

Female, 3+ yrs old. Down/Autism. Referred to in Chapter IX as Eleanor (pseudonym); verbal delays, sensory issues, comprehension deficits.

4. Child D: Overview of Treatment Objectives

PDD/Asperger Syndrome, David (pseudonym), 13 and a half years old; described in Chapter XI, Conclusion. Review of treatment provided to the school and allied therapists.

The enclosed materials are actual reports of patients in music therapy treatment. In the interest of privacy, all names and pertinent personal information have been changed or omitted.

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Board Certified Music Therapist THE MUSIC THERAPY CLINIC

MUSIC THERAPY EVALUATION

CLIENT NAME: *(Child A)* D/O/B: 6/21/96
 Address _____ Diagnosis: *Unspecific: Multiple Delays,*
 Address _____ Possible PDD
 Parents: _____ Date of Report: *April 24, 2000*

(Child A) was referred for music therapy by psychologist (Dr. G) and has been involved in one-on-one music therapy sessions weekly, since January 20, 2000. The following evaluation and recommendations derive from eleven sessions to date, at 45 minutes per session, totaling 8.25 hours of treatment.

Introduction

Prior to reading this evaluation, it is important to understand what Music Therapy is, and how it differs from academic, skills-oriented training. As with other clinical interventions, Music Therapy seeks to provide a level of comfortable physiologic function that can ultimately induce functional adaptation to the environment, and to the ability of the brain to pattern, process, retain and recall cognitive and intuitive appropriate responses. Functional physiologic adaptation ultimately impacts all areas of learning. Thus, Music Therapy as a process-oriented intervention, based on the cumulative continuous application of specific stimuli, enables the brain and body to obtain organized information in ways that ultimately affect and redirect intellect and behaviors.

Resources of Music Therapy interventions include the six basic elements of music – rhythm, melody (tune), harmony, timbre (the unique quality of an instrument or voice that differentiates it from another), dynamics (louds/softs), and form (beginning-middle-end). Using these resources, both patient and therapist engage in the physical act of playing a variety of instrumentations, often including voice and movement, to help reinforce the repetition of stimuli targeted toward problematic issues in

order² to alter and obtain specific results. As with any other therapy intervention, Music Therapy goals focus upon altering the functionality of the system, applying goal-oriented music activity toward that end.

Music Therapy as a child-centered clinical intervention, affects sensory integration issues, attention and extended eye contact, rhythm internalization for organizing body movements and muscular control, auditory tracking, auditory integration and figure-ground focus, eye-tracking, information processing, behavior, independence, self-awareness and self-knowledge, organization of self and environment, awareness of others, and a variety of cognitive issues. It provides a "safe" environment for obtaining new ways of interacting with another, and provides a key element to learning — motivational Individual music therapy services are currently being contracted by several school districts throughout Fairfield County. Schools across the country are providing music therapy services to special needs populations. Further information and research studies on the effectiveness of Music Therapy with special needs populations may be researched through the web site of the American Music Therapy Association at www.musictherapy.org.

General Observations of Child A

Child A is a pleasant child age 3 years 10 months, of average height for his age. His demeanor is very congenial, pleasant and completely connected to the music environment. At each session Child A displays excitement, enthusiasm and curiosity about the variety of instruments available throughout the room. From the outset, it is quite clear that Child A has severe visual problems and relies extensively upon his hearing and his sense of touch. Similar to working with a blind child, Child A's demeanor, vestibular insecurity, deficient spatial awareness, sense of perspective, distance, high and low, demonstrates severe impairment.

Upon entering the room for the very first time, Child A did not provide direct eye-contact to therapist, but ran directly into room towards the instruments of choice: specifically, the standing snare drum and other smaller hand drums. He did not especially ask for nor seek mallets in order to play the drums, but rather, relied on playing them with the tips of his fingers, investigating the textures of the drum, and the sounds. As he played

each drum, he neared his ear to the drum (usually tilting his head toward the right ear).

His first several sessions were disorganized. Child A made his preferences clearly understood by using the third person "he" rather than first person "I" want to play... "He likes drums", "He doesn't want the maracas", and so on. In addition, the first few sessions found him rather resistant to being organized, and he preferred to skitter about the room touching this, playing that, and trying everything available.³ However, it was very evident from the beginning, that rhythm is a physical organizer for Child A. His disorganized movements immediately became paced and pulsed to the beat of the music. His drumming was extremely organized and rhythmic, and he was able to maintain this rhythmic stance for the duration of the music. It made no difference whether the music was a recognizable "tune" or an improvisation within a very rhythmic beat.

