

What music therapy methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why?

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Abstract

The purpose of this research project is to explore the information available about the use of music therapy methods and techniques when working with children (0-6) who have physical disabilities, particularly in a Conductive Education setting. This is qualitative exploratory theoretical research. The data analysis strategy used is triangulation, which involves three sources of data. Thematic analysis of data was of nine pieces of literature, eight video transcriptions, and three meeting notes and three clinical supervision notes. From the analysis, four core themes were generated: 1) familiar songs, 2) following children, 3) repeated musical structure, 4) and musical cueing. Within the core themes, two music therapy methods, improvisation and re-creation, and many music therapy techniques overlap and interweave.

Findings show a development of theory for this population that music therapists can naturally use improvisation and re-creative music therapy methods. They can use familiar songs, designing structured and repeated interactions in the music activities, following children in the moment to respond to them musically, and using musical elements to provide cueing and support. The four core themes identified in this research indicate the areas which can help children to participate in activities and improve their motor skills.

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Ethical Statement

Ethics Approval

This project was reviewed and approved by the New Zealand School of Music Postgraduate Committee. The Victoria University of Wellington Human Ethics Committee has given generic approval for music therapy students to conduct studies of this type. The music therapy projects have been judged to be low risk and, consequently, are not separately reviewed by any Human Ethics Committees. The Ethics Approval Application number is #22131.

Table of Content

Abstract	ii
Acknowledgements	iii
Ethical Statement	iv
Table of Content	v
1. Chapter 1 Introduction	1
1.1. Personal Journey	1
1.2. Background	3
1.3. Research Question	4
1.4. Thesis Structure	4
2. Chapter 2 Literature Review	6
2.1. Conductive Education	7
2.1.1. Theory	7
2.1.2. Aim of Conductive Education	9
2.1.3. Methods used by Conductors and Teachers	9
2.1.4. Assessment Methods for Physical Development of Children	10
2.2. Children with Physical Disabilities	12
2.2.1. Cerebral Palsy	13
2.2.2. The Importance of Early Intervention	14
2.3. Music Therapy	15
2.3.1. Music	15
2.3.2. Music Therapy Methods and Techniques	16
2.3.3. Music Therapy with Children who have Special Needs	20
2.3.4. Music Therapy with Children who have Physical Disabilities	21
2.4. Summary	22
3. Chapter 3 Methodology	24

3.1. Introduction	24
3.2. Theoretical Framework and Methodology	24
3.2.1. Constructivism	24
3.2.2. Exploratory Research	25
3.2.3. Empirical Theory	25
3.2.4. Triangulation	26
3.2.5. Summary	26
3.3. Data Collection	26
3.3.1. Literature	27
3.3.2. Videos	28
3.3.3. Meeting Notes and Supervision Notes	28
3.3.4. Summary	29
3.4. Data Analysis	29
3.5. Ethical Considerations	31
4. Chapter 4 Findings	32
4.1. Introduction	32
4.2. Overview of the Findings	32
4.3. Findings in More Detail	34
4.3.1. Familiar Songs	34
4.3.2. Following Children	37
4.3.3. Repeated Musical Structure	42
4.3.4. Musical Cueing	46
4.4. Summary	50
5. Chapter 5 Discussion	51
5.1. Introduction	51
5.2. Areas for Review	52
5.2.1. Familiar Songs	52
5.2.2. Following Children	53
5.2.3. Repeated Musical Structure	53
5.2.4. Musical Cueing	54
5.3. Other “Findings”	55

5.3.1. Relationship Building	56
5.3.2. Meeting the Child's Needs and Identified Goals	56
5.3.3. Non-musical Support	57
5.4. A Review of the Strengths and limitations of this study	62
6. Chapter 6 Conclusion	64
References	66
Appendices	72
Appendix 1 Meeting Consent Form	72
Appendix 2 Supervision Consent Form	73
Appendix 3 Initial Thematic Themes Map	74
Appendix 4 Methods Oriented Thematic Map	75

1. Chapter 1 Introduction

“Music is a natural part of the child’s world through which they can shine says Marcia Humpal in an interview with Dr. Petra Kern (2005)” (Jonsdottir, 2008, p. 370).

“Have you ever felt the charm, power, and magic of music? I have. Music is like the sunshine which gives me warmth” (L. Xiuyu, personal writing, November, 2012). It is vital for individuals to take part in a musical activity, especially for children (Jonsdottir, 2002).

As a music therapy student due to work on placement at a Conductive Education (CE) pre-school centre, I wanted to explore what music therapy methods and techniques were likely to be the most effective in this setting and why this might be. I used three contrasting data sources (the literature, video examples, and notes from meetings and supervision) which enabled triangulation to take place.

I am going to talk a little bit about my personal journey, why I want to provide music therapy to people in need, and then introduce the background of this study. After that, I will present the research question and the structure of the thesis.

1.1. Personal Journey

My first encounter with music therapy was in 2009 when I was a freshman majoring in Pipa performance at the Central Conservatory of Music. One month after school began, a grievous news came to me that my grandfather had passed away. My grandmother was so sad that the recurrence of cerebral thrombosis occurred immediately after my grandpa’s passing. My grandmother had never attended any school when she was young, and she could not read

or write at all. However, due to the recurrence of cerebral thrombosis, she lost most of her verbal skills. What was worse, she was paralysed and suffered from toxemia at a later period. She could hardly recognise any person around her bed. My mother was absolutely shattered, weeping all day long, which led to great sadness as well. However, as an 18-year-old girl with very limited knowledge and life experience, I did not know how I could help my family members and myself to overcome this grief. Until once in a public class in college, I met students majoring in Music Therapy. Through communicating with them, I heard about music therapy and how it works.

After three years, my grandmother began experiencing music with me. My music therapy teacher in China gave me some ideas and guidance. During the first time, when she listened to a piece of her favourite *Huangmei* opera, I saw a light in her eyes for a moment. I could see the subtle tears in her eyes. During those music interaction periods, she could keep her eyes on someone for a long time. This surprised everyone because she had not maintained eye contact with anyone for a long period. My grandmother had loved the song *The East Is Red* before her illness. When we sang this song for her, her right index finger moved slightly. After several repetitions, her finger could move along with the rhythm, even though not very steadily. After that, she developed more responses and could communicate with people through winks and finger movement.

This experience was very enlightening. I used to define myself as a beneficiary of music therapy, but after building a relationship with participants in my music therapy study and practicum, I started to realise how this profession could bring help and changes to different people and their families. These experiences gave me a strong desire to become a “real” therapist and offer help to people in need.

1.2. Background

As part of my Master of Music Therapy programme, I was enrolled in the Casework and Research paper, which typically involved students engaging in integrated practice and research projects (such as action research related to placement practice; or secondary analysis of clinical data generated on placement). Students were enrolled for a full year, and they anticipated working from 1st February 2020 – 31st January 2021. The practice would run concurrently with research activities.

However, due to the Coronavirus outbreak, I experienced significant disruption. My travel from China to New Zealand was delayed and it was necessary for me to self-isolate on arrival. Then in March, the whole country went into lockdown and I was unable to start my placement until May. It was necessary to develop a different focus for my research. Therefore this research is a qualitative exploratory theoretical research.

My theoretical research is based on the area of my placement, so I will briefly introduce the setting and population. CE is a pre-school centre. This facility caters for children aged 0 to 6 years old, most of whom have physical disabilities such as Cerebral Palsy (CP).

According to UNICEF, it is estimated that there are at least 93 million children with physical, cognitive, psychological, sensory and emotional or developmental disabilities (Unicef for every child, 2020). There is growing evidence of the effectiveness of music in the education of children with disabilities. Although music therapy has traditionally been used in clinical and therapeutic settings, more and more music therapists are now providing services in educational settings (Dieringer, Porretta, & Gumm, 2013; Rickson, 2008).

However, there are not many articles about the application of music therapy methods and techniques in CE. I found that there are only two theses relevant to music therapy with children in a CE setting, from graduated students Kho (2011) and Gao (2018), but their theses

focused on communication and technology rather than physical disabilities. There is no article more specifically relevant to music therapy with children who have physical disabilities in CE, which were limited for people to get enough knowledge and information. CE programmes often incorporate musical elements and materials to help children to develop. Given that music is already a valued part of CE, I believe the addition or inclusion of music therapy strategies or techniques will enhance programmes further.

1.3. Research Question

Therefore, the purpose of this research is to explore the information available about the use of music therapy methods and techniques when working with children who have physical disabilities, particularly in a CE setting. Data from several sources (relevant literature, videos available on the internet and personal notes from meetings and supervision with professionals) will be used to explore this topic. I am aiming to provide useful information in the gap of the available literature, and this would be helpful for music therapists and other professionals working in this kind of setting. Therefore, my research question is:

“What music therapy methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why?”

1.4. Thesis Structure

The first chapter of this thesis is an introduction. Chapter two is the literature review, which is mainly to summarise and outline the information and related literature to the research topic. Following the research methodology, data collection and analysis in chapter

three, the research findings are then introduced in chapter four. The discussion is presented in chapter five and the conclusion in chapter six.

2. Chapter 2 Literature Review

An increasing number of music therapists are working with children with special needs. This literature review summarises the relevant information about music therapy work with children who have special needs, and in particular, physical disabilities in the CE context. I have included academic or professional journals, books and professional websites, most of them published in the last ten years. To source this literature, I used the Victoria University of Wellington Library, Google Scholar, and also found sources from recommendations from my placement liaison.

These were identified by using the following key terms: *music therapy, children, physical disability, CP, early intervention (EI), CE*.

There are a total of 43 pieces of literature to support this review. Nine of them are closely related to my research questions, and have been used as sources for my data. I will introduce them in detail in the data collection section part (3.3.1). The literature discussed in this review falls into the following categories:

- Six articles and three official websites relevant to CE and CE with children who have physical disabilities, especially those children with CP
- Four articles relevant to medical diagnosis
- Five articles relevant to CP
- 11 existing articles relevant to music therapy with children with special needs
- Three articles specifically relevant to music therapy with children who have physical disabilities
- Five articles relevant to music therapy theory, methods and techniques
- Six articles relevant specifically to Rhythmic Auditory Stimulation (RAS).

2.1. Conductive Education

Petruta (2015) reported that the educational environment has an important impact on children's mental and spiritual health and plays an important role in children's development. Children who have health challenges are often involved with many agencies and services, such as special education, clinical psychology, speech and language therapy, and physical therapy. The educational environment can not only increase the child's expressive abilities and cognitive development, but also can train the whole person (body, mind and soul). The use of music and/or art and all its aspects (spiritual, physical, emotional, mental, social and aesthetic) by therapists to help children with disabilities improve their educational outcomes and meet their special needs, is considered essential and important. One of the significant therapeutic interventions is CE.

CE can be defined as: "... a holistic educational system that uses an active cognitive approach to teach individuals with motor disorders to become more functional participants in daily activities" (Wright, Boschen, & Jutai, 2005, p. 291).

2.1.1. Theory

Professor András Peto is a physician and educationalist who developed CE in Hungary. In the 1940s, Peto focused on assisting children with motor disabilities to go to school with maximum independence. He helped children achieve "orthofunction" which is defined as an individual's ability to respond to physiological and social needs, to participate and function in society despite disability (Darrah, Watkins, Chen, & Bonin, 2004). In the late 1980s, CE became recognised for its developmental-education paradigms to understand and work

with people who have motor dysfunctions, gaining the attention of many families around the world (Capelovitch, 2014). CE is a mode of education rather than a medical intervention, and both education and rehabilitation goals are included and integrated into this programme (Capelovitch, 2014; Darrah et al., 2004; Negin, Ghorban, & Diba, 2017; Schenker, 2016). Because CE is an educational programme, it is led by teachers (or special education teachers) who specialise in and learn CE pedagogy (a 3-4 year tertiary course) rather than medical practitioners or other professionals (Capelovitch, 2014). It encourages CE practitioners to understand that adults and children whose central nervous system have been damaged leading to motor disabilities, have a pedagogic problem rather than a medical problem (Schenker, 2016).

