

Music Therapy in the Neonatal Intensive Care Unit: Prevalence and Presentation of
Parental Empowerment: An Integrative Literature Review

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A Thesis

in

The Department

of

Creative Arts Therapies

Presented in Partial Fulfillment of the Requirements

for the Degree of Master of Arts (Creative Arts Therapies, Music Therapy Option)

Concordia University

Montreal, Quebec, Canada

March 2021

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CONCORDIA UNIVERSITY
School of Graduate Studies

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Entitled: Music Therapy in the Neonatal Intensive Care Unit: Prevalence and
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and submitted in partial fulfillment of the requirements for the degree of

Master of Arts (Creative Arts Therapies, Music Therapy Option)

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2021 YEAR

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ABSTRACT

Music Therapy in the Neonatal Intensive Care Unit: Prevalence and Presentation of Parental Empowerment: An Integrative Literature Review

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This integrative literature review investigated, synthesized, and analysed research relating to caregiver empowerment in Neonatal Intensive Care Unit (NICU) music interventions. As many as 70% of mothers and 30% of fathers face mental health disruptions in the NICU. Because of this, there is an identified need to address parental health and wellbeing in the NICU. Literature on empowering parents in the NICU and its potential positive implications on their wellbeing have been examined in other disciplines but have yet to be explored in the context of music therapy. In this study, 28 articles including 27 peer-reviewed journals and one book chapter were examined and coded based on intervention and themes of empowerment. The review explored four facets of empowerment including: self-regulation, sensitivity, engagement, and nurturing strengths and potentials. It uncovered that: (a) empowerment can come from a wide variety of music therapy interventions, (b) the most commonly addressed theme of empowerment was self-regulation, followed by nurturing of strengths and potentials, engagement, and sensitivity, and (c) when an article used the word empowerment it always contained at minimum two facets of empowerment. Of the 28 qualifying articles included in this study, 3 (10.7%) included no empowerment themes, 8 (28.6%) included only one theme of empowerment, 8 (28.6%) included two themes of empowerment, 5 (17.9%) included 3 themes of empowerment, and 4 (14.3%) included all four themes of empowerment. These results indicate that further research is needed to investigate the impact, application, and role of empowerment in NICU music therapy with caregivers. Future research and recommendations are presented.

ACKNOWLEDGEMENTS

I would like to thank all the Music Therapy Faculty members at Concordia University for inspiring my passion for music therapy practice and research. I would like to thank my supervisor music therapist Christelle Jacquet for sharing her knowledge and passion for NICU music therapy with me during my graduate practicum. Thank you to my thesis supervisor, Guylaine Vaillancourt for being supportive, patient, and for challenging me to become a better writer and to gain deeper insight into my research. Thank you, Trina Chakrabarti, for encouraging me to work on my thesis by video chatting and doing work with me nearly every day. Finally, I would like to thank my family, friends, peers, and partner for their continued support and encouragement throughout my graduate studies.

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Chapter 1. Introduction

Music therapy in the Neonatal Intensive Care Unit (NICU) is a rapidly growing field. Early studies strongly indicate potential health benefits to infant respiratory function (Łucja et al., 2016). Having an infant in the NICU can negatively impact parental mental health (Obeidat et al., 2009). Healthcare staff need to be aware of the NICU environment's impact on parents and create an environment that supports parents to strengthen family functioning and increase parental well-being (Lean et al., 2018). Models of care in the NICU setting are evolving to address parental well-being by providing empowerment opportunities through a family-centred approach. Empowerment models of care in the NICU have positively impacted parental well-being (Ding et al., 2019). Currently, there are limited articles on empowerment in NICU music therapy with parents. More research is needed to improve the understanding of the processes and benefits of NICU music therapy with parents (Ettenberger et al., 2017). As patient care in the NICU setting shifts towards family-centred models and music therapy practice in the NICU increases, an integrative and inclusive perspective of music therapy that includes parental empowerment in the NICU setting becomes essential.

To examine parental well-being in the NICU setting, Obeidat et al. (2009) conducted a qualitative systematic review of the literature on the mental health of parents with infants in NICU. This review included literature from 1998-2008. The study discovered that parents with infants in the NICU frequently reported symptoms of anxiety, stress, and depression. Mackley et al. (2010) discovered that a third of fathers of infants in the NICU displayed elevated and persistent levels of stress. The authors concluded that the emotional needs of fathers with infants in the NICU are not being met. According to a structured analysis by Harris et al. (2018), as many as 70% of mothers with infants in the NICU faced distress and mental health disruptions. As these mental health disruptions are becoming better understood in the NICU setting, the models of care are shifting to address this disruption.

In the early 2000s, models of care in the NICU setting started shifting towards a family-centred approach to improve parental well-being. The two most utilized care models that incorporate and consider parental well-being in the NICU are Family Centred Care (FCC) and the Compassionate Family Care Framework (CFCF). Both FCC and the CFCF are empowerment-based and have stressed the importance of parental inclusion and education, including encouraging parents to help during care and teaching developmental milestones, developmental cues, and infant characteristics. Benefits of these models of care have included infant weight gain, lower maternal stress, increases in parental satisfaction, and fewer symptoms of depression in parents (Ding et al., 2019; O'Brien et al., 2013; Segers et al., 2019).

There are several music therapy models and interventions developed or adapted specifically for use in the NICU. The main models and interventions used in the NICU include First Sounds: Rhythm, Breath and Lullaby, Creative Music Therapy, and a Pacifier Activated Lullaby device. Joanne Loewy developed Rhythm, Breath and Lullaby (RBL). The purpose of RBL is to re-create a womb-like environment through music (Loewy et al., 2013). Creative Music Therapy (CMT) is an interactive music therapy model created for children and adults with disabilities (Haslbeck, 2014). Barbra Haslbeck has adapted CMT to address the needs of premature infants and their parents. The purpose of CMT with premature infants and their parents is to transform infant breathing patterns, facial expressions, and gesticulations into infant-directed improvised humming/singing (Haslbeck, 2014). The final intervention mentioned is a Food and Drug Administration (FDA) developed and approved Pacifier-Activated Lullaby device designed to provide lullabies to infants and entrain a sucking response (Standley, 2012).

To date, music therapy research in the NICU has mainly focused on short-term quantitative research on infant gains such as pacification and stabilization (Haslbeck, 2012). Two meta-analyses of NICU-MT research demonstrated that music therapy, especially when utilizing live music, had significant clinical benefits on infant physiological and behavioural measures (Standley, 2002; 2012).

Relevance to Music Therapy

In the past decade, music therapy in the NICU setting has focused on improving the quality of life for premature infants by reducing and preventing sensory overstimulation, minimizing sensory deprivation, and encouraging attachment (Haslbeck, 2012). The studies have mainly examined the effects of pre-recorded music and the maternal voice on the infant. The research does not typically examine or include the role and involvement of the parents.

The Canadian Association of Music Therapist's Code of Ethics states, "Demonstrate an active concern for the welfare of any individual, family, group, or community with whom they relate in their role as music therapists. This concern includes both those directly involved and those indirectly involved in their activities" (Canadian Association for Music Therapists, 1999, Code of Ethics, article II.1). Therefore, to follow this ethical guideline, it is important to demonstrate care for the family of infants in the NICU.

In an article about music therapy and the philosophy of empowerment, Rolvsjord (2004) notes that music therapy is about more than curing illness and solving problems: it is about nurturing potentials and strengths. Music therapy in the NICU may provide an opportunity to go beyond the medical model of care and nurture family potentials and strengths (Ettenberger et al., 2016).

As models of care in the NICU setting evolve to address parental well-being through parental empowerment, it is important to gain a comprehensive understanding of an integrative and inclusive perspective of NICU music therapy. This perspective must include: (a) parental empowerment to ensure the practice of music therapy supports current care models, (b) stays ethically aligned, and (c) provides optimal outcomes for the infants and their families.

The purpose of this study is to search for relevant themes of empowerment within music therapy in the NICU and discuss how music therapy can promote empowerment in this setting. The significance of this research is that it: (a) helps to clarify the current

music therapy research using an integrative literature review methodology, (b) enhances understanding of how NICU music therapy uses parental empowerment, and (c) elucidates potential implications of parental empowerment in the NICU setting.

Student-Researcher Stance and Assumptions

The student-researchers relationship with this topic came from two distinct experiences. Firstly, the student-researcher witnessed first-hand how hard it is on parents when a child becomes critically ill when the student-researcher was in the hospital six years ago with a life-threatening illness. The student-researcher saw how desperate the parents were to try to make things better and how helpless they felt. The researcher believed that this research could provide insight into helping parents with children in a hospital setting. Secondly, this research topic's personal relationship came from a practicum at a children's university hospital. The student-researcher has heard and seen first-hand the difficulties parents face in the NICU, how parents wished they could help more, how they struggled to connect with their baby, and how much of an emotional and physical toll the NICU environment had on parents. After witnessing these difficulties, the student-researcher wanted to gain further knowledge in NICU music therapy to inform the student-researchers music therapy practice and the practice of others.

Within the context of this research, it was assumed that music therapy can influence the infant-caregiver relationship and that empowerment experienced through music therapy may influence the caregiver's well-being. It was also believed that compiling, organizing, and synthesizing research on this topic would be a concrete way of bringing attention to parental empowerment's potential effects through music therapy in the NICU. Finally, the student-researcher assumed that this research would help inform future research and music therapy practice.

This integrative literature review aimed to discover, compile, organize, and synthesize music therapy research related to parental empowerment in NICU music therapy. The primary research question was: What is the prevalence and presentation of

parental empowerment themes in NICU music therapy-related literature? The secondary research question was: what types of music sessions contained or elicited empowerment?

Delimitations for this study included limiting the literature search to articles that: (a) were written in English, (b) focused on music or music therapy in the NICU, (c) addressed or incorporated parents in the study, (d) were written in the past 10 years.

Definition of Terms

To provide a comprehensive and interdisciplinary overview of parental empowerment in NICU music therapy with parents, it was necessary to use a broad definition of NICU music therapy.

NICU Music Therapy

Music therapy techniques adapted or created for use in the NICU, implemented by a music therapist who has undertaken advanced training (in NICU music therapy or First Sounds: Rhythm Breath and Lullaby). NICU music therapy aims to encourage physiological stability and well-being of infants and their caregivers in the NICU (Haslbeck, 2012).

Family-centred Music

Family support through music therapy increasing parental autonomy, support, control, and responsibility (Mikkelsen & Frederiksen, 2011).

Caregiver Empowerment

Nurturing potentials and strengths of the caregiver (Rolvsjord, 2004). Encouraging and engaging caregivers in self-regulation, sensitivity and engagement through music in the NICU to evoke feelings of empowerment in the caregiver (Haslbeck, 2017).

Chapters Overview

Following this introductory chapter, Chapter 2 is a brief literature review providing background on music therapy, empowerment, and empowerment in the NICU setting. Chapter 3 describes the integrative literature review methodology as

conceptualized in this thesis. Chapter 4 presents the results of the study. Chapter 5 contains the discussion section and conclusion.

Chapter 2. Literature Review

The purpose of this literature review is twofold. The initial purpose is to examine parental empowerment in the neonatal intensive care unit (NICU). The second purpose is to give a brief overview of NICU music therapy with parents and identify gaps in the literature. Treyvaud et al. (2019) have found that infants admitted into the NICU are critically ill and have a range of severe and life-threatening symptoms. As a result, the premature birth of an infant and admittance to the NICU is a distressing experience for parents. Harris et al. (2018) noted that as many as “70% of mothers of very preterm infants experience mental health challenges” (p. 36). The literature on parental mental health in the NICU demonstrates a broad range of challenges that parents may face, including stress, anxiety, and depression (Obeidat et al., 2009; Roque et al., 2017; Wyatt et al., 2019). Recently, there has been greater consideration of the wellbeing of parents with infants in the NICU. Models of care are emerging to help mitigate some of the distress that these parents face (Altimier, 2015). To examine parental empowerment and how NICU music therapists currently incorporate empowerment into their practice, this review is organized into five sections: defining empowerment, models of empowerment, implications of empowerment in the NICU, empowerment in music therapy, and empowerment of parents with infants in NICU music therapy.