Child A displayed limited facial and body affect of likes and dislikes, demonstrating delight by smiling occasionally as an indicator of enjoyment and/or recognition of a familiar song. He responded with a quiet stare when music stopped, as if waiting in anticipation for music to begin again, and immediately verbalized description of what he just became engaged with ("he played drum..."), and surveyed the possibility once again of playing another instrument. However, he was not particularly musically engaged or connected to the therapist. That is, he played because music was available, but he was completely into himself when he played, as if he went internal into his musical train of thought without ever looking at therapist during activity. However, auditorily, he was completely engaged, as demonstrated by his ability to stop and start each time the music stopped or started. At those points, he would look up to therapist in anticipation, often declaring "He's not finished playing drum...". Modulation is difficult for Child A, although in this short amount of time, he has come a very long way.

³ Child A was not particularly happy with physical prompting for playing instruments in a defined way. Overall, he sought to be extremely independent of therapist, basically resistant to prompting, remaining completely attached to the activity and the music-making for the duration of each 45-minute session. As the encounters accumulated, Child A became more and more organized and able to attend to task and therapist without

much scampering about the room. In effect, the more familiar he became with the routines and what was available for music-making, the more in control of himself he became, and the more able to follow directives.

Physical Skills

Due to Child A's visual problems, his physical skills are somewhat underdeveloped. His visual issues contribute to his inability to accurately imitate the movements of others or to incorporate these by copying them into his own body actions. However, as stated earlier, rhythm appears to be a highly organizing and stabilizing factor for Child A. In the presence of rhythm, he is able to bring muscular activity to a stable and comfortable level of function. His gait in march-like pattern becomes less self-conscious and somewhat more balanced and secure. His ability to beat the drum while marching — i.e., upper/lower body coordination — is becoming more secure and fluent. And his physical whole-body activity when music is available, seeks to be coordinated with his visual and auditory processing, although this will require much more input in order for it to become completely comfortable and functional.

At this point, his vision in conjunction with motor activities is somewhat disparate. When he is active in upper body motions (playing drums, etc.) he tends to shut his vision down and devote auditory attention. Thus mid-line issues become present, and it is unclear where he determines his mid-line, both vertically and horizontally, to be. He attempts to avoid this issue as much as possible. Therefore, he has great difficulty playing drums with arms crossed, for instance. Or reaching across his body for a drum placed at the other side of him.

The trampoline presents major vestibular issues for Child A. He is completely insecure going up and down in vertical sequences, uncomfortable with his balance. He leans forward a great deal, and prefers not to jump if at all possible. In stepping onto the trampoline, or stepping down, he has difficulty gauging accurate distance between the trampoline height and the floor. He enjoys moving rhythmically to the music, once on the trampoline, but would like to avoid this activity completely! Holding a pair of heavy maracas while jumping demonstrates his upper/lower body coordination

deficits, but he is becoming much more comfortable hearing the sound of his jumping (as the maracas make sounds while he jumps and holds them).

Although in the beginning Child A had difficulty being completely still, during the past several sessions, he has become much more able to stand and perform a task for extended time and repetitions, and has also shown the ability to modulate without anxiety, from one task to another. He has become much less distracted by items around the room, and can remain with one activity.

He is quite able to play drums bilaterally in parallel motion, although his right arm is always a touch slower than his left arm, as they come down together on a drum. The coordination of left and right requires some work. In bilateral alternate movements for playing the drum, Child A often requires prompting if he has not provided sufficient visual attention to "copying" what the therapist is doing. Verbal prompting, as well as physical prompting are required in order to suggest to Child A's brain that it coordinate the rhythm of alternate arm movements in pulse to the music.

In addition, if asked to play two arms parallel on a drum, switching between two drums (first two arms on one drum, then two arms on another), there is difficulty with motor planning, and he can sustain this activity only briefly.

Stopping, starting, running, marching, are activities presented to Child A, and he is trying to negotiate these to the best of his ability. However, visual constraints and his insecurity with spatial dimension are limiting his ability to free himself into the movements. He has progressed immensely in these activities since we first began working together, and he enjoys the excitement of these tasks, and is much more able to modulate from one to another.

