

A powerful voice

Music therapy in respiratory rehabilitation is helping brain-injured patients reclaim their powers of speech

Tina Broad

Dr David Burke was an early convert to the value of music therapy in the care of patients with severe brain injury. When the discipline was still emerging in Australia, he saw first hand the power it had to click an otherwise unresponsive patient into first gear.

“Sometimes it’s the music therapy that provides the trigger, a way into that patient – leading the way for speech therapists, occupational therapists and other staff,” says Burke, senior consultant in Rehabilitation Medicine at Ivanhoe Private Rehabilitation Hospital in Melbourne.

“When the patient has a low level of responsiveness it can be very hard to engage them – and that becomes frustrating for those of us involved in their care. The more orthodox practices aren’t always easy or even appropriate in patients where there is low level of function.”

Cue Jeanette Tamplin. As senior music therapist at the Royal Talbot Rehabilitation Centre and Ivanhoe Hospital, she works alongside Burke and is one of the new breed of professionals



Jeanette Tamplin

whose research is making waves in Australia and overseas. She recently presented her research to the Music Therapy World Congress, in Brisbane.

Her work with brain-injured patients with dysarthria provides an encouraging glimpse into the potential of music-based therapies to help patients overcome the condition. Dysarthria is the group of speech disorders caused by disturbances in the strength or co-ordination of the muscles used for speech – in the jaw, mouth, tongue, lips and diaphragm, for example – as a result of damage to the brain or nerves. Dysarthric speech is sometimes called “drunken speech” and is common after stroke and acquired brain injury.

In her research, Tamplin worked intensively with four brain injured, dysarthric patients: a 19-year-old man and two women of 20 and 23 who had been in serious car accidents, and a 51-year-old female stroke patient.

Working with each of the patients three times a week for eight weeks, Tamplin led the patients through a therapeutic regime as a kind of vocal coach. Her ministrations were not dissimilar to those that would be made by a voice teacher to a promising singer.

“If you stop to think about it, there are hardly two more related areas than respiration and music. When we sing, our intratracheal pressure is about four times greater than during normal conversation. It’s the lungs and muscles of expiration in the thorax and abdominal wall that provide this pressure.

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“We would start with oral motor respiration exercises concentrating on the use of the diaphragm. These exercises include breathing without sound, then with audible breath, then using the diaphragm muscles to pant. Then we’d add sounds, ‘aaahs’ and ‘sh sh’, hum and sing single notes, then expand on that with higher pitched notes because high notes need more breath support.

“Gradually we’d sing scale-like exercises, try to sustain notes without wavering, add rhythmic chanting and finally we’d work on all of these things in combination through singing whole songs, with the patients’ preferred repertoires. Often song lyrics reflect the natural rhythms and stress patterns of speech.”

So what of the endgame: the improvement of brain-injured patients’ functional speech? What impact did the music therapy have on that?

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“I conducted pre, mid and post-treatment assessments of the patients’ speech to look at what kind of carry-over there had been from the music therapy into functional speech. There were trends of improvement among all the patients. There was a very high rating of more natural speech – demonstrated through better use of stress and rhythm, better intonation and improved fluency – after the music therapy,” says Tamplin.

Intelligibility was a fundamental part of the assessment process. Tamplin used the Sentence Intelligibility Test – a standard evaluation used by speech pathologists. She recorded randomly-generated sentences read by each patient and asked three speech pathologists to transcribe what they heard. In addition, she recruited a panel of 30 people: 15 speech pathologists and 15 members of the general public, to assess “speech naturalness” in the patients. The patients’ speech patterns were also analysed by spectrograph before and after the treatment to provide a visual rendering of pauses, fluency and intonation. Eighty-five per cent of post-treatment sentences were judged “more natural”.

What are the implications of Tamplin’s research?
 “For a start, I want to build on these initial findings with a bigger research project, collaborating with other music therapists nationally and internationally. There is great potential to entrench some of the singing-based music therapy exercises into the practice of speech pathology across the board.

Illustration: Lee McLachlan

“The evidence is growing that there can be great benefits to patients with neurological damage. Speech pathologists who are musical may feel more comfortable about using music and singing in their clinical work. I’d like my research to help provide other professionals in the health services greater confidence to try music-based techniques in their work.”

Big-picture considerations aside, Tamplin returns to the four subjects in her research.

“Often you can’t hear changes in your own voice or speech. But when I played the ‘before’ and ‘after’ recordings to my four patients it was a real eye-opener for them. They were struck by the improvements they had made. So I think there was tremendous value in that outcome alone, in terms of helping to inspire and motivate four people as they travel the road to recovery.” ■

Music. Play for Life is the Music Council of Australia’s national campaign to encourage more Australians to make music. In each issue, *arts + medicine* profiles a music therapy case study which demonstrates the link between music and wellbeing. Further reading: www.musicplayforlife.org and www.austmta.org.au