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## Exploring Attachment in the NICU: A Music Therapy Model

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Exploring Attachment in the NICU: A Music Therapy Model

Capstone Thesis

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Specialization: Music Therapy

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### **Abstract**

This music therapy method intends to explore the implication of music within the Neonatal Intensive Care Unit (NICU) to foster attachment and provide bonding experiences between infants and their caregivers. Using a flexible multistep model, the music therapist will consider established family dynamics, cultural background, and medical diagnosis of infants to determine the necessary music therapy approach to support the infant and caregiver throughout hospitalization. This method involves the integration of live-music intervention and hospitalization through procedural support and infant-contingent singing as co-regulation. Music therapy is an evidence-based practice used across the lifespan. The practice of music therapy with neonates has been identified as a viable non-pharmacological treatment modality to improve infant sleep patterns, support brain development, and improve physiological calming and regulation. This method seeks to explore the outcomes of music therapy interventions by providing procedural support and facilitating opportunities for family bonding while empowering caregivers to engage in the process alongside the clinician. In order to conduct a music therapy method that supports the infant while providing resources and sustainable care practices for caregivers, this model will follow a session structured on building rapport with the family and care team, establishing trust with the infant and caregiver, supporting the family throughout hospitalization through clinical practice and advocacy, and empowerment of the caregiver and infant to continue bonding throughout hospitalization and once discharged.

*Keywords:* neonatal intensive care unit, attachment, infants, caregivers, music therapy, procedural support, infant-directed, hospital

*Author Identity Statement:* The author identifies as a queer, white, cisgender woman from Eastern Tennessee of mixed European ancestry.

## Exploring Attachment in the NICU: A Music Therapy Model

### **Introduction**

While neonatal intensive care units often provide resources, imperative medical care, and overall life-saving procedures, being admitted to an intensive care unit has the potential to increase the infant and caregiver's exposure to traumatic experiences. Repeat or extended hospitalization of an infant patient often creates a stressful environment for the infant and has the potential to impede their developmental progress. For caregivers, this environment can also cause stress, while heavily impacting the mental health and overall stability of their everyday life, mental health, and family system. This type of intense hospitalization often inhibits the process of forming secure attachment between infants and their caregivers. Parenting or caring for a critically ill child is more likely to cause fractures in relationships, marriages, and family systems than in families with children who are not medically compromised (Joesch & Smith, 1997), further intensifying child and caregiver stress. There are multiple contributing factors to this including but not limited to the inability to be held due to medical equipment and limited skin-to-skin contact due to patient sensitivity, requiring a feeding tube and the inability to breast or bottle-feed, lack of socialization, and caregiver visitation due to work schedules, or complications while raising additional children within the family. Many caregivers experience depression and anxiety while their child is admitted as there are often high-risk medical procedures and ever-changing discharge dates due to medical complexities. Many caregivers have described their time in the NICU as a waiting game filled with medical rounds, information, reports, and procedures longing to know what is to come for their child's future. Though there are barriers to providing typical opportunities for attachment between caregiver and infant due to the nature of the medical environment, there are multiple ways for families to engage with their

child during hospitalization that can provide positive outcomes for their child's future development socially, emotionally, and relationally. Introducing creative arts therapy to this medical environment involves infants and their caregivers in a meaningful process to foster connection and provide caregivers with more autonomous options for engaging with their child during hospitalization. Music is often an innate means of connection for infants and caregivers and spans many cultures to represent family traditions, to offer soothing, and to connect as a means of co-regulating communication and presence. The integration of music and medicine when caring for infants has been identified not only as a means of fostering attachment (Ettenberger & Ardilia, 2018) but as a tool used to empower the caregiver during the bonding process with the infant (Menke et al., 2021), offer opportunities for caregivers to explore self-concept and well-being (Roddy et al., 2020), enhance overall sleep patterns in infancy (Anggerrainy, et al., 2019), facilitate soothing, and emotional regulation (Fallek et al., 2020), and provide opportunities for self-expression and creativity (Hendon & Bohon, 2008).

