MUSIC THERAPY FOR IMPROVING PREMATURE INFANTS' WELL-BEING AND COMMUNICATION SKILLS AND ENHANCING MOTHER-INFANT BONDING -- A CASE STUDY

Stefania Antonakopoulou

Master's Thesis

Music Therapy

Department of Music

13 June 2016

University of Jyväskylä

JYVÄSKYLÄN YLIOPISTO

Tiedekunta – Faculty Humanities	Laitos – Department Music Department
Tekijä – Author ANTONAKOPOULOU STEFANIA	
Työnnimi – Title PREMATURE INFANTS: MUSIC THERAPY FOR IMPROVING INFANTS' WELL-BEING AND ENHANCING MOTHER-INFANT BONDING AND AS A MEANS OF COMMUNICATION AT AN EARLY DEVELOPMENT STAGE. CASE STUDY	
Oppiaine – Subject Music Therapy	Työnlaji – Level Master's Thesis
Aika – Month and year June 2016	Sivumäärä – Number of pages 57 (59 with Appendix)

Tiivistelmä – Abstract

Over the last few decades, mother-child attachment has received increasing attention in early intervention with prematurely born infants. In these early years, physical interactions constitute a crucial arena for early learning and brain development, and together with the strong emotional bonding between the mother and her infant, they build the foundation for later interaction relationships. Premature birth is a challenging experience for the mother-infant relationship and is always a risk factor in early interaction issues (long hospital stay, lack of physical closeness etc.). This case study aims to examine how music therapy can promote premature infant's well-being and encourage the creation of a healthy mother-infant bonding. The current investigation involved the observation and qualitative analysis of twelve recorded video data of mother-infant music therapy sessions and an in-depth, semi-structured interview with the music therapist analyzed with Interpretative Phenomenological Analysis. Findings of the case study included improvement of infant's visual attention abilities, auditory information processing and quality of sleep, as well as important enhancement of mother-infant relationship with the participation in music therapy activities. Along with former studies on effective music therapy for preterm infants, these findings show the power of music therapy on infant's physical and psychological state, as well as on the rapprochement of this valuable mother-infant bond at this early stage. Further research could be conducted on the creation of greater and effective music therapy techniques for premature infants during and after leaving the hospital, which would encourage all parents to work the relationship with their baby.

Asiasanat – Keywords Premature infant, Mother, Bonding, Music Therapy, Interpretative Phenomenological Analysis	
Säilytyspaikka – Depository	Jyx-database: https://jyx.jyu.fi
Muitatietoja – Additional information	

CONTENTS

“Music lives between us, and the development of children flows from this. If you help them to experience and share the strength of music, they find strength to face the world.”

-Jean Eisler. Music therapist and tutor on the training course
at the Nordoff-Robbins Music Therapy Centre.

Acknowledgments

First of all and most importantly, I would like to thank my family for their valuable and immense support, faith, trust and patience that they showed me during these two years of my studying in the Music Therapy Master's program in Finland. They are always there for me in every single step and decision that I take by supporting my dreams and helping me in every possible way to make them real.

A special thank you also goes to my supervisor, Jaakko Erkkilä, who helped me realize the meaning of research in the Music Therapy Field, by keenly supporting my ideas and providing me a safe environment for expressing my numerous questions, worries or doubts during these two years. He was always present and he was guiding me to the right path with great patience and altruism. Thank you for having faith in me and for the valuable knowledge that you provided me.

Finally, I would like to show my great gratitude to all of our professors for the invaluable support that they gave to us during this program. Esa Ala-Ruona and Anja Vanninen thank you for this amazing experience that you offered us during this music therapy knowledge trip. You provided us with all the necessary spiritual supplies and confidence for our future progression and we are really grateful for that.

Thank you all for this memorable journey.

1 INTRODUCTION

Outside the Neonatal Intensive Care Unit's (NICU) entrance, parents live their own Calvary; their agony is very high and they wait, pray and hope everyday for a miracle to come. Even if they feel secure that the nursing staff gives their baby the hope of survival, their own premature newborn rarely has the luck to experience the gift of Mom's and Dad's everyday caress in these special first moments of his life. Then, when baby's good physical health is secure, his parents are able to give him the affectionate touch and hold him close (even sometimes through glove's cold material) and to whisper him words and sounds of affection, behind the glass of the incubator. This is the only way to feel like parents and give their newborn all these positive messages of love and tenderness that he needs, in order to win this great battle for life, a battle in which he stars inadvertently before he even realizes the meaning of survival. For all those parents, moms or dads, who have a little low-birth weight baby that struggles to survive everyday in these clinical and unfriendly rooms, prematurity is a crucial bet to win.

In the twenty-first century, even extremely low-birth weight premature newborns manage to survive after birth, because of the significantly high level of prenatal and postnatal care in the Neonatal Intensive Care Units (NICU), as well as due to the introduction of new alternative and effective methods which can promote infants' physical health and well-being. On the other hand, the hospital setting and staff cannot offer infants this unique natural safety and affection that a mother's womb can provide. The auditory environment inside the special rooms for premature infants is really noisy and irritating because of the monitoring equipment, thus this can be an important risk for babies whose health is at a fragile state. Furthermore, another problem that both infant and parents face after premature birth is the lack of physical closeness due to the long period of infant's stay in the hospital. Thus, the valuable mother-infant relationship confronts a big risk, as they both need to work hard (especially the mother) in order to prevent any serious interaction and bonding problems at this early development stage.

The forthcoming weeks after premature birth are considered more demanding from those of full-term newborns, because mother-infant physical and essential attachment is missing due to baby's medical needs. Therefore, this can influence the natural procedure of mother-infant bonding and postpone the important early interaction between them. It can also cause a great danger for serious problems in this crucial infant's development stage, due to the fact that the baby is physically separated from his mother in order to receive the nursing care in the hospital. The process of the first physical contact with the premature newborn is a quite challenging experience for parents, and especially the mother, because they may sometimes feel upset, terrified or even annoyed due to the first shock that they experience by thinking that the infant does not belong to them but to the nursing and hospital staff, because of his medically necessary care. Their daily routine suddenly changes, as they need to visit regularly their little child, in order to provide him expressed breast milk and a shade of love and shelter for some minutes. Thus, it is absolutely normal for the parents to face sometimes difficulties in being as close to their infant as they would want, something that increases the amount of stress and worry that they feel.

This immediate change of status is horrifying and unusual for the preemies, as they are necessarily removed from the affectionate atmosphere of the womb to the unknown and irritating hospital context. Thus, from security to uncertainty and from the warmth of the mother's uterus to the unpleasant and extensive medical processes in the hospital setting, followed by preemie's isolation in the incubator. The hospital environment can undoubtedly cause discomfort for both infant and parents. The most natural and effective way to transform this "cold" atmosphere into a warm and pleasant environment is by using the "art of the Muses", i.e. Music. Research has shown that early music therapy interventions can help in the improvement of premature infants' physical and psychological state, as well as in the redefinition of the valuable mother-infant bonding, as they can be applied at this early age first in the hospital setting and then they can be practiced by parents together with their baby back at home.

However, since a lot has been written about the clinical use of music therapy for premature babies and their families in the Neonatal Intensive Care Units all around the world, the focus

of the current case study will be on the preemie's total needs (both physical and psychological) after leaving the hospital settings and also on the development and enhancement of the special mother-infant relationship during the first eight crucial months after birth, when the infant is back at home. Thus, the main purpose of this study is to observe and investigate the several benefits of music therapy, which was applied on an 8-months old prematurely born infant and his mother during a clinical internship together with a music therapist at the Clinic of the University of Jyväskylä, in Finland.

The thesis starts with the definition and analysis of the terms "premature birth", "preterm infant's later development" and "mother-infant bonding", and then continues with the report of the clinical research that has been conducted on the use of music therapy with prematurely born babies and the parents (especially the mother) in a clinical setting. Following is the presentation of the current qualitative study, including the methodology and the research process or tools that have been used, i.e. the video observation and the interview with the music therapist of the former research project. This thesis ends with the results from the data analysis, followed by a general discussion, recommendations for further research on this topic and final conclusions of the researcher.

2 THEORETICAL BACKGROUND

In 1960, Winnicott, an English pediatrician and psychoanalyst, wisely stated that "there is no such thing as an infant...If you set out to describe a baby, you will find you are describing a baby and someone. A baby cannot exist alone, but is essentially part of a relationship", indicating that whenever one finds an infant one finds maternal care, and without maternal care there would be no infant (p. 587). Winnicott (1960) also clarified the meaning of the word "infant" as a very young "not talking" child (*infans*) and, consequently, infancy as the stage when the use of words has not appeared yet and word symbols work as a means of communication at an early stage (p. 587-588). Therefore, the baby depends more on the maternal care and empathy rather than on clarifying any verbal expression from his environment.

Normally, a woman's pregnancy lasts for nine months, which means around forty weeks (37 to 41 weeks). There are three types of pregnancy, according to its duration, such as the early term (around week 37 and 38 of gestation), the full term (around week 39 and 40 of gestation) and the late term that usually lasts until the week 41 of gestation ("Pregnancy", n.d.). However, there are some exceptional cases, where babies are born after 41 weeks ("post term pregnancy") or before 37 weeks of gestation, when the baby is born prematurely, something that can cause later health and developmental problems to the preemie.

Research on preemies has shown that the earlier a baby is born, the greater the risk is for delays in basic functions of the human organism, for example the vision, the hearing, the blood circulation, the breathing etc.. For this reason, premature newborns receive special medical care in the Neonatal Intensive Care Units (NICU) of the hospitals, with specialized doctors and nursing staff, who take care of these babies by keeping them in the incubators, where the warmth from the advanced mechanical support, together with the mother's supporting breastfeeding and the skin to skin contact with both parents, help them to recover in a short period of time, by reducing considerably the preterm mortality (" Preterm birth", n.d.).

Furthermore, the last few decades, music therapists all over the world provide notable support on premature infants' well-being in the NICU, by using specific music therapy methods and infant care techniques with music, such as "Kangaroo Care" (skin-to-skin care for preemies with an adult together with music listening produced by a music therapist), something that can also enhance parent-infant bonding. Thus, in our era, premature infants leave the hospital in fewer days than in the past and they enjoy a normal childhood and life with their families back at home warmth.

2.1 Premature Birth

Preterm labor and premature birth, i.e. a birth that occurs before completing the 37th week of pregnancy, is a shock for the family and results in emotional crisis. It is usually a sudden event that is evolving rapidly. Pregnant women are being prepared for a normal pregnancy and birth of a healthy child, and that is why they are surprised by a premature labor as, when it happens, it finds them psychologically unprepared. In most cases, there is no time for parents to learn about the consequences or the various therapeutic methods, especially when the labor occurs due to an accident or illness of the mother (such as toxemia of pregnancy, high blood pressure, placental abruption) which makes necessary an urgent caesarean section to save child's and mother's lives (Marcovich & De Jong, 2015). Therefore, in a routine examination, a premature birth may occur suddenly and without any warning.

Over the last few years, the mortality of low-birth weight infants has noticeably decreased, although infants who are born prematurely face a higher risk than full term babies due to short and long term difficulties, for example a disablement in growth and in the development of the sensory role of infant's nervous system, as well as different problems in behavioral and emotional maturation (Korja, 2009). The greatest risk exists in babies who are born very prematurely, for example in less than 32 weeks of pregnancy, or those infants whose birth weight is very low, for example less than 1500g (Korja, 2009). Parents with premature infants agonize and worry about their child's safety or the appearance of future disabilities and problems on their baby's health, something that, together with the parent-infant separation, can cause many emotional or psychological problems and may lead to depression. Therefore,

premature birth is justifiably considered to be an important risk factor for the normal development of the parent- infant relationship.

Since premature babies are not "ready" to leave their mother's womb, different health problems may occur after birth, as they are not totally equipped to deal with the outside world. There are many differences between a full-term and a premature birth, since during the last few weeks of pregnancy, the fetus "refines" the operation of various systems of his body, in order to be able to live autonomously in the external environment. Some of the main physical and psychological problems that an early, low-birth weight baby may face and that may not appear immediately after birth, are asthma, respiratory infections, cerebral palsy, ADHD, lack of coordination and some learning or behavioral problems. Preterm infants' basic body parts, such as immune system, digestive system, lungs and skin, are usually underdeveloped and immature, but thanks to the caring staff and the modern medical equipment in the Neonatal Intensive Care Units (monitoring and alarm systems, respiratory equipment, pulse oximeter etc.), it is possible for them to gain weight quickly during the first few days or weeks and, thus, win the battle for life and have the strength to make it then on their own.

Therefore, due to the rapid advances in the treatment of premature babies, 90% of newborns with birth weight greater than 800 grams will survive ("Prematurity", n.d.) However, the fact that very premature newborns are kept alive with the help of monitoring machines in the NICU and by using different drug therapies (corticosteroids and antibiotics) leads inevitably to upbringing children who may face later health problems, such as cerebral palsy, hearing and visual impairment etc. Thus, from the very beginning, a preemie needs frequent reviews and intensive monitoring from specific physicians in different pediatric specialties (this is known as "follow-up"), such as a neonatologist, a pediatric neurologist, an auxologist and a pediatric ophthalmologist.

2.2 Preterm Infant's Development After Birth

The preterm infant's exit from the hospital, unfortunately, does not mean the end of later complications and problems on his well-being. Most of preemies require special neonatal care

for their physio-psychological development, since many of the problems encountered during their hospitalization have long-lasting consequences that afflict them for a considerable period of time. Furthermore, there is an increased probability of rehospitalization, particularly for respiratory diseases. It is also estimated that premature newborns usually return to the hospital during the first year of their lives by 33%, while during the second and third year by 10% ("Growth and development after prematurity", 2015).

Premature birth, even when it happens in about four to six weeks before the normal term, may considerably influence the preterm child's health, both in a short and a long term. Sometimes, due to the health treatments and care that premature infants receive in the NICU's incubators (for example being in the ventilator for many days), there may occur some developmental problems on their physical well-being, as well as on their motor skills. Depending on the infant's prematurity and his medical care in the hospital, there may appear either short or long-term effects on his physical state and well-being. As detailed below, prematurity influences several areas of human organism (both physical and mental) and, hence, both healthcare team and families should be aware and alert in order to observe and deal with them as soon as possible.

