

A Look at How Vocal Coaching Techniques for Singers Could Be Used to Increase the Effectiveness of Melodic Intonation Therapy on Stroke Patients

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Abstract

Although people who suffer strokes can lose the ability to speak, their ability to sing may be retained (Marina 2007). The areas of the brain associated with speaking and singing use an area on the left side of the brain; however, singing also uses frontal parts of the right side of the brain which are unaffected by a left hemisphere stroke affecting speech. Melodic Intonation Therapy is used to exploit this pathway (Schlaug 2010).

The overlap between speech and singing can be most easily observed through the shared characteristics of melody (prosody) and rhythm (rate). MIT will use some common words and the clinician will teach the client these phrases by having them sing them while tapping their left hand. The phrases are intoned on just 2 pitches; “melodies” are determined by the phrases’ natural rise and fall of the chosen words.

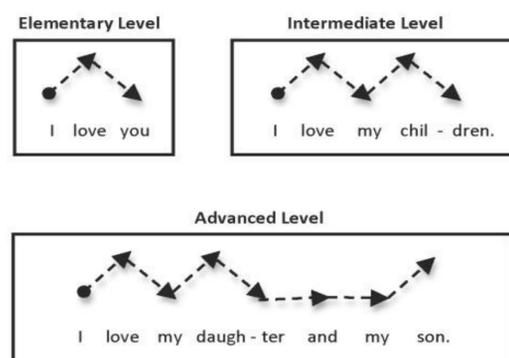
This presentation will compare and contrast the current techniques of teaching MIT against vocal coaching techniques that are normally reserved exclusively for singers. The hope of this exercise is to enrich the current MIT techniques with new ideas that may prove to increase effectiveness and success of this evidence-based strategy to further help clients with left hemisphere strokes affecting their speech.

Learner Outcomes

1. Participants will be able to explain the concept of MIT.
2. Participants will be able to identify similarities and differences between speaking and singing.
3. Participants will be able to identify the benefits of singing for stroke patients.

What is Melodic Intonation Therapy (MIT)?

The original program is designed to lead nonfluent aphasic patients from intoning (singing) simple, 2–3 syllable phrases, to speaking 5+ syll. phrases across 3 levels of treatment. Each level consists of 20 high-probability words (e.g., “Water”) or social phrases (e.g., “I love you.”) presented with visual cues. Phrases are intoned on just 2 pitches, “melodies” are determined by the phrases’ natural prosody (e.g., stressed syllables are sung on the higher of the 2 pitches, unaccented syllables on the lower pitch), and the patient’s left hand is tapped 1x/syllable. (Norton 2009).



Adapted from: Helm-Estabrooks, N., Nicholas, M., & Morgan, A. (1989). *Melodic Intonation Therapy program*. Austin, TX: PRO-ED.

5 Steps of MIT:

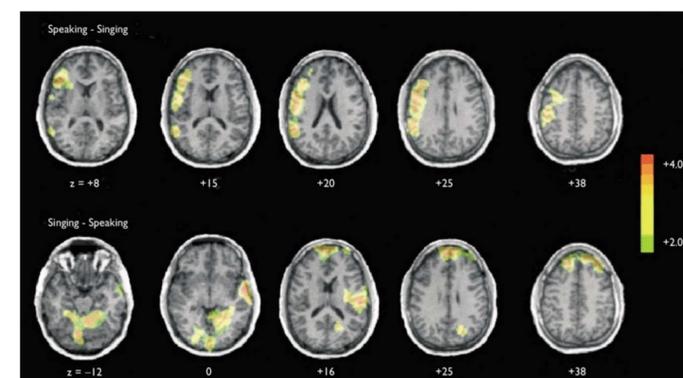
Step	Procedure
1 Humming	Therapist introduces the target phrase by showing a visual cue, humming the phrase 1x at a rate of 1 syllable/sec., then intoning (singing) the phrase 2x while tapping the patient’s left hand 1x per syllable.
2 Unison intoning	Therapist and patient intone (sing) the target phrase together while the therapist taps the patient’s left hand (1x/syllable).
3 Unison intoning with fading	Therapist and patient begin to intone (sing) and tap the target phrase together, but halfway through, the therapist fades out while the patient continues to sing the rest of the phrase accompanied by hand-tapping, but with no further verbal or oral/facial cueing.
4 Immediate Repetition	Therapist intones and taps the target phrase while the patient listens. The patient immediately repeats the phrase assisted only by the tapping of the left hand.
5 Response to a probe question	Immediately following the patient’s successful repetition of the target phrase (Step 4), the therapist quickly intones a question (e.g., “What did you say?”) and the patient answers by intoning the target phrase. Hand-tapping is the only assistance allowed.

Summarized from: Helm-Estabrooks, N., Nicholas, M., & Morgan, A. (1989). *Melodic Intonation Therapy program*. Austin, TX: PRO-ED.

Vocal Coaching Techniques

- A good vocal coach will help the singer **interpret a phrase so that it feels natural and most closely matches a spoken phrase**. In a way, this technique could be used in reverse by having the vocal coach take a spoken phrase and create a musical phrase that matches the speed and prosody of the desired spoken phrase.
- A second characteristic of vocal coaching that could be useful in MIT is having the coach **accompany the client with a guitar or a piano**. Having a foundation or musical grounding underpinning what the client is doing could help the client more easily access the right hemisphere during therapy. Jazz musicians do this when they improvise music. There is a predictable chord progression and the instrumentalist or singer will use those established rules to then make up musical phrases on the spot. This would be a great exercise to **potentially create spontaneous speech that maintains right hemisphere activation**.
- A third characteristic of a good vocal coach is to **pick out a good repertoire for the client**. In a therapy context, this would be a good skill to have. The clinician would be able to carefully choose the **length and complexity of phrases** to teach to the client and make sure that they are **best suited to the needs and abilities of the client**.
- Based on Lucy Green’s 2002 publication entitled *How Popular Musicians Learn*, **being able to reproduce exact imitations of songs heard - including the melodic structure, textual, and rhythmic qualities - is a learned process that can be improved with practice** (Jaffurs 2004); however, receptive deficits are a limitation to this technique, thus the client must be able to understand the instruction.

Speaking vs. Singing (Jeffries 2004)



Conclusions

- “MIT in its current form has potential limitations. The first is in the use of a small range of pitches, often just two, usually separated by a minor or major third.” (Conklyn 2012)
- According to Christiner (2013), motor flexibility and the ability to sing improve language and musical function – meaning that there is a mutually beneficial and reciprocal relationship between singing and speaking that can be improved with explicit vocal instruction.
- The text and the melody of a song appear to have separate representations in memory, making singing a dual task to perform. Musical training had little impact on performance, suggesting that vocal learning is a basic and widespread skill and a viable tool for a larger audience than initially thought. (Racette 2007).
- Singing is certainly about words, but first and foremost, it is about the proper sequencing of pitches over time (Wakefield 2003). The role of feedback is crucial to this process as is the role of repetition. This could be improved upon with voice coaching techniques.
- “Despite some shared cognitive processes and neural substrates, the way pitch information is handled in speech and in music differs: there seem to be two mechanisms, one focused on contour, which may overlap across domains, and another, perhaps specific to music, involving more accurate pitch encoding and production” (Zatorre 2017).

Resources

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