This capstone thesis explores the intervention of music therapy through infant-directed singing, parent engagement in auditory stimuli, eye-contact and physical touch to promote co-regulation techniques, and music as a soothing element during medical procedures. Each of these will be further examined and explained throughout this model as a tool to foster attachment between infants admitted to the NICU for a repeat or extended hospital stay and their caregivers. Over 4 weeks, this music therapy model will include the integration of music within the neonatal intensive care unit to encourage co-regulation techniques, provide stability through procedural support, and explore the impact of infant-directed singing on sociability and coping. The research and observation behind this music therapy model intend to explore the developmental and relational benefits of music therapy for infants in the NICU while considering the nuances,

traditions, and experiences of each patient and family. Additionally, this model will examine the strengths and challenges patients and families present that often influence the quality of care and communication received in the healthcare system, including identity, family dynamic, socioeconomic status, and cultural background.

Despite obstacles premature and medically compromised infants experience, attachment can be fostered through the integration of music intervention and a developmentally stimulating environment that provides opportunities for family bonding experiences. In addition to supporting attachment between infants and caregivers, the model within this thesis project intends to explore the capacity of music intervention to support the caregiver psychosocially.

The intention of this thesis project was not only to examine how music can foster attachment and facilitate bonding experience between infants and caregivers but to shed light on the positive correlations to the overall improvement of patient and family quality of care during hospitalization. Additionally, this project and model strive to provide resources for those treating, caring for, and providing support to families and infants in the neonatal intensive care unit.

### **Literature Review**

Music intervention has been used to promote attachment by increasing bonding experiences, encouraging co-regulation, establishing trust between infants and caregivers, and strengthening coping skills; this practice can be impactful from birth through the entire lifespan (Pasiali, 2014). Within the NICU setting, music and voice have been used to reduce pain perception and provide relief to infants (Jain et al., 2019). This literature review intends to address the evidence-based research behind the creation of exploring a music therapy model to increase attachment and bonding within the NICU setting, as well as a means of procedural support. The articles and studies presented in this section were used to inform the music therapy

method proposed throughout this thesis project. This section will include the relevancy of music therapy theories when working in this population while focusing on fostering attachment.

### **Procedural Support**

In a study conducted by Datta Meghe Institute of Medical Sciences University, the impact of music and vocal intervention as pain relief was observed in newborn babies (Jain et al., 2019). During this study, music and voice were integrated to study the impact on vocalization while newborns underwent their vaccinations. Out of a total of fifty newborn participants, the first group was vaccinated without any musical intervention while the second group was provided with instrumental music (Jain et al., 2019). The conclusion drawn from this study was that music therapy played a role in reducing the experience of pain during immunization for the infants within the second group likely due to the “...analgesic effects of music stem from the indirect effect on attention, whereas distraction averts concentration, enabling a slower process of painful stimuli” (Jain et al., 2019, p.1). This information proposes that music intervention could be a useful tool when considering the number of painful procedures infants undergo while supporting the behavioral and neurological outcomes of the child (Jain et al., 2019).

This study also emphasized the importance of offering music intervention as a means of pain control, given that infants in the NICU typically experience a daily average of sixteen pain-inducing procedures that are conducted without many alternatives for pain control (Jain et al., 2019). The method presented within this thesis project is supported by Jain’s research study, as the mentioned use of lullabies to increase weight and decrease oxygen desaturation, discomfort, and overall hospitalization is highly recommended throughout (Jain et al., 2019).

Infants are impressionable beings who are often constantly seeking to interact with others and their surroundings. The integration of procedural support through music therapy can support

attachment and ease the overall distress of the infant (Malloch et al., 2012). Within the article, Malloch enumerates the importance of optimizing an infant's opportunity for social engagement, as infants admitted to the NICU often experience fewer opportunities for developmental stimulation than infants who are not hospitalized (Malloch et al., 2012). By offering live music therapy experiences, hospitalized infants are provided with a social opportunity to engage in positive sensory experiences and face-to-face interactions with those in their environment.

While conducting a study at Royal Children's Hospital Melbourne, researchers found that providing music therapy intervention to infants hospitalized in the NICU benefitted their neurobehavioral development as these infants showed stronger self-regulation skills and appeared to experience less agitation during face-to-face interactions and handling (Malloch et al., 2012). This information is critical when facilitating opportunities for bonding and attachment between infant and caregiver, as handling and physical transitions can cause distress for infants. Opportunities for an infant to be held or transitioned by a caregiver can be supported through music to decrease the infant's level of agitation and provide the infant and caregiver opportunities for social engagement which is important for attachment (Malloch et al., 2012).