The human body is a creative and intelligent organism. The various components of the brain are connected via many pathways rather than only one, and the brain has the unique ability to form new connections. Although one part of the brain is damaged or injured, it has not completely stopped working. People with motor disorders can sometimes use undamaged areas of the brain to learn a new skill, to find a way to compensate for the damage, which can reduce the impact of trauma. CE does not depend on developing children's inherent abilities, but encourages them to create new capabilities by learning. (Conductive Education Wellington Trust, 2020; Kwak, 2007; Negin et al., 2017; Schenker, 2016). Depending on the abilities of children and the environmental context, CE supports multiple approaches to meet the functional and developmental goals of the individual (Darrah et al., 2004).

2.1.2. Aim of Conductive Education

The conductor of the CE works with the assistance of other staff members to plan a comprehensive learning programme to coordinate the physical, cognitive and emotional aspects of learning. Programmes are designed to mediate the relationship between the world and the child by creating new abilities and potentials in the child with motor disabilities to help them gain independence in daily activities according to their functional level (Conductive Education Wellington Trust, 2020; Myrhaug, Odgaard-Jensen, Østensjø, Vøllestad, & Jahnsen, 2018; Schenker, 2016). The educational goals are based on the environment and the general ability level of the group. The design and arrangement of the activities are highly structured and each step is planned. The task begins within the child's ability level, and then increasingly challenges them to progress so that they can finally achieve a functional independent goal (Darrah et al., 2004).

2.1.3. Methods used by Conductors and Teachers

CE is based on holistic and humanistic perspectives and aims to improve all aspects of child development. According to the NZ foundation for Conductive Education (2020), there are many centres located in New Zealand. The programme aims to help children with disabilities learn unique skills using a dynamic learning system on their journey to independence. There are various types of groups provided such as Parent and Child Groups, Kindy/Pre-school Classes, Riding and Swimming, Specialised Groups and Individual Sessions (Conductive Education Canterbury, 2020; Conductive Education Wellington Trust, 2020; NZ foundation for Conductive Education, 2020). The CE programme has many benefits such as strengthening gross and fine motor skills, improving emotional, social,

cognitive and communication areas, and also increasing motivation, confidence and well-being (Tuersley-Dixon & Frederickson, 2010).

A variety of CE training models have been developed and CE has spread from Hungary to many other countries (Myrhaug et al., 2018). In the CE programme, children work together in groups which can provide an opportunity for them to monitor and encourage each other. Conductors lead the group and provide an environment of motivation and support (Darrah et al., 2004; Negin et al., 2017).

There are four main components of the CE programme:

- (1)**Task-oriented learning** to work towards specific goals using highly structured environments. The specific goals are identified for individual children's needs, including functional skills like standing, sitting, walking, lying, and arts and crafts would perhaps support functional skills like finger grip and independent finger movement.
- (2)To promote and improve motor actions using '**rhythmic intention**' which are verbal instructions using rhythmic speaking or singing. In this way, the CE facilitator provides a background rhythm which can support and motivate children to initiate and control movements.
- (3)**Targeting Activities of Daily Living** (ADLs) such as diet, dressing and toilet routines, and integrating manual activities into the context of daily life.
- (4)**Child-centred** group environments to promote participation (Darrah et al., 2004; Myrhaug et al., 2018; Tuersley-Dixon & Frederickson, 2010).

2.1.4. Assessment Methods for Physical Development of Children

In order to provide appropriate interventions and other therapies for these children who have physical disabilities, understanding the typical development of children is fundamental. According to Schwartz (2008), there are many stages in a person's life, and

early childhood is a significant stage. During this period, all functional areas are changing rapidly and become the basis for all subsequent developments.

In CE, the Carolina Curriculum for Preschoolers with Special Needs (CCPSN) is used to assess a child's function and level. The list is divided into five domains; cognition, communication, social adaptation, fine motor skills and gross motor skills.

According to Kwak and Kim (2013), there are a predictable series of milestones, such as sitting, standing, walking and running for children's motor skills development. Typically, children will follow this order of stages and do not skip milestones.

For children (0–24 months), the gross motor skills have three main parts: prone (on stomach); supine (on back); and upright (posture and locomotion, stairs, jumping, and balance). For the fine motor skills, there are five main levels: tactile integration; reaching, grasping, and releasing; manipulation; bilateral skills; and pencil control and copying (Johnson-Martin, Jens, Attermeier, & Hacker, 1991).

For children (2.5-5 years), according to Johnson-Martin, Attermeier, and Hacker (1990), there are six levels of gross motor skills: locomotion (walking, tiptoe walking, galloping, hopping); the action of going up and down stairs; jumping (jumping up, jumping down and broad jumping); balance (static balance and dynamic balance); the action required to coordinate throwing and catching; and the coordination required which enables children to interact with outdoor equipment. For the fine motor skills have five main levels: hand use; manipulation; bilateral skills; tool use; and pencil control and copying a movement, and cutting.

Children with physical disabilities develop and change differently at each stage. The development of motor skills in children with physical disabilities, in particular, children with CP, show abnormal movement patterns and do not follow the typical development sequence. Kwak and Kim (2013) state that the sequential development is impacted by abnormal muscle

tone, inefficient patterns of movement and brain lesions. Knowing what stage the child is at can help conductors and other therapists better develop goals and design activities that are more appropriate for them.

In the CCPSNE, each item has a definite and detailed description. For example, in the list of items, the second item on the fine motor skills of the age from 0 to 24 months is “reaching, grasping, and releasing” (Johnson-Martin et al., 1991, p. 59). At 15 months, a typically developing child can grasp two small objects with one hand. However, some children with physical disabilities may not have achieved this, even by the age of 4 and 5 years old. Although children in CE are aged from 0 to 6 years old, most of their physical functioning levels belong at around the 24 month old range. Chronological age and developmental age do not match up.

2.2. Children with Physical Disabilities

The following section will introduce the information relevant to children with physical disabilities. Meadows (2002) indicated that the physical and/or intellectual difficulties and challenges, experienced by children can be caused by medical pathology and genetic conditions. Common characteristics include increasing or decreasing muscle tone, loss of range of movement, and poor or no ability to control motor coordination. Children with physical disabilities may have good motor skills that allow them to move some parts of their bodies independently, or they may have little or no independent movement and no apparent awareness of their bodies. According to DSM-5, developmental coordination disorder may be an individual's impaired gross motor skills or fine motor skills, resulting in reduced participa-

tion in team activities and physical activity; poor sense of self-worth; emotional or behavioural problems; impaired academic achievement; poor health, reduced physical activity and obesity (American Psychiatric Association, 2013). In addition, it is worth noting that some children with disabilities experience pain and/or stress from touch or physical movement. Because these children are sometimes mistreated or discriminated against by adults, they develop resistance to being touched, and sometimes hostility (Meadows, 2002). Therefore, children with physical disabilities need to be given more comprehensive positive attention.

2.2.1. Cerebral Palsy

In CE, more than half of the children are diagnosed with different types and degrees of CP. CP is a complex central nervous system syndrome caused by lesions in the immature brain. It is one of the more common childhood neurodisabilities which impacts motor function and results in physical disabilities (Kwak & Kim, 2013; Ma, Zhang, Cui, Jin, & Zhang, 2019; Myrhaug et al., 2018; Negin et al., 2017). CP is a life-long degenerative disease that occurs in approximately 2-2.5 per 1000 live births (Surveillance of Cerebral Palsy in Europe, 2000).

According to Kwak and Kim (2013), the term CP includes a variety of permanent and non-progressive disruption in the development of movement and posture. As a result, people with CP are restricted in all aspects of their daily lives. Children diagnosed with CP may face a variety of developmental challenges with regard to motor skills (Kriger, 2006; Kwak, 2007; Kwak & Kim, 2013; Ma et al., 2019; Pennington, 2008; Negin et al., 2017; Tiersley-Dixon & Frederickson, 2010), particularly difficulties in co-ordination and motor control (Kwak, 2007; Kwak & Kim, 2013; Negin et al., 2017). CP is often accompanied by cognitive development disorder, as well as visual, auditory, and speech disorders (Ma et al., 2019; Negin et al., 2017; Pennington, 2008; Tiersley-Dixon & Frederickson, 2010), epilepsy (Ma

et al., 2019; Negin et al., 2017; Tuersley-Dixon & Frederickson, 2010) and spasticity (Kwak & Kim, 2013).

The purpose of treating CP is to maximise motor ability and improve goal-directed function. There can be a significant impact on the comfort and quality of life of children and their caregivers even with only a modest improvement in motor function (Ben-Pazi et al., 2018). According to Zwinkels (2015), for children with CP, the quality of life can be improved by participating in sports activities. Children with CP need to maximise their development of physical skills by activating and strengthening their neural network to learn gross motor skills like walking, to improve their overall function (Kwak & Kim, 2013).

2.2.2. The Importance of Early Intervention

For children with physical disabilities or special needs, EI is vital and essential. According to Jonsdottir (2002), special education and a variety of therapies introduced from infancy by an integrated team, including family teachers and health professionals, can positively influence outcomes for children with special needs.

In its narrowest sense, EI refers to measures taken early in life to influence the development of children. Various authors highlight the importance of early and systematic interventions that affect the developmental processes of children with disabilities (Jonsdottir, 2002; Jonsdottir, 2008; Tuomi, Ala-Ruona, & Oldfield, 2017). Studies have demonstrated that effective factors of EI play an important role in children's development (Hume, Bellini, & Pratt, 2005). There is an important influence on the behaviour and long-term development of children depending on the quality of children's physical and social environment. The impact of disabling conditions can be effectively reduced through EI (Jonsdottir, 2008).

A variety of educational, developmental and therapeutic activities and support networks of a public and personal nature are the components of EI (Jonsdottir, 2002; 2008). Professionals are most effective when they work together as an interdisciplinary team (Jonsdottir, 2008). Jonsdottir (2002) pointed out that music and intuitive music can be effective methods of EI.

2.3. Music Therapy

2.3.1. Music

Music is a key component of music therapy and a part of the human experience. Music is auditory, visual, kinesthetic, cognitive, emotional and provides a creative experience (Schwartz, 2008). Music is a patterned process in sound that is used by all human cultures that derives from the basic need for expression and allows people to express themselves in a very natural way. Music is just another part of children's senses, whether they have studied music or not, children are very sensitive to music (Petruta, 2015; Schwartz, 2008).

Since ancient times, music has been considered to be a health resource. Dragulin's study, conducted in 2009, shows that:

“At different moments of history and in different cultures, over the last two and a half millennia, music has been considered part of medicine. Singing or listening to music is more than entertainment; it is a spiritual ascent, which maintains or restores health to mind or even body” (as cited in Petruta, 2015, p. 277).

The basic elements of music include rhythm, pitch, melody, duration, harmony, texture, timbre, and structure. Varying responses and the effects to each element naturally depend on the stages of development (Schwartz, 2008). For example, managing volume is

especially important for students with especially important for children with Autism Spectrum Disorder or other sensory integration challenges, because the volume of music may distract them (Dieringer et al., 2013). Rhythm is also important because people naturally move their bodies in time to music and rhythm can therefore be used to organise a participant's gait, and to improve the gait pattern (Kwak, 2007).

