Speech and Music Therapy Co-Treatment Approach to Aprosodia in Right Hemisphere Brain Damage (RHD)

Stephanie Casale, B.S., Melissa Johnson, Ph.D., CCC-SLP, Melissa Reed, M.S., MT-BC, Conner Burry, B.M.

Purposes

1) To examine the effects of an innovative combined music and speech therapy treatment approach in a college-based clinic to improve expressive linguistic and affective aprosodia in a participant with right hemisphere brain damage (RHD);
2) To qualitatively describe students’ learning outcomes from co-delivering this treatment.

Literature Review

- Aprosodia is present in ~80% of patients in acute hospitals 1 and ~20% of those in inpatient rehabilitation facilities. 2
- Aprosodia can involve comprehension and/or expression of prosodic features including rate, rhythm, and melody, used to convey meaning and emotion. 3, 4
- Affective prosody = communication of emotional content via prosodic features. 3, 5
- Linguistic prosody = communication of meaning via prosodic features (e.g., stressing a key word in a sentence). 3, 5
- Music therapy (MT) and speech-language pathology (SLP) are natural collaborators in the pursuit of enhanced communication, sharing a common focus on voice, breath support, rhythm, articulation and prosody. 6
- Neuroimaging studies suggest the presence of powerful cortical interactions when speech and music are engaged simultaneously. 7
- Interprofessional education (IPE) provides problem-based learning opportunities for students to learn from and with each other. 8, 9
- Students develop improved clinical and interpersonal competencies from IPE [e.g., better understanding of client needs, improved understanding of roles of others, improved communication, teamwork and negotiation skills, increased self-confidence]. 8, 9

Methods

- Single-subject, clinical research study of novel aprosodia treatment delivered by students in a college-based clinic.
- Participant:
  - 70-year-old male with RHD due to a stroke.
  - Mild-moderate executive function deficits.
  - Memory and language skills were functional.
  - Expressive linguistic and affective aprosodia characterized by frequent intonation at ends of declarative sentences that was not characteristic of his premorbid vocal pattern.
- Clinicians:
  - CB – a senior in the MT program completing his first practicum with adults and his first co-treatment session with SLP.
  - Excited to co-treat with and learn more about SLP and to teach someone else about MT.
  - SC – a first year SLP graduate student completing her first practicum with adults and her first co-treatment session with MT:
  - Eager to learn more about how speech therapy and music therapy could complement one another to reach a common goal.
- Informal assessment: received receptive and expressive affective and linguistic prosody pre-and post-treatment (see below).
- Therapy Approach:
  - Combined music and speech therapy delivered in 11 50-minute sessions.
  - Included cognitive-linguistic and imitative elements, as per single available treatment study (to our knowledge). 10
  - Components:
    - Vocal warm-up.
    - Union or client-only singing of familiar songs with piano, guitar, or percussion accompaniment.
    - Analysis of prosodic features needed to convey emotion (happy, sad, angry) in semantically neutral sentences followed by spoken and sung productions of those sentences.
    - Drumming exercises targeting rhythmic control and pulse.
    - Oral reading exercises targeting production and self-monitoring of rate and prosody of structured speech.
    - Naturalistic conversation to promote generalization.
  - Scored using rating scale of 1-66.

Client Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective Prosymda</td>
<td>66%</td>
<td>100%</td>
</tr>
<tr>
<td>Linguistic Prosymda</td>
<td>87.7%</td>
<td>100%</td>
</tr>
<tr>
<td>Speech Rhythm</td>
<td>75%</td>
<td>85%</td>
</tr>
</tbody>
</table>

- Significant improvement in affective and linguistic prosody; results did not generalize to spontaneous conversation.
- Client’s response to treatment and interaction with students was highly positive.
- Client’s caregiver reported that the session was a highlight of the client’s week, and that he had few other events in his life that brought such enjoyment.
- Client continued in a speech/music group co-treat session the following semester, focused on use of choral singing to enhance language and speech. Continued high level of attendance and engagement.

Student Outcomes

- Learned to co-plan, co-implement and co-write about session, treatment and results.
- Increased understanding of shared and unique vocabulary and concepts.
- Increased understanding of other discipline, thus increased awareness and willingness to pursue future collaboration.
- Increased confidence due to having overcome challenges.
- Increased experience with and opportunity for future scholarly endeavors.
- CB: “I gained the knowledge and vocabulary to comfortably navigate conversations pertaining to speech therapy practice, and have a much better understanding of the SLP profession”.
- SC: “I developed a greater understanding and appreciation of music therapy, while expanding my own clinical skills. I believe [client] made the progress he did as a result of our interprofessional collaboration”.

Discussion, Limitations, Future Directions

- Larger studies of this treatment approach for aprosodia in RHD needed.
- Continue to develop assessment tool and treatment approach.
- Develop strategies to address generalization of treatment gains.
- Continue to develop IPE and interprofessional practice in our clinics and report on outcomes.

References