A PHENOMELOGICAL INQUIRY OF THE APPLICABILITY OF NEUROLOGIC MUSIC THERAPY FOR A STUDENT MUSIC THERAPIST

by

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Abstract

Neurologic Music Therapy (NMT) is a standardized training offered to many different clinical disciplines including music therapy. NMT specializes in research, techniques, and principles regarding the brain's relationship with music. Despite what the name may suggest, NMT is not affiliated with the music therapy profession, and may be often overlooked by music therapy programs across the country, as was the experience of the principal investigator (PI). There is a lot of research and studies available showing the benefits of NMT for specific clinical populations, but there is no research that examines the effect and value NMT training has when combined with a music therapy education.

In an effort to find the value of NMT for a student music therapist specifically, this study uses a phenomenological approach, which is appropriate for understanding how experiences are perceived as well as the influence they may have on an individual. With this approach in mind the PI received NMT training and implemented the topics and techniques into their treatment process during a clinical practicum assignment. Over the course of 9 weeks the PI collected different forms of quantitative data specific to different reoccurring stages of their treatment process (planning, facilitating, and documenting) as well as qualitative data in the form of journal entries. At the end of 9 weeks the data was examined for themes and codes to determine the effect that NMT had within the practice of music therapy treatment.

NMT training was found to have a positive influence on the music therapy student's experiences within a clinical setting. The PI found that after taking the training they were much more aware of the role of different musical elements and was better able to understand and assess the needs of their clients and that they were more detailed, prepared, technical, and organized in their processes which in turn assisted them as they handled the unpredictable moments of interacting with clients and other professionals. Overall, it was determined that in the PI's own experience NMT training reinforced a lot of principles that were taught during the PI's music therapy education, but that hearing these principles described from an interdisciplinary perspective (outside of music therapy) allowed the PI to integrate a different kind of awareness in their music therapy process that wasn't present before.

The PI recognizes the limitations of a phenomenological approach to research and can only recommend the NMT training to other music therapy students based on the PI's own documented experience. Future studies should seek to include a greater number of music therapy students.

Acknowledgements

This research project would not have been possible without all the support that I received. I would like to thank my mentor Allison Fox, for her guidance and patience with me as I tried to determine, solidify, and navigate different portions of my research. I'm grateful for her time, expertise, and enthusiasm for research and mentoring. Much of this project would not have been completed without her help. Professor Fox, thank you.

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I am also grateful for the Office of Undergraduate Research as well as the Caine College of the Arts that supported me financially through the Undergraduate Research and Creative Opportunities Grant and Scholarship. Without their financial support I would not have been able to focus so much time and energy on my project. Thank you.

Lastly, I would like to thank all my friends and family for all of their support throughout my project. Thank you for reading through my report and for all your encouragement. Thank you for supporting me as I presented my research and for giving me opportunities to share my findings with you. If it weren't for you, I would not have been as motivated to complete my project. Thank you.

Dear Reader,

Thank you for taking the time to read this inquiry. This topic has been on my mind for a while now and I hope that in reading you will be able to gain insight and inspiration no matter who you are or what your background is. This paper will be written from my own perspective as one music therapy student to other music therapy students. If you are not familiar with music therapy, thank you again for reading, I will provide minimal definitions when it comes to the profession, and would encourage those who are seeking additional information about music therapy to visit musictherapy.org. With that said I will mainly focus on the content of my study providing definitions that relate to Neurologic Music Therapy. Please feel free to utilize the table of contents to find sections that will be most beneficial for you.

This study is a little different from other studies (quantitative and qualitative) that you may be familiar with, as this is a phenomenological inquiry about the applicability and value of taking the Neurologic Music Therapy (NMT) training as student music therapist. Phenomenology is an introspective and reflective form of qualitative data which provides a framework for seeking an understanding of how experiences are understood and perceived, in addition to understanding the personal influence those experiences leave (Delve, 2022). Because this study is not a question of fact, such as "is NMT effective or beneficial for different clinical populations?" but more a question of experience, applicability and overall value, phenomenology is an appropriate approach. Your own level of familiarity with NMT or music therapy does not matter to be able to understand this study, because this is an evaluation of my own experience. Even though I will be writing to other music therapy students and professionals, I hope that no matter who you are or what your background is, that as you read about my own experience combining NMT with my music therapy education you will gain a greater understanding of the personal effect NMT could have for anyone considering the training. At the conclusion of this document, I will present a list of questions that were meaningful to me throughout the study that may help guide others as they decide for themselves if NMT is right fit for them.

Once again, thank you for your support and interest in reading this inquiry. If you have any questions or concerns, please don't hesitate to reach out.

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Reflection- 1,035 words

Introduction

Background

First off let me give you a little background to who I am. At the time of this study, I was completing my last year of coursework as a music therapy student at Utah State University prior to starting the required internship. I grew up in northern Utah with a large part of my childhood identity including playing the violin in school and community orchestras and taking part in a variety of school and community science clubs. I stumbled across the music therapy profession while completing a school research project during my senior year of high school. I was intrigued by the thought of understanding the psychology of music and of manipulating music in an effective way to serve others. I made up my mind to pursue auditioning for the music therapy program at Utah State, teaching myself how to play the piano and guitar. 5 years later I'm about to graduate and have gained clinical experience working with many diverse clinical populations during assigned field experience placements. My experience up to this point includes but is not limited to: atypical and typical children in elementary schools and hospitals, along with older adults in a memory care unit. I have had opportunities to work with groups of individuals as well as individual 1 on 1 sessions, both with and without an additional student partner.

For those not familiar with the profession, music therapy is a combination of psychology and social science in which music is used as therapy. Music therapy goes beyond just teaching music or entertaining clients, it is using music to accomplish non-musical goals. Music therapists work with all ages, diagnosis', populations, and cultures to improve quality of life and achieve spiritual/emotional well-being. I recognize that this explanation is very brief and generic, and I encourage those that are interested in learning more about music therapy as a clinical practice and profession to visit musictherapy.org.

There are many different paths to becoming an accredited music therapist. To enter the field, all music therapists must have at least a bachelor's degree. If the bachelor's degree is in a field other than music therapy specific training and specialization in music therapy (through an equivalency program or graduate programs) is required. Educational training and programs at all levels include musical foundations, clinical foundations, and music therapy principles that cover a wide range of topics, populations, goals, and approaches. In addition to classroom learning music therapy students are required to complete at least 1200 hours of clinical experience through the completion of an internship. At the completion of the degree/equivalency conferral, accreditation occurs after the student passes the national certification exam before the individual is allowed to practice music therapy as a professional. (American Music Therapy Association, 2023)

Educational programs and training have each of these required core elements but vary across the country as the skillset and expertise of the program director and music therapy professors allows. Despite what the name may suggest, NMT is a separate academy of research, principles, and specific trainings and techniques that is not associated with the music therapy profession. Because of this distinction as a specialized training the ideas and principles are not a requirement for music therapy educational programs. Of course, some programs may choose to

integrate NMT into a music therapy curriculum, but in other cases such as my own, NMT was more overlooked or lost in the bustle of the diverse music therapy requirements.

I recognize that all music therapy programs are different, so to provide background to my study I will briefly describe my undergraduate experience. I studied music therapy at Utah State University (USU) from 2020-2023 where I gained an understanding of the theoretical framework and history of the profession and was given opportunities to practice the treatment protocol during 2 years of field work experiences. Music Therapy courses included topics such as group facilitation, and music therapy with diverse clinical populations. I was also expected to learn about the psychology of music in addition to increasing my proficiency on a main instrument (the violin), while gaining functional clinical musicianship skills on core instruments such as piano, guitar, voice, and percussion through individual instruction and music therapy specific instrumental courses. Based on my experience at Utah State, a music therapy program is rigorous time consuming 4-year degree with a full load of general courses (such as English, statistics, and anatomy), core music classes (theory, history, and instrumental training) and music therapy specific courses and competencies.

So, why am I so interested in NMT? As I mentioned earlier, NMT is not a standard educational requirement for music therapy programs and USU was not one that integrated the techniques and ideas into their curriculum. I first heard about NMT during one of my music therapy treatment classes while in my sophomore year. It was presented very briefly as an approach to music therapy that specializes entirely on the relationship between music and neurologic functions, but that was all of it. Like a giant cliff hanger where no time was left in our diverse curriculum to revisit and discuss NMT. But the idea sparked my interest and I wanted to learn more, what were these techniques? How are they different from the interventions and principles that I am already familiar with? And most importantly, if there are no required pre-requisites allowing those from disciplines outside of music therapy to take the training, what role or effect does it play/have in the hands of a music therapist?

These questions, along with my own deep love for music and science/psychology, stuck with me throughout my music therapy education. And when opportunities arose to seek answers to these questions, I took them.

Previous Research Project

In Spring 2022 I was enrolled in a Research in Music Therapy course, where I was taught the basics of conducting research. I was given freedom to choose a research topic that was meaningful to me and to take charge of conducting the research independently. My research consisted of 2 small scale projects that sought to evaluate the impact of NMT training on a working music therapist and determine any value in educating music therapy students about NMT. The two projects included an interpretivist approach along with a quantitative study where I gained research experience and was able to begin to answer my NMT questions.

My first project took an interpretivist approach where I interviewed a working music therapist who had taken the NMT training. I prepared 6 questions that offered opportunities for

open ended conversation to provide as much information about the interviewee's experience as possible.

1. What inspired you to receive NMT training?
2. How has it affected your approach to creating and facilitating music therapy interventions?
3. What sort of effect have NMT techniques had on your clients?
4. Are there clinical populations that you find NMT most effective with?
5. How does your practice differ from other board-certified music therapists?
6. Would you recommend an NMT certification to other music therapists?

The interview lasted 50 minutes and 3 major themes emerged out of the conversation. First, the interviewee felt that the training complemented their music therapy education and experience by enhancing their understanding of the specific role that music plays during therapy. Second, with a greater understanding of the physiological, neurological, and psychological elements occurring the interviewee also felt that they were able to provide better service to their clients, by assessing and meeting their needs with greater accuracy. The final theme was an increase of career opportunities, by providing additional networking, internships, jobs, and co-treatment opportunities that opened up to the music therapist who had received NMT training.

My second project built on the information I received during my interpretivist project and took a quantitative approach. I created a 10-15-minute survey asking many similar questions that came up during the live interview and from continuous research. The survey was sent to music therapists across the country, with a response rate around 15%. The results of the survey were complementary to the results of the interview. The respondents reported that NMT had influenced their approach to assessment, planning a treatment plan, developing, and implementing interventions, and evaluating the data. All respondents gave positive feedback explaining that NMT changed their perception of the possibilities of music therapy as well as provided networking opportunities. Overall and in a discussion of the study one participant said that the "techniques have supported the organization of treatment goals, development, implementation, report structure, and language focus when talking with other clinicians" (Fairbourn, 2022).

After my project ended, I found myself with strong results showing that music therapists found the training to be beneficial, but I was still faced with one question burning inside of me. What is it about the training that leaves these music therapists feeling different about music therapy? Or just exactly how does this training fit in with music therapy? I wanted to learn about the process of change and understand what happens to a music therapist after taking the training. My senior year rolled around, and I thought I would create a systematic way to track and document this process. Where an interest in understanding the psychology of music inspired me to study music therapy and thoughts and questions about NMT followed me throughout my education, this seemed fitting as a research project that was a culmination or capstone of my undergraduate degree.

Current Project

After brainstorming different ideas with advisors and my mentor, I settled on conducting *A Phenomenological Inquiry of the Applicability of Neurologic Music Therapy Training for a Student Music Therapist.* Considering what we discussed earlier about phenomenology you should understand that this study is an analysis of my own experience receiving NMT training as a music therapy student with the goal of sharing experiences that demonstrate the value of the training for other music therapy students. Within my experience conversing with other music therapy students at Utah State, I know that I am not the only one who has had questions about NMT and of its applicability within music therapy, and I hope that my findings may be beneficial to other music therapy students across the country. My objective in conducting this research is to share with you my experiences applying NMT into a clinical setting, and to let you decide for yourself if NMT is a good fit for you and your style of practice.

I recognize that this project is just my experience, and that the conclusions drawn are not indicative of experiences that you also may have. I am not here to prove anything but to provide you with live examples, data and personal interpretations that you can analyze for yourself, coming to your own conclusions about the value of NMT training for yourself.

Methodology

My project included 4 stages: Pre-Training Research and Development, The NMT Training, Post NMT Training Practice and Implementation, and Post Implementation Data Analysis and Reporting. The Pre-Training Research and Development stage took place during Fall semester (September-December 2022) where I sought to gain more information and background on NMT by studying the *Handbook of Neurologic Music Therapy* (Thaut and Hoemberg, 2014); *Rhythm, Music and the Brain: Scientific Foundations and Clinical Application* (Thaut, 2005)*;* and other preparatory materials given to me by the Academy when I registered for the training. The NMT Training stage occurred during the month of December 2022, and included the 4-day training, as well as the time studying and taking the exam. The third stage, Post NMT Training Practice and Implementation occurred from January-March 2023 where I incorporated NMT training topics and skills into an assigned clinical practicum site. The month of April 2023 is the conclusion of my project where I gathered data, coded journal entries, analyzed and interpreted the results, and presented my phenomenological inquiry.

Over the course of my study, qualitative data was taken in the form of journal entries at the end of each experience, including (but not limited to) each time I would research and gain more understanding, after the conclusion of each of the 4 NMT training days, and after each time I [would] prepare/implement/and document a practicum session with clients. At the end of each week, the journal entries would be read and compiled into a shorter weekly summary which highlighted the main takeaways and experiences from each week. At the end of the project, the entries were examined for codes and themes defining my experience throughout the project.

In addition to recording journal entries, 6 different phenomenological aspects of quantitative data were tracked during specific parts of the Post NMT Training Practice and Implementation stage. This stage was divided into 3 distinct music therapy processes that reoccurred each week: preparing/planning, facilitating/implementing, and debrief/documenting.