Defining empowerment

Empowerment is complex and involves multiple components (Fitzsimons & Fuller, 2002). In order to understand empowerment and how it can be useful for parents with infants in the NICU, it is first necessary to define empowerment including its underlying concepts. Specifically, foundational definitions, modern definitions, pre-conditions, and conditions of empowerment will be discussed.

In a theoretical foundational article by Swift and Levin (1987); empowerment was discussed in two ways, as an emerging mental health technique and as a tool for the prevention of negative mental health symptoms. In this context, the authors explored the definition of empowerment, the role of the clinician in initiating empowerment, and the

role of empowerment as a preventative tool (Swift & Levin, 1987). Swift and Levin (1987) defined empowerment as the use of activities that are directed at increasing the perception of control that people have over their lives. More specifically, they noted that empowerment refers both to a state of mind and to the modification and reallocation of power. State of mind is defined as the perception of control over one's situation and goals (Swift & Levin, 1987). Modification and reallocation of power is defined as a movement in power from the clinician to a shared responsibility of power between the clinician and patient (Swift & Levin, 1987). From Swift and Levin's (1987) viewpoint, empowerment is the reallocation and modification of power in order to increase the perception of control that people have over their lives.

Rappaport (1987) used a community psychology framework to define empowerment and related concepts. The paper made an argument for the use of empowerment as a theory in community psychology by defining it in a psychotherapeutic context. Rappaport (1987) suggested that empowerment is a relationship and process through which people and communities gain influence over their lives and situations. Rappaport (1987) outlined an ecological viewpoint by defining three different specifics of empowerment: definitions and meanings, conditions, and time. Definitions and meanings referred to how empowerment is perceived by the individual (Rappaport, 1987), while conditions of empowerment and time focused on the setting within a longitudinal timeframe (Rappaport, 1987). From Rappaport's (1987) viewpoint, empowerment is a process and relationship, in which people gain influence over their lives.

Rappaport's (1987) definition of empowerment is comparable to Swift and Levin's (1987) in that both note the importance of gaining control and influence over one's life as an integral part of empowerment. However, it varies from Swift and Levin's (1987) definition when ecological concepts such as community, setting, and time emerge. Both of these views of empowerment have helped shape the practice of music therapy by

informing scholars such as Rolvsjord (2004) who authored a foundational article on empowerment in music therapy.

Modern Definition of Empowerment

In a comprehensive study, Castro, et al. (2016) utilized a thematic analysis approach to examine patient empowerment, patient participation, and patient-centredness for the ultimate purpose of creating a comprehensive modern definition of each concept. The authors found that patient empowerment is multi-faceted, complex, and occurs at both individual and collective levels. On an individual level, patient empowerment was defined as a process that enables the patient to exert more control over their health by gaining control over issues, they deem important (Castro et al., 2016). Collective empowerment was defined as a process that helps groups and communities gain power to express their needs, take action to meet their needs, and improve their quality of life (Castro et al. 2016). This definition of empowerment has similar connotations to those of Swift and Levin (1987) and Rappaport (1987), in that there is a central component of patient control.

In a critical analysis of empowerment theory in the field of social work, Joseph (2020) analysed empowerment theory through the lens of the Theory Evaluation Scale (TES). The author discovered that empowerment theory rated very highly (39 out of 45) on the evaluation scale. The author noted that most scholars perceived empowerment as a transformative tool to energize people in utilizing their strengths and power dynamics. This definition is coherent with Castro et al. (2016) in that both stress the importance of power dynamics.

Conditions and Pre-Conditions of Empowerment

In many of the previously discussed articles, the underlying concepts, conditions, and pre-conditions of empowerment are explored. Swift and Levin (1987) addressed three pre-conditional roles of the professional within patient empowerment: The researcher-reporter role, the collaborator-educator role, and the advocate-systems activist role. Swift and Levin (1987) defined the role of the researcher-reporter as the

professional discovering and announcing deficits in empowerment: the collaborator-educator as the professional increasing awareness of the person through education, and finally, the advocate-systems activist as the mobilization and utilization of resources. Rappaport (1987) noted that the pre-conditions of empowerment are focused on setting and time and that without the consideration of setting and time you cannot have empowerment.

Building on Fitzsimons and Fuller's (2002) position, Castro et al. (2016) noted four antecedents as pre-conditions of empowerment. The first antecedent was a dialogue between health care workers and patients. This dialogue indicates a need for effective communication and co-creation of knowledge. The second antecedent was a patient-centred approach. The third antecedent was the enhancement of patient competencies to enable the patient to make decisions and act upon issues that they perceived as important. The final antecedent of patient empowerment was active participation. Castro et al. (2016) noted that active participation plays a crucial role in patient empowerment because, without participation from the patient, no action towards empowerment could be taken. Castro et al.'s (2016) conditions of empowerment such as dialogue and increasing competencies align with the conditions of taking a collaborative approach and strength-based interventions proposed by Fitzsimons and Fuller (2002).

Fitzsimons and Fuller (2002) noted several conditions in the facilitation and development of empowerment including utilizing competency-building activities, taking a collaborative approach, being flexible, implementing individualized and strength-focused interventions, and encouraging the development of support. Fitzsimons and Fuller (2002) mentioned that long-term effects are more likely if these conditions are met.

In summary, the previously discussed authors stressed that empowerment is a multilevel construct that occurs both within the individual and in the environment. The pre-conditions noted for empowerment were the various roles of the clinician (Swift & Levin, 1987) and consideration for setting and time (Rappaport, 1987). Fitzsimons and Fuller (2002) identified conditions of empowerment as competency building, a

collaborative approach, flexibility, including individualized and strength-focused interventions, and the development of support. Castro et al. (2016) identified conditions of empowerment that include the primacy of dialogue, a person-centred approach, enhancement of competencies, and active participation.

Based on the above findings, for the purpose of this literature review, empowerment has been defined as a relationship between a healthcare worker and the parent(s), through which the parent(s) gain a sense of power, shared responsibility, and increased competency.

Models and Implications of Empowerment in the NICU

In order to understand parental empowerment in the NICU setting, it is pertinent to examine the most common and current models and applications as presented in the literature. Specifically, the empowerment-based models of Family-Centred Care (FCC) and the Compassionate Family Care Framework (CFCF) are explored.

Family-Centred Care

Family-Centred Care (FCC) is a partnership approach to care in the NICU in which health care staff and parents work together in care and decision making. Mikkelsen and Frederiksen (2011) performed a concept analysis of 25 research articles published between 1951 and 2009 and identified key themes in current FCC literature on infants and their parents. The authors identified the key themes and attributes of FCC as (a) core value mutuality, (b) common goals, (c) partnership, (d) responsibility sharing, (e) parental control, and (f) autonomy (Mikkelsen, & Frederiksen, 2011). The themes of parental autonomy, control, partnership, and responsibility sharing reflect the previously discussed definition of empowerment that includes the sharing of control and power between the clinician and patient and as a multilevel construct that occurs both internally and externally (Swift & Levin, 1987; Rappaport, 1987; Fitzsimons & Fuller, 2002; Castro et al., 2016).

Implications for Parental Wellbeing. Several studies have explored the benefits of a family-centred model of care. Ding et al. (2019) performed a systematic review and

meta-analysis of 19 randomised control trials of FCC from English and Chinese literature to determine the effects of FCC interventions on pre-term infants and their parents. The authors determined that FCC interventions can improve parental and neonatal outcomes such as infant weight gain and decreased readmission as well as parental satisfaction, knowledge, skills, and a decrease in depression, and stress (Ding et al., 2019).

In a similar study, Segers, et al. (2019) performed a systematic review to discover the impact of FCC interventions in the NICU and the impact of FCC on parent satisfaction and length of stay. Seventeen studies were narratively reviewed. Interventions that increased parent-professional collaboration were found to increase parent satisfaction (Segers et al., 2019). Interventions increasing parental involvement in infant care found a decreased length of stay in the NICU (Segers et al., 2019).

Compassionate Family Care Framework

The Compassionate Family Care Framework (CFCF) is also an empowerment based model of care that is commonly used in the NICU. Altimier (2015) defined CFCF and its potential benefits in the NICU, noting the three central components of the CFCF as affiliative relationships, bidirectional communication, and compassionate partnerships. Affiliative relationships were defined as supporting or improving one's relationship with others through a drive to maintain partnerships (Altimier, 2015). Bidirectional communication was defined as addressing family needs and suffering through verbal and non-verbal communication (Altimier, 2015). Compassionate partnerships were defined as a relationship in which family suffering is addressed through action taking (Altimier, 2015). CFCF brings these three components together to build the connection between the care team and the family. The connection was achieved through affiliative relationships, supporting growth in the relationship through bidirectional communication, and creating an active and compassionate partnership between the family and healthcare staff (Altimier, 2015). Similar to the definitions of empowerment previously presented, Altimier's (2015) model of compassionate care stresses the need for a co-relationship, and shared power between healthcare providers and parents.

Effects of CFCF on Parental Wellbeing. To discuss the potential benefits of a compassionate model of care, several studies using the CFCF program were explored. In one study, Mirghafourvand et al. (2017) conducted a systematic review of the literature to determine the impact of parental empowerment opportunities on parental mental health in the NICU setting. Statistical analysis was used to track the results of the CFCF program on the stress and anxiety of the mothers. Results indicated that the CFCF program can reduce incidences of stress and anxiety in mothers with infants in the NICU (Mirghafourvand et al., 2017).

With similar results, Mianaei, et al. (2014) conducted a randomized clinical trial to discover the impact of the Creating Opportunities for Parent Empowerment (COPE) program on Iranian mothers of pre-mature infants in the NICU. Ninety ($n = 90$) mothers participated in the trial and were randomly allocated to experimental and control groups. To measure the effects of the COPE program State-Trait Anxiety Inventory, the Parental Stressor Scale: Neonatal Intensive Care, and The Index of Parental Participation/Hospitalized Infant were used. The mothers in the experimental group participated in two phases of the COPE program. Stress and anxiety were measured before the program and two to four days after the program had finished. The results demonstrated that mothers in the experimental group showed significantly lower levels of anxiety and stress than the control group (Mianaei et al., 2014).

To summarize, FCC is defined by its key concepts of core value mutuality, common goals, partnership, responsibility sharing, and parental autonomy (Mikkelsen & Fredriksen, 2011) whereas CFCF comes from a more compassionate framework and can be defined by the key themes of affiliative relationships, bidirectional communication, and compassionate partnerships (Altimier, 2015). Both models demonstrate statistically significant results in reducing maternal stress and anxiety and both have aspects of shared power. Both models seek to actively empower parents through the purposeful sharing of power and responsibility. It is possible that similar health benefits may occur if aspects of

these empowerment models are applied to music therapy with the parents of infants in the NICU.

Empowerment and Music Therapy

Now that empowerment has been defined in a healthcare setting, and models of empowerment and their implications have been outlined, empowerment in music therapy and empowerment in NICU music therapy are explored. Studies examining the application of parental empowerment in NICU music therapy are scarce, however several relevant studies were identified.

Empowerment in Music Therapy vs Empowerment as Music Therapy

In a literature review article by Rolvsjord (2004), empowerment theory and philosophy were discussed using a mental health and music therapy framework. Rolvsjord (2004) noted that the practice of resource-oriented music therapy was closely related to empowerment theory. Rolvsjord (2004) outlines two opposing views regarding music theory and empowerment: empowerment in music therapy and empowerment as music therapy. The author suggested that empowerment in music therapy represents a belief that empowerment is intrinsic and is a natural consequence of music therapy. This intrinsic view of empowerment is passive and assuming. It allows for the possibility of the previously discussed health benefits of empowerment without acknowledging or intentionally applying empowerment practices.

Compared to empowerment in music therapy, empowerment as music therapy was described as an active process (Rolvsjord, 2004). Empowerment as music therapy was described as a philosophy in which the music therapist modifies existing practices with the client to enable the client to build on their experiences and abilities. This implies the sharing of responsibility and power in the therapeutic relationship and is in line with the definition of empowerment in healthcare that was previously identified.

Empowerment as music therapy takes a more active view of empowerment, highlights and acknowledges empowerment's role in the practice of music therapy and is a more purposeful application of empowerment than empowerment in music therapy.

