Appendix A Literature Matrix of Included Studies

	Literature Reference	Format	Methodology	Theme or Focus of Study	Participants	Summary of Interventions	Brief Summary
1	Conklyn, D., Novak, E., Boissy, A., Bethoux, F. &, Chemali, K. (2012). The effects of modified melodic intonation therapy on nonfluent aphasia: A pilot study. *Speech, Language and Hearing Research. 55*, 1463-1471.	Peer-reviewed journal	Quantitative RCT	Non-fluent aphasia following left-hemispheric stroke	Participants: 30 Male: N/A Female: N/A	MMIT	Explored the effect of MMIT as an early intervention with 30 participants. 14 control and16 in the treatment group. One session of MMIT was carried out where assessment scores displayed a significant improvement in speech assessment when compared to the control group.
2	Hartley, M. L., Turry, A., & Raghaven, P. (2010). The role of music and music therapy in aphasia rehabilitation. *Music and Medicine, 2*(4), 235-242.	Peer-reviewed journal	Qualitative case study	Global aphasia, apraxia following left-hemispheric stroke	Participant: 1 Male: 1	Various forms of singing	Explored the link between language and music in the brain in relation to speech disorders following stroke. Involves a case study of Bruce, a left-hemispheric stroke patient with global aphasia and apraxia. Treatment began in 2000 and he spent more than 6 years attending individual music therapy sessions. Improvements in phrase production and linguistic skills.
3	Hough, M. S. (2010). Melodic intonation therapy and aphasia: Another variation on a theme. *Aphasiology, 24*(6-8), 775-786.	Peer-reviewed journal	Quantitative case study	Non-fluent aphasia following left CVA	Participant: 1 Male: 1	Adapted MIT	Investigated the effectiveness of MIT as a means of increasing verbal output in a patient with non-fluent aphasia. The adapted version of MIT without the left hand tapping component was used. Results showed significantly increased ability to produce short phrases.
4	Jungblut, M., (2005). Music therapy for people with chronic aphasia: A controlled study. In D. Aldridge (Ed), *Music therapy and neurological rehabilitation: Performing health (pp. 189-209)*. London, UK: Jessica Kingsley Publishers.	Chapter in edited book	Quantitative RCT	Non- fluent aphasia following left-hemispheric stroke	Participants: 17 Male: 9 Female: 7	SIPARI ®	Investigated the potential benefits of the SIPARI method with post-stroke aphasics. Seventeen participants were recruited for the study; 9 experimental group and 8 in a control group. Experimental participants attended 20 group sessions and 10 individual sessions. Results showed significant improvements in speech ability in 75% of participants. In comparison the speech abilities of the control group remained unchanged.

5	Jungblut, M., Suchanek, M., Gerhard, H. (2009). Long-term recovery for chronic global aphasia: A case report. *Music and Medicine, 1*(1), 61-69.	Peer-reviewed journal	Quantitative case study	Global aphasia, agraphia, alexia, from sin following left-hemispheric stroke	Participant: 1 Male: 1	SIPARI ®	Investigated the efficacy of the SIPARI method for long-term recovery from aphasia. Participant was treated for 20 months and showed significant improvements in spontaneous speech as well as improvements in the aachener aphasia test. Follow-up treatments and assessments continued to show signs of improvement.
6	Kim, M., & Tomaino, C. M. (2008). Protocol evaluation for effective music therapy for persons with non fluent aphasia. *Topics in Stroke Rehabilitation, 15*(6), 555–569.	Peer-reviewed journal	Qualitative multiple-case study	Non-fluent aphasia, apraxia of speech, dysarthria following primarily left-hemispheric stroke	Participants: 7 Male: 2 Female: 5	- Singing familiar songs - Breathing single-syllable sounds - Musically-assisted speech - Dynamically cued singing - Rhythmic speech cueing - Oral motor exercises - Vocal intonation	Evaluated a general treatment protocol for music therapy with persons with non-fluent aphasia. The study reported on a multiple-case study of seven participants who received 8-12 individual music therapy sessions approximately 3 times a week. In each session the therapist guided the patient through seven structured musically-assisted speech exercises. Several outcomes are discussed in relation to guidelines for clinicians.
7	Lim, K-B., Kim, Y-K., Lee, H-J., Yoo, J., Hwang, J. Y., Kim, J-A., Kim, S-K., (2012). The therapeutic effect of neurologic music therapy and speech language therapy in post-stroke aphasic patients. *Annals of Rehabilitation Medicine. 37*(4), 556-562.	Peer-reviewed journal	Quantitative RCT	Non- fluent aphasia following left- and right-hemispheric stroke	Participants: 21 Male: 15 Female: 6 16 left-sided	- MIT - Therapeutic singing - Respiratory training - Voice training - Singing familiar songs - Speech training	Studied the effect of neurological music therapy and speech language therapy with post-stroke aphasic patients. Of the 21 participants 16 had survived a left-hemispheric stroke. Twelve participants in the NMT group received treatment for one month. All participants were assessed using the aphasia quotient. There were improvements in both groups but the NMT group showed significant improvements in linguistic skills in a sub-acute group.

