Therapeutic Listening Evidence Brief
What is Listening?

Listening is a dynamic experience that involves the whole brain and the whole body. It has both social and survival value, allowing us to communicate with one another and with the world around us. While hearing is largely a passive and mechanical process, listening is an active process that demands attention and engagement.

Listening triggers and draws attention outward and readies the body to respond. It is a continuous process involving engagement (what is that sound?), interaction (what does that sound mean to me and my world?), and discrimination (should I attune more closely to that sound?). The survival of an animal in the wild depends on its ability to listen and monitor, then actively respond to changes in the environment. Because of its importance in survival, A. Jean Ayres acknowledges that the processing of sound can be classified as one of the “primal forms of sensory integration” (Ayres 1972, p. 71).

Sensory integration is the ability to organize sensory input from the body and the environment and to incorporate it adaptively in meaningful occupations. Many experts agree that the auditory system is a critical link in sensory integration theory; in optimal, everyday listening, we attend selectively to auditory information and integrate it with other salient information from the other senses.

The Importance of the Inner Ear

The auditory system is intimately connected to the vestibular system. Neurologically, the two systems function in similar ways, with hair-like receptors moving in a fluid filled canal. In addition, they share a single cranial nerve for sending information to the brainstem, crossing paths and exchanging information with one another every step of the way. Anatomically, there is no clear boundary between the two systems: both systems are housed within the bony structure of the inner ear. The vestibular end of the canal processes the lower frequency vibrations of movement, while the cochlear end processes the higher frequency vibrations that we perceive as sound. Both ends of the vestibular-cochlear system are involved in orienting us to our surroundings.

The vestibular system has played a major role in sensory integration theory. It helps us to understand the position of our head and body in gravity-bound space. It gives us information about which way is up and where we are going. It helps us with balance, spatial orientation, and maintaining a stable visual image, even when we are in motion. Since movement is an important part of everything we do, the vestibular system is important for all of our interactions with the sensory world. The vestibular system teams up with the auditory and visual systems to perform many important tasks by helping us understand the three dimensional space that surrounds us wherever we go.

Through the proper functioning of our vestibular-auditory-visual triad, the sights and sounds of our world become meaningful and entice us to move, explore, and engage with objects, people, and events. When the vestibular system is not working properly to guide postural control, the eyes cannot participate efficiently in tasks such as copying from a blackboard, reading, writing, or catching/kicking a ball. Many of the individuals who have sensory processing and sensory integration difficulties also have listening difficulties, such as difficulties orienting to sound or over-responsiveness to environmental sounds and voices.
What is Therapeutic Listening?
Therapeutic Listening is a sound-based intervention that is embedded in a sensory integration perspective. It has evolved from clinical work built on a foundation of developmental and neurological principles. Because the auditory system has connections to many parts of the brain, sound is a powerful way to access the nervous system and affect changes.

Therapeutic Listening involves listening to specially recorded and enhanced music on headphones as part of a daily home program. The program is highly adaptable to the specific needs of the client. The choice of music, type of modulation, listening time, and individualized activity program vary depending on the treatment goals and needs of the child. By monitoring the child’s progress in Therapeutic Listening, the therapist is able to change and adapt the child’s individualized program to meet treatment goals.

Vital Links has developed an extensive library of electronically altered music for use in the Therapeutic Listening program. The music gives the listener unique and precisely controlled sensory information to trigger attention and activate body movement. The music varies in musical style, type of filtering, and level of complexity, offering therapists everything from familiar children’s songs to Baroque Era orchestrations to sounds found in nature.

Typically, clients will use Therapeutic Listening twice a day for thirty minutes per session as part of a sensory diet. When combined with other therapy treatment approaches, Therapeutic Listening can have a significant impact on the client’s functional abilities and progress toward treatment goals.

Who can benefit from Therapeutic Listening?
Therapeutic Listening, when coupled with sensory integrative treatment, tends to speed the emergence of:

- attention
- organized behavior
- self regulation
- postural control
- bilateral coordination
- praxis
- fine motor control
- oral motor/articulation
- social skills/communication
- visual motor integration

Sara’s Story
Sara was adopted by American parents from a Russian orphanage at the age of four and spoke no English when she began school at age five. Her pre-intervention status showed that she could only attend to tasks for five to ten minutes and had tactile hypersensitivity—she disliked hugs and was a picky eater, refusing certain textures and temperatures of foods. Sara had extreme difficulty calming herself for sleep, was easily frustrated and prone to tantrums, and struggled with transitions. She also had minimal eye contact with others and a high, shrill voice that she could not modulate.

After initial testing, Sara’s occupational therapist saw her every other week and started her on a Therapeutic Listening program. The program was implemented by her parents two times per day and seven days a week for seven months.

Sara’s parents and therapist observed many exciting changes over the course of her therapy, including increased appetite and willingness to try new foods, increased tolerance for touch, increased eye contact, increased attention to task, and increased ability to achieve a quiet-alert state. Sara spontaneously began to grade her voice and whisper, and even began hugging her grandmother. Everyone knew Sara’s listening skills had improved when she reported hearing a clock ticking and birds chirping for the first time.

Sara’s handwriting also improved. Before listening she had difficulties with legibility, spacing, and spatial organization. In a post-Therapeutic Listening sample, Sara wrote all 26 letters without any omissions and with 100% legibility. Spacing between the letters was appropriate, and letter height and size were consistent between all letters. Smaller printing and the ability to write in a straight line revealed better spatial organization despite the lack of lines on a page to guide her.

Through her drawings, Sara clearly showed that her world had come alive.

Gail Huecker, OTR
Research

To the untrained eye, it is often difficult to assess listening skills. Since we cannot directly observe internal listening processes, we must infer listening function through behavioral clues. This task is especially difficult due to the extremely wide range of behaviors associated with poor listening skills and the fact that the behaviors are not always linked to listening in an obvious way, such as cupping one’s hand behind the ear.

