

Melodic Intonation Therapy: Rewriting the Song

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In the attempt to more effectively serve the aphasic population, various unique intervention strategies have been suggested. Among them is Melodic Intonation Therapy, or MIT, which was originally discussed by Sparks, Helm, and Albert (1974). At that time these authors suggested that the use of MIT was most appropriate with the aphasic patient who demonstrated adequate, or nearly adequate, receptive abilities, in the face of an expressive deficit. Somewhat later, Sparks and Holland (1976), in discussing MIT as a viable approach to aphasia intervention, suggested that, while MIT appeared promising, the assessment of its full potential and/or limitations was a bit premature. Since that time, however, a few authors have reported on successful intervention programs based on modifications of the MIT approach as it was originally outlined. Notable among these were Marshall and Holtzapple (1976).

The purpose of this paper is to report on modifications and expansions made of the MIT approach, as originally outlined, so as to improve its appropriateness with two individual intervention cases. In the first case, aphasia was the primary communicative disorder, while in the second, apraxia of speech was of primary concern. These case studies will underscore the importance of individualized intervention programs and add to the current data in support of MIT.

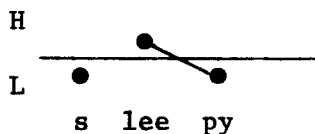
Case 1

Mr. E. was a 61 year old man who had a cerebrovascular accident in the left hemisphere in 1970. He had been continuously enrolled in a language intervention program other than MIT for the 19 months immediately preceding the initiation of MIT. Previous intervention strategies, designed to increase expressive language, had met with limited success. MIT was initiated on October 16, 1978, and the patient was seen three times weekly from October, 1978, to May, 1979. Baseline data obtained from the Porch Index of Communicative Ability (PICA) at the time MIT was begun revealed adequate auditory comprehension skills with depressed verbal skills and an overall performance level at the 59th percentile. Generally, expressive language was characterized by pantomime and nouns were expressed as single words. Verbs were communicated through gesture. Word combinations were rarely self-generated.

Sparks and Holland (1976), in describing the stages of MIT, include a first nonlinguistic handtapping step, which serves merely to adapt the aphasic patient to the procedure. It is then continued throughout four levels. The unique aspect of the MIT approach with Mr. E. was that initially he relied on the pitch contours rather than those of rhythm; later the rhythm aspect of handtapping alone served as a cue for production. Since the handtapping appeared to aid speech production by Mr. E., specific steps designed to reflect this were added to the proposed stages of MIT. The behaviors exhibited by Mr. E. at each level of intervention, as well as the additions to the procedures that were made, will be discussed according to the levels outlined by Sparks and Holland.

The introductory phase of MIT, whereby the melody is hummed and the rhythm and stress tapped out, was an easy phase for Mr. E. The second phase of MIT involved connecting words to the melodic pattern previously rehearsed in the first phase, as previously mentioned. Mr. E. initially relied totally on the melody of the stimulus while appearing to ignore the handtapping of the rhythm and stress pattern. Throughout this period the clinician continued to tap the rhythm and stress, but did not insist on Mr. E.'s participation.

The melody, stress or rhythm of a stimulus was often altered to aid articulation. To facilitate articulation, difficult words were presented melodically but independent of the phrase. For example the word "sleepy" was presented in the following manner:



The articulation of the functors in a phrase was primarily aided by placing stress on the misarticulated functor. This emphasis on rhythm and stress to aid the production of the functors soon appeared to be apparent to Mr. E. By the seventh session of MIT he was nodding his head and beginning to tap out the rhythm himself. Since the rhythm appeared to be of help to him as he produced a phrase, emphasis on rhythm and stress was added to the MIT sessions. First the concept of the number of syllables in a word was introduced by presenting a word and tapping once for each syllable. Mr. E. would then tap along with the clinician, but a verbal response was not required from him. One- to three-syllable words were presented in this manner. Once he understood the task, words were presented by the clinician without the accompanied tapping of syllables, and Mr. E. was required to tap out the appropriate number of syllables in each word. As the work on the MIT phrases progressed through the outlined levels, the handtapping progressed to that of phrases and sentences.

As Sparks and Holland have suggested, MIT can be used with attention to grammatical structure. This phase included the use of Mr. E.'s ability to tap out the rhythm of phrases and sentences, acquired in the former phase. In this phase, however, handtapping was employed to aid the introduction of new grammatical structures. The first grammatical structure was a noun + verb + noun combination, for example, I eat pie. Such a combination was presented to Mr. E. and he was asked to tap the rhythm and stress without emphasis on verbal performance. The primary stress was always placed on the verb in these contexts since verbs had not previously been introduced and they were now appearing as the key structure for emphasis.