When considering the benefits and outcomes of procedural support through music therapy, it is important to differentiate between music medicine and music therapy. As mentioned in the article by Drs. Yinger and Gooding, board-certified music therapists, and as defined by the American Music Therapy Association, music therapy should be understood as, "...the use of music interventions by a credentialed music therapist to accomplish an individualized goal within a therapeutic relationship" (American Music Therapy Association, 2005, heading). While music medicine is described as, "...passive listening to pre-recorded music by medical personnel..." (Bradt, Dileo & Shim, 2013, [Abstract]). Additionally, music medicine would not



involve the patient's preferred music choice and would likely require listening through headphones exclusively (Yinger & Gooding, 2015).

### **Infant-Directed Singing**

Each family comes from a different cultural and socioeconomic background. These families often experience different work and life schedules, routines, family dynamics, and challenges. While families whose infants are admitted to the NICU have their child's location and medical condition in common, what brought them to this point in life and how they navigate it as a family might be incredibly different. From the infant's perspective, staying in an environment for a long period that may be loud, invasive, and potentially distressing is challenging. Developmentally, these infants might experience delayed milestones and high sensitivity due to their lack of typical socialization and bonding experiences they might have outside of the hospital (Ullsten et al., 2018). While these barriers seem overwhelming at times for infants and their caregivers, there are multiple ways to engage in positive sensory and biopsychosocial experiences with an infant admitted to the NICU to offer developmental support.

In an article describing a theoretical approach to support an infant with pain management, infant-directed singing is described as a means of multisensory and biopsychosocial communication between caregivers and infants that decreases the child's risk of overstimulation during handling, transition, bonding, and overall coordination of medical intervention (Ullsten et al., 2018). While utilizing infant-directed singing throughout the method being developed in this thesis project, it has become evident that caregivers respond in a variety of ways, ranging from feeling unmotivated musically to joining in and singing to their infant during a music therapy session. Ullsten's study (2018) emphasized the positive impact of infant-directed singing when facilitated alongside caregivers, stating that caregivers should be

encouraged to engage their children by providing them with a nonpharmacological form of pain management, social communication, and emotional regulation that supports attachment and family bonding (Ullsten et al., 2018).

### **Understanding and Building Co-Regulation Skills**

Music provides a path towards bonding that is unique to each family to support healthy attachment and engagement through co-regulation skills. Co-regulation can be understood as a response or interaction that demonstrates support and acknowledgment of another person's expression, thoughts, or feelings (Gillespie, 2015). The development of self-regulation begins during infancy and can be supported throughout an individual's life through the practice of co-regulation as they are often dependent on their caregivers to grasp this concept (Gillespie, 2015). Much like the different perceptions of music provided through one's background, the nuances of co-regulation are prevalent cross-culturally and should be considered when caring for infants and caregivers through music therapy as well as when conducting culturally relevant research (Buhler-Wassmann & Hibel, 2021). For both researchers and music therapy clinicians alike, it is important to consider the multifaceted lives of caregivers and families at large. Each family member serves both individual and familial roles within their environment, including social, financial, political, and personal identity factors (Buhler-Wassmann & Hibel, 2021).

As this thesis project seeks to provide an intersectional music therapy model exploring attachment, the research provided by Buhler-Wassmann and Hibel highly informs the writing and theoretical approach to the music therapy model being conducted. Buhler-Wassmann and Hibel (2021) highlight the conceptual understanding of co-regulation through a multidimensional and multicultural lens by offering the perspective that, "...caregivers responses to infant demands are not just reflective of stable caregiving behaviors, but the dynamic pressures and supports a

family experiences moment-to-moment, day-to-day, and year-to-year” (p.3) To further support the perspective of emotional regulation and co-regulation varying across cultures, Lavelli et al. (2019) proposed the study of mother-infant pairs from three separate cultural backgrounds through observation of behaviors, communication, and affection suggesting that there are multiple, culture-specific ways to navigate co-regulation outside of the westernized approach.

### **Music as Bonding**

When music is introduced to a child during infancy, whether recorded or sung, the opportunities to create a ritual of bonding become natural between caregiver and infant, providing engagement and stability, while fostering connection through shared musical experiences. Music therapist and educator Amy Clements-Cortés reflected on the integration of music and her infant daughter's daily routine while discussing how music not only creates bonding experiences widely accepted by society but impacts the forming of attachment (Clements-Cortés, 2020). Clements-Cortés included musical attributes of attachment and bonding from creative arts therapist Elizabeth Schwartz, which include, “...shared focus and attention engaged by music, rhythmic entertainment promoting mutual movement and regulation of emotions, and the musical structure that fosters expectation...” (Schwartz, 2016, as cited in Clements-Cortés, 2020, p. 48). In this form of fostering attachment and bonding through music, caregivers and infants can be provided with music as the catalyst to cultivate attachment and engage in co-regulation.

