges, and lessons learned.
            - Best for: Clinicians who want to highlight real-world applications or unusual cases.
        - **Research**: A poster that presents original data from a study—quantitative or qualitative—conducted by the presenter(s).
            - Purpose: To contribute new knowledge to the field through systematic investigation.
            - Best for: Students, academics, or clinicians involved in formal research projects.
        - **Clinical Topic**: Poster that focuses on a specific area of practice, therapy technique, or service delivery model without necessarily presenting new data.
            - Purpose: To educate or inform peers about best practices, innovations, or implementation strategies.
            - Best for: Clinicians who want to share practical knowledge or program development.

2. **Craft a Clear and Compelling Title**
    - Craft a Clear and Compelling Title
    - Make it descriptive and engaging
    - Reflect the core topic or question
    - Avoid jargon unless it's widely understood by the target audience

    💡 ***Example****: "From Burnout to Balance: Wellness Strategies for SLPs in High-Stress Settings"*

3. **Show Creativity in Your Vision**
    - Even though you're not submitting the actual poster yet, provide a sense of your creative direction:
        - Will your poster include visuals, infographics, or interactive elements?
        - Are you planning a unique layout or theme?
        - How will you make your content engaging for attendees?

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TSHA
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4. **Need Inspiration?**
    - Please find examples of successful posters from TSHA's 2025 Annual Convention below:
        - **Research**: Neuromagnetic Patterns Of Imagined and Overt Speech by Keerthana Stanley
        - **Case Study**: Early Intervention Care for Autistic Patients: Bridging the Gap Between Medical and Social Disability Models by Shannon Whittley, MS CCC-SLP
        - **Clinical Topic**: Using rhythm and timing to improve overall language and literacy skills by Michaela J. Ritter, EdD, CCC-SLP and Sandra E. Wright, PhD, CCC-SLP

Neuromagnetic Patterns of Imagined and Overt Speech

Keerthana Stanley[1], Dorcas Wong[1], Jinuk Kwon[1], Zhe-Chen Guo[3], Paul Ferrari[2] , Abbas Babajani-Feremi[4], Jun Wang[1]

[1]University of Texas at Austin, [2]Helen Devos Children's Hospital, [3]Northwestern University, [4]University of Florida

Introduction & Goal

- Patients with locked-in-syndrome (LIS) suffer from total paralysis that renders overt speech impossible, but their cognition remains intact[2].
- Brain-computer interface (BCI) technology may provide the only means of communication for these patients. The current BCI-spellers for communication have a slow rate and is unnatural[2]. Direct decoding of speech from neural signals may be a better solution[1]. Current progress has been made using neural signals generated in overt speech tasks.
- However, patients with LIS imagine speech only. Understanding the neurological differences between imagined and overt speech has the potential to contribute to the development of these decoding algorithms.
- **Research Goal: This study uses magnetoencephalography (MEG)[3] to study the neuromagnetic differences between imagined and overt speech tasks.**

Methods

- Participants: 6 healthy English-speakers; 2 speakers completed the protocol with 400 unique, phonetically-balanced sentences, and the other 4 speakers completed the protocol with 5 sentences that were repeated 100 times[2]
- MEG detects changes in magnetic field around the head in response to neural activity changes
- MEG scanner: Elekta Neuromag Truix System (**Fig. 1**)
  - 204 planar gradiometer sensors and 102 magnetometer sensors
  - Non-invasive
  - Quiet
  - High temporal resolution
  - Great spatial resolution
- **Delayed overt reading task (Fig. 2):** baseline, perception, imagined speech, then overt speech for each phrase
- Phrases are in pseudo-random order
- Magnetic field recording collected during each trial
- Preprocessing included: filtering out slow drifts, power line frequency correction, baseline correction
- **Measures**:
  - Band power analysis
  - Machine learning classification

