

### **STRUCTURED MUSIC ACTIVITIES**

Providing infants and toddlers with opportunities to explore and immerse themselves in a variety of environments and experiences is an ever-increasing aim for those concerned with child development. Children learn through the social and communicative exchanges with their peers and caregivers throughout each day. Simultaneous cross-domain learning occurs when children interact in various activities.

Structured music activities help a child process multiple sensory inputs. For example, a song traditionally seen as a movement activity actually requires a child to process visual input from a peer or adult model, auditory input from the music source, receptive language to decode directions in the song, cognitive functioning to enable decision making, expressive language to communicate within the activity, emotional regulation to remain engaged, and kinesthetic inputs to implement the motor skills demonstrated in the activity. Much research supports the multisensory learning paradigm that learning-rich environments provide to children. Illuminating the multiple learning areas extended to infants during music activities strengthens the developmental impact of music intervention. Music therapists, early childhood music educators, and childcare providers can all provide developmentally appropriate music interactions for infants and children and also can share these experiences with the families of the children.

### **MUSIC THERAPY**

Many people ask what separates music therapists from musicians leading songs and groups. As a profession, music therapy is defined as “the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program. Music Therapy is an established health profession in which music is used within a therapeutic relationship to address physical, emotional, cognitive, and social needs of individuals” (American Music Therapy Association, 2012). Within the early childhood setting, music therapists draw on their training to identify and address needs of children of all ability levels and their family systems to increase their developmental progress over time (Knight, 2010). Knight explains that overlapping can occur among music therapists, music educators, and community music professionals pertaining to children served, music curricula used, and musical backgrounds. This overlapping enables music therapists and related professionals to work alongside each other in exposing young children to the many benefits of music listening, interactions, and interventions.

Within early intervention settings, music therapy is a related service that targets need areas for children including cognitive development, hearing ability, motor skills, receptive and expressive language, self-regulation skills, social-emotional skills, and visual skills (Humpal & Colwell, 2006). Pederson and Reuer (2010) found that functional skills in motor, language, and social areas increased for at-risk children ages 0–3 who attended the “Sound Minds” music therapy groups with their caregivers. For kindergarteners, phonological memory and metacognitive abilities were increased for students participating in a music therapy program led by a music educator versus students participating in the standard music education program (Bolduc, 2009). Hanson-Abromeit (2011) identified seven therapeutic functions that music serves for infant language development:

1. melodic contour to regulate attention;
2. rhythm as a sensory organizer;
3. style and tonality to support cultural familiarity and context;
4. form and tempo to regulate emotion;
5. pitch to encourage vocalizations, reciprocal and therapist initiated;
6. dynamics to organize sensory integration; and
7. lyrics to facilitate language (gestures, intentional babbling, and words).

One explanation for why music interactions enhance developmental skills for young children is that the mirror neuron system is activated during shared musical experiences (Overy & Molnar-Szakacs, 2009). The Shared Affective Motion Experience model posits that expressive motor acts are heightened through the imitation, synchronization, and shared experiences that naturally occur through music interactions. After reviewing the recent early childhood literature, LaGasse (2011) postulates that music interactions have the ability to alter the young child’s developing brain to allow acquisitions of new skills, due in part to the brain’s plasticity at the infant stage.

#### **DEVELOPMENTAL SKILLS AND DOMAINS**

Children are commonly drawn to music activities and willingly engage in musical play. Just as adults commonly listen to music while exercising or working to increase their enjoyment while completing tasks, children who are having fun at music time are learning and practicing important skill development without realizing they are “working.” With the knowledge that music does positively impact developmental learning areas such as reading and literacy skills for pre-K and school-aged children (Standley, 2008), it stands to reason that early music can have an impact on developmental learning for infant and toddlers in the following areas.

### ***Social Skills***

When exploring the evolution of music, researchers have focused on music's ability to reinforce social bonds (Balter, 2004). Music can teach social skills by encouraging interaction through directions in the lyrics, by taking turns playing instruments, and by telling stories in the music (Gourgey, 1998). To investigate the ecological impact on music play behaviors, Littleton (1991) observed preschool children in a music-specific play area and non-music house play setting. When the children played in the music setting, more functional and constructive play was observed, whereas children who played in the house setting engaged in more dramatic play. Music therapy groups targeting social skill acquisition for infants 0–3 with their caregivers were successful in increasing skill levels for the infants (Nicholson, Berthelsen, Abad, Williams, & Bradley, 2008; Pederson & Reuer, 2010; Walworth, 2009).

### ***Cognitive Skills***

Cognition is addressed in all music therapy interventions for young children when a child is integrating the words in the songs, movements, playing instruments, and observing their surroundings. Very young children demonstrated improvement after engaging in the current program (Standley, Walworth, Nguyen, & Hillmer, 2011). Targeting gains for clients in cognitive goal areas is recommended for all early childhood music therapists (Wellman, 2011).