Both acts of empowerment in music therapy and empowerment as music therapy are present in the literature but are not always specifically stated.

Empowerment in NICU Music Therapy with Parents

Studies of empowerment in music therapy specific to the NICU are scarce. Though empowerment is not often directly referenced in the literature on NICU music therapy with parents, empowerment is still inherently present and is outlined in the following paragraphs.

In a qualitative analysis of Creative Music Therapy (CMT) in the NICU conducted by Haslbeck (2014) empowerment of parents is directly referenced. In the study, CMT was adapted for use in the NICU setting. In the context of Haslbeck's (2014) study, CMT was described as an interactive, resource-oriented, and needs-oriented approach to music therapy in which the music therapist adapts to the needs of the infants and their parents in the NICU. The purpose of the study was to ascertain a deeper understanding of CMT in the NICU. Participants included 18 premature infants and their parents (when available) who had participated in videotaped CMT sessions. CMT sessions consisted of improvised and reflexive humming and singing attuned to the infants breathing, heartbeat, facial expressions, and gestures. Results of the qualitative analysis indicated that CMT can facilitate empowerment through communicative musicality. In this context, communicative musicality is defined as the caregiver and infant participated in a musical dialogue (Malloch, 1999). In these moments of empowered communication themes of participation, autonomy, relaxation, self-regulation, engagement, creativity, attachment, and expression were identified. Within communicative musicality the music therapist was able to aid in the enhancement of responsiveness and dialogue between the infant and the therapist and/or the infant and their parents (Haslbeck, 2014).

Empowerment in this study aligns with Rolvsjord's (2004) definition of empowerment in music therapy as empowerment is facilitated and introduced purposefully through communicative musicality, making it an active process of

empowerment. The music therapist used a NICU adapted CMT approach to empower infants and the parents or the therapist to interact, communicate, and meet in moments of music.

Palazzi et al. (2017) conducted a case study on a mother with a child in the NICU to examine the impact of music therapy on the mother-infant dyad. The study used the Music Therapy Interventions for the Mother-Preterm Infant Dyad (MUSIP) program. The dyad participated in nine music therapy sessions. The music therapy sessions aimed to encourage the mother to sing to the infant and sensitize the mother to singing. Interviews were conducted with the mother pre- and post-discharge and directly after the intervention. Throughout the sessions, the music therapist shifted the leadership role to the mother. Using thematic analysis, Palazzi et al. (2017) indicated that music therapy contributed to the empowerment of the mother through relaxation, overcoming the embarrassment of singing, decreasing fear of interaction with her infant, and strengthening her autonomy and motherly competence through singing. The intervention also had an empowerment effect on the infant through relaxation, stabilization of oxygen saturation, and engagement in singing (Palazzi et al., 2017). These results highlight the potential importance and impact that music therapy has on mother-infant interaction and empowerment. Empowerment emerged as a central theme for both the mother and the infant (Palazzi et al., 2017).

This case study aligns with both the view of empowerment in music therapy and the view of empowerment as music therapy. Empowerment themes emerged through retrospective interviews, which is in line with the intrinsic and passive view of empowerment in music therapy. The intentional shift in power from the music therapist to the mother can be viewed as active empowerment if empowerment is defined in terms of an intentional power shift. Though it is not clearly stated that the therapist is using empowerment intentionally in this study, it is still an example of how empowerment can be conceptualized within music therapy with the parents of infants in the NICU.

Using a music therapy approach based on songwriting, Ettenberger and Aridila (2018) conducted a mixed-methods pilot study to measure the effect of music therapy on bonding, depression, anxiety, and wellbeing of mothers with babies in the NICU. The study included 15 mother-infant dyads and medically stable infants between 28- and 34-weeks' gestation. Quantitative data was collected with the Mother-to-Infant Bonding Scale (MIBS), Short Warwick-Edinburgh Mental Well-Being Scale (SWEMWBS), and the Hospital Anxiety and Depression Scale (HADS). Qualitative data was collected through semi-structured interviews and then analysed using thematic analysis. Mothers and infants participated in 4-6 music therapy sessions while the parent held the baby in Kangaroo Care. Kangaroo Care is a method of holding a baby involving skin-to-skin contact. Throughout the sessions, parents created a welcome song for their infant. A CD was created of the welcome song for the parents. The results indicated an increase in mother-infant bonding, a higher overall wellbeing post-intervention, a decrease in anxiety, and a reduction in depressive symptoms. In the interviews, the mothers indicated that they thought that the songwriting helped them relax and bond with their baby. The main themes that emerged from the thematic analysis were empowerment, bonding, and maternal wellbeing (Ettenberger & Aridila, 2018). Similar to the study conducted by Palazzi et al. (2017), this study can also be seen as incorporating the two views of empowerment. Through the music therapy process, themes of empowerment occurred, which fits into the view of intrinsic empowerment in music therapy. The music therapist gifting the CD in the final session can be seen as a shift in power from the music therapist to the parents, which, if intentional, can be viewed as empowerment as music therapy.

In the previously mentioned studies music therapy actions such as songwriting with the mother (Ettenberger & Aridila, 2018), encouraging singing (Palazzi et al., 2017), and transferring some control to the mother (Ettenberger & Aridila, 2018, Palazzi et al., 2017) were identified as empowering in the study results. Occurrences of empowerment in music therapy may be intrinsic to music therapy and emerge throughout the process.

Empowerment can also be found in an empowerment as therapy form and is demonstrated by a shift in power from the music therapist to the parents.

Conclusion

Parents with children in the NICU often experience challenging mental health symptoms (Obeidat et al., 2009; Roque et al., 2017; Wyatt et al., 2019) and as such, parental mental health is being incorporated into the NICU model of care. Specifically, empowerment has been found to help alleviate parental distress (Altimier, 2015). By examining foundational and recent articles, this review defined parental empowerment as a relationship between the parent(s) and the healthcare worker, through which the parent(s) gain a sense of power, shared responsibility, and increased competency. There are two main models of empowerment that have been implemented into the NICU models of care: Family Centred Care and Compassionate Family Care Framework. The implementation of these models showed promise in increasing the wellbeing of parents with infants in the NICU (O'Brien et al., 2013; Segers et al., 2019). In music therapy, empowerment can be viewed as receptive (empowerment in therapy), or active (empowerment as therapy) as defined by Rolvsjord (2004). In analyzing studies involving music therapy with parents of infants in the NICU, both views can be identified. The potential positive impact that empowerment techniques can have on parental wellbeing, and the move towards empowerment models of care in the NICU setting, indicate that empowerment techniques should be purposefully applied in NICU music therapy to best serve families. Currently, the lack of studies implicitly addressing parental empowerment in NICU music therapy leaves a significant gap in the literature.

Chapter 3. Methodology

Design

This study used an integrative literature review methodology. An integrative literature review is a comprehensive approach that answers a specific research question by exhaustively searching interdisciplinary literature and synthesizing the available research evidence (Whittemore, 2007). The student-researcher chose an integrative review over a systematic review because systematic reviews are highly selective and focus on a particular intervention (Whittemore, 2007). Literature that explicitly addresses music therapy and parental empowerment in the NICU is scarce. The existing articles on the use of music with parents in the NICU come from varied sources, including sources outside of music therapy. These articles explored various music therapy interventions in the NICU and included both qualitative and quantitative studies. Because of the scarce and varied literature, the inclusion of qualitative and quantitative research is necessary. This review involved: (a) conducting an exhaustive interdisciplinary search, (b) appraising all qualifying literature, and (c) synthesizing the findings. Utilizing and appraising various qualifying literature was essential to identifying the prevalence and presentation of parental empowerment in NICU music therapy.

Before beginning the review, the student-researcher consulted relevant literature which described the integrative review process. More specifically, the student-researcher based the review process on 'The Integrative Review: Updated Methodology' by Whittemore and Knafl (2005), 'Writing Integrative Literature Reviews' by Toraco (2005), 'Reviewing the methodology of an integrative review' by Hopia et al. (2016), and a study using an integrative review by Haslbeck (2012). Informed by these resources, the student-researcher developed data collection, analysis, and synthesis protocols to explore the research question. Following the development of the protocols, the student-researcher designed the methods for searching the literature, study selection, and data analysis and synthesis.

Materials

The student-researcher created and used an excel spreadsheet to track pertinent information from both qualitative and quantitative research. The student-researcher searched institutional university databases to identify and access peer-reviewed journal articles, theses and dissertations, and academic books and stored and viewed all selected literature in Zotero.

Data collection

The student-researcher created eight selection criteria based on the previously defined terms, statement of purpose, and research question to identify appropriate literature for inclusion in the review. Each article included in the research met all of the criteria: (a) examined music in the NICU, (b) included parents/caregivers, (c) published within the last ten years, (d) published in English, (e) were either peer-reviewed journal articles, edited books, or book chapters, (f) contained qualitative or quantitative data that demonstrated results related to music therapy, (g) included two or more keywords in the title, abstract, or keywords, and (h) met at least half of the criteria listed on either the Critical Review Form for Qualitative Studies (Letts et al., 2007) or the Critical Review Form for Quantitative Studies (Law et al., 1998).

The student-researcher created five exclusion criteria before beginning the study and used these exclusion criteria throughout the preliminary search. Articles were excluded from the study if: (a) music in the NICU was not the focus, (b) there was no research data on the parents or caregivers, (c) the studies were not peer-reviewed research, (d) they were grey literature (Whittemore, 2007), (e) they were un-available through the Concordia University Library or the Inter-Library Loan system (COLOMBO).

This study used a literature search consistent with the guidelines by Whittemore and Knalf (2005). These authors suggest having a specific focus and completing a comprehensive investigation using at least two search strategies. The research question provided a specific focus. The two search strategies utilized were keyword searching of computerized databases and data mining and searching relevant studies' references. This

study aimed to locate a maximum number of relevant sources from interdisciplinary literature. The strategies included exhaustive interdisciplinary electronic searches. The student-researcher did not perform hand searches due to the closure of libraries during COVID-19.

The student-researcher identified and searched electronic databases using the integrative review guidelines by Torraco (2005) and Whitemore and Knafl (2005). These guidelines included: (a) systematically searching published literature, (b) reviewing citations, and (c) having specific criteria for retaining or discarding each study. Selection and access of electronic databases were through multi-disciplinary, health, and social science research platforms. These platforms included a wide variety of up-to-date published literature (see Appendix 1). The student-researcher identified the key terms and words to utilize during the initial search to locate relevant literature for screening.

The student-researcher searched a total of seven electronic databases. These databases included ERIC, Google Scholar, Sophia, APA Psychnet, Proquest, Pubmed, Web of Science, and Medline. The search was restricted to title, abstract, and literature keywords. Boolean operator terms ('AND', 'OR', 'NOT') were employed and used with the selected search terms to increase the number of available studies. Initial search terms were as follows: [("music therapy" or music) and (NICU OR pre-mature infants) and (Parents OR caregivers OR caretaker OR mother OR Father) and (empowerment) in the title, abstracts, indexes, or keywords].

The student-researcher selected peer-reviewed journals based on their relevance to the field of music therapy and their accessibility through the Concordia online library or COLUMBO. The search included the following electronic music therapy journals: *Australian Journal of Music Therapy*, *British Journal of Music Therapy*, *Canadian Journal of Music Therapy*, *Journal of Music Therapy*, *Music and Medicine*, *Music Therapy Perspectives*, *Music Therapy Today*, *New Zealand Journal of Music Therapy*, *Nordic Journal of Music Therapy*, *Qualitative Inquiries in Music Therapy*, and *Voices: A World Forum for Music Therapy*. A total of 28 sources from the literature search met all

the previously noted inclusion criteria: 27 peer-reviewed journal articles and one book chapter.

Data Analysis

The data analysis utilized guidelines outlined by Whittemore and Knalf (2005) and Hopia et al. (2016). These guidelines suggest ordering, coding, categorizing, and summarizing each article. Data analysis and extraction steps included: (a) quality assessment, critical appraisal, and selection of literature using the Critical Review Form for Qualitative Studies (Letts et al., 2007) and the Critical Review Form for Quantitative Studies (Law et al., 1998), and (b) data extraction including descriptive and analytical data (Dickson et al., 2017).