2.2.1 Physical Growth

Pediatricians state that the first two years of preemie's life are the most important, as the preemie is not usually at the same developmental and physical level that his full-term peer has already reached, thus it is harder for him to "catch-up". The term "catch-up growth" means that premature child's growth, in order to reach the same size as his full term peer, has to be faster than usual. It has also been noticed that 85% of premature infants show a catch-up growth and stability on the regular growth chart by two years of age ("Will My Baby "Catch Up"?", n.d.). Thus, premature birth can affect in many ways the future development of the infant, and hence any kind of early intervention and special health care are crucial at this stage, in order to ensure that the child will grow up in a normal way and reduce also parents' worries about later health complications on his life. Moreover, it is very important for parents to be aware and observe their child's growth after leaving the hospital and returning back home, as the earlier a child was born the bigger is the risk for delays on his general development. The child's personal pace of maturation, the genetic characteristics and the

environment around him, together with numerous different factors, can also importantly influence his later growth ("Growth and development after prematurity", 2015).

Starting from prematurity's short-term effects, nowadays preemies quite often need special care in the Neonatal Intensive Care Units, such as a close (sometimes mechanical) support and monitoring on their vital functions by the healthcare team and the nursing staff ("Short and Long-Term Effects of Preterm Birth Fact Sheet", n.d.). Preterm infants usually face an increased risk to readmit them to the hospital and sometimes a risk of sudden infant death, even if they have already managed to exit the Intensive Care Unit (nowadays, this is more unusual than in the past). Furthermore, one of the main short-term consequences of prematurity for baby's health regards some severe respiratory problems. If we consider that, when a child is born prematurely, the lungs are not mature enough to be ready to cope with a lifetime struggle that is following after birth, usually these babies need artificial ventilation. Thus, these breathing problems is possible to last during the first year of the child's life, as well as increase the risk of asthma later in life ("Short and Long-Term Effects of Preterm Birth Fact Sheet", n.d.).

It is widely known that the brain is the last major instrument that matures in the fetus; it is also typical that it continues to grow from the time of birth and on. Therefore, the more prematurely an infant is born, the more likely it is to show bleeding on his brain or other signs of stress, which can greatly affect the brain development. Even during the week 35 of gestation, the embryo's brain weighs only two thirds of its weight compared to the weight that it has when the pregnancy is completed (around the week 40). Thus, if the child is born prematurely, even a few weeks earlier, the important process of integration of brain development occurs outside the uterus, namely in an abnormal environment.

Furthermore, it has been noticed that, due to the medical care that preemies receive in the NICU when they are little (for example while being on the ventilator), the infant's motor skills (reflexes) can also show some important delays, although nowadays this problem can be reduced and improved with the help of special positioning techniques ("Growth and development after prematurity", 2015). This phenomenon usually appears when premature baby's experience in the NICU results a delay on the development of an appropriate muscle tone, something that is followed by the so called "knock-on effect". An example of this

phenomenon is the period of time that the preemie achieves sitting, where a longer time than expected can show some delays on later skills like hand or leg function, something that seems to appear more rarely among babies with a birth weight between 1 to 1.5kg ("Growth and development after prematurity", 2015).

In our era, most premature infants show a normal physical-motor development after birth, even if they are usually really short and they do not weigh so many kilos as the full-term babies. Research has shown that if a preemie is really sick and weak during the first weeks of his life, then sometimes this can affect their later development till they get around 12 years old ("Premature baby development: common concerns", 2013). However, there is another group of preemies who can catch up earlier, for example between preschool and school age. Therefore, motor and physical difficulties usually occur in very low-birth weight infants who struggle to survive in the incubators for a longer time. In the NICU, doctors and nursing staff check for any initial signs of body movement problems or delays, such as a decreased muscle tone ability on every side of preemie's body ("hypotonia"), thus, after several examinations, they decide whether an early intervention is needed or not.

A long-term effect that may emerge after a premature birth is the so-called "cerebral palsy", which is a major motor impairment that, according to research on prematurity, usually appears in about 10-15% of preemies ("Growth and development after prematurity", 2015). Very premature infants or even babies who are really sick and weak in the NICU do not have a fully developed brain, thus they face a higher risk for cerebral palsy later on. However, doctors cannot clearly diagnose this permanent movement disorder before 12 months, as, in order to have a concrete result, babies should have already developed some basic skills, such as sitting up, walking or crawling around ("Growth and development after prematurity", 2015). Usually, around 8 to 18 months, children start walking by themselves without any help, thus early newborns need more time to catch-up and reach the normal milestones.

Some less severe motor impairments may also appear in about 40% of very low-birth weight infants, for example difficulties in motor planning and fine motor skills (like holding a pencil), as well as visual-motor coordination (like drawing) and different sensory-motor skills ("Growth and development after prematurity", 2015). Further research has also shown that children who were born prematurely may face a future high risk of chronic health problems in

adulthood such as heart disease, delayed physical and mental growth, digestive disorders (acid reflux, colic), different infections, apnea, as well as oxygenation disorders, hearing impairments, visual problems, diabetes and hypertension ("Short and Long-Term Effects of Preterm Birth Fact Sheet", n.d.). However, all these problems that have been mentioned before remain scientific theories and speculations, as researchers and doctors are still reserved and have yet to clearly recognize the possible future effects and disorders that a premature birth can cause on infant's later development, since it depends on several factors, such as how prematurely born is the infant, his hospital stay and also the family environment where he grows up after birth.

2.2.2 Language Skills

Children demonstrate their language skills over time. Each child separately, with his own unique personality, develops his language skills with his own unique rate. However, nowadays, researchers have reached some remarkable evidence regarding the average ages on which these basic abilities should appear, as well as the different learning pace of prematurely born infants, who in the majority tend to develop a normal speech during the early years, but the language development may show some signs of delay later on ("Premature baby development: common concerns", 2013). Thus, it has been noticed that speech and understanding during the school years are less developed in children who were born very prematurely than in full-term ones (the same delay phenomenon is also met with late premature children). Nevertheless, it is not necessary that these lingual difficulties will appear to every child who was born some weeks before the normal labor; on the contrary, many preterm infants have a fully-developed language system by age 4 to 5 and usually grow into healthy adults. Moreover, it is worth mentioning that parents can play a very important role on their child's later language development, by providing to him any type of stimuli in his daily routine and life, such as frequent talking to him, responding to every question that he curiously asks, listening and reading to him, as well as playing or listening to music together ("Premature baby development: common concerns", 2013).

2.2.3 Sensory Growth

According to the electronic article, "Premature baby development: common concerns" (2013) by the Australian Raising Children Network, most children who were born prematurely usually have normally developed their sensory system, however, due to their general acute sensitivity, it is more possible for them than their full-term peers to acquire later impairments on their hearing and vision. Therefore, some of the later sensory sensitivities that may appear in a preemie's life are the increased consciousness and hypersensitivity to different kinds of sensory stimulation, like noise and specific fabrics, while researchers affirm that some preemies dislike putting any materials in their mouths (probable feeding problems) and they may also feel a lower intensity of any perceived pain than the full-term infants ("Premature baby development: common concerns", 2013).

As far as hearing function is concerned, the same article supports that about 2-6% of preterm infants and the majority of very prematurely born babies develop hearing impairment after birth ("Premature baby development: common concerns", 2013). During preemie's hospital stay, doctors do the necessary hearing screening test, in order to check if there are any severe hearing issues in both infant's ears which may need an electroacoustic device (hearing aid) or even a cochlear implant ("Premature baby development: common concerns", 2013). However, it has been noticed that even fewer and fewer infants face serious hearing problems in both ears, but anyway, this test can early diagnose most types of hearing problems and help doctors to deal with them at this early stage, where baby's language development and social communication characteristics are on their infancy.

Finally, vision, human's dominant sense, is also affected by a premature birth, which can cause vision impairment on premature babies who are more likely and more sensitive than full-term ones to develop less severe visual difficulties, for example short or long-sightedness, problems with depth perception, contrast sensitivity or even squint ("Premature baby development: common concerns", 2013). Usually, about 1-12% of preterm infants face serious visual impairments, and especially babies who were born a long time before the normal period ("Premature baby development: common concerns", 2013). These problems are recognized by the healthcare staff at an early stage through regular and special eye tests in the

hospital in order to provide preemies with an early treatment and, thus, relieve parents of their anxiety and agony about their child's life.

2.2.4 Early Cognitive Development

Jean Piaget (1896-1980), a Swiss clinical psychologist known for his focus and innovative work on child development, first developed the famous "*Piaget's theory of cognitive development*", which consists of four developmental stages ("sensorimotor", "pre-operational", "concrete operational", "formal operational") that children pass through in order to obtain, construct and then use the nature of knowledge (Wadsworth, B. J., 1971). According to Piaget (1969), childhood is the most important period of human's life and it plays an active role in his later development, as, during this period, the child constructs an idea (meaning) of the world around him by combining what he already knows (inherited biological or genetic factors) with the general idea that he receives from the environment where he grows up (environmental experience). Each stage is characterized by certain features that also determine what human can learn in each phase of his life. At each of these four stages, some mental processes are being performed, whose completion marks the end of each stage which then gives place to the next one (Piaget, 1969). However, even if Piaget asserted that cognitive development always follows the same sequence which cannot be skipped, it is possible for some children to pass through these stages at different ages than the normal averages or even show traits and aspects of more than one stage during a specific time of their lives. Thus, children who were born prematurely may sometimes need more time to pass through some of Piaget's cognitive stages, as their first and most important (or time-consuming) goal is their struggle to survive, something that can cause different developmental and cognitive delays later in life.

Researchers and healthcare teams have estimated that after three years of premature child's life, there may appear some long-term neuro-developmental issues on child's behavior and mental health, or even later problems during his learning procedure and school performance. Usually, children at this age start experimenting and creating their cognitive skills through searching and exploring the world every day. Most preemies often have a normal cognitive development, whereas their very premature and extremely low-birth weight peers face a greater risk of cognitive delays due to the numerous medical complications, together with a

small percentage of really prematurely born children, who deal with more severe learning impairments ("Premature baby development: common concerns", 2013). Furthermore, the Australian electronic article "Premature baby development: common concerns" (2013) reported that, during the IQ tests that are usually run by qualified healthcare professionals in order to measure children's cognitive functions, most premature children show a quite satisfying school progress, even if their average scores are mildly lower than those of full-term peers.

Therefore, healthcare professionals suggest parents with prematurely born children to be on alert and observe their child's learning process, in order to recognize any thinking difficulties or weaknesses while making their first attempts to read and spell at this early age, even if the child has not started going to school yet. Children usually use many sensory functions, like visual and hearing memory or even touching, in order to understand what they are reading or writing, even if their IQ is within the normal range ("Premature baby development: common concerns", 2013). Thus, sometimes parents can assess at an early stage if their kid needs extra support from specialists or at the school environment later on.

2.2.5 Socioemotional Development

In 1934, Lev Vygotsky, a Soviet psychologist and the founder of different psychological theories around the so-called "Social Development Theory" or else "Cultural-historical psychology", stated that "when a child first learns a new word, the development of its meaning is not completed but has only begun" (p. 170), meaning inter alia that children's mental development is more a feature of human communities (social environment), rather than individuals' themselves (Miller, 2011). Vygotsky (1978) strongly believed that communities play an important role in human's "meaning making" function. Thus, in opposition to Piaget's approach that children's development must inevitably take precedence over their learning process, Vygotsky alleged that the necessary social learning procedure is inclined to come before human development (1978, p. 90).

Generally, socio-emotional development refers to human's learning process to recognize, control and express his feelings, empathize with other people's emotions, as well as interact positively with people who share similar interests and habits ("Premature baby development:

common concerns", 2013). When someone is able to deal with his feelings, this influences all the different areas of his development. In this way, people are able to pay attention on different aspects of life, such as set their personal goals, develop friendships, be autonomous and consider more deeply about world affairs ("Premature baby development: common concerns", 2013). When a normally developed child has "social and emotional problems", it seems that he faces adaptation challenges in his social environment, by meaning troubles to follow specific social norms and socialize with other people of his community. Thus, these confused children normally show adverse behavioral reactions by breaking the social rules (antisocial behavior).

On the other hand, prematurely born children usually face difficulties dealing with and controlling their personal feelings and emotions ("Premature baby development: common concerns", 2013). Sometimes, they really struggle to process and complete their basic health needs, such as staying calm, feeding well and having a nice and full term sleep, which are necessary for their vital well-being. Other grown up preemies may feel low respect for themselves (self-esteem) later in life or even face difficulties while trying to create new friendships. Therefore, since prematurely born children are more sensitive than full-term ones, they may also face an increased risk to be diagnosed with certain developmental disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), autism spectrum disorder, anxiety or even depression during the first stages of their lives ("Premature baby development: common concerns", 2013).

Even late preterm babies (those who are born between the week 34 and 36 of gestation) often face long-term difficulties, such as problems with their behavior, socialization and management of their emotions, learning problems etc. Researchers have noticed that, usually, most prematurely born children have a normal socio-emotional development later in life, but they may also show some different behavioral aspects from their full-term peers due to their general sensitivity ("Premature baby development: common concerns", 2013). An example of premature babies' reaction on a normal behavioral trait that differs them from the full-term ones is crying, as preemies in the Neonatal Intensive Care Unit (NICU) do not cry very often (maybe only when they experience a very painful situation). Usually, crying is always a sign that the baby tries to communicate his needs with his milieu. Also, full-term infants usually increase the frequency of their crying around 6-10 weeks old, especially during the night,

something that also happens with healthy preemies ("Premature baby development: common concerns", 2013). The difference between these two peers is that, during the first year, preterm infants usually sleep more easily or isolate instead of interplaying and communicating with their social environment. When the maturity period starts, parents are less confused about their premature baby's reactions or delays and they can understand his need for engagement or isolation more easily by trying to read his body language and facial expressions. Gradually, this helps the preemie to form his communication skills and increase his self-confidence when he meets the outside world.

Considering the above mentioned data, it is then hard to clarify during the childhood, adolescence and adulthood which of these characteristics or special behavioral features stem from premature birth or whether they are based on other aspects of child's life and environment. Therefore, early diagnosis and treatment of any possible complications or problems are crucial for preemie's later well-being, so doctors in NICU insist on making more assessments on a low-birth weight baby's health progress than a full-term infant; prevention is always the key factor for any kind of health problem. In many countries with an advanced newborn medical care, doctors and the nursing staff of NICU suggest to parents with premature babies to attend additional inspections ("follow-up") or even visit neurodevelopmental clinics, in order to assess infant's health improvement and medically (and directly) intercede wherever it is needed during the first years of baby's life ("Growth and development after prematurity", 2015). Thus, this healthcare team's job is to routinely monitor infant's physical development and milestones, such as his height (length), weight and head circumference in order to assure that he meets all the expectations for normal growing and relieve also parents' agony.