### ***Language and Communication Skills***

Language and communication permeate all goal areas. Communication and language skills have improved for various age groups participating in music interactions (Nicholson et al., 2008; Register, 2001; Schwartz, 2008; Standley, Walworth, & Nguyen, 2009).

### ***Motor Skills***

Motor skills are addressed within music therapy sessions when children dance, play instruments, and move around the environment. Children have shown improvement in their motor skills after exposure to music therapy groups (Pederson & Reuer, 2010; Standley et al., 2009).

## **FACTORS THAT IMPACT CAREGIVER AND INFANT INTERACTIONS**

A large body of research has focused on the impact of maternal interaction on infants' development. Maternal responsiveness, play behaviors, affect, depression, joint attention, and synchrony with their infants have all been investigated. Research continues to show that mothers and other caregivers have a very large impact on the developmental outcome of a child.

For example, variations in the onset of language for infants are linked to variations in the amount of symbol-infused joint engagement seen between mothers and infants (Adamson & Bakeman, 2004). When parents placed a target item within their 6-month-

old infant's visual field, a significant number of infants were able to match the parent's direction of gaze toward the object, but were not able to do so when the target object was placed out of the infant's visual field (Morales, Mundy, & Rojas, 1998). These findings indicate that some infants develop important socialization joint attention skills as early as 6 months old when interacting with a parent.

A large sample of 111 mother–infant pairs was investigated by Laakso, Poikkeus, Eklund, and Lyytinen (1999) to assess 14-month-old children's symbolic play competence and early social interactional behaviors. Results indicated that an infant's social attention coordination serves as a prerequisite for expressive language, and maternal interactional strategies have a positive influence on symbolic play behaviors. Both aid in later language development for the infant.

### CAREGIVER MOOD STATE

Mothers suffering from a depressed mood state may not only impact interaction with their infants, but may also influence how their infants interact with other individuals in their environment. When 112 infants were assessed at 15 months, infants with chronically depressed mothers performed significantly lower on motor and cognitive tests compared to infants whose mothers were not depressed (Cornish et al., 2005). However, early language scores were not affected by maternal depression.

In a sample of 260 infants, differences in infant development between infants whose mothers showed depressive symptoms versus infants born to mothers without depressive symptoms were measured with mental and motor scores at a 12-month follow-up after mothers were randomly assigned to the control or intervention group (Field et al., 2000). Intervention groups consisted of maternal relaxation therapy, music mood induction, massage therapy, and mother–infant coaching. Mothers in the intervention group showed significantly improved interactions, biochemical values, and normalized vagal tone. Infants whose mothers were in the intervention group also demonstrated more positive maternal interaction, better growth, and normalized biochemical values. At the 12-month follow-up, they had higher mental and motor scores than infants in the control group.

The importance of maternal–infant bonding has been established and such bonding can be facilitated by music therapy interventions (Edwards, 2011). Music therapy interventions can address what Register (2011) identifies as three fundamental goals for caregiver–infant interactions:

1. providing children and their families with support for safe, secure, and appropriate attachment to one another;
2. modeling situations for children to self-regulate and cope with change; and
3. offering play-based opportunities for families, particularly young children, to communicate in meaningful, positive ways.

Parents who have difficulty forming healthy attachments with their children are able to learn observation skills to increase their ability to read and respond to their child's

emotional cues (Betz, 2011). Music provides a safe and nurturing environment for parents who are practicing new interaction styles with their infants and young children.

### **PREMATURITY/LOW BIRTH WEIGHT**

The preterm birth rate has risen by roughly 30% since the late 1980s and currently no evidence indicates that the premature birth rate will decline in the future (Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2008). Therefore, for children born prematurely who are at risk of developmental delays, identifying effective interventions targeted at increasing developmental skill achievement is critical. Children born with extremely low birth weight are at risk of developing poorer social skills and adaptive behaviors and having more attention and behavior problems when they are school aged (Msall & Tremont, 2002). Many parents are faced with increased levels of care when their preterm infants come home from the hospital. Donohue (2002) found that most parents of preterm infants adjust well to their change in lifestyle, but some did report having psychological distress for years after their preterm child's birth due to their child's health problems.

Health-related quality of life (HRQL) was measured at preschool age for infants admitted to the Newborn Intensive Care Unit (NICU) and also for their parents (Klassen et al., 2004). Parents reported more worry and stress as well as less time to meet their own needs. Parents of infants admitted to a NICU reported more maladaptation from fathers and need for support during the first year after delivery, as well as more child behavior problems at 3 years of age and less time for themselves due to the intensity of child care than did parents of low-risk and no hospitalization control infants (Rautava, Lehtonen, Helenius, & Sillanpää, 2003).