When experiencing extended hospitalization of an infant, caregivers are often in need of support in unconventional ways that do not involve decision-making and can aid in relieving stressful situations, providing caregivers the opportunity to relax and inviting them to step away from the pattern of medically complex care conversations. Providing families with the

opportunity to engage in music therapy alongside their infant facilitates the opportunity for caregivers to experience normalcy and a moment of connection with their child. This not only engages caregivers in reclaiming their control and perception of being a caregiver to their infant (Ames et al., 2011) but increases the overall well-being of the infant, as studies show the positive developmental impact on infants and emotional health improvement of caregivers when engaging in shared art-based experiences (Menke et al., 2021). The intention of this intersectional music therapy model exploring attachment within the neonatal intensive care unit over four weeks is informed by the research stated above that includes, but is not limited to the use of procedural support through music therapy, music as co-regulation, the positive impact of songwriting with caregivers of hospitalized infants, and the multicultural nuances to attachment theory at large.

### **Method**

The purpose of this study is to explore how music therapy impacts infant and caregiver relationships and how this modality serves as a catalyst for bonding experiences and promoting attachment. With this method, existing attachment styles, and family dynamics were observed as music therapy was integrated into the patient's weekly routine to facilitate connection, decrease pain perception and promote the overall well-being of the infant and caregiver. While supporting infants and caregivers through procedural support, infant-directed singing, and modeling co-regulation skills, this model follows a process of building rapport, establishing trust, supporting and advocating for individual infant and caregiver needs, while utilizing music intervention as the driving force of fostering attachment.

## **Observation of Infants and Caregivers**

This method involved the observation of infants admitted to the NICU due to prematurity or bronchopulmonary dysplasia (BPD), their caregivers, and the overall care team on the unit. Infants within the setting are likely to experience invasive procedures, intense sensory stimulation, and are at risk for overstimulation due to high levels of noise, discomfort due to handling, and medical equipment (Slusher & McClure, 1992, p. 1). Patients were referred by a member of their care team to begin music therapy services. Providing music therapy services within this environment involved receptive music listening, active music-making, multisensory stimulation, and infant-directed singing with preferred music to build rapport with infants and caregivers during weekly music therapy sessions. A typical reason for referral involving an infant patient and their caregiver may include but are not limited to a terminal diagnosis, traumatic event, pain management, agitation, high anxiety, complicated, recent, or anticipatory grief, appearing withdrawn, significant change in condition, palliative care, poor coping, the potential for extended or repeat hospitalization, perceived isolation, procedural support, new diagnosis, sensory exploration or regulation, developmental support, or caregiver request.

## **Background Information**

After understanding the reason for referral, the method begins by getting to know the patient and family while considering multicultural, personal, and biopsychosocial aspects of the family's life. Upon meeting the family and introducing music therapy services, caregivers were provided with the option to engage in music therapy alongside their child, step away if needed, or simply observe at the bedside as music intervention was provided to the patient. As this method strived to provide caregivers and infants opportunities to connect, it was important to allow the caregivers to make decisions that would aid in supporting their child as the primary

caregiver while also gradually encouraging caregiver participation to optimize opportunities for bonding. This method strived to integrate caregiver education of musical intervention and viewed caregivers as collaborators within the session in order to optimize positive experiences for infant and caregiver engagement and promote continual family bonding (Rolvsjord, 2010).

### **Procedural Support**

Infants experience multiple hands-on procedures throughout their day as well as routine assessments that might involve handling the patient and creating disturbances. This method involves the use of music intervention to aid in creating a calm environment for the infant and caregiver by providing live music during procedures to reduce the infant's perception of pain or discomfort and promote normalization of the hospital environment. Procedural support can be provided in a variety of ways throughout the hospital. Procedural support is often provided when a patient or caregiver needs support during a bedside procedure. Music therapy procedural support can be understood as, "...the use of music interventions by a board-certified music therapist to decrease distress (e.g., pain and anxiety) and promote coping during medical procedures" as defined by the American Music Therapy Association (Gooding et al., 2021, p.1). While receiving a cranial ultrasound, an infant was held by their mother during the session. A cranial ultrasound with an infant can cause discomfort due to positioning and the challenge of the infant remaining still. As the mother held her child, carefully assisting the medical team with positioning, the music therapist collaborated with the caregiver and medical team by facilitating gentle guitar playing and engaging with the infant through singing.