During each of the 3 parts I tracked levels of confidence by examining 5 different factors that I determined played a role in how confident one feels in anticipation of the task, and in retrospect after the task was completed. A self-assessment scale was used where 1 represented the negative end of the spectrum, and 10 the positive. The following 5 categories were then tracked before and after each part of the practice cycle over the course of 9 weeks.

- Competence: how well do you feel your education/training is sufficient for the task?
- Preparedness: how well do you feel your planning is sufficient for the task?
- Calmness: How does the perceived outcome make you feel? (i.e. 1=stressed, 10=calm)
- Energy: How much energy do you have to accomplish the task? (1=bored, 10=excited)
- Health: What is your perceived overall health at this moment? (including factors such as headaches, lack of sleep, life distractions, and other health considerations)

I was curious to see how the average of the 5 factors compared to my general feelings of confidence, so I also took the average of the 5 factors and compared that to my overall perception of confidence, or "how well do you feel about your ability to perform roles, functions and tasks?" using the same self-assessment scale. These two numbers would then be compared to determine any change over the course of the semester, as well as to determine any correlation between the 5 factors and how confident I felt.

In addition to tracking my confidence levels during every part of the Post NMT Training Practice and Implementation stage, I also tracked 5 other forms of qualitative data specific to the 3 parts of the weekly cycle. After each of my preparing/planning sessions I considered and recorded what percentage of my plan utilized knowledge from the NMT training. This includes not just how many standardized techniques I planned to use but also any ideas, philosophies and techniques that were emphasized and taught during the training. Every week after facilitating and implementing my plan during a live music therapy session, I used the same 1-10 scale to evaluate my ability to assess my clients in the moment, along with how I felt the music interventions were received (perception of reception) by the clients. I also tracked my ability to use NMT techniques/knowledge to adapt my planned interventions to meet the presenting needs of my clients. During the documentation portion I tracked the number of times NMT techniques or ideas were mentioned during the debrief and documentation. By tracking different data points specific to individual music therapy processes, I hoped to be able to see the effect the NMT training had not only on my music therapy in general, but also on individual parts of the music therapy process.

If you are a visual person as I am, here is a table outlining the stages of my project with all the forms of data collection I just talked about.

Stages of Project	**Data Collection**	
	Type	Description
Pre-training Research and Development (September-December 2022)	Qualitative	Journal Entries

The NMT Training (December 2022)		Qualitative	Journal Entries
Post NMT Training Practice and Implementation (January-March 2023)	Prepare/ Plan	Quantitative	Confidence
		Quantitative	% of NMT
		Qualitative	Journal Entries
	Facilitate/ Implement	Quantitative	Confidence
		Quantitative	Assessment
		Quantitative	Perception of Reception
		Quantitative	NMT adaptations
		Qualitative	Journal Entries
	Debrief/ Document	Quantitative	Confidence
		Quantitative	# of time NMT was mentioned
		Qualitative	Journal Entries
Post implementation Data Analysis and Reporting (April 2023)		N/A	N/A

Stage 1: Pre-training Research and Development

During the fall semester of my senior year (September-December 2022), I prepared myself for the NMT training by researching and learning about NMT. As mentioned earlier I studied the *Handbook of Neurologic Music Therapy* (Thaut and Hoemberg, 2014); *Rhythm, Music and the Brain: Scientific Foundations and Clinical Application* (Thaut, 2005)*;* and additional online materials that I received when I registered for the training. To help you understand what NMT is, I will give you a brief overview of the things that I learned in this section as well as a short description of the NMT techniques that can be found in Appendix A. If you are interested in gaining a deeper understanding of the practices and techniques, I recommend reading the *Handbook* (Thaut & Hoemberg, 2014) for yourself at the very least, as it contains research, theories, and the techniques of NMT.

When it comes down to the nitty gritty, what exactly is the difference between music therapy and NMT? Afterall, you may have heard (as I did) that many of the underlying techniques and ideas that define NMT are things that music therapists do anyway without an official universal term for it. On the logistical side to work as a music therapist, one needs a bachelor's degree in music therapy (or equivalency program), 1200 clinical hours and the successful completion of the 3-hour 150 question board exam. One the other hand, be recognized within the lowest level of NMT only a 30-hour training and short exam is required. Next to these logistical differences, the approaches between the two also differ. Music therapy is a broad social science, and NMT is a more focused neuroscience. The best way that I can describe this difference is by thinking about

the focus and approach of music therapy and NMT. Music therapists, work within a variety of different domains (cognitive, social, emotional, spiritual, physical, ect.) and adapting to the needs of each client. They seek to improve well-being through any manner of musical interventions utilizing behavioral, humanistic, and psychodynamic approaches. NMT moves away from being a social science which they define as "giving music individual meaning, expression and social roles in life and culture" (Thaut & Hoemberg, 2014) and turns towards understanding the brain's relationship with music. Corene Thaut (2013) explains the neuroscience approach as, "What do we know about music perception, cognition, and production and how can we use that knowledge to change the brain by engaging it in music". So, in conclusion where there are some similarities between music therapy and NMT, NMT differs by focusing on understanding the relationship between neuroscience and music perception. NMT is more specialized and seeks to make informed therapeutic decisions based on evidence in neuroscience, using music in more specific and direct ways that produce considerably stronger therapeutic results.

This switch from using music as a social science to using music within neuroscience framework proved to further differentiate NMT from music therapy, as it led the way for NMT to become a standardized world-wide medical practice. The NMT organization has grown substantially since their first training in 1999 now including international trainings available for a variety of interdisciplinary medical professionals all over the world. The *Handbook of Neurologic Music Therapy* (Thaut & Hoemberg, 2014) was awarded second by the British Medical Association for 'Best New Book in Neurology' in 2015 (The Academy of Neurologic Music Therapy [NMT], 2022), demonstrating their start to being recognized as a standardized medical practice. Today the Academy is "endorsed by the World Federation of Neurologic Rehabilitation (WFNR), the European Federation of Neurorehabilitation Societies (EFNS) and the International Society for Clinical Neuromusicology (CNM)" (The Academy of NMT, 2022). To compare, music therapy has been established worldwide, but each individual country has their own version of a national organization such as the American Music Therapy Association for the United States. These national music therapy organizations set standards of education, training, and requirements for music therapists specific to their country that are similar but vary from country to country. With NMT being a worldwide medical organization, the training is standardized and designed to be compatible with other clinical professions outside of music therapy.

As a part of the standardized training, NMT's standards of practice and techniques are created in ways that are inclusive of other medical professionals and applicable within their interdisciplinary medical settings. Because of this interdisciplinary approach many of the foundational principles for treatment are like those that music therapy students are taught in school. But despite the principles being similar, the interdisciplinary approach provides different perspectives through their standardized treatment system called the Transformational Design Model (TDM). This model challenges the clinician to rethink their approach to their current process of treatment, by utilizing music in a more effective way. It encourages the clinician to keep in mind and focus on the non-musical needs and goals, crafting musical interventions that target those specific goals, and then incorporating a transformation of the musical goal back into the non-musical need. NMT encourages the use of common standardized medical assessments and standardized techniques that help connect the work that you are doing as an NMT with other

clinical professions, increasing collaboration and communication about the needs and progress of the clients. From the outside, when compared to the social science approach of music therapy, NMT's standards of practice may be interpreted as ridged, with too much focus on standardized measurements rather than the overall well-being of clients. But as you begin to understand NMT as a system of evidenced based techniques that can inform your practice as well as connect you to a more standardized way of clinical thought, you can find your own personal practice style that is balanced between the overall well-being of clients and the evidence driven success of the techniques.

Stage 2: The NMT Training

The NMT training is offered through the Academy and specific details regarding times, locations, and topics can be found on their website (nmtacademy.co). Currently the Academy offers multiple training courses each year all around the globe in the location's respective language both in person and virtual (via zoom). I registered and attended a virtual training hosted in Toronto, Canada that took place at the beginning of December 2023. At the time I registered for the training it was $450 USD for a student and $650 USD for a professional (aka not a student). I'm not sure how my virtual training experience compares to an in-person training but in my session, there were 120 participants from all over the world, attending the training on Zoom each day. I would imagine that in-person training would have a smaller cap on the number of participants so that more individual attention can be provided, but again I'm not sure how it compares.

The training itself is 4 days long with an accumulation of 30 hours of lecturing and direct supervision/training. A more detailed schedule of the training can be found on their website, but lectures are given on NMT topics such as the Transformational Design Model (TDM), the role of music for persons with neurodevelopmental disorders, and of course each of the 20 of the NMT techniques. In addition to the basic NMT lectures, specialists were brought in (either in person or as pre-recorded lectures) to provide additional training from an interdisciplinary perspective. For example, during my training a psychotherapist/music therapist offered training on NMT techniques with Developmental Disorders, and a physical therapist offered a lecture on Gait Assessment/Anatomy and RAS implications within physical therapy. We were also given access to and encouraged to watch pre-recorded lectures given by a professional singer explaining the mechanics of the voice and an audiologist providing additional information about the anatomy/and neurology of auditory perception. As a student, I found the specialized lectures very informative in helping me understand the capabilities of music and my role as a music therapist working within a neurologic framework.

After the 4-day training ends, an exam is made available with various questions about the techniques and other information that was provided during the training. The exam was open for the month following the last day of the training and the PowerPoint lectures were provided to the participants for study purposes. To pass the training one needs to achieve a 70% or higher on the exam, and in the extreme case of not passing, the Academy would then work with you individually to find a solution to help you understand the material and pass the exam. After passing the exam

the Academy sends you a certificate of completion and adds your name to their list of NMT Affiliates found on their website. This list is a wonderful tool for networking and finding job opportunities.

After passing the exam your NMT accreditation is good for the next 5 years. To keep your accreditation current you are expected to accumulate 50 (10 per year) NMT Continuing Education Credits (CEC's). The Academy offers many different virtual opportunities for CEC's in the form of conferences, global support meetings, focused forums (masterclass), and more local/regional support chapters. These CEC opportunities not only keep you current and up to date with the current research informing NMT practice, but they also provide opportunities to network with other professionals from all over the country and even the world, and to receive/give support.

The next step along the NMT journey would be to become an NMT Fellow through the Academy's fellowship training. This of course is optional, but provides affiliates with additional educational, research, and individual training opportunities. The fellowship training is more intensive requiring participants to not only stay current with clinical practices and research findings but also requires participants to submit video examples of NMT techniques that are then evaluated by the Academy, who provides feedback and direction for improvement until the participant passes the advanced course. Becoming an NMT fellow demonstrates your knowledge and provides opportunities for more in-depth instruction, guidance and growth that can't be taught over the course of a 4-day training.

Stage 3: Post NMT Training Practice and Implementation

After I took the training and passed the exam in December, I started my final semester of undergraduate coursework in the music therapy program at Utah State University. The music therapy curriculum provides hands on clinical experience through a series of assigned practicum placements where the student then has opportunities to plan, facilitate, and document music therapy sessions under the supervision of a working music therapist. It is in this practicum setting that I implemented all that I had learned in the NMT training, practicing the models, framework, and techniques within a clinical setting. Throughout this stage I recorded and collected different types of qualitative and quantitative data (as explained in Methods section) that through analysis would determine NMT's applicability within a music therapy education.

Although NMT can be implemented with any population, I was randomly assigned to work at a local nursing home facility, specifically with a group of older adults who had Alzheimer's, dementia, and different psychiatric disorders. I was also randomly assigned another music therapy student to co-facilitate and work with each week. The current music therapist works with this group multiple times every week using music to maintain movement, social skills, and various cognitive processes. Although my supervisor is not currently affiliated with NMT, many years back she had taken the NMT training and still utilizes many of the ideas, techniques, and principles in her work with older adults. My partner and I were assigned to focus our music therapy efforts on providing the group with cognitive and sensory stimulation. Due to the nature of the group, the number of members varied each week from 6-13 individuals, each with varying abilities and needs. To make the practicum setting a little more manageable my supervisor recommended that my partner and I

each select 2 individuals that regularly came to the group to focus our planning and data collection on, while still planning to meet the general needs of each group members.

After meeting the group and selecting 2 individuals to focus on I then administered a standardized assessment outside of the music therapy session to determine the needs of each resident and provide a plan for the subsequent sessions. For my assessment I used two different standardized forms: the Mini-Cognition test which focuses on memory and executive functioning skills, and the Apathy Evaluation Scale, Clinician Version [AES-C] which provides a more holistic view of cognition, behavior, and emotional capabilities. Both assessment tools were recommended during the NMT training and are utilized by various disciplines for determining the severity of Alzheimer's and dementia. I administered the assessments outside of the scheduled time for the music therapy so that I could determine the functional abilities and needs of the residents within their daily setting. In evaluating the results of the assessment, I determined that maintaining executive function skills, and attention maintenance/orientation were the main areas of need for my clients.

I then created a treatment plan for the course of the semester where I set goals and objectives for the 2 residents to meet during each session. Sessions were 45 minutes long and were offered once a week with music interventions designed to provide cognitive stimulation for all the group members, but also specifically designed to meet the needs of the two selected residents. For the purposes of my project, data on myself as a music therapist with NMT training was taken for 9 weeks (from January through March) to allow time for data analysis before the end of April. As a music therapy practicum student, my partner and I continued to provide music therapy services to the group through the end of the semester for 4 additional weeks after the conclusion of stage 3 of my research project.