Music has a significant influence on children with disabilities. Jonsdottir (2002) reported that it is vital for individuals to have opportunity to access music participation. Music participation can be active or passive, and children's responses to it can be positive or negative, where they have the autonomy to contribute creatively to music that they like or interrupting music that they dislike. Jonsdottir (2002) suggested that music may be playful, stimulating, calming or unappealing and everyone's musical experience is valid. On a physiological level, the rhythm of music performed or listened to by people can balance the biological rhythm of human body, regulate respiration, circulation and other physiological functions, and also have therapeutic effects on mental diseases, vascular diseases, brain function improvement, and chronic diseases (Ma et al., 2019; Petruta, 2015). Music can also support language acquisition, influence the behaviour or emotional state of children, support the development of musical, relationships, and emotional intelligence (Jonsdottir, 2008).

2.3.2. Music Therapy Methods and Techniques

Definition

Music therapy can be broadly defined as the planned use of music to meet the needs of an individual or group (Dieringer et al., 2013). Music therapy can involve aspects of mu-

sic, psychology, philosophy, psychoacoustics, psychoanalysis, pedagogy and education sciences, musicology, aesthetics and sociology. Music therapy can support children with special needs to develop individually and helps them integrate into society (Petruta, 2015).

Approaches

Music therapists employ a variety of approaches including behavioural, neurological, social, emotional, play-based and environmental approaches according to their training and their places of work. New Zealand music therapists are more likely to base their work on the humanistic framework, which focuses on experiencing present feelings of ‘here and now’ (Bunt & Stige, 2014). For example, when working with children who have Autism Spectrum Disorder they use a flexible and improvisational approach responding in the moment combined with other standard music therapy techniques to meet the needs of children (Rickson, Castelino, Molyneux, Ridley, & Upjohn-Beatson, 2016).

Methods

Music therapists also employ a range of music therapy methods, such as receptive methods, composition, improvisation and re-creation (Dieringer et al., 2013; Wheeler, Polen & Shultis, 2005).

- With the receptive method, individuals act as the recipient of the music being played. Participants listen to and respond to the music. The receptive method supports goals such as improving receptivity, which involves awakening curiosity and interest in order to support the building of connections between music therapist and child. This method can also be used to help with developing specific physical responses. Music therapists use pre-composed and pre-recorded music and during the songs add instructions to encourage participants to perform physical tasks such as jumping, twisting the body, or imagining

moving like a turtle, so participants can improve their motor skills and improve social interaction (Dieringer et al., 2013).

- The composition method uses the music to support independence and self-expression, and it also encourages individuals to develop new music. The composition method usually supports goals such as encouraging responsibility and facilitating exploration (Baker & Wigram 2005; Dieringer et al., 2013).
- The improvisation method is used to encourage individuals to create music spontaneously. It also encourages people to create music/rhythm with their own voice or instruments (such as tambourines). The improvisation method usually supports goals such as encouraging independence, communication, and social interaction (Carroll & Lefebvre, 2013; Dieringer et al., 2013; Wigram, 2004).
- The re-creation method helps participants use or develop a re-created piece of music to express emotions, experiences and/or events. The re-creative method usually supports goals such as developing memory skills, improving attention, and enhancing social interactions with peers (Dieringer et al., 2013; Wheeler et al., 2005).

Techniques

Music therapy techniques include mirroring, imitating, copying, matching, empathic improvisation, reflecting, grounding, holding, containing, dialoguing, musical cues, gestural cues, verbal prompts and type of accompanying style (Carroll & Lefebvre, 2013; Wigram, 2004). Rhythm and tempo can provide momentum for movement. Melody and harmony can maintain interest and awareness. Style and timbre can support and encourage relaxation and they can stimulate a child. Improvised music can support or imitate the action being undertaken. Song lyrics can describe movement (e.g., stretching), the context of movement (e.g.,

identifying body parts), or the medium in which movement occurs (e.g., the child's spontaneous movement of their bodies in response to a familiar and/or motivating song). The music therapist may improvise on an instrument to reflect the perceived emotional and/or energy levels and to match the current state of children. Often improvisational techniques are used to engage children to join in. When children participate in or show an interest in an instrument or activity, improvisation techniques can be appropriately transferred to a more structured musical activity. In this way, music is created on the spot to follow the child's actions and timing (Archer, 2004; Baker & Wigram 2005; Bunt & Stige, 2014; Carroll & Lefebvre, 2013; Dieringer et al., 2013; Meadows, 2002; Wheeler et al., 2005; Wigram, 2004).

Music Therapy methods and techniques (physical)

Since the topic of this study is about how to better provide music therapy services for children with physical disabilities in the CE environment, I would like to further explore music therapy methods and technologies related to whole child, in particular the physical aspects of the child. According to Pakdeesatitwara and Tamplin (2018), music therapy can be effective in various fields of physical rehabilitation such as encouraging different movement and the voice is most commonly used to support interventions in the physical rehabilitation field.

Auditory Stimulation

According to a 2018 study, parents in a study group reported that compared with the control group, the study group's upper extremity skills improved following a month of auditory stimulation through headphones. Auditory stimulation reduces high tension of muscle and improves fine and gross motor function. This method which is a safe, non-invasive intervention may improve motor skills of children with CP, and increase their communication

skills at home, school and in the community, while reducing the burden on caregivers (Ben-Pazi et al., 2018).

Rhythmic Auditory Stimulation/Rhythmic Auditory-Motor Entrainment

According to Thaut and Abiru (2010), evidence suggests that there is a rich connectivity between the auditory and motor systems at different cortical, subcortical, and spinal levels. The auditory system projects into the brain's motor structure, creating entrainment in response to rhythmic signals and motor responses. The phenomenon of auditory entrainment is the key element of RAS, encouraging the body to move rhythmically in sync with sounds (Kwak, 2007). The periodicity of auditory rhythmic patterns can affect the movement patterns of patients with motor disorders (Thaut, 2015). Kwak and Kim (2013) indicated RAS showed significant improvements in gait. The first randomised controlled trial (RCT) involved RAS gait training in children with CP and concluded that the children responded positively to rhythmic cues in musical rhythms and suggested that RAS has the potential to work with other children with CP (Kwak, 2007). Auditory rhythm cues can cause changes in gait and upper extremity movement patterns. In the area of clinical applications for retraining injured brains, the structural elements of music have great potential (Thaut, 2015).

2.3.3. Music Therapy with Children who have Special Needs

Children with disabilities have various challenges, and the degrees of difficulty they experience also vary. Music therapy intervention can help them to improve the ability to study, as well as assisting with emotional regulation and expression, and communication skills (Petruta, 2015).

There is growing evidence of the effectiveness of music in the education of children with disabilities. For example, music can have a positive impact on behaviour, improve

attention span and nonverbal communication skills, promote independence, and improve interpersonal and social play (Dieringer et al., 2013).

According to Buric (2013), musical improvisation has become an effective way to help children with special needs with developmental integration, and thus to enhance their social communication. Aldridge, Gustroff and Neugebauer (1995) described an active music therapy approach, a form of improvised music therapy developed by Nordoff and Robbins which originates from working with children with disabilities, and is a humanistic approach primarily based on the relationship of music. Accompanied by a music therapist, children are encouraged to play various instruments and also sing or vocalise. Every child has their own basic rhythm. Starting with the musical basis of this behaviour, the music therapist works with the child to improvise music and encourage his or her further active involvement. This intervention can support cognition, gesture, emotion and relationship making it advantageous for children with developmental disabilities (Aldridge et al., 1995).

2.3.4. Music Therapy with Children who have Physical Disabilities

Music is often incorporated into physical activities by practitioners who use physical activity for children with disabilities. They often use rhythm, musical instructions, listening to music, lyric instructions substituted in familiar songs, and musical movements to motivate children with special needs to engage in physical activities (Dieringer et al., 2013).

Meadows (2002) indicated that programmes that incorporate movement and music can be helpful for children who have physical disabilities. Music therapists can be primary therapists in working with children who have severe multiple disabilities. The goals of the music and movement programme for children with severe multiple disabilities can be to increase “body awareness, identify body parts, increase muscle control, maintain range of movement, improve rhythmic skills, improve speech sounds, integrate movements, and

improve circulation and respiration” (Meadows, 2002, p. 18). Meadows describes four approaches to music and movement, including (a) physiotherapy with music, (b) structured music and movement, (c) improvised music and movement, and (d) music therapist directed music and movement (Meadows, 2002).

According to Ma et al. (2019), music therapy has been applied to the rehabilitation training of children with CP due to its functions of regulating and improving the brain, muscles and emotions. Music therapy seems to improve the motor functions of gross and fine motor skills such as crawling, kneeling, standing and walking in children with CP. In addition, for this population, music therapy can also be effective in improving muscle tension, improve mood, and increase motivation to engage in rehabilitative activities.

2.4. Summary

Music therapy is helpful in EI settings, special schools, and for children who have motor disorders. Music therapy enables many positive benefits in early childhood development, including creating opportunities for fun and enjoyment. Fun and enjoyment are very important because it actively promotes a child’s participation, while simultaneously allowing developmental opportunities within the domains of social and communication, emotional maturity, and both motor and cognitive development (Tuomi et al., 2017). Chiarello et al. (2012) reported that supporting communication capabilities may be particularly beneficial for children with CP to further develop their relational capabilities within the context of their family environment. In addition, music therapy can enhance children's behaviour, social and communication skills, and promote more active parenting styles (Nicholson, Berthelsen, Abad, Williams, & Bradley, 2008). CE programmes often incorporate musical elements and materials to help children to develop. Given that music is already a valued part of CE, I

believe the addition or inclusion of music therapy based strategies or techniques will enhance programmes further. However, there is sparse literature available relating to music therapy with children within a CE setting. I found that there are only two theses relevant to music therapy with children in a CE setting, from graduated students Kho (2011) and Gao (2018), but their theses focused on general communication and technology rather than supporting children with physical disabilities. Based on the lack of research and the potential for valuable new findings, I therefore propose the following question for my research:

“What methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why?”

3. Chapter 3 Methodology

3.1. Introduction

This chapter outlines the theoretical framework and methodology, data collection, data analysis, and ethical considerations.

3.2. Theoretical Framework and Methodology

Patel (2015) identified that a researcher is influenced by their assumptions and beliefs about the world, how it can be understood and how problems can be approached. How a researcher views the nature of the world is termed ontology and how that reality is understood is termed epistemology. The following sections indicate the choices I made as researcher and the beliefs that underpin these choices.

3.2.1. Constructivism

Constructivism suggests that there are multiple truths, that reality is created and influenced by individuals' values, and social context (ontology), and that interpretations and meanings of reality are varied (epistemology). Constructivist research usually uses qualitative research methods (Bradt, Burns, & Creswell, 2013; Patel, 2015).

For the purpose of this study, I am investigating the application of music therapy methods and techniques for the children working within a CE programme, through analysis of the data (literature, video examples relating to my topic which are freely available on the

internet, and notes from meetings and clinical supervision) from which I will construct meanings.

3.2.2. Exploratory Research

According to Stebbins (2001), exploration aims to maximise the discovery of the generalisations of description and understanding for an aspect of social or psychological of life by using an extensive, intentional, standardised, designed experiment. My research was exploratory, and the research topic I explored was one that has not been studied in-depth in the past. I discovered new ideas, to find out “what is going on here” and to use these ideas in future work (Stebbins, 2001).

3.2.3. Empirical Theory

According to Bruscia (2005), the way of thinking about what we do or know is a theory, and it can be created. A theory may be descriptive, explanatory, empirical, and conjectural. In music therapy, theory underpins clinical work, but the exploration of clinical work can also develop a new theory.