2.3 Sacred Mother-Infant Dyad

The sacred mother-child attachment is profound, and nowadays, new studies suggest a natural connection even deeper than we thought. This meaningful physical and psychological bond that mother and child naturally share together starts during pregnancy, when the mother's uterus is the whole world for the developing embryo, as it provides to him warmth and nourishment together with the calming steady pace from the beat of mother's heart.

Undoubtedly, the power of mother-child dyad, of this single unit, is truly unbeatable. After birth, baby's little hands, his mother's chest and her hug, are pieces of a unified world, that only after six months the baby begins to separate into "internal" and "external".

Many years ago, Klaus Marshall H. and Kennell John H. (1976), famous neonatologist and pediatrician respectively, developed a new perspective on the valuable early parent-infant bonding, by shifting the supporting healthcare and medical methods used in the maternity hospitals for pregnant women, labors, infants and their families, as their focus was on the enhancement of mother-infant mutual welfare from the very beginning after birth, in order to develop enduring psychological links. Klaus once wisely stated that "the mother-baby dyad is a single cell organism, and separation is life threatening", by highlighting and recommending, through his clinical and research experience, the importance of carefully supporting this intense physio-psychological connection (Klaus & Kennell, 1976). The baby is not an independent unit. There is only the mother-infant dyad, where both of them are called to get to know each other, work together and operate as a team. For this reason, throughout the years, researchers and clinicians all around the world give more attention on the further development of special and alternative techniques, in order to improve the mother-infant relationship from different perspectives combined with the existing knowledge.

2.3.1 The Meaning of Mother-Infant Relationship

The mother-infant bonding is a crucial and valuable system, which is influenced by numerous factors from both infant's and mother's side. Premature birth is a potential risk factor, which together with the quality of the couple's relationship and the family environment can affect dramatically the normal development of the mother-infant bond. According to Korja (2009), a qualitative relationship between the mother and her preterm infant can later help the infant to develop his mental and behavioral welfare and improve his physical state. Since the ancient years, there was always a need for encouraging parents (especially the mother) to provide special care to their child, in order to regulate his psychological and physiological state, as well as to help him create secure attachment relationships in his future social environment. Thus, the infant needs to feel safe and sound, especially during the first 12 months after birth, when he is more fragile and tries to create a first idea about the outside world.

The primary and most important figure with whom the infant creates an attachment relationship during the first 12 months is normally his mother. During breastfeeding, the most important and beneficial natural process after birth, the baby develops a strong bonding with his mother, as his need for nutrition keeps them in a close contact for many weeks. Both Korhonen (2007) and Leijala (2008) once claimed through their research that the strong emotional bonding and the mutual aspiration to closeness profoundly and definitely build the foundation for later interaction relationships. Furthermore, it has been noticed that, during the creation of attachment relationship, the infant constructs internal representations about the experiences of the caretaking and the relationship with his mother (Bowlby, 1982). These internal attachment representations combine cognitive, behavioral and emotional elements and sculpture infant's behavior for healthy future social relations (Bowlby, 1982).

Another clinician who indicated the essential creation of a healthy bond between mother and child was Robert Shaw M.D., a famous child and family psychiatrist, by stating in his book "The Epidemic" (2003) written together with Stephanie Wood, the following:

> "The more the child feels attached to the mother, the more secure he is in his acceptance of himself and the rest of the world. The more love he gets, the more he is capable of giving. Attachment breeds self-control, self-esteem, empathy, and affection, all of which lead to an increasing ability to develop literacy. Attachment is as central to the developing child as eating and breathing" (Shaw & Wood, 2003).

In other words, Shaw (2003) indicated that children need to be consistently attached to their parents (care-givers), something that is achieved through constant and affectionate interactions between parents and their child, especially during the first years of childhood. Thus, mother-infant interaction is the most crucial thing at this early point, in order to prevent any kinds of future problems.

A very effective and necessary practice right after birth that ensures numerous advantages is the alternation between breastfeeding and skin-to-skin care during the first period, by keeping mothers and their babies together as much as possible. The first touching, holding and gazing moments are valuable for mothers and babies who naturally need to be together at this sensitive stage following birth, as this enhances their bonding and prevents any short and long-term health or brain complications or even breastfeeding problems that may occur due to possible daily separation. Therefore, further promotion and encouragement for prolonged use

of established and efficient practices by health-care professionals and pediatricians is needed, so that mothers can feel more secure and willing to exercise them together with their baby. Respect and support on this fragile and emotional "sacred hour" is also required, as any delay or disruption during breastfeeding and skin-to-skin care may cause different negative results, such as sudden behavioral disarray (disconnection) from both mother's and child's side and confusion on their attachment, baby's intrinsic oppression of his feelings and self-attachment etc.

2.3.2 The Challenges of Mother-Premature Infant Attachment

These sacred moments described above are even more challenging for mothers whose child "hurried" to meet the outside world. After a premature birth, the mother feels empty, scared and worried about her child. A large number of mothers with preemies believe that, due to their distressing physical and psychological state, doctors and the nursing staff hide the death of their child. Therefore, the happiness of motherhood is naturally postponed and these mothers are often surprised that they do not feel happy after giving birth to a new life, by approaching sometimes the postpartum depression. The mother of a child who was born many weeks before the normal date does not have enough time to disengage her child from her narcissistic love and then love him in order to experience him as a real entity that exists separately from her (Nöcker-Ribaupierre, 1998). As Nöcker-Ribaupierre (1998) also determined it, after birth the mother experiences the loss of a part of her organism, along with a feeling of unreality, by thinking that her child may not be a real creature, like she cannot imagine him or as if she lost something really important for her. As if she is a new mother and at the same time she is not, she is mom and she is not, she has a baby and she does not have one, it is a baby and it is not. This feeling is probably due to the lack of the beloved object and it is usually intensified during the separation of the child from his mother (Nöcker-Ribaupierre, 1998).

The last few years, many studies have shown that the mutual behavior is different between mother and her premature infant and full term infant with his mother (Korja, 2009). According to Minde et al. (1985), after the first month of birth, premature infants were less active than full term ones. Furthermore, the same study claimed that the mothers of low-birth weight infants had less motor and verbal communication (frequency of smile, speech, eye

contact, facial expressions etc.) with their babies than the mothers of full term infants during the first three months (Minde et al., 1985). The most evident differences in infant's behavior were noticed during the first month after birth, while mothers had diverse interactions at all times between the first and third month after the child's birth. Minde et al. (1985) also reported that an average mother of a premature infant tries to give to her infant the redeeming care, for example verbal communication, facial expressions, eye-contact, instrumental touching (really close touch), but with less affection, such as less smiling and non-instrumental touching. Moreover, according to another study, premature infants and their mothers were less facially active during their communication than full term infants with their mothers and they mostly preferred the vocal interaction and the less-responsive facial expressions (Schmucker et al., 2005).

In contrast to the previously mentioned researchers, Gerner (1999) did not find any differences between full term and premature infants' facial interaction with their mothers the first crucial three months of their lives. On the contrary, premature infants and their mothers presented lower interaction quality while milk feeding during the first six months of age. Additionally, Gerner (1999) found that infant's interaction skills are more active on the first six months of age than in the earlier assessment, while the mothers of preemies are not so successful in their effort to counterbalance the difficulties during the demanding feeding procedure. Another study by Muller-Nix et al. (2004), which is similar to Gerner' s (1999) research, suggested that the mothers of preterm babies showed a more manipulative and less emotional attitude than the mothers of full-term infants with their infant during the dyadic play on the first six months of their infant's life. However, there was no difference between the interaction behavior of the low-birth weight infants and the full-term infants at the same age point (Muller-Nix et al., 2004).

To summarize, several studies have suggested that the period of the first six months of both preterm and full-term infants is the period with the most visible differences in maternal interaction behavior on the mother-infant relationship. During that period, infants' own interaction skills are better defined and more obvious than before by playing a more symbolic role. Korja (2009) also mentioned that the areas of concern about mother's behavior on their preterm infants during the interaction with their babies have been mostly defined as an absence of facial communication, a lower sensitivity and a higher worry. Accordingly, as far

as preemie's interaction behavior is concerned, the areas of concern that are more regular are basically the absence of alertness and the insensitivity. Thus, the most frequent explanations for the logic behind these differences vary. Some researchers claim that the differences in mother's interaction behavior are more flexible responses to her premature infant's immaturity and others claim that these differences exist because of the mother's distress and the abnormal relationship process.

2.3.3 Influential Aspects in Mother-Preterm Baby Bonding

There is still no sufficient and clear image about the sources of the idiosyncrasy of the mother-premature infant bonding, but we can consider that there are some aspects that influence this relationship, depending on the stressful period of time after birth for both of them. Minde et al. (1985) and Muller-Nix et al. (2004) reported that some of the risk aspects on the creation of mother-premature infant link concern the premature infant's poor physical and health condition, as well as mother's stressing experience of pregnancy and labor. Schmucker et al. (2005) also adds mother's anxiety and agony, and Gerner (1999) the low socioeconomic status.

Furthermore, Muller-Nix et al. (2004) suggested that preemie's immaturity and the absence of receptiveness are aspects which can complicate the later mother-infant interaction. A few years ago, Minde et al. (1985) had claimed that the intensity of the preterm infant's reported health problems was linked to the mother's way of interaction with her child. Also, it was noticed that the mothers of sick infants looked less pleasant and happy at their infants than the mothers of healthy premature infants. Both Muller-Nix et al. (2004) and Minde et al. (1985) agreed that the mother's behavioral communication could have a more invasive and flexible mode in front of the difficulties that emerge, because of infant's immaturity. Minde et al. (1985) finally reported that the lack of maturity of those infants push the mother into a more counterbalanced care.

In conclusion, generally, it has been demonstrated that the stress and the anxiety that mothers with premature infants face during the first period after birth are related to the quality of the mother-preemie bonding. Muller-Nix et al. (2004) also suggested that, the highly stressed mothers during the prenatal period were more predominant and less sensitive in the dyadic

communication on six months of the premature infant's age than the mothers of full term infants and less-stressed mothers of low-birth weight infants. Finally, the same study claimed that preemies' behavioral interaction with their really distressed mothers on eighteen months of age was very different, with less insensitivity and more passionate behavior than the full term infants and the premature infants of less stressed mothers (Muller-Nix et al., 2004).

2.3.4 The Impact of Socioeconomic Background to Mother-Premature Infant Relationship

According to research based on prematurely born children, low socioeconomic status is connected with the parental anxiety and the quality of the valuable mother-premature baby connection and communication. Thus, it has been reported that the socioeconomic status is lower in highly stressed mothers of premature infants than in the less stressed ones and mothers of full-term infants (Muller-Nix et al., 2004). Moreover, the low socioeconomic status and the stage of education may symbolize confusing variables in those studies. Gerner (1999) stated that mothers with a low level of education also experienced a lower quality of dyadic communication with their premature infant. Therefore, there is a need for more investigation on the socioeconomic background of the families with premature infants, as it can highly influence the mother-preterm baby attachment more than it is thought, especially nowadays, where even more and more countries all over the world are facing serious financial crisis.

2.4 The Contribution of Music Therapy to Preterm Infants Welfare

People who have become parents of preemies know quite well that nothing can offer so much relief and happiness to their baby as giving him attention and taking care of him as much as possible and in many affectionate ways. Speaking, playing with him and, without having any special knowledge, singing to him when he hurts or he is upset can directly make him feel better and improve his total well-being. Thus, parents often refer to songs of their childhood, usually without even remembering the lyrics, and they are impressed by the fact that their preterm baby responds immediately, by indicating in different ways his positive feelings. The value of music in our lives is not a new concept. However, its value in children's lives, even from infancy, is being confirmed even nowadays through numerous studies, which constantly

show that music can not only entertain a child, but it can also effectively develop his health state and his skills, and probably his IQ score later in life.

After a preterm birth, specialist doctors and healthcare teams immediately focus on each case by providing the preemie with the appropriate medication, while parents are persistently searching for every possible alternative "relieving" treatment which would support psychologically their weak little child. Thus, the basic preemie parents' concern is to provide him with the primary and appropriate care, as their strongest will is to create a plan for their uncertain future, adapt to their routine and reposition their expectations. In many countries all over the world, music therapy is present and used for a long time in maternity clinics and Neonatal Intensive Care Units (NICU), in order to relieve and support both premature children and their parents during this challenging journey. Music therapy offers the opportunity and creates the framework for both parents and their infant to express feelings that were previously difficult to be expressed for several reasons, by helping them through music to accept the reality. This expressive and creative art therapy can show smaller or greater results proportionate to the severity and the special case of each child. The truth is that, through the years, music therapy has shown that it can give premature children and parents the opportunity to take control of their lives (albeit briefly), to make them better and happier, and perhaps be a bit more optimistic about their child's survival and future.

2.4.1 Research and Clinical Practice on Premature Infants

Several studies on the auditory stimulation in the Neonatal Intensive Care Unit (NICU) have provided important knowledge into the benefits of music to the infant's natural growth and well-being. During the decade 1970, researchers started assessing the behavioral reactions of premature infants to any kind of auditory stimulation. First of all, Katz (1971) published research data, which suggest that any kind of auditory stimulation in the NICU helps preterm infants' well-being. In addition, Segall (1971) stated that auditory stimulation after birth can evoke a heart response. For example, while the premature infant was crying, the pace of his heartbeat decreased in response to the auditory stimulation, and while he was calming down, the pace of his heartbeat increased as a reaction to the specific auditory stimulus (Segall, 1971). Moreover, in the early 1990's and 2000's, researchers started to study the effects of different kinds of music on physiologic variables, for example the heart rate (Burke et al.,

1995), the blood pressure (Butt & Kisilevsky, 2000), the oxygen saturation (Caine, 1991; Calabro et al., 2003) and the respiratory rate (Cassidy & Standley, 1995; Cassidy, 2009; Chapman, 1978; Chou et al., 2003).

Similar investigation on low-birth weight infants has shown that music enhances and stabilizes the physiological state of premature infants, by decreasing infant's stress behavior (Whipple, 2000; Arnon et al., 2006; Standley et al., 2010), by increasing oxygen saturation levels (Teckenberg-Jansson et al., 2011; Cassidy et al., 1995), and also by lowering their heart beat (Teckenberg-Jansson et al., 2011; Arnon et al., 2006) and by improving their neurological maturation (Standley et al., 2010). Many researchers have also found that music is very beneficial for premature infants' parents, and especially for the mother, who sometimes suffers from postpartum depression. According to Lai et al. (2006) and Blumenfeld et al. (2006), music can reduce parents' anxiety and distress and help them feel more relaxed and comfortable (see also Tuomi, 2014). Moreover, it has been proved that infants' long hospital stay can be managed more easily by using different music therapy techniques and interventions with both preemies and their parents (Cevasco, 2008).