### **CAREGIVER TRAINING AND SUPPORT**

Parent training programs have had positive effects on premature infant development over time. A Mother-Infant Transaction Program targeting responsiveness of parents to their premature infants has shown favorable results and is low in cost to hospital systems (Nordhov et al., 2010). While their premature infants were still hospitalized, parents were counseled through the emotions of having a preterm infant and were taught specific interaction techniques, the signs of infant distress, and the various behavioral states their infants would cycle through. Infants whose parents completed the in-hospital training and received follow-up visits for the first 3 months following discharge had increased cognitive intelligence scores at 5 years of age.

Because the stresses and challenges faced by children born prematurely and their caregivers, as well as by infants of depressed mothers, are substantial, a community group setting may offer many benefits to them. Attending a developmental music group can provide a supportive network of other parents who are caring for young children. Additionally, the other children attending the group provide peer models of various developmental skills for children at risk for delays.

## **MUSIC AND EARLY INTERVENTION/ EARLY CHILDHOOD SPECIAL EDUCATION**

### **UNIFIED THEORY OF PRACTICE**

Early intervention/early childhood special education (EI/ECSE) programs in every state primarily provide services for infants and preschool children with disabilities and their families. A unified theory of practice is currently supported by the EI/ECSE fields. This theory consists of the following tenets:

1. Families and homes are primary nurturing contexts; strengthening relationships is an essential feature of EI/ECSE.
2. Children learn through acting on and observing their environment.
3. Adults mediate children's experiences to promote learning.
4. Participation in more developmentally advanced settings is essential.
5. Program transitions are enhanced by adults or experiences.
6. Broader ecological contexts influence families and EI/ECSE programs.  
(Odom & Wolery, 2003)

Group music activities can promote each of the tenets of the unified theory through facilitating interaction between caregiver–infant dyads. A group music setting may provide a rich environment for children to act on and explore to promote learning across a variety of developmental domains.

### **LEARNING THROUGH MUSIC**

While there is much literature that discusses the importance of early childhood learning through music for pre-K and elementary-aged children, the literature addressing developmental learning through music for children under the age of 2 is just beginning to emerge. How infants respond to music stimuli is well documented. Simultaneous cross-domain learning for infants among music and language, music and social awareness, or music and motor development is an area needing further investigation. Many music therapists can attest to the fact that infants and toddlers with developmental delays make gains as a result of music therapy intervention in multiple developmental areas such as language, cognition, motor, and social-emotional skills (Abad & Williams, 2007; Nicholson et al., 2008; Pederson & Reuer, 2010; Schwartz, 2008). The development and implementation of Bright Start Music substantiate this premise.

## **BRIGHT START PILOT PROJECT**

The current program was implemented and investigated to determine the impact of music on developmental learning for infants and toddlers. Infants who regularly attended the groups using the current program were compared with infants of the same ages who attended only one time (Standley et al., 2009). Regularly attending infants demonstrated significantly advanced music, cognitive, and social skills. The infants who participated in the targeted program groups clapped in time, moved in time, and played instruments independently. They also followed directions to retrieve and return objects, pointed to their own body parts when named, and performed sign language and other gestures at a significantly higher rate than infants who came to the group only once. Additionally, infants regularly attending the groups shared with others more often, socialized with peers in the group, and responded to other people's names with higher frequency.

A follow-up study with group participants investigated the impact of group involvement on the caregiver infant interaction (Walworth, 2009). All subjects were matched according to developmental age and were also matched by group for socioeconomic status and for maternal depression. Types of infant play and parent responsiveness were measured using observation of a standardized toy play for parent–infant dyads, a demonstrated measurement tool used in similar mother–infant dyad research. The toy play time that was observed occurred at a time other than during the music group. The amount of time caregivers and infants spent in social play versus non-social play was recorded.

The infants attending the music groups using the targeted program's curriculum with their parents demonstrated significantly more social toy play during the standardized parent–infant toy play than infants who did not attend the music groups. While not significant, graphic analysis of parent responsiveness showed parents who attended the developmental music groups engaged in more positive and less negative play behaviors with their infants than parents who did not attend the music groups. Another interesting finding involved the premature infants who attended the music groups. While the amount of their social toy play time was not as great as the full-term infants attending the groups, the premature infants did spend more time in social play than full-term babies who did not come to the music groups. This investigation supported the positive effects a developmental music group can have on social behaviors for both premature and full-term infants under 2 years old. In addition to the studies discussed above, this program was pilot tested in hospital settings for children at risk of developmental delay due to their hospitalization and with children receiving early intervention services in a community setting.