In general, the presence of music has enabled Child A to make great physical strides in sustaining and pacing his energies. Motor planning issues will persist, but are increasingly organizing for more functional execution of musical tasks.

Sensory Function

Child A accepts auditory information very appropriately. Functioning as a blind person would, Child A's auditory attention is quite astute, and it

appears that he is accepting general music-flow quite well. However, his auditory processing of very high, or very low frequencies is still being explored, with focus on how he tends to integrate these frequencies. Language development depends on auditory processing and integration of linked pitches, and music therapy intervention is one of the most successful methods for the developing brain to learn accurate sound processing.

Child A follows the sound of an instrument and responds to loud vs. soft sounds, identifying these as loud and soft. He plays the snare drum in one manner, however, which indicates a motor planning issue of muscular control in using his muscles adequately to emit loud and soft sounds. This implicates body dynamics, and music therapy interventions continue to address the issue of "hear/do" to alter flexibility in motor control.

Child A's auditory focus and tracking, auditory figure-ground, auditory discrimination, although functioning initially at an "acceptable" level, requires much intervention to become clear. Tracking and focus is required in following teacher instructions, hearing information, and attending. Auditory figure-ground is the ability to focus on the foreground of sound, putting superfluous sounds in the background. He has the ability to do this, but requires much more work in order to secure this. Because his visual does not support his auditory processing, music therapy can address the strengthening of auditory figure-ground, as well as discrimination of sounds (what's a car screech from a human scream, for instance), because music processing does not necessarily require visual support. While his abilities here remain unclear – especially as far as frequencies of speech and prosody incantation are concerned – what or how, exactly, Child A perceives when he hears will directly impact the development of his receptive and expressive language skills. Music Therapy seems the most obvious intervention in aiding auditory adaptive function. In this brief evaluation period the exact processing by Child A of auditory information is difficult to gauge. Because it is unclear exactly what Child A's hearing, it will take some time to help Child A display his ability to discriminate differences in auditory information. Further investigation will yield insight into this area of auditory perception, which, as stated above, is crucial to receptive and/or expressive language development.

Child A is now able to sustain extended visual attention as long as music activity is present, whereas, when just language is being used he scans

the room, loses eye-contact with therapist, and seems highly uninvolved. He is also now able to provide extended task and auditory figure ground attention, when the task of listening to the directive words of a song asking him to play this or the other instrument, is present. This is an amazing achievement from our first few sessions, when he was totally uninvolved with any directives. He attends visually to the instrument he is playing, visually following his arms and crossing mid-line. In addition, Child A has been able to hold the violin with one arm while bowing on the string with the other arm, and actually looking down his nose (literally) dead center, to follow as the bow crosses the string. This has greatly strengthened his eye-hand/auditory coordination. Auditory/visual/physical attention is becoming increasingly obvious and expanded as sessions accumulate. This points to the beginnings of self-awareness and knowledge that it is he – and his body – playing. A sense of organized independence encourages further learning. Eventually such tasks lead to upper-body motor planning, willful and purposeful use of hands and arms, and rhythmic self-control.

Visual Processing is the most acute issue thus far in sensory integration for Child A. This deficit impacts on Child A's motor planning, imitative capabilities, environmental evaluation and organization, vestibular insecu-rites, interactive communicative abilities, relationship to others, task organization and attention, and distractibility. Visual/auditory coordination will continue to be a crucial adaptive issue, if Child A is to succeed academically. Visual tracking (oculomotor planning), depth-perception, visual discrimination and figure-ground, and visual/auditory verification are issues which are currently being addressed in music therapy. As such, the use of specific instruments, such as the xylophone, which requires visual attention in order to play individual tones, playing of several instruments in sequence, and other activities, are being directly focused on visual issues. Picture association (find picture A, on chart B, and push that picture to hear the song we just sang) is a very difficult process for Child A, but his motivation to hear the tune we just sang (it's a song-playing book) drives him to try to find the correct picture. He is also giving visual attention to the pictures on the page which define the song.

In addition, playing the recorder (blowing instrument), brings visual to mid-line, as he holds the recorder with both hands and looks down the shaft to find where the sound is coming from. He blows this instrument,

"attend" and take "directives" in a congenial and cooperative manner, much information will have the opportunity to find its way to Child A's memory bank for retrieval. He is quite a teachable young man, enthusiastic and willing, as long as there's music around to calm and relax his struggling system. Since auditory influx of information is his safety factor, music—especially rhythmic music—will always be useful in programming information into Child A's brain.

