

ARRESTED DEVELOPMENT— REMARKABLE GROWTH



Maude Le Roux

And He ... put His fingers into his ears ... and saith unto him, "Ephphata," that is, "Be opened." And straightaway his ears were opened, and his tongue loosed, and he spake plain.

—Mark 7:31-37, quoted in Alfred Tomatis,
The Ear and Language

Maude Le Roux

Maude owns and directs A Total Approach, a therapy and education center just outside Philadelphia in the United States, and has several years of field and supervisory experience in a variety of occupational therapy fields. She is an experienced occupational therapist, holds a DIR® certificate (Floortime™), and has completed several sound therapy certifications, including Interactive Metronome. Maude is currently an elected board member of the International Association of Registered Certified Tomatis® Consultants (IARCTC) and also serves on the research and conference committee for the same organization. She works with a team of occupational therapists, speech language pathologists, physical therapists and mental health counselors in her practice, and she is well known for her experience and work with children who carry a diagnosis on the autism spectrum, sensory processing disorder, and dyslexia/learning disabilities. Maude believes in being a lifelong learner, and attends conferences on an almost-monthly basis. She is also a co-trainer of the Solisten®/Tomatis® training team for the USA and South Africa.

You can find out more about Maude's center—and her incredible work—at **www.atotalapproach.com**.

CHAPTER 1

Arrested development— remarkable growth

This is a story about Joey, a charming little boy with dark brown hair, the sweetest blue eyes, the most pleasant disposition and the cutest smile. Joey first came to us when he was three years and eight months of age.

Joey's mother's full-term pregnancy was largely uneventful, although she did experience a fever of undiagnosed origin around the time of birth, which both brought on the delivery and persisted afterwards. Joey's Apgar scores were excellent after birth and he was pronounced a healthy, seven-pound baby boy, to the delight of both parents. However, when he was just one week old, Joey was diagnosed with gastroesophageal reflux disorder (GERD). He gagged frequently, vomited often and experienced difficulty with feeding, which made natural feeding difficult and required him to transition to formula. The GERD persisted until he was about 11 months of age.

When he was six months old, the doctors questioned whether Joey was struggling with "failure to thrive," and the decision was made to transition him to solid foods. At the same time he began to struggle with fluid in his

ears, which required the placement of ear tubes in both of his ears at the age of two and a half, and then again when he was three. When Joey came to us, he continued to struggle with fluid in his ears. Joey had all his vaccinations on time and reached most of his developmental milestones within average time frames. The family had not involved any biomedical interventions at that time.

When Joey was two the family noted some delay in his speech development and he was evaluated to determine his eligibility for Early Intervention Services. In the United States, these services consist of different therapies such as occupational therapy, speech therapy, and physical therapy. The services are government funded for children up to three years of age, and are delivered in the family home. Joey qualified for occupational therapy services and specialized instruction (teaching services) until he was three years old.

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Between the ages of two and three he also experienced a traumatic event in a day care setting. Apparently he cried incessantly for a period of three and a half hours, and there was little intervention from the day care staff to console or placate him. It took the family three months to get Joey's schedule back to some semblance of order, as he experienced extreme anxiety following this incident.

When presenting Joey to our center, the family described him as, "happy, funny, patient, athletic, imaginative, great ability to memorize books, and quite musical, liking to sing and play guitar." But they were concerned about his conversational skills, his ability to pay attention in a conversation situation and his linguistic development. Other areas of concern discovered during the first parent interview were his difficulty in making appropriate eye contact, his tendency to make "odd" sounds, and his extensive trouble falling and staying asleep at night—the length of time for which he was able to remain

asleep was quite unpredictable. The family wanted to identify the possible impact of sensory processing systems on these concerns.

In the United States, occupational therapists are trained to work in a variety of rehabilitation settings and the primary function of an occupational therapist is to evaluate and treat possible causes preventing any person from enjoying their current occupation to the fullest degree possible. It is a very satisfying career and can be applied in multiple settings, including physical and mental rehabilitation. At our center we are mostly concerned with children from birth through to adolescence, and their ability to apply themselves to the occupation of early development, play and learning.

One of the primary researchers in the field of sensory processing is Lucy Jane Miller, PhD, OTR. In her book, *Sensational Kids*, she wrote that, “Sensory processing is a term that refers to the way the nervous system receives sensory messages and turns them into responses.”¹ She further explained that, “Sensory Processing Disorder exists when sensory signals don’t get organized into appropriate responses and a child’s daily routines and activities are disrupted as a result.”²

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When we evaluated Joey we used measures and clinical observations to assist us in understanding his early development. We aimed to understand not only how his sensory processing systems were discriminating information as individual systems, but also how these systems interacted with each other to allow efficient and healthy functioning. Joey presented with no diagnosis at the time of the evaluation and our work focused more on assessing his profile than on reaching a diagnosis.

Joey underwent several assessments and evaluations at our center. He was first evaluated in June 2007 and was then re-assessed in November 2007 so that we could check on his progress. During the period from June

to November 2007, Joey participated in occupational therapy services once a week for 60 minutes. The family elected to use a home-based listening program called Therapeutic Listening[®], designed and developed by Sheila Frick, an exceptional occupational therapist. The family was given the option of completing Tomatis[®] training, but decided that this did not meet their needs at that time. However, after Joey was re-assessed in November 2007, they decided to enroll him in the Tomatis[®] training program. He was then re-assessed again in May 2008, post-Tomatis[®] training.

During his initial assessment in June 2007, Joey completed the Peabody Developmental Motor Scale—Second Edition (PDMS-2), specifically the fine motor section. This assessment analyzes a child's ability to grasp and release patterns, manipulation skills (such as using fasteners), pre-writing skills, visual perceptual skills (imitating block designs), and cutting skills. Joey achieved a grasping standard score of five, putting him in the fifth percentile rank when compared with peers of his age. His visual-motor integration standard score was nine, placing him in the sixth percentile. His fine motor quotient score reached a Z-score of -1.80 and a total fine motor quotient score of 73. For quotient scores, 70 to 79 are considered to indicate poor performance, 80 to 89 are considered below average, and 90 to 110 are considered average.

Joey also completed the DeGangi Berk Test of Sensory Integration. This assessment measures three areas: postural control (both antigravity positions of extension and flexion), bilateral motor integration, and two primitive reflexes—the asymmetrical tonic neck reflex (ATNR), which pertains to the development of both the left and the right side of the body, and symmetrical tonic neck reflex (STNR), which is mostly concerned with the development of the upper and lower body. Both these reflexes assist in the birthing process and are generally fully integrated by the fourth month of infant life. If children persist in utilizing these reflexes until later in life it serves as an indicator of arrested motor development. These three areas of development are considered to be of clinical significance in the development of sensory integrative functions in the preschool child.

For postural control the “normal” score is 20 to 30, the “at risk” score is 17 to 19, and the “deficient” score is 0 to 16. Joey achieved a score of 17, placing him in the “at risk” range.

For bilateral motor integration the “normal” score is 30 to 42, “at risk” is 26 to 29, and “deficient” is 0 to 25. Joey achieved a score of 20, placing him in the “deficient” range.

The reflex integration score on this test is only used to determine the total test score, and Joey achieved a score of 15.

The “normal” range for the total test score is 52 to 88, “at risk” is 47 to 51, and 0 to 46 is “deficient.” Joey scored 52, placing him in the “normal” range for his age. Considering the first two scores it was clear that his reflex integration score was high, overcoming the other areas of weakness and bumping his total test score up into the “normal” range.

Clinical observation of Joey during this time revealed that he had difficulty following directions and answering questions, repeating words and phrases, and reciting scripts. He had particular trouble when background noise was present, but the problem also persisted in ideal conditions. In terms of language Joey experienced difficulty pronouncing new words, relating ideas and holding conversations. He could not sustain eye contact and listen at the same time. He thoroughly enjoyed any movement activity, though he fatigued fairly quickly in antigravity positions. Prone extension (lying on the stomach while raising both arms and legs) was limited to three to four seconds.

With regard to his eating, Joey tended to stuff his mouth, although he would accept a wide variety of foods. Joey used a pacifier to help him sleep at night and he had difficulty coordinating oral movements pertaining to his tongue, lips and jaw. He also experienced considerable tactile sensitivity; for example, he needed the tags in his shirt to be cut out and he was reluctant to explore any messy media presented to him. Sitting still and sustaining

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attention were extremely challenging for him, and his ability to “motor plan” through new motor actions appeared awkward. He was unable to build a tower comprised of ten blocks, use scissors to cut a piece of paper in two, or even to cut on a straight line. Joey experienced difficulty readily crossing the midline of his body. He also had trouble playing with peers at this time.

We had been adding Tomatis® sound training to our traditional therapies since 2003, and our experience was telling us that Joey would be an excellent candidate as most of his difficulties surrounded the effects of the vestibulo-cochlear system and, more specifically, the processing of cranial nerve eight, the vestibulo-cochlear nerve. Our goal is always to start intervention at the point of origin of a difficulty and then work our way from that point to increase fine discrimination and organizational tasks. Joey’s family chose to complete the therapeutic listening program at home, and his once-a-week occupational therapy program included postural control work, oral motor control work, brushing and joint compression (using a program for tactile sensitivity designed by Pat and Julia Wilbarger). When we do this type of program the families also receive a home program (to be completed five times weekly) to complement the one-hour-a-week therapy.

Joey was re-assessed in November 2007. Now over the age of four, his scores compared him with his current age group. On the PDMS-2 his grasping scores remained the same, but his visual-motor integration decreased to a standard score of seven, putting him in the seventh percentile. His fine motor quotient increased slightly to 76, providing a still-deficient Z-score of -1.60. On the DeGangi Berk Test of Sensory Integration, his postural control improved to 20, which was considered to be right at the cutoff for “normal.” His bilateral integration score improved slightly, though it was still deficient.

At this time, the therapist added another test called the Test of Visual-Motor Skills—Revised, which assesses a child’s ability to draw or copy a figure that has been presented to them. Visual-motor integration is the ability to relate visual stimuli to motor responses with accuracy and Joey achieved a score equivalent to that of a child aged three years and one

month, which placed him in the 14th percentile rank when compared with his peers. His mother also completed the Greenspan Social-Emotional Growth Chart, and the highest level he achieved at this time was level three, with scattered skills to level six. Broadly speaking, level three equates to two-way communication skills, level four to simple, yet sequential, problem solving and expansion of own play ideas, level five to symbolic thinking and level six—the highest level—to logical thinking, negotiation, complex problem solving, and flexibly negotiating different solutions for single problems. In the book *Engaging Autism*, Dr. Stanley Greenspan and Dr. Serena Wieder explain the Developmental, Individual Differences, Relationship-based Model, or DIR[®], in greater detail. Affectionately known as “Floortime™,” DIR[®] is a specialized developmental framework that requires post-graduate certificate training.

The evaluating therapist felt that although Joey had gained some ground in clinical terms, he was still underperforming in several areas of development and struggled with following directions. He tended to shut down when required to listen, although he no longer repeated back everything that was said to him. His ability to pronounce new words and verbally express himself had improved, but pragmatic language still remained a problem. There was little to no improvement in eye contact when he was expected to listen. Prone extension (one postural control measure) had improved to six seconds, though this was still deficient for his age, and although the therapist had previously been unable to measure his balance at all, he was now able to stand on one foot for two seconds. His tactile sensitivity had decreased significantly and he had started to request tactile activities, such as playing with his hands in shaving cream.

Joey was able to attend to tabletop tasks for longer periods of time and his ability to transition from one activity to another had improved, although he still experienced difficulty with non-preferred tasks. Despite the fact that he was able to comply with testing for motor-

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planning measures, he still indicated strong difficulties in this area, contributing to a tendency to avoid new and novel tasks. He was crossing his midline more readily. He was still observed to sometimes start drawing from right to left, but his pencil grasp was emerging into a more mature pattern and he was able to print the letters of his first name, although he still exhibited an awkward scissor grasp. He had become more assertive with family members and his interest in social interaction was increasingly active, but on the whole this remained an area of grave difficulty for him. During play he would repeat the same play themes and would not readily expand steps or create novel ideas.

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Joey's family decided to enroll him in the Tomatis® training program. In our program the child participates in an occupational therapy program with a child/therapist ratio of one to one. The two-hour therapy session takes place simultaneously with the two-hour listening program.

After the first 15 days of the program, Joey was striking up conversations with people he had not encountered before, and he was also making more conversation around the dinner table than he had previously. He had also started sleeping better, except for occasional nightmares. Joey was still shy around new peers, but had one friend with whom he played regularly.

Joey was indulging in regular arguments with his sister, talking non-stop through television and video games and also initiating family games. Not only was he able to speak in full sentences, he had also started correcting his mother, telling her to put her seatbelt on or to look left and right when crossing the street. The family noted that at this time Joey was able to tell sequential stories in full, lengthy sentences. He would comment on his own behavior: "Sorry I yelled at you, Daddy!" He was notably more in control of his environment and expressed a desire to control his sister. His teachers also noted that Joey was doing very well at school—he had started to memorize sight words and to spell words. He was also more emotionally sensitive, and

his feelings got hurt more.

After his second intensive of eight days, his mother exclaimed, “He is coming into his own!”

Joey had started to initiate play with more than one peer and requested play dates. He was sleeping very well, demonstrated the ability to hold conversations for longer periods of time and used the names of both his peers and adults freely, although keeping him on topic when discussing non-preferred subjects remained difficult. Joey’s interest in writing and reading increased and he also decided that he was going to help his mother cook. Joey was now asking to play and stay outside—he was riding his bike and standing on the pedals, and was practicing using rollerblades. While previously Joey seemed to prefer using his left hand in baseball, he had switched to consistently using his right hand.

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Joey was settling into being a member of his family and was excited to go with his mother every day to pick up his sister from school and talk to her. His father was especially pleased that Joey would now run to him when he came home after work, expressing his happiness in seeing his daddy. His teacher was noting no concerns at this time, and stated that he was asking questions, had many ideas and initiated conversations. He liked to win the games he participated in, but was really good about losing too. Joey had almost completely ceased getting his mother to perform motor tasks for him, however his parents were still concerned about his attention span at this time.

Joey completed his third intensive in March 2008, totaling 62 hours of intensive work. He then completed a reassessment in June 2008. On the Test of Visual-Motor Skills—Revised Joey scored at four years of age, which showed significant improvement and placed him in the 30th percentile. On the PDMS-2 his grasping standard score was now eight, placing him in the 25th percentile. His visual-motor integration standard score was now ten, positioning him in the 50th percentile. His total fine motor quotient was now -0.40 placing him for the first time in the completely average range

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for his age. He achieved full mastery at level six on the Greenspan Social-Emotional Growth Chart, although clinical observations continued to note subtler motor-planning and related language difficulties. On the DeGangi Berk Test of Sensory Integration, his postural control remained in the normal range, with even more improvement in his score. His bilateral motor integration score improved to 27, which now placed him in the “at risk” category. His total test score improved to 66, which was right in the middle of the average range. His mother also completed a preschool version of a questionnaire called the Behavior Rating Inventory of Executive Function (BRIEF). No difficulties were reported in the area of executive functioning at this time.

Clinically, Joey was now able to participate fully in motor-planning (praxis) tasks and was also completing most of them to an average degree. He still had some difficulty with tasks that required him to close his eyes, but having been visually reliant for so long, this habit would take time to break. He had become consistently right-handed when using any utensils, such as for tasks like eating and writing. Joey still demonstrated difficulty with understanding laterality concepts such as “bottom” and “front” although he was consistently drawing from left to right. He was able to imitate all oral motor movements easily and flexibly, and could assume the prone extension

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position for ten seconds (with good quality and form), which is the expected norm for his age, and was able to balance on one foot for five seconds. Joey indicated increased distal control of his hands, suggesting improved scissor skills, though he still needed to work on quality. He was also demonstrating a mature pencil grasp and was printing and forming his letters appropriately.

Though Joey still showed some sensitivity to sounds he was able to cope and function in multi-sensory environments, such as the busy preschool classroom setting. He was able to follow more complex directions most of the time, needed only occasional assistance and was able to follow two-step commands without difficulty. His verbal self-expression and pragmatic language skills had improved greatly, and therapy continued to also improve the quality of his pragmatic expression. Joey's eye contact showed great improvement and he would only avert his eyes in the face of challenging tasks.

Joey suddenly experienced a burst in his language and communication skills and a strong increase in his awareness of the world. This is the kind of difference we usually see when we add Tomatis® training to our clinical work.

Joey did make some gains in the six months between his first and second assessment, but most of these gains were in the sensory processing skills, not in the areas of communication and language, which were some of the family's primary concerns. The scores on his fine motor testing also did not improve to any significant degree, especially considering that he was now six months older.

Because occupational therapy treatment does not replace the work of speech language pathology (speech therapy), no additional language intervention took place. However, after the first 15 days (30 hours) of occupational therapy with Tomatis® sound training—with no speech/language intervention—Joey suddenly experienced a burst in his language and communication skills and a strong increase in his awareness of the world. This is the kind of difference we usually see when we add Tomatis® training to our clinical work. We have no doubt that the stimulatory effect of the complex mechanism of the Electronic Ear was the cause of his much-greater improvement during the latter program.

It would be ideal if we could receive sufficient funding to empirically prove the actual method without the use of additional therapies. But until

such time, we will continue to support families such as Joey's, and assist in the improvement of their lives. We continue to have contact with Joey's family and, wonderfully, he has never looked back. Once he was able to grasp the necessary foundation, he simply soared. We appreciate and thank his family for allowing us to share his story. He is one very special example among many other very special children at our center, who allow us to learn from them and grow in our clinical understanding of early development.

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