Stage 4: Post implementation Data Analysis

After the completion of stage three, I then started the process of analyzing the data I had been collecting over the last 8 weeks. I started with my journal entries and used a spreadsheet to map out the data week by week (see Appendix B). I then took the key themes from each type of experience (planning, implementing, and documenting) and combined similar themes taking note of the value (positive or negative) as well as the number of times each theme reoccurred (Figures 1.1, 4.1 and 8.1). I scanned for any themes that re-appeared throughout multiple types of experiences to gain a more accumulative perspective on the project, again considering their value and number of total occurrences (Figure 11). To draw more concrete conclusions, I placed each theme (relative to the type of experience) within one of 3 main categories: emotional (how I felt), cognitive (what I thought), and facilitative (what I did) (Figure 1.2, 4.2, 8.2 and 11.2). The placement of the themes within a category was based on the individual context of the themes within their perspective experience. Next, I began to create charts/graphs that illustrated specific data points (both the qualitative themes, and the quantitative data I collected as explained in the "methods" section) across the 8 weeks (Figure 2, 3, 5, 6, 7, 9, 10, 12 and 13). The charts helped me to visualize the change and effect that occurred over the course of the project and draw conclusions regarding the effect and applicability NMT has within the context of an undergraduate music therapy education.

Results

Due to the unique nature of each type of music therapy process, I will discuss each of the 3 types of music therapy experiences separately before talking about any results that relate to multiple types of experiences within the Post-Training Implementation and Facilitation Stage.

Planning:

While engaging in planning processes, the theme that reoccurred the most frequently was an increased awareness of the specific purpose individual musical elements within the session I was planning as shown in Figure 1.1. This theme occurred during 5 separate times planning sessions. This theme was closely followed by being more detailed, prepared, organized, and technical in planning interventions, which re-occurring 4 times.

An example that demonstrates both of these most frequent themes occurred while planning in week 7. I was planning a PSE intervention (see Appendix A for more information on NMT techniques) with the functional movement of moving each arm separately out away from the body and back towards the midline. From the very beginning of my planning process, I was more aware of the musical elements that I would use. I started with determining the rhythm and timing of the movement naturally without music, and then tried to mimic the natural rhythm of effort and release by using a 6/8 meter over a 4/4 meter. The first 3 beats would represent moving the arm out away from the body, and with the last 3 beats representing the return of the arm towards the body. Next, I focused on melodic elements that would help shape the movement as well as prompt the body and mind as it prepares for the stage with the most "work" (being the moment before a change of direction occurs). To shape the movement, I would play an ascending arpeggio to mimic the motion away from the body, and a descending arpeggio to mimic the returning motion while keeping a steady tempo. The arpeggios would be played on the piano with the right hand, while the left hand would play the grounding base notes with preparatory cues by playing a quarter note, followed by an eighth note. The pickup to the major beats would act as an auditory cue preparing the motor neurons for the next motion, making the "work" easier to accomplish. And with that, I had a well thought through PSE intervention planned. This is just one example of how the NMT training helped me to be aware of the purpose of the different musical elements, and of the detail that would go into my planning sessions.

Among the negative themes, the one that reoccurred the most was going about planning "backwards" or being unable to focus on the goals and objectives while planning. The most prominent example of this was during the first planning session, where I was still trying to figure out how to plan with NMT, my new practicum partner, and a new practicum setting. While planning this session I recorded feeling as though I "kept falling back into the same old way that I've always planned sessions" meaning I wanted to focus on the goals and objectives but kept adjusting the goals and objective to fit within an intervention that we wanted to do. In that moment I felt as though I didn't even use any NMT knowledge, and that the whole planning process was just backwards from what it should have been. Before drawing any conclusions associating this inability to focus on the goals and objectives as an equal factor to the two positive themes in planning, it is important to consider that this theme only occurred during 3 different planning sessions which equals the frequency of 2 additional positive themes: a feeling of confidence, and

instances of inspiration regarding what the intervention needed to be for the residents. When compared to the higher frequencies of the positive themes, its importance as a defining characteristic of planning is reduced.

Figure 1.1

Planning Themes	#	**Value**
Frustrated/waist of effort	2	n
Inexperienced/lacking knowledge	2	n
Backwards (not focused on goals)	3	n
Stuck in old habits		n
Unable to communicate ideas		n
Lack of creativity		n
Lost/no vision		n
Intervention Inspiration	3	p
Goal/objective focus	2	p
Excited		p
Detailed/prepared/organized/technical	4	p
Satisfied		p
Creative		p
Confident	3	p
Easier/smooth	2	p
Aware of musical elements	5	p
Captivated	2	p
Knowledgeable		p

Figure 1.2

Breakdown of individual themes into 3 categories

Facilitative:
11 out of 15 (73%) positive responses

(-) **Backwards (not focused on goals)**
(-) Unable to communicate ideas
(+) Goal/objective focus
(+) **Detailed/prepared/organized/technical**
(+) **Aware of musical elements**

Cognitive:
5 out of 9 (55%) positive responses

(-) Inexperienced/lacking knowledge
(-) Stuck in old habits
(-) Lack of creativity
(+) Intervention Inspiration
(+) Easier/smooth

Emotional:
9 out of 12 (75%) positive responses

(-) Frustrated/waist of effort
(-) Lost/no vision
(+) Excited
(+) Satisfied
(+) Creative
(+) Confident
(+) Captivated
(+) Knowledgeable

Figure 1.1 shows the frequency and value of the different themes that presented themselves during planning experiences. The highlighted themes are those that have higher frequencies when compared to the other themes with the same value.

Figure 1.2 shows the categorization of each individual theme that was presented during planning experiences, as well as the number of positive responses to the total number of responses within each category. The quality of each theme is indicated by a (- or +) and the bolded themes are those with the higher frequencies for each of the values.

In addition to looking at the frequency of each theme, more conclusions can be drawn when the themes are separated into 3 different categories as shown in Figure 1.2. Here my attention is drawn towards not only the number of different themes (both positive and negative), but more importantly the total number of instances a theme occurred within each category. The facilitative (or "what I did") category catches my attention as the most significant when compared to the other

2 categories. First, I notice that all of the most frequent themes for a planning experience were physical things that I did, thus falling under the facilitative category. Despite only having 5 unique themes, the total number of times a facilitative theme occurred was 15. This is the highest number of individual experiences out of all 3 categories (Cognitive being 9, and emotional being 12). These total numbers can then be further examined through a percentage of positive themes to negative themes. Despite having the largest number of experiences being facilitative, the percentage of positive themes is slightly greater in the emotion category (75%) with the lowest being the cognitive category (55%). Although there are many different factors playing into how I perceived certain attributes about myself, this data suggests that over the course of implementing NMT into my process of planning I was left with more positive experiences both in how I felt, and in what I did.

An additional way to examine the individual themes in Figure 1.1 is to view the themes in the context they were presented, that is week by week. Due to the qualitative nature of the themes resulting in a different number of themes each week, I calculated the percentages of positive themes within each week for comparison as shown in Figure 2. Once again, there are many outside and uncontrollable factors that influence the presented themes, but as I implemented NMT into my planning process over the course of 9 weeks there is a clear difference between the baseline (week 0) to the final week. Depending on the week the percentage of positive themes goes up and down, but you can clearly see the trend line move from 45% (roughly) to 100% showing that as I became more familiar with implementing NMT into my planning process I had a more positive experience planning for music therapy sessions.

Figure 2

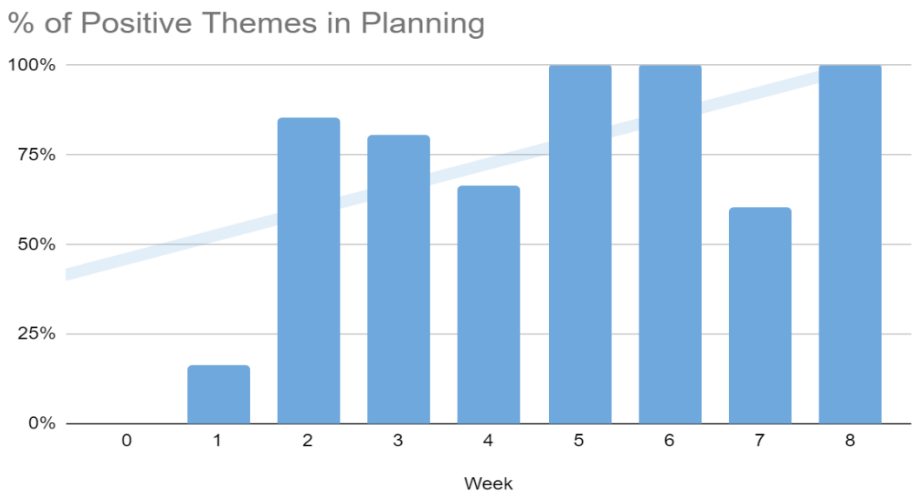

Figure 2 shows the total percentage of positive theme responses presented each week during planning experiences. The light line represents the trend of the data across 8 weeks.

In addition to the themes derived from the qualitative journal entries, I also recorded at the conclusion of each planning experience the amount of NMT knowledge I utilized in that individual session plan. This was a reflective process where I would consider the specific processes that lead me to certain interventions and ideas, analyzing the applicability of NMT training when it comes to planning music therapy sessions. Or in other words, I evaluated my process of planning and

noticed if I had used topics that were emphasized and taught during the NMT training, and if so what percentage of my planning process could be tied back to the training.

Figure 3 plots the percentage of NMT education that was used for each planning process. In examining the graph, three different inferences and conclusions could be made considering different outside factors. First, you could determine from the trend line that as time went on (and as it continues to move forward) session planning processes will continue to utilize an increasing amount of NMT ideas. Second, you could determine that the baseline (which plan only contained only 10% NMT knowledge) sits as an outlier within the other data points (which all contain more than 75%). An inference could then be made that with this being the first time at this clinical site, with this supervisor, and student partner, I as the music therapy student just needed a little extra time to adjust to the setting and figure out the best process of planning for the situation. And in excluding the outlier from the trend line, determine that as time goes forward, the amount of NMT knowledge would continue to range from 75% to 100% indefinitely. And lastly, you could determine an option that is a combination of the first and second option, recognizing the baseline as an outlier. You could then infer that as a music therapy student who was new to NMT, I just needed a few weeks to learn and adjust to using NMT within a music therapy setting. Then determine that as time goes forward the percentage of NMT utilized during the planning process would continue to increase as I gain more experience and understanding of how NMT could be used when planning music therapy sessions.

Figure 3

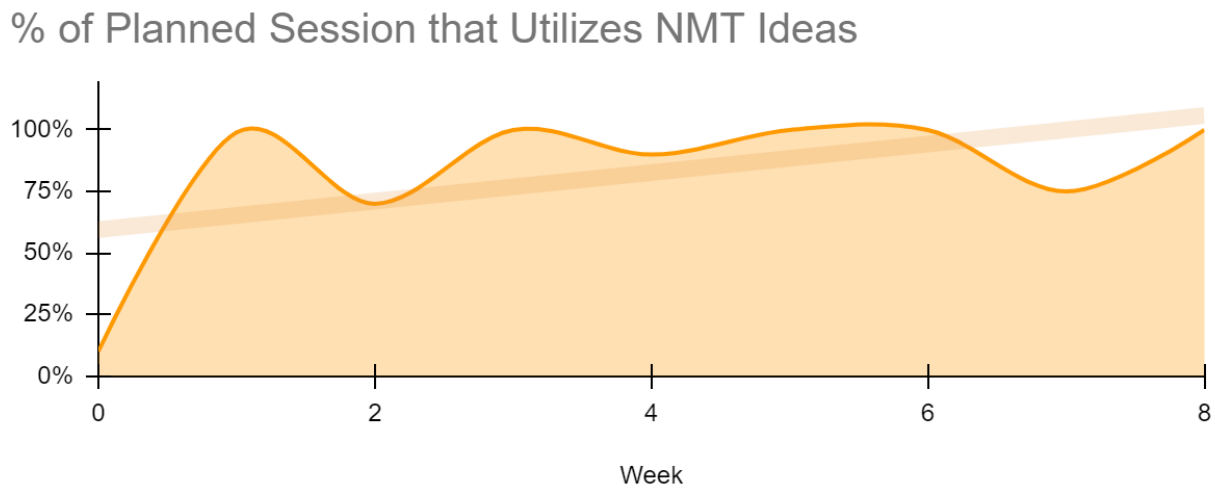

Figure 3 shows the total percentage of each planned session that utilized NMT Ideas. Percentage was calculated after the experience and included any interventions that included NMT techniques, the utilization of the TDM, and any other NMT processes, ideas, or any other instances that could be tied back as things discussed in the NMT training.

Implementation:

Planning and preparing for a music therapy session is next followed chronologically by implementing and facilitating the planned session in real time. Because facilitating involves working directly with clients who have their own experiences and agendas, a successful session

involves being able to adjust, scrap, and reinvent your plan to meet the daily needs presented by the clients in the moment. From my own experience participating in previous practicum placements, a feeling of uncertainty often accompanies facilitation of a session due to the vast possibility of things that you can't control or plan for. This setting and feeling of uncertainty may offer an explanation as to why there is a larger number of unique themes in implementation compared to planning processes.

Of these themes presented in Figure 4.1 the theme that reoccurred the most was being able to appropriately assess the needs of the residents, which reappeared 5 separate times. This is positive theme reflects my ability as a music therapist to work within an unpredictable setting while facilitating interventions that address the individual needs of my clients is an important skill for all music therapists and was able to be tied that back to my training in NMT.

A good example of this theme can be found in week 8, as I facilitated the session. As I started to explain the instructions and directions for the intervention, I noticed that some of the clients were struggling with the task. For a split second this caused me to panic, but I was then able to instinctively slow down the intervention and musical processes, spending more time assisting each of the group members with the instructions. I was more aware of the present moment and of certain elements (musical, situational, and neurological) that made the task more difficult for the residents to accomplish. This resulted in more engagement from the group as each of their individual needs were met, and I as the facilitator felt like I was able to engage well with the clients despite being tied to the piano. This allowed me to use both the music and different kinds of cues to assist the residents in the task.