Throughout the procedure, the infant remained calm and comfortable during handling evidenced by calm facial affect and engaging in eye contact with the mother as she verbally comforted the patient. The infant was transitioned back to their crib as the music therapist continued to provide

gentle guitar playing, resulting in the infant falling asleep. Following the procedure, the medical team noted the infant's natural inclination to music and its ability to provide soothing throughout the scan. Through observation and integration of existing data, infants are more likely to achieve regulation and experience comfort when utilizing vocalizations in tandem with a gentle touch to soothe infants during medical procedures (Jain et al., 2019, p. 3).

### **Infant-Inclusive, Infant-Contingent, and Infant-Directed**

As singing presents as an innate means of engagement and communication between many infants and their caregivers (Malloch et al., 2012, p. 396), throughout this method the use of infant-inclusive and infant-contingent singing became a regular tool to encourage caregiver participation and create a circular pattern of engagement with the infant. Infant-directed singing can be understood as "...multisensory, biopsychosocial, communication..." (Ullsten et al., 2018, p. 1) provided by the caregiver to the infant or the music therapist to the infant.

The central characteristics of this technique are indicated when working with infants to promote co-regulation and communication between infant and caregiver (Ullsten et al., 2018, p.1). As written by Malloch et al. (2021) this technique does not fully encompass the "... cooperative and shared nature of the interaction" (p. 388) and can be understood as one-way communication. In contrast, the technique of infant-inclusive singing involves the unprompted, spontaneous communication between infant and caregiver (Malloch et al., 2012, p. 388). Within this method, the use of infant-inclusive singing was utilized following the use of infant-contingent singing. Infant-contingent singing can be understood as intentional communication and engagement facilitated by the music therapist (Malloch et al., 2012, p. 388).

**Table 1***Understanding Infant-Directed, Infant-Inclusive, and Infant-Contingent Singing*

| <b>Infant-Directed</b>   | <b>Infant-Inclusive</b>  | <b>Infant-Contingent</b>   |
|--|--|--|
| <ul style="list-style-type: none"> <li>● Multisensory</li> <li>● Biopsychosocial</li> <li>● Form of Communication</li> </ul> | <ul style="list-style-type: none"> <li>● Multisensory</li> <li>● Biopsychosocial</li> <li>● Form of Communication</li> </ul> | <ul style="list-style-type: none"> <li>● Multisensory</li> <li>● Biopsychosocial</li> <li>● Form of Communication</li> </ul> |
| <b>Caregiver or Music Therapist intentionally communicating with infant</b>  | <b>Caregiver and infant spontaneously engaging in communication together</b>   | <b>Music Therapist and infant intentionally engaging in communication together</b>   |

*Figure 1. Understanding Infant-Directed, Infant-Inclusive, and Infant-Contingent Singing*

(Source: Jordan-Lake, March 2022)

The role of the music therapist involves modeling infant-directed singing techniques for caregivers in order to provide families resources with a nonpharmacological intervention to soothe their child when experiencing pain or agitation. Each music therapy session began with the clinician consulting the caregiver if they appeared at the bedside. This check-in typically consisted of gathering information on caregiver and infant coping and inquiring whether they felt music therapy at the current time would be appropriate.

Following this check-in, the music therapist would begin the session by acknowledging the infant and singing a “hello song”, often used in music therapy practice to begin the session based on the type of population, and greet those participating in the session. Within this specific method, the original hello song used included the infant’s name, and a directive to introduce music into the session.



**Figure 2***Hello Song: Example 1*

**Hello Song 1**

Hello, \_\_\_\_\_  
baby's name

Hello, \_\_\_\_\_  
baby's name

Hello, \_\_\_\_\_  
baby's name

It's good to see you today.

Hello, \_\_\_\_\_  
baby's name

Hello, \_\_\_\_\_  
baby's name

Hello, \_\_\_\_\_  
baby's name

It's time for music today.

*Figure 2.* Hello Song 1 (Source: Jordan-Lake, March 2022)

An additional hello song to introduce music to infants in the session described elements of the patient's environment such as their caregiver in the room, the weather, colors or toys in the room, or their blankets and clothing.



and hopeful eventual discharge to their home (Loewy et al., 2020, p. 6). Based on this information, the music therapist utilizes their primary instrument or instrument specified by the family to provide a consistent chord progression within a chosen key throughout the entirety of the session.