After Mr. E. was able to produce the rhythm of the sentence type, the verbal production of the stimulus followed the progression as outlined in Level IV by Sparks and Holland; that is, from intoning, to speech song, to normal speech prosody. Two observations were made during this phase which were noteworthy. One was the fact that when propositional speech was elicited from Mr. E., by either a picture stimulus or question, he would first tap out the structure of the response before he would verbally produce it. Then he would give the verbal production, which was also accompanied by handtapping. Further, when the verb was absent he would at least hold its place with a handtap. For example, when asked what one does with pie he

tapped and said, "I (tap) pie; no, I am pie; no, I eat pie." Therefore, the handtapping was encouraged, whereas Sparks and Holland had eliminated the handtapping by the time normal speech prosody was being used. The second observation of interest involved a progression whereby Mr. E. first used gesture to help retrieve the verb and then tapped out the syntactic form he planned to use for the sentence before he actually produced it. As an example, a picture of a loaf of bread was presented to him. He first gestured slicing the bread; then he tapped the rhythm (tap tap / tap tap); and then tapped and said, "I slice the bread."

Similarly, work with the present progressive form was adapted. However, this time the melody of the phrase was equally as important as the hand-tapping. That is, when stimuli were presented with the use of MIT, the target form was presented in such a way that the melody suggested to Mr. E. the need for a two-syllable word. Once again, the stages of presentation progressed from melody without verbalization to melody with verbalization. First the melody was hummed and the rhythm and stress pattern tapped out by the clinician. Mr. E. then initiated the pattern several times. Once the pattern was established, a picture was presented and the clinician intoned the stimulus which was in the form of an "intoned sequence unit," such as that discussed by Marshall and Holtzapple (1976), with the carrier phrase he is. Mr. E. imitated the intoned stimulus several times. Another picture was then presented, at which time the clinician intoned only the carrier phrase he is and hummed the remainder of the melodic pattern. Mr. E. was required to produce the carrier phrase in unison with the clinician and then supply the final word appropriate to the pictured stimulus. Although the retrieval of the verb appeared to occur without great difficulty, Mr. E. did appear to need the structure provided by the melodic pattern to use the appropriate verb form. The melody pattern for presentation of the present progressive was as follows:



By approximately five months post initiation of MIT, Mr. E. began to use four to five word utterances in response to questions or a pictured stimulus, many of which contained functors. Examples of these included: I go to the store (pause) buy a paper, I read a paper. Wash your face and dry, and Hammer the nail and paint.

The mean scores of subtest I of the PICA, reflecting four testing dates, indicate a sudden increase in verbal performance at seven weeks after we started MIT; that is from 8.8 to 9.9, respectively. Progress seemed to plateau at that higher level. The PICA scores and clinical observations were clues to the successful modification of MIT for Mr. E.; however, of at least equal importance were the reports from the spouse of Mr. E. Since the onset of language intervention with Mr. E., Mrs. E. was included as a participant-observer once weekly. During the fifth session of MIT she reported her implementation of singing at home. Additionally, she reported that Mr. E. had begun to use phrases (as opposed to single word

utterances) more often. Approximately two months after MIT was initiated, Mrs. E. reported what she considered to be highly unusual communicative behavior by Mr. E. Mr. E. had called her at work. To do so he had made a long distance call, reached her office, spoken with the receptionist, and was placed "on hold" before finally speaking to his wife. Sparks and his colleagues (1974) observed that as their patient's language improved, their willingness to attempt verbal communication also increased. This certainly seemed to be the case here. Further, at six months after the beginning of MIT Mrs. E. reported the following:

He's talking up a storm at home. He's saying sentences now.
 In fact, he doesn't shoot it out like he did with pantomime.
 He looks at me and starts to say a sentence rather than use his hands.

Seven months after the initiation of MIT, Mrs. E. recorded several utterances produced by Mr. E. at home. These are included in Table 1. This sample appears to represent functional communication efforts which were multiworded and which contained verbs, markers of attribution, and self-correction. In addition, this sample represents an improvement not previously made in other intervention programs with Mr. E., but which appears to have been made through MIT and the modifications thereof.

Table 1. Language sample taken by spouse of case #1 at home.

Liddle/ take off lid.	*Betty/ time to get up.
*I am sleepy.	Telephone call/ call Ethel.
Good dinner	Get newspaper.
Pie please.	Mix drinks.
*Glass of milk.	Pour drinks.
Buy feed.	Buy whiskey.
Candy bar.	I am put on pajamas.
Go to the store/ buy feed/ rabbits.	Put on pants.
Get up/ buy gas.	Buy cat food.
	Buy milk.

*Indicates specific phrase introduced through MIT.

Case 2

Dr. L. was a 53 year old man who began MIT on October 18, 1978, seven months post left cerebrovascular accident. He had been involved in an apraxia intervention program since three weeks post CVA. At that time, although receptive skills appeared adequate, Dr. L. could make only one vocalization, that occurring when he coughed. Seven months post onset Dr. L. could produce three vowel phonemes and eight initial consonant phonemes: /j/, /i/, /u/, /m/, /n/, /p/, /f/, /s/, /hw/, and /l/. Individual phonemes could not be blended to produce syllables or words (e.g. the diphthong /æ/ was actually produced as the two separate phonemes, /a/ and /i/.

The fact that MIT was usually recommended for individuals with some expressive ability, albeit stereotypic speech, suggests the uniqueness of the

implementation of MIT with this patient. An account of the modifications of MIT which occurred so as to increase its appropriateness for use with Dr. L. are described herein, according to the levels outlined by Sparks and Holland (1976).

The first stage of MIT called for an intoning of a three syllable utterance. This was obviously not possible with Dr. L. Therefore, intervention began with the intoning of the /a/ phoneme. It was intoned with a steady rhythm and stress.

a a
—————
a

After the idea of melody was established, rhythm and stress were introduced (e.g. waltz pattern). As it turned out this phase, thru this approach, was accomplished easily by Dr. L. As a matter of fact, upon its first introduction his body swayed with the melody and he even began to vocalize laughter in such a melody. Eventually his rate of production increased. When each of the phonemes originally in the repertoire of Dr. L. could be produced readily in rhythm, the phonemes were alternated:

a a
—————
e

Although the stimuli varied, the remainder of this phase was accomplished by following the order of presentation outlined in Level II by Sparks and Holland. Basically this consisted of a model, participation in unison, gradual fading on the part of the clinician, and finally a model and the imitative production by Dr. L. on his own.

When it came time to combine the phonemes at a given pitch level, Dr. L. could not blend the two. Therefore the approach had to be altered again. Single phonemes were initially intoned until the glide between them was accomplished with relative ease. The diphthong /aI/ was the first combination attempted with the glide. This method enabled him to connect the two phonemes. Initially the /a/ was produced at a high pitch and fell into a sigh to end in the production of /i/. The productions were quite prolonged; however, once the motor movement was established, the duration of the glide was decreased.

a a a
~~~~~                      ~~~~~                      ~~~~~  
i                      i                      i

This method proved to be successful at the syllable level and progressed to monosyllabic words and phrases which were comprised of two monosyllabic words. For example,

my    wife    or    I    might  
~~~~~    ~~~~~    ~~~~~    ~~~~~

At the phrase level, use was made of the intoned sequence unit, or carrier phrase, suggested by Marshall and Holtzapple (1976). Whenever Dr. L. readily completed a carrier structure, for example, I like food, (which seemed to come without difficulty), no glide pattern was necessary at the termination

of the phrase. If, however, the final word appeared to be difficult, as in I like pie, it was necessary to terminate the phrase with a glide. The glide seemed to serve an additional function for Dr. L. Whereas his earlier productions, achieved through intervention, were accompanied by palpable tension and plosive releases of air, the sigh-like pattern enabled a relaxed production with an easy release of air.

As an aside of some note, Marshall and Holtzapple (1976), as well as Berry and Newhoff (1978) have observed the importance of the written stimulus in their work with apraxic patients. Dr. L. proved to be another case where the written word greatly enhanced progress during intervention. When a stimulus item was initially presented through the verbal modality alone, Dr. L. produced a highly disconnected, unintelligible attempt. However, when the same stimulus item was presented verbally and in a written format, Dr. L. was able to imitate adequately. With the written stimuli available he seemed to begin to associate an articulatory placement with a specific phoneme. For example, when confronted with a written stimulus such as see Dr. L. began to produce each phoneme separately, yet correctly (e.g., /s/ /i/). His use of this strategy, when confronted with novel situations, was quite evident in his final PICA performance. Whereas previously he refused all PICA verbal subtests, in his final testing, five months after the melodic intervention, he attempted subtest IV, the naming of objects. And for pen he produced /p/ /i/ /n/. For knife, he produced /k/ /a/ /i/. These examples appear to demonstrate how Dr. L. had come to depend on the visualized spelling of a word. Correct or incorrect productions depended upon whether or not words are said exactly as they are spelled.

At this writing Dr. L. has a 33-word vocabulary which can be used to generate speech and answer questions. He can imitate novel words which contain combinations of the 16 phonemes readily available to him when the visual stimulus is present. There are eight phrases which are easily produced with the visual stimulus. Examples of phonemes, words and phrases contained in the repertoire of Dr. L. are contained in Table 2.

Table 2. Examples of phonemes, words and phrases contained in the repertoire of case #2.

| PHONEMES | WORDS | PHRASES |
|----------|------------|----------------------|
| a | Lou see | I want <u>(noun)</u> |
| i | Nina saw | I like <u>(noun)</u> |
| u | Lisa sleep | I need <u>(noun)</u> |
| aI | my two | My wife |
| s | I hot | me too |
| t | we new | I might |
| m | he funny | I'm fine |
| hw | she nice | hot tea |
| l | me might | |
| n | you food | |
| p | I'm neat | |
| f | wife pie | |
| j | want shoe | |
| ʃ | need tea | |
| h | eat knee | |
| k | like wine | |
| | fine | |

Recently Dr. L. was provided with a communication board. It was constructed so that words which he was able to produce were written in red. In black were those which he did not yet produce but which would enhance communication. An example which nicely illustrates the use of the communication board, his strategies for word formulation, and the use of glide for production, occurred eight months after the beginning of melodic intervention, when Dr. L. self-generated the word sleep without a model or any previous attempt at the word in therapy. The word was available on the board, he knew the articulatory placement of each phoneme, and used the glide to enable a very intelligible production.

Summary

In summary, it is obvious that in neither case are fully competent communicative skills observed. However, we believe there is evidence to suggest that MIT, in one or many modified forms, might serve to enhance communication in aphasic and/or apraxic patients. Functional communication appears to have improved in both. Both cases use speech more; this fact, in and of itself, would contribute to an improvement in functional communication. We tend to believe MIT is responsible for the observed changes. Just how MIT is responsible is somewhat debatable. Is it the case that through such melodic patterns the right hemisphere unlocked some obscure language capacities thereby contributing to a gradual improvement? Or is it rather the case that through melody and some production, the patient's overall confidence in communication was increased, leading to more frequent attempts? Can motivation alone be the answer? Perhaps not. Perhaps there is an interaction of these factors; such as the use of an alternate mode of communication, like a communication board, to supplement speech and possibly increase the number of attempts at speech production as well. It does appear to be true that such changes may not be readily apparent in standardized testing performances. For example, Mr. E. would have been terminated months ago if no more than the PICA scores were considered. Analyses of spontaneous speech samples could supplement and perhaps add to the rationale of continuation in intervention. Along these same lines, it behooves the astute clinician not to travel unsuccessfully for a matter of months down the wrong road of intervention. If one isn't getting anywhere, perhaps a new approach is in order. And it is our feeling MIT should be attempted. Modifications made will depend upon the needs of the individual client, which points out once again our need to plan individual intervention programs.

It seems essential, however, that clinicians be made more aware of MIT as a possible intervention approach. Training programs should insure a sufficient exposure to unique treatment methods, such as MIT. As a case in point, Mr. E.'s first clinician did not know the rationale behind MIT or the steps involved to implement it and therefore, disregarded the approach after just singing familiar songs.

References

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Discussion

- Q. Did Dr. L. begin spontaneously to phonate or was that part of his treatment? And what was the period of time before you got phonation?
- A. No, we had to start with a cough and then from that went to an /a/. The first session we were able to get the cough and then for three or four sessions we worked on prolonging the cough from the /a/ before any other vocalization could be attempted in treatment.
- Q. I'm interested in the carryover in the first patient. I wonder what exactly the role of the wife was. Did the wife do anything in particular at home to encourage a melodic intonation type of treatment or was this actual generalization?
- A. We had a very cooperative spouse; in fact she began the melodic intonation on her own at home. She found that it was easier to communicate with him if they did it melodically. So their conversations at home were done melodically.

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ROUND TABLE DISCUSSIONS