



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

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## 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 <sup>1</sup> and ~20% of those in inpatient rehabilitation facilities. <sup>2</sup>
- Aprosodia can involve comprehension and/or expression of prosodic features including rate, rhythm, and melody, used to convey meaning and emotion. <sup>3, 4</sup>
- Affective prosody = communication of emotional content via prosodic features. <sup>3, 5</sup>
- Linguistic prosody = communication of meaning via prosodic features (e.g., stressing a key word in a sentence). <sup>3, 5</sup>
- 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. <sup>6</sup>
- Neuroimaging studies suggest the presence of powerful cortical interactions when speech and music are engaged simultaneously. <sup>7</sup>
- Interprofessional education (IPE) provides problem-based learning opportunities for students to learn from and with each other. <sup>8, 9</sup>
- 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). <sup>8, 9</sup>

## 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 rising 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** assessed 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). <sup>10</sup>
  - Components:**
    - Vocal warm-up.
    - Unison 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.

	Linguistic	Affective (neutral sentences)
Receptive	Ask, "What am I trying to be sure that you understand?" Score 1 or 0. Write qualitative information below	Ask, "How do you think I am feeling when I read each of these sentences?"
	SCORE	SCORE
	1. Martha likes cats. _____	1. I am going for a walk. (S) _____
	2. Martha likes cats. _____	2. I am going for a walk. (A) _____
	3. Joe is going to California on Thursday. _____	3. I am going for a walk. (H) _____
	4. Joe is going to California on Thursday. _____	4. The picnic starts at noon. (A) _____
Expressive	5. Who is coming for lunch today? _____	5. The picnic starts at noon. (S) _____
	6. Who is coming for lunch today? _____	6. The picnic starts at noon. (H) _____
	Say, "Read the sentence aloud. Then, read the sentence again, answering the question I ask, using your voice to help you tell me what I want to know".	Say, "Read the following sentence using a _____ (sad, happy, angry) voice".
	SCORE	SCORE
	1. I went to the game yesterday. _____	1. The day after tomorrow is Friday. (H) _____
	(Q: When did you go to the game?) _____	2. The day after tomorrow is Friday. (S) _____
	2. I went to the game yesterday. _____	3. The day after tomorrow is Friday. (A) _____
	(Q: Who went to the game?) _____	4. The woman is walking her dog. (H) _____
	3. She set the table for dinner. _____	5. The woman is walking her dog. (S) _____
	(Q: What meal did she set the table for?) _____	6. The woman is walking her dog. (A) _____
	4. She set the table for dinner. _____	7. He is drawing a picture. (H) _____
	(Q: Who set the table for dinner?) _____	8. He is drawing a picture. (S) _____
	5. My mom called this morning. _____	9. He is drawing a picture. (A) _____
	(Q: Who called this morning?) _____	10. They are sitting on the park bench. (H) _____
		11. They are sitting on the park bench. (S) _____
		12. They are sitting on the park bench. (A) _____
		13. It is hot outside. (H) _____
		14. It is hot outside. (S) _____
		15. It is hot outside. (A) _____

## Client Outcomes

	Baseline	Post-Treatment
Affective Prosody	66%	100%
Linguistic Prosody	87.7%	100%
Speech Rhythm	75%	85%

- 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.

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