Past research on prematurity, as was previously stated, has demonstrated several times that music stabilizes premature infants' physical welfare, relieves pain and settles them down. Ten years ago, Huotilainen (2006) reported that the auditory sense is functioning in the middle stage of the pregnancy, that is after week 24 of gestation (see also Tuomi, 2014). Current research has also reported that the sounds that travel to the womb are actually louder and more transparent than was previously considered. Huotilainen (2004) noticed that the embryo responds to the sounds from the environment, and therefore, it contacts with the external world (see also Tuomi, 2014). Thus, the sensory stimulation that the embryo experiences in the womb gives the foundation for a physical neurological and social development after birth (Tuomi, 2014). While the baby is growing on the mother's womb, he already experiences music, as he listens to the sounds of the uterine action and also the mother's blood flow, together with external sounds, such as human voices and many kinds of musical stimuli. Also, the mother is naturally the closest person to the infant, thus the baby automatically perceives her emotions and intentions and he senses all of her wills and reactions.

Throughout the years, various interventions have been conducted for the enhancement of the quality of preterm infants' life and also for the improvement of the bonding between the parents and their little child in this demanding period (Hodges & Wilson, 2010). One of these truly effective interventions is music therapy. Standley (2002) once conducted a meta-analysis of 10 studies of music therapy for premature infants. These specific 10 studies were published from 1991 to 2000 and the sample sizes were ranging from 9 to 66 members (see also Hodges & Wilson, 2010). Nine of those investigations included recorded music, but only some of them used live music as an intervention. All of these studies included lullabies as the type of music that was utilized. Also, the music intervention was compared with daily auditory stimulus in five studies and by using white noise in only one study (sees also Hodges & Wilson, 2010).

In 2002, Standley also suggested that music in the neonatal intensive care unit (NICU) should be smooth with a constant volume and rhythm. Furthermore, Standley (2002) proposed that the vocal music should be provided by a female or child with a maximum of one extra instrument, while the volume level for music should be in the low 70 dB range and music should be provided in short intervals of 20 to 30 min throughout the day, with the live singing being steady, constant, quiet, soothing, and infant directed (see also Hodges & Wilson, 2010). Seven years later, Hartling et al. (2009) also conducted a systematic review of nine randomized controlled trials that were published from 1989 to 2006, with sample sizes ranging from 14 to 121 participants. Six of them included premature infants and three of them long term babies (see also Hodges & Wilson, 2010). Moreover, eight studies included recorded music and just one had live music. The music interventions were compared to a large number of other conditions, for example intrauterine sounds, routine, auditory stimulation and songs for children with a specific rhythm customized to a real human heartbeat (Hodges & Wilson, 2010).

Based on the results, Hartling et al. (2009) proposed that extra research is required, even if there is some testimony of benefits from the use of music with the premature infants. Also, the authors presented the two major methodological weaknesses in the reviewed studies, which contain absence of clarity on randomization to groups and absence of double-blinding (see also Hodges & Wilson, 2010). Finally, small sample sizes were identified as a limitation to the inspected studies.

2.4.2 Music Therapy Interventions with Preemies and Parents

The oldest song, since ancient times till nowadays, is the lullaby, which every parent without exception sings to his baby. People always combine on their minds the lullabies with a melodic female voice. Their melody is calm without abrupt transitions, slow, monotonous and repetitive. They are also more effective on infants when they are sung softly and in a lower tone. Children immediately after their birth are in contact with various sounds, as well as with their mother's voice, which is usually more melodic when addressed to her baby. Thus, child's musical development and sociability is affected by the songs he listens to and also by the intuitive maternal speech, which is defined as the total of vocal expressions through which mothers are addressed to their children (Papailiou, 1999). It has been noticed that this intuitive maternal speech has a strong musical character, usually followed by a high tone, smooth changes in melody and extensive tone bursts, as well as a wide tonal range, repetitive short phrases, long pauses and simplified syntax (Papailiou, 1999).

Mothers often use different varieties of intuitive maternal speech, and, depending on infant's emotional condition or state of alertness, they invite their baby or increase his participation in a communication transaction or even maintain it, if it already exists. Therefore, since the baby does not understand the verbal content of this intuitive maternal speech, he gets all the truly musical features of this speech that convey the quality of his mother's intentions and emotions and which are coordinated with the quality of his own emotions (Papailiou, 1999). During the first three months of premature baby's life and later on, the incentive for interpersonal communication recedes and the motivation for exploring the inanimate environment dominates next. The mother, who wishes to communicate with her preterm infant, usually experiences the loss of interpersonal contact. Thus, in order to attract the attention of her little baby in an interpersonal communication, the mother should show dramatic character behaviors (Papailiou, 1999).The most suitable of these behaviors are the songs for babies, as these tracks consist of a narrative specific texture which leads to peak performance and then completion, and thus, this structure conveys an alternation of infant's emotional state.

However, in cases where mother's communication with her infant is disturbed, for example when the child is born prematurely and must stay in the incubator for weeks or even when the mother faces a postpartum depression, then there is a distortion of the musical characteristics

of intuitive maternal speech and infantile songs. The melodic tone is lower, monotonous and lacks brightness, while the tempo is really slow approaching largo (Papailiou, 1999). When intuitive maternal speech and infant songs show these characteristics, infants usually express strong dissatisfaction, crying and eventually withdrawal. Consequently, the mother cannot achieve a smooth interpersonal communication with her infant.

The data from the research of modern developmental psychology which were presented above, demonstrate the musical nature of direct interpersonal communication, which is a primary human behavior and the foundation for child's cognitive and emotional development. Certain musical characteristics in mother's and infant's behavior during their communication reflect the good quality of this interplay, while the deterioration of these characteristics reflect a disorder in the formation of self and self-other relationship (Papailiou, 1999). In general, the special value of music therapy is that the music therapist forms a frame in which a dynamic direct interaction with the person receiving therapy occurs through the music improvisation, analogous to that between mother-infant dyad. The result of patient's improvisation reveals his mental and emotional synthesis, without the intervention of other human body organs, such as the tongue which is demanded in other psychotherapy methods and which may cover or distort part of this internal synthesis (Papailiou, 1999). Thus, in order to enhance the effectiveness of his method, the music therapist must cooperate both with the family and with other specialists who are involved in addressing the specific problem of the prematurely born child. By using music therapy as a "communication bridge" between mother and infant, music therapists work as "enhancers" of the valuable mother-child bond by adjusting different music therapy methods on each premature infant's and mother's physio-psychological state, such as the Kangaroo Care with skin-to-skin method, singing lullabies or children songs together with mother, music improvisation with special instruments for babies or listening to improvised music together with storytelling.

In conclusion, singing to the preterm child is always a personal matter, which can encourage parents to evoke emotions and connect them with their premature infant. When parents (especially the mother) are singing directly to the infant, it helps them to communicate with their baby and find again the lacking closeness. This exceptional moment between the mother and her infant should be carefully examined from the very first moment by both specialist doctors and music therapists, in order to be enhanced with the help of different kinds of

musical stimulation and proposed music therapy techniques depending on the severity of infant's state. Moreover, after the thorough research on the effects of prematurity on infant's welfare and mother-infant bond, the researcher of the current case study concluded that what researchers have in common is, in one way or another, that they all refer to the need for further use of music therapy with premature infants and their parents (especially with the mother), starting from inside the NICU and continuing later at home, something that seems it is growing rapidly during the recent years. Finally, despite the fact that research exists regarding its benefits, it is evident that not all music therapists use the same techniques or follow the same psychotherapy models.

3 DESCRIPTION OF THE EXAMINED CASE STUDY

Prematurity has already and extensively been investigated throughout the decades with important results for preterm infants born in different weeks of gestation that may face various physical and developmental difficulties. The current case study basically aimed to examine the several benefits that music therapy can later offer to prematurely born infant's welfare and as a key facilitator to the mother-infant interaction during the music therapy sessions, through a diversity of music therapy activities proposed by the therapist. The auditory environment sometimes can be quite beneficial and sometimes extremely harmful for these infants at a later age, thus another research goal was to explore and determine what kind of musical stimulation or auditory setting during the music therapy process can influence premature infant's well-being and, in parallel, improve the mother-infant communication. The role of the music therapist was another important element to examine, as she is the "vehicle" that promotes a healthy and appropriate ground to let this valuable relationship between the mother and her child nicely blossom.

In 2014, Kaisamari Tuomi, a music therapy trainee on the Master's degree program in Music Therapy at the University of Jyväskylä, experienced (in the context of her clinical internship) a music therapy journey together with an 8-months old prematurely born boy and his mother, in a clinical setting. Afterwards, in her Master's thesis, she gave a recommendation for further research and understanding on mother's singing to her baby as an instinctive way of communication, interaction and bonding with him, even without having any previous musical skills (Tuomi, 2014). The power of the sound that comes from mother's voice, the first musical instrument in human, works as a type of first language and interaction with her child. Therefore, the researcher of the current case study, after taking into account Tuomi's suggestion for further understanding on this sensitive natural process, she decided first to elaborately observe and then further analyze the video data from Tuomi's music therapy experience, by focusing more on her (researcher's) personal perception.

Using the results from this study, it can be appraised whether music therapy would support the enhancement of the later and important mother-infant dyad, starting from improving

infant's health or any existing psychological disorders and then focusing and working on the mother-infant attachment. Together with the video data observation, the researcher also conducted a face-to-face interview with the music therapist Kaisamari Tuomi, in order to get a more interpretative form of her own music therapy experience with this special dyad. Thus, this study is based on the continuation of the prior research project in the Music Therapy field and works as a research expansion on the improvement of premature infant's well-being at a later infant age, always together with the mother and with the help of music therapy methods. The analytical method of the interview that was used was the Interpretative Phenomenological Analysis (IPA), proposed by Smith and Osborne in 2007, in combination with the Qualitative research for the video data analysis.

4 METHODOLOGY

The aim of this chapter is to describe the methodology which was used for the research design and the data analysis during this research project. The researcher worked as an observer of the prior twelve music therapy sessions which were held in the context of a clinical internship, something that offered to him the opportunity for a subjective and personal interpretation of the therapy process, always from a music therapy perspective. Both research and analysis methods were selected according to the type of investigation which was held by the researcher, as well as the results that emerged during both the video observation and the interview by the music therapist of the prior survey.

4.1 Procedure of research project

The current case study was based on a prior music therapy research project, which was held by the music therapist Kaisamari Tuomi in the Clinic of the Department of Music at the University of Jyväskylä, in Finland. Her project examined the effects of combining kangaroo care and parental singing on premature infants' and parents' well-being, together with the nursing staff's notions and thoughts about using music on the ward (Tuomi, 2014). After studying this special music therapy method and practice for preterm infants in the NICU, the researcher of the present case study wished and became more interested in examining the later development of the preemie during the first months at home and after his great struggle for life at the hospital. Thus, researcher's main idea was to investigate in which way music therapy in practice with a premature child and his mother can bring positive results for both of them, something that required two steps of research process which are being described below. Also, following there is a pyramid that shows the main idea of researcher's study plan (Figure 1).

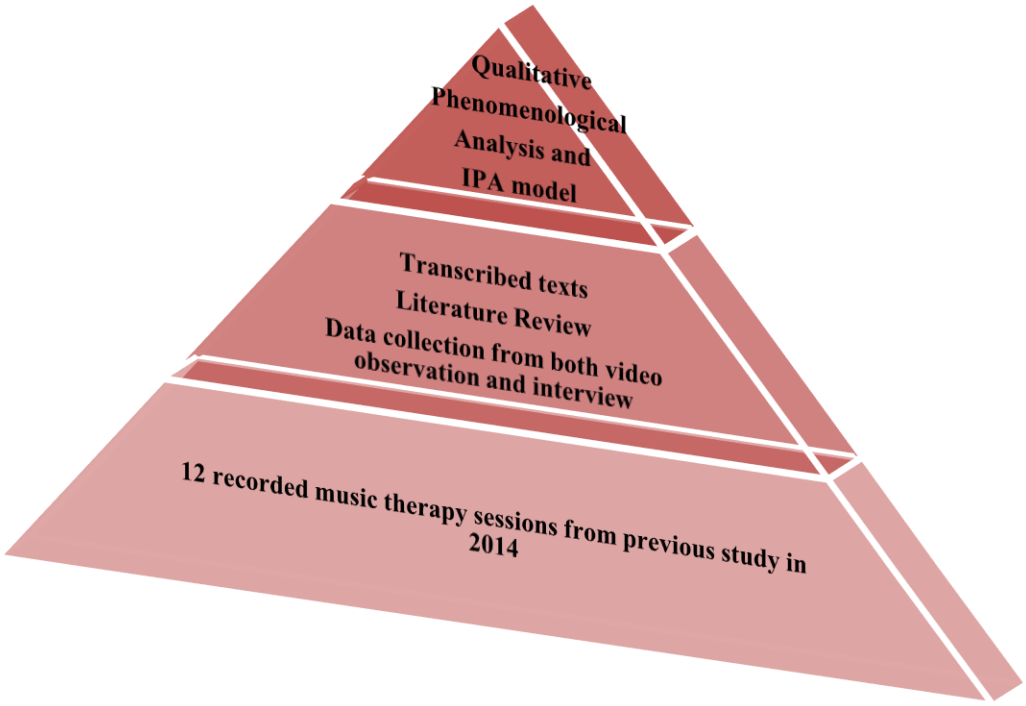

FIGURE 1 Research design introduced on a pyramid.

The first step demanded the researcher to observe and analyze elaborately the video database, which included the twelve music therapy sessions with an 8-months old premature baby and his first caregiver, that is his mother. Thus, the primary goal that was set by the researcher was to investigate the role of music therapy in the improvement of the prematurely born infant's well-being and also its contribution on the enhancement of the valuable mother-infant link, by focusing on the infant's responsiveness to music interaction, as well as on his mother's action during the sessions. Since the current study was based on the observation and analysis of the video database, the method that was chosen by the researcher was the Qualitative research, for reasons to be explained later on this case study.

The second and last step was to take an in-depth interview by the music therapist of the prior project, in order to get more information about the therapy sessions that could not be noticed during the video observation process, through transcribing and analyzing it. Therefore, another researcher's goal was to combine her perspective with the music therapist's personal experience by asking her specific questions mostly about her own personal experience, behaviors and feelings that may occurred during that time, something that can be considered as a "revival" of therapist's former therapy and life moments.