In addition to being able to appropriately assess the needs of my clients, other high frequency themes that were mentioned 3 times over the course of implementing sessions included positive themes such as feeling successful, being aware of musical elements, having a high engagement response from the residents, feeling flexible as the music therapy student, as well as the negative theme of feeling unprepared and scattered during the session.

Figure 4.2 provides some interesting information as each theme is categorized and the percentage of positive responses are calculated. Once again, similar to planning experiences the theme with the highest frequency is in the facilitative category. In considering all the thematic facilitative occurrences 94% of them were positive, suggesting that within implementation the greatest effect NMT had is found in the developed skills directing me as I react moment to moment with my clients. When looking at the other two categories, cognitive and emotional, the percentage of positive themes is significantly lower hovering just above and below 50% (cognitive-42%, emotional-52%). These lower percentages suggest higher quantities of negative themes within those categories. Within the unique context of implementing, it is an interesting discussion as to how a higher percentage of negative feelings and thoughts could result in more positive actions. A possible conclusion could be inferred that within the unpredictability of the session, my thoughts and emotions were trying to process everything that was happening feeling scattered and unprepared, or lost and inexperienced. But despite these feelings my intuition would take over in the moment, and I naturally and appropriately responded to the session as a result of an accumulation of music therapy experiences and my own training within NMT.

Figure 4.1

Implementation Themes	#	Value
Frustrated/waist of effort		n
Alone		n
Overwhelmed		n
Unable to follow/understand/lost	2	n
unprepared/scattered	3	n
emotionally unavailable	2	n
Responsible for lack of success		n
Inexperienced/lacking knowledge		n
unable to give clear instructions		n
Successful	3	p
In Control	2	p
Comfortable		p
Confident	2	p
Aware of musical elements	3	p
Enjoyable		p
Natural	2	p
appropriate assessment of needs	5	p
High engagement	3	p
Flexible	3	p
Seeking more understanding/epiphany	2	p
Detailed/prepared/organized/technical		p
Therapeutic awareness		p

Figure 4.2

Breakdown of individual themes into 3 categories
*(quality) **Bold=high frequency**

Facilitation:
17 out of 18 (94%) positive responses

(-) Unable to give clear instructions
(+) **Appropriate assessment of needs**
(+) **High Engagement**
(+) In control
(+) **Flexible**
(+) Detailed/prepared/organized/technical
(+) **Aware of musical elements**

Cognitive
3 out of 7 (42%) positive responses

(-) Unable to follow/understand/lost
(-) Responsible for lack of success
(-) Inexperienced/lacking knowledge
(+) Seeking more understanding/epiphany
(+) Therapeutic awareness

Emotional
9 out of 17 (52%) positive responses

(-) **Unprepared/scattered**
(-) Frustrated/waist of effort
(-) Alone
(-) Overwhelmed
(-) Emotionally unavailable
(+) **Successful**
(+) Comfortable
(+) Confident
(+) Enjoyable
(+) Natural

Figure 4.1 shows the frequency and value of the different themes that presented themselves during implementation experiences. The highlighted themes are those that have higher frequencies when compared to the other themes with the same value.

Figure 4.2 shows the categorization of each individual theme that was presented during implementation experiences, as well as the number of positive responses to the total number of responses within each category. The quality of each theme is indicated by a (- or +) and the bolded themes are those with the higher frequencies for each of the values.

The rate of positive responses week by week is represented in Figure 5. There is a wide range of percentages from 0% all the way to 100%. The base line starts with 0% but then jumps up to 100% for the next 3 weeks before diving back down to 0% at week 4 and gradually climbing

back to 100%. Similar to our discussion regarding the % of NMT ideas utilized in planning, weeks 1-3 seem as though they could be outliers within the rest of the data. In context of starting a new practicum assignment the high percentages could be a result of directly comparing of my experience of feeling lost and confused during my baseline observation. Considerably any session compared to that baseline would seem 100% more positive and successful. But gradually as I acclimated to the clinical setting, my standards of success increased as I realized that there was still so much more that I needed to accomplish and that I seemed incompetent at performing. This shift in attitude and definition of success could more accurately explain returning to 0% in week 4, and the gradual progression of skills, abilities, and positive themes in the subsequent weeks.

Figure 5

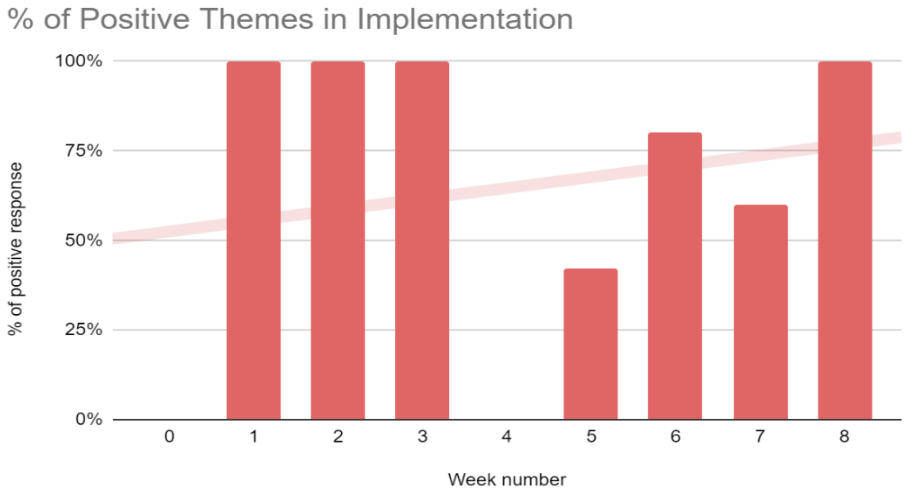

Figure 5 shows the total percentage of positive theme responses presented each week during planning experiences. The light line represents the trend of the data across 8 weeks.

In addition to tracking my qualitative response to an experience implementing NMT into a live session I also tracked various facilitation skills shown in Figure 6. Using a scale of 1-10 I determined how well I as the music therapist was able to assess client's needs and how well the musical interventions were received by the clients including their response, engagement, and the ability of the music to address their needs. The yellow trend line representing my ability to assess needs is more gradual (less steep) than the green trend line representing the impact of the interventions. This difference may have been influenced by the variability of group members week to week ranging from 6 to 13 individuals. Where I was constantly required to meet and get to know new group members, the number of residents that I was able to build rapport with and truly understand their needs was minimal. Considering this information makes the fact that there is even any progression in my ability to assess the needs of the residents more significant. It suggests that as time went on my ability to infer and understand the needs of the residents required less and less time getting to know the residents before I was able to appropriately assess their needs, directly reflecting on topics that were emphasized during the NMT training.

The last point of data that is shown in figure 6 is a record of whether I used NMT techniques/ideas/training to creatively alter my session plan to meet the assessed needs of the residents. This point of data is shown in purple as either 0 (no creative processes) or 10 (at least

one creative adaptation). Over the course of 9 weeks of data (including week 0) 6 of them included flexibility on my part as a music therapist where I creatively adjusted my plan in some way to meet the needs of the clients. These experiences range from small changes in my accompaniment pattern, to altering the questions asked, and overall, just engaging with the residents in ways I hadn't anticipated. The most dramatic example occurred in week 7 where directly in the moment I changed my session plan, utilizing NMT ideas on the spot to address the needs of the residents.

Figure 6

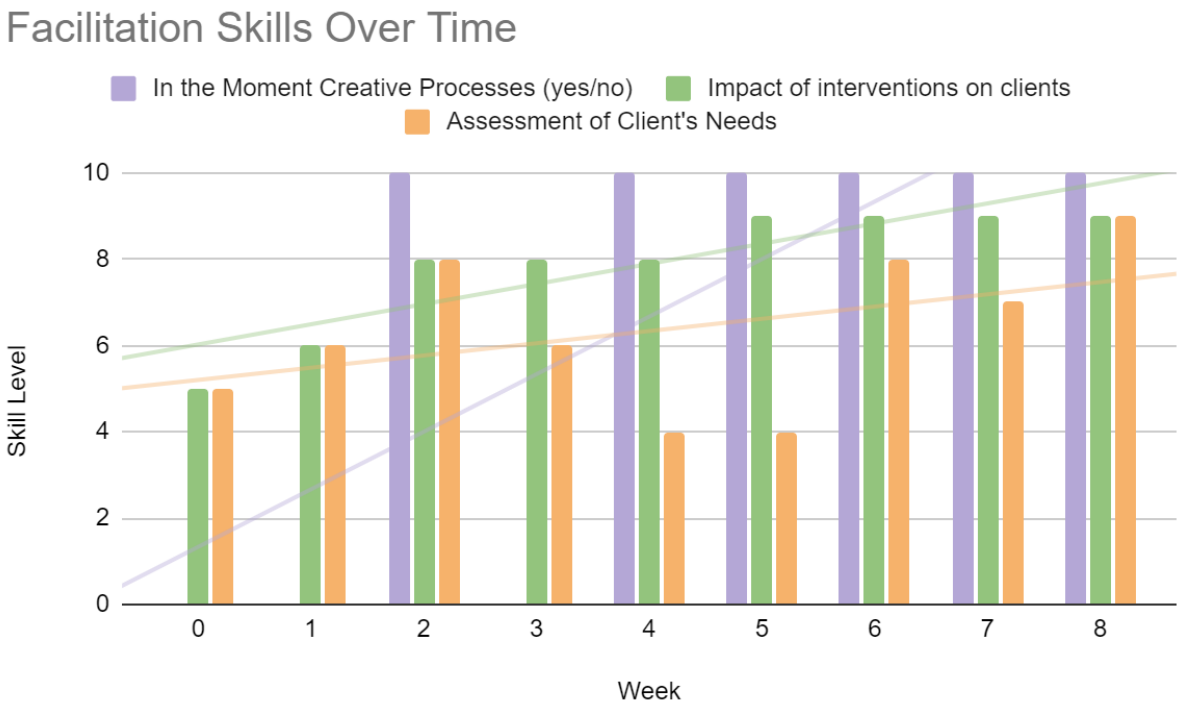

Figure 6 shows the development of different facilitation skills over time. The impact of interventions on clients and assessment of clients' needs are represented on scale from 1-10. In the moment creative processes are presented as either not occurring (0) or occurring (10)

The session for week 7 was planned last minute (the day before) after receiving some feedback from my supervisor asking for some St. Patrick's Day themes. Where the theme was requested with such determination, the planning session ended up being "backwards" where I kept trying to fit the goals and objectives into a St. Patrick's Day intervention. I finally settled on an idea that involved an APT intervention (using my violin) which would lead into a MACT intervention on the piano. The intervention began with a discussion about common house items that could be used as instruments, and leaving my plan I turned the discussion into an exploratory experience where I passed out different percussive instruments (blocks, spoons, cymbals, etc.) to each of the clients to make the discussion more engaging. I figured that that they would continue to use the assorted instruments during the MACT intervention on the piano. I then pulled out my violin for the APT portion and played two excerpts requiring them to listen and identify which one sounded more like an Irish Jig. Watching the fascination, response, and engagement that the clients

had when hearing the sound of the violin, my session then took a very different turn from my plan. So much so that my supervisor said that she had to double check my session plan to confirm that she didn't miss anything, and I was indeed "going off script". But in the moment, I adjusted the MACT intervention to include the Irish Jig that was eliciting such a positive response from the group. I very carefully explained to the group that a Jig was a dance, and I encouraged the group to use their instruments to keep the beat during the Jig. Instinctively I used musical cues, emphasizing the beats with my bow, and visual cues through the stomping of my foot dramatically to reinforce beat for the clients as they played their instruments. The intervention was just what the group needed, and the engagement was like nothing I had ever seen in previous sessions.

Very briefly I have one discussion point regarding the implementing of NMT into facilitating a session as shown in Figure 7. Over the course of 8 weeks, I collected data on my confidence levels for each type of experience and Figure 7 compares my perceived confidence before and after facilitating a session with my practicum partner's perceived confidence for the same experience. My practicum partner was a junior in the music therapy program and had one semester of previous music therapy clinical experience. Just looking at the charts you may conclude and assume that as a senior music therapy student, the NMT training left me feeling less confident and capable compared to my practicum partner but it's important to remember that these numbers are based on our own perceptions of how we feel. Where it is very clear that my practicum partner on average felt more confident than I did both before and after facilitating a session, it could be inferred that the additional training and extra year of clinical experience that I had, provided me with a different approach to evaluating myself as a music therapist which appeared to be harsher than my practicum partner.

Figure 7

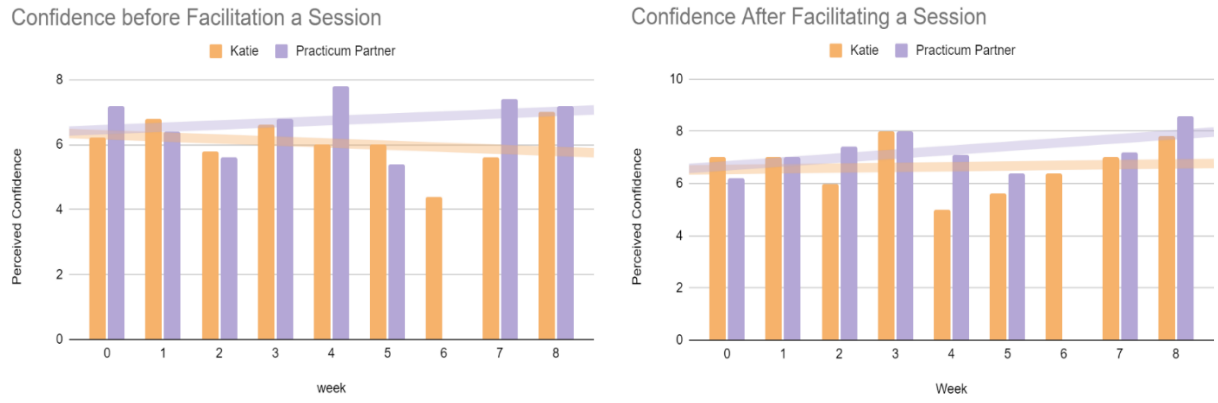

Figure 7 shows confidence levels before and after facilitating a session for the primary investigator (Katie) and her practicum partner. Confidence scores were compiled as an average of 5 individual factors rated on a scale of 1 to 10. Individual factors include perceived competence, preparedness, Energy, Health, anxiety levels. (For a more detailed description of each factor see the methods section)

Documentation:

Directly following the session, I would meet with my supervisor and talk about the session. In this debrief we would talk about things that went well or didn't go well for both the residents and for myself as the facilitator/music therapy student. From this conversation I would then return home and document the session in the form of DEP notes. DEP notes are a type of documentation that includes 3 distinct sections, a description (D) of what occurred during the session, an evaluation (E) of the client's objectives and progress towards their goal(s), and a rough plan (P) or idea as to what would be the next steps for treatment. For research purposes I categorized both the debrief and the process of writing DEP notes as the weekly documentation experience.

