

Effectiveness of Music Therapy Interventions On Joint Attention in Children Diagnosed with Autism: A Pilot Study

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Abstract

Joint attention, the ability to selectively attend to an object of mutual interest, is a critical skill that develops early in life and consequentially affects future social-cognitive skills, social-emotional skills, and language development. It is widely accepted that children with autism spectrum disorders (ASD) have difficulties with joint attention. ASD children need interventions that systematically facilitate cooperative, negotiated and culturally relevant learning. Interventions need to consider the learner's moment-to-moment motivational and interpersonal responses. Music therapy is one effective method for increasing interpersonal understanding, joint motivation, and cooperative skills. Music therapy interventions have been used with ASD for the past forty years. The present study examines the effectiveness of individual music therapy intervention on development of joint attention behaviors in ASD boys both within treatment and as reported by parents outside of treatment. Participants were 3 to 5 year old non-verbal males diagnosed with autism spectrum disorder ages 37 months to 61 months ($M = 50$ months). All participants fell in the Severely Autistic range of functioning as measured by the Childhood Autism Rating Scale (CARS) (Schopler, Reichler, and Renner, 1988). CARS scores ranged from 37 to 46.5 ($M = 40.8$; $SD = 3.6$).

Children participated in a total of eight 30-minute individual music therapy sessions twice weekly. First and last music therapy sessions were video taped and evaluated for quality, subjective frequency, and types of joint attention by using selected items from the Social Approach Behaviors section of the Parent Version of the PDDBI (Cohen & Sudhalter, 2001). Joint attention behaviors included paying attention to another's face when given instructions, looking when called or praised, watching others and playing near them, and smiling in anticipation of teasing, tickling, etc. among others. Sessions consisted of five categories of musical experiences: greeting song, seated imitation activity, instrument playing, gross motor musical movement/imitation activity, and closing/goodbye song. Both live and recorded music was used. Musical improvisations were often created during sessions based upon the child's vocal and motor output with intent to musically join, reflect, and expand the child in his experience.

Simple and likely familiar songs were incorporated into treatment to provide the child with a sense of comfort and mastery. The musical experiences improvised during sessions initially arose from the vocal and motor output provided by the child. The music therapist musically reflected and expanded on this experience using musical instruments, her voice, and expressive language to capture the affective essence of the behavior. Props and instruments used in music therapy treatment provided enhanced sensory stimulation by moving, making noise, etc. Activities, songs, and experiences were presented in slightly different ways to facilitate increased interest and novelty (e.g. various instruments, changing tempo, rhythmic accompaniment, or key).

A total of 13 children completed the research protocol. The participants' ages ranged from 37 months to 61 months ($M = 50$ months) at the start of this study. The majority ($n = 10$) of the participants were formally diagnosed with autism, while a few ($n = 3$) were diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified. The age at diagnosis ranged from 19 months to 49 months ($M = 31$ months). Ethnic composition of the participants was 2 non-Hispanic Whites, 10 Hispanics, and 1 Native American. Only three children were taking medication at the time of the study (one child each taking Strattera, Claritin, and Clonidine). Ten parents reported that their child had normal development until about 18 months of age while 3

parents indicated atypical development from birth. Most participants had been receiving at least some therapies since their diagnosis.

The Initial Social Approach Group Mean t-score ($M = 40.8$, $SD = 10.2$) was less than the Pre-Treatment Social Approach Group Mean t-score ($M = 44.3$, $SD = 9.0$), which was also less than the Post-Treatment Social Approach Group Mean t-score ($M = 45.7$, $SD = 11.2$). Because of the instability in the PDDBI Initial and Pre-Treatment scores, a test of Means was run for the difference between the Initial scores and the Post-Treatment scores as well as the Pre-Treatment scores and the Post-Treatment scores. The Mean difference between Group Mean t-scores for the Initial and Post-Treatment was 5.2 ($SD = 6.3$). The Test of Means was significant at $p < .01$ level. The Mean difference between Group Mean t-scores for the Pre-Treatment and Post-Treatment was 1.5 ($SD = 5.5$).

Inter-rater reliability of video tapes was low; therefore, the decision was made to more closely examine video ratings from the more experienced rater only. Using the data from this rater, the Group Mean difference on the measured behaviors was 10.4 ($SD = 12.46$; $p = .02$). Expected improvement was greater within music therapy treatment than what was reported by parents outside of treatment. Similarly, there was a noticeable improvement in the participants' overall autism t-score, as reported by parents, across all three administrations of the PDDBI.

A total of seven participants showed improvements in Social Approach behaviors as measured by the PDDBI. Improvement ranged from 8% to 40% ($M = 13.5\%$). Five parents reported essentially no change; only one parent stated that her child's joint attention behaviors worsened at post-treatment. Positive changes were found in other areas measured on the PDDBI including 70% of participants lessening their overall severity of autism score by 10% to 30%.

Video analysis showed that approximately 70% of participants had noticeable increases in joint attention behaviors. Improvement ranged between 36% and 200% ($M = 65\%$). Two children decreased the amount of joint attention behaviors during the final session by about 20% while one child remained essentially unchanged. Participants showed the most improvement in the areas of Visual Social Approach Behaviors (e.g. paying attention to the other person's face and looking at the other to seek feedback or praise), Social Imitative Behaviors (e.g. imitating motor actions and sounds), and Positive Affect (e.g. smiles when praised, showing affection, and smiling in anticipation of teasing, tickling, etc.). Additional behaviors targeted during the videotape ratings included ceasing inappropriate behaviors when warned, using gestures to motion to others, and selecting his own toy to play with and allowing others to play along.

Results indicate that the addition of music therapy intervention to a child's treatment program can have positive outcomes and may be an effective method for increasing joint attention skills in some children with autism. Children with severe forms of autism may benefit from individual music therapy treatment. Engaging in music with another person is intrinsically rewarding, motivating, and structured. It provides unique opportunity for self-expression, choices, and enjoyment in the life of a child who is frequently faced with therapists who demand specific responses to stimuli. Music therapy provides opportunity for engaging a child's affective being, his creative self, and the chance to create something of value and meaning. Music therapy provides a child with a reason to interact, to respond, to engage, to return to proximity with another person.

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