Fig. 1, *MEG scanner at Dell Children's Medical Center, Austin, TX*

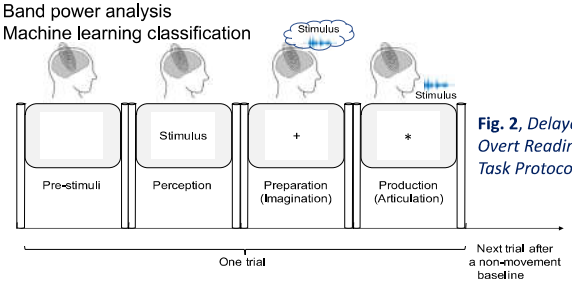

Fig. 2, *Delayed Overt Reading Task Protocol*

Results & Discussion

MEASURE 1: Band Power Analysis

- The magnetic changes recorded over each imagined and overt speech task are transformed into the frequency domain, where they are then split into the following frequency bands:
  - **Delta** (1 - 4 Hz), **Theta** (4 - 8 Hz), **Alpha** (8 – 13 Hz), **Beta** (13 – 30 Hz), **Gamma** (30 – 61 Hz), **High Gamma** (61 – 119 Hz)
- **Fig. 3** illustrates the band power of all sensors during imagined and overt speech in a single speaker
- The average band power between imagined and overt speech were computed for each subject, across all sensors (**Fig. 4**)
- Statistical testing: Wilcoxon signed-rank test ($\alpha < 0.05$) with Bonferroni multiple comparisons correction

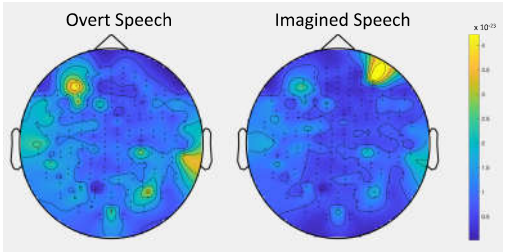

Fig. 3, *Brain activity map of beta band power for overt versus imagined speech production in one participant*

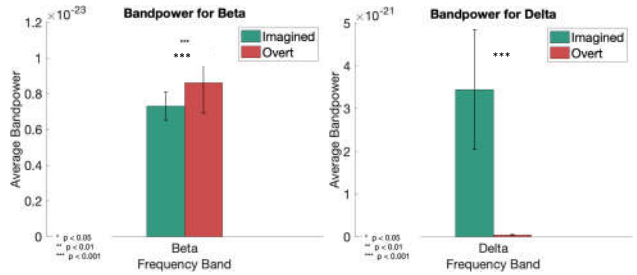

Fig. 4, *Statistical analysis suggests some repeated band power patterns across subjects and gradiometers ($p < 0.001$ for both Beta and Delta).*

Discussion

- High speaker variability, but some common patterns found across participants
- Beta band and gamma band tended to be significantly higher in overt speech data, which is consistent with the findings in literature[4].
- Delta band tends to be higher in imagined speech than in overt speech.

MEASURE 2: Machine Learning (ML) Classification

- Can ML classify imagined and overt speech from neural signals?
- Support Vector Machine (SVM) classifier implemented for 4 out 6 subjects
- Sample-level MEG gradiometer data served as input for SVM
- 10-fold cross validation, where average score across folds is computed as final accuracy score for classifying each speech modality

Results & Discussion

- Backwards selection algorithm; beginning with all 204 gradiometers and iteratively removing the sensors with the lowest performance

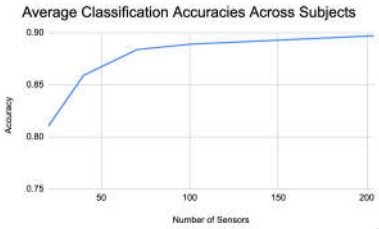

Fig. 5, *Average classification accuracy scores in relation to the number of the best MEG sensors*

Table 1. *Confusion matrix from the ML classification experiment (overall accuracy = 89.78%)*

		Prediction: Imagined	Prediction: Overt
Actual	Imagined	43.76%	6.24%
Actual	Overt	3.98%	46.02%

Table 1 provides the confusion matrix of the ML classification. The high overall accuracy suggests that the neural patterns between the two speech modes is very distinct.
In addition, **Fig. 5** shows about 30 to 40 sensors (out of 204 gradiometers) can reach a high accuracy already, which suggests the potential of next MEG (OPM[5]) with a small set of MEG sensors for lower cost purpose.