Figure 8.1 shows the themes presented during documentation experiences, and Figure 8.2 categorizes those themes into the same 3 categories discussed in the other sections. The number of

Figure 8.1

Documentation Themes	#	Value
Hesitant for feedback	2	n
Anxious		n
Inexperienced/lacking knowledge	2	n
Paranoid		n
Time Consuming/waist of effort		n
Burnout		n
Unable to communicate ideas		n
Enjoyable		p
Natural	2	p
Successful		p
Increased Rapport		p
Knowledgeable		p
Creative		p
Detailed/prepared/organized/technical	5	p
Comfortable		p
Easier/smooth	2	p

Figure 8.2

Breakdown of individual themes into 3 categories
*(quality) **Bold=high frequency**

Facilitative:
5 out of 6 (83%) positive responses

(-) Unable to communicate Ideas
(+) Detailed/prepared/organized/technical

Cognitive
3 out of 6 (50%) positive responses

(-) Inexperienced/lacking knowledge
(-) Time consuming/waste of effort
(+) Increased Rapport
(+) Easier/smooth

Emotional
7 out of 12 (58%) positive responses

(-) Anxious
(-) Burnout
(-) Paranoid
(-) Hesitant for feedback
(+) Enjoyable
(+) Natural
(+) Successful
(+) Knowledgeable
(+) Creative
(+) Comfortable

Figure 8.1 shows the frequency and value of the different themes that presented themselves during debrief and documenting experiences. The highlighted themes are those that have higher frequencies when compared to the other themes with the same value.

Figure 8.2 shows the categorization of each individual theme that was presented during debrief and documenting experiences, as well as the number of positive responses to the total number of responses within each category. The quality of each theme is indicated by a (- or +) and the bolded themes are those with the higher frequencies for each of the values.

themes and their frequency of occurring are smaller than planning and implementation themes with only 1 theme occuring more than 2 times over 8 weeks. This most frequent theme occurred 5 times and included being more detailed, prepared, organized, and technical in my communication. This theme was also a frequent theme within planning, but within documentation it built off of my ability to appropriatly assess the needs of my clients during the session. I found myself evaluating with more precision what occurred during the session, including interpreting neurologic processes, and any additional effect the intervention had on the clients. With no other themes apearing with such high freqency, more attention is drawn towards this theme as an important part of the documentation process.

Looking at the percentages of positive themes to negative themes within each category (figure 8.2) as well as generally over the course of the 8 weeks as shown in figure 9, we see a pretty even mix of both positive and negative themes for the documentation process. In reflecting on my experience communicating with my supervisor, I felt as though there was a communication barrier that may influenced the presentation of different negative themes such as having a hesitation or fear of receiving feedback. These negative themes show their influence mostly in the form of emotions and cognitive thoughts, and allthough I cannot conclude if this communication barrior was a reflection of my ability to communicate effectivly, my supervisors ability to communicate, or a combination of both, it is an important factor to consider when examining the applicability of NMT when it comes to communicating with other clinical professionals. The trend line in Figure 9 shows a slight incline sugesting that as time went on, communication with my supervisor improved, containing a more frequent percentage of positive themes.

Figure 9

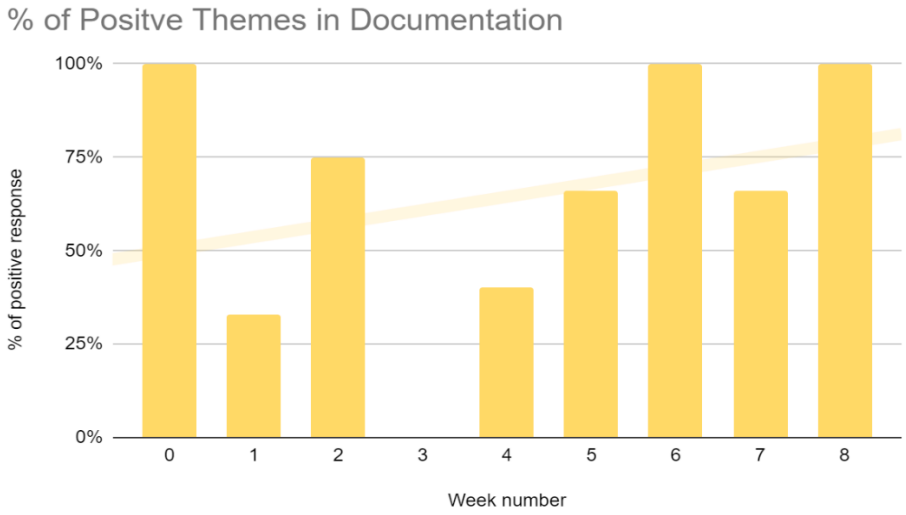

Figure 9 shows the total percentage of positive theme responses presented each week during debrief and documenting experiences. The light line represents the trend of the data across 8 weeks.

To see the effect NMT had within my efforts to document and communicate with others, I tracked the number of times I mentioned NMT ideas during both the debreif and the write up as shown in Figure 10. The total number ranges from week to week, but for most of the weeks (except for week 5) I communicated more NMT ideas in the written report. I suspect that this number is greater due to the fact that I would have 1-2 days to sit and think about what occurred during the

session and apply terminology and ideas from the training into the evaluation and plan section of the report. The gradual decrease of the use of NMT terminolgoy and ideas over time may sugest a couple of things. First, as a new student eager to learn and specify all that was occuring within a session, I may have relied on NMT terminolgy in the beginning as a confidence crutch which then decreased as I found myself more capable of communicating with others. Another explaination could include that as I gained more and more experience with the group, similar results and interactions would re-occur reducing the need to re-expalin similar situations/ that had been discussed in the past weeks.

Figure 10

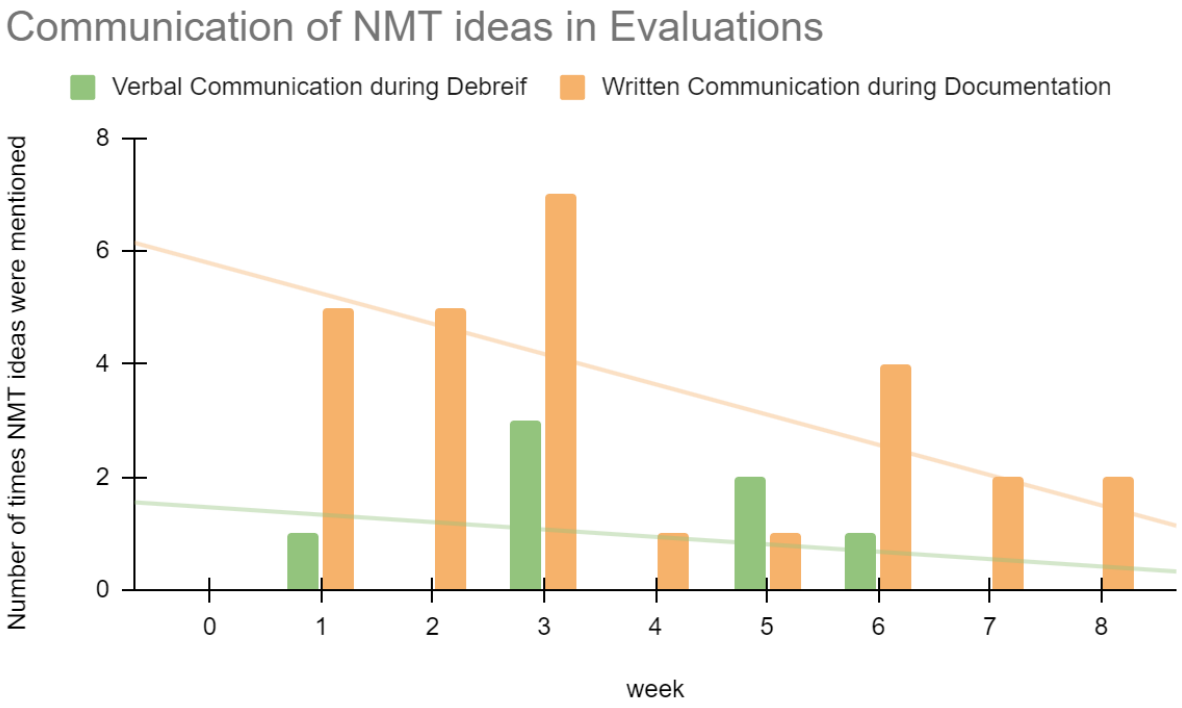

Figure 10 shows the number of times I communicated NMT ideas in both my debrief meeting with my supervisor and during the written documentation of the session.

Accumulative Experiences:

Now that I've talked about the results of the individual portions of my weekly music therapy practice, I will now talk more about the value of NMT for music therapy generally by examining the combination of experiences within the Post Training Implementation stage. Figures 11.1 and 11.2 examine themes that appeared during more than one type of experience, along with the total number of times that theme appeared throughout the 9 weeks. The frequency of the different themes ranges from 2 to 10, and highlights themes that apply in multiple different contexts of the music therapy process.

Figure 11.1

Cross over themes	#	Value
Inexperienced/lacking knowledge	5	n
Unable to follow/understand/lost	3	n
Frustrated/waste of effort	4	n
Unable to communicate ideas	2	n
Successful	4	p
Comfortable	2	p
Confident	5	p
Aware of musical elements	8	p
Enjoyable	2	p
Natural	4	p
Detailed/prepared/organized/technical	10	p
Knowledgeable	2	p
Creative	2	p
Easier/smooth	3	p

Figure 11.2

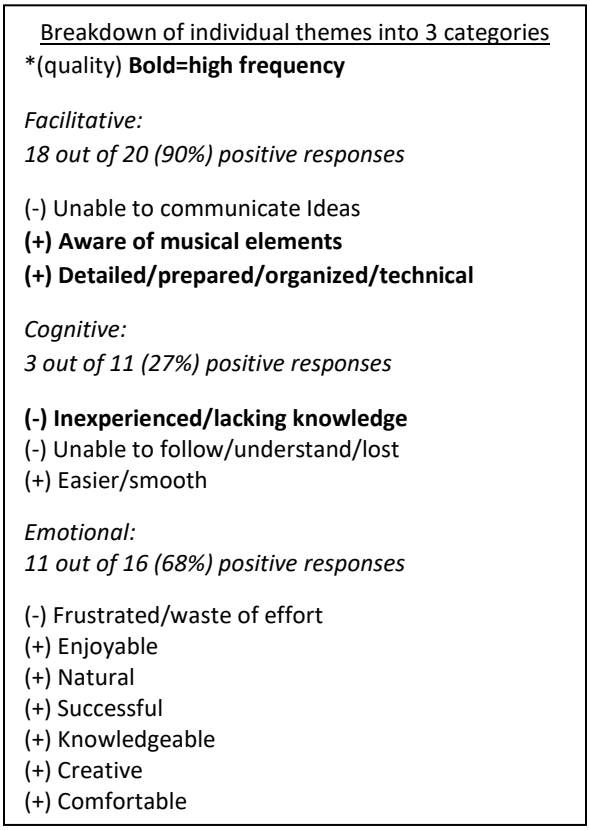

Figure 11.1 shows the frequency and value of the different themes that presented themselves during multiple types of experiences. The highlighted themes are those that have higher frequencies when compared to the other themes with the same value.

Figure 11.2 shows the categorization of each individual theme that was presented during multiple types of experiences, as well as the number of positive responses to the total number of responses within each category. The quality of each theme is indicated by a (- or +) and the bolded themes are those with the higher frequencies for each of the values.

The most frequent theme reoccurring 10 times throughout my music therapy process was being more detailed, prepared, organized, and technical in the music therapy processes I was engaging in. An additional theme that occurred more frequently than the other themes was an increased awareness of the musical elements and the specific role that they were playing within the session. It is interesting to note that both of these themes were also the two most frequent themes when planning. This may suggest that NMT's effect on my planning processes influenced the different areas of my music therapy practice. And it could be concluded that NMT provided me with the necessary skills to plan more effectively, which then helped me to be more prepared to react to the changing session and evaluate what happened.

When compared to other presented themes, these most frequent themes also stand out as techniques and practices that can be directly tied back to the NMT training as topics that were highly discussed. There are many outside factors that may influence my own perception (thoughts

and feelings) regarding the success of a particular experience, but the concrete actions or what I physically did in the moment despite the negative or positive thoughts and emotions I was feeling at the time are more indicative of my training and education as a music therapist/NMT affiliate. Along these same lines, in dividing the themes into 3 distinct categories facilitative not only has the highest percentage of positive themes (90%), but also the greatest number of total responses (20) over the course of 9 weeks. In concluding the value and applicability of NMT for a music therapy student, the quantity of these themes suggests that over the course of implementing NMT into my practicum setting I was more specific in explaining my work and more aware of what was happening in the moment within the various musical elements, and in manipulating them to work for the resident's needs.