In qualitative research, an empirical theory is developed based on the analysis of research data that can be either existing already or collected through empirical research. Through systematic observation, survey or investigation it is possible to conceptualise a phenomenon in qualitative research. The data can be collected specifically for the aim of theorising, including conversations, field viewing, and lots of arts productions or literature. In this method, theories are developed gradually while data are collected and analysed. With the continuous update and analysis of the data, the original theory is constantly illustrated, altered, and re-explained until the theory is entirely rooted in the data.

3.2.4. Triangulation

Triangulation refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999). Triangulation also has been viewed as a qualitative research strategy to test validity through the convergence of information from different sources. Triangulation means using more than one method to collect data on the same topic. This is a way of assuring the validity of the research through the use of a variety of methods to collect data on the same topic, which involves different types of samples as well as methods of data collection (Carter, Bryant-Lukosius, Di-Censo, Blythe, & Neville, 2014).

3.2.5. Summary

I have accessed this research from a constructivist (interpretive) paradigm, using a qualitative methodology to create a theory and explore the research topic by triangulating data in the thematic analysis to refine and develop the themes.

3.3. Data Collection

To answer my research question “*what music therapy methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why*”, the data for this project was collected from three sources; literature, transcription of video examples, and notes from meetings and clinical supervision.

3.3.1. Literature

The first source was the literature. Before I describe how I collected the data from the literature, I would like to clarify how I identified this literature and how it differs from the literature I used for my literature review.

From the 43 pieces of literature accessed for the literature review, there were nine articles relevant to the research topic and question. These nine articles were used as one source of data to be analysed (as below).

- Auditory stimulation improves motor function and caretaker burden in children with cerebral palsy- A randomized double blind study (Ben-Pazi et al., 2018).
- The discovery of human auditory-motor entrainment and its role in the development of neurologic music therapy (Thaut, 2015).
- Using music therapy principles to enhance physical activity participation: in children and adolescents with disabilities (Dieringer et al., 2013).
- Rhythmic Auditory Stimulation in Rehabilitation of Movement Disorders: A Review of Current Research (Thaut & Abiru, 2010).
- Part I: Music, Young Children, and Development (Schwartz, 2008).
- Effect of Rhythmic Auditory Stimulation on Gait Performance in Children with Spastic Cerebral Palsy (Kwak, 2007).
- Improvisation: methods and techniques for music therapy clinicians, educators and students (Wigram, 2004).
- Approaches to music and movement for children with severe and profound multiple disabilities (Meadows, 2002).
- A pilot study of music therapy in the treatment of children with developmental delay (Aldridge et al., 1995).

I undertook a thorough review of the nine pieces of literature which were academic or professional journals, and books, using the keywords ‘music therapy’, ‘children’, ‘physical disability’, ‘cerebral palsy’, ‘early intervention’, and ‘conductive education’.

3.3.2. Videos

The second data source involved the analysis of video examples. I found six videos relevant to my topic which are freely available on the internet from five different music therapists. One of them was quite long and fell naturally into three sections, so I broke this into three documents as I analysed the video. This gave me a total of eight transcriptions. I looked at the examples several times to get a sense of the whole exchange. I then looked closely at a few seconds of work at a time to describe what the music therapist was doing using the following questions as a guide:

What is the music therapist doing with music, and why?

What is the music therapist doing with their body, and why?

What resources are they using and why?

What is the reaction of the child?

3.3.3. Meeting Notes and Supervision Notes

During the lockdown period in April, before I was able to start my placement, I had in-depth conversations with my facility liaison, the music therapist on site and the registered music therapist (RMT) who would be supervising my work on placement. In addition, I have used three sets of clinical supervision notes with my clinical music therapy supervisor from May to August. I prepared some general and specific questions for the research topic focusing on what music therapy methods and techniques that music therapists always use when they were working with children who have physical disabilities in a CE programme before

each meeting and made notes about the information they shared. In total, I had six sets of notes. With informed consent these notes were used as research data and were analysed to uncover any information about the methods and techniques that they shared.

3.3.4. Summary

In total, I collated nine pieces of literature, eight transcriptions of video examples, and six sets of notes from meetings and clinical supervision.

3.4. Data Analysis

“Thematic analysis (TA) is a method for identifying, analysing, and interpreting patterns of meaning (‘themes’) within qualitative data” (Braun & Clarke, 2016, p. 297). Based on Braun and Clarke’s report (2006), I used six steps to analyse my data:

- Familiarising myself with the data
- Generating initial codes
- Searching for themes
- Reviewing themes
- Defining and naming themes
- Producing the report

Rather than working through these steps in a linear way, I completed back and forward analysis between these steps to enable deeper immersion with my data. I used the qualitative data analysis software NVivo to support my data analysis. I started by getting familiar with my data, such as reading the nine articles carefully, watching videos many times and checking the transcription, and listening to recordings of meetings, and re-organising and reviewing the

notes of clinical supervision repeatedly. I then identified the data that had meaning to my research question and started coding them into small chunks. I used an inductive approach to code and I generated more than 60 small codes.

According to Maguire and Delahunt (2017), a theme is a pattern that brings those important, interesting and meaningful things relevant to the research question from the codes together. After I generated initial codes, I tried to find the themes, and during this process, I repeatedly reorganised and renamed the codes again and again. I put some similar codes together to generate the categories and then developed the themes. During this period (coding and identifying initial themes), many ideas overlapped.

The next step was to review the themes. During the review process, I changed and improved the initial themes and then found a new way for the themes to support my research question. I refined and reorganised the codes and categories to develop the final themes that answered my research question (fig. 1).

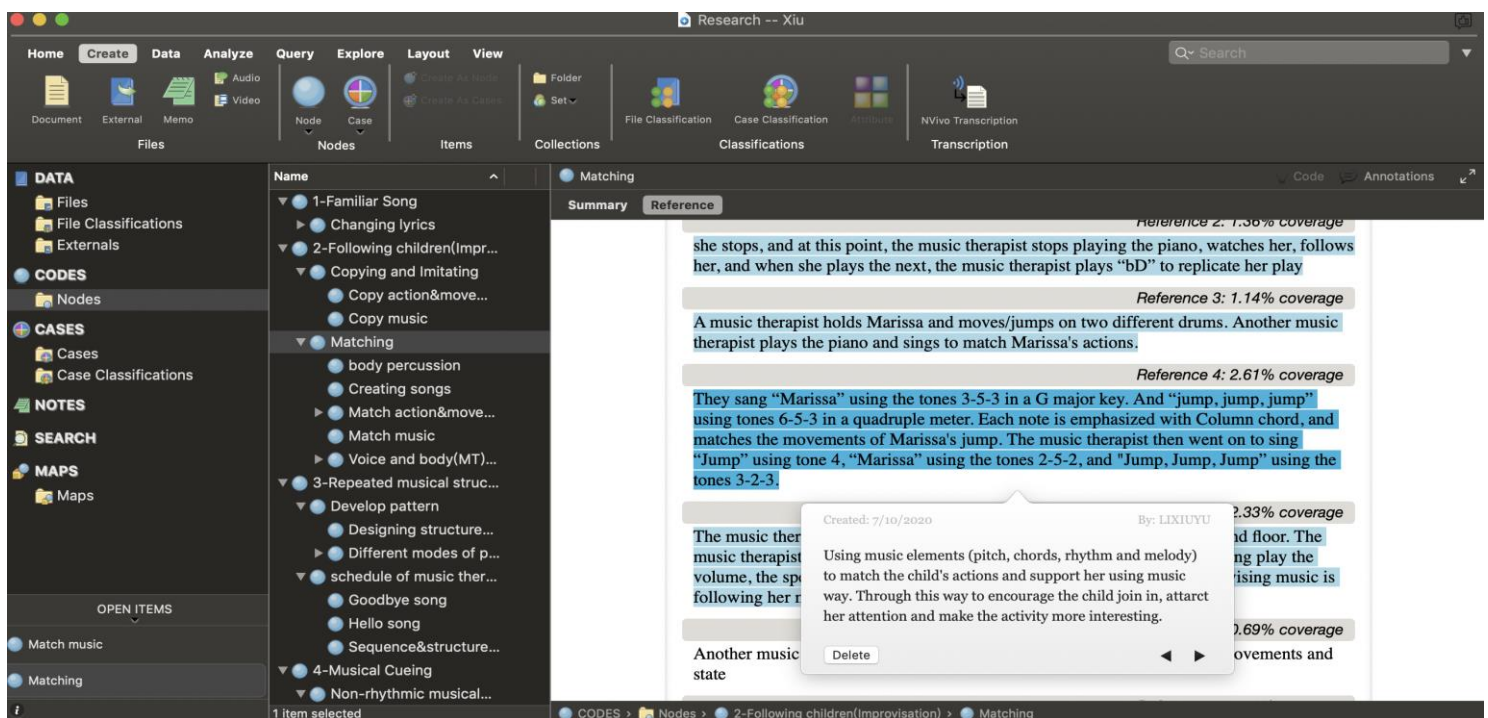


Fig. 1 Example of the analytic steps using NVivo

3.5. Ethical Considerations

As a music therapy student, I was required to abide by the Code of Ethics for the Practice of Music Therapy in New Zealand (2012), and the Victoria University of Wellington Human Ethics Policy (2019) and Human Ethics Guideline (2018).

The research was grounded in the literature, video examples which are freely available on the internet, meeting notes and clinical supervision notes. I received written consent to use the data generated from meeting notes and clinical supervision notes from my clinical liaison, music therapist on-site, and my clinical music therapy supervisor.

This research will not generate commercial intellectual property. The researcher cannot use this research to earn money. It will be a useful study for the music therapy profession and for educators who support children within the CE programme.

4. Chapter 4 Findings

4.1. Introduction

In this chapter, I present the findings from the inductive thematic analysis of the literature, the transcription of video examples of music therapy practice on the internet and notes from meetings and supervision.

4.2. Overview of the Findings

I have found two main music therapy methods in my findings, improvisation and re-creation. These include many types of music therapy techniques that can be used interchangeably by music therapists in my data.

I identified four key themes in my analysis of music therapy methods and techniques that are likely to be the most appropriate for children working within a CE programme.

Within the four key themes, there were sub-themes and then categories as follow:

Table 1

Final Thematic Map

Themes	Sub-themes	Categories
Familiar songs	<u><i>Changing lyrics</i></u>	Improvising
		Re-creating
		Create a story
Following children	<u><i>Copying and mirroring</i></u>	Action and movements
		Music
	<u><i>Matching</i></u>	Action and movements
		Music
		Voice
		Body percussion
Repeated musical structure	<u><i>Developing a pattern</i></u>	Designing structured musical interactions
		Different modes of playing instruments
	<u><i>Schedule of music therapy sessions</i></u>	Hello song and goodbye song
		Sequence and structure
Musical cueing	<u><i>Rhythm</i></u>	Stimulation and anticipation
		Rhythmic speech
	<u><i>Non-Rhythmic musical elements</i></u>	Pitch
		Dynamic
		Pause and silence

4.3. Findings in More Detail

In each theme of the analysis, I will describe and explain each theme and its sub-themes to illustrate their meanings. All my codes have come from my data identified in the literature, the transcription of video examples, and notes from meetings and supervision. I refined those codes to classify them and then generated different themes that I think best explain my codes.

4.3.1. Familiar Songs

My first theme is familiar songs. Familiar songs include those that are pre-composed and children are familiar with such as nursery rhymes. These songs are an effective way to build relationships with children, connect with them, and guide them to participate in activities.