8	Racette, A., Bard, C., Peretz, I. (2006). Making non-fluent aphasics speak: Sing along! *Brain. 129*, 2571-2584.	Peer-reviewed journal	Quantitative multiple-case study	Aphasia and dysarthria following left-hemispheric stroke	Participants: 8 Male: 4 Female: 4	- Production of familiar songs - Repeating and recalling from unfamiliar songs - Singing and speaking along to auditory models	Investigated the production of sung and spoken utterances. Three different experimental conditions were carried out. Results suggest that singing in synchrony with an auditory model, such as choral singing, is more effective than choral speech in improving word intelligibility. It is suggested that choral singing is an effective means of speech therapy.
9	Schlaug, G., Norton, A., Marchina, S. (2008). From singing to speaking: Why singing may lead to recovery of expressive language function in patients with broca's aphasia. *Music Perception. 25*(4), 315-323.	Peer-reviewed journal	Quantitative exploratory RCT	Non –fluent aphasia left-hemispheric stroke	Participants: 2 Male: 2	MIT	Authors reported on the development, effects and efficacy of MIT. RCT involving two middle-aged male left-sided stroke patients where one received MIT and the other speech repetition therapy. Purpose of the RCT was to demonstrate the effects of MIT compared to speech repetition therapy. Results showed that the MIT gains exceeded those of the speech repetition therapy interventions. Authors concluded that plausible reasoning for this is MIT's unique engagement of the right hemisphere.
10	Schlaug, G., Marchina, S., Norton, A. (2009). Evidence for plasticity in white matter tracts of chronic aphasic patients undergoing intense intonation-based speech therapy. *Annals of the New York Academy of Science, 1169*, 385-394.	Peer-reviewed journal	Quantitative multiple-case study	Non-fluent aphasia following left-hemispheric stroke	Participants: 6	MIT-left hand tapping	Study investigated the suggestion that the only path to recovery for patients with left-hemisphere damage may be through the development of the arcuate fasciculus in the right hemisphere. Specifically investigated whether MIT would lead to changes in the arcuate fasciculus. The AF was analysed in the 6 participants pre and post 75 music-therapy, individual sessions. Results of the analysis showed a significant increase in the number of AF fibres in the right hemisphere. The authors suggest that intense, long-term treatment using MIT leads to re-modelling of the right AF and as a result may improve recovery in speech processing and oral movements.

