

## SPECIAL TOPIC

Evolutionary and neuro-affective aspects of early communication suggest, "the human capacity for singing, first evident in the sing-song babbling of babies, is an adaptation that facilitates teaching and learning between mother and child" (Panksepp & Bernatsky, 2002). The singing voice evolves and stays with us for life; it is available to us everywhere, anytime. In the realm of the highly dynamic, relational approach known as DIR® (Developmental, Individual Differences, Relationship-based)/Floortime™ (Greenspan & Wieder, 2006), it is certainly musical gold!

Based on my experience and supported by research in the scientific literature, this is a brief view of procedures and rationale for the adult partner's singing voice when applied to a child's challenges in the earliest (four out of six) functional emotional developmental capacities articulated by DIR®, detailed below. Greenspan (2006, chap. 17) considers the earliest four capacities to have particular importance, as embedded in them are many of the most critical building blocks for mental health. Challenges in the earliest capacities often impact joint attention, social engagement and expressive communication, with even minimal signaling posing difficulties.

A transdisciplinary approach developed by Drs. Stanley I. Greenspan and Serena Wieder, DIR® "is a framework that helps clinicians, parents and educators conduct a comprehensive assessment and develop an intervention program tailored to the unique challenges and strengths of children with Autism Spectrum Disorders (ASD) and other developmental challenges." (<http://www.icdi.com/DIR/floortime.shtml>) Assessment is made regarding each of the developmental milestones (capacities) that a child needs for healthy growth: 1.) Shared attention and regulation 2.) Engagement 3.) Two-way purposeful signaling 4.) Long chains of shared problem-solving 5.) Creating representations 6.) Logical thinking. Strongly impacting DIR® interventions is the overarching principle that affect is a critical factor for healthy development; failure of affect to connect a child's sensory perceptions to motor

## Musical Gold: The Partner's Singing Voice in DIR®/Floortime™

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planning, and later to symbols, is seen as the primary neurologically-based compromise in ASD (Greenspan & Shanker, 2004).

Floortime™, one component of DIR®, is carried out in multiple daily sessions of naturalistic play with the parent or caregiver in a developmental-partner's role. Affect is mobilized by following the "child's lead" (interest) and then gradually challenging him or her to successively higher stages. The voice is a natural and powerful medium in this special kind of interactive play. Serena Wieder refers to the value of a prosodic speaking voice clearly dressed with musical riches when she says, "Remember, the voice is probably the most powerful tool you have to cue your child. Whether or not he understands the words, the message comes from the tone and the rhythm and the loudness and the pacing of it." (Greenspan, 2004).

Singing for social communication and regulation in settings with children who have developmental impairments is similar to that which Trehub (2003) describes mothers universally applying in the developmental process with pre-linguistic infants. However, while mothers of typically developing babies use "meaningful melodies" (Fernald, 1990) to propel dyadically-tuned states, children with developmental delays often need to be drawn out from affectless, self-absorbed states. Here, we have reason to value vocal material with heightened impact of pitch (frequency). While Zatorre, Belin, and Penhune (2002) distinguish music processing from speech (the latter requiring left-hemisphere processing of rapid, brief auditory stimuli), research (Gervais et al, 2004) suggests cortical impairment in speech processing in ASD. Importantly, though, there is also evidence for a heightened ability for pitch processing in ASD (Heaton, 2003). This combination - impairment in speech processing and strength in pitch - bodes well for singing as a medium of intervention which offers slower, more defined spectral information that evidently "gets through" and that retains some common elements of both speech and music.

Further support for the power of the singing voice for these early social dynamics comes from research by Porges and Lewis (in press). According to them, evolutionary shifts in the vagus (the primary parasympathetic cranial nerve regulating visceral states) brought reciprocal vocalizations into a privileged role; Along with facial expressions, head movements and listening, vocalized intonations are thought to actually trigger the social engagement system and evolve there in the service of regulation. Interventions designed with these principles in mind could hypothetically "enhance social behavior, facilitate state and affect regulation, reduce stereotypical behaviors, and improve vocal communication, including both prosody in expressive speech and the ability to extract human voice from background sounds." (Porges, in press).