4.2 Data Collection

4.2.1 Video Observation

The main advantage of the case study research design is that you can focus on specific and important cases or elements (Yin, 2003). This may be an endeavor to evaluate a specific theory with a typical case or it can be a certain interesting topic for research. According to Yin (2003), research should be rigorous and note taking should be extensive and systematic. The primary base of the case study is the subject of study and the applicability. In a case study, you are deliberately trying to isolate and examine extensively a small study group, an individual case or a particular population (Yin, 2003). Thus, the researcher focuses on a single event and tries to understand and describe it as well as possible. Furthermore, qualitative research method uses recorded observations and different kinds of interviews in a fieldnotes form. Thus, the quality of these recorded observations defines the strength of the qualitative study. Several forms of qualitative research are based mostly on observations in the field, for example in the state or context that the research takes place. Also, different kinds of fieldnotes can be documented either by hand writing on a paper and later passed into a computer system, or they can be recorded by using audiovisual tools, for example digital voice, tape recorders, as well as digital photography and video cameras.

Therefore, after consulting the theory of case study and qualitative research, the researcher of this case study first observed the twelve (12) videos with the music therapy sessions between the music therapist and the mother with her preterm child, which are stored as patient records in the Music Therapy Clinic for Research and Training (MTCRT) of the Department of Music, at the University of Jyväskylä (Finland). In the Music Therapy Clinic for Research and Training (MTCRT), clinical music therapy is practiced, as well as relevant scientific research and training in music therapy. Therapy sessions are audio and video recorded for making clinical notes and for collecting data for scientific research. This clinical database is kept in the confidential archive following the rules of the Ministry of Social Affairs and Health and can be used under strict confidentiality for either teaching or as research material for creating clinical activities and studying music therapy in several research projects. It must be also clarified that this material can be used only within the clinic by employees, music therapy students and researchers or other groups that co-operate with the MTCRT. Thus, after

discussing with the music therapy professors of the Master's program, the researcher agreed to watch the video database at the Department under extreme confidentiality and use the material only for her personal investigation.

4.2.2 Interview

According to Robert Farr (1982), an internationally known specialist on social psychology, when the investigation is quality-oriented (qualitative method), the researcher seeks through a flexible and open type of interview to let the interviewee give his own interpretations and descriptions, by using his personal conceptual categories, something that provides the participant with the freedom to express his thoughts and feelings without requiring specific concepts or categories by the research plan. The interview is a method or technique for establishing or discovering that there are perspectives or views on the events that take place and they usually differ from those of the researcher (Farr, 1982). Furthermore, according to Smith (1990), the semi-structured interview is mainly used to obtain a detailed view of the beliefs, attitudes and opinions of a person about a specific problem, because as mentioned above, it allows the investigator to be more flexible. The interviewer tries to enrich the discussion, while the diagram of semi-structured interview should guide and not dictate its course (Smith, 1990). Thus, a face-to-face conversation aims to help the researcher understand the perspective and attitude of the respondent on the issue to be investigated and hear his experiences through his own words.

Qualitative semi-structured interview is a flexible and powerful tool which is non-directional, non-strictly structured and formalized, with questions that can give open-ended responses. In the context of the qualitative method that was used in the current case study, the researcher conducted also an in-depth, semi-structured interview with the music therapist of the prior project, for a deeper understanding of the language code between the therapist, the premature infant and his mother, since their native language was Finnish and it was quite difficult for the researcher to understand some important dialogues during the video observation. Thus, the investigator formed an interview schedule with multiple open-ended questions (Appendix 1) based on any further details on the music therapy process that she missed due to the foreign spoken language and also on the therapists' emotions, feelings, thoughts and her general experience that she had during the sessions. The interview lasted about one hour and a half, it

was recorded with the aid of a recording machine and the researcher was taking notes throughout the interview.

Another reason for conducting a semi-structured interview, together with researcher's preparation, was to provide the music therapist with a safe place for expressing her deeper emotions and thoughts about her own experience. The investigator's notes during the interview also helped her to note any extra ideas or elements in need for further research, without interrupting interviewee's flow of speech. Moreover, another researcher's idea was to watch some quite interesting and important music therapy sessions together with the music therapist in parallel to the interview, in order to help the music therapist remember the exact facts that happened during that time and also to give any extra information about the infant's physical and psychological problems, his family environment or any challenges that his mother was facing at home. Furthermore, the music therapist had brought with her the clinical internship's notebook, so that she could refer to her personal notes after the sessions and remember the exact moments. Thus, the researcher chose to focus more on seven sessions of total twelve, which show some important signs of improvement or challenges on infant's welfare and his bonding with his mother through their participation and interaction on different musical-therapeutic activities.

4.3 Data Analysis

The first step of the analysis was to transcribe the collected data from both the video observation and the interview with the music therapist, and then read them elaborately, delve into and familiarize with them. The current researcher's choice of qualitative method in order to investigate his own research questions by using the interview as an extra data collection tool was considered to be the most suitable, since the qualitative research aims to describe, analyze, interpret and understand specific phenomena, responding mainly to the questions "how" and "why", which concern the current research. The first main unique feature of qualitative research is that the researcher is the instrument by which research is conducted, while the second is that its main purpose is to explore some aspects of the social system which is being studied (Iosifidis, 2003). Both these features are integral parts of the process and consider the researcher as the person who builds knowledge and not merely as a recipient

thereof. The researcher collects data which then he translates and interprets through analysis methods into information. This information, when being implemented and used repeatedly in practice in different social situations, then they become knowledge (Iosifidis, 2003).

During the data observation, the researcher of this case study focused more on what is considered most important during the music therapy sessions regarding the research question that he had already set. Observations were connected with each other and, thus, this enabled the investigator to control more easily the amount of the data. Then, the studied mysterious phenomenon became clearer through the researcher's personal interpretations on the data observations, and afterwards, during the methods that he chose to conduct the data analysis. The qualitative video data that were elaborately analyzed in this case study constitute all of the prematurely born infant's expressions and reactions to the music therapist's effort to communicate with him and connect him with his mother by singing, playing or listening to music together, for example the body movements, the eye contact with both mother and therapist, the facial expressions and all these expression signs that he was making during the music therapy sessions.

A really useful approach of qualitative research that was used during the data analysis is the "Phenomenology", which, according to the philosopher Edmund Husserl, describes the subjective view and perspective of a certain event or phenomenon that is consciously perceived and experienced by the study community, in a more conscious "meaning-making" way (Wheeler, 2005). The aim of this approach is to define and explain the reason why specific variables in daily life experience interplay the way they do and also the relationship between them, by using the hypothesis that this relationship expands further than the normally measured rates (Wheeler, 2005). This is also the aim of the current investigation, as the researcher's role is first to observe and then analyze in a subjective-critical way and always from his personal music therapy perspective, which variables and how do they interact between them during the music therapy activities and improvisations, in order to influence positively the preterm infant and the valuable phenomenon of mother-child interaction.

Another important approach to qualitative, phenomenological psychology is the Interpretative Phenomenological Analysis (*IPA*), which helps the researcher to collect qualitative data from the participants of his research in a more interpretative form (Smith & Osborne, 2007). It is an

approach to psychological qualitative research that focuses on individuals, in order to provide an insight into their own life world and their unique personal interpretation on a given phenomenon and under certain circumstances (Smith & Osborne, 2007). Therefore, this approach was chosen by the researcher in order to document the music therapist's personal emotions and remarkable personal moments that she experienced during the clinical internship with the premature infant and his mother. This "revival" of the former music therapy process in a verbal form helped the researcher to obtain additional information on the therapy procedure and the music therapist to remember and elaborate more on her own understanding and sensation of this therapy journey.

In conclusion, the researcher's last step after transcription was to reread many times all the collected data, in order to refresh her memory and also to get a comprehensive understanding of them, so that she could then start the initial coding by comparing and contrasting, interpreting and understanding, as well as concluding and verifying her findings. Thus, after handwriting both her personal notes on the data observation and the whole interview with the music therapist, the researcher proceeded to making notes in the text by underlining and marking important signs and by paying attention to specific codes between mostly the infant and his mother, such as words, phrases, actions, values, meanings and motifs. Afterwards, the researcher wrote some notes next to the text by grouping similar meanings and codes, such as development of relations between subjects, same phenomena, concepts and explanations noticed during both the observation of music therapy sessions and the interview. Finally, after identifying and scoring, the codes were grouped together appropriately according to their conceptual relevance and then placed together in order to form a thematic area. Therefore, coding expressed briefly the interpretation that the researcher gave to the collected data, while codes emerged in some way through the text and were not imposed by the investigator in advance.

5 FINDINGS

In the current case study, the individual is an 8-months old baby, who was born prematurely and was facing severe sleep disorders during the first months of his life. According to the music therapist Kaisamari Tuomi, the parents decided to try the music therapy approach, in order to find a solution for their baby's difficulty to sleep, as well as to check if there is any specific problem with his hearing, as there was a thought about a hypersensitivity to high sounds. Thus, the mother and her child experienced music therapy sessions in the Clinic of the Department of Music at the University of Jyväskylä, in Finland. The twelve (12) music therapy sessions of the former music therapy research project were held in 2014, once a week for 45 minutes, by the trainee music therapist Kaisamari Tuomi, in the context of her clinical internship which was conducted during the Master degree program in the Music Therapy field.

The 8-months old infant was born in the week 34 of gestation, so he cannot be considered as very premature, but it is already six weeks before the full-term birth (40 weeks) and this had caused some important health problems which needed to be early solved. It is important to mention also that, during the music therapy sessions, only the mother was present at the sessions and the father joint them just for once (session 2), as he was working for many hours every day and the mother was the closest person for the child. With the use of both qualitative phenomenological research and Interpretative Phenomenological Analysis (IPA) for analyzing the video observation data and the interview with the music therapist, six major themes emerged:

1. Improved infant's well-being

2. Music therapy benefits on baby's sleep disorder

3. The role of music therapist-infant interaction

4. Enhancement of mother-infant bonding

5. Beneficial musical stimuli for the infant

6. Positive changes on mother's image

Furthermore, the researcher decided to give more attention to only seven (7) of total twelve (12) recorded music therapy sessions, which showed some quite interesting signs on infant's response to music and his interaction with the mother, that were gradually being improved during time. Thus, the sessions that were chosen for further analysis are sessions 2,3,4,6,9,11 and 12. In this section, these findings are presented elaborately, by combining the researcher's personal interpretations on the music therapy process and the music therapist's own experience and perspective, in order to come to specific conclusions from both sides.

5.1 Improved infant's well-being

During the interview, I discussed with the music therapist about parents' thought that their preterm infant had a hypersensitivity to high sounds, because, as an observer of the whole procedure, I also noticed in some sessions that the baby was sometimes touching his ears or he was closing his eyes when the sound was a bit louder, something that may show some problems at this area. The mother had informed the music therapist that, whenever his older sister was making noise at home, his facial expressions were showing some fear or horror, as if he could not tolerate this loud noise at all. Furthermore, she also mentioned that the baby had a small problem with his taste, but there were no issues with his tactile stimulation or any hypersensitivity in touching, as most prematurely born infants usually have. Thus, he did not face any big problems after birth, except for the sleep disorders and the small degree of hypersensitivity to high sounds.

Milestones

It is absolutely normal that each baby meets the physical milestones at his unique pace, especially infants who were born before the normal period. When the baby reaches the first eight months, he starts to understand how different objects in his environment relate to one another by giving more attention to his parent's body movements and expressions. The 8-

months old prematurely born infant of the current study showed that he had already developed very good reflexes and strength, as he was engaging with many things at the same time and he was grabbing and holding really well all of the musical instruments. For example, when the baby was trying to play music by himself, he did not need the help of his mother, so he was kicking away her hands every time that he was struggling at some points. Thus, the specific music therapy activities suggested by the therapist enhanced also the infant's motor skills, because they worked as a motivation for extra effort to play music by using all of his body parts, with or without the help of his mother.

Curiosity for music

In the first two music therapy sessions, the infant seemed really curious and unquiet, as the clinical setting was something totally new for him and he was just exploring everything, by crawling all around the room. After choosing the musical instrument that seemed interesting to his eyes from a variety of small instruments that the music therapist was introducing to him every time, he was trying then to play it with his hands, put it on his mouth and close to his ears, as well as shake, gum and drop it, in order to understand how to use it and where does the sound come from. Later on, during the third and fourth session, the music therapist was introducing and adding more musical activities (every 5 minutes) to practice together with the mother, and thus, the baby was getting even more willing to try many different instruments and play loudly in many tones, without any sign of disturbance or anxiety due to the loudness of sound.

> "He is so curious and excited about everything new; you can see it on his face! He is so cute, look at him, he is laughing so genuinely!"
>
> **Music therapist, while watching some of the sessions during the interview.**

Thus, after watching the videos together with the therapist, we discussed again and we concluded that the possible hypersensitivity problem that his parents referred to was probably something temporary that was being improved during the music therapy sessions, with his frequent exposure to loud sounds and different musical stimuli in both Clinic and at home. The mother also mentioned that gradually they started playing music together at home with small instruments for children, so he was experiencing the music playing in two contexts,

something that provided a continuation of the music engagement at a safe place like home and an enjoying moment with the family members.

Facial expressions and eye contact

Furthermore, his facial expressions was another sign of reaction to any kind of musical stimuli provided by the music therapist, either it was live or recorded music listening and playing. In the first two sessions, he did not seem very willing to follow music therapist's suggestions and he was sitting on his mother's hug for a long period of time. However, he gradually got the idea of this musical experience and he started reacting and responding right away, maybe because he felt safe and left himself free. In most of the sessions, and especially after the sixth session where he already knew the structure of the musical activities, the baby was showing his pleasure and enjoyment in a very expressive way with his facial movements, by laughing a lot and getting surprised with anything new. Since the baby was facing sleeping problems at this early age, the music therapist was trying to amuse him with various musical activities together with his mother during the first 30 minutes, and then calm him down during the last 15 minutes by playing the traditional Finnish melodic instrument named "kantele". This smooth melody like lullaby produced by the kantele was making him yawn and then he was ready to sleep, so that was considered as the closing part of each session.

> "He was staring at me a lot, because I was a foreigner for him and it took him four to five sessions to get used with the idea of being in a new place with a new person and his mother. He was really curious to see what is next and that is why he was watching more my movements than his mother's. It is normal."

Moreover, the infant's eye contact with his mother was rare during the first five therapy sessions, as he was more focused on the music therapist (foreign person) than his mother (constant figure). This maybe occurred by the affected mother-infant relationship after premature birth that probably was facing some challenges and it was not as strong as it should be.