11	Straube, T., Schulz, A., Geipel, K., Mentzel, H., Miltner, W. H. R. (2008). Dissociation between singing and speaking in expressive aphasia: The role of song familiarity *Neuropsychologia*, *46*(5), 1505-1512.	Peer-reviewed journal	Quantitative exploratory RCT	Aphasia and mild dysarthria 1 experiment subject left hemisphere	Participants: 5 Male: 3 Female: 2	- Familiar song singing - Speaking songs - Phrase production with novel, pre-learned melody	Explored the dissociation between singing and speaking. Study included a single experimental subject who was asked to speak and then sing phrases of familiar and unfamiliar songs. The participant showed significant increase in the number of correctly-pronounced words during singing rather than speaking. The authors suggest that this was not due to the effect of singing but possibly due to a memory-based mechanism linking melody to words.
12	Tomaino, C. M. (2010). Recovery of fluent speech through a musician's use of prelearned song repertoire: A case study. *Music and Medicine, 2*(2), 85-88.	Peer-reviewed journal	Qualitative case study	Non-fluent aphasia following left-hemispheric stroke	Participant: 1 Male: 1	Use of pre-learned songs - Singing familiar lyrics - Singing accompanied with tapping rhythm - Lyrics cued with gaps - Spoken lyrics to a rhythm - Word retrieval and speech	Investigated the use of pre-learned songs prior to stroke, in the recovery of speech. Additionally, the differences in treatment of musicians versus non-musicians were investigated. One participant received daily music-therapy sessions for 4months. Within 4 weeks his speech showed great improvements for word retrieval, fluency, accuracy and he was singing freely. The authors suggest that the use of pre-learned songs may have significant benefits in recovery of speech. They also propose that musicians may benefit more from music therapy methods due to an enriched neural system.
13	Wilson, S. J., Parsons, K., Reutens, D. C. (2006). Preserved singing in aphasia: A case study of the efficacy of melodic intonation therapy. *Music Perception. 24*(1), 23-36.	Peer-reviewed journal	Quantitative case study	Non-fluent aphasia following left-hemispheric stroke	Participant: 1 Male: 1	MIT	Study examined the efficacy of MIT. A single participant was subject to three experimental conditions of the vocal production of phrases. The results showed superior production of MIT phrases during therapy and showed signs of being more durable in facilitating longer-term phrase production.

14	Vines, B. W., Norton, A. C., Schlaug, G. (2011). Non-Invasive brain stimulation enhances the effects of melodic intonation therapy. *Frontiers in psychology, 2* (230).	Peer-reviewed journal	Quantitative multiple-case study	Non-fluent aphasia following left-hemispheric stroke	Participants: 6 Male: 6	- Transcranial direct current stimulation - MIT	Investigated the potential for non-invasive brain stimulation to augment the benefits of MIT in patients with aphasia. Authors applied direct current stimulation to areas in the right hemisphere that increase excitability of the participants while they received MIT treatment. They did the same but applied current to reduce excitability. Results showed significant improvements in fluency of speech when areas of the right hemisphere were aroused. By enhancing activity in the right-sided hemisphere, the brain's ability to seek and compensate for damage to the left side was enhanced; this strongly supported the author's hypothesis.
15	Zipse, L., Norton, A., Marchina, S., Schlaug, G. (2012). When right is all that is left: Plasticity of right-hemisphere tracts in a young aphasic patient. *Annals of the New York Academy of Science. 1252*, 237-245.	Peer-reviewed journal	Quantitative case study	Non-fluent aphasia following left-hemispheric stroke	Participant: 1 Female: 1	Adapted MIT	Study including one female stroke patient who received a total of 80 individual music-therapy sessions. The patient's performance improved on trained and untrained phrases, as well as speech and language tasks. The study also indicated that intensive treatment induced functional and structural changes in a right hemisphere network.

Abbreviations

AF	Arcuate Fasiculus	NMT	Neurologic Music Therapy
CVA	Cerebral Vascular Accident	RCT	Randomised Controlled Trial
MIT	Melodic Intonation Therapy	MMIT	Modified Melodic Intonation Therapy
SIPARI®	Singing, Intonation, Prosody, Atmung (breathing), Rhythm, Improvisation		
N/A	Not available		