My observation is that Child A is ready and willing to "learn" cognitive information and functions best when highly motivated and challenged to attend, and when rhythm and music is present. He seems able to "anticipate" what is being presented, and his gazing into my face and mouth seem to indicate an ability to remain still and attempt to absorb what is happening as long as music is somehow involved. Music creates an extended attention to task, and his eyes do not look away as long as I play and sing directly to him. It is clear by all indications, that cognitive training can be part of the music therapy treatment. Colors and shapes, letters, numbers, words (two bells, one triangle or "circle" drum, etc.) and writing can definitely be presented within the musical setting.

Investigation of cognitive skills requires more extensive evaluation. On a preliminary level, it appears that cognitive input through musical stimulus will be successful. This will ultimately transfer to other learning aspects in a variety of settings. Once the brain is patterned to absorb information in organized, rhythmic fashion, and is reinforced through ongoing cumulative interventions such as Music Therapy, a child of Child A's demeanor can surely develop cognition quite well.

Psycho-emotional and Social Cues

Child A obviously enjoys being in the presence of music; and there is emotional affect indicating contentment. Also present seems to be a sense of self and other, some understanding of common social cues (my smile, frown, shaking head for "no" or "yes", etc.) He does not imitate therapist facial expressions or affect but gazes attentively at them when possible. Child A seems to have some awareness of personal boundaries and enjoys proximity as well as distance from me. He definitely requires ample space and time to absorb and internalize a situation. He appears to be quite

capable of doing so appropriately, as demonstrated by his relaxing to allow hand-over-hand maneuvering in order to play an instrument a particular way. When therapist comes near, he no longer withdraws, frowns, or seeks to distance himself in any manner spatially from therapist, and now allows closeness when being prompted for a task. Trust will always be an issue for Child A, since he is visually unable to confirm friend or foe! If he can't assess your smile, he can't determine your friendliness! And his vision issues will affect his picking up of social cues, ^{§b} physical touch directives and auditory cues will be most essential.

Recommendations and Preliminary Music Therapy

Goals

Music therapy is often one of the most appropriate and effective services for children with brain function issues. We know that the brain immediately attends to music. We know that information is processed, retained and recalled when provided through a musical format. We know that rhythm animates and organizes the system. We know that music stimulates language learning. We know that music can elicit emotion, interaction, and interdependence. Music Therapy has been playing a prominent role in helping Child A develop in all of the areas discussed above. As stated in the introduction, Music Therapy is a treatment intervention in which the elements of music are applied to address presenting issues and specific goals. These are integrated with goals of allied therapies, and school curricula.

With enough exposure to this intervention, the positive results of music therapy application permeate throughout all areas of learning, both cognitive and intuitive. Both areas are essential for integrated learning. Creativity is the source of curiosity and the seeking of information by the brain. Therefore, the intervention of music therapy reaches well beyond standard therapies and education. It reaches into the inner child seeking to be discovered and taught! In Child A's specific case, records show that some brain damage may have occurred in the right brain areas. Although music is a whole-brain activity, the right brain areas are particularly active with music. Therefore, much brain rehabilitation can take place with the intervention of music, which will ultimately impact the whole brain's rehabilita-

tion. The right brain is nearest to the amygdala, the emotional brain. Therefore, affect, recognition and expression of feeling states, are impacted through music. It is an essential area of integrative development of both intuitive function and cognitive function.

Because the brain "attends" to music, tracks sequential tones linked to one another (following a tune from one note to another), and orders the body to move rhythmically, music has the ability to:

- automatically stimulate rhythmic movement and physical coordination
- pacify or animate and coordinate sensory systems
- aid vestibular regulation through rhythmic motor planning and proprioceptive stimulation
- contribute proprioceptive feedback through muscle contractions when playing instruments (drums, etc.) and surrounding vibrational stimulation due to live instrumental playing
- aid in language and cognitive development
- provide rhythmic proprioceptive information to the brain for self-organization
- extend attention, absorption and retention of cognitive information, and much more.

Child A is a personable willing participant in a music activity, as demonstrated in all sessions thus far. He "attends", wants to be prompted into participation, enjoys moving rhythmically, and even contributes vocal input from time to time as if to join in the singing/playing activity. Because he is so attentive and organizable, Music Therapy can have a great impact on his betterment and development.

Without an organized, comfortable physiologic system, learning is impossible. It is only when the body no longer feels threatened by incoming sensory information, that the brain can relax and process information beyond the paleocephalon (the survival old brain) into higher cognitive function. These are facts currently being substantiated by the great majority of brain research. Thus, a system in which there are so many physical issues, cannot be comfortable enough to learn math and reading.

Therefore, the first important interventions must deal with these primary issues, before any further cognitive learning can take place. Music Therapy is precisely such an intervention, which has been shown to reach a dysfunctional system on both the sub-cortical as well as the cortical levels of function.

Because of Child A's ability to provide consistent attention span, task attendance and cognition interest within the music environment, the non-threatening form of stimulus intervention that music provides can easily address several issues simultaneously, including sensory/physical, psycho-emotional and social, communication and social interaction, and elementary cognition. It is recommended that Child A receive a minimum of three 45-minute sessions per week of one-on-one music therapy. Child A displays a strong ability to sustain complete attention to music and musical tasks for at least one hour at a time. Three weekly 45-minute sessions will allow appropriate pacing of activities within each session, enabling Child A to take the time he seems to need in order to focus and process stimulus and information without haste, and to develop functionally adaptive patterns of movement and cognitive responses. Three (or more) contacts a week with therapist will provide needed repetition and recurrence required to ultimately reinforce consistent adaptive learning responses. The more contact, the more time, the sooner the progress. Because music therapy is a cumulative process, the more extensive the exposure, the better the effect on adaptation.

The following areas can be efficiently addressed through Music Therapy goals:

- **Auditory Integration issues:** location, auditory focus, tracking, figure-ground, discrimination.
- **Sensory/auditory/visual integrative issues:** specifically, extended auditory attention and integration; auditory/physical coordination; auditory/visual coordination; visual focus; attention; tracking.
- **Physical coordination,** bilateral integration of physical movements through rhythmic movement and activities

providing appropriate proprioceptive and vestibular stimulus through music activities.

- **Breath control and language stimulation** through such activities as playing of recorder, vocalization tasks, fill-in songs, sound imitation; expressive language development; conversations.
- **Self-Regulation**, motivation, curiosity, appropriate use of instruments; task attention; self-restraint.
- **Organization of Environment**: organize task; environmental depth perception; arrange instruments.
- **Cognition and cognitive association** through visual/auditory resources (number/letter shapes and colors songs, picture-song books, cause/effect activities); imitation; generalization.
- **Social awareness**, development of affect, choice, likes/dislikes, awareness of self-other; personal boundaries; sharing; turn-taking; etc.; interests, conversations.
- **Relatedness** to task, stimulus, activities requiring specific hands-on participation addressing eye-contact, assess at this time, the exact processing of auditory information. Imitation of therapist's facial expressions and affect will be primary focus, in order to elicit sound imitation paralleling facial expressions and instrumental sounds.
- **Attention/Focus** extended attention to task; self-regulation; extended focus and repetition.

Summary

Child A seems to be taking the world in on his own terms, and is basically content. He is very motivated by music, listening aptly, allowing prompting, and generally enjoying the experience. He displays a readiness to take in cognitive information, and is willing to attempt a task with physical prompting. He is aware of the music environment, anticipates and attends to sounds, has been providing continuous and extended

eye-contact, and has the ability to sustain self through a longer session music therapy. The inclusion of Individual Music Therapy Services into IEP will contribute an important and holistic therapy treatment which address many of the issues which seem to predominate, including helping him sustain focus and attention, physical coordination, sensory integration, relationships, system organization through rhythmic internalization functional adaptation and cognitive development, language development and a general sense of "belonging" and well-being.

Since music — especially rhythm — is an important stimulant and motivational tool for Child A, it is recommended at this time that 45 minutes three times a week of individual music therapy be provided.

Submitted April 24th, 2000
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INVOICE

ACCOUNT #: PVT 1042
DIAGNOSIS: PDD/Autism
DATE: Jan. 6th 2000
TREATMENT CODES: 97770, 92506, 97112, 97799 Cognitive Development, Sensory Integration
Language Development; Physical Coordination;
SERVICES TO: Child A nation;
Neuromuscular Reeducation; Coordination;
Visual and Auditory Tracking

D.O.B.

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