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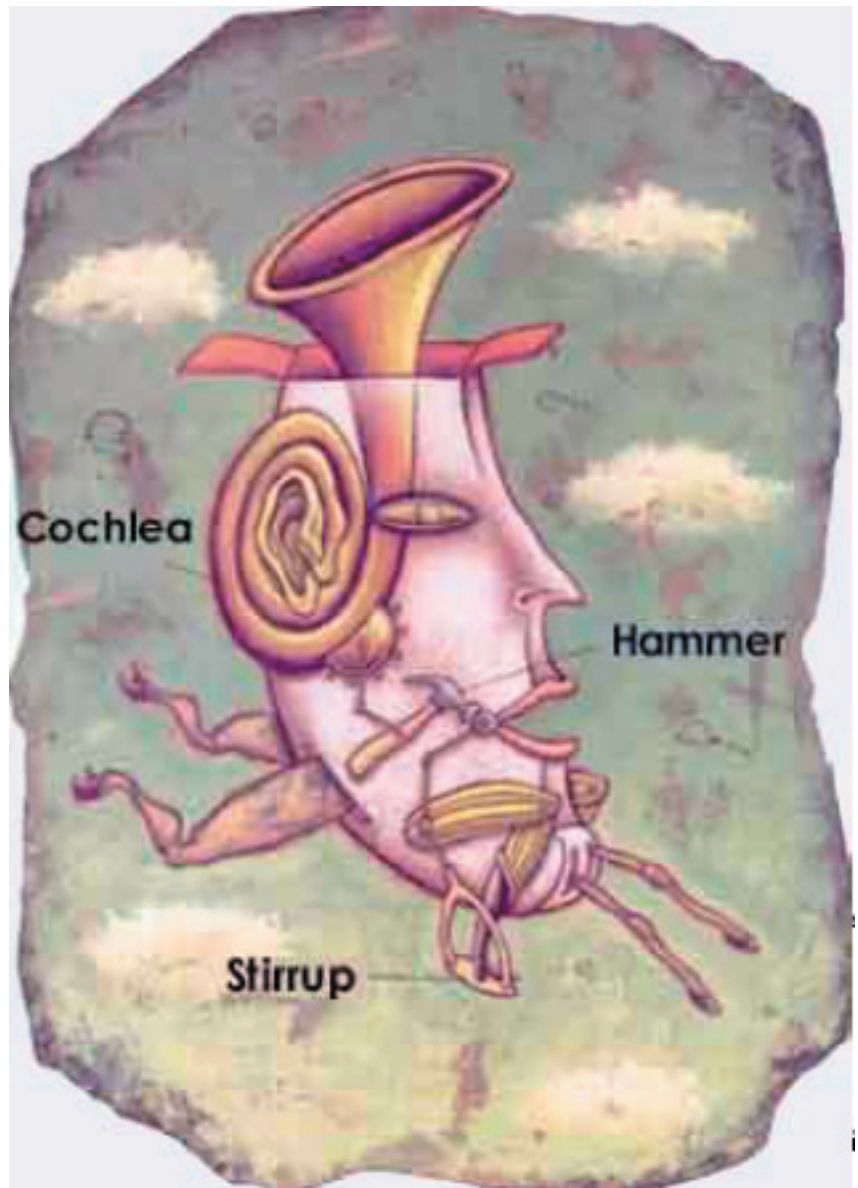
Does your child have trouble learning? Is your boss constantly interrupting you? Are you searching for a way to live life more fully? The answers, according to the Tomatis Method, are all in the ears.

The Listening Cure

Article by Nicholas Regush
with photography by Jeff Speed

The usual sonic mayhem of downtown Toronto seems particularly acute on a cold and crisp December morning. It is the kind of day when the air does little to filter out squealing brakes, distant yells, rumbling streetcars, even traffic lights changing colours; a day when you realize just how deadened the human ear normally is to the urban grinder. It is in just this maelstrom, in a quaint and cheerful three-storey brick Victorian building, that children and adults are tuning their bodies to the world. The bright, childlike drawings and the giggles of active youngsters coming from various rooms do little to prepare a visitor for what is really happening. Here, the human ear is being moulded into a powerful tool of transformation.

In one room on the main floor, a 6-year-old boy with a reputation as a schoolyard bully bounces on a small trampoline while wearing headphones that seem to swallow his head. One flight up, a younger boy who has had difficulty relating to his parents wears similar headgear while lying quietly on a mat listening to the music of Mozart.



Toying with listening technology, young and old are tuned to the world at Toronto's Listening Centre. Director Paul Madaule teaches actor Gisele Rousseau how to vocalize with greater precision.



Next door in the adult room, an opera singer reads a libretto into a microphone, loudly and with great vigour, and receives feedback of her own voice. Nearby, a mother records a fable that will be specially processed electronically for her grade-school daughter, who has serious speech impediments, to listen to. Throughout the day, others will venture to The Listening Centre for their own voyage in sound stimulation and auditory training. It is all designed to reawaken the ear and body and even the desire to embrace life.

Toronto's Listening Centre is one of the largest and most respected of more than 200 facilities worldwide that are based on the so-called Tomatis

Method, a rather unorthodox view of how the ear works. The idea was developed in the early 1950s by Alfred Tomatis, a French ear, nose, and throat specialist who described a highly active role for the ear, a function that complemented the brain's work.

In a key departure from the traditional neurophysiology of the ear, Tomatis distinguished between hearing and listening. To hear, he claimed, is to perceive sound. To listen is to tune those sounds selectively, an all-encompassing process that shapes our connections to the world around us. In this light, it is possible to hear sounds but not attend to them. While people might actually hear well, they could still have listening problems brought on by a range of psychological stresses.

Tomatis was convinced that listening difficulties, especially among children, led to speech and language impairment, learning disabilities, lack of concentration and alertness, the tendency to interrupt others, depression, and even severe withdrawal, such as in the case of autism. It was quite the proposition, considering that traditional medicine had viewed the ear essentially as a receiver piping sounds to the brain, where the processing and real perceptual work occurred.

By the mid-1950s, Tomatis had devised a method to treat these types of problems by correcting poor listening. It involved use of a device, dubbed the Electronic Ear, that emits various sound frequencies, or ranges, to stimulate and train the ear to listen more effectively. He claimed the method not only improved the quality of the voice and language and organizational skills but also helped reenergize the brain. And since the inner ear is closely associated with balance and movement, his sound-stimulation approach would also improve posture and coordination.

If true, it meant almost anyone could benefit from the Tomatis Method - from those suffering from a mild to severe breakdown in communication to those simply desiring a listening tune-up.

A story often told about Tomatis by his advocates is how he managed to give a new lease on life to a group of Benedictine monks who had "lost their spirit." In the mid-1960s, the monks at a French abbey in the south of France were suffering from extreme fatigue and depression. Various medical prescriptions, such as a change in diet, medications, and a vitamin regimen, all proved futile. Sleeping longer hours only made matters worse.



The monks asked Tomatis, who had visited the abbey, to return to conduct his own medical investigation. Tomatis quickly determined that problems began soon after they had followed a 1960 Vatican directive prohibiting the use of Latin in religious services and stopped practising Gregorian chants. The monks had already been living a very quiet life and were, he reasoned, shutting out even more sound stimulation to the brain. As the story goes, Tomatis reintroduced Gregorian chants into the daily life of the depressed monks. Most of the monks soon regained their physical and spiritual health.

It was this vignette that first drew me to Tomatis. As a newspaper reporter on the lookout for new ideas, I made arrangements to interview him when he set up temporary shop in Montreal in

the mid-1970s as part of his plan to establish centres in North America that would apply his ear-training methods.

Initially, during our meeting, Tomatis was no nonsense and scarcely broke into a smile. His head shaved, he sat rigidly in a straight-back chair and appeared more monk than physician. He eventually warmed as he related the events that led him to a radical vision of how the ear is at the very centre of human functioning.

Tomatis's voyage of discovery began with observations he made in medical practice about opera singers who needed treatment to overcome vocal difficulties. To understand why they were having problems, he took a cue from a study he had conducted for the French government in the late 1940s on how noise can affect hearing: he had noted that factory workers with hearing loss suffered some distortions in their voices. Was there a link between hearing and vocalizing? When he gave his voice-troubled singers audiograms to measure their ability to hear sounds, they, too, showed signs of hearing loss, leading him to reason that it was likely due to "noise" from their own voices. After all, an opera singer such as the famed Maria Callas, who was a Tomatis patient, could belt out as many as 130 decibels of sound, comparable to the noise you would hear while standing near jet engines. When Tomatis tested further by blocking singers' right ears while they performed (bombarding them with noise or cutting off sound), he noticed that their voices began to break down. It was another clue that voice and hearing are inextricably linked. Hence, his famous principle that became known as the Tomatis Effect: If you cannot hear a sound, you will not be capable of singing it or, for that matter, speaking it.

Operatic Earobics

The lone figure at a microphone in one of the adult rooms at The Listening Centre recites tracts from a Wagnerian opera. Wearing headphones, singer Margot Bos listens to a filtered feedback of her own voice, a process that exercises her middle-ear muscles and enhances her ability to focus more easily on a wide range of sounds. It's the first day of her five-day Tomatis ear tune-up, and Bos, who has travelled from her home in Baltimore, expects that improvement in listening ability will reinforce more flexible and easily produced singing.

Several years ago, while completing her Master's degree at the University of Indiana, she noticed her singing voice was becoming wobbly. "I know now that I was being forced to sing the wrong repertoire, and I was straining my voice," Bos says with obvious frustration. "I am a dramatic soprano, but my teacher was trying to make me sing in a lower range. Eventually, my voice fell apart completely."



Susan Dusk, a voice teacher in Philadelphia, introduced Bos to the Tomatis Ear Training Method. Dusk had studied with Tomatis and accepted his theory that the voice can produce only harmonics the ear is likely to hear. She advised Bos that ear training would likely help her build a solid and flexible voice, rich in a higher range.

It turned out to be excellent advice. After a full program, which required a total of 25 days of ear training, Bos emerged with a voice that could more easily cut through an orchestra. "I could sing much more easily in the higher range, and my voice was very clear," she recalls. The training had, in part, forced her to listen more attentively to sounds in the higher range, and in turn, she became more capable of reproducing them.

About 18 months ago, Bos experienced another setback, this time breast cancer. "Singing kept me going, and now I'm doing really well," she says. The five-day ear training boost is aimed at helping her fine-tune her singing for several upcoming voice competitions and an operatic performance. "You know, I really enjoy these sessions she says. Ear stimulation is a pleasurable experience. I sort of enter a zone and reenter the world feeling refreshed and recharged." -- N.R.

In further administering hearing tests to singers, he noted that a life in music was associated with a certain way of hearing. He found the same true for specific languages that have their own acoustic geographies. British English, for example, is richer in high-frequency content than French, whereas French is richer in medium frequency. The "English ear" is therefore differently tuned than the French.

But is it not the brain's job to process the sounds and make sense of them? I asked. With mild impatience, Tomatis spoke about tiny muscles connected with two small bones, the hammer and stirrup, that sit in the middle ear. "These muscles are generally viewed as a system that can protect the ear from dangerously loud noise by diminishing vibrations of the eardrum and incoming sound," he told me. "But they're also capable of focusing the ear to tune into certain sounds." The English ear, for instance, could

be trained to adjust to the range of pitches of other languages. As it happens, the nerves controlling the hammer and stirrup muscles are also involved in speech, which helps explain why attuning to sounds would allow one to reproduce them vocally with more ease.

Delving deeper into the ear's physiology, Tomatis was interested in the phenomenon of the dominant ear. Humans are either right-ear or left-ear dominant, which indicates through which ear they primarily take in sounds. Tomatis came to believe that listening predominantly with the right ear is a more efficient means to tune in and respond to the world. The right ear, he reasoned, has more direct and numerous connections than the left ear to the brain's left hemisphere, the primary control centre for speech and hearing. Listening predominantly with the left ear, according to Tomatis, delays the processing of sound and reduces the quality of sound reception. Because most nerves in the brain lead to the opposite side of the body, signals must first be routed from the left ear to the right side of the brain, and only then are they forwarded to the left. This view led Tomatis to postulate further that a delay in sound processing could well affect speech, leading to inarticulate or monotonous expression and even stuttering.

He also studied the structures of the inner ear, specifically the cochlea, conventionally associated with sound perception, and the vestibule, which handles the perception of three-dimensional space such as body position, movement, and balance. Tomatis didn't view cochlea and vestibule as functioning separately, as was widely thought; rather, he saw them working together, their anatomic connections strong throughout the nervous system. Together the cochlea and vestibule analyze movements, jointly contribute to the awareness of ourselves in space, and link up with all forms of sensory information. In a sense, such interconnectivity enables the entire body to be involved in the processing of sound.

At this point, it was hardly a leap for Tomatis to conclude that poor listening skills could have an impact on the entire body, meaning that human imperatives such as speech, coordination, and body image could be disturbed. By the end of our meeting, I began to realize that perhaps this is partly what was occurring with the monks Tomatis was able to help. It wasn't merely a matter of sending energy to their brains by means of sound stimulation. The therapy Tomatis had designed was calculated to rouