NEUROLOGY 1994;44:566-568

Assessment: Melodic intonation therapy

Report of the Therapeutics and Technology Assessment Subcommittee
of the American Academy of Neurology

Despite explosive growth, both clinically and academically, since World War II, aphasia therapy remains largely individualistic, with most speech pathologists using idiosyncratic combinations of techniques to treat broadly different language problems. Because of this and the questionable ethics of establishing a no-therapy control group, proof of the efficacy of aphasia therapy has been difficult to demonstrate. One of the few language therapy techniques sufficiently formal in presentation to be critically evaluated is melodic intonation therapy (MIT).

Singing was recommended for the rehabilitation of expressive deficits as early as 1953,[1] as it had long been observed that many aphasics could sing the words of previously learned songs better than they could speak. As a therapy, however, singing produced little or no carryover into daily life. A variation, based on the assumption that musical tonal ability is a right hemisphere function, suggested that intonation could be used to augment other therapy efforts. MIT was introduced in 1973[2] with a report of its successful use in three chronic nonfluent aphasics. A scattering of published reports over the subsequent years has outlined a programmed technique for MIT,[3,4] relatively strict criteria for patient selection,[5] some suggestion of the anatomic loci of disorders to be treated,[6] and a limited amount of data concerning outcome.[7,8] Of the many variations of language therapy currently in use, very few are sufficiently precise to allow evaluation across different subjects, therapists, and institutions. MIT can fulfill consistency requirements for research-level studies.

I. Methodology. MIT provides a hierarchically structured treatment program divided into three levels. In the first two levels, multisyllabic words and short, high-probability phrases are musically intoned in a prescribed, graduated course. The third level introduces longer or more phonologically complex sentences, or both, to the program. In each level the material is first intoned, then produced with exaggerated speech prosody before being spoken normally. With all intoned phrases, the clinician taps the patient's left hand once for each syllable. The items are intoned slowly with continuous voicing, using simple high note/low note patterns that exaggerate the normal melodic content of the phrase. A scoring system is available for each step of each of the three levels, allowing progress (or lack of progress) of the therapy to be charted. MIT is physically demanding and is best presented in multiple, short, daily sessions.

II. Candidacy. Several studies have been directed at identifying patients who will respond best to MIT.[3,5] Criteria derived from these studies include (1) no evidence of bilateral brain involvement; (2) reasonably good auditory comprehension; (3) nonfluent verbal production with diminished articulatory agility and effortful initiation of speech production; (4) poor repetition, even for single words; and (5) a well-motivated, emotionally stable patient with good auditory span. These criteria exclude most aphasic patients, including all those with global and transcortical aphasia and almost all with evidence of significant posterior language area involvement. Broca's aphasia, or variants of this syndrome, is the language impairment most amenable to MIT.

III. Safety. As with most language therapy programs, MIT is noninvasive, and except for the mentally demanding intensity with a tendency for the patient to become bored and tired, MIT has no significant risk factors. Because of the intensity of the program and the need for multiple, short, (preferably) daily sessions, MIT has a significant time demand that is of consequence to both the patient and the financially responsible party.

IV. Efficacy. The early studies concentrated on criteria for patient selection and clearly demonstrated that MIT was ineffective in aphasics who

Approved by the Therapeutics and Technology Assessment Subcommittee July 23, 1993. Approved by the AAN Practice Committee July 24, 1993. Approved by the AAN Executive Board September 18, 1993.

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had good verbal repetition or who had significant comprehension disorder.[5] Almost all early reports utilized patients with long-standing aphasia, the patients acting as their own controls[2,7]; success was measured by simple before-and-after samples of speech production. Criteria of efficacy cannot be judged simply by success in completing the program (all transcortical aphasics perform well on test items and learn the entire program readily). Demonstration of improved verbal communication skills in everyday communication is the ultimate criterion. One useful technique is to tape-record both conversational and expository speech samples at intervals during therapy. One such study of 10 aphasics[6] showed that the five subjects who made the best response (more than a two-word increase in phrase length in spontaneous speech) had less extensive and more specifically localized lesion(s) than the five who responded poorly. Other reported studies are even more anecdotal, but most report that some patients do make significant gains in communication competency following MIT.

Results with the use of MIT vary considerably; a number of therapists believe the technique to be of little value whereas others find it a useful form of therapy. Several reasons for the wide variance can be noted. As an example, many, possibly most, speech pathologists utilize selected aspects of MIT but do not attempt to follow the precisely outlined technique. Obviously, the occasional use of melody to augment speech production is not equivalent to the formal MIT program. In addition, a significant number of therapists do not adhere to the very specific patient selection criteria that have been suggested. MIT is not effective therapy for many aphasics.

V. Conclusions. MIT is a formal language therapy that is now used worldwide but is effective only for a specific form of aphasia. As it is an intense therapy program, it is best given in short, frequent sessions during a limited span of time (3 to 6 weeks). Although some reports clearly demonstrate good results with MIT, the technique is not universally accepted. Most speech pathologists agree that, while MIT may be useful for Broca's aphasia, it has little or no effectiveness for other types of aphasia. Most also agree that MIT is most effective if presented by a speech pathologist who is not only trained and qualified to work with aphasia patients but is also experienced with the MIT technique. On the basis of current knowledge, MIT appears appropriate for patients with Broca's aphasia.

As only short-term qualitative benefits have been demonstrated and no long-term follow-up studies have been reported, MIT can be rated as promising. The suggested quality of evidence for MIT would be *Class III* (see Ratings).

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Definitions

Safety. A judgment of the acceptability of risk in a specified situation, eg, for a given medical problem, by a provider with specified training, at a specified type of facility.

Effectiveness. Producing a desired effect under conditions of actual use.

Established. Accepted as appropriate by the practicing medical community for the given indication in the specified patient population.

Promising. Given current knowledge, this technology appears to be appropriate for the given indication in the specified patient population. As more experience and long-term follow-up are accumulated, this interim rating will change.

Investigational. Evidence insufficient to determine appropriateness; warrants further study. Use of this technology for given indication in the specified patient population should be confined largely to research protocols.

Doubtful. Given current knowledge, this technology appears to be inappropriate for the given indication in the specified patient population. As more experience and long-term follow-up are accumulated, this interim rating will change.

Unacceptable. Regarded by the practicing medical community as inappropriate for the given indication in the specified patient population.

Quality of evidence ratings

Class I. Evidence provided by one or more well-designed randomized controlled clinical trials.

Class II. Evidence provided by one or more well-designed randomized clinical studies such as case-control, cohort studies, and so forth.

Class III. Evidence provided by expert opinion, nonrandomized historical controls, or one or more case reports.

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Neurology 1994;44;566
DOI 10.1212/WNL.44.3_Part_1.566

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DOI 10.1212/WNL.44.3_Part_1.566