Leah Hall and Jane Case-Smith published their peer-reviewed study on Therapeutic Listening, “The Effect of Sound-Based Intervention on Children with Sensory Processing Disorders and Visual-Motor Delays”, in the March/April 2007 issue of the American Journal of Occupational Therapy (Volume 61, Number 2). Hall and Case-Smith observed the effects of Therapeutic Listening on ten children over a twelve week span, composed of a four-week sensory diet followed by eight weeks of the same sensory diet with the addition of Therapeutic Listening. Testing was done prior to starting the sensory diet, at the end of the four-week phase, and again at the end of the twelve weeks. Hall and Case-Smith found that Therapeutic Listening, when coupled with a sensory diet program, produced very positive results:

Our results suggest that the therapeutic-listening program in combination with a sensory diet facilitated substantial improvement in children’s behavior as measured by the Sensory Profile. …Parents stated that their children demonstrated improved attention, greater interaction with peers, decreased nightmares, improved transitions, better communication, improved sleep patterns, and more consistency in following directions. (214)

Vital Links Practitioner Survey

Vital Links also conducted a practitioner survey in 2005. The survey questions focused on attention, self-regulation, and sensory modulation. Clinicians reported seeing widespread improvements in these areas: more than 87% of all respondents (N=1053) and 95% of those who had taken the Advanced Therapeutic Listening course (N=246) reported that Therapeutic Listening increased the rate of improvement in more than half of their cases. Improvements were reported in sound sensitivity, energy level, sensory defensiveness, transitions, attention, focus, and mood.

Adam’s Story

Although initially his development seemed typical, at thirteen months of age Adam completely stopped all verbal responses to social cues, and about the same time stopped sleeping. His mother reported, “He would scream for hours in a very high pitched squeal. We would take turns with him through the night. He was afraid of everything. Whenever he saw smoke or steam or dust he would panic.” Hitting and banging his head became a regular occurrence and all attempts at offering comfort were fiercely resisted. “That was the hardest part,” said his mother. “There was nothing I could do.”

Adam was terrified of people: when someone looked at him he would quickly cover his eyes. He hated being touched and showed no signs of affection. Any attempts at communication consisted of grunts and sounds. Although he often did not register pain, his mother and father felt that he was in great pain all the time. His appetite was poor and his diet was limited to eight starchy foods.

Adam was diagnosed with Autism, and at the age of two his parents brought him to a clinic for an occupational therapy evaluation. Through clinical observation and a sensory history it was determined that Adam had severe sensory defensiveness. A Therapeutic Listening program in combination with Therapressure was implemented.

With his sensory defensiveness, wearing headphones was not easy for Adam. His mother used many strategies to familiarize him with the listening protocol. “I would wear them on my head while I was cooking or just around the house, “she said with a smile. Playing the CD as background music also helped Adam acclimate to the music.

Within the first month, significant changes in sensory modulation occurred. His mother noted, “When Adam was screaming I would put the music on and he would begin to calm and relax. Sometimes he’d even fall asleep.” He also began to sleep through the night. Babbling and eye contact were increasing. Although still cautious, his tolerance of having others in his physical space began to change and he began to explore moving his body over different surfaces in the clinic space.

After three months, Adam’s previously terrifying relationship with the world was beginning to take on new meaning. His food repertoire increased by ten different foods. Different textures and tactile experiences were becoming objects of interest. As I talked with his parents, I watched Adam intermittently kissing and rubbing his mother’s face with great joy and giggles. “It feels wonderful,” said Jenny with a tear in her eye. And though there were bridges yet to cross, it was touching to see how far this little boy had come.

Genevieve Jereb, OTR
Our Courses
Vital Links offers courses all around the globe on Therapeutic Listening, vestibular habilitation, and other sensory integrative topics. As an AOTA-approved provider of educational opportunities, Vital Links provides participants CEUs or contact hours upon completion of each workshop.

In *Therapeutic Listening: Listening With the Whole Body*, participants learn to use Therapeutic Listening Modulated CDs to create individualized, home-based programs for their clients, implemented in conjunction with other postural, respiratory, and sensory activities.

**Advanced Therapeutic Listening** builds upon *Therapeutic Listening: Listening With the Whole Body*, presenting a variety of advanced sound tools for use in treatment sessions, home programs and sensory diets. This course covers new series of therapeutically enhanced audio, including the Fine Tuning™ series, the Spatial Enhancement™ series, and the Gearshifters™ series.

**Astronaut Training: A Sound Activated Vestibular-Visual Protocol** expands the therapist's skills in administering precise vestibular input via enhanced understanding of the developmental and neurological processes of the vestibular-auditory-visual triad. Astronaut Training provides precise input to all five vestibular receptors, along with auditory and visual input to create a comprehensive treatment protocol.

**Building Blocks for Sensory Integration** is an experiential course that provides therapists with an in-depth understanding of the developmental and neurophysiological links between sensory integration and the basic primary movement patterns that provide the foundation (or building blocks) for sensory modulation and integration.

Who We Are
Founded in 1997 by Sheila Frick, **Vital Links** is an AOTA-approved provider of practical, clinical-based continuing education opportunities that incorporate Therapeutic Listening, vestibular habilitation, and core development. Building on a strong base of sensory integration theory, clinical investigation, and scholarly research, Vital Links provides therapists with clinical tools and cutting edge treatment strategies that can be immediately implemented into their practice.

**Sheila M. Frick, OTR** is an internationally esteemed clinician, lecturer, and pioneer in Occupational Therapy. She has over 25 years of clinical experience and worked in a variety of settings, including psychiatry, rehabilitation, and home health before specializing in pediatrics. In 1994, the Wisconsin Occupational Therapy Association honored her with the Award of Excellence for Therapeutic Practice in Pediatrics/Sensory Integration.

Sheila has co-authored several books, including *Listening With the Whole Body: Clinical Concepts and Treatment Guidelines for Therapeutic Listening*, *MORE: Integrating the Mouth with Sensory and Postural Functions, Core Concepts in Action*, and *Astronaut Training: A Vestibular-Visual Protocol for Moving, Looking, and Listening*.