According to the data, it was mentioned many times that “*familiar songs can let children feel safe, relaxed and comfortable*” (A. Tutty, personal communication, April 22, 2020; August 3, 2020). According to Ben-Pazi et al. (2018), when children are not able to join in the activities designed by researchers to explore auditory stimulation with children with CP, using familiar songs and music encouraged greater participation. In addition, according to Dieringer et al. (2013), the use of familiar songs promoted and enhanced participation in physical activity for children with disabilities.

In this theme I found the sub-theme ‘changing lyrics’ that included three categories; improvising, re-creating, and creating a story.

Changing lyrics

Lyrics were found to be changed using two methods; improvisation and recreation. The difference between them is that the lyrics are changed at different times such as in the moment or designing before the session. In addition, the two methods of changing lyrics also have different goals. For example, lyrics could describe those movements such as stretching, recognising body parts, or encouraging children to move their bodies (Dieringer et al., 2013; Meadows, 2002). Besides that, changing lyrics also can create a story to attract children's attention.

Improvising

Improvising new lyrics in the moment based on familiar songs can be used to describe children's actions to attract their attention and help children to feel connected. At the same time, it is also a kind of affirmation, response, and support for their behaviours. This can better encourage children to maintain or generate more movements.

For example: Improvising the lyrics with the song of *If you are happy and you know it* (Ormerod & Gardiner, 2003). If children were swinging on the chair, the lyrics could be changed to "*if you are happy and you know it, swing on your chair*" (A. Tutty, personal communication, May 20, 2020).

Re-creating

Re-creating some new lyrics based on the familiar songs before the music therapy session to promote physical movements which will help children to practice their motor skills, as well as introducing new and surprising ideas to engage children and make it more fun.

For example 1, changing the lyrics of the song of *Row Row Row your boat* (Cabrera, 2014) to “*row row row your boat, gently down the stream, if you see a little monkey, don’t forget wave your arm/ if you see a little duck, swimming away on the river*” (A. Tutty, personal communication, May 20, 2020).

For example 2, the lyrics could just focus on what actions the music therapist wanted that children could achieve, such as changing the lyrics of a song they are familiar with, such as *Twinkle twinkle little star* (Kregenow & Saldaña, 2018) to “*raise your hands are really high, try to reach the little star*” (A. Tutty, personal communication, May 20, 2020).

The lyrics are contained in a structure of music and of words that convey instruction and meaning. Retaining a familiar melody, while changing the lyrics, allows the child to more easily grasp the new instructions and meanings conveyed in the new lyrics. Changing the lyrics in their favourite songs can support children to reach their needs and goals.

Create a story

According to Dieringer et al. (2013), creating a story based on a familiar song is an effective way to engage children and promote their abilities such as communication, cognition, expression and also motor skills through the design of some scenes and storylines.

For example: Using the song of *Old MacDonald had a farm* (Cabrera, 2020) to design scenes and create a story. Designing different zones like an “animal box”, “farm board” and “finish box”, and putting them in different places in the music therapy room. In the beginning, the music therapist could encourage children to choose a kind of animal from the “animal box”, and at this time, the music therapist can sing “*Old MacDonald had a farm, E-I-E-I-O! And on his farm he had a ...* (sing the animal that children chose), *E-I-E-I-O!*”. After that, the music therapist could encourage children to put the animal on a blackboard that represents the “farm”, and at the “farm”, the music therapist could encourage some interactions

such as placing the animal on and taking it off. When the activity finishes, the children could be encouraged to tidy up those animals into the “finish box”, and at the same time the music therapist could sing some lyrics like “*the little duck needs to sleep, put it into the box*”. During this process, the children could be encouraged to move and also have fun (A. Tutty, personal communication, June 22, 2020).

4.3.2. Following Children

My second theme is following children. According to the data, many music therapists adopted an improvisational approach to follow the child’s lead. This enabled the child to feel that they were heard and affirmed. This is important to increase engagement and encourage participation in music therapy activities as well as to facilitate more interactions and practice motor skills. In this theme I found the following sub-themes and categories:

- Copying and mirroring
 - Action and movement
 - Music
- Matching
 - Action and movement
 - Music
 - Voice
 - Body percussion
 - Creating songs

Copying and Mirroring

According to Wigram (2004), copying and mirroring involved paying attention to the participant’s music, and music therapists made music by using body percussion, sounds, or

instruments in response to the participant. In this way, from music therapists' behaviour, the participant can recognise their own performance and action. To copy and mirror children's music, music therapists may use the same and similar instruments or use a different kind of instrument.

Action and movement

Children can be encouraged to generate more movements when the music therapist copies and mirrors their movements. This can also build the relationship between the child and the music therapist and offers affirmation and encouragement.

For example, the music therapist might mirror a child's movements whilst walking, as well as playing chords on the guitar to match the speed and accent of the child's gait to let them know that the music therapist was copying them (A. Tutty, personal communication, May 20, 2020).

Music

When children play instruments, they generate their own rhythm, speed, pitch, and/or pattern. Music therapists can facilitate them to maintain their interests in music by copying and mirroring their music. At the same time, this can encourage them to play more music to practice motor skills by playing instruments.

For example: from the video of Oldfield (2002), a child was playing the chimes, and the music therapist played the piano to copy the pitch of the chimes. The music therapist played G-D and G-E notes in C major key and repeated the two group notes very fast which was the same as the child's playing. During this process, the child seemed to become aware of the music therapist and he seemed interested in this kind of interaction and he continued to play the chimes many times. The positive experience motivated more music and interactions.

Matching

According to Wigram (2004), the definition of matching was that music therapists improvised music that maintained the same cadence, volume, nature and other musical elements as the participant's music, and tried to make the improvisational music meet and suit the music style of the participant. Improvisation methods include many techniques and matching is often used as a starting point. The technique of matching is used by the music therapist to respond and affirm the music and the emotional expression of children. It is different from copying and mirroring. Music therapists do not play exactly the same music as the children but offer music in the same style and quality.

Action and movement

According to Aldridge et al. (1995), every child is musical and they have their own basic tempo such as when they are clapping hands, beating the drum, and even taking a breath. In the data, music therapists use improvisational music to match the child's behaviour, movements, and breath to encourage more active participation, develop more interactions, and facilitate more physical practicing.

For example 1, the music therapist could match the speed (faster or slower) of the child's gait and provide some steady rhythm and beat to work with (A. Tutty, personal communication, April 22, 2020). Through doing this, the music therapist could encourage more motor skills practice.

For example 2, in the Nordoff -Robbins (2008) video, there are two music therapists. One music therapist held the child around the waist and helped her to move between two drums, which were different heights, and the floor. The other music therapist played the piano and kept following their movements using the volume, speed, and musical style to match

them. The melody and chords of the improvised music were changeable depending on the child's movements, such as when the child jumped on the higher drum, the music therapist would play the note A on the piano, and when the child moved to the lower one, the music therapist would play the notes G/E on the piano to match her movements and changes in height.

Music

Adjusting the tempo, volume, dynamic, style and other musical elements to match children's instrumental playing can encourage them to play more music and interact more. For example, from the video of Oldfield (2002), the music therapist changed the speed, style, and accompaniment depending on the child's playing, such as when the child scratched the drum with his left hand, and the music therapist played fast arpeggios on the piano to match him. At that time, the child seemed to become aware of the music therapist and seemed happy. After that, he played the drum more times and synchronised with the music therapist.

Voice

In addition to using instruments to match music generated by children, music therapists can also use their own voices. The voice is a good way to interact with the children. In this way, music therapists can promote more movement, instrumental play, and vocalisation from children.

For example 1: from the video of Oldfield (2002), a child was lying down on the ground, and he was playing the first string (E) of the guitar with his right index finger. The music therapist responded to him by singing "Ah" using tones 3-10 in a C major key, and "Ba" using tones 6-8-7-6-5-3 in the same key. The singing of the music therapist seemed to match the pitch and the sounds of the guitar that the child made. And when the child was

playing the different strings of the guitar (from bass to high), the music therapist generated an upturn sounds “An, An-sh” to match him. During the activity, the child seemed to be attracted, repeated the action, and played the guitar many times.

Body percussion

Bodies are used by music therapists to make music such as body percussion when they are working with children. According to the data, many music therapists created rhythm by tapping their own bodies or doing some body movements such as clapping and stomping to communicate with children (Dieringer et al., 2013)

Body percussion can be used as a rhythmic instrument like a drum to improvise rhythm to copy or match what the child is playing. For example, from the video of Judd (2013), the music therapist steadily tapped his legs with his hands five times to copy the speed and frequency of the child playing who played a homemade instrument like the cymbals. After that, the music therapist created the rhythmic pattern “♪ ♪ ♪ ♪ ♪ ♪” (four quarter notes plus two eighth notes and one quarter note) by tapping his legs and clapping his hands (legs, hands, legs, hands, legs twice, and hands). At this time, the child seemed to be attracted and caused bouts of laughter. After that, the music therapist continued to use his hands and legs to interact with the child and to encourage the child to play more.

Creating songs

According to the data, music therapists often created a new song using improvisational methods. The melody of the song would be improvised and the lyrics of the song would describe and follow what the children were doing to match them. The song could be simple and did not need special complex lyrics. Sometimes music therapists mimicked the

sounds or a movement that children made and used the voice to sing or hum to create a simple song (A. Tutty, personal communication, May 20, 2020). In this way, music therapists can attract children's attention, offer them opportunities to lead, and let them know the music therapist is looking at them and responding to them. They can encourage more communication and interaction with children.

For example 1, when the child was paying attention to turning on and turning off the light, the music therapist could create a song to describe these actions. The music therapist could create a melody to match the action of the child. Such as when the child turned on the light, the music therapist used a rising pitch tune and vice versa, or started and stopped the music matching the frequency of turn on the light and turn off the light by the child. Following the child to attract her to do more and develop more movements and interactions (A. Tutty, personal communication, May 20, 2020).

For example 2, from the video of Oldfield (2002), the music therapist improvised a melody with the lyrics that described what the child was doing and guided him to do more, such as "*standing up...scratching the drum, let us do it again*".

4.3.3. Repeated Musical Structure

My third theme is repeated musical structure. Repetition is important for children with special needs, especially when the focus is practicing motor skills. According to Meadows (2002), designing structured and repeated movement activities could let children move in a certain way in a predetermined order to improve their motor skills. In this theme I found the following sub-themes and categories:

- Developing a pattern
 - Designing structured musical interactions
 - Different modes of playing instruments

- Schedule of music therapy sessions
 - Hello song and goodbye song
 - Sequence and structure

Developing a pattern

Developing or designing a relatively stable and repetitive pattern can be an effective way of encouraging children to participate in activities. Children become familiar with the pattern and know what will happen next. This helps children to feel safe, familiar, and comfortable to participate in activities. In addition, developing patterns could provide opportunities and space for children to practice and enhance their motor skills.

Designing structured musical interactions

Songs

According to the data, music therapists created a structured song before the session and designed some instructions in the song. They guided children to follow the instructions to carry out some physical practice. For example, in the Nordoff-Robbins Music Therapy video (2015), the music therapist sang “XXX, let us beat on the drum”, which was followed by time for the child to respond. The lyrics and space were repeated, creating a pattern for the child to follow. The music therapist used the lyrics to facilitate and guide the child to do certain actions.

Instruments

In the Nordoff-Robbins Music Therapy video (2015), a music therapist developed a pattern to promote motor skills. There were four drums in front of the child. The music therapist played different chords on the piano and she sang numbers such as “one, two, and three”. At the same time, she encouraged the child to play the same number of drums. After that, the

music therapist increased the difficulty, changing the numbers to “one and two” or “only one”. This encouraged the child to follow the changes in the numbers to play a different number of drums. Developing such a pattern can not only encourage the child's attention, participation, and increase motor skills but also make activities interesting and challenging.