After finishing the initial quality assessment, the student-researcher analyzed and synthesized all the qualifying studies according to the steps outlined by Miles and Huberman (1994). These steps include: (a) data reduction, (b) data display, (c) data comparison, (d) conclusion drawing, and (e) verification. The data reduction stage of analysis was accomplished by reading, extracting data, and coding each piece of literature several times. To answer the primary research question, themes of empowerment were identified in the literature. These themes were based on the definition of empowerment outlined in chapter one. The definition of empowerment was nurturing potentials and strengths of the caregiver (Rolvsjord, 2004) and encouraging and engaging caregivers in self-regulation, sensitivity and engagement through music in the NICU to evoke feelings of empowerment in the caregiver (Haslbeck, 2017). After identifying the themes in the literature and coding the data, the student-researcher aligned the empowerment-based results with the overarching categories of self-regulation, sensitivity, engagement, and nurturing of strengths and potentials. To answer the secondary research question, the music-based treatments were identified and broken down into the sub-categories of interventions, programs, and approaches. The student-researcher conducted the data display step by creating visual displays of the themes. Conclusion drawing was achieved through a narrative synthesis of the available data and themes. Verification of the results

included examining past literature reviews on NICU music therapy to see if other authors had drawn the same conclusions.

Ethical Considerations

The student-researcher's primary ethical consideration while executing this integrative review was that only one person completed the data extraction. Single-person data extraction may have led to the data being inaccurate or incomplete. To help mitigate inaccurate or incomplete data extraction, Fleeman and Dunbar (2017) have suggested redoing data extraction and cross-checking the data extraction a week or more after the initial process. The student-researcher completed both an initial data extraction followed by a second data extraction, including a cross-check of processes two weeks apart.

A second ethical consideration of this review is that when using an integrative literature review methodology, the quality of the results relies heavily on the quality of the studies used (Bradt, 2016). The student-researcher used established quality analysis guidelines in the literature selection process to help mitigate this limitation. These guidelines included the Critical Review Form for Qualitative Studies (Letts et al., 2007) and the Critical Review Form for Quantitative Studies (Law et al., 1998). All studies were assessed with the same measures, and any studies that did not meet the quality standard were removed.

Summary

This study used an integrative literature review methodology. The student-researcher searched institutional university databases to identify relevant studies. The review utilized specific inclusion and exclusion criteria based on the research question for study selection. The data analysis followed guidelines outlined by Whittemore and Knalf (2005) and Hopia et al. (2016). The student-researcher analyzed and synthesized all the qualifying studies according to the steps outlined by Miles and Huberman (1994). Ethical considerations addressed both single-person data extraction and the quality of the studies used. The next chapter lays out the collected data and results.

Chapter 4. Results

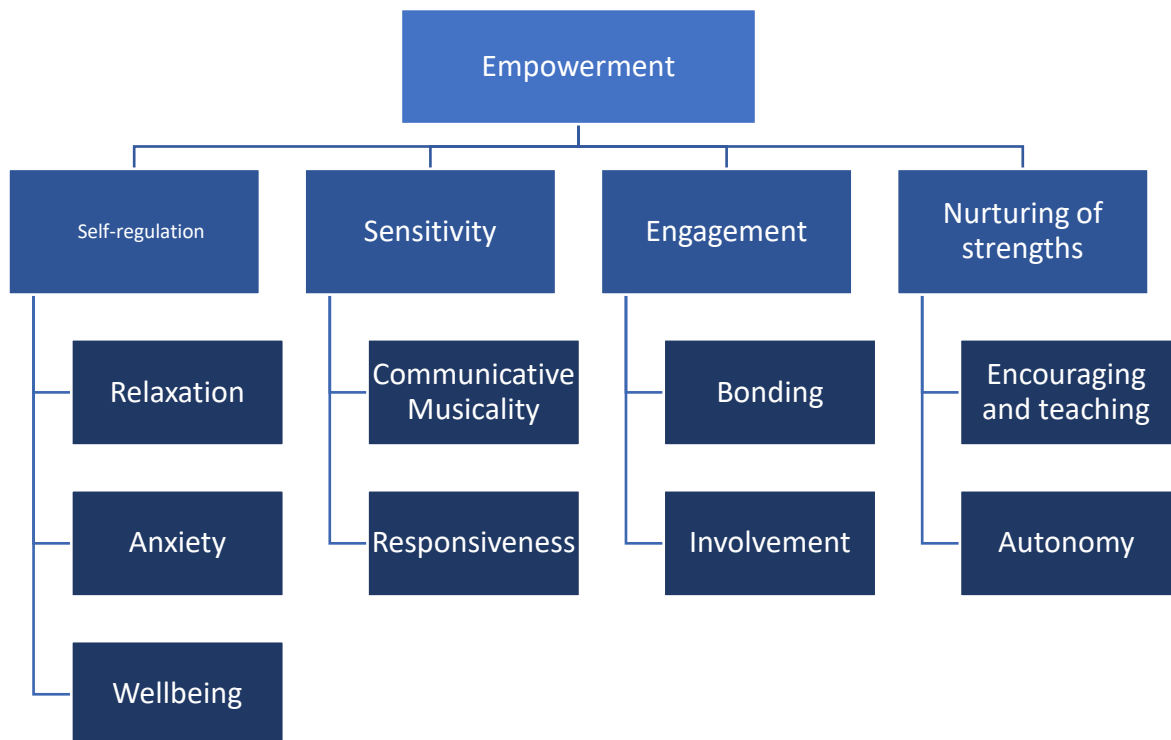
As noted in chapter 3, the student-researcher organized the information extracted from qualifying literature into four caregiver empowerment themes: self-regulation, sensitivity, engagement, and nurturing of strengths and potentials. Music therapy and musical techniques were broken down into the subcategories of interventions, programs, and approaches. The following discussion describes the occurrences of caregiver empowerment themes in NICU music therapy and musical techniques, and how the music therapy and musical techniques fit into the empowerment themes. The discussion also explores which specific music-based interventions, programs, and approaches used with parents in the NICU setting contain empowerment themes. A total of 28 sources met the inclusion criteria and were used in the review. An outline of the included sources can be found in Appendix A.

Themes of Empowerment

The student-researcher examined caregiver empowerment using the themes of self-regulation, sensitivity, engagement, and nurturing of strengths and potentials. Each theme included several subcategories. This review deemed that studies contained a specific empowerment theme if the study included one or more of the theme's subcategories. Figure 1 below details the categories and subcategories of empowerment based on Rolvsjord's (2004) description of empowerment as music therapy and in music therapy and Haslbeck's (2017) description of empowerment in the context of NICU music therapy with parents. See Appendix B for an outline of articles using the word empowerment and the themes of empowerment present in each article.

Figure 1

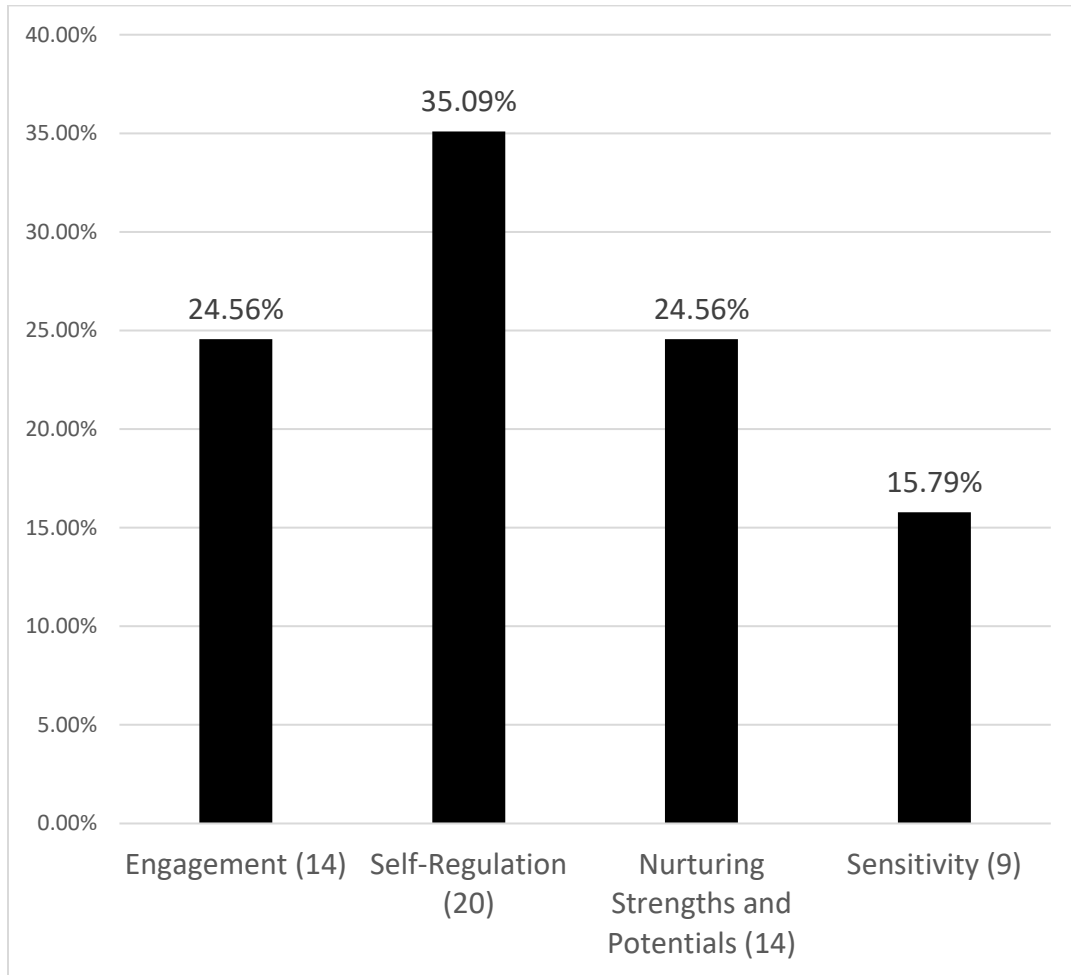
Themes and Subcategories of Empowerment



The most commonly occurring theme of empowerment in the qualifying literature was self-regulation, followed by nurturing of strengths and potentials, engagement, and sensitivity. Of the 28 qualifying articles included in this study, 3 (10.7%) included no empowerment themes, 8 (28.6%) included only one theme of empowerment, 8 (28.6%) included two themes of empowerment, 5 (17.9%) included 3 themes of empowerment, and 4 (14.3%) included all four themes of empowerment. Table 1 below is a visual representation of the percentages of empowerment themes contained in the articles. Throughout the 28 articles, the four empowerment themes occurred a total of 57 times. The self-regulation theme was found 20 (35.1%) times, sensitivity was found 9 (15.8%), engagement was found 14 (24.6%) times, and nurturing strengths and potentials was found 14 (24.6%) times.