> "When I was singing, he was concentrated on me, because his mother was not so willing to sing, as she was quite shy. Also, when I am with the babies, I really enjoy it and I am really open and concentrated, and that is another reason why in the first sessions he was contacting and looking more at me than his mother."

Thus, with the help of music interaction and games that required physical and eye contact, the baby was gradually changing his interest for the therapist into interest for his mother. It was obvious that as sessions were coming to an end, even the smallest gap in their relationship was fixed and his focus was exclusively on his mother (specifically, after the 8th therapy session). The mother's attitude also played an important role at this point, but it is described extensively below.

5.2 Music therapy benefits on baby's sleep disorder

When prematurely born infant's mother applied for experiencing music therapy together with her child at the university's Clinic, she mentioned that he suffered from a serious sleep disorder, as he used to wake up to the smallest sounds in the room and his sleep lasted only 30 minutes per nap during the day, while the normal sleep duration for babies at his age is about 2-3 naps daily for 2-3 hours per day (with extra 11-12 hours during the night). This was happening for a long period of time, thus the mother decided to help her child to improve his sleep and relax, as a good sleep and these small naps during the day are crucial for child's brain development. Even if he was born at gestational week 34 and he was not so premature, sleeping is a necessary process, as it can truly interrupt his later development and his cognitive function.

Therefore, the music therapist mentioned that the two main goals that they had set were first to help the premature child learn how to receive the provided auditory stimuli and then to improve gradually his quality of sleep. She also stated that:

> "A lot of good things happened during these 12 sessions. We noticed, without knowing the reason, that something on the infant's brain changed..."

> "It was a big change that he started sleeping for even 2 hours. His mother was really happy about this improvement by using only music and that he didn't wake up so easily, as she could also sleep better and relax."

> "I have this feeling that when you use music and this kind of sounds and instruments, there is definitely a change to infant's state, but I don't know exactly what is it, because I couldn't measure and test his brain reactions and activities. Thus, we don't know what happened deeper in his brain, but it was really interesting that something big changed. We used many different activities, like children songs, audio and motor ones, so I can now say that this variety of activities helps somehow the brain to become more mature. But of course, this topic needs more research."

Then, she also mentioned that, due to the fact that he was waking up every time that a sudden sound was interrupting his sleep and then he could not sleep easily again, she was trying to adjust the music listening or playing at his level of loudness so not to be painful for his ears or annoy him with something sudden and make him feel uncomfortable and cry. Sometimes, she was also testing his limits by putting the volume a bit higher, but always in a safe way for him during the music listening.

5.3 The role of music therapist-infant interaction and therapist's own experience

In some music therapies, like the current one, the therapist interacts directly and purposely with the infant. According to Stern (1995), the infant then is forced to form a representation of the type of interaction he has with the therapist and to compare it with the representation of the type of interactions he usually has with his mother. The comparison between these two representations may play a large therapeutic role. Thus, if the infant can learn to interact differently with someone except for the mother, it may be able to apply this new way of interacting into the old relationship with the mother, and then, change its system of schemas-of-being-with-mother.

In general, babies have naturally a big interest in everything new and different and they behave in an exploratory way when they meet a new person for the first time. Thus, they usually react negatively, as their brains suddenly get more information about the stranger and they try in different ways to edit this new input. However, the music therapist's stance and whole attitude, as she informed me, was very discreet, as her role was more to suggest and show the musical activities and then step back sometimes to let them do it together and by themselves:

> "I did not want to go between them and interrupt the mother's role in front of her baby. I just wanted to show them how to make music together and strengthen their relationship. In the beginning of the sessions, I had to be more active as the mother was quite shy, but in the end I was able to leave more space, as she learned the activities and, due to the repetition, that brings safety and continuation."

Thus, the presence of the music therapist during the sessions worked as a "bridge" between the infant and his mother, in order to provide them with all the necessary stimulation which was enhancing gradually their own valuable relationship.

Finally, one of the interview questions was about music therapist's own emotions during the therapy sessions. She was really expressive while describing them and I noticed that the whole experience was very pleasant for her as well, but also quite exhausting, as working with children is quite challenging. Here are some of her thoughts as she vocalized them during our interview:

> "Working with children is definitely really demanding. I just wanted to do some meditation in order to relax before the sessions, like self clearing, sleep early at night and have a structure on my mind to feel safe and know what I am going to do next. To have many choices and find what is good for my job, my personality and my own way of working. Once in a while, in the mornings, I had that bad feeling, but I learned to switch it and say that now I am going to help other people and I put anything personal aside."

And then, she added:

> "It is really important before the therapeutic process to set the atmosphere of the sessions with each type of client, for example I was listening to children songs before the session to get to the infant's level, as music always helps me to get to the mood right."

> "It was really easy for me to be with the infant. So every time he was there, I felt very familiar and natural, that's why I love working with babies. That is what I like most!"

5.4 Enhancement of mother-infant bonding

Mother's role during the music therapy sessions with a little 8-months old baby was very important, as she was not only his musical partner and facilitator during musical improvisation and listening or movement activities, but also a constant figure which provides the child with safety and trust, and gives him the motivation to try many new things without fear. Thus, she was helping her child to play all of the instruments by holding or positioning the instrument, and she was many times encouraging him to play more, even if she was a shy person. This encouraged dialogues between them and was leading to humor, laughs and enjoyment during their interaction. It was obvious that their relationship was surprisingly enhanced during the last four music therapy sessions, as their communication was notably

improved. The music therapist's role is very important here, as she provided a safe and "holding" working place for the mother-infant dyad.

Furthermore, in the beginning of the sessions it was clear that the infant was giving his attention mostly to the music therapist and he was not staring at his mother so often. Gradually, and especially when they both started to understand the suggested musical activities and they were willing to try them together, the baby begun to follow his mother's movements and ask for her hugs or help, something that also encouraged the mother to feel better with her baby and come closer to him. The physical contact was also really important for creating a healthy mother-infant bonding and it was obviously more frequent with time, especially when the music therapist showed them a massage exercise on a doll to practice it together, which was very relaxing and soothing for the baby, as he was closing his eyes and he was just enjoying it a lot.

> "After the fourth session, they started playing music together at home with small musical instruments and, according to the mother, he was playing really loud showing that he was not afraid of loud noise anymore."

> "After the middle of the sessions, he was more relaxed, calm and focused on music making, by sitting more on his mother's lap to do exercises together. He was enjoying more the whole process and he was laughing with the mother's funny facial expressions. The mother finally started smiling more in the last five sessions, because she was watching her child having fun, so they were laughing together and this refreshed and enhanced more their relationship."

It should be noted that, in session 2, the father also joined the therapy session and it was totally normal for the baby to give most of his attention on him. However, the music therapist was introducing different activities to both parents and then they were practicing them in turns, thus, while focusing on and playing with one parent, the other was just watching. It was really interesting to see that the baby had this preference for his father and showing it with all of his body gestures, but then the music therapist informed me that he was working for many hours daily, so it was a nice moment to focus more on their relationship in this session and not so much on the mother-infant one. Anyway, there were no other important issues or signs for extra analysis from this session with the father-infant interaction, that is why I did not insist more on that.

5.5 Beneficial musical stimuli for the infant

The music therapy sessions had a specific structure with repetitive musical activities, which were alternating with music listening and calming parts every 5 to 10 minutes, in order to keep the premature infant occupied and amused. As the music therapist stated:

> "We had to change activities a lot, because he couldn't stay focused and concentrated for many minutes, so I was just following him and we were searching together the instruments that he preferred. Otherwise, he was very frustrated. He was moving all the time and exploring, so I had to accompany him."

During most of the activities, the baby was really concentrated with all these musical stimuli that attracted his interest, by trying to hear and explore every instrument next to his ears or with his mouth, expressing his joy with screaming and humming and moving all the parts of his body while enjoying the musical activities together with his mother. Also, during an exercise with bubbles made by the mother together with the dim lighting in the clinic room helped the infant to relax a lot and enjoy the visual stimuli in combination with relaxing and smooth music listening. The instruments that the music therapist preferred to play in each session were mostly percussion, such as little drums, ocean drum, egg shakers for children, bongos, rattles, or melodic ones, for example the Finnish kantele, metallophone and ukulele, and sometimes the piano. The little boy was most interested in shakers and the metallophone, but in general he was trying everything by himself in order to hear the sounds and touch the material of each instrument.

Another two really effective and beneficial musical activities for the mother-infant attachment were a dancing exercise together with listening to Finnish traditional songs for children performed by the music therapist, which required the mother to hug her baby and do different movements together by standing up and moving all around the room. This encouraged the shy mother to focus on her baby's entertainment and well-being by touching him and holding him close on her body and then dancing or walking around the room together. The boy showed that he really enjoyed the whole process and this specific exercise which required the physical contact seemed to be his favorite (he was moving his body parts according to the beat, and also he was laughing and really showing his pleasure with his facial expressions).

> "I had the same structure every time. Every time we begun with the same song and the kantele, then we got the small instruments and played, and then we had this singing and playing moments, while in the end we had the same songs together with the bubbles, as a calming down procedure for the baby and to show that it is ending and was time to sleep, as a habit; he needed this structure. And at some point I made the song for the ending, as he was very tired and the mother was trying to dress him up with so many clothes, so he was concentrating on that song and he seemed really relaxed."

When I asked her about noticing any resistance from the baby during the music therapy sessions, she answered:

> "No, he was very curious and he enjoyed everything, he loves music and during the 45 minutes, which is a long time for babies, he was surprisingly very active. I didn't expect him to have so much energy and concentrate for more than 30 minutes, for example. It would be a catastrophe if he didn't like playing music at all, so they had to enjoy what they were doing during the sessions, otherwise they would not have the willingness to concentrate and try new things together. I tried to introduce them also some sensorimotor exercises for that reason. "
>
> (She was very happy to watch him on the video to enjoy and play music or the piano and laugh with the activities that she was suggesting.)

As mentioned before, the music therapist had to change the musical activities every 5-10 minutes, because the baby was feeling bored easily or even annoyed. Thus, I asked her about this variety of activities and the frequency of change, as well as how he reacted in sudden changes of rhythm or melody. She stated that:

> "I had to change the musical activities many times, because it was only once a week for 45 minutes and I had to find a way to provide him with as much stimulation as possible during these minutes. I also remember that the sound of drum was quite annoying for him, but when he was playing it by himself, he was not frightened; he was searching the sounds because *he* was making the sounds, so he was not surprised by the noise, but he seemed more frightened when he listened to sudden sounds. Especially in the ward, babies are frightened because they don't know where the sounds come from (the machines). Now that he is 8-months old is totally different. "
>
> "I also made a song for him with his own name, because he was crying all the time in the end of the first sessions, I remember… So, in each ending of session, I was singing what the baby was doing, for example now he puts his gloves on, his hat on etc, to make him focus on me and not to this boring and annoying process of dressing up, otherwise he would scream all the time as he was tired. Music can make him forget these negative feelings and change his mood; he learned that through this process."

While video observing of the music therapy process, I also noticed that, during the last session, the little boy was engaged in music with his whole body, by moving his head, arms and legs. The music therapist was trying then to imitate him ("mirroring technique"), something that was really entertaining for the three of them and made them smile a lot. During the interview, she stated that:

> "He understands and realizes that the other person sees me now and she is doing the same things I am doing, she is following me. It was like a dialogue with the baby, like talking through mimicking and playing music. Also, it is very interesting to see how easily infants learn new things and then do them by themselves."

And she added that:

> "It was nice to see that he is gradually learning these activities and he does them by himself afterwards. We had really nice moments; he really seemed to enjoy it. Especially in the end of the sessions where the mother was more relaxed and was practicing the exercises while standing up by herself holding the baby, while I was playing the piano."
>
> (As memories flashed through her mind's eye, she was recollecting the whole procedure and she was laughing a lot while watching the videos again. I noticed something like a nostalgic feeling from her side…)

Her answer on my question about how can music therapy benefit infants who were born prematurely and why it is important to study further the premature birth for future complications on infants' lives was the following:

> "Research has already shown that music therapy is very beneficial in our health generally and I have the feeling that it can be really beneficial for preterm infants, because they can show less learning difficulties (in about 60%) and better speech development in the future. Music activates different parts of the brain and can be beneficial with the learning procedure at a later age. Especially parental singing together with the motor activities and interaction is the most important gift for parent-infant bonding, as they learn how to communicate by having fun together."
>
> "For example, the sound waves from mother's singing are totally different from talking, as she can put emotion on that. And if you sing the same lullaby as your mother used to sing to you, you also express your own emotions from your memories and you can naturally communicate your feelings. So music therapy is really important, as the infants' interactions with the members of their families could also benefit from it. I have noticed now how it worked with those people; singing to the baby exists in every culture and it works as a way to relax also the mother and the father. Thus, both music therapy and parental singing can create a safe and calm environment for the baby and improve his physical state; it has a bigger effect to the whole family."

And she continued:

> "The research project that I have been working on shows the benefits of music therapy on infants with long hospital stay, but more research is needed on baby's later speech development by using music therapy. Prematurity is always a risk factor for these problems and the lack of closeness and bonding for the premature babies can cause serious problems on mother-infant relationship."

5.6 Positive changes on mother's image

After extensively analyzing premature baby's reactions and responds to any kind of music stimuli during the sessions, it was considered quite important to focus also on the mother's general image and how it surprisingly changed after the first positive results from the music therapy intervention on both her child and on their relationship. According to the music therapist, the mother was also facing sleep problems at that period of time, since her child was awake many times during the night and she had to take care of him. She was a really shy person and she didn't open up during the therapy process and talk about any possible personal problem that she may faced then. However, it was obvious that music therapy created a safe place also for the mother and it helped her to be more confident, as she gradually started to interact musically and sing with her child in front of a foreign person (music therapist), especially during the last four sessions, where she already knew the structure and how to practice the musical activities with her baby by herself.

My own perception about the mother was confirmed by music therapist's personal opinion about her:

> "The mother was quite shy, so I felt that she didn't want to talk to me a lot and open up, so that was just fine with me and I wanted to support her the way she is and not go deeper. So it was something like "come and go", always from a distance. You have to be careful with these sensitive things when you are a therapist and to "smell" all the time how to react to each case, to know where to stop and set boundaries. So the best way is to give support and then step back again; to be 100% there and catch every sign and every small detail."

> "She looked more beautiful, and she put make-up and cut her hair! So maybe she was not so tired, as the baby started to sleep more, and she had more time for herself. Maybe she also liked to come to the sessions and she wanted to look prettier."