References


The Effect of Sound-Based Intervention on Children With Sensory Processing Disorders and Visual–Motor Delays

Leah Hall, Jane Case-Smith

This study investigated the effects of a sensory diet and therapeutic listening intervention program, directed by an occupational therapist and implemented by parents, on children with sensory processing disorders (SPD) and visual–motor delays. A convenience sample was used of 10 participants, ages 5 to 11 years, with SPD and visual–motor delays. In the first phase, each participant completed a 4-week sensory diet program, then an 8-week therapeutic-listening and sensory diet program. The Sensory Profile was completed by the participants’ parents before and after both study phases. The Draw-A-Person test, Developmental Test of Visual Motor Integration (VMI), and Evaluation Tool of Children’s Handwriting (ETCH) were administered before and after each phase. Over 12 weeks, the participants exhibited significant improvement on the Sensory Profile, increasing a mean of 71 points. Parents reported improvements in their children’s behaviors related to sensory processing. Scores on the VMI visual and ETCH legibility scales also improved more during the therapeutic listening phase. Therapeutic listening combined with a sensory diet appears effective in improving behaviors related to sensory processing in children with SPD and visual–motor impairments.


Music has long been known to have therapeutic value (Ferguson & Voll, 2004; Sacks, 2006). In recent years, occupational therapists, speech-language pathologists, and psychologists have adopted the use of music and sounds as therapy, and a variety of auditory intervention techniques have become available. Occupational therapists use music as preparation for therapeutic activities on the basis of the belief that sensory input through the auditory and vestibular systems can be calming and organizing to children (Ayres, 1979; Frick & Hacker, 2001). The purpose of this study was to investigate the effectiveness of a therapeutic-listening home program in combination with a sensory diet on children with sensory processing disorders (SPDs) and visual–motor delays.

Sound-Based Interventions

The originator of sound-based treatment was French physician Alfred Tomatis, who in the mid-1900s developed the use of electronically altered music as a treatment modality for adults and children with differing conditions, including attention deficit disorders, developmental delays, autism, head injury, multiple sensory system disorder, and learning disabilities. Tomatis believed that the main role of the ear is to function as the “integrator,” facilitating organization at all levels of the nervous system (Thompson & Andrews, 2000).

Studies on the Tomatis method have yielded mixed results. Neysmith-Roy (2001) found that 3 out of 6 boys with severe autism experienced major improvements in behavior. After the Tomatis treatment, 1 boy no longer met the criteria...
for an autism diagnosis, 2 boys showed behaviors indicative of mild autism, and 3 boys continued to exhibit behaviors in the severe autism category. For 5 of the 6 boys, positive changes also were seen in the pre-linguistic areas (i.e., adaptation to change, listening response, nonverbal communication, emotional response, activity level). Kershner, Cummings, Clarke, Hadfield, and Kershner (1990) compared a group of children with learning disabilities who received treatment using the Tomatis approach in school and a control group of children with learning disabilities who received only direct instruction and found no differences in achievement gains at 1-year follow-up.

In the early 1960s, Guy Berard, who worked with Tomatis, developed another method of sound treatment, Auditory Integration Training (AIT), which was based on some of the Tomatis principles (Rimland & Edelson, 1994). AIT uses electronically enhanced popular or classical music that distorts or modulates sound frequencies at random intervals for random periods. AIT is typically used to correct hypersensitive or distorted hearing. This clinic-based treatment consists of 10 hours of listening to modulated music in 20 half-hour intervals over 10 consecutive days (Rimland & Edelson, 1995).

Research on AIT has produced mixed results as well. Some studies showed that children treated with AIT demonstrated fewer aberrant behaviors (Rimland & Edelson, 1994, 1995). Gillberg, Johansson, Steffenburg, and Berlin (1997) applied AIT to 9 children with autism. Changes in behavior were not observed other than a reduction in sensory problems as rated on the Autism Behavior Checklist (Krug, Arick, & Almond, 1980). Bettison (1996) completed a large randomized controlled trial using 80 children with autism and sound hypersensitivities. One group (n = 40) received filtered or modulated music, and the other (n = 40) received unprocessed music. When assessed 1 month after the listening treatment, both groups made clinically important but equal improvements on tests of behavior, verbal and performance intelligence, and language. A study by Mudford, Cross, Breen, and Cullen (2000) of 16 children with severe autism, using a crossover design, did not support AIT (twenty 30-min sessions). Mudford and colleagues compared AIT using headphones to the use of silent headphones and music in the room. After the AIT treatment, no differences were noted in children’s aberrant behavior, cognitive functioning, or adaptive functioning. These findings suggest that evidence for the effectiveness of AIT is equivocal and inconclusive (Sinha, Silove, Wheeler, & Williams, 2004).

Advanced technology has made possible the development of home-based methods that allow people to participate in sound-based treatment. One such technique, Therapeutic Listening® (Vital Links, 6613 Seybold Road, Suite E, Madison, WI 53719) uses electronically altered music on compact discs (CDs) (Frick & Hacker, 2001). The child listens to the music using high-quality headphones for two sessions per day for up to 30 min per session. Treatment is typically implemented as a home program for an average of 3 to 6 months. Occupational therapists have begun to use therapeutic listening as an adjunct to their intervention, particularly when applying a sensory integration approach (Frick & Hacker, 2001). The sound stimulation appears to calm and organize the child, in preparation for engagement in purposeful activity (Bettison, 1996; Rimland & Edelson, 1995). Ayres (1972, 1979) suggested that auditory input contributes to arousal, self-regulation, and emotions. She further theorized that well-organized sensory information helps children prepare for action. In addition to these potential effects on sensory processing and behavior, other scholars hypothesize that auditory stimulation influences spatial–temporal organization and visual–motor performance. Frick and Hacker (2001) explained that the therapeutic-listening program influences children’s arousal and potentially enhances spatial–temporal organization. Through clinical observations, occupational therapists have reported that therapeutic-listening programs result in improvements in task attention, spatial–temporal organization, visual–motor skills, handwriting, and timing of coordinated movements (Frick & Hacker, 2001). As part of a sensory integrative approach, therapeutic-listening programs may prepare the child to attend to and focus on perceptual–motor activities.

**Purpose**

The purpose of this study was to investigate the effects of incorporating the therapeutic-listening program (Frick & Hacker, 2001) with a sensory diet on children with SPD and visual–motor delays. We hypothesized that children would demonstrate improved visual–motor integration after 8 weeks of therapeutic listening and sensory diet when compared to a 4-week sensory diet phase. We also hypothesized that children would demonstrate fewer behaviors indicative of SPD after the sensory diet and therapeutic listening interventions.

**Methods**

**Participants**

The study used a convenience sample of children between ages 5 and 11 years who exhibited moderate to severe SPD and visual–motor integration delays. Each child was referred to occupational therapy at an outpatient clinic associated...
with a children’s hospital. Inclusion criteria were visual–motor integration delays as indicated by a score of at least 1 standard deviation below the mean on the Beery Developmental Test of Visual Motor Integration (VMI) (Beery, Buktenica, & Beery, 2004) and SPD as indicated by a score of definite difference (i.e., 2 standard deviations below the norm) on at least three subscales of the Sensory Profile (Dunn, 1999). Exclusion criteria for the participants in this study included moderate to severe mental retardation, cerebral palsy, Down syndrome, visual impairment, hearing impairment, and severe autism as reported by the parents and judged by parent report and child’s performance on the VMI. A participant’s condition, as documented in the medical record, could include any of the following: attention deficit hyperactivity disorder (ADHD), sensory integration disorder, mild autism or pervasive developmental disorder, Asperger syndrome, developmental delay, coordination disorder, or motor delays. Children on medication and those whose dosage was anticipated to change during the study were excluded. Participants who were currently receiving other therapy services were asked to continue in these therapies during this study. The authors determined that a sample of 10 would have adequate power to find effects. Using an effect size of 1.0 (based on preliminary data from one child who completed a trial of the protocol), a sample size of 10 participants yields a power of .76. Based on an effect size of 1.4 (expected effect size based on the preliminary results on the Sensory Profile), 10 participants yield a power of .92. Twelve children were recruited into the study, and 2 dropped out in the first phase.

Research Design

The participants were individually admitted into the study over a 10-month period. Each participant acted as his or her own control, first receiving 4 weeks of traditional sensory diet and then receiving 8 weeks of the therapeutic-listening (Frick & Hacker, 2001) program combined with the sensory diet. In the sensory diet program, the first author gave each family strategies to implement at home that would help the child modulate his or her sensory responses and arousal throughout the day. These strategies included various activities, including exercise, slow rhythmic rocking, deep pressure massage, or gum chewing. After the 4-week sensory diet, the first author prescribed an individualized therapeutic-listening program (while continuing the sensory diet) for each participant. Each program included specific CDs and a schedule for daily listening that the family implemented. The first author met with the families after 4 weeks to update and monitor the program. Sensory motor assessments before and after the study’s phases measured the treatment effects.

Instrumentation

Four standardized instruments were used to measure sensory responsiveness and visual–motor performance: the Sensory Profile (Dunn, 1999), the Draw-A-Person test (DAP; Vane, 1967), the VMI (Beery et al., 2004), and the Evaluation Tool of Children’s Handwriting (ETCH; Admundson, 1995). The DAP, VMI, and ETCH were administered three times before and after each treatment phase. Because the Sensory Profile was not expected to change within a month, parents completed it only twice, during the first visit and 12 weeks later at the final visit. All tests were administered by the first author and were scored by other occupational therapists, blinded to the participants and to whether the tests were pretests or posttests.

The Sensory Profile (Dunn, 1999) is a standardized 125-item questionnaire that evaluates sensory processing, modulation of sensory input, and behavioral and emotional responses. The parent or caregiver who has daily contact with the child completes the questionnaire by reporting how often these behaviors occur. Reliability and validity are strong (Dunn, 1999). Raw scores for the Sensory Profile sections were used for statistical analysis.

The DAP test was used to measure integration of visual–motor skills (Short-Degraff & Holan, 1992; Vane, 1967). Mortensen’s (1984) summary of research for the DAP found that test–retest reliability was .68 to .69 (1 week to 3 months) and interrater reliability was .68 to .96 (most found .80 to .90). Each participant was asked to draw a person on a blank sheet of paper. The test was scored by giving credit to each detail in the drawing according to specified criteria. The raw scores were used in statistical analysis.

The VMI (Beery et al., 2004) is a norm-referenced, evaluative measure of visual–motor integration for children ages 2–15 years. The test involves copying forms. In the VMI visual perception section, the child matches figures on the basis of their form, size, and position in space. In the motor coordination scale, the child draws lines within boundaries. Interscorer reliability is .94 for the VMI, .98 for the Visual, and .95 for the Motor. The VMI and its supplemental Visual and Motor tests had overall average reliability (interscorer, internal consistency, and test–retest) of .92, .91, and .89, respectively (Beery et al., 2004). In our study, the standard scores for the VMI and supplemental tests were used for data analysis.

The ETCH (Amundson, 1995) evaluates manuscript and cursive handwriting skills of children in Grades 1 through 6 who are experiencing difficulty with handwriting. Interrater reliability for total letters and numbers ranges from ICC = .82 to ICC = .84. For total letter legibility, test–retest reliability was $r = .77$, and for total number legibility, $r = .63$
In our study, each participant wrote letters and numbers from memory. Only the first three subtests for manuscript handwriting were administered; these subtests included writing uppercase letters, lowercase letters, and numbers from memory. Tests were scored by an occupational therapist, blinded to the participant’s identity and the study phase. Legibility raw scores were used for statistical analysis.

**Intervention**

**Sensory diet phase.** At the initial testing session, the first author developed a sensory diet to be implemented by the parents that was based on the initial Sensory Profile and the needs of the child. The sensory diet contained activities for the child to do at home that provided sensory input, such as movement, heavy work, or tactile stimulation. The researchers asked parents to fill out a daily checklist that recorded the type and frequency of the child’s target behaviors as well as to track their use of sensory diet that was given to them at their first visit.

**Therapeutic-listening and sensory diet phase.** After 4 weeks of a sensory diet alone, the first author, who was trained in use of therapeutic-listening treatment, met with the families to develop a therapeutic-listening protocol. The parent was given the equipment needed to implement this treatment as an intensive home program. The equipment included a set of high-quality Sennheiser 500 headphones (Sennheiser Electron Corporation, 1 Enterprise Drive, Old Lyme, CT 06371) with a high resistance or impedance of at least 150 ohms and a frequency sensitivity to 23,000 Hz, and two to three CDs specifically selected for the child. Participants used their own portable CD players.

Modified CDs, altered by processing the music through an alternating high pass, low pass filter, were used in this study. When modified, the high and low frequencies of the music pass through at different intervals, creating a disruption in the sound of the music. Frick and Hacker (2001) explained the clinical significance of this type of modification:

What appears to be created with the use of modulated music is an “exercising” effect of the muscles in the middle ear. Flexibility of these muscles is necessary to transmit sensory information to primary sensory processing centers that support sensory modulation. . . . Biomechanically, it is the function of the middle ear muscles to contract or focus on sounds and relax to monitor ambient environment. (pp. 3–13)

The therapeutic listening protocol required the participants to listen to the prescribed music for two sessions daily with at least 3 hr between sessions. Each session lasted from 20 min to 30 min depending on the type of music prescribed. No one CD was used for longer than 3 weeks to prevent habituation. Participants were instructed to avoid activities that required intense focus and that would distract them from listening, such as watching TV or playing videogames during listening sessions.

Parents kept a listening log on their children to record the frequency of treatment and their children’s response to the prescribed music. They were asked to continue documenting their use of a sensory diet and the frequency and severity of target behaviors throughout the treatment period. The researchers asked parents to document changes in target behaviors that reflected their goals for their child, such as increased eye contact, reduced outbursts, or decreased wetting accidents. After 8 weeks of protocol use, the researchers asked the parents open-ended questions in an interview to gather additional information about their child’s behavior during the study period.

**Statistical Analysis**

The SPSS (version 13.0) computer program was used to analyze the scores of the instruments in this study. Means and standard deviations of the dependent variable were summarized to demonstrate the group’s performance at each observation interval. Scores for the VMI, DAP, and ETCH at each testing time were compared using repeated-measures analysis of variance (ANOVA). Pretest and posttest scores for the Sensory Profile were compared using paired t tests. When results were significant, post hoc multiple comparisons (Tukey’s and Scheffé) were performed to determine which testing times were most significant (Cohen, 1988). The level of significance was set a priori at $p = 0.05$.

**Results**

**Participants**

Ten out of 12 participants completed the full 12 weeks of the study. The age of those who completed the study ranged from 5 years, 8 months, to 10 years, 11 months. All had a sensory processing disorder as defined by at least three areas of definite difference on the Sensory Profile and had scored at least 1 standard deviation below the norm on the VMI. Their conditions, ages, and services received are presented in Table 1.

Participants were directed to complete two therapeutic listening treatment sessions per day for 8 weeks. According to the parents’ logs, all but two parents were diligent in following the treatment protocol. These two implemented the treatment at least once per day and sometimes twice per day. All but one parent reported that their children did not change medications or therapy services during the 12-week
study. One child’s ADHD medication was reduced after 1 month of therapeutic listening because his behavior and attention had improved dramatically.

**Sensory Responsiveness and Visual–Motor Performance Effects**

Using a paired *t* test, Sensory Profile means for 9 of 14 subscales improved significantly between pretest and posttest (see Table 2). One-way ANOVA with repeated measures using the Greenhouse–Geisser adjustment were computed for DAP and ETCH raw scores and for VMI standard scores (see Table 3). When the three measures were compared, scores differed significantly for the visual and motor scales of the VMI and the lowercase, number, and total legibility scales of the ETCH.

Post hoc multiple comparisons using Tukey’s test for honestly significant difference were calculated to identify which phases were associated with significant improvement in scores (see Table 4). The Tukey’s analysis reveals that scores improved significantly only when the two phases were combined (01–03).

Using Scheffé compound contrast procedure, the mean scores for posttest 03 were compared to the average of the mean scores for pretests 01 and 02. Both the VMI visual

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**Table 1. Description of the Participants**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Age*</th>
<th>Services</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>7 years, 2 months</td>
<td>None. Previously received OT</td>
<td>Asperger syndrome</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>7 years, 3 months</td>
<td>OT 2 times per month</td>
<td>Developmental delay, hypotonia</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>7 years, 3 months</td>
<td>Previously received OT</td>
<td>Sensory integration dysfunction</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>8 years, 4 months</td>
<td>None</td>
<td>ADHD, sensory integration disorders</td>
</tr>
<tr>
<td>5</td>
<td>Female</td>
<td>5 years, 8 months</td>
<td>OT weekly at school</td>
<td>Developmental delay</td>
</tr>
<tr>
<td>6</td>
<td>Male</td>
<td>10 years, 11 months</td>
<td>None. Previously received OT</td>
<td>High-functioning autism</td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>8 years, 0 months</td>
<td>OT once per month</td>
<td>Coordination disorder</td>
</tr>
<tr>
<td>8</td>
<td>Male</td>
<td>8 years, 1 month</td>
<td>OT consultation</td>
<td>Asperger syndrome, anxiety disorder</td>
</tr>
<tr>
<td>9</td>
<td>Male</td>
<td>8 years, 6 months</td>
<td>Previously received OT, PT once per week</td>
<td>ADHD, mild cerebral palsy</td>
</tr>
<tr>
<td>10</td>
<td>Male</td>
<td>8 years, 7 months</td>
<td>OT once per week</td>
<td>Arnold–Chiari malformation</td>
</tr>
</tbody>
</table>

Note. OT = occupational therapy; ADHD = attention deficit hyperactivity disorder; PT = physical therapy. *Age at baseline.

**Table 2. Paired *t*-Test Results of the Sensory Profile**

<table>
<thead>
<tr>
<th>Sensory Profile Total</th>
<th>367</th>
<th>10.6</th>
<th>439</th>
<th>15.1</th>
<th>−6.23</th>
<th>.001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Auditory Processing</td>
<td>18.4</td>
<td>0.9</td>
<td>27.1</td>
<td>1.1</td>
<td>−6.78</td>
<td>.001*</td>
</tr>
<tr>
<td>B. Visual Processing</td>
<td>29.8</td>
<td>2.1</td>
<td>34.3</td>
<td>2.0</td>
<td>−1.97</td>
<td>.079</td>
</tr>
<tr>
<td>C. Vestibular Processing</td>
<td>40.1</td>
<td>1.2</td>
<td>43.0</td>
<td>2.4</td>
<td>−1.18</td>
<td>.265</td>
</tr>
<tr>
<td>D. Touch Processing</td>
<td>55.5</td>
<td>3.8</td>
<td>64.2</td>
<td>4.1</td>
<td>−2.78</td>
<td>.021*</td>
</tr>
<tr>
<td>E. Multisensory Processing</td>
<td>19.9</td>
<td>1.4</td>
<td>23.4</td>
<td>0.9</td>
<td>−2.86</td>
<td>.019*</td>
</tr>
<tr>
<td>F. Oral Sensory Processing</td>
<td>36.5</td>
<td>3.6</td>
<td>43.8</td>
<td>2.9</td>
<td>−2.75</td>
<td>.022*</td>
</tr>
<tr>
<td>G. Endurance and Tone</td>
<td>28.8</td>
<td>2.9</td>
<td>31.6</td>
<td>2.6</td>
<td>−1.54</td>
<td>.157</td>
</tr>
<tr>
<td>H. Body Position and Movement</td>
<td>31.5</td>
<td>1.3</td>
<td>35.3</td>
<td>2.0</td>
<td>−2.27</td>
<td>.049*</td>
</tr>
<tr>
<td>I. Movement Affecting Activity Level</td>
<td>19.4</td>
<td>1.2</td>
<td>21.3</td>
<td>1.3</td>
<td>−1.27</td>
<td>.235</td>
</tr>
<tr>
<td>J. Emotional Responses</td>
<td>10.1</td>
<td>1.0</td>
<td>12.7</td>
<td>0.7</td>
<td>−3.40</td>
<td>.008*</td>
</tr>
<tr>
<td>K. Modulation of Visual Input Affecting Emotional Responses</td>
<td>11.9</td>
<td>0.7</td>
<td>12.9</td>
<td>0.9</td>
<td>−2.23</td>
<td>.052</td>
</tr>
<tr>
<td>L. Emotional/Social Responses</td>
<td>4.11</td>
<td>2.5</td>
<td>54.0</td>
<td>3.4</td>
<td>−3.27</td>
<td>.010*</td>
</tr>
<tr>
<td>M. Behavioral Outcomes</td>
<td>13.6</td>
<td>0.7</td>
<td>17.7</td>
<td>0.9</td>
<td>−6.23</td>
<td>.001*</td>
</tr>
<tr>
<td>N. Items Indication Threshold Response</td>
<td>10.5</td>
<td>0.6</td>
<td>11.2</td>
<td>0.4</td>
<td>−1.35</td>
<td>.209</td>
</tr>
</tbody>
</table>

*p < .05.

**Table 3. DAP, VMI, and ETCH One-Way Repeated-Measures ANOVA Results**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Pretest 01</th>
<th>Pretest 02</th>
<th>Posttest 03</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SEM</td>
<td>Mean</td>
</tr>
<tr>
<td>DAP–R</td>
<td>12.2</td>
<td>2.2</td>
<td>12.8</td>
</tr>
<tr>
<td>VMI</td>
<td>83.5</td>
<td>1.8</td>
<td>83.8</td>
</tr>
<tr>
<td>VMI–V</td>
<td>81.8</td>
<td>4.5</td>
<td>84.1</td>
</tr>
<tr>
<td>VMI–M</td>
<td>85.8</td>
<td>6.8</td>
<td>73.6</td>
</tr>
<tr>
<td>ETCH–LC</td>
<td>12.9</td>
<td>2.0</td>
<td>14.0</td>
</tr>
<tr>
<td>ETCH–UC</td>
<td>14.5</td>
<td>2.1</td>
<td>13.8</td>
</tr>
<tr>
<td>ETCH–N</td>
<td>8.0</td>
<td>0.869</td>
<td>8.8</td>
</tr>
<tr>
<td>ETCH–T</td>
<td>52.6</td>
<td>7.9</td>
<td>53.5</td>
</tr>
</tbody>
</table>

Note. ANOVA = analysis of variance; sig. = significance; DAP = Draw-A-Person test (Vane, 1967); VMI = Visual Motor Integration test (Beery et al., 2004); VMI–V = VMI, Visual subtest; VMI–M = VMI, Motor subtest; ETCH = Evaluation Tool of Children’s Handwriting (Amundson, 1995); LC = lowercase; UC = uppercase; N = numbers; T = total.

*p < .05.
Other studies of AIT have not shown this dramatic reduction in sensory and behavioral problems (Mudford et al., 2000; Zollweg, Palm, & Vance, 1997). Intervention in the current study differed from these earlier studies in that the AIT programs are administered by trained specialists in the clinic. Additionally, each child had a sensory diet recommending specific sensory experiences throughout the day. The sensory subscale and the ETCH total legibility subscale demonstrated significant improvement when posttest 03 scores were compared to the means for pretest 01 and 02 scores ($p < .05$).

Qualitative results were provided through logs that the parents kept during the therapeutic listening program and the interviews after the program. Parents of 4 of the 5 participants with reported auditory hypersensitivity stated that their children were more tolerant of noise. Of the 4 participants reported to have tantrums daily or weekly, the parents indicated that tantrums had either stopped completely or decreased dramatically in frequency, duration, and intensity. Five of 6 parents, who reported at baseline that their children were high energy or very active, stated that their children were calmer during the therapeutic listening program. During the 8 weeks of therapeutic listening, 4 parents reported that they received reports that their children's performance in school had improved, and 3 parents reported that their children's eye contact improved.

### Discussion

The participants demonstrated remarkable improvement in behaviors that reflected sensory processing (the participants increased an average of 71 points on the Sensory Profile). The participants improved in 9 of 14 subtests (see Table 2), with the greatest differences in auditory processing and behaviors associated with sensory processing. Studies of AIT have demonstrated similar results in that children’s sensory problems declined (Gillberg et al., 1997) and behaviors improved (Bettison, 1996; Rimland & Edelson, 1995). Other studies of AIT have not shown this dramatic reduction in sensory and behavioral problems (Mudford et al., 2000; Zollweg, Palm, & Vance, 1997). Intervention in the current study differed from these earlier studies in that the therapeutic-listening program, although therapist directed, was implemented by parents at home, whereas AIT programs are administered by trained specialists in the clinic. Additionally, each child had a sensory diet recommending specific sensory experiences throughout the day. The sensory activities provided an active component to the therapeutic-listening program, based on the concept that therapeutic listening helps prepare the child for purposeful activity.

Our results suggest that the therapeutic-listening program in combination with a sensory diet facilitated substantial improvement in children's behavior as measured by the Sensory Profile. The parent interviews at the end of the study provided insight into some of the behavioral changes. Parents stated that their children demonstrated improved attention, greater interaction with peers, decreased nightmares, improved transitions, better listening, greater self-awareness, better communication, improved sleep patterns, and more consistency in following directions. The interviews and logs also suggested that the therapeutic-listening program appeared to have differential effects according to the child's behavioral problems. One parent wrote,

[My son] is now interacting with classmates. He [now] talks about [his friends]. His teacher said he used to walk outside the play area with his head down to avoid the other kids. Now he is playing beside the other kids. Eye contact is improved.