Figure 2

Percentage of Each Empowerment Theme in Qualifying Articles

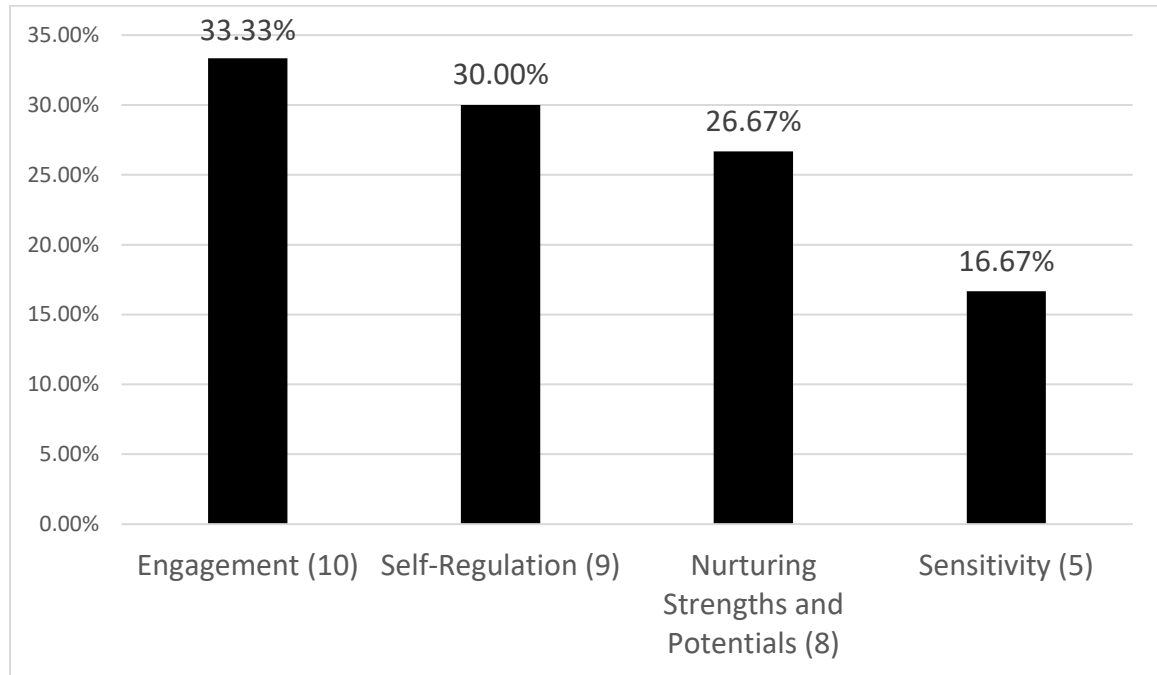


Eleven (11) articles (39.3%) explicitly named empowerment (or empowering/empower) as an intention of the intervention or as a result of the intervention. All 11 articles had multiple themes of empowerment. Of these 11 articles, 4 (36.4%) had two themes of empowerment, 4 (36.4%) had three themes of empowerment, and 3 (27.3%) had all four themes of empowerment present. Throughout these 11 articles, empowerment themes occurred a total of 30 times. Of the 30 occurrences, engagement was found 10 (33.3%) times, self-regulation 9 (30%) times, nurturing of strengths and

potentials 8 (26.7%) times, and sensitivity 5 (16.7%) times. Appendix F contains a detailed list of which articles include the word empowerment.

Figure 3

Occurrences of Empowerment Themes in Articles that Name Empowerment



Of the 28 articles included in this study, only 8 (28.6%) did not have a music therapist involved in some capacity. Of the 8 non-music therapy articles, 3 (37.5%) had zero themes of empowerment, 4 (50%) had one theme, and 1 (12.5%) had two themes of empowerment. Thus, in the 8 articles, empowerment themes occurred a total of 6 times. Self-regulation occurred 4 (66.7%) times, sensitivity 0 (0%) times, engagement 1 (16.7%) time, and nurturing of strengths and potentials 1 (16.7%) time. Three (10.7%) of the 28 articles had no themes of empowerment present. All three of these articles had no stated music therapist involvement.

In the 20 articles that had a music therapist involved, 5 (25%) had one theme of empowerment, 6 (30%) had two themes, 5 (25%) had three themes, and 4 (20%) contained all four themes. In the 20 articles, the four empowerment themes occurred a total of 48 times. Of the 48 times empowerment themes occurred, 16 (33.3%) were self-

regulation, 7 (14.6%) were sensitivity, 13 (27.1%) were engagement, and 12 (25%) were the nurturing strengths and potentials.

The following section describes each theme of empowerment, including the theme subcategories. Each subcategory identifies the measures and interventions used by the relevant studies.

Theme 1: Self-Regulation

In the context of NICU music therapy with parents, caregiver self-regulation through music is the act of using music to relax, mitigate stress or anxiety, or increase caregiver wellbeing (Haslbeck, 2017). For this research, self-regulation included the subcategories of relaxation, anxiety, and stress, and wellbeing. Relaxation refers to any reference directly relating to parental relaxation during or following a musical intervention. Anxiety and stress are any direct references to reducing parental anxiety or stress during or after the music intervention. Wellbeing is any reference made to a positive shift in mood, attitude, or wellbeing during or after the musical intervention.

After coding, 20 of the 28 included articles incorporated the theme of self-regulation in their protocol or results. Of those 20 articles, four did not include a music therapist (Varişoğlu & Güngör Satılmış, 2020; Arnon et al., 2014; Norouzi et al., 2013; Schlez et al., 2012).

Relaxation. Ten of the 20 papers from the literature reviewed had cited relaxation as an outcome of music therapy. Moments of relaxation were all qualitative and based on statements from parents about the music therapy interventions. Five of the interventions included active music therapy techniques, and five utilized more receptive listening techniques. The active interventions included a singing group for parents (Coombes & Muzaffar, 2020), a program called MUSIP (Palazzi et al., 2020; Palazzi et al., 2017), creative music therapy (Haslbeck, 2014), and music guided relaxation and breathing exercises (Roa & Ettenberger, 2018). The listening techniques included music therapy during kangaroo care (KC) with live or recorded music (Ettenberger et al., 2014; Schlez

et al., 2012; Teckenberg-Jansson et al., 2011), and listening to music (Varişoğlu & Güngör Satılmış, 2020; Keith et al., 2012).

Anxiety and Stress. Eleven pieces of literature contained results or protocol on reducing anxiety or stress through musical intervention. A reduction of anxiety or stress was measured through instruments such as the STAI-A/B/C/X-1 (Varişoğlu, & Güngör Satılmış, 2020; Norouzi et al., 2013; Ranger et al., 2018; Arnon et al., 2014; Ettenberger et al., 2014). Two studies utilized a Likert Scale and questionnaire to assess parental anxiety and stress post-intervention (Loewy et al., 2013; Loewy, 2015). One study suggested an increase in parasympathetic activity indicated a reduction of stress (Ribeiro et al., 2018). Another study noted that mothers stated a decrease in stress post music therapy (Bollard et al., 2019). A further study used a numeric rating scale to indicate a reduction of stress post-intervention (Roa & Ettenberger, 2018). A final study used the Hospital Anxiety and Depression Scale (HADS) to measure post-intervention anxiety changes (Ettenberger & Ardila, 2018).

Seven of the studies included active musical techniques to reduce anxiety or stress, and four utilized live or recorded listening. Active music interventions included songwriting (Bollard et al., 2019; Ettenberger & Ardila, 2018), singing lullabies or parent preferred songs (Arnon et al., 2014; Ettenberger et al., 2014), live music listening in a music therapy self-care group for parents, verbal relaxation and guided imagery, and some subtle movements (Roa & Ettenberger, 2018), and First Sounds: Rhythm, Breath, and Lullaby including contingent singing and singing song of kin (Loewy et al., 2013; Loewy, 2015). Music listening interventions included music listening during Kangaroo Care (Norouzi et al., 2013; Ranger et al., 2018), listening to music during breast milk pumping (Varişoğlu, & Güngör Satılmış, 2020), or a music-listening based music therapy session (Ribeiro et al., 2018).

Wellbeing. Nine pieces of literature included in this research contained results on parental wellbeing. To measure wellbeing, researchers used the Full Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) (Coombes & Muzaffar, 2020), the Short

Warwick-Edinburgh Mental Well-being Scale (SWEMWBS), a researcher created numeric rating scale (NRS) (Roa & Ettenberger, 2018), or qualitative interviews (Ribeiro et al., 2018; Palazzi et al., 2017; Ettenberger et al., 2014; Mclean, 2016; Haslbeck, 2014; Ettenberger et al., 2017). Eight of the studies addressing parental wellbeing used active music interventions, and one used receptive listening-based interventions. Interventions included an educational workshop on developmentally appropriate music and singing in the NICU (Coombes & Muzaffar, 2020), infant-directed singing (Palazzi et al., 2017; Haslbeck, 2014), parental singing during KC (Ettenberger et al., 2014; Ettenberger et al., 2017), lullaby singing (Mclean, 2016), songwriting with parents (Ettenberger & Ardila, 2018), and a music therapy self-care group with live music listening verbal relaxation and guided imagery, and some subtle movements (Roa & Ettenberger, 2018). Listening interventions included receptive music listening and verbal processing (Ettenberger & Ardila, 2018).

Theme 2: Sensitivity

In the context of NICU music therapy, caregiver sensitivity through music is the act of using music to create opportunities for communicative musicality between infant and caregiver (Haslbeck, 2017). For this research, the theme of sensitivity included the subcategories of communicative musicality and responsiveness. Communicative musicality was defined as parents entraining their music/singing or behaviours/gestures/expressions to their infants' behaviours or responses (Haslbeck, 2015). Responsiveness was defined as moments of mutual exchange (i.e., interactive facial expressions or movements) between infants and parents during or immediately after a musical intervention. After coding, 9 of the 28 included articles incorporated the sensitivity theme in their protocol or results. All of the 9 articles that included the sensitivity theme involved a music therapist. The subcategories of communicative musicality and responsiveness consistently occurred together and are therefore described together in the following section.

Communicative Musicality and Responsiveness. Nine pieces of literature had communicative musicality and responsiveness in their results or protocol. Communicative musicality emerged mainly through parent-infant singing interventions; results were qualitative and based on observation or parent interviews. The singing interventions were based on the principles of infant-directed singing. Throughout the interventions, music therapists guided parents in matching their infant's behavioural cues and suck, swallow, breath rhythms (Palazzi et al., 2020; Ettenberger et al., 2017; Palazzi et al., 2017; McLean, 2016; Haslbeck, 2015; Loewy, 2015; Haslbeck, 2014). Parents felt that singing helped them connect with their infants and learn to recognize their infants' preferences, gestures, and behavioural changes (Ettenberger et al., 2017; McLean, 2016; Loewy, 2015). Episodes of singing allowed space for parents to make or imitate facial expressions in response to their infant (Palazzi et al., 2017). While singing, parents felt as though they were able to have organized emotional interactions with their infants (de l'Etoile, 2012), and felt as though their infants recognized and responded to their voices (McLean et al., 2019).

Theme 3: Engagement

In the context of NICU music therapy, caregiver engagement through music is the act of using music to encourage caregiver bonding and involvement with their infant (Haslbeck, 2017). For this research, the theme of engagement includes the subcategories of bonding and involvement. Bonding refers to any direct reference to closeness, attachment, or parent-infant bonding through music. Involvement refers to parental engagement with their infant through behaviours, expressions, or prolonged attention during musical episodes. After coding, 14 of the 28 articles incorporated the theme of engagement in their protocol or results. Only one of the 14 articles did not involve a music therapist (Vahdati et al., 2017).

Bonding. Eight of the 14 articles contained bonding in their protocol or results sections. Bonding information was collected through the Mother-Infant Bonding Scale (MIBS) (Ettenberger et al., 2017; Ettenberger & Ardila, 2018) or through interviews with

the parents and observations during the music interventions (Palazzi et al., 2020; Coombes & Muzaffar, 2020; Bollard et al., 2019; Shoemark, 2018; Palazzi et al., 2017; McLean, 2016). Perceived occurrences of bonding emerged through infant-directed singing (Palazzi et al., 2017; McLean, 2016; Shoemark, 2018), Kangaroo Care with parental singing (Ettenberger et al., 2017), MUSIP (Palazzi et al., 2020), a singing workshop to teach parents about the developmentally appropriate use of the voice (Coombes & Muzaffar, 2020), and song writing (Ettenberger & Ardila, 2018; Bollard et al., 2019). Parents felt that music therapy gave them space to bond with their infants in the NICU (Coombes & Muzaffar, 2020; Palazzi et al., 2020; Shoemark, 2018; Ettenberger et al., 2017; McLean, 2016).

Involvement. Ten of the 14 studies increased parental involvement. The studies measured involvement through researcher observations during musical interventions (Palazzi et al., 2020; Vahdati et al., 2017; Haslbeck, 2015; Haslbeck, 2014; de l'Etoile, 2012) or through qualitative interviews with the caregivers' post-intervention (Coombes & Muzaffar, 2020; Bollard et al., 2019; Ettenberger & Ardila, 2018; Palazzi et al., 2017; Ettenberger et al., 2014). Involvement emerged through music listening during KC (Vahdati et al., 2017), during infant-directed singing (Palazzi et al., 2020; Palazzi et al., 2017; Haslbeck, 2015; Haslbeck, 2014; de l'Etoile, 2012), after songwriting (Ettenberger & Ardila, 2018; Bollard et al., 2019), after KC with live music therapy and parental singing (Ettenberger et al., 2014), and after a singing workshop on the use of voice in the NICU (Coombes & Muzaffar, 2020).