And then she added:

> "The mother seemed very calm in the last four sessions. It was also her idea to do the exercise with her baby and dance with him while I was playing the piano, without my instructions, as she already knew it and she just did it by herself. So the baby started to follow her and they had their own very beautiful moment. He enjoyed it a lot (on the 11th session)."

The music therapist gave the mother all of the material that they used during the sessions so that they could continue to practice them at home. They had already started from the beginning of the sessions to play some music at home with some small instruments for little

children and he was really enjoying it without any resistance. Then, she explains that her role as a therapist was just to show to the baby and his mother the way to communicate and interact more easily through music, but she certainly did not want to go between them or give her attention only to the boy and ignore the mother ("*I didn't want to act like I am doing that now with your boy and you just look and learn…That was not my goal at all*.").

Therefore, music therapy was also important for the mother, as it gave to her the time and space to take care of herself more and enjoy the improved relationship with her child.

6 DISCUSSION

After the analysis of the research data from both the video observation and the interview with the music therapist, the next section consists of the discussion part, where the six themes-results that emerged will be further elaborated, as well as the recommendations for future directions proposed by the researcher of the current case study and the conclusion part with some of the researcher's final ideas and opinions on this research topic.

6.1 Discussion

The main aim of the current case study was to investigate how can music therapy benefit an 8-months old preterm baby's welfare by enhancing also the valuable relationship of the mother-infant dyad. The purpose was to focus on a prior music therapy project and watch from a more observational sight the whole therapy process, in order to notice all these special signs that are produced between the mother and her child and are responsible for all the positive changes, always with the help of the music therapist. Thus, music therapy's role in this study was mainly to fill the gap between mother and her infant, which was causing difficulties in their communication, but this required first the total music therapy support of prematurely born infant's physiological and psychological state.

The results of this case study were divided into six major themes, which emerged after the video observation and the transcription of the interview with the music therapist. Therefore, starting from the premature boy's general well-being, it was noted and then confirmed in the interview by the music therapist that the baby was gradually engaging even more with the musical activities and music improvisation, something that helped him easily concentrate in the moment and reduce this sensitivity in loud and sudden noises that his mother had noticed at that time. The participation of his mother in the therapy session was also an important factor, as she worked as his musical partner, by encouraging him even more every time to play music and explore every musical instrument together or by himself. The safe place that music therapy created during that time and the relaxation moments that were introduced by the music therapist also facilitated infant's effort to have a normal sleep for 2 to 3 hours, in

order to develop a healthy brain and relieve also his parents (especially the mother) from this sleep anxiety. After the stressful moments of a premature birth, the offer of music therapy in the following years of child's life is a great relief for the parents, who need to insure that this special support that their child gets from music therapy will secure him a normal and healthy future.

The next person that was quite interesting to focus on was the music therapist, who played a meaningful role during the therapy sessions, because she worked as the "bridge" or the "facilitator" for the enhancement and support of the sensitive mother-child bond which was facing some challenges during that period, like most families with prematurely born infants (Figure 2). Generally, she made a great effort during the whole therapy process, as she was introducing many different musical activities and was changing them quite often, in order to hold baby's interest and encourage the mother to participate more and play together with her child. Thus, the way that the therapist was showing the exercises to the mother and the infant was quite helpful and effective, as they were both getting more and more interested and excited for the procedure during time and they were practicing the musical activities also at home every day.

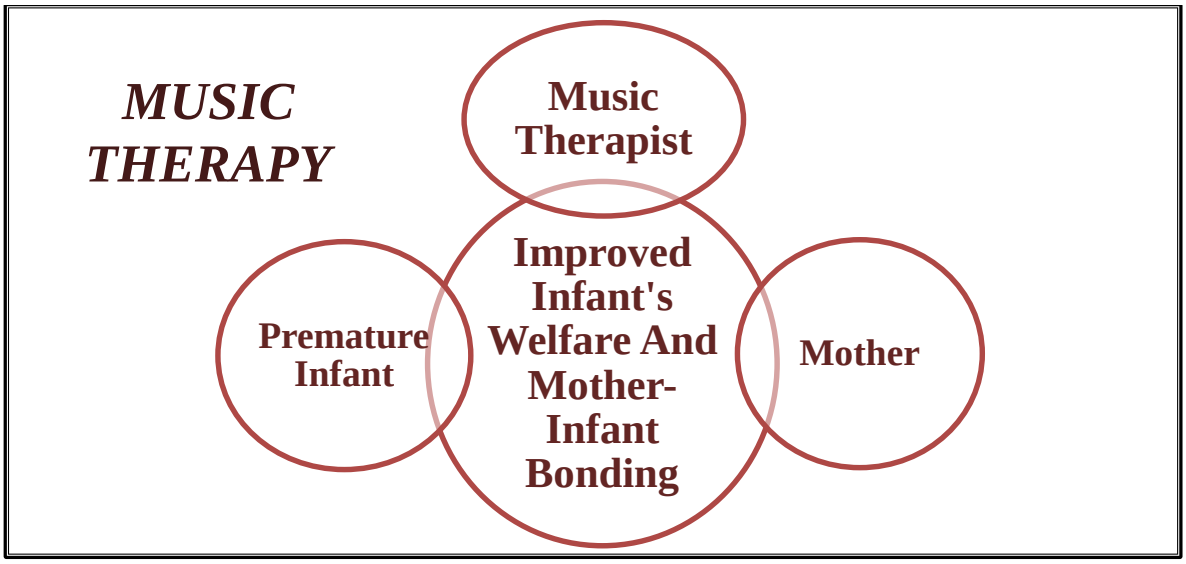

FIGURE 2 Music therapy as a safe place for the improvement of infant's physical state and the creation of a healthy mother-infant bond with the help of the music therapist who bridges the gap.

It is really important for the music therapist to find a balance between giving a big effort in order to provide his clients with as much stimulation as possible and also keeping a distance from this valuable mother-infant relationship, in order to avoid any potential confusion with

mother's role. The current music therapist adequately corresponded to this demanding role, as the results showed that the affected mother-infant attachment was gradually restored and they were both enjoying their interaction in this context.

Another finding that is worth mentioning is the role of music therapy in the establishment of a successful mother-preterm infant attachment and how does it generally support a good start in life for this vulnerable population. A healthy bond of love in a normal mother-child relationship during these early years is crucial for preemie's physical and psychological development, as it builds the foundation for later attachment relationships. Thus, music therapy's purpose is to provide both preemie and his mother with easily recognizable music elements combined with supporting therapeutic interventions, in order to encourage secure bonds between these vulnerable babies and their parents. During the current music therapy sessions, the mother was really willing to strengthen her relationship with her child and, since the child was so curious and explorative for new sounds and musical instruments, music therapy came as a key facilitator to help this attachment naturally and healthy blossom.

As Jane Edwards mentioned in her book *Music therapy and parent-infant bonding* (2011),"by providing a musical container, or skin, in which both the parent and the infant can be held, music therapy can offer the dyad a chance to safely encounter and explore one another anew", by meaning that one of the basic music therapist's capacities is that he can support through joyful and interactive methods the sensitive mother-infant relationship and also extend the range of maternal skills in bonding and communicating with the child. Thus, music therapist introduces the dyad to various musical interventions, such as lullabies, musical or vocal improvisation, songs and chants, in order to promote the reciprocal co-regulation procedure between the infant and his mother, as well as to create a healthy and secure environment for this relationship's natural development.

The "love vitamin" is really important for the prematurely born baby, as well as for the parents, who need an extra psychological support in order to be able and have the strength to give the so needed love, affection and special care to their preemie. The premature children are separated from their mothers at a time that is not indicated by nature to exist life outside the womb; neither physically nor mentally. For those children, it is therefore essential to receive the hormones that facilitate the human organism's adjustment to life outside the

mother's body. However, premature babies urgently need something more; to be close to their mother and next to her body, especially during the first difficult months. Thus, as it was also noticed during the video observation of the music therapy sessions, the mother's physical contact and touching of her baby was really helpful and soothing for him, as the musical activities that the therapist was suggesting every time included special and affectionate movements together with the baby by providing him with positive emotions.

Another point worth noting as far as the musical part is concerned was that the prematurely born boy was really attracted to vocal interventions by singing different songs for children together with the mother and under the instructions of the music therapist. It is totally understandable that parents and, in general, caregivers all over the world early ascertain that the babies are more interested to attend and react to suggestions for play interactions which are proposed through different singing techniques. Thus, when the mother was interacting with her premature child during the music therapy sessions of the current study, he was engaging more with the vital emotions of love that were being produced from the sound of her voice and, in this way, she was capturing the baby's interest on her and reinforcing the positive feelings for the enhancement of their bonding (Figure 3).

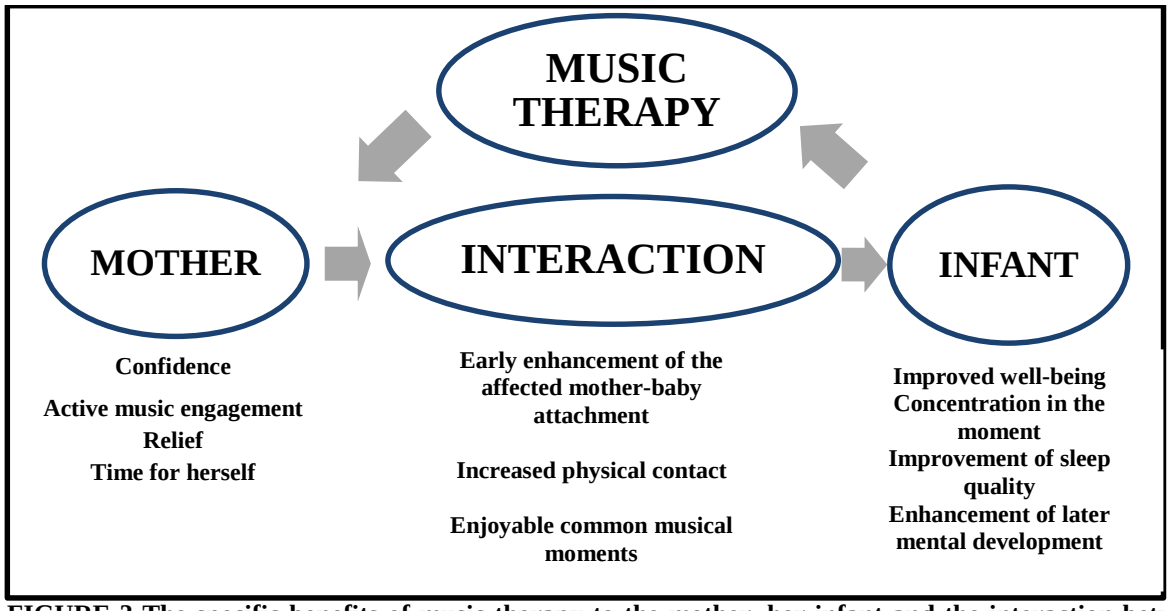

FIGURE 3 The specific benefits of music therapy to the mother, her infant and the interaction between them.

Furthermore, the emotional singing and vocalizing together with the musical activities and listening that the music therapist proposed to the mother-infant dyad provided the baby with

relaxation and peacefulness, as they were soothing his anxiety of being in a new context and they were also inviting him to a better and easier sleep after the sessions, something that was accomplished in a short time (around the middle of the therapy sessions). Moreover, these musical interpersonal exchanges were conveying the emotional states of both the mother and her baby and were giving the appropriate space to let them experience meaningful and pleasant interactions between them during these 45 minutes of the music therapy session. Therefore, music was the key factor that allowed and promoted a healthy communication between the mother and her premature child, by helping them exchange valuable information about their emotional conditions and strengthen their links of love. In this way, the music therapist was, thus, the important promoter of this fundamental procedure.

A last person that was surprisingly benefited by music therapy was the mother of the prematurely born infant. In the first sessions, she was trying to adjust to this new idea of experiencing music therapy together with her child, as she was the person who contacted with the music therapist in order to start the sessions and help her little boy overcome his sleep problems, something that was stressful and tiring also for herself. As therapy sessions passed by, the mother gradually started to take more care of her image, by changing her hair, sprucing herself up and dressing up in a more classy way. Furthermore, she seemed less shy, more confident and more positive to try many different musical activities or even sing to her baby (to test her own limits) after the first half of the sessions, something that revealed the safety and freedom that the music therapist was providing to the mother-infant dyad in the music therapy context. Therefore, music therapy generally can encourage also the parents of prematurely born infants, who do not have any musical skills and may feel uncomfortable with using their voice and sing to their baby in front of a foreign music therapist, to take the risk and actively participate in this music making process and interaction by expressing their affectionate love and emotions that are so needed for their little child at this early age. Afterwards, they will feel ready and forceful to create a soothing atmosphere and a mutual space to let the communication and emotional sharing with their baby flourish.

6.2 Recommendations for future research

Parent-premature infant music therapy, and especially between the mother and her child, is a topic that has emerged the last few years, but it is practiced only in specific and few countries all over the world. The reasons for the delay in the introduction of music therapy in the wards (NICU) and then its practice during the first months or years of preemie's life are numerous, as each country has her own policy, financial difficulties and cultural identity which cannot create the "fertile ground" to let music therapy grow and be practiced properly. Therefore, I strongly believe that the use of music therapy with prematurely born children together with their parents (families) in different countries, conditions and cultures is a topic that is worth investigating further in the future. Parents all over the world should learn that music therapy is a safe means that can support them during this challenging period after a premature birth and find the solution in different problems that can occur after birth.

Even if technology has been dramatically developed the last few decades and NICU has been equipped with all the necessary mechanical support, parents must be informed and realize that, except for the healthcare teams and doctors who provide the necessary care to the preterm infants during the first days, music therapist is an essential part of preemie's later well-being. Music therapist is the one who will provide both the parents (family) and their premature child with every kind of psychological support through different kinds of musical stimulation, something that will rapidly improve infant's general welfare and help him live a normal and healthy childhood like his full-term peers. This is a topic which needs to be researched more in the near future, because there are still parents who do not know the existence of music therapy and its benefits especially in the vulnerable population of preemies, as there are still hospitals who do not use music therapy in the pediatric primary care due to financial problems or lack of healthcare staff's information.

Thus, further research and information should be also practiced and provided on enhancing premature infants' well-being, firstly by encouraging the mothers to breastfeed their babies and increase their physical contact more than they are suggested to do by the health care staff, and secondly by spreading the knowledge about the benefits of music therapy on the improvement of the sacred mother-infant bonding. It is important for researchers to focus on this very early stage after birth, because if the parents are well-informed by themselves before

welcoming their child, they can have the choice to offer whatever they believe it is more beneficial for their baby.