Therapeutic listening is believed to improve spatial–temporal organization (Frick & Hacker, 2001), and to examine this effect, we measured visual–motor and handwriting performance. Our findings offer minimal support that therapeutic listening improves temporal–spatial skill. Comparison of DAP mean scores did not support the treatment effect. Additionally, visual–motor integration and the VMI motor subscale did not change between baseline and treatment phases. However, improvements seen on the visual subscale were significant, indicating that therapeutic listening appears to affect visual perception. Participants’ handwriting also improved over the course of the study. Post hoc analysis showed that the participants made considerable improvement in writing their lowercase letters over the entire 12-week period, although this improvement was not greater during the therapeutic-listening phase. Number writing showed greater improvement during the baseline phase, then gradual improvement over the treatment phase, thus not supporting a treatment effect. However, total legibility improved significantly during the treatment period (7%) compared to the baseline phase (1%). In the 2 of the 10 children who were receiving services for handwriting skills during the study, performance jumped when therapeutic listening was implemented. One scored 3% and 5% on the two pretests, respectively, and scored 17% on posttest, and the other scored 40% and 48% on the two pretests, respectively, and scored 61% on the posttest. The parent of the former noted that after her child started therapeutic listening, the child became more interested in writing.

### Table 4. Results of Tukey’s Test for Post Hoc Multiple Comparisons

<table>
<thead>
<tr>
<th>Scales</th>
<th>01–02</th>
<th>02–03</th>
<th>01–03</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMI–V</td>
<td>NS</td>
<td>NS</td>
<td>S*</td>
</tr>
<tr>
<td>VMI–M</td>
<td>S (d)*</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>ETCH–LC</td>
<td>NS</td>
<td>NS</td>
<td>S*</td>
</tr>
<tr>
<td>ETCH–N</td>
<td>S*</td>
<td>NS</td>
<td>S*</td>
</tr>
<tr>
<td>ETCH–T</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Note. (d) denotes decrease of mean scores. NS = not significant; S = significant; VMI = Visual Motor Integration test (Beery et al., 2004); VMI–V = VMI, Visual subtest; VMI–M = VMI, Motor subtest; ETCH = Evaluation Tool of Children’s Handwriting (Amundson, 1995). LC = lowercase; N = numbers; T = total.

*p < .05.
Limitations and Recommendations

An important limitation of the study was use of a convenience sample. The children had a wide range of conditions, suggesting that behaviors reflecting sensory processing may improve with therapeutic listening regardless of condition. Because the therapeutic-listening program was administered by the parent as a home program, the authors were not able to closely monitor how well or consistently the parents followed the treatment. The parents, however, documented the duration and frequency of each session to track compliance with the treatment protocol. Most children who receive sound-based treatment typically continue with this treatment for an average of 3–6 months. This study examined the effect of a short duration of this treatment. Therefore, the full effects of this intervention may not be revealed given the 8-week duration.

Further study is needed to specifically analyze the effectiveness of therapeutic listening in conjunction with occupational therapy. Given evidence of robust effects on behavior, additional measures of behavior should be incorporated in future studies of therapeutic listening. In addition, research is needed to examine the long-term effects of therapeutic listening, perhaps targeting specific behaviors from the Sensory Profile.

Conclusion

The present study produced encouraging findings to support the use of therapeutic listening as part of an overall sensory integrative approach to occupational therapy in elementary school-age children. Therapeutic listening, along with sensory diet strategies, can be effective in reducing many behaviors associated with sensory integration disorder. To achieve optimal outcomes, we recommend that practitioners combine therapeutic listening with traditional occupational therapy approaches that elicit the child's active participation. ▲

References

Evidence Brief on the Effectiveness of Therapeutic Listening®

Summary of Findings: The existing body of research on Therapeutic Listening presents positive findings regarding the use of Therapeutic Listening as a treatment tool embedded in a sensory integrative treatment approach. The studies identify multiple positive gains including improved attention, handwriting, ability to perceive and move through space, enhanced interaction with peers, greater ability to attend to and follow directions, improved sleep and wake cycles, and enhanced communication. The current research on Therapeutic Listening does support continued clinical use. Future well-controlled studies would expand and enhance the existing research.

Level III: Quasi-Experimental/Repeated Measure Design/Pretest-Posttest Design


The purpose of this study was to examine the effectiveness of a sensory diet and Therapeutic Listening on a group of children with sensory processing disorder and visual-motor delays. Study participants included a convenience sample of 10 children; ages ranging from 5 years, 8 months to 10 years, 11 months. In the first phase, participants took part in a 4-week sensory diet, followed by an 8-week sensory diet and Therapeutic Listening phase. Each participant was assessed on sensory responsiveness using the Sensory Profile both before, and after, both intervention phases. Participants were assessed on visual-motor performance using the “Draw-A-Person” test, the Developmental Test of Visual-Motor Integration (VMI), and Evaluation Tool of Children’s Handwriting (ETCH) before and after each intervention phase. During the 4-week sensory diet phase, each participant was provided with specific activities to be completed at home with their parents. The activities selected by the occupational therapist were based upon the initial Sensory Profile and the individual needs of the child. In the second 8-week phase, the families again met with the therapist and a Therapeutic Listening protocol was developed to meet the needs of the child.

Participants’ scores on the Sensory Profile indicate a remarkable improvement in sensory processing following the 12-week intervention (scores increased an average of 71 points from pre- to post-test). Following the Therapeutic Listening intervention, participants demonstrated mixed results on the improvement of temporal-spatial skills. Participants demonstrated a significant improvement in scores on the VMI visual subtest and writing lowercase letters (ETCH). Handwriting total legibility improved significantly from initial pre-test to post-test. Parent interviews at the end of the second intervention phase also indicated an improvement in participants’ behavior. Parents reported they observed improvements in their child’s attention, enhanced interaction with peers, improved transitions, greater self-awareness, decreased nightmares, enhanced listening, improved communication, greater regularity following directions, and improved sleep patterns. Overall, the results of this study provide promising support for the use of Therapeutic Listening as an intervention tool to support occupational therapy with sensory integrative treatment approach.

The purpose of the study was to further expand the current evidence on Therapeutic Listening by examining the results of listening with a group of preschool children with developmental disabilities. The participants included a group of 15 children, ranging from 3 to 6 years of age, who attended one of four similar preschool classrooms. Each displayed difficulties with sensory processing as demonstrated by their scores on the Sensory Profile. All received occupational therapy services, primarily related to enhancing school performance. Participants engaged in a Therapeutic Listening protocol, which was developed and monitored by an occupational therapist. Assessments were administered pre-intervention at the beginning of the school year (October) and post-intervention at the end (April and May) in the following areas: fine-motor, visual-motor, language, social skills, nonverbal intelligence, and sensory processing. The pretest and posttest assessments included the Peabody Developmental Motor Scales-Second Edition (PMDS-2); Developmental Test of Visual-Motor Integration (VMI); Preschool Language Scale-3 (PLS-3); Draw-A-Person (DAP); Social Skills Rating System (SSRS); and the Sensory Profile. The length of intervention ranged from 6 weeks to 5 months depending on the child’s individual needs. Participants engaged in Therapeutic Listening one to two times a day, for 5 days a week, for duration of 20 to 30 minutes.

The results of this study indicate that participants made statistically significant changes in visual-motor, fine-motor, language, non-verbal, and social skills from pretest to posttest. The mean of each pretest assessment significantly increased at posttest, with the exception of the SSRS problem behavior standard score and the PLS-3 language standard score. Participants did not demonstrate any significant changes on any of the subtests of the Sensory Profile. In addition to improvements in standardized assessments, both teachers and parents noted encouraging changes in their children’s behavior. Parents reported transformations in their children’s execution of activities of daily living. Teachers stated positive improvements in group activity participation, overall attention and processing, increased number of verbalizations, more positive social interactions, and greater ability to attend to and complete directions. The results of this study indicate that for a group of preschool students, Therapeutic Listening in conjunction with traditional occupational therapy services resulted in a statistically significant improvement in a number of critical performance areas (fine-motor, visual-motor, language, non-verbal, and social).


The purpose of this pilot study was to explore the use of Therapeutic Listening in a group of eight elementary-age students. The study participants all had varying degrees of impairment with motor, visual, ocular, and sensory processing skills. Study participants’ caregivers and teachers completed the Sensory Processing Measure (SPM) and the Conners 3 Short Form. Additionally, the Developmental Test of Visual Perception- 2nd edition (DTVP-2) was administered in December and June.

Study participants demonstrated improvements in both behaviors in the classroom and at home. Within two weeks of initiating the Therapeutic Listening protocol, four of the most emotionally labile students were spending more time in the classroom, as compared to previous time spent saddened in the hallway. Teachers noted that participants were more engaged in classroom activities. One parent reported that their child was now sleeping through the night and open to trying new
foods. Other parents reported that their children were more regulated, less frustrated, and less anxious. All parents reported an increase in attention and emotional flexibility. All but one teacher, who responded neutral, reported that were likely or very likely to use this program again. The participants’ parents responded positively to the implementation of Therapeutic Listening, and some even requested a continuation of this program for their child. Overall the results of this study support the use of Therapeutic Listening with elementary school students and the use of this tool within a school setting.

Level V: Case Study


This article presents a case study on a 4 ½ year old girl, who had recently been adopted from Russia. Upon referral to occupational therapy, parental primary concerns included poor safety awareness and lack of impulse control. “Sara” also demonstrated increased activity level, difficulty regulating sleep patterns, postural insecurity, and difficulty with interpersonal interactions. She exhibited adverse responses to light touch, noise, bright lights, and environmental smells. Sara became easily frustrated and had difficulty coping with transitions. In the clinic, Sara presented with poor trunk strength and quickly fatigued while sitting or standing. To compensate for poor trunk strength, Sara would quickly move through all gross-motor activities.

Sara participated in bi-weekly occupational therapy for duration of 60 minutes, for a total of 15 direct treatment sessions over seven months. Sara participated in a Therapeutic Listening program and a sensory diet home program including the TheraPressure Program, *How Does your Engine Run?*, and postural and muscle coordination activities.

Sara presented with significant behavioral changes within the first few weeks of Therapeutic Listening. She began to tolerate and seek out touch (i.e. hugging her grandmother), and started to notice sounds for the first time (i.e. birds chirping). In the final weeks of Therapeutic Listening, Sara’s teachers reported improvements in overall attention and visual-spatial skills. Parental report indicated that Sara more frequently engaged in a quiet alert state, demonstrated improved eating, and is now able to fall asleep independently. Sara also displayed significant improvements in four subscales on the Sensory Profile. This case study supports the use of Therapeutic Listening with individuals with modulation and self-regulation difficulties in conjunction with other sensory integrative techniques.

Frick, S., Young, Sally. (2009). Listening with the Whole Body: clinical concepts and treatment guidelines for therapeutic listening. Vital Links; Madison, WI.

This book includes a compilation of case studies of individuals who participated in the Therapeutic Listening program. Case study subjects range in age from 10 months to 59 years of age, with a variety of diagnoses, and levels of sensory dysfunction. Individual case studies provide specific detail that pertains to each individual’s detailed occupational therapy program and progression through Therapeutic Listening. While participating in Therapeutic Listening, many individuals also received ongoing occupational therapy services based on a sensory integration treatment perspective and recommendations for home program activities.
Participants in the Therapeutic Listening program demonstrated a range of positive results and improvements in everyday activities. Individuals displayed improvements in overall self-regulation, ability to fall asleep and stay asleep, enhanced ability to engage in social interactions, improvements in ability to perceive and explore space, and increased ability to engage in movement. Younger participants demonstrated improvements in communication, ability to tolerate transitions, enhanced safety awareness, ability to function in noisy environments, and advanced fine- and gross-motor skills. Improvements related to Therapeutic Listening were observed at home as well as in school environments. Participants demonstrated improved academic performance, enhanced attention, and ability to focus on homework. The results of these case studies substantiate the use of Therapeutic Listening, used within a sensory integrative treatment context, with a broad range of individuals, ages, and sensory integration dysfunction.