Theme 4: Nurturing of Strengths and Potentials

In the context of this research, nurturing the potentials and strengths of the caregiver is the act of encouraging, teaching, or guiding caregivers to interact with their infants autonomously. For this research, the nurturing of strengths and potentials theme includes the subcategories of encouraging or teaching and autonomy. Encouraging and teaching refers to any reference made before, during, or after the music intervention aimed at encouraging, instructing, educating, explaining, guiding, or the learning of

caregivers through music in the NICU setting. Autonomy refers to a shift in power from the researcher to the caregiver during music sessions or caregiver independence in using music with their infant.

After coding, 14 of the 28 articles incorporated nurturing strengths and potentials in their protocol or results. Of the 14 articles with the theme of nurturing strengths and potentials, only one article did not indicate the involvement of a music therapist (Vahdati et al., 2017)

Encouraging or Teaching. Fourteen of the articles referred to encouraging or teaching the parents. The studies included encouraging and teaching in the protocol sections as a step in the music intervention process. Interventions that included encouraging or teaching involved encouraging parents during infant-directed singing (McLean, 2016; Arnon et al., 2014; Ettenberger et al., 2014; de l'Etoile, 2012), guiding parents in songwriting (Palazzi et al., 2017; Bollard et al., 2019), parental education about the use of voice, musical interaction, and early auditory stimulation in the NICU (Coombes, & Muzaffar, 2020; Palazzi et al., 2020; McLean, et al., 2019; Shoemark, 2018; McLean, 2016), singing during Creative Music Therapy with a particular focus on encouraging caregiver selected music (Haslbeck, 2015), a self-care group focused on caregiver wellbeing and sharing music wellness resources (Roa & Ettenberger, 2018), and RBL with guidance on how parents can match their music to vital rhythms of their infants (Loewy, 2015; Loewy et al., 2013).

Autonomy. Six of the articles referenced autonomy in the protocol or results sections. Autonomy emerged during singing interventions when caregivers sang spontaneously or without the guidance of the researcher (Palazzi et al., 2020; McLean et al., 2019; Palazzi et al., 2017; McLean, 2016; Haslbeck, 2014) and during parental singing when the caregiver taught the researcher a song (Haslbeck, 2015).

Music Therapy and Music Techniques

This review divided music therapy and musical techniques into the categories of interventions, programs, and approaches. Musical interventions, programs, and

approaches used with parents in the NICU are diverse. In the following sections, the student-researcher outlines all the musical interventions, programs, and approaches used with parents in the included studies.

In total, 20 of the 28 included articles involved a music therapist in some capacity, 8 either did not specify or did not have a music therapist involved. Appendix E contains information on which articles incorporated music therapists and which did not. All 8 of the studies that had no stated music therapist involvement were in the interventions category. A fully detailed outline of the interventions, programs, and approaches, including information on the authors, protocols, and music, can be found in appendices B, C, and D.

Interventions

Studies that fit into the intervention category involved a singular music technique or music therapy intervention. The interventions included: live music with KC, live music listening, recorded music listening with KC, recorded music listening, recorded maternal singing, a Pacifier Activated Lullaby (PAL) with maternal voice, songwriting, and infant-directed singing (ID).

A total of 15 studies focused on a singular intervention. Three of the studies (20%) contained zero themes of empowerment, 8 (53.3%) had one theme, 2 (13.3%) contained two themes, 2 (13.3%) contained three themes, and 0 (0%) contained all four themes of empowerment. The studies that did not include themes of empowerment were all based on recorded music. They had recorded maternal voice played after infant suctioning (Pouraboli et al., 2019), recorded music by Johann Sebastian Bach during KC, and recorded mother's voice played to the infant. Studies that contained a single theme of empowerment included recorded maternal singing played for their infant, listening to live harp music, listening to recorded music during breast milk pumping, and listening to live voice and lyre. Studies that contained two themes of empowerment included songwriting, and live music (lullaby style singing) during KC. Studies that had three themes of empowerment included the PAL with maternal lullabies and ID singing. In the 15 studies

that focused on a single intervention, the four empowerment themes occurred a total of 18 times. Nine of the 18 occurrences (50%) were self-regulation, 1 (5.6%) was sensitivity, 4 (22.2%) were engagement, and 4 (22.2%) were nurturing strengths and potentials. A detailed list of the authors of each article, and the corresponding interventions and empowerment themes can be found in Appendix G.

Programs

Studies that fell into the program category had a stated set of musical interventions conducted for a set number of sessions in a specific order. The music programs used in the articles included: a singing workshop, the Music Therapy Intervention for the Mother-Preterm Infant Dyad (MUSIP), Time Together, a 1:1 music therapy program centred around music listening, a music therapy self-care group, and a music therapy program featuring Kangaroo Care (KC).

Nine studies were centred around music therapy programs. All 9 included at least one empowerment theme. One (11.1%) had one theme, 5 (55.6%) had two themes, 1 (11.1%) had three themes, and 2 (22.2%) had all four themes of empowerment. The study that contained one theme of empowerment was a 1:1 music therapy program centred around recorded music listening. Studies that had two themes of empowerment included Time Together, a self-care group program for parents, music therapy to emulate womb sounds, and a live music therapy program during KC. The study that had three themes of empowerment included a singing workshop. The studies that had all four empowerment themes used the MUSIP. Throughout the nine studies in the program categories, the four themes of empowerment were found a total of 25 times. Of the 25 times empowerment themes were found, 8 (32%) were themes of self-regulation, 4 (16%) were sensitivity themes, 6 (24%) were engagement themes, and 7 (28%) were themes of nurturing strengths and potentials. A detailed list of the authors of each article, and the corresponding interventions and empowerment themes can be found in Appendix H.

Approaches

Studies that fell into the approaches' category contained a framework of practice and several interventions used reflexively throughout the music therapy sessions. The music therapy approaches outlined in the studies included: family-based individual and group music therapy, Creative Music Therapy (CMT), and First Sounds: Rhythm, Breath, and Lullaby (RBL).

The approaches category contained a total of four studies. All 4 studies included at least 3 themes of empowerment. Two studies (50%) contained three themes, and two studies (50%) contained all four themes. The two approaches that contained three empowerment themes were family-based music therapy and CMT. The two approaches that contained all four themes were CMT and RBL. In the four studies, the four empowerment themes occurred a total of 14 times. The Self-regulation theme occurred 3 (21.4%) times, sensitivity 4 (28.6%) times, engagement 4 (28.6%) times, and nurturing strengths and potentials 3 (21.4%) times. A detailed list of the authors of each article, and the corresponding interventions and empowerment themes can be found in Appendix I.

Summary

This chapter detailed findings on the empowerment themes that were presented in each study and identified empowerment within music therapy and music techniques that were used with parents in the NICU setting. Empowerment was divided into the themes of self-regulation, sensitivity, engagement, and nurturing of strengths and potentials. The empowerment themes were further broken down into subcategories of relaxation, anxiety, wellbeing, communicative musicality, responsiveness, bonding, involvement, encouraging and teaching, and autonomy. Throughout the 28 articles, the four empowerment themes occurred a total of 57 times. The self-regulation theme was found 20 (35.1%) times, sensitivity was found 9 (15.8%), engagement was found 14 (24.6%) times, and nurturing strengths and potentials was found 14 (24.6%) times. Eleven (11) articles explicitly named empowerment (or empowering/empower) as an intention of the intervention or as a result of the intervention. Articles that explicitly named empowerment were found to have at least two themes of empowerment present. The most

commonly occurring theme of empowerment within the empowerment-specific articles was engagement, followed by self-regulation, then nurturing strengths and potentials, and sensitivity.

Music therapy and music techniques used in the NICU were diverse and were broken down into categories of interventions, programs, and approaches. A total of 15 studies focused on a singular intervention. The interventions category contained all 8 of the non-music therapy studies. The most common empowerment theme in the interventions category was self-regulation, followed by engagement and nurturing strengths and potentials. The sensitivity theme was not found in any of the articles in the interventions category. Nine studies fit into the programs category. The most commonly included empowerment theme was self-regulation, followed by engagement, nurturing strengths and potentials, and finally sensitivity. Four studies fit into the approaches category. Of the four empowerment themes, sensitivity and engagement were the most commonly addressed, followed by self-regulation and nurturing strengths and potentials.

Chapter 5. Discussion

The purpose of this integrative review was to explore the prevalence and presentation of parental empowerment themes in NICU music therapy-related literature, and to discover which music therapy interventions, programs, and approaches contain empowerment themes. The results of the integrative review identified 28 articles that were based in the NICU setting, used music and music therapy and musical techniques, and included parents. Themes of empowerment and subcategories of empowerment themes were discussed in the context of music-based interventions in the NICU setting. The empowerment themes included self-regulation, sensitivity, engagement, and nurturing of strengths and potentials. Subcategories included relaxation, anxiety/stress, wellbeing, communicative musicality, responsiveness, bonding, involvement, teaching and encouraging, and autonomy. Of the 28 qualifying articles included in this study, 3 (10.7%) included no empowerment themes, 8 (28.6%) included only one theme of empowerment, 8 (28.6%) included two themes of empowerment, 5 (17.9%) included 3 themes of empowerment, and 4 (14.3%) included all four themes of empowerment. All 4 of the articles that did not have themes of empowerment were non-music therapy articles, meaning that they did not indicate any involvement of a music therapist.

Eleven (11) articles explicitly noted empowerment as a result or outcome. Of these 11 articles, 4 (36.4%) had two themes of empowerment, 4 (36.4%) had three themes of empowerment, and 3 (27.3%) had all four themes of empowerment present. This may imply that interventions, programs, and approaches need to include at least two themes of empowerment to elicit feelings of empowerment. In the 11 articles, the student-researcher identified occurrences of the four empowerment themes a total of 32 times. Of the 32 occurrences of empowerment themes, 10 (90.9%) were engagement, 9 (81.8%) were self-regulation, 8 (72.7%) were nurturing strengths and potentials, and 5 (45.5%) were sensitivity.

A music therapist was not involved in 8 of the studies. Of the 8 non-music therapy articles 4 (50%) did not include themes of empowerment, 3 (37.5%) had one theme, and

1 (12.5%) had two themes of empowerment. Four (50%) of the articles contained the self-regulation theme, 1 (12.5%) had the engagement theme, 1 (12.5%) contained the nurturing strengths and potentials' theme, and 0 (0%) included the sensitivity theme.

A music therapist was involved in 20 of the studies. All 20 of the music therapy articles had at least one theme of empowerment present. Of the 20 articles, 5 (25%) had one theme of empowerment, 6 (30%) had two themes, 5 (25%) had three themes, and 4 (20%) contained all four themes. This may indicate that music therapy, in the context of the NICU, is somewhat innately empowering. In the 20 articles, the student-researcher identified occurrences of the four empowerment themes a total of 48 times. Of the 48 occurrences of empowerment themes, 16 (33.3%) were self-regulation, 7 (14.6%) were sensitivity, 13 (27.1%) were engagement, and 12 (25%) were nurturing strengths and potentials. The least addressed theme was sensitivity. The sensitivity theme included the subcategories of responsiveness and communicative musicality. Because of its scarcity of occurrence, it may be beneficial to look further into how sensitivity effects empowerment and how responsiveness and communicative musicality could be further integrated into music therapy practice.

This review repeatedly found the self-regulation theme occurring independently of the other themes. Self-regulation occurred on its own a total of 7 times. All 7 of these articles studied the effects of music listening. The self-regulation theme in isolation may occur with music listening because music listening has often been hypothesized to illicit a relaxation response. This could indicate that the process of music listening, in certain situations, innately creates a self-regulation response.

This review never found the sensitivity theme occurring without other themes present. The sensitivity theme only occurred when accompanied by a minimum of two other themes and was only found in music therapy articles. The sensitivity theme was always found with the engagement theme, but the engagement theme was not always found with the sensitivity theme. This may indicate that engagement is a pre-requisite of sensitivity. The sensitivity theme was also only found in the programs and approaches.