6.3 Conclusion

Everybody deserves a good start and a healthy welcome in his life. There is nothing more beautiful and beneficial for a child than being raised and shaped by love and tenderness, solidity and truth. However, not everyone begins from the same starting point in life. Some people start their life journey with a "mental storage" full of emotions and affection, some others begin as semi-empty of inner strength with a hope to find "emotional fuels" along the way, and some people start with a poor and challenging welcoming in this world by fighting to stay alive from the very first minute after their birth. The last ones are identified with the prematurely born infants, who are considered universally as "little heroes", because they start struggling for their lives from this early age.

The best "medicine" for enhancing premature infants' great effort to survive is undoubtedly the mother's affectionate hug and touch. Starting from inside the NICU at the hospital and continuing afterwards at home during the first crucial months of infant's life, the mother is the person of reference for the little child or else the most important figure in his life. Without undermining the equally major father's role in child's healthy development, the mother is the one who will provide her child with all the primary and necessary supplies, from breastfeeding to affectionate care and from secureness to mental stability. Stepping away from this case study research, what I will take with me for my future practice as a music therapist is that, music therapy is a major facilitator, which enters the lives of families with preterm babies and offers all these necessary elements of emotional closeness and healthy growth that are missing or hidden at this early stage due to feelings of fear for the uncertain future.

My role as an observer of those magical moments of real and meaningful interaction between the mother and her 8-months old prematurely born boy also made me realize the power of music therapist's involvement on this special relationship, as she provided the needed safe space through various musical experiences without interrupting or influencing negatively this bond. Both infant's and mother's negative emotions gradually decreased and then disappeared,

as music therapy brought to the surface the most obvious and innate thing in the world; the natural warmth and contact between mother and her infant, which covers their souls with vital positive emotions and helps them enjoy life together. Music is undoubtedly a powerful therapeutic means that can be used even from the very first fragile moment after premature birth till the end of life. The only thing that should be promoted more is to let people know that the therapeutic use of music is the greatest weapon and partner during each age group's struggle for a better life.

REFERENCES

Arnon, S., Shapsa, S., Forman, L., Regev, R., Bauer, S., Litmanovitz, I. & Dolfin, T. (2006). Live music is beneficial to preterm infants in the neonatal intensive care unit environment. *Birth, 33*(2), 131-136.

Blumenfeld, H., Eisenfeld, L. (2006). Does a mother singing to her premature baby affect feeding in the neonatal intensive care unit? *Clinical Pediatrics, 45*(1), 65-70.

Bowlby, J. (1982). Attachment. New York: Basic Books.

Burke, M., Walsh, J., Oehler, J., & Gingras, J. (1995). Music therapy following suctioning: Four case studies. *Neonatal Network, 14*(7), 41-49.

Butt, M. L., & Kisilevsky, B. S. (2000). Music modulates behavior of premature infants following heel lance. *Canadian Journal of Nursing Research, 31*(4), 17-39.

Caine, J. (1991). The effects of music on the selected stress behaviors, weight, caloric and formula intake, and length of hospital stay of premature and low birth weight neonates in a newborn intensive care unit. *Journal of Music Therapy, 28,* 180-192.

Calabro, J., Wolfe, R., & Shoemark, H. (2003). The effects of recorded sedative music on the physiology and behavior of premature infants with a respiratory disorder. *Australian Journal of Music Therapy, 14,* 3-19.

Cassidy, J. W., & Standley, J. M. (1995). The effect of music listening on physiological responses of premature infants in the NICU. *Journal of Music Therapy, 32*(4), 208-227.

Cassidy, J. W. (2009). The effect of decibel level of music stimuli and gender on head circumference and physiological responses of premature infants in the NICU. *Journal of Music Therapy, 46*(3), 180-190.

Cevasco, A. (2008). The effects of mothers' singing on full-term and preterm infants on maternal emotional responses. *Journal of Music Therapy, 45*(3), 273-306.

deRegnier R. A. Will My Baby "Catch Up"? Growth and Prematurity. Retrieved March 19, 2016, from http://www.prematurity.org/child/growth/catchup.html

Edwards, J. (2011). Music therapy and parent-infant bonding. Oxford: Oxford University Press.

Farr,R.M. (1982). Interviewing: An introduction to the social psychology of the inter-view. In F. Fransella (ed.), Psychology for Occupational Therapists. London: Macmillan, 151-170.

Gerner, E. (1999). Emotional interaction in a group of preterm infants at 3 and 6 months of corrected age. *Infant Child Development,* 8, 117-28.

Growth and development after prematurity. (April 2015). Retrieved March 19, 2016, from http://www.tommys.org/pregnancy/labour-and-birth/premature-birth/taking-your-baby-home/growth-and-development-after-prematurity

Hartling, L., Shaik, M.S., Tjosvold, L., Leicht, R., Liang, Y., & Kumar,M. (2009). Music for medical indication in the neonatal period: a systematic review of randomized controlled trials. *Archives of Disease in Childhood-Fetal and Neonatal Edition, 94,* F349-F354.

Hodges, A. L., & Wilson, L. L. (2010, Seprember). Preterm Infants' responses to music: An integrative literature review. *Southern Online Journal of Nursing Research 10*(3). Retrieved from http://www.resourcenter.net/images/snrs/files/sojnr_articles2/vol10num03art05.html

Huotilainen, M. (2004). Sikiöaikainen oppiminen valmistaa tien syntymänjälkeiseen elämään. *Tieteessä tapahtuu, 4,* 14-16.

Huotilainen, M. (2006). Hermoston kehitys ennen syntymää. In Hämäläinen H., Laine M., Aaltonen O. & Revonsuo A. (Ed.), *Mieli ja aivot: kognitiivisen neurotieteen oppikirja.* Kognitiivisen neurotieteen tutkimuskeskus, Turun yliopisto.

Iosifidis, T. (2003). Ανάλυση ποιοτικών δεδομένων στις κοινωνικές επιστήμες [Analysis of qualitative data in social sciences]. Athens: Kritiki Publishing S.A.

Katz, V. (1971). Auditory stimulation and developmental behavior of the premature infant. *Nursing Research, 20*(3), 196-201.

Klaus, M. H., Kennell, J. H. (1976). Maternal–infant bonding: the impact of early separation or loss on family development. Mosby, Saint Louis.

Korhonen, A. (2007). Varhainen vuorovaikutus. In Paananen, U., Pietiläinen, S., Raussi-Lehto, E., Väyrynen, P. & Äimälä, A-M. (Eds.), Kätilötyö (p. 309-315). Helsinki: Edita.

Korja R., (2009). Early relationship between very preterm infant and mother: The role of infant, maternal and dyadic factors. Master's Thesis. University of Turku. Finland

Lai, H. L., Chen, C. J., Peng, T. C., Chang, F. M., Hsieh, M. L., Huang, H. Y., & Chang, S. C. (2006). Randomized controlled trial of music during kangaroo care on maternal state anxiety and preterm infants‟ responses. *International Journal of Nursing Studies, 43,* 139-146.

Leijala, P. (2008). Varhaisen vuorovaikutuksen mekitys lapsen elämässä. Lecture material. Valtakunnalliset perhetukipäivät, Seinäjoki.

Marcovich, M., & De Jong, T. (2015). Πρόωρα μωρά: Αγάπη, Φροντίδα, Επαφή [Frühgeborene - Zu klein zum Leben? Die Methode Marina Marcovich]. ΡΕΩ Publ., Athens

Miller R. (2011). Vygotsky in Perspective. Cambridge: Cambridge University Press.

Minde, K., Perrotta, M., & Marton, P. (1985). Maternal caretaking and play with full-term and preterm infants. *Journal of Child Psychology and Psychiatry*, 26(2), 231–44.

Muller-Nix, C., Forcada-Guex, M., Pierrehumbert, B., Jaunin, L., Borghini, A., & Ansermet, F. (2004). Prematurity, Maternal Stress and Mother–Infant Interactions. *Early Human Development*, 79, 145– 158.

Nöcker-Ribaupierre, M. (1998). Premature birth and music therapy. In Wigram, T., De Backer, J. (eds). *Clinical Application of Music Therapy in Developmental Disability, Paediatrics and Neurology*. London: Jessica Kingsley

Papailiou, C. (1999). Η μουσικοθεραπεία στην πρώιμη παρέμβαση: Θεωρητικό υπόβαθρο και πρακτικές εφαρμογές [Music therapy in early intervention: Theoretical background and practical applications]. Retrieved March 26, 2016 from http://langcogdev.blogspot.fi/2011/05/blog-post_23.html

Piaget, J., & Inhelder, B. (1969). The psychology of the child. New York: Basic Books.

Pregnancy. (n.d.). In *Wikipedia*. Retrieved March 19, 2016, from https://en.wikipedia.org/wiki/Pregnancy

Premature baby development: common concerns. (2013, October 13). Retrieved March 19, 2016, from http://raisingchildren.net.au/articles/premature_baby_development_concerns.html/context/1403

Prematurity. (n.d.). In *Wikipedia*. Retrieved March 19, 2016, from http://www.pediatricweb.com/webpost/iframe/MedicalConditions_487.asp?tArticleId=176)

Preterm birth. (n.d.). In *Wikipedia*. Retrieved March 19, 2016, from https://en.wikipedia.org/wiki/Preterm_birth.

Schmucker, G., Brisch, K.-H., Kohntop, B., Betzler, S., Osterle, M., Pohlandt, F., et al. (2005). The influence of prematurity, maternal anxiety, and infants' neurobiological risk on mother-infant interactions. *Infant Mental Health Journal*, 26, 423–441.

Segall, M. (1971). The relationship between auditory stimulation and heart rate response of the premature infant. The American Nurses' Association, Seventeenth Nursing Research Conference Report, Kansas City, 119-125.

Shaw, R. & Wood, S. (2003). The Epidemic: The rot of American culture, absentee and permissive parenting, and the resultant plague of joyless, selfish children. New York: Regan Books.

Short and Long-Term Effects of Preterm Birth Fact Sheet. (n.d.). Retrieved March 19, 2016, from http://ukhealthcare.uky.edu/health-and-wellness/publications/fact-sheets/mother-baby/Short-and-Long-Term-Effects-of-Preterm-Birth-Fact-Sheet/

Smith, J.K. (1990) The nature of social and educational inquiry: empiricism versus interpretation. Norwood, NJ: Ablex.

Smith J.A. & Osborne, M. (2007). Interpretative Phenomenological Analysis. In Smith, J. A. (Ed.). Qualitative psychology: A practical guide to research methods, (53-80). Sage.

Standley, J. M. (2002). A meta-analysis of the efficacy of music therapy for premature infants. *Journal of Pediatric Nursing*, *17*(2), 107-113.

Standley, J.M., Cassidy, J., Grant, R., Cevasco, A., Szuch, C., Nguyen, J., Walworth, D., Procelli, D., Jarred, J. & Adams, K. (2010). The effect of music reinforcement for non-

nutritive sucking on nipple feeding of premature infants. *Pediatric Nursing, 36*(3), 138-145.

Teckenberg-Jansson, P., Huotilainen, M., Pölkki, T., Lipsanen, J. & Järvenpää, A-L. (2011). Rapid effects of neonatal music therapy combined with kangaroo care on prematurely-born infants. *Nordic Journal of Music Therapy, 20*(1), 22-42.

Tuomi, K. (2014). The effects of combining Kangaroo care and parental singing on premature infants' and parents' well-being and development of parent-infant relationship. Master's Thesis. University of Jyväskylä, Finland.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Yin, R. K. (2003). Case study research: Design and methods. Thousand Oaks, Calif: Sage Publications.

Wadsworth, B. J. (1971). Piaget's theory of cognitive development: An introduction for students of psychology and education. New York: McKay.

Wheeler, B. L. (2005). *Music Therapy Research*. Gilsum, NH: Barcelona Publishers.

Whipple, J. (2000). The effect of parent training in music and multimodal stimulation on parent-neonate interactions in the neonatal intensive care unit. *Journal of Music Therapy, 37*(4), 250-268.

Winnicott, D.W. (1960). The Theory of the Parent-Infant Relationship. Int. J. Psycho-Anal., 41:585-595.

Appendix: Interview Schedule

Interview schedule

Warm-up questions

- What is your theoretical orientation?
  - *What kind of framework do you use in the work with your clients?*
  - *Did it change during the music therapy sessions with the premature infant and his mother? Are there any limitations of this orientation?*

- In your opinion, how can music therapy benefit infants who were born prematurely? How can it influence their future development?
  - *What kind of musical stimuli and creative methods can be offered to this vulnerable group of infants?*

Main questions

- What do you think about your role as a music therapist while working with the 8-months old premature infant and his mother?
  - *Differences between male and female therapists who work with premature infants? Does therapist's sex matter?*
  - *Do you think that the child was influenced by the fact that you are a woman? And if so, how did that affect your relationship with him?*

- Did you notice any connections between you-and-the-infant relationship and mother-infant bonding? Any empathy with the mother's role during the sessions (identification)?
  - *Did mother-infant physical interaction change at some point and when? Positively or negatively?*
  - *What do you think that the presence of the father in the second therapy session offered to the mother-infant interaction? Did that influence their relationship positively or negatively?*

- Could you describe to me your own emotions during the sessions?
  - *How were they being expressed?*
  - *How did you deal with them?*
  - *Was it easy for you?*

Additional themes and questions

- During the music therapy process, do you remember any remarkable changes in premature infant's mood (any resistance)? How did you musically deal with them?
  - *Sometimes, the infant rubs/scratches his right or sometimes left ear with his fingers and it seems like something is bothering him. Is it because of the loudness of the instrument that you were playing (hypersensitivity in loud noises)?*

- Do you remember any specific music therapy technique that you used and which helped the infant to relax and concentrate on the process?

- *How often did you change your method?*
- *Which music therapy method or model is the most efficient for premature babies?*
- *Which factors in your singing and what kind of musical stimuli influenced the infant's state? How did the infant respond to your effort to communicate with him (body movements, eye contact, facial expressions etc.)?*

- Did the mother mention any difficulties or challenges that she probably faced during these 8 months (lack of physical closeness with her child, postpartum depression, anxiety, lack of communication with her husband etc.)?
  - *How was the mother reacting in her infant's mood changes?*
  - *Was she willing to cooperate with you and try different creative activities? Any resistance?*
  - *How did her personal image change during the sessions?*

- In your opinion, why it is important to study the issue of premature birth (and especially music therapy's value for the improvement of mother-infant bonding)?
  - *What should be our focus?*
  - *Which areas need our attention?*