Conclusion

- Both band power analysis and ML techniques suggest clear differences between the neural activity patterns of imagined and overt speech.
- This finding indicates that imagined speech data needs to be used in training future BCIs or transfer learning may be useful.
- Further investigation into source localization and connectivity measures are needed to shed insight into the specific differences between the two speech modalities.

Acknowledgments

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MGH INSTITUTE OF HEALTH PROFESSIONS

Early Intervention Care for Autistic Patients

Bridging the Gap Between Medical and Social Models of Disability

Shannon Whittley, MS CCC-SLP; Madhu Sundarrajan, PhD, CCC-SLP

Introduction

One in 36 children in the US are diagnosed with autism.[1] Autism is a neurodevelopmental condition characterized by differences in communication, social interactions, and sensory processing.

Neurodiversity-affirming practice is grounded in a social movement that is inherently strengths-based. It honors the acceptance of natural differences in neurology, how people interact with their environments, and emphasizes these differences as potential assets. Neurodiversity advocates illustrate the societal benefits of recognizing and developing autistic strengths rather than pathologizing them. [2]

Autistic people and their caregivers face significant barriers in accessing adequate care within the current medical framework. [3, 4] Early intervention (EI) providers are closely involved with a family's initial diagnostic and therapeutic experiences, and it is especially important for these clinicians to embrace a neurodiversity-affirming approach. While this social movement has become more prevalent in the last several years, it is not the universal standard for healthcare education and subsequent care.

Methods

The purpose of this project is to disseminate knowledge about neurodiversity-affirming care and positively impact clinicians' practice.

Research Questions

- What do EI clinicians know about neurodiversity-affirming practice and related topics?
- Are short videos (5-6 min.) effective for teaching?

Project Design

- 4 videos with pre- and post-test questions
- Case study for application of learned concepts

Participants

- EI clinicians located in Boston Metro
- 14 interdisciplinary clinicians, including: mental health professionals, LCSW, PT, OT, SLP, and MT)

Videos

- Autism: background information
- Neurodiversity-affirming practice
- Double-empathy problem (Milton et al., 2022)
- Personalized service referrals

Participant Questions

Demographic Information

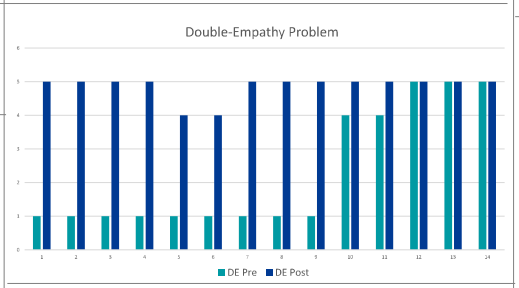
- Profession, age, time in profession, neurotype

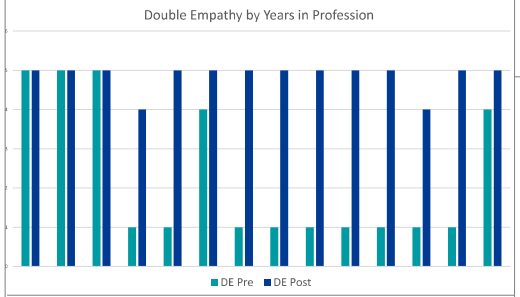
Pre- and Post Questions

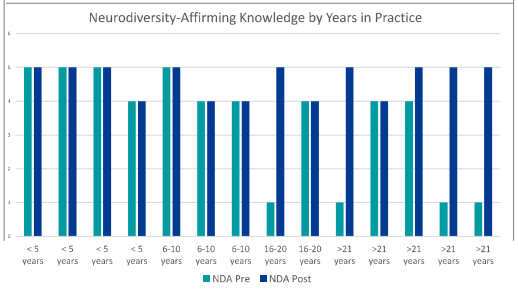
- Please use your own words to describe what you think autism is.
- What is neurodiversity-affirming practice?
- Please describe the double-empathy problem.
- How do you determine appropriate referrals for additional services for autistic clients?

Measurement

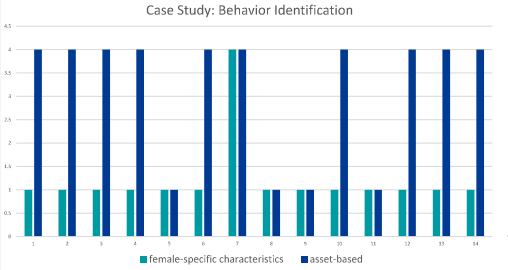
- Strengths-based or neutral language vs. deficit-based
- accuracy

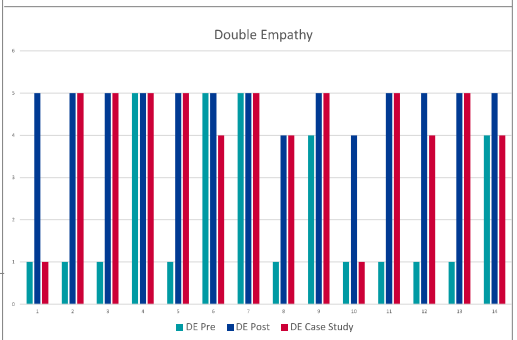






Case Study: Identifying the Female Phenotype and Double-Empathy



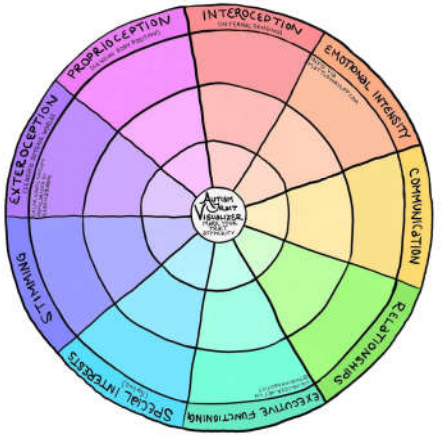


Results and Discussion

- Neurodiversity-affirming practice and the double empathy problem topics demonstrated the most growth in pre-test vs. post-test
- Pre-test knowledge of the double empathy problem varied significantly by years in profession
- Pre-test knowledge of neurodiversity-affirming practice also varied by years in profession
- Despite using asset-based language to describe autistic behaviors, participants did not demonstrate deeper understanding of the female phenotype
  - Double empathy application was more successful
- Findings indicate that these brief videos were highly successful for topics with more limited background knowledge
- While conceptual knowledge increased, deeper understanding to apply concepts to practice is an area of growth, specifically in identifying female-specific autism characteristics

Participant Responses

- "Autism is a neurodevelopmental condition affecting social, communication, and sensory processing in individuals across a spectrum, with both internalizing and externalizing features that are differentiated between genders."
- "Neurodiversity-affirming practice involves meeting children where they're at, as well as using strengths-based approaches when assessing/treating the child and when communicating with their family."
- "The double empathy problem is a mutual breakdown in communication between an autistic person and non autistic person."
- "I will decide referrals based on the child's strength, areas of growth, and their family's priorities for the child and themselves."



Autism Trait Visualizer, Meg Hartley

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Using Rhythm and Timing to Improve Overall Language and Reading Skills

Michaela J. Ritter Ed.D., CCC-SLP **Sandra Wright Ph.D., CCC-SLP**

Purpose

Determine the effectiveness of Interactive Metronome Therapy on language and reading

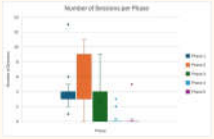
Participants

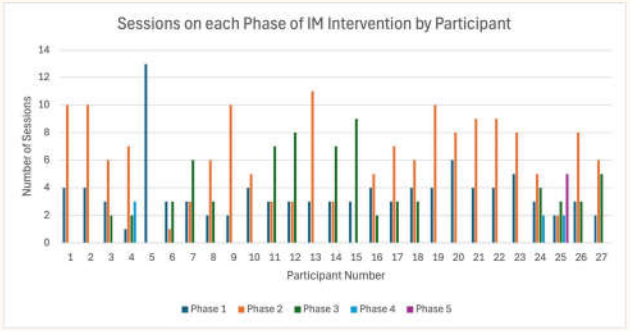
- Two groups of participants all of whom received intensive language and reading intervention (n=51, M=10;2 , SD =2;4)
- The experimental group who participated in Interactive Metronome therapy for 15 minutes every session (n=27, M=10;1, SD = 2;5)
- The control group who did not participate in Interactive Metronome therapy (n = 24, M = 10;3, SD 2;5)
- An independent t-test revealed no statistical significance between group ages (*p=.321).*

Procedure

- Pre-Post Assessments
  - Woodcock Reading Mastery Test Third Edition (WRMT-III)
  - Oral & Written Narrative Retell using subtests from the Test of Narrative language , Second Edition (TNL-2)
  - Client's total T-Units for each Narrative sample collected
- 4 weeks of Monday through Thursday language and literacy intervention for approximately 165 minutes each day.
- 3 different segments each day: 1) Phonology, semantics, and morphology; 2) expository and narrative; and 3) literacy
- 15 minute interval of IM for experimental group
- 5 phases of IM phases possible for all participants
- Time variances for each participants to go through the phases
- All IM Participants started sessions with the "Short Form"

- Participants began at Level 1 and stayed there until they reached a score in the Task Average Criteria for age
- The time at each level varied by participant.
- Phase 2 had the highest average of 5.96 sessions. (SD = 3.2 sessions)
- Only 1 participant reached stage 5.
- One participant did not advance out of stage 1.





Results

Paired Sample Correlations	N	Correlation	*p-value*
Oral Narrative Number of Elements	54	0.54	<.001
Oral Narrative Retell Level	55	0.43	<.001
Oral Words Per T-Unit	55	0.346	0.005
Written Narrative Number of Elements	54	0.601	<.001
Written Number Retell Level	54	0.601	<.001
Written Words per T-Unit	53	0.218	0.058

- Paired t-tests showed a significant improvement from pre- to post-intervention for all participants in narrative skills with the exception of Written Words per T-Units.

WRMT-III Subtest	t	df	*p-value*
Word Identification	-1.449	48	.154
Paragraph Comprehension*	1.977	48	.027
Oral Reading Fluency	-0.716	48	.478
Basic Skills	-0.395	48	.695
Reading Comprehension*	2.629	48	.011
Total Reading	1.532	48	.066

- Paired t-tests showed a significant improvement from pre- to post-intervention for all participants on the WRMT-III on the Paragraph Comprehension and Reading Comprehension subtests.

Narrative Tests	df	F	*sig.*
Oral Narrative Number of Elements	1	0.047	.829
Oral Narrative Retell Level	1	0.166	.685
Written Narrative Number of Elements	1	1.673	.202
Written Narrative Retell Level	1	0.963	.331

- Anova Analyses of subtests of the TNL-2 showed no significance between the two groups

Subtest of WRMT-III	df	F	*sig.*
Word Identification	1	2.04	.674
Word Attack	1	2.03	.160
Paragraph Comprehension	1	0.664	.419
Listening Comprehension	1	1.323	.256
Oral Reading Fluency	1	0	1.00
Basic Skills	1	2.174	.147
Total Reading	1	0.374	.544

- Anova Analyses of each subtest of the WRMT=III showed no significance between the two groups

Conclusions

- The use of IM with individualized advancements for each participant did not yield a positive effect on word attack and basic reading skills in an intensive session format, which it has in the past with scheduled advancement for all participants.
- The presence of others participating in IM at the same time may have been a distracting factor that affected their ability to achieve age task average criteria to move to a new phase.
- The inclusion of game-based IM activities may have limited the focus on the attention to the feedback sounds related to the timing and rhythm cues provided by the IM program.

Research Background & Resources

Resources Here

Baylor University
ROBBINS COLLEGE OF HEALTH AND HUMAN SCIENCES

interactive metronome

Poster Session Submission Checklist

- **Proposal Content**
  - ☐ Clear, relevant session title
  - ☐ Concise abstract and description with topic, format, and takeaways
  - ☐ Learning level, pathway, and topic area selected and representative of the session
- **Learning Objectives**
  - ☐ 3-5 measurable objectives using action verbs
  - ☐ Aligned with session content and audience
- **Poster Vision**
  - ☐ I've described any creative or visual elements I plan to include Diverse perspectives represented
  - ☐ I've considered how to make my poster engaging for attendees
- **Format & Flow**
  - ☐ Session length and time breakdown provided
  - ☐ Moderator role described
  - ☐ Audience engagement strategies included
- **Relevance & Readiness**
  - ☐ Proofread and submitted by deadline.

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