In Floortime™, I encourage drawing stylistically from an expanded vocal model, including a.) Highly prosodic speech b.) Monotonic unmeasured chant c.) Multitone rhythmic chant d.) Non-speech vocalizations (animal and environmental sounds, clicks, sighs, etc.) e.) Musical babble f.) Orchestration g.) Recitative-like speech/song h.) Melodic phrases and full songs from the child's musical culture h.) Improvised phrases and songs i.) Light-hearted melodic patterns that highlight "building blocks of music" from just-sung tunes (Reynolds, Valerio, Bolton, Gordon, & Taggart, 1998).



Photograph  
"Where's the treasure, do you know, is it high or low?"  
Mom was singing with pivotal DIR®/Floortime principles and

continued

tools to help her gain advance from repetitive, self-absorbed puzzle play through the first four developmental milestones and into a joyful, interactive game. The power of singing (fostering attention, stimulating engagement and evoking spontaneous vocal participation) is magnified when following his lead and joining his play, meaningful gestures coordinated with sound, face-to-face high affect, and "playful obstruction" (holding his desired puzzle piece in one of her hands).

training, there is flexibility on many levels for such use, ranging from "ordinary" singers whose emergent voices can be supported by basic physical adjustments and stylistic choices, to those with considerable pastime or professional experiences who might, for example, be able to name the benefits of "center

Panksepp, J., Bernatsky, G. (2002). Emotional sounds and the brain: The Neuro-affective foundations of musical appreciation. *Behavioral Processes*, 60,133-155.  
Porges, S. W. (In Press). Music therapy and trauma: Insights from the Polyvagal Theory. In W. Beaumont (Ed.),

The timing and purpose of each singing style is evoked by the lead of the child and is purposefully linked to the sensory-motor states that are precursors of representational self-expression, with aims of both co-regulating and leading meaning. Along with occasional body percussion and rhythmic instrument play, singing is integrated with semantic and prosodic speech, gestures, facial expressions and, most importantly, embedded in play with toys of the child's choice and Floortime pursuits (Weeks, 2005).

The child may show a range of positive responses, including alert oculocapture/absorption (Reynolds et al., 1998), engaged vocalizations, sung or spoken material in "proto-conversation," (Trevathan, 1998, chap. 1) or non-musical social interaction. As the child is moved to communicate more, the singing partner's choices and rhythmicity must be exquisitely sensitive to the child's unique biological vulnerabilities and strengths in order to cultivate a steady back and forth flow, creating more and stronger "circles of communication." (Greenspan & Wieder, 2006). Especially here, being able to "carry" one's voice in tandem with rapid and versatile physical mobility for proximity and contingent responses gives the singing partner a unique musical and relational advantage.

Greenspan and Wieder (2006) have consistently advocated for hands-on, primary roles for parents in applied solutions for their children. Thus, singing partners in Floortime™ are often parents. Just as parent coaching is applied to Floortime™ techniques, so too some vocal coaching by a knowledgeable professional is feasible and valuable in this setting. Many adults today are so removed from live music-making that they have either forgotten or never developed fundamental singing skills or confidence. Yet significant improvements can result from attention to basic competencies, such as breathing, diaphragmatic support, use of articulators (jaw, tongue, lips) particularly to adapt timbre, and appropriate use of vocal registers (Appelman, 1967).

While my work has primarily been as a coach to parents, DIR®-based clinicians and educators from a variety of [non-musical] disciplines have increasingly been interested in incorporating tactics informed by a singing model. With direction and

banding" to heighten effect (Sundberg, 1999, chap. 6) or strengthening spectral resonance, including the special ringing sound known as the "singer's formant" (Titze, 2001). Further development of feasible methods for training parents and professionals related to a singing and DIR®/Floortime™ context are timely and called for. As these skills, integrated with DIR® principles, move toward second-nature for singing partners, their value as "musical gold" will optimally enrich the child's early developmental capacities.

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#### Editor's Note:

It has been brought to my attention that there has been an oversight in referencing Kaja Weeks' work in the article "A Glimpse into the use of Music Therapy and the DIR®/Floortime™ Model for Children with Autism," *Early Childhood Newsletter* Issue 14, 2008, p.18-19. The editor and author of this article apologize for this error.