The music therapist will engage the infant visually and musically, offering gentle instrument playing paired with infant-contingent singing. Derived from a Creative Music Therapy (CMT) method, this method integrated musical responses by mirroring the infant's vital signs, emotions, and movement to reach rhythmic synchronization, also known as entrainment (Martin, 2012, p. 49-56) and overall attunement. Based on the caregiver's choice to participate or observe, the clinician will provide the caregiver with opportunities to engage with their infant through vocalizing, holding if medically appropriate, providing hand over hand support to play an instrument, or offering gentle touch to facilitate multisensory stimulation. As the session begins to conclude, the music therapist offers a goodbye song, mimicking the introduction song to indicate the expectation that the session is ending and incorporating early communication skills of teaching hello and goodbye.

Over a 4-week study observing infant attachment and family dynamics through music intervention, data was collected via written documentation following each session. Within the data collected, patient medical status, level of engagement, treatment goals, level of sedation, and vitals were recorded while documenting significant changes and medical or developmental progress. This information also included information regarding the caregiver's interactions, presence in the room, their report on the infant, and overall coping each week. When reflecting on the data recorded, the information provided by the patient's medical team and additional providers were integrated into the organization process. Information provided by a patient's

therapy team of occupational, physical, respiratory, speech and language therapies informed the level of engagement and mobility the patient would likely present during music therapy sessions due to their interdisciplinary goals.

Additional considerations documented in session by written record included caregiver report, infant's response to music, infant's response to the caregiver while engaging in music therapy. This music therapy model seeks to provide opportunities for the family through a four-step model that begins in the early stages of understanding the family and intends to empower the caregiver(s) to continue facilitating attachment using music intervention.

**Table 1**

*Considerations for Music Therapy Method*

| <b>Building Rapport</b>                             | <b>Establishing Trust</b>                                   | <b>Support/Advocacy</b>  | <b>Empowerment</b>   |
|---|---|--|--|
| Gathering background information to inform approach | Prioritize family's schedule and offer flexibility          | Check-in with the caregiver to identify needs                                  | Discuss caregiver comfort with music/vocalizing                  |
| Introduce and Identify (self and clinical role)     | Consistency with treatment                                  | Be observant and speak up when concerns arise                                  | Model instrument playing, vocalization, infant-inclusive singing |
| Person first approach                               | Offer choices   | Provide weekly music therapy sessions  | Encourage participation  |
| Provide flexibility                                 | Receptive to caregiver preferences using clinical knowledge | Collaborate with the treatment team to support family                          | Provide resources for infant developmental instruments           |
| Create time and space for caregiver expression      | Creating time and space for caregiver expression            | Attend psychosocial rounds to gather and relay information to treatment teams. | Include caregivers in the termination process with infants       |

*Figure 1. Considerations for Music Therapy Method (Source: Jordan-Lake, March 2022)*

## Results

While reviewing documentation of music therapy sessions, it was noted that caregivers often utilize music in their infant's room during hospitalization to encourage sleep and provide infants with distraction when unable to be at the bedside. When presented with the option to engage their child in live-music experiences parents often acknowledged their preference for music therapy to support their child developmentally and socially. Caregivers of infants receiving weekly music therapy appeared to cope well throughout hospitalization as their child engaged in music therapy sessions, evidenced by verbal expression and recognition of the infant's ability to soothe and their increased engagement during music therapy. Additionally, the integration of infant-directed singing appeared to be an effective form of engagement to reduce overstimulation (Ullsten et al., 2018). Infants who received music therapy during procedural support tolerated handling throughout the medical procedure and appeared to remain calm throughout, evidenced by decreased heart rate, engagement with caregiver or music therapist, and by a verbal report from the medical team.

Caregivers of infants receiving weekly music therapy appeared to cope well throughout hospitalization as their child engaged in music therapy sessions, evidenced by verbal expression and recognition of the infant's ability to soothe and their increased engagement during music therapy. Throughout this music therapy method and observation, each caregiver's perception of their child's level of care and need for engagement appeared to differ based on experiences and cultural background. By facilitating opportunities for the caregiver to participate in infant-inclusive singing and co-regulation as the infant receives a bedside procedure, this model exemplified the positive implications of music mentioned by Jain et al, 2019, to decrease the perception of pain and promote relaxation and stabilize vital signs (Jain et al., 2019).