This may indicate that sensitivity emerges as part of the music therapy process rather than through a single intervention. Additionally, sensitivity almost always paired with the nurturing strengths and potentials theme. This may indicate that nurturing strengths and potentials may help to guide the parents towards sensitivity but is not always necessary.

This review found a diversity of music therapy and musical techniques used in the NICU. The student-researcher divided music therapy and musical techniques into categories of interventions, programs, and approaches. A total of 15 of the 28 studies (53.6%) focused on a singular intervention. Three of the 15 intervention focused studies (20%) had zero empowerment themes. All 3 of those studies were non-music therapy studies. The most commonly occurring empowerment theme in the interventions category was self-regulation, followed by engagement, nurturing strengths and potentials, and then sensitivity. Nine of the 28 studies (32.1%) fit into the programs category. All nine of these studies had at least one empowerment theme. The most commonly included empowerment theme in the programs category was self-regulation, followed by engagement, nurturing strengths and potentials, and finally sensitivity. Four of the 28 studies (14.3%) fit into the approaches category. Each article in the approaches category contained three or more empowerment themes. In the approaches category, sensitivity and engagement were the most commonly addressed empowerment themes, followed by self-regulation and nurturing strengths and potentials. The prevalence of multiple themes of empowerment occurring in programs and approaches may indicate that feelings of parental empowerment in NICU music therapy more commonly occur through a process rather than a single intervention.

Potential Implications for Practice

In light of the results of this study, it is recommended that music therapists continue to explore parental empowerment in NICU music therapy. Empowerment models of care continue to evolve and be implemented in the NICU setting (Altimier, 2015). Empowerment models of care in the NICU have positively impacted parental well-being (Ding et al., 2019). As these models evolve and research on their benefits

increase, NICU music therapists should give increased attention to how they are facilitating empowerment in their practice and how it may be contributing to the wellbeing of infants and caregivers in the NICU setting.

Parallels in Existing NICU Music Therapy Related Literature

The student-researcher was unable to identify any other studies examining the different themes of empowerment of caregivers in NICU music therapy. The results of this study do align with some of the results of an integrative review by Haslbeck (2011). In a review by Haslbeck (2011), music therapy with parents in the NICU setting incorporated a vast array of interventions. Those interventions included recorded heartbeat, music listening during KC, recorded mothers voice, and live singing. Specifically, the use of KC with music, recorded maternal voice, and singing are in alignment. The article by Haslbeck (2011) also reported intensified bonding and a positive influence on parental wellbeing, anxiety, and coping behaviours. These findings match up with several empowerment themes that were discussed in this study: anxiety, wellbeing, and bonding.

A study by Gooding and Trainor (2018) examined music therapy practice in the United States and working with parents in the NICU setting. The authors found that the need most addressed in NICU music therapy with parents was anxiety. The interventions most commonly found by Gooding and Trainor (2018) included infant-directed procedures, psychoeducation, counselling, and music-assisted relaxation. In this research, the findings that align with the findings of Gooding and Trainor (2018) include the empowerment themes of self-regulation, including anxiety and relaxation, and nurturing of strengths and potential, including educating and guiding parents.

Empowerment in the context of NICU music therapy is currently an under-explored topic. Research on empowerment models of care in the NICU is continuing to grow and expand. Because of this, music therapists should consider how they may be able to contribute to the conversation and research on empowerment.

Limitations

The main limitation of this research is the data extraction was completed by a single student-researcher. This was the student's first-time conducting research which, due to inexperience, may have led to the data being inaccurate or incomplete. A second limitation is that the student researcher's knowledge of this topic was based on a 7-month practicum at a children's hospital that had a strong focus on music therapy in the NICU and completing the first segment of NICU-MT training. Completion the second segment of training to obtain the NICU-MT designation was interrupted due to COVID 19. This may have limited the researcher's knowledge of the population. Based on the research and experience limitations, this research may not have provided a complete picture of the topic.

Future Research Implications

This research examined the prevalence of caregiver empowerment in literature related to NICU music therapy. After exhaustive searches, the researcher was only able to identify 28 articles that met the inclusion criteria. The results of this research uncovered that only five articles made use of all four themes of empowerment and only 11 articles specifically named caregiver empowerment as a purpose or outcome. The limited amount of existing research specific to caregiver empowerment in NICU music therapy, and the growing body of research on empowerment in other NICU research warrants the need for more music therapy research on this topic.

This research examined the prevalence and presentation of caregiver empowerment in literature related to NICU music therapy. The research did not specifically explore the potential benefits of caregiver empowerment through music in the NICU setting. Future research could explore the potential benefits of empowerment in NICU music therapy with caregivers. The articles discussed in this research mainly included mothers and did not often include fathers or other caregivers. Further research could address the mental health of fathers and other caregivers with infants in the NICU and the impact of empowerment on these caregivers.

The least occurring theme of empowerment was sensitivity. This may warrant further exploration of the relevance and importance of parental sensitivity (including communicative musicality and responsiveness) in empowerment within the context of NICU music therapy with parents. This study did not specifically examine the outcomes of each study. In future music therapy research, it may be beneficial to examine the effect of empowerment techniques on caregiver needs and issues.

Conclusion

This integrative review explored themes of empowerment in research related to NICU music therapy with caregivers. Qualifying literature from the past 10 years was reviewed and analysed to uncover the themes of empowerment in NICU music interventions with caregivers and discussed the interventions that elicit empowerment themes. This research provided new insight into empowerment theory and a broad overview of what empowerment may look like in the context of NICU music therapy with parents. It is hoped that this research will aid in expanding music therapy research on empowering caregivers in the NICU setting and that music therapists who work in this area may critically reflect on their practices and on how they empower parents through music. This integrative review may serve as a starting point for those wanting to explore empowerment in NICU music therapy and create discussion in the music therapy community around the uses and potential implications of empowerment.

Appendix A

Publications Reviewed

Authors	Year of Publication	Type of Report	Name of Source
Schlez, Litmanovitz, Bauer, Dolfín, Regev, & Aron	2011	Journal Article	Israel Medical Association Journal
Teckenberg-Jansson Huotilainene, Pölkki, Lipsanen, & Järvenpää	2011	Journal Article	Nordic Journal of Music Therapy
Keith, Waever, & Vogel	2012	Journal Article	Advances in Neonatal Care
de l'Etoile	2012	Journal Article	The Arts in Psychotherapy
Filippa, Devouche, Arioni, Imberty, & Gratier	2013	Journal Article	ACTA Pædiatrica
Lowey, Stewart, Dassier, Tesley, & Homel	2013	Journal Article	Pediatrics
Norouzi, Keshavarz, SeyedFatemi, & Montazeri	2013	Journal Article	Complementary Therapies in Medicine
Arnon, Diamant, Bauer, Regev, Sirota, & Litmanovitz	2014	Journal Article	ACTA Pædiatrica
Ettenberger, Cardenas, Parker, & Odell-Miller	2014	Journal Article	Voices
Haslbeck	2014	Journal Article	Nordic Journal of Music Therapy
Haslbeck	2015	Book Chapter	Advanced Practice in Medical Music Therapy: Case Reports
Loewy	2015	Journal Article	Annals of the New York Academy of Science
Ettenberger, Cardenas, Parker, & Odell-Miller	2017	Journal Article	Nordic Journal of Music Therapy

Authors	Year of Publication	Type of Report	Name of Source
Palazzi, Meschini, & Piccinini	2017	Journal Article	Voices
Vahdati, Mohammadizadeh, & Talakoub	2017	Journal Article	Iranian Journal of Nursing and Midwifery Research
Yusuf, Hadisaputro, Runjati, Suwondo, Mashoedi, & Supriyana	2017	Journal Article	Belitung Nursing Journal
Ettenberger, & Ardila	2018	Journal Article	The Arts in Psychotherapy
Ranger, Helmert, Bott, Ostermann, Als, Bassler, Hautzinger, & Vagedes	2018	Journal Article	Complimentary Therapies in Medicine
Ribeiro, Alcântara-Silva, Oliveira, Paula, Dutra, Pedrino, Simões, Sousa, & Rebelo	2018	Journal Article	BMC Psychology
Roa, & Ettenberger	2018	Journal Article	Medicines
Shoemark	2018	Journal Article	Music Therapy Perspectives
Bollard, Purdy, Casale, & Cheah	2019	Journal Article	Neonatology Today
McLean, McFerran, & Thompson	2019	Journal Article	Journal of Neonatal Nursing
Pouraboli, Rayyani, Anari, Hossenini, & Loghmani	2019	Journal Article	Electronic Journal of General Medicine
Coobes, & Muzaffar	2020	Journal Article	Journal of Neonatal Nursing
Corrigan, Keeler, Khallouq, & Fowler	2020	Journal Article	Journal of Perinatology
Palazzi, Meschini, Medeiros, & Piccinini	2020	Journal Article	Nordic Journal of Music Therapy
Varişoğlu & Güngör Satılmış	2020	Journal Article	Breastfeeding Medicine

Appendix B

Music Interventions, Music Protocols, and Music Types

Author	Interventions	Protocol	Music
Corrigan et al. (2020).	Recorded maternal singing played back to the infants following Retinopathy of Prematurity (ROP) exam	<ul style="list-style-type: none"> - Music therapists met with the mothers, explained the intervention, discussed song - Psychoeducation on lullaby-style singing - Recording the mothers voice and heartbeat - Music therapist remained present for the exams - Speakers were placed at the feet or the head of the infant - A decibel meter was placed - A 5-minute recording was played immediately following the exam. 	Recorded maternal selected and sung music in a lullaby style
Varişoğlu & Güngör Satılmış (2020)	Recorded music listening during breast milk pumping	<ul style="list-style-type: none"> - Giving the mothers mp3 players with music cued up - 15 minutes of listening to the Turkish Buzurk mode - 	Turkish Buzurk mode
Bollard et al. (2019)	Pacifier Activated Lullaby (PAL) with maternal lullabies	<ul style="list-style-type: none"> - Song writing - Verbal processing - Reflection - Meditation - Caregiver education 	Pre-recorded, Lullaby style song written and sung by the mothers
Pouraboli et al. (2019)	Recorded maternal singing prior to, during, and after infant suctioning.	<ul style="list-style-type: none"> - Recording the mothers voice singing a lullaby - Testing the playback through a sound meter 	Recorded lullabies sung by the mother

Author	Interventions	Protocol	Music
		<ul style="list-style-type: none"> - Playback through headphones and an mp3 player - 5-minutes of music before suctioning - 10-minutes of music during and following infant suctioning 	
Ettenberger & Ardila, (2018)	Song writing	<ul style="list-style-type: none"> - Exploration of favorite songs - Structuring a welcome song - Brainstorming - Singing the welcome song - Continuously modifying the welcome song to infant needs - DVD booklet was created - Singing the finalized version of the welcome song and delivering the DVD booklet 	
Ranger et al. (2018)	Live music listening	<ul style="list-style-type: none"> - Two minutes of arpeggios to fade-in the music - Varied melodies played in adagio triple meter - Two minutes of arpeggios to fade out the music 	Hand harp tuned pentatonically.
Vahdati et al. (2017)	Recorded music during KC	<ul style="list-style-type: none"> - Infant was placed in kangaroo position on the mother's chest - Music was played via mp3 and disposable headphones for 20-minutes 	Music by Dr. Arnd Stein, was not stimulating, had slow rhythms, uniform melody, and had ocean waves and bird songs in the background.
Yusuf et al. (2017)	Recorded music during KC	<ul style="list-style-type: none"> - Infant was put into kangaroo position 	Lullaby music

Author	Interventions	Protocol	Music
		<ul style="list-style-type: none"> - KC alone was performed for 1-hour - Music was introduced for 20-minutes via speaker near the infant's head or feet - Music was between 60-70dB 	
Arnon et al. (2014).	Live music during Kangaroo Care (KC)	<ul style="list-style-type: none"> - Music therapist started 30-minutes after the infant was fed - KC was performed alone for 10 minutes - Mothers were educated on lullaby style singing - KC and music were performed for 20 minutes - A sound analyzer was used to ensure the music was between 60-70 dB - Sessions concluded with 10 minutes of KC without music 	Music sang by the mother in a lullaby style, was repetitive, sang in a soothing tone, and was a slow tempo. Lullabies that the mother had listened to or sang during pregnancy were suggested.
Filippa et al. (2013)	Recorded mother's voice	<ul style="list-style-type: none"> - Testing occurred over 6 days - Infant behaviours were measured via video recording - Mothers arrived in the NICU - Mothers were instructed to speak for 5-minutes - Mothers were asked to sing for 5-minutes - Sound levels were between 60.6 to 71.5 dB 	Mothers chose songs and sang to their infant

Author	Interventions	Protocol	Music
Norouzi et al. (2013)	Recorded music during KC	<ul style="list-style-type: none"> - Music and KC intervention was 30-minutes - The infant was put into KC position on the mother's chest - Music was played via mp3 occlusive headphones 	Soft instrumental music by Johann Sebastian Bach.
de l'Etoile (2012)	Infant directed singing (ID)	<ul style="list-style-type: none"> - Mother sang the song "Twinkle Twinkle Little Star" - The researcher sang "Twinkle Twinkle Little Star" - Video review and caregiver education 	Vocals, the song "Twinkle, Twinkle Little Star"
Keith et al. (2012)	Recorded music listening during breast milk pumping	<ul style="list-style-type: none"> - Giving the mothers mp3 players with music cued up - 12 minutes of guided relaxation accompanied by lullabies played on guitar 	Lullabies played on guitar
Schlez et al. (2012)	Live music during KC	<ul style="list-style-type: none"> - Infant was placed in kangaroo position 30-minutes after feeding - Improvised music was played 1-2 meters away for the mother-infant dyad - A sound level and decibel scale were used to measure volume 	Live harp music, incorporated a blend of eastern and western melodies, was in a lullaby style, used major and harmonic minor modes, and had a tempo between 60-70 bpm.
Teckenberg-Jansson et al. (2011)	Live music during KC	<ul style="list-style-type: none"> - Infant was place in kangaroo position on the mother's chest 	10 stringed lyre, tuned pentatonically and

Author	Interventions	Protocol	Music
		<ul style="list-style-type: none"> - Improvised music played for 20-minutes - Music started instrumentally then added voice and finished with several minutes of instrumental music - Music was adjusted based on infant needs 	the voice of the music therapist

Appendix C

Music Programs, Music Protocols, and Music Types

Author	Programs	Protocol	Music
Coombes & Muzaffar, (2020)	Signing workshop with listening activities	<ul style="list-style-type: none"> - Outline of content and discussion about musical experience and preferences - relaxation with recorded music - Caregiver education - Practicing humming and singing exercises - Selection of parent requested songs, recorded music listening. 	Songs selected by parents, recorded relaxing music, voice
Palazzi et al. (2020)	MUSIP	<ul style="list-style-type: none"> - Singing maternal preferred songs - Infant directed singing - Skin-to-skin contact - Caregiver education 	Lullaby style singing or humming. Harmonic accompaniment on guitar.
Shoemark (2018)	Time Together	<ul style="list-style-type: none"> - Contingent singing - Resource booklet - Caregiver education - 	Lullaby style singing and humming
Ribeiro et al. (2018)	1:1 music therapy with recorded music listening	<ul style="list-style-type: none"> - 30-45 minute sessions - number of sessions was flexible - listening to an 60-80 bpm solo or duet instrumental piece for 2-4 minutes - Listening to participant selected music - Verbal processing 	music was either classical or baroque, had a regular pulse, had few points of tension, had tension resolution, had low levels of dissonance

Author	Programs	Protocol	Music
		<ul style="list-style-type: none"> - Listening to instrumental densely textured music that were above 80 bpm - Brief overview of the issues that were addressed - Setting up a time for the next session 	Music selected by the participants
Roa & Ettenberger (2018)	Music Therapy self-care group for parents	<ul style="list-style-type: none"> - Short musical games - Verbal guided relaxation - Live music with deep breathing prompts or prompts for the parents to sing or hum - Verbal reflection - Caregiver education 	Nylon-string guitar, voice, shakers, ocean drum, Samafon Improvised music with a slow tempo, repetition, subtle modulations
Ettenberger et al. (2017)	Live music therapy during KC	<ul style="list-style-type: none"> - Music therapist took place 2 x per week until discharge - Parents sat in a chair beside the infant's incubator and held the infant in kangaroo position - Sessions had no time limit and were based on family needs - Music was selected and played based on Rhythm, Breath, and Lullaby (RBL) principles 	Parent chosen, significant music, or lullabies were used. Music was played in a lullaby style (60-80bpm and often in $\frac{3}{4}$ time), included voice and simple harmonic chord progressions played on guitar.

Author	Programs	Protocol	Music
		<ul style="list-style-type: none"> - Music composition was sometimes incorporated - Parent education on developmentally appropriate singing 	
Palazzi et al. (2017).	MUSIP	<ul style="list-style-type: none"> - Singing maternal preferred songs - Infant directed singing - Skin-to-skin contact - Caregiver education 	Lullaby style singing or humming. Harmonic accompaniment on guitar.
Ettenberger et al. (2014)	Live music therapy during KC	<ul style="list-style-type: none"> - Music therapy occurred up to 4 times in 2 weeks - Infant was put into kangaroo position - Music was selected and played based on the principles of RBL - Some sessions were receptive and incorporated improvised music 	Parent chosen, significant music, or lullabies, played in a lullaby style (60-80bpm and often in $\frac{3}{4}$ time), included voice and simple harmonic chord progressions played on guitar. Improvised music was played on either guitar or a harp.

Appendix D

Music Approaches, Music Protocols, and Music Types

Author	Approaches	Protocol	Music
McLean et al. (2019)	Family based individual and group music therapy	<p>Family:</p> <ul style="list-style-type: none"> - Contingent vocalizations - Lullabies during Kangaroo care - Music and multimodal neurological stimulation - Caregiver education - Recording parent vocalizations <p>Group:</p> <ul style="list-style-type: none"> - Caregiver education 	Live lullabies accompanied on guitar, slow, repetitive and reflexive singing
Haslbeck (2015)	CMT	<ul style="list-style-type: none"> - Assessment of infant ‘music’ - Improvised humming or singing based on infant ‘music’ - Continuous and reflexive adjustment of vocalizations - Present and willing parents are encouraged to participate - Caregiver education is provided on the reflexive use of voice - 	Reflexive humming and singing
Loewy (2015)	First Sounds: Rhythm, Breath, and Lullaby (RBL)	<ul style="list-style-type: none"> - Parent education on lullaby style signing and entraining to their infant - Singing “song of kin” and lullaby 	Parent selected, meaningful music or “Twinkle, Twinkle Little Star”

Author	Approaches	Protocol	Music
		- Simulated womb sounds with instruments	Remo Ocean Disk played to the infant's breathing.
Haslbeck (2014)	Creative Music Therapy (CMT)	<ul style="list-style-type: none"> - Assessment of infant 'music' - Improvised humming or singing based on infant 'music' - Continuous and reflexive adjustment of vocalizations - Present and willing parents are encouraged to participate - Caregiver education is provided on the reflexive use of voice 	<p>Gato box played to simulate an intrauterine heartbeat.</p> <p>Reflexive humming and singing</p>

Appendix E

Article's Music Therapist Involvement

Author	Music Therapist Involved	Music Therapist Presence not stated
Arnon et al., (2014)		X
Bollard et al., (2019)	X	
Coombes & Muzaffar, (2020)	X	
Corrigan et al., (2020)	X	
de l'Etoile, (2012)	X	
Roa & Ettenberger, (2018)	X	
Ettenberger & Ardila, (2018)	X	
Ettenberger et al., (2017)	X	
Ettenberger, et al., (2014)	X	
Filippa et al., (2013)		X
Haslbeck, (2014)	X	
Haslbeck, (2015)	X	
Keith et al., (2012)	X	
Loewy, (2015)	X	
Loewy et al., (2013)	X	
McLean et al., (2019)	X	
Norouzi et al., (2013)		X
Palazzi et al., (2020)	X	
Palazzi et al., (2017)	X	
Schlez et al., (2012)		X
Pouraboli et al., (2019)		X

Author	Music Therapist Involved	Music Therapist Presence not stated
Ranger et al., (2018)	X	
Ribeiro et al., (2018)	X	
Shoemark, (2018)	X	
Teckenberg-Jansson et al., (2011)	X	
Vahdati et al., (2017)		X
Varişoğlu & Güngör Satılmış, (2020)		X
Yusuf et al., (2017)		X

Appendix F

Use of the word Empowerment by Article

Author	Use of the word empowerment
Arnon et al., (2014)	
Bollard et al., (2019)	X
Coombes & Muzaffar, (2020)	X
Corrigan et al., (2020)	
de l'Etoile, (2012)	
Roa & Ettenberger, (2018)	X
Ettenberger & Ardila, (2018)	X
Ettenberger et al., (2017)	X
Ettenberger, et al., (2014)	
Filippa et al., (2013)	
Haslbeck, (2014)	X
Haslbeck, (2015)	X
Keith et al., (2012)	
Loewy, (2015)	
Loewy et al., (2013)	
McLean et al., (2019)	X
Norouzi et al., (2013)	

Author	Use of the word empowerment
Palazzi et al., (2020)	X
Palazzi et al., (2017)	X
Schlez et al., (2012)	
Pouraboli et al., (2019)	
Ranger et al., (2018)	
Ribeiro et al., (2018)	
Shoemark, (2018)	X
Teckenberg-Jansson et al., (2011)	
Vahdati et al., (2017)	
Varişođlu & GÜngör Satilmiş, (2020)	
Yusuf et al., (2017)	

Appendix G

Features of Empowerment: Articles in the Interventions Category

Author	Intervention	Self- Regulation	Sensitivity	Engagement	Nurturing Strengths
Arnon et al., (2014)	Live music during KC	X			X
Bollard et al., (2019)	Pacifier Activated Lullaby (PAL) with maternal lullabies	X		X	X
Corrigan et al., (2020)	Recorded maternal singing played back to the infants following Retinopathy of Prematurity (ROP) exam				X
de l'Etoile, (2012)	Infant directed singing		X	X	X
Ettenberger & Ardila, (2018)	Songwriting	X		X	
Filippa et al., (2013)	Recorded mother's voice played back to the infant				
Keith et al., (2012)	Recorded music listening during breast	X			

	milk pumping		
Norouzi et al., (2013)	Recorded music during KC	X	
Schlez et al., (2012)	Live music during KC	X	
Pouraboli et al., (2019)	Recorded maternal singing prior to, during, and after infant suctioning.		
Ranger et al., (2018)	Live harp music listening	X	
Teckenberg-Jansson et al., (2011)	Live music during KC	X	
Vahdati et al., (2017)	Recorded music during KC		X
Varişoğlu & Güngör Satılmış, (2020)	Recorded music listening during breast milk pumping	X	
Yusuf et al., (2017)	Recorded lullaby music during KC		

Appendix H

Features of Empowerment: Articles in the Programs Category

Author	Program	Self-regulation	Sensitivity	Engagement	Nurturing of strengths
Coombes & Muzaffar, (2020)	Signing workshop	X		X	X
Loewy et al., 2013	Series of 3 interventions	X			X
Roa & Ettenberger, (2018)	Music Therapy self-care group	X			X
Ettenberger et al., (2017)	Live music therapy during KC	X	X	X	
Ettenberger, et al., (2014)	Live music therapy during KC	X	X	X	X
Palazzi et al., (2020)	MUSIP	X	X	X	X
Palazzi et al., (2017)	MUSIP	X	X	X	X
Ribeiro et al., (2018)	1:1 music therapy with recorded music listening	X			
Shoemark, (2018)	Time Together			X	X

Appendix I

Features of Empowerment: Articles in the Approaches Category

Author	Intervention	Self-regulation	Sensitivity	Engagement	Nurturing of strengths
Haslbeck, (2014)	CMT	X	X	X	X
Haslbeck, (2015)	CMT		X	X	X
Loewy, (2015)	RBL	X	X	X	X
McLean et al., (2019)	Family based music therapy	X	X	X	

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