Different modes of playing instruments

According to the data, many therapists gave children opportunities and encouraged them to play instruments, which could be an effective way to improve their physical abilities and achieve their needs. For example, from the video of Oldfield (2002), the child was lying on the ground and the music therapist encouraged him to play guitar. When he would like to complete this action, he would need to lift his arms and touch the guitar strings with his fingers. During the process, the child raised his right hand again and again to play the strings of the guitar. Playing instruments with children can take different forms, including playing together or turn-taking.

Playing together

Playing music with a child enables the music therapist to provide feelings of support and affirmation, which can increase confidence and generate more musical interactions. For example, from the video of O'Donnell-Smith (2016), the child played the chimes with her right middle finger. At the same time, the music therapist plucked a string of the guitar with his right index finger. It seemed that the music therapist supported her, accompanied her, and responded to her in a musical way. It seemed to make her feel more confident and happy to make more music.

Turn-taking

Allowing space for musical dialogues between children and music therapists and developing turn-taking like a conversation is an effective way to attract children's attention, encourage participation, increase interactions and facilitate more music-making.

For example 1, when a child stopped playing, the music therapist played the music and vice versa to develop a conversation, rather than maintaining synchronised music, which sometimes would disturb the child's music (A. Tutty, personal communication, April 22, 2020; August 3, 2020).

For example 2, from the video of O'Donnell-Smith (2016), a child was exploring the bass area of the piano, and she played the same note several times. When she stopped, the music therapist responded to her by playing the bass on a xylophone. After the music therapist played, the child tried to play the piano again, which seemed to respond to the music therapist. In the process, the child seemed happy and engaged in more interactions and music. Taking turns in this way developed a musical dialogue.

Schedule of music therapy sessions

Hello song and goodbye song

According to the data, providing a frame around sessions by beginning with a regular "hello song" and finishing similarly with a "goodbye song" rather than using words can encourage participation and help children to feel safe (Y.T. Gao, personal communication, April 20, 2020).

In addition, the "hello song" and "goodbye song" not only provides cues for the start and end of a session but could also develop some daily life interactions and communication. For example, "it's good to see you for music today, what do you feel today, thank you for coming" (Oldfield, 2002).

Sequence and structure

According to Meadows (2002), maintaining a regular session structure was an effective way for music therapists to provide a predictable sequence of activities and music therapy sessions followed a similar pattern every week because repetition and familiarity could reduce the anxiety and discomfort of children practicing their physical abilities.

In addition, providing a schedule of activities for children enabled them to anticipate what will happen next. This helped them to feel safe, comfortable, and more able to naturally participate in music interaction (A. Tutty, personal communication, May 20, 2020). Structured activities were particularly suitable for children to practice their motor skills (Y.T. Gao, personal communication, April 20, 2020). After the hello song, a session might begin with familiar songs, and then introduce new things and/or playing instruments or practicing movement before ending with familiar songs and goodbye. In this way, it could help children feel more comfortable (A. Tutty, personal communication, August 3, 2020).

4.3.4. Musical Cueing

My fourth theme is musical cueing. According to the data, many music therapists used different types of musical cues, such as rhythm, pitch, dynamics, pause and silence to achieve different goals. For example, encouraging children to participate in activities, attracting children's attention, developing more musical interactions, and guiding and supporting children to engage in motor skills exercises.

Musical cueing makes full use of the various elements and characteristics of music to give children sensory stimulation and encouragement. According to Meadows (2002), musical elements could have different effects on children with physical disabilities. For example,

rhythm could promote movement, melody could attract attention, timbre could encourage relaxation, and the style could support and encourage participation.

Rhythm

The data showed that rhythm is an essential element in music. Using rhythmic music or even just toe-tapping can influence and synchronise movement (Kwak, 2007; Thaut, 2015). Rhythm can act as an effective external stimulus and time cue to support and improve body movement (Kwak, 2007; Thaut, 2015), especially having significant effects to improve gait and upper extremity function when using the RAS methods (Thaut & Abiru, 2010; Thaut, 2015).

Stimulation and anticipation

The rhythm creates a stable expected time scale, and the rhythmic cue gives the brain a time limit to let people know the duration of the movement (Thaut, 2015), which can give children anticipation and let them feel safe and reduce their anxiety to join in the activities. Therefore, the rhythm was so important for children to practice their motor skills (A. Cseh, personal communication, April 20, 2020).

For example, in the Nordoff -Robbins (2008) video, a child was encouraged to practice her walking. Before she started, a music therapist played four steady quarter notes on the piano, which seemed to act as a start signal and also gave the child and co-music therapist a rhythmic framework to practice walking, creating anticipation and allowing time to prepare for walking. After that, the music therapist played a steady rhythm on the piano to support the child as she practiced walking. Every two quaver notes matched the child's one step. At the same time, the music therapist sang "*Shall we take a little walk*" using the tones 3-4-5-5-5-6-5/3-4-5-5-8-6-5 in a B flat major key.

Rhythmic speech

In the Nordoff-Robbins Music Therapy video (2015), the music therapist used a rhythmic speech to guide children to do more movements. The rhythmic pattern of these words was two eighth notes plus one-quarter note and two-quarter rest (♩ ♩ - -). The words were “*put your hands, to the front, to the back, to the left, to the right*”.

Non-Rhythmic musical elements

According to the data, many non-rhythmic musical elements also were used by music therapists such as pitch, dynamic, and pause/silence.

Pitch

According to Schwartz (2008), the pitch is a sound that can be identified by a particular frequency and which can be high or low. According to the data, many music therapists used different pitches and variations of pitch as a cue to promote exercises in motor skills and to enhance musical interactions with children.

For example 1, when children needed to practice their arm movements, the music therapist could use the pitch of the notes E-F-G in a C major key on the piano or chords like C-F-G-high C on the guitar to push and promote children to raise their arms (A. Tutty, personal communication, April 22, 2020).

For example 2, in the Nordoff-Robbins Music Therapy video (2015), the music therapist used pitch as a cue and also as an instruction for the child to play different areas of the xylophone. The music therapist played arpeggio from high to low pitch on the piano, and she encouraged the child to follow the change of pitch to play the xylophone from high to low pitch. After that, the music therapist stopped and started the next round of arpeggio from low to high, and the child followed the musical cue to play the xylophone. In this example, the

child is exploring highs/lowes and up/down (spatial awareness) as well as practicing her motor skills.

Dynamic

Dynamics describe volume, the degree of loud or soft sound (Schwartz, 2008). Dynamics are volume levels can also be used as musical cues. For example, when an activity finishes, the music therapist could use an increasingly soft pattern to express the ending. Such as singing “*E I E I O*” loudly, and then singing it softer at the second time, and softer at the third time, and singing it with almost no sound or very low volume at the last time. Such musical cues can give the child a sense of transition, make it easier for the child to accept finish and felt comfortable (A. Tutty, personal communication, June 22, 2020).

Pause and silence

According to the data, many music therapists used a pause to engage children to join in and facilitate more musical interactions. A pause can act as a cue to leave space inviting participation.

For example 1, from the video of Judd (2013), the music therapist used a pause to invite the child to perform an action. The music therapist sang “*Do you want to play the piano*”, and then there was a pause after the last word “*piano*”, at the same time, the music therapist’s body was moving forward and looked at the iPad to encourage the child to move his fingers to choose “yes” or “no” by touching the iPad.

For example 2, from the video of Oldfield (2002), the music therapist played decomposition chords on the guitar, and then she stopped for 6-7 seconds, after that she played the next decomposition chord, and then she stopped again. In this way, the music therapist gave

the child time to react and give responses. In the beginning, the child did not give any response, but during the process, he turned his head to the music therapist and made eye-contact with the music therapist and his hands showed a little movement.

4.4. Summary

This chapter reviewed the four key themes that I identified and illustrated the findings from my thematic analysis. These findings presented multiple techniques that belong to improvisation and re-creation music therapy methods which seem to be particularly appropriate for music therapists to use when working with children with physical disabilities within a CE programme.

Those themes, sub-themes and categories seem to show a pattern and theory. When music therapists working with this population in the CE programme, they often use improvisation and re-creation music therapy methods flexibly. Depending on the current state and response of children in the moment. Through designing structured musical interactions, using familiar songs, and using musical elements to give children feedback, cues and support, so that to help children engage with and practice their motor skills and meet their needs.

The four core themes in the findings play an important and indispensable role in supporting the development of a theory as they co-operate and co-exist with each other. The overriding essence of the theory is **following children in the moment to respond to them musically**. If music therapists only fixedly used familiar songs and repetitive musical activities, they may lead to children's distracting their attention and losing interest in music rather than participating. The findings highlight that music therapists pay attention to the present when reacting with children in the repeated musical structured activities, flexibly choosing appropriate methods and techniques to conduct natural musical interaction with children.

5. Chapter 5 Discussion

5.1. Introduction

In this chapter, I will review the important points in the findings and link them back to the literature review and vice versa. Because my research was theoretical, my data included nine pieces of literature which were part of my literature review. The information from these nine articles was included in my data and is therefore present in my findings, so I will exclude them from consideration when discussing how the findings relate to my literature review.

There are four main music therapy methods employed by music therapists; receptive methods, composition, improvisation, and re-creation (Dieringer et al., 2013; Wheeler et al., 2005). In chapter 4, the findings identified two main music therapy methods, improvisation and re-creation, which were likely to be the most appropriate methods for music therapists working with children within a CE programme. Many types of music therapy techniques were interwoven and overlapping each other under those two methods, which highlighted the flexibility and complexity of working with this population.

I will firstly discuss the main themes; familiar songs, following children, repeated musical structure, and musical cueing. Secondly, I will discuss some interesting discoveries. According to the data, the findings also showed some aspects were belonging to non-music therapy methods and techniques. Although those techniques were not directly relating to my research question, they were important and could not be ignored. At the end of this chapter, I will also discuss the strengths and limitations of my research.

5.2. Areas for Review

In the findings, the two main music therapy methods that I identified were improvisation and re-creation. According to Dieringer et al. (2013), improvisation is used to encourage individuals to create music spontaneously. Re-creation helps participants use or develop a re-created piece of music to express emotions, experiences and/or events.

5.2.1. Familiar Songs

Under the theme of ‘familiar songs’, an important sub-theme was ‘changing lyrics’ in different ways, depending on the child’s needs and the circumstances of the session. There were three categories under this sub-theme; improvising, recreating and creating a story. All three categories were interlinked in the data. According to Bunt and Stige (2014), music therapists in New Zealand are more focused on experiencing the “here and now”. When they are working with children with special needs, they use a flexible and improvisational approach that combines other standard music therapy techniques to respond to the child’s needs in the moment (Rickson et al., 2016). Therefore, when a familiar song is used to support children to practice their motor skills, the lyrics can be designed beforehand to guide the child to increase physical movement, or some storyline can be designed to attract children’s attention. This process is not rigid or immutable, but flexible and natural, changing depending on the child’s feedback. Using improvisation, it is also possible to change the lyrics to follow the child’s behaviour, or start by improvising lyrics based on the movements, sounds or behaviours of children to offer responses and guidance.