Throughout this method, infants were provided with live music engagement as well as positive multisensory experiences to promote stimulation vital to their overall development (Malloch et al., 2019). Additionally, it was observed that the role of the caregiver appeared to be recognized differently when participating in music therapy sessions than when engaging with medical staff. Evidenced by caregiver reporting, this music therapy model appeared to be an effective intervention to engage the infant, facilitate bonding experiences between infant and caregiver, and promote the overall well-being and mental health of the caregiver during their infant's hospitalization.

### **Discussion**

This music therapy method is intended to explore how music can assist caregivers in the neonatal intensive care unit (NICU) with the facilitation of attachment, using music as co-regulation. Additionally, due to existing research on attachment difficulties between premature infants and their caregivers in the NICU, this method modeled what infant-inclusive singing looks like through: a) the music therapist building rapport with the family of the hospitalized infant b) the music therapist establishing trust with the family c) the music therapist supporting the family through the provision of weekly music therapy sessions and advocating for the child's social/emotional needs, and d) empowering the caregiver to carry out techniques from hospitalization into the family's daily routine at home.

As mentioned by Buhler-Wassmann and Hibel (2021), "Though the co-regulation process is shared among humans, how caregivers co-regulate will be different based on sociocultural experiences" (p. 4). This research depicts the importance of not only understanding the nuances of what it means to co-regulate across cultures but the psychological impacts of culture when it comes to the perception of family relationships (Buhler-Wassmann & Hibel, 2021). When

reflecting on this method and the research observed, this method highlights the importance of considering the unique and individualized method that each family creates as a reflection of their lived experiences in addition to their cultural and social norms (Lavelli et al., 2019).

As it is often assumed that the provider and therapist is the expert when providing for caregivers and infants experiencing extended or repeat hospitalization, it is important for the clinician to be aligned with the ideology that the caregiver of the infant is also an expert themselves (Gaden et al., 2021). This model strives to encourage caregivers to retain the developing expertise to soothe, comfort, and connect with their infant post-hospitalization through musical intervention and engagement. The clinician and the caregiver share a joint responsibility “...forming a shared goal for a session, finding ways to work together with the infant, and evaluating how these efforts have gone (Rolvsjord, 2010, as cited in Gaden et al., 2021, p.113). As the caregiver is provided with the tools and knowledge to carry out music intervention to foster attachment with their infant, the therapeutic intervention is carried out during the session and integrated into the family’s life to promote wellness throughout the child’s development.

## References

- Alexandra, U., Mats, E., Klässbo, M., & Ulrik, V. (2018). Singing, sharing, soothing – biopsychosocial rationales for parental infant-directed singing in neonatal pain management. *Music & Science*,  
<http://dx.doi.org.ezproxyles.flo.org/10.1177/2059204318780841>
- American Music Therapy Association (2014). What is music therapy? Retrieved from  
<http://www.musictherapy.org/about/musictherapy/>
- Ames, K. E., Rennick, J. E., & Baillargeon, S. (2011). A qualitative interpretive study exploring parents' perception of the parental role in the pediatric intensive care unit. *Intensive & Critical Care Nursing*, 27(3), 143-50. doi:<http://dx.doi.org/10.1016/j.iccn.2011.03.004>
- Beer, L., & Lee, K. V. (2017). Music therapy and procedural support: Opportunities for practice. *Music and Medicine* 9(4). <http://dx.doi.org/10.47513/mmd.v9i4.515>
- Bradt, J., Dileo, C., & Shim, M. (2013). Music interventions for preoperative anxiety. *The Cochrane database of systematic reviews*, (6), CD006908.  
<https://doi.org/10.1002/14651858.CD006908.pub2>
- Buhler-Wassmann, A. C., & Hibel, L. C. (2021). Studying caregiver-infant co-regulation in dynamic, diverse cultural contexts: A call to action. *Infant Behavior and Development*, 64. <https://doi-org.ezproxyles.flo.org/10.1016/j.infbeh.2021.101586>
- Clements-Cortés, A. (2020). Music and Parent-Child Attachment and Bonding. *The Canadian Music Educator*, 61(3), 48-50.  
<https://ezproxyles.flo.org/login?url=https://www.proquest.com/scholarly-journals/music-parent-child-attachment-bonding/docview/2481266594/se-2?accountid=12060>