When considering the total amount of positive themes appearing within more than one type of experience, we see the same upward trend suggesting that as the weeks went on the number of positive themes each week increased. When comparing Figure 12 with similar figures specific to the 3 individual processes (figures 2, 5, 9) I find it significant that each week had more than 40% positive responses, while the other charts would have some weeks had no positive themes. This suggests that in examining the entire week, an overwhelming number of negative themes presented within one type of music therapy process did not transfer over to the other types of experiences. This is just one other example of being able to recognize negative themes within one experience, readjust my attitude/prepare for the next experience, and perform the next task to the best of my ability each week despite having a negative experience trying to apply NMT into my practicum setting.

Figure 12

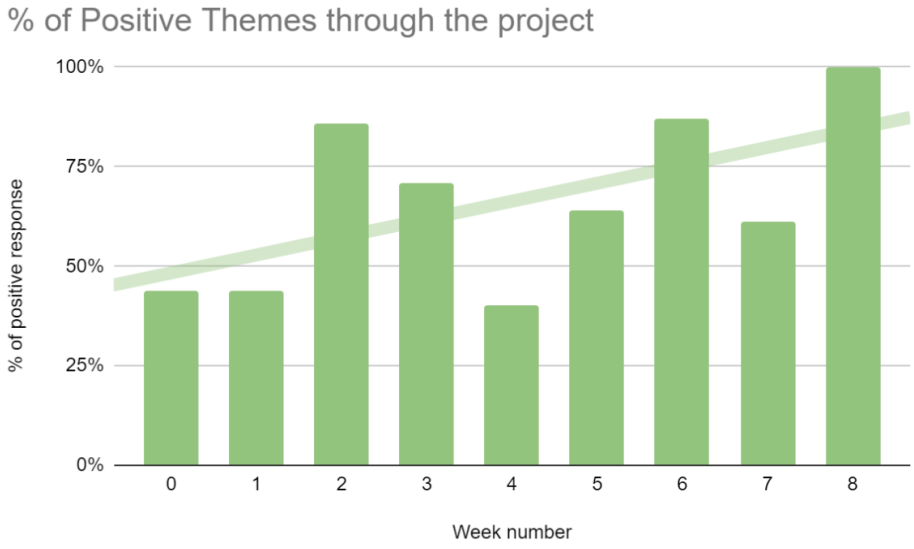

Figure 11 shows the total percentage of positive theme responses that crossed over multiple types of experiences. The light line represents the trend of the data across 8 weeks.

To examine the effect of NMT on my confidence as a music therapy student I tracked 5 different factors that I felt would affect how confident one could feel about a task (see Methods section for more details). I collected this data before and after every time I planned, facilitated, and documented a session, and figure 13 shows the average of the five numbers defined as confidence levels. Each color represents a different type of experience and at first glance the data looks a little

chaotic, but in focusing on the trendline we see gradual changes over time and can determine more general conclusions.

Figure 13

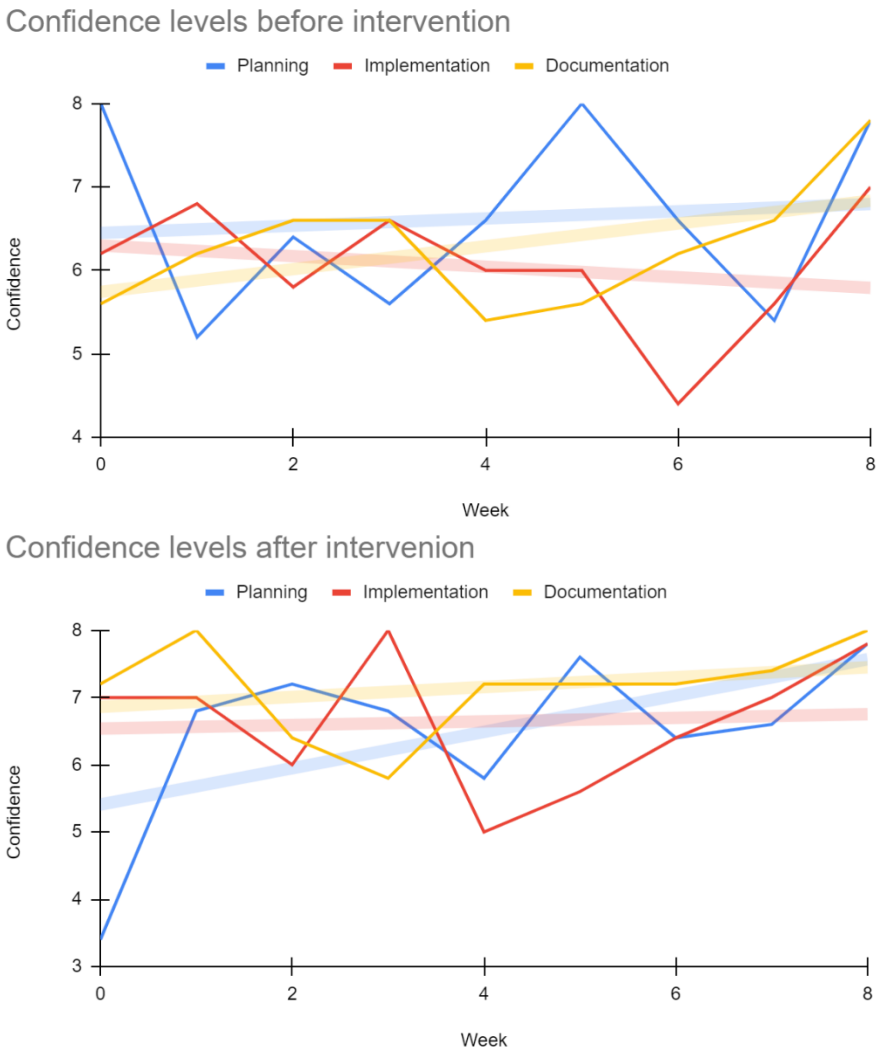

Figure 13 demonstrates confidence levels before and after each type of intervention (planning, implementing, and documenting). Confidence scores were compiled as the average of 5 individual factors rated on a scale of 1 to 10. Individual factors include perceived competence, preparedness, Energy, Health, anxiety levels.

(For a more detailed description of each factor see the methods section)

Planning experiences are depicted in a blue color and the difference between pre and post confidence levels are noticeably different. Over the course of 9 weeks my confidence levels before planning generally had a slight incline, with a much more significant incline after planning. This difference could be attributed to feelings of inadequacy before planning that dissipated as I focused on the needs of the residents. As I was more detailed and thoughtful in using different musical elements to accomplish the goals of my clients, I would see what I accomplished and feel proud of what I accomplished thus resulting in a more significant trend line post planning.

Implementation experiences offer a similar perspective and are represented with a red color. But a difference is found that prior to implementation my confidence levels declined, but also stayed relatively stable post implementation. This could suggest that as the weeks went on prior to the session my confidence declined as I considered last minute feedback from my

supervisor regarding my session plan, and post session I would reflect and realize that I performed appropriately and had the instincts, knowledge and training to facilitate a successful session for the residents resulting in higher confidence levels.

Documentation experiences also share a similar story, with the most significant incline of confidence prior to documenting than the other music therapy processes. This could be connected to the discussion on figure 8 regarding the communication barrier between my supervisor and myself. As time went on and I learned how to adequately communicate with my supervisor it makes sense that my levels of confidence before documentation would increase as I would have less anxiety and fear regarding the task at hand.

Each of the 3 types of experiences shared similar stories and results with the post confidence levels being higher than the pre confidence levels. Once again this is an example suggesting that within these individual music therapy processes my training in NMT and my education as a music therapy student served to assist me in meeting the various needs of each task despite feelings of inadequacy going into each of these experiences. I recognize that my perceived confidence is not directly tied to my NMT training, but where I recorded NMT specific themes and practices that occurred during these experiences it is suggested that the successful implementation of NMT into my practicum setting as a music therapy student had a positive effect on my music therapy approach, and my confidence as a music therapist.

Conclusion

This project started years ago as I was a music therapy student curious about NMT. I went from interviewing other music therapists, to researching and taking the training for a close-up analysis of NMT within a music therapy setting. I understand the limitations of a phenomenological approach as well as the bias and pre-conceptions that accompany my own understanding and analysis of what occurred while implementing and practicing NMT. Future studies should seek to involve a greater number of music therapy students and their experience after taking NMT training. One other limitation to this study was the setting and timing of implementation. My specific setting didn't provide many opportunities for a variety of goals and objectives, which in turn didn't provide opportunities for a very large variety of NMT techniques to practice within the setting. Where I was working with a cognitive/sensory stimulation group, I utilized MACT the most often as well as different versions of MEFT and MSOT3. I noticed that I was using a lot of the same techniques in different forms, so I tried my best to branch out combining techniques such as AMMT, APT, TIMP, and PSE with the other techniques that served to meet the primary goals of the group. But overall, there were limited opportunities to practice everything that I learned in the training. Another limiting factor was that of time. Due to the placement of the training, nature of the semester, and deadlines for presentations that needed to be met, the 9 weeks of implementation felt short and inconclusive.

Overall, I feel as though the purpose of this study was met and that an understanding of the implications of NMT for a student music therapist will continue to be made known as an awareness of NMT grows. From a phenomenological stance, I am satisfied with the training and happy that

I had the opportunity to take it. Going into the training I was under the impression based on my background exposure and research that NMT was only a series of specific techniques that I would add to my repertoire of interventions as a music therapist. But in reality, NMT is a way of thinking about the process of treatment. The ideas and principles taught in the training complement my education as a music therapy student and although there were many principles that overlapped with my education, I found that those principles took on extra credibility as they were emphasized in outside settings. For example, I know I've been taught through my music therapy education that each intervention needs to focus on the goals and objectives for each client. Subconsciously I knew that was important, but hearing that same principle emphasized within a different setting brought more attention to that principle almost as if someone was knocking me on the head saying, "pay attention, this is really important!"

I also felt that within the training there was a huge emphasis on integrating music therapy into the medical world as a discipline of equality and value. I personally find great importance in the inclusion of music therapists as an equal member of a treatment team, and the interdisciplinary perspectives on NMT helped me as a future music therapist recognize how I could become more aware of other disciplines and ways that music therapy could complement and support their work becoming more than just the client's "entertainer".

But on the flip side where I was trying so hard to implement this training within an educational setting not familiar with NMT, as a student I struggled at first trying to fit NMT into my educational requirements. For example, in the middle of week one I was really struggling communicating with my supervisor and attended a music therapy class designed to enhance our clinical field experiences. The topic for this class period focused assessment, and I remember feeling that my assessment process that I did with NMT just was not fitting into the course requirements for the assignment. This left me feeling frustrated and upset with the extra effort and work I put into my assessment that now wasn't going to work for the class. But as time went on, I received feedback from my music therapy instructor who commented on the assignment saying "Wow, this looks amazing", and I realized that NMT did indeed fit within the music therapy scope of practice, despite looking different.

Looking towards my future as a music therapist, I feel as though receiving this training has given me more credibility as a music therapy student. For example, currently I am applying for music therapy internships all over the country and I feel more confident about myself because of this training. From my own perspective I feel as though the NMT credential on my resume helps me stand out from other music therapy students, and also shows that I'm a student who takes initiative in their own education. I have also felt more confident and capable during internship interviews, especially when they ask you that one question about how you would approach a specific client with needs and abilities that you've personally had no direct experience with. This is when it felt good to understand neurologic functions well enough to provide a hypothetical answer using NMT ideas and techniques. Even looking past my internship, I feel well taken care of as an NMT affiliate who is now part of this worldwide family that feels more personal and accessible than the music therapy family. In the one NMT support meeting I attended during week

1, I felt so welcomed into this “family” and with all the resources and job opportunities I have no anxiety about finding employment in the future.

All in all, from my experience I would recommend the NMT training to any music therapy student who has the means. Of course, it is a personal question and I hope that in reading my experience one may gain a greater understanding of what NMT is, and how it could hypothetically fit into their practice as a music therapist. As promised, here are some questions that I found significant as I explored the training and may be useful for those considering the training. Thank you again for your time in reading this, and please don’t hesitate to reach out if you have any questions or comments.

Questions to consider before taking the NMT training

1. Are you interested in co-treatment opportunities or in working as part of an interdisciplinary team?
2. Are you interested in a behavioral and humanistic approach to music therapy?
3. Do you enjoy understanding the mechanisms of why things work or don’t work?
4. Do you enjoy being creative?
5. Do you have the time and resources to take the training?
6. Do you feel like you understand the music therapy process?
7. Are you interested in a worldwide but more personal professional family?
8. Are you planning on working with neurodivergent populations?

Reflective Writing

I joined the honors program as a transfer student just before my junior year of college. My husband had suggested it, mentioning that it would look good on a resume and would provide me with opportunities to engage myself more deeply into my field of study. Prior to joining the honors program, I was very much a background student who was interested in the topics of my various classes, but not enough to go beyond what was required in my classes and involve myself in extracurricular educational activities. Joining the honors program was a lot more work than I had anticipated but I wouldn't trade my experiences for anything. Every part of the honors program gave me opportunities to be more engaged and create for myself a meaningful and memorable experience here at Utah State. When it came time to complete my capstone project my senior year, everything that I had come to understand about the honors program tripled in intensity. The amount of work and effort again was nothing like what I was expecting. But where it was an extracurricular activity that was mine to determine, lead and perform, I had a feeling of pride and accomplishment that motivated me to give my best regarding my project. I've learned so many things about myself as a student and professional and feel much more prepared by my educational experiences to graduate and move into the field of music therapy.

The process of completing my capstone, outside of the amount of work that I wasn't expecting felt intuitive and natural. As I already explained during my project report, coming up with a topic for my capstone was easy, and my mentor was so helpful in helping me design a research project that met the needs of my question. Reading through the requirements for the honors capstone overwhelmed me at the start of the semester, but I found comfort in my work plan. I knew that if I stuck to the schedule that I had created, I would be able to accomplish everything by the end of the semester. I didn't realize how detail oriented I was as a person until I saw it written how specific my work plan was, including everything that I wanted to accomplish over the course of the semester. I even had a list of topics for each meeting that I had with my mentor.

Where I was very much a background student before joining the honors program, I was nervous about having to work with a mentor for my project. I didn't want to impose on my professors, and in my mind "annoy" them with things that I felt I should be competent enough to handle by myself. But I learned very quickly that my mentor cared about me, and I was touched by the amount of support they provided. As the project carried on, my mentor taught me a lot about flexibility and adaptations, helping me to not be too hard on myself when I failed to meet my own expectations. She was there as a guide as well as someone to just talk through issues that I was having. As a student I feel so much closer to my mentor and have gained a lot of confidence in myself to speak up and converse with other professors in a respectful manner. Because of my project I've created relationships with my professors and had experiences that are defining characteristics of my undergraduate experience.

Outside of feeling more confident around my mentor, I also felt so much more capable of myself as a music therapy student within my practicum assignment out in the community. This confidence may be a combination of the topic of my capstone, as well as the act of accomplishing something greater than I've ever accomplished before. But in practicing music therapy with actual

clients under the direct supervision of a music therapist, I felt more equal to my supervisor than I had in the past, having the experiences and educational/training background to be able to have more professional conversations about the work that I was doing.

As the project came to a close, I thoroughly enjoyed examining the data and results of my project and sharing that with others. I put so much intentional work into my paper, hoping that it would provide relatable experiences to other music therapists. As I presented my work at multiple different conferences and venues, I was proud to advocate for music therapy as a field and to share my study with my intended audience (other music therapy students). Despite feeling overwhelmed when thinking about the word limit for the final product, I found that I had more than enough to say and share. I put a lot of effort into my written report and hope that it will continue to inspire other music therapy students for many years to come.

Even though I am still not sure of what I will be doing in the future after my internship, this project has opened a lot of doors where I feel like I could be happy and successful with many different things. I've never really considered myself as a researcher, or a graduate student, or even a professor, but as I have spent a lot of time reflecting on this experience and the impact that it's had on me, I've decided research, and teaching others is something that I enjoy doing. I also feel that additional educational experiences through extra trainings or even graduate programs would be something that I would really enjoy in the future. I've learned that I don't need to plan out my whole life, but that I am also the master of my own fate. If there is something that I want to do, I am more than capable of achieving anything that I set my mind to. This project has taught me to not back down from challenges, but to embrace them with courage and determination. This project has lived within an organized binder that I will proudly display on my bookshelf will be a reminder that not only can I do hard things, but more importantly that I enjoy and find pride in doing hard things.

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APPENDIX A: NMT Techniques

Over the years neurologic research has informed and provided evidence for the foundation for the creation of 20 music-based interventions that serve specific functions in the brain utilized and taught by the NMT Academy. These 20 interventions can be divided into 3 different domains including speech/language, cognition, and sensory motor. There is so much to know, understand and experience about each of these techniques, and I strongly encourage that if you find yourself interested in learning more about NMT and the clinical protocols and current research informing each technique, to turn towards the *Handbook of Neurologic Music Therapy (*Thaut & Hoemberg, 2014) and to consider taking the training for yourself. My purpose here is to help you develop a general introductory understanding of NMT by providing a short summary of each technique (as they are explained in the *Handbook*) that includes a definition/goal, the target population/clientele criteria, and the underlying therapeutic mechanisms as to the "why" of each technique. For quick reference, I will bold each technique followed by the chapter in the *Handbook* where the information was drawn from in parenthesis. Once again if you are a visual person as I am, I will provide a table containing the techniques within their categories at the start of each domain.

Domain: Speech/Language

Aphasia	*Motor Control*	*Voice Quality*	*Speech/Comm.*
MIT	RSC	VIT	DSLM
MUSTIM	OMREX	TS	SYCOM

Eight of the 20 NMT techniques fall under the Speech/Language domain, with 4 subcategories including aphasia, motor control, voice quality, and speech/communication training. The exact part of the brain that processes language varies from individual to individual, but 97% of people use the left side of their brain when processing, formulating, and producing language (Mandal, 2019). When using music to access the language regions of the brain, it is important to remember basic principles of language used by speech therapists in a variety of different forms which can then be translated into musical interventions. Some principles include learning in a gradual progression of length and difficulty, and lots of repetition with high frequency of practice/sessions (Coreen, 2019).

The first subcategory, aphasia, is a neurologic disorder that affects an individual's cognitive ability to understand language and express what they want to say. It comes in different forms affecting different areas of the brain which can result in a large variety of symptoms and language abilities. The two most common types of aphasia are Broca's aphasia and Wernicke's Aphasia. Broca's aphasia is distinguished with good language comprehension skills, but the inability to formulate what they want to say, spouting random jargon each time they try to speak. Wernicke's aphasia affects the individual's ability to both understand words and communicate. There are two techniques that address different aspects of aphasia, Melodic Intonation Therapy, and Musical Speech Stimulation.

Melodic Intonation Therapy (MIT)© (Chapter 11) takes functional phrases and uses melody and rhythm to exaggerate and reflect normal speech inflection patterns. In doing so, individuals who can understand and comprehend language (Broca's aphasia) are able to intone phrases that they can later recall and utilize in their different activities of daily life. **Musical Speech Stimulation (MUSTIM)©** (Chapter 12) is an approach for those who may not have the language comprehension abilities to engage with MIT. MUSTIM uses well known music and familiar melodic phrases with a clear structure as a musical cue for the client to "fill in the blank". For example, in singing a well-known nursery song the clinician would pause, singing only "Twinkle twinkle little _____". The overused song activates the brain to fill in the missing word automatically, even for those with little to no language abilities. Both MIT and MUSTIM utilize the same therapeutic mechanisms. By using different musical elements including rhythm, you are re-routing the neural pathways for speech and language from the damaged left hemisphere to the healthy right hemisphere.

Where aphasia is more focused on the cognitive ability to understand and express language, there are other disorders that limit an individual's ability to control the muscles that are required for speech. That's where the second subcategory, motor control, comes in with two more techniques: Rhythmic Speech Cuing, and Oral Motor and Respiratory Exercises.

Rhythmic Speech Cuing (RSC)© (Chapter 13) uses rhythm to help an individual control their rate of speech, intelligibility and facilitate the rhythmic sequencing of motor movement when speaking. RSC is a useful technique for those with fluency disorders (stuttering, or speaking too fast), dysarthria (slow or weak uncoordinated muscles for articulation) and apraxia (the inability to plan motor movements for words). This technique proves effective as the rhythm acts as an anchor for the speech, not giving way to speeding up or slowing down. The steady rhythmic stimulus entrains the motor neurons facilitating a more effective approach to motor planning. **Oral Motor and Respiratory Exercises (OMREX)©** (Chapter 14) uses singing and different wind instruments to strengthen weak articulatory muscles and improve respiratory strength. This technique is useful for treating any variety of disorders that affect speech motor control, respiratory function, and/or developmental speech disorders. The use of music in this way helps patients experience fundamental language characteristics through the creation of music. OMREX provides opportunities for the patient to learn how to shape the mouth to create different vocal sounds-strengthening those muscles and sustaining enough breath to support speech production through instrumental playing.

The third subcategory, voice quality includes Vocal Intonation Therapy and Therapeutic Singing. These techniques can be paired nicely with the other techniques, where once an individual is able to master their speech control and articulatory mechanisms these next techniques help to improve the quality of their vocal output. As singing heightens the elements of speech, these techniques expose and can be directed at specific aspects of vocal control, stimulating and strengthening muscles.

Vocal Intonation Therapy (VIT)© (Chapter 15) at a quick glance may look and feel like vocal warmups before voice lessons, or choir rehearsal. These vocal exercises are used to train different aspects of voice control such as inflection, pitch, breath control, timbre, loudness,

phonation, resonance, and intonation. VIT is beneficial for anyone with different voice disorders, or in other words those with an abnormal voice (relative to the culture) that interferes with their daily needs. **Therapeutic Singing (TS)©** (Chapter 16) on the other hand is a technique that serves a broad spectrum of individuals with varied needs through a more generalized use of singing where all the different aspects of speech are brought together.

The final subcategory, speech/communication training focuses on the development of language for those those with no language skills. This subcategory contains the last two speech/language techniques: Developmental Speech and Language Training Through Music and Symbolic Communication Training Through Music.

Developmental Speech and Language Training Through Music (DSLM)© (Chapter 17) is a technique designed for children or adults with developmental and speech delays, where music is used to enhance and facilitate speech development. DSLM maintains a balance between novelty and support by utilizing client preferred music while still being goal oriented. The rhythm can be used to prompt speech response, and the musical structure provides an opportunity for repetition. **Symbolic Communication Training Through Music (SYCOM)©** (Chapter 18) is useful for those with a complete loss of expressive language as a result of dysfunctional or absent language development. In this technique music is used to build and enhance understanding of the rules, function, and meaning of language interaction. Interactive music making incorporates different language pragmatics such as turn taking/gesturing, listening, dialoguing, and asking questions/creating answers. Music improvisation creates opportunities for the client to directly practice the rules of communication.

Domain: Cognitive

Attention/Perception	*Memory*	*Executive Functioning*	*Psychosocial*
MSOT	MEM	MEFT	MPC
MACT	MMT		
APT	AMMT		
MNT			

The cognitive domain is the most recent domain that has been established within NMT and contains 9 of the 20 techniques. Similar to the speech/language domain there are 4 different areas that the techniques focus on, including attention/perception, memory, executive functioning, and psychosocial. The cognitive domain differs from the speech/language domain with a wide, general range of clinical populations appropriate for each technique, rather than the speech/language techniques designed to serve a need for a specific population. Of course, these cognitive techniques are very applicable to some populations more than others and may be useful when working with the following populations: Dementia/Alzheimer's, neuro-trauma, developmental disorders, autism, ADHD, CVA, TBI psychiatric disorders, multiple sclerosis, neglect, and different emergence states. Although research shows the cognitive techniques effectiveness with these populations remember that the goals and design of the techniques are more general and can serve anyone with the presenting needs.

The first area, attention/perception includes 4 different techniques, addressing different aspects of attention. Attention is defined as the "ability to select/focus, concentrate, and shift focus on a task" (Thaut, 2013), and perception is one's ability to bring awareness through the senses. These techniques address 5 different types of attention. Sustained attention is one's ability to concentrate on a task, and is the baseline for all other types of attention. Selective attention is being able to select and respond to a specific target/stimulus. Alternating attention includes being able to switch attention towards different stimuli, and divided attention is a rapid form of alternating between 2 stimuli at once. Focused attention is the ability to tun out unwanted stimuli and continue sustaining attention towards the task at hand. Each of these types of attention have real life applications, and music in different forms can address and enhance attention and perception.

The first technique, **Musical Sensory Orientation Training (MSOT)©** (Chapter 19) is the use of music to stimulate arousal, meaningful responsiveness and orientation to time, place, and person. It is divided into 3 different levels, where music is first used to stimulate senses; second, to arouse and orient; and third to practice vigilance and attention maintenance. MSOT works by stimulating the auditory signals that then activate the motor skills and memory functions and is really useful for individuals who have a difficult time with arousal and orientation. After an individual is aroused, oriented and able to sustain their attention, the second technique, **Musical Attention Control Training (MACT)©** (Chapter 21), helps enhance an individual's ability to control their attention. This technique emphasizes the quality of the individual's efforts to maintain attention, where MSOT looks more for the quantity of attention efforts. Defined, MACT is a structured musical exercise that provides practice opportunities for sustained, selective, alternating, divided, and focused attention. Music can offer many different levels of stimuli (rhythm, melody, timing, organization) and offers an emotional element that promotes motivation. An effective therapist can manipulate these in a way to help improve attention functioning with a variety of populations.

Next, **Auditory Perception Training (APT)©** (Chapter 20) brings an individual's attention towards their senses (specifically hearing) and their perception of sound through discriminating and identifying different components of music. This includes how loud or soft something is, the tempo or pace of an auditory stimulus, as well as the duration, pitch, quality, and rhythm of an auditory stimulus. Music exercises can be created in a way that aids identification and discrimination by creating different pairs for comparison and allows the client to see and discriminate cause and effect relationships (ie. playing an instrument and producing sound). And lastly for attention/perception, **Musical Neglect Training (MNT)©** (Chapter 22) is slightly more specific by addressing the needs of individuals with visual neglect, but the principals can be applied to all types of neglect, and inattentiveness. This technique uses music to help direct the individual's attention to an unattended/neglected visual field and stimulates hemispheric brain arousal. MNT works because music provides strong tangible cues that are linked with specific tasks that can be arranged in a manner that brings the attention towards the neglected side, building new connections and strengthening damaged connections in the brain.

The second area of the cognitive domain is memory which can be found in all shapes and forms. The 3 NMT techniques in this area focus on declarative memory, which is your episodic

memory that acts like a library of experiences, rather than procedural memory, which is your intrinsic and automatic memory containing information such as rules and skills. Memory is also stored in different areas of the brain and is thus divided by the varying lengths of the memory. Echoic memory includes immediate recall of up to 2-3 seconds after the event and similar to an echo often disappears from memory unless it is processed and moved towards working memory. Working memory holds information that is relevant for immediate tasks anywhere from a few seconds to multiple minutes, such as remembering a to-do list. Long term memory includes the vast amount of procedural and declarative information that is stored for longer periods, even for an entire life. Each of these 3 techniques focuses on different aspects of memory and can be useful for anyone with the presenting needs.

Musical Echoic Memory Training (MEM)© (Chapter 25) uses musical sound to train an individual's immediate memory recall up to 3 seconds, and may look like singing with random pauses, and then asking the client to recall the last sung word. MEM is effective with individuals presenting any form of auditory memory dysfunction. In MEM the harmony and vibration patterns of music create an environment in which echoic memory functions are registered and organized through auditory stimulation. Next, **Musical Mnemonics Training (MMT)©** (Chapter 24) uses music to encode/decode and recall various information held within the many different types of memory through song (ex. The ABC's). Musical structure should be repetitive and catchy, establishing the information within the memory, while also promoting emotion, confidence and action that help link the new information with familiar things. And lastly, **Associative Mood and Memory Training (AMMT)©** (Chapter 26) is the use of music to induce mood states that facilitate various types of memory recall specific to the needs of the individual. Listening to music with this focus improves a client's ability to retrieve both autobiographical memories such as emotions/specific memories, and factual memories such as the lyrics to a song, or the name of the band.

Musical Executive Functioning Training (MEFT)© (Chapter 23) is the only NMT technique in the executive functioning area of the cognitive domain. It is the use of improvisation or compositional exercises that train different aspects of executive functioning skills such as organization, problem solving, decision making, reasoning, comprehension, and everything else that guides plans/aspirations towards completion. Important executive dialog between the therapist and client is important in providing the organization that keeps the technique from becoming just a 'jam session'. Using music as a means of strengthening executive functioning provides many different dimensions that support rehabilitation of these skills. Music raises an individual's level of activity, provides tangible cues that are linked with specific tasks, recruits shared/parallel brain functions necessary for executive functioning, and it integrates motivation with affective and cognitive processes helping the client to stay on task.

Similarly, **Music Psychosocial Training and Counseling (MPC)©** (Chapter 27) is the only NMT technique in the psychosocial area and is the last of the 9 cognitive techniques. MPC is a general technique that uses any music-based method to help individuals improve their psychosocial functioning through mood vectoring, cognitive reorientation, affect modification, social competence, and behavior modification. Music can have a strong role in psychosocial

training because of its affective qualities that address relevant emotions, and its ability to make cognitive information more accessible through the stimulation of associative memory networks.

Domain: Sensory Motor

PSE	RAS	TIMP

We have now talked about 2 of the 3 NMT domains, covering 17 out of the 20 techniques. This last domain, sensory motor may be smaller in comparison to the others (with only 3 different techniques) but the amount of information and descriptions available for these techniques is equal to that of the other domains. During the NMT training, most of the time was spent on these techniques incorporating different lectures from other disciplines and lots of hands-on learning. I will still only give a brief overview of each technique and would encourage once again that if you are interested in learning more about these techniques, or any of them, to study the *Handbook of Neurologic Music Therapy*, or to consider taking the training for yourself.

Patterned Sensory Enhancement (PSE)© (Chapter 9), is a technique that is useful for individuals working to maintain or develop strength and range of motions to perform certain tasks. PSE uses different musical elements to support the motion of the movement by providing spatial (size, direction), temporal (speed, rhythm), and force (where the work is) cues. With the help of music, PSE transforms movements that are not intrinsically rhythmic into a rhythmic sequence that they can practice again and again. Specific movements can be targeted through Exercise PSE, or you can string multiple movements together to mimic a need in their ADL's (such as reaching for something) through Functional Sequence PSE.

Rhythmic Auditory Stimulation (RAS)© (Chapter 8) is designed to utilize rhythm to facilitate the performance of movements that are naturally rhythmic in nature (PSE is for movements that are not rhythmic). The most common rhythmical movement used with RAS is an irregular gait pattern-a common side effect of Parkinson's Disease, Stroke, TBI, Multiple sclerosis and different orthopedic conditions. The *Handbook* describes 4 neurologic principles as the foundation for both RAS and PSE. First, rhythmic entrainment. The steady rhythm is processed in the brain by the auditory system which then couples with the motor system connecting and driving the movement patterns. A good example of rhythmic entrainment can be found at a concert, where without even noticing you (and everyone around you) begin to head bob, jump, or move in time with the beat of the song. The second principle is priming, which actually takes place before rhythmic entrainment. This is the moment where you sit listening to the music that is then preparing the motor system to act. Third, music provides strong cues as we have already discussed with other techniques. The natural entrainment occurring makes the movements predictable and easy for the motor system to perform. Movements are more focused and muscle activity is more consistent because you are expecting the movement. The last principle is a stepwise limit cycle, which is the gradual progression of frequency towards the target goal.

The very last NMT technique is **Therapeutic Instrumental Music Performance (TIMP)©** (Chapter 10). This technique is similar to RAS and PSE in that the focus is on developing and strengthening functional movement patterns, but TIMP achieves this by having the

client play instruments in traditional and non-traditional ways that mimic the desired movement patterns. TIMP emphasizes range of motion, endurance, strength, functional hand movements, finger dexterity and limb coordination. Actively playing music stimulates cortical and subcortical networks connecting motor sensory and cognitive brain functions. The musical element helps to train the functional movements and creates a feed forward loop where the sound primes the movement which then produces more sound. Individuals with a wide variety of motor impairments, peripheral nervous system damage, spasticity, athetosis and ataxia can benefit from TIMP.

Appendix B: Week by Week Overview

		Planning		Implementation			Documentation		Misc.	
Week 0	*Date*	N/A		Jan. 17. 23(Observation)			(Assessment) Jan. 20. 23		N/A	
	Data:			Conf. Pre:	K: (8)/6.2	P: (7)/7.2	Conf. Pre:	(6)/5.6		
				Conf. Posts:	K: (8)/7	P: (5)/6.2	Conf. Post:	(7)/7.2		
				Assessment:	5		# of NMT mentions:	N/A		
				Creativity	No					
				Perc. of Rec.	5					
	Key themes:			fixated on ideas, feeling like I need to start all over, Alone, overwhelmed, Unable to follow what was happening.			Enjoyable, Natural, Successful, increased Rapport			
Week 1	*Date*	Jan. 18. 23		Jan. 24			Jan. 25		Jan. 24	Jan. 27
	Data:	Conf. Pre	(8)/8	Conf. Pre:	K: (7)/6.8	P: (7)/6.4	Conf. Pre:	(6)/6.2	(NMT Support Group)	(Practicum Seminar)
		Conf. Post:	(2)/3.4	Conf. Posts:	K: (8)/7	P: (7)/ 7	Conf. Post:	(8)/8	*Key Themes:*	*Key Themes:*
		% of NMT	10%	Assessment:	6		# of NMT mentions:	1/5	Welcomed, Encouraged, Networking, Connected	Overwhelmed, Frustrated, Prideful, Waste of effort ("Doing extra work for nothing"), "Setting myself up for failure", Unsuccessful
			(Group planning)	Creativity	No	(11 people)		(Analyzing Assessment)		
	(unique events)			Perc. of Rec.	6	(MEFT)		(Creating Goals/Obj.)		
	Key themes:	Frustrated, stupid, backwards, stuck in old habits, unable to communicate ideas, "fill in the blank interventions" later connected process w/NMT		Successful, In control, Comfortable, Confident, Aware of the role of music during the session			Time consuming, Confident in reasoning but not in communicating			
Week 2	*Date*	Jan. 26		Jan. 31			Jan. 31		N/A	
	Data:	Conf. Pre	(6)/5.2	Conf. Pre:	K: (7)/5.8	P: (7)/5.6	Conf. Pre:	(7)/6.6		
		Conf. Post:	(8)/6.8	Conf. Posts:	K: (7)/6	P: (7)/7.4	Conf. Post:	(6)/6.4		
		% of NMT	99%	Assessment:	8		# of NMT mentions:	0/5		
				Creativity	yes	(7 people)		(revamped objectives)		
	(unique events)			Perc. of Rec.	8	(MACT)				
	Key themes:	Lack of creativity, Intervention inspiration, emphasized objectives, satisfying, not backwards, excited to facilitate, detailed/prepared		Enjoyable, Successful, Natural, Good understanding of clients			Creative, Technical communication, hesitant for feedback ("putting up an emotional wall"), Easier than "last week.			
Week 3	*Date*	Feb. 3		Feb. 7			Feb. 8		N/A	
	Data:	Conf. Pre	(7)/6.4	Conf. Pre:	K: (6)/6.6	P: (7)/6.8	Conf. Pre:	(7)/6.6		
		Conf. Post:	(7)/7.2	Conf. Posts:	K: (8)/8	P: (8)/8	Conf. Post:	(6)/5.8		
		% of NMT	70%	Assessment:	6		# of NMT mentions:	3/7		
			(Caught on the transition)	Creativity	no	(7 people)				
	(unique events)			Perc. of Rec.	8	(TIMP/MACT)				
	Key themes:	Caught up on transition (How can I make this fit?"), Creative, Confident, not backwards, easy		Successful, High engagement, Flexible, Interest in how to utilize music during transitions and conversations, to keep engagement			Anxious, Stupid, "not solid" Plan			
Week 4	*Date*	Feb. 9		2/14			2/14		N/A	
	Data:	Conf. Pre	(6)/5.6	Conf. Pre:	K: (6)/6	P: (6.5)/7.8	Conf. Pre:	(6)/5.4		
		Conf. Post:	(8)/6.8	Conf. Posts:	K: (5)/5	P: (5.5)/7.1	Conf. Post:	(6)/6.8		
		% of NMT	100%	Assessment:	4		Conf Post Feedback:	(8)/7.2		
				Creativity	yes	(11 people) (MACT/MSOT 3)	# of NMT mentions:	0/1		
	(unique events)			Perc. of Rec.	8					
	Key themes:	Intervention inspiration, Confident, Clear/Precise, Aware of musical elements. Later post feedback-Stupid, waste of effort		Lost, unprepared, emotionally unavailable, responsible for lack of success			Hesitant for feedback, Smooth process, clear communication, paranoid about NMT training, conflicted about planning process.			
Week 5	*Date*	2/16		Feb. 21			Feb. 22		N/A	
	Data:	Conf. Pre	(8)/6.6	Conf. Pre:	K: (7)/6	P: (5)/5.4	Conf. Pre:	(6)/5.6		
		Conf. Post:	(6)/5.8	Conf. Posts:	K: (6)/5.6	P: (6.5)/6.4	Conf. Post:	(8)/7.2		
		% of NMT	90%	Assessment:	4		Conf Post Feedback:	(8)/7.2		
				Creativity	yes	(9 people)	# of NMT mentions:	2/1		
	(unique events)			Perc. of Rec.	9	(MACT)				
	Key themes:	Structured, professional, aware of musical elements, effective discussion planning		Unsure, well planned, scattered and unprepared. Unable to give clear instructions ("yelling at a group of kids"), Hig/new engagement, Greater understanding of clients and their needs.			Comfortable, unsure, conversational			
Week 6	*Date*	Feb. 23		Feb. 28			Mar. 1		N/A	
	Data:	Conf. Pre	(9)/8	Conf. Pre:	K:(5)/4.4	N/A	Conf. Pre:	(7)/6.2		
		Conf. Post:	(8)/7.6	Conf. Posts:	K: (7)/6.4	N/A	Conf. Post:	(7)/6.2		
		% of NMT	100%	Assessment:	8		Conf Post Feedback:	(8)/7.2		
				Creativity	Yes	(7 people)	# of NMT mentions:	1/4		
	(unique events)			Perc. of Rec.	9	MACT				
	Key themes:	Intervention inspiration, Aware of musical elements		High engagement, "flying by the seat of my pants", appropriate assessment of needs, aware of musical elements, NMT epiphany			Technical/specific			
Week 7	*Date*	Mar. 2		Mar. 14			Mar. 15		Mar. 12	
	Data:	Conf. Pre	(8)/6.6	Conf. Pre:	K: (6)/5.6	P: (8)/7.4	Conf. Pre:	(7)/ 6.6	Conf. Pre	(6)/5.4
		Conf. Post:	(7)/6.4	Conf. Posts:	K: (7)/7	P: (8)/7.2	Conf. Post:	(8)/7.4	Conf. Post:	(8)/6.4
		% of NMT	100%	Assessment:	7	(11 people)	# of NMT mentions:	0/2	% of NMT	75%
				Creativity	yes	(MACT/AMMT/ APT)				
	(unique events)			Perc. of Rec.	9					
	Key themes:	Time consuming in a positive way, flawless, confident in my idea, aware of musical elements, informed confident		Emotional, in the moment, rushed, in tune with the clients, flexible			Burnout, accurate/technical, natural NMT inclination		All over the place, no vision, backwards, Goals-secondary to Theme	
Week 8	*Date*	Mar. 17		Mar. 21			Mar. 22		N/A	
	Data:	Conf. Pre	(8)/7.8	Conf. Pre:	K: (7)/7	P: (8) / 7.2	Conf. Pre	(8)/7.8		
		Conf. Post:	(8)/7.8	Conf. Posts:	K: (8)/7.8	P: (8)/8.6	Conf. Posts:	(7)8		
		% of NMT	100%	Assessment:	9		# of NMT mentions:	0/2		
				Creativity	yes	(9 people)				
	(unique events)			Perc. of Rec.	9	(PSE/AMMT)				
	Key themes:	Aware of musical elements		Confident, Patient, Capable at leading the group, aware of musical elements, Natural, aware of cognitive processes/the needs of the clients			Capable, Successful, Easy, Technical,			

About the Author

Katie Fairbourn is a senior in the music therapy program at Utah State University. She plays the violin, guitar, piano, ukulele, voice, and various percussive instruments. Katie has always enjoyed the personal connections that are made with others through music. While in school Katie has received awards for her research “The Value Neurologic Music Therapy for a student music therapist” wining scholarships and grant funding, as well as taking 1st place for social science oral presentations during the spring Student Research Symposium. Outside of music therapy and her research project Katie enjoys working at the Student Nutrition Access Center on Campus, and has received an “Outstanding Service” award, as well as a nomination for the Val R. Christensen award. She enjoys making a difference in the world and is excited to see where a career in music therapy will take her. After graduating Katie plans on moving to Baltimore, Maryland to work as a music therapy intern providing hospice care for older adults.