5.2.2. Following Children

In the theme following children, the main musical therapy method was improvisation. There are many techniques in the music therapy method, improvisation. These include mirroring, imitating, copying, matching, empathic improvisation, reflecting, grounding, holding, containing, dialoguing and cueing (Carroll & Lefebvre, 2013; Wigram, 2004). According to Archer (2004), music therapists can improvise by using instruments to reflect and match the perceived emotional and/or energy levels of the child to engage children. The music is created in the moment according to the child's behaviours. Once the child is involved or interested, other improvisational techniques can be used to guide the child to the next more organised or purposeful activities. This view is consistent with my findings. In my findings, two sub-themes were identified; copying and mirroring, and matching. Music therapists copied or matched the child's action, movements, and music performance by using instruments, voice, or their own bodies. In the process, some songs were created to match the child's actions through the lyrics. This was an effective way to help the child engage in activities and encourage more interactions or practise physical movements.

5.2.3. Repeated Musical Structure

An important element of my research topic is to use music therapy methods and techniques in the CE environment. According to Hume et al. (2005), EI plays a significant factor in the development of children. Many kinds of educational, developmental and therapeutic activities as well as public and personal support networks are components of EI (Jonsdottir, 2002; 2008). Collaborative working by interdisciplinary teams is the most effective way to provide support for children (Jonsdottir, 2008). An increasing number of music therapists are now providing services in the field of education (Dieringer et al., 2013; Rickson, 2008).

Therefore, it is important to understand and collaborate within CE setting to provide music therapy activities for children.

The third theme from the findings was repeated musical structure. By developing a pattern using structured interactions and providing different modes of playing instruments, as well as setting fixed greetings and goodbye songs, and arranging structured and organised interaction sequences in the activities, music therapists provide children with a safe and familiar space. In this way, music therapists could better encourage the participation of children and the improvement of motor skills. In CE, their educational model is task-oriented learning, and the design and arrangement of activities are highly structured (Darrah et al., 2004; Myrhaug et al., 2018; Tuersley-Dixon & Frederickson, 2010). This theme illustrated such patterns and methods can also be better integrated into the CE programme, not only providing children with a relatively stable learning style, but also offering a better musical experience.

5.2.4. Musical Cueing

The final theme is musical cueing, the use of rhythm and non-rhythmic musical elements as cues to encourage and support children's participation and movements. In this theme, almost all techniques can be intertwined in both improvisation and re-creative music therapy methods.

Rhythm can provide a stable musical environment and provide children with a sense of anticipation in preparation for movement. Rhythm can also be used as a support tool, encouraging children to participate in music making. According to Ma et al. (2019) and Petruta (2015), the rhythm of the music that people play or listen to can balance the biological rhythm of the human body, regulating the physiological functions. In addition, using rhythmic speech can not only guide children but also encourage their participation. In the CE programme, conductors always use rhythmic speaking or singing to provide a background

rhythm that promotes and improves motor actions, as well as enhancing the child learning and initiating the movement (Darrah et al., 2004; Myrhaug et al., 2018; Tuersley-Dixon & Frederickson, 2010). According to Petruta (2015) and Schwartz (2008), music is another part of children's senses, and children are very sensitive to music. Using non-rhythmic musical elements such as pitch, dynamic, and pausing can also support and guide children to develop their motor skills.

According to Kwak (2007), a key element of RAS is the ability of the body to move synchronously and rhythmically. The periodicity of rhythm patterns can affect movement patterns (Thaut, 2015). Kwak and Kim (2013) pointed out that RAS can significantly improve gait. However, according to Kwak (2007), for RAS to be effective, it is necessary to include pre-tests and post-tests in the protocol. There are certain requirements and standards for rhythm, music, speed and how to adjust in each repetition. But for children with physical disabilities, this is difficult to achieve. From my findings, it seems that rhythm is a good element for musical support, musical stimulation, and anticipation for the child. However, it is also essential to remain flexible and to follow the child's rhythm before developing the activities.

5.3. Other “Findings”

It is interesting that the findings also uncovered techniques, such as relationship building, that are not often referred to specifically in the literature as a music therapy method or technique, however in my findings relationship building was considered vitally important by music therapists as a method. Additionally, non-music therapy methods and techniques were

considered important by music therapists, including meeting the child's needs and identified goals, and non-musical support.

5.3.1. Relationship Building

Relationship building is an important goal of music therapy. Developing a good relationship between music therapists and the children they work with is the basis for conducting music therapy sessions, as it serves as a vehicle for the participation and expression of participants and is the basis for progress all other goals. Children need to spend time with music therapists to get to know them and trust them, and then children can feel safe and comfortable enough to join in with the music therapy activities. In addition, if a child leaves the session feeling happy, their thoughts and memories of the music therapist, the session and the therapy room will be positive. This is an effective way to build relationships (A. Tutty, personal communication, April 22, 2020; May 20, 2020; June 22, 2020).

5.3.2. Meeting the Child's Needs and Identified Goals

According to the data, it was essential for music therapists to set suitable goals for children with special needs, especially those with physical disabilities such as CP. Those development goals were to maintain or improve their motor skills such as increasing body awareness and muscle control; maintaining and developing the range, the fluidity, and the number of times of movements that children can make; improving spontaneity and independence of movement (Meadows, 2002). Among these goals, sitting, walking and fine motor skills were the main areas (Ben-Pazi et al., 2018). When music therapists set goals including musical goals and non-musical goals, they need to consider how the music therapy methods and techniques support the goals.

Music therapy offered children the opportunity to engage in, listen to, and interact with music, as well as improving physical abilities. Communicating through music has the potential to enrich children's lives (A. Cseh, personal communication, April 20, 2020; Nordoff Robbins, 2008; O'Donnell-Smith, 2016; Oldfield, 2002). For example, music therapists could use action songs to promote children's gross motor skills, used instruments to improve children's fine motor skills (hands and fingers). At the same time, the goals needed to be measurable, such as improving motor skills, a short-term goal might be to encourage and support a child's standing practice from one minute to one minute and 10 seconds (A. Tutty, personal communication, August 3, 2020; Y.T. Gao, personal communication, April 20, 2020).

According to the data, it was important to identify the goals for the children. It can take time to identify appropriate goals for children with learning support needs. Music therapists need to spend a lot of time with children to get to know them, to build the therapeutic relationship. They must identify what the individuals' needs were, talk with the families, and think about individual education plans for them. Good communication and the setting of realistic goals can get good results (A. Cseh, personal communication, April 20, 2020; A. Tutty, personal communication, April 22, 2020).

5.3.3. Non-musical Support

According to the data, some non-musical support was frequently used by music therapists. These techniques are not limited to music therapy activities but are also used by other early education teachers or other therapists.

Materials

Visual

According to the data, many music therapists used visual materials to support music therapy activities. For example, using a blackboard with a list that was made of different pictures to show children what they were doing and what was going to happen next. This type of visual representation allows children to anticipate activities, and helps them to feel safe and comfortable to participate (A. Tutty, personal communication, May 20, 2020). In addition, music therapists could also use different animals, colours, shapes, pictures of facial expressions, and toys to interact with children, which could attract their attention and interest (A. Tutty, personal communication, August 3, 2020).

In addition to pictures, music therapists sometimes also use technological devices such as iPad in music therapy sessions. In the Judd (2013) video, the music therapist put different colour “yes” and “no” pictures on the iPad, and guided the child to express his choice by touching the “yes” and “no” on the screen. This tactile and visual stimulation draws the child's attention, making activities more interesting, and increasing the child's body awareness.

Creating/choosing suitable instruments

Creating and choosing suitable instruments for children is vital to improve their motor skills. According to the data, many music therapists made decisions about which instruments to use based on children's specific circumstances and needs.

For example, in the Judd (2013) video, the music therapist used homemade instruments to encourage the child to practice his fine motor skills. The wooden instrument was rectangular. Its length was about the length of the child's hands. Its width was about one-third the length of the child's hands. It was not very thick, and it was about 1-2 centimetres. There

was a silver rubber band on the shorter sides of the wooden instrument. The ends of the rubber band were secured by glue or something else that can stick. The silver rubber band (about 2 cm wide) appeared to be a little elastic, soft and smooth. The rubber band helped the child hold the instruments. The child could experience the pleasure and feeling of playing musical instruments and creating rhythms. This instrument can provide more opportunities for children to play and experience different musical forms.

Massage and touching

According to Meadows (2002), massage and touching helped children increase their body awareness and prepared the body to move. According to the data, some music therapists used massaging to connect with children and also improved their body awareness and made children feel relaxed.

For example, in the Oldfield (2002) video, the child was laying on the ground and looking to the right which was opposite to the music therapist. The music therapist sang “Hello” to him and at the same time used her right hand and fingers to touch the child’s arm to build a connection with him.

Encouraging Words

According to the data, many music therapists used positive words of praise to give children affirmation, to make them feel more confident and to encourage them to participate and to engage in motor skills practice, such as “yes”, “very nice”, “good”, “well done” and so on.

Position

According to the data, the physical position was important for children and music therapists. Placing the instruments appropriately was also helpful to encourage children to participate more.

Children

A suitable and healthy position is essential for children to develop physical abilities and also make them feel comfortable so that they can participate fully. According to Meadows (2002), one of the preparations of music activities was to make sure that children were in a comfortable position.

For example, in the Oldfield (2002) video, the music therapist worked with a physical therapist to provide music for the child. The physiotherapist held the child to make sure his posture was comfortable and so that he could easily reach to play the instrument.

Music therapists

According to all video data, music therapists sat close to the children, facing them, sometimes hugging them, and made physical, verbal and non-verbal contact and interaction. They expressed acceptance, warmth, and appreciation of them.

For example, in the Nordoff -Robbins (2008) video, the music therapist held the child and lets the child sit on his lap. The music therapist was shaking the child's body naturally and singing cheerful songs. At this moment, a smile appeared on the child's face, as if he was very happy.

Positioning of Instruments

According to the data, many music therapists placed instruments where children could easily play and touch them. In addition, music therapists also placed instruments with consideration of the child's goals or the requirements of the activity. For example, in the Nordoff -Robbins (2008) video, the music therapist designed two different heights of drums, plus the

ground, which offered three different levels like a staircase. The music therapist held the child to jump between the different heights. This activity allowed the child to feel different heights, different instruments, and the child seemed happy as well as increasing her body awareness.

It is also interesting that playing an instrument from a different angle, placing the instrument in different positions around the child's body, and playing it in different ways can change and affect the sound of the instrument, and this can also provide opportunities to experiencing different feelings. For example, an ocean drum, if placed the ocean drum above a child's forehead, or behind the child's ear, could produce a completely different sound than playing in front of the child (A. Tutty, personal communication, June 22, 2020).

Help to move

According to the data, music therapists, who worked with children who had physical disabilities, sometimes helped children move their bodies to increase body awareness and improve their motor skills.

For example, from the video of Oldfield (2002), the child was sitting in a chair and holding a beater in his right hand. The music therapist held a xylophone in her right hand and helped the child to play the xylophone by holding the child's hand gently in her left hand. This encouraged the child to practice using his right hand.

5.4. A Review of the Strengths and limitations of this study

Due to the Coronavirus outbreak, I had to be flexible about the type of research I would undertake to make sure I could complete it successfully. As a student music therapist, it was useful for me to read a lot of literature before I started my placement. This helped me to understand and familiarise myself with the children I was going to work with, the facility, and how other music therapists or other therapists were supporting children. Through reading literature, watching many videos and attending the meetings and supervisions, I absorbed a lot of knowledge and information which formed a foundation for me to offer more suitable music therapy sessions to children. When I started my placement, I was able to verify this information in my practice, to try the methods and techniques I had explored. I have used those findings in my clinical placement, such as using familiar songs, changing lyrics, improvising music to interact with children, using structured patterns, and making full use of musical elements. All of them have received good feedback. I found how precious and enriching they were to my study and practice.

In addition, as I mentioned in the literature review in chapter 2, there is some relevant literature about music therapy interventions to support children with special needs or physical disabilities. However, there are not many articles about the application of music therapy methods and techniques in CE. Some literature focuses on music therapy with children who have physical disabilities, but those are more than 10 years old. The findings from my theoretical research summarised and provided information for me and others who are interested in this area or working in the CE programme, outlining some music therapy methods and tech-

niques that are likely to be the most appropriate for children working within a CE programme, and why this might be. Although the information and theories I have gathered in this study may need to be updated and expanded, it is a useful reference for further exploration and practice in this field.

6. Chapter 6 Conclusion

As a student music therapist, this research project helps me better understand the important aspect of working with children with physical disabilities in the CE programme, as well as learning more methods and techniques that are used in the practice of music therapy.

For this qualitative exploratory theoretical research, the three data sources offered an exploration and discovery of what music therapy methods and techniques can be most appropriate when working with children in the CE programme. I used inductive thematic analysis to analyse the data from different sources as my qualitative research strategy. This study presented some findings of my work by analysing nine pieces of literature related to my research topic, eight transcriptions of video examples, and six notes from in-depth conversations with three relevant professionals about the research question. I used this to find meaningful themes from my data to answer my research question.

This study found different themes, sub-themes, and categories. There were four main themes which were familiar songs, following children, repeated musical structure, and musical cueing. These four themes were supported by two music therapy methods and many music therapy techniques. These music therapy techniques are interwoven between the two music therapy methods.

In addition, there were some non-musical techniques and ideas that were often used not only by music therapists but also by other therapists and educators, including building a relationship, setting appropriate goals, and offering some non-musical support. These came up frequently in my data and were widely used by music therapists. These strategies better supported children's participation and helped them improve their motor skills.

The four core themes identified play a significant and vital role in supporting the development of a theory because they are mutually cooperative and coexisting. For children (0-6) with physical disabilities in the CE programme, music therapists can naturally and flexibly use improvisation and re-creative music therapy methods. The main aspects of the theory are following the child's lead and responding musically to them in the moment. Using familiar songs and designing structured and repeated interactions in the music activities, and using musical elements to provide cueing and support as the techniques to effectively encourage children to participate in activities, and improve their motor skills.

The research has the potential to help families, others in the CE programme, music therapists, the music therapy community and student music therapists learn about the information in this field. This research study can be useful by supplementing the gaps and shortages in literature. I have also tried to highlight the most relevant information, materials and ideas that can be used to support and enhance the work that we all do.

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Appendices

Appendix 1 Meeting Consent Form



TE KŌKI NEW ZEALAND SCHOOL OF MUSIC
VICTORIA UNIVERSITY OF WELLINGTON, PO Box 600, Wellington 6140, New Zealand
Phone + 64-4-463-5369 Email music@nzsm.ac.nz Web www.nzsm.ac.nz

Meeting Consent Form

Research Working Title: What music therapy methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why?

Date _____

Dear [name],

Kia ora. I am Xiuyu Li, the music therapy student currently studying at Victoria University of Wellington. As part of my second year of a Master of Music Therapy in which I am enrolled, I am required to carry out a research project relevant to my placement, the results of which will be presented in a written exegesis at the end of the year. The letter is to formally request the permission for the use of the data collected from meeting notes relevant to my placement. The research will be supervised by Dr Daphne Rickson (Associate Professor) and Penny Warren (Teaching Fellow) in Music Therapy at the New Zealand School of Music. Because it is low-risk research, ethics approval has already been granted (Ethics Application ref: #22131, 2019). In addition, I will abide by the Code of Ethics for the Practice of Music Therapy in New Zealand.

Please sign both copies of this letter, and return one to me, to indicate that permission is granted from [name].

Let me know if you have any concerns about this, or don't hesitate to contact Penny Warren by email [email].

With kind regards,
Xiuyu Li
Music Therapy student
New Zealand School of Music

Signed, on behalf of [name]

.....

*

Appendix 2 Supervision Consent Form



TE KŌKI NEW ZEALAND SCHOOL OF MUSIC
VICTORIA UNIVERSITY OF WELLINGTON, PO Box 600, Wellington 6140, New Zealand
Phone +64-4-463-5369 Email music@nzsm.ac.nz Web www.nzsm.ac.nz

Supervision Consent Form

Research Working Title: What music therapy methods and techniques are likely to be the most appropriate for children working within a Conductive Education programme, and why?

Dear [name],

Kia ora. I am Xiuyu Li, the music therapy student currently studying at Victoria University of Wellington. As part of my second year of a Master of Music Therapy in which I am enrolled, I am required to carry out a research project relevant to my placement, the results of which will be presented in a written exegesis at the end of the year. The letter is to formally request the permission for the use of the data collected from meeting notes (date) relevant to my placement, and the ongoing clinical supervision notes (date) on my placement. The research will be supervised by Dr Daphne Rickson (Associate Professor) and Penny Warren (Teaching Fellow) in Music Therapy at the New Zealand School of Music. Because it is low-risk research, ethics approval has already been granted (Ethics Application ref: #22131, 2019). In addition, I will abide by the Code of Ethics for the Practice of Music Therapy in New Zealand.

Please sign both copies of this letter, and return one to me, to indicate that permission is granted from [name].

Let me know if you have any concerns about this, or don't hesitate to contact Penny Warren by email [email].

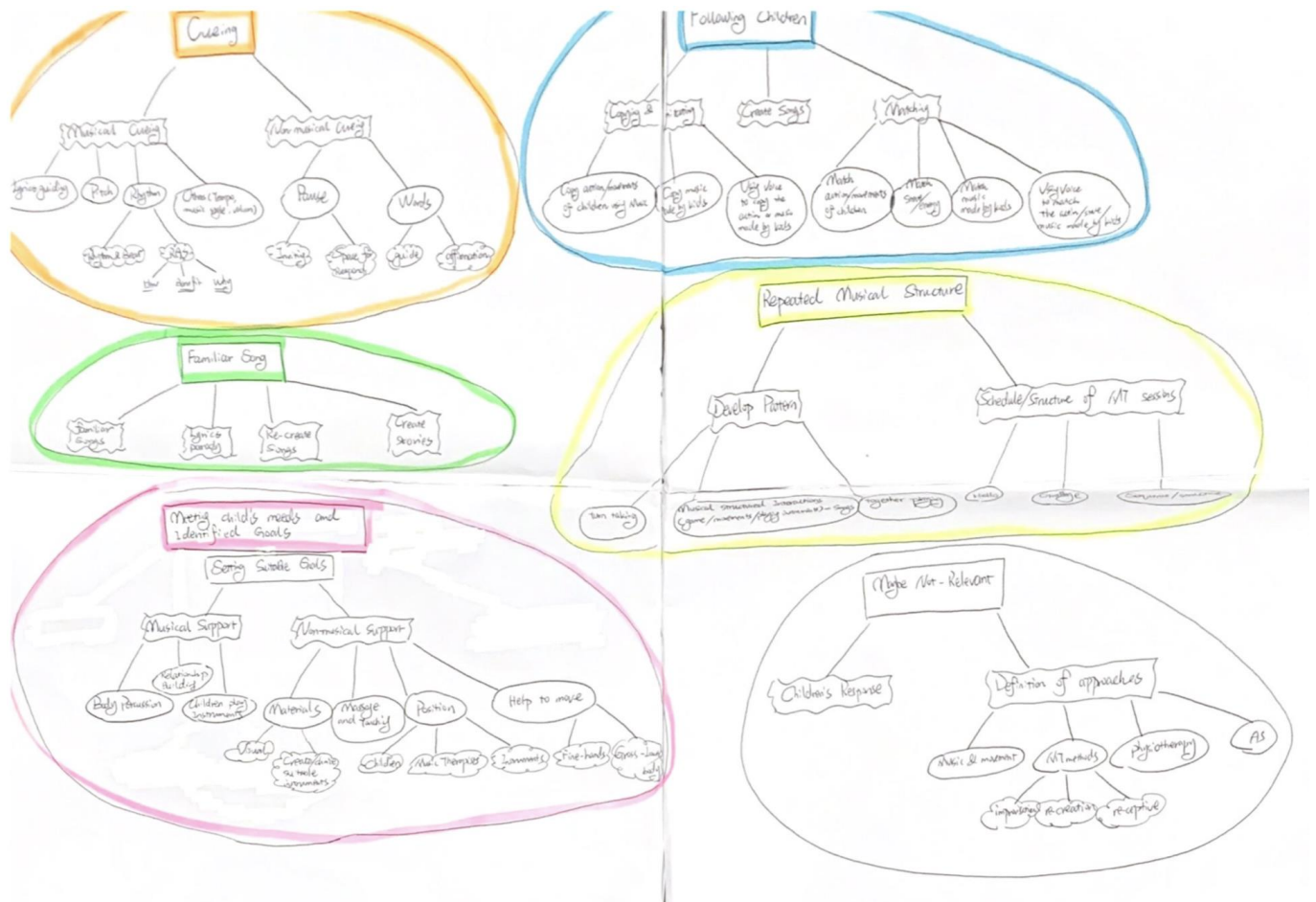
With kind regards,
Xiuyu Li
Music Therapy student
New Zealand School of Music

Signed, on behalf of [name]

.....

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Appendix 3 Initial Thematic Themes Map



*names have been changed

Appendix 4 Methods Oriented Thematic Map

Themes	Improvisation	Explanation	Re-creation	Explanation
1. Familiar songs	Changing lyrics (improvising)	Describing children's actions in the moment based on familiar songs	Changing lyrics (re-creating and creating a story)	Designing and re-creating lyrics before the session based on familiar songs Creating a story by designing interactions and plots in familiar songs before the session
2. Following children	Copying and Mirroring (action, movement and music)	Copying and mirroring children's actions and movements, and music in the moment		
	Matching (action and movement, music, voice, body percussion, and creating songs)	Matching children's actions and movements, and music in the moment by using instruments, voice and body percussion Creating a song by using improvisational methods to create the lyrics matching the child's behaviours and the melody is also improvised		
3. Repeated musical structure			Developing a pattern — (Designing structured musical interactions)	Designing and creating a structured song before the session and designed some instructions in the song. Designing some patterns to encourage children to play instruments.
	Developing a pattern — (Different modes of playing instruments)	Playing instruments with children in different ways. Such as playing together, during the process, using improvisational methods to match/copy/grounding with the child. Or turn-taking, during the process, trying to develop musically conversation.		
			Schedule of music therapy session— (hello song and goodbye song)	Creating and singing the same song as the start and finish signals for children to join in the activities.

Themes	Improvisation	Explanation	Re-creation	Explanation
	Schedule of music therapy session— —(sequence and structure)	Playing instruments or doing action songs depending on what is suitable for children in the moment.	Schedule of music therapy session— (sequence and structure)	Singing some familiar songs to make children feel safe and comfortable.
4. Musical cueing	Rhythm (stimulation and anticipation)	Using Rhythm to create the grounding/containing of the music of children	Rhythm (stimulation and anticipation, and rhythmic speech)	Playing a stable rhythm to give children anticipation Before the session, designing interactions by using rhythmic speech
	Non-Rhythmic musical elements (pitch, dynamic, pause and silence)	Using pitch (high and low) as an cue to guide children to play music; using pitch to encourage children to do movements like using C-F-G for children arising arms (in the moment) Playing music depending on the children's energy to change dynamic to develop music Leaving space for children to invite them join in and give response by pause and silence in the moment	Non-Rhythmic musical elements (pitch and dynamic)	Using pitch (high and low) as a cue to guide children to play music; using pitch to encourage children to do movements like using C-F-G for children arising arms (designing before the session) Reducing the dynamic for the ending of the music therapy session