- Gaden, T. S., Ghetti, C., Kvestad, I., & Gold, C. (2021). The LongSTEP approach: Theoretical framework and intervention protocol for using parent-driven infant-directed singing as resource-oriented music therapy. *Nordic Journal of Music Therapy*, 1–26.  
<https://doi-org.ezproxyles.flo.org/10.1080/08098131.2021.1921014>
- Ghetti, C. M. (2012). Music therapy as procedural support for invasive medical procedures: Toward the development of music therapy theory. *Nordic Journal of Music Therapy*, 2(11), 3-35. doi:10.1080/08098131.2011.571278
- Gillespie, L. (2015). It Takes Two: The Role of Co-Regulation in Building Self-Regulation Skills. *YC Young Children*, 70(3), 94-96.  
<https://ezproxyles.flo.org/login?url=https://www-proquest-com.ezproxyles.flo.org/scholarly-journals/takes-two-role-co-regulation-building-self-skills/docview/1789785777/se-2?accountid=12060>
- Jain, A., Upadhyay, K., & Lakhkar, B. (2019). Music therapy in neonates for procedural pain. *Journal of Datta Meghe Institute of Medical Sciences University*, 14(6), 83.  
[https://link.gale.com/apps/doc/A637648785/AONE?u=les\\_main&sid=bookmark-AONE&xid=8b7f5bba](https://link.gale.com/apps/doc/A637648785/AONE?u=les_main&sid=bookmark-AONE&xid=8b7f5bba)
- Lavelli, M., Carra, C., Rossi, G., & Keller, H. (2019). Culture-specific development of early mother-infant emotional co-regulation: Italian, Cameroonian, and West African immigrant dyads. *Developmental Psychology*, 55(9), 1850–1867.  
<https://doi-org.ezproxyles.flo.org/10.1037/dev0000696>
- Malloch, S., Shoemark, H., Črnčec, R., Newnham, C., Paul, C., Prior, M., Coward, S., & Burnham, D. (2012). Music therapy with hospitalized infants-the art and science of

- communicative musicality. *Infant Mental Health Journal*, 33(4), 386–399.  
<https://doi-org.ezproxyles.flo.org/10.1002/imhj.21346>
- Martin, C. (2012) 'What is entrainment? Definitions and applications in musical research.', *Empirical musicology review.*, 7 (1-2). pp. 49-56.
- Menke, B. M., Hass, J., Diener, C., & Pöschl, J. (2021). Family-centered music therapy—Empowering premature infants and their primary caregivers through music: Results of a pilot study. *PLoS ONE*, 16(5), 1–18.  
<https://doi.org/10.1371/journal.pone.0250071>
- Palazzi, A., Meschini, R., & Piccinini, C. A. (2021). NICU music therapy affects maternal mental health and preterm infant’s emotional arousal. *Infant Mental Health Journal*, 42(5), 672. <https://doi-org.ezproxyles.flo.org/10.1002/imhj.21938>
- Pasiali, V. (2014). Music therapy and attachment relationships across the life span. *Nordic Journal of Music Therapy*, 23(3), 202–223.
- Punamäki, R., Vänskä, M., Quota, S. R., Perko, K., & Diab, S. Y. (2020). Vocal emotion expressions in infant-directed singing: The impact of war trauma and maternal mental health and the consequences on infant development. *Infant & Child Development*, 29(3), 1–23. <https://doi-org.ezproxyles.flo.org/10.1002/icd.2176>
- Rolvjord, R. (2010). *Resource-oriented music therapy in mental health care*. Barcelona Publishers.
- Schwartz, E.K. (2016). Strengthening bonding and attachment through mutual music-making for at-risk infants and toddlers. Retrieved from:  
<https://raisingharmony.com/wp-content/uploads/2016/04/NYSAEYC-2016.pdf>

Slusher, I. L., & McClure, M. J. (1992). Infant stimulation during hospitalization. *Journal of pediatric nursing*, 7(4), 276–279.

Yinger, Olivia Swedberg, PhD., M.T.-B.C., & Gooding, Lori F, PhD., M.T.-B.C. (2015). A Systematic Review of Music-Based Interventions for Procedural Support. *Journal of Music Therapy*, 52(1), 1-77.

<https://ezproxyles.flo.org/login?url=https://www-proquest-com.ezproxyles.flo.org/scholarly-journals/systematic-review-music-based-interventions/docview/1721982924/se-2?accountid=12060>

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Thank you for the music, the songs I'm singing  
 Thanks for all the joy they're bringing  
 Who can live without it? I ask in all honesty  
 What would life be?  
 Without a song or a dance, what are we?  
 So, I say thank you for the music  
 For giving it to me

***THESIS APPROVAL FORM***

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In the judgment of the following signatory this thesis meets the academic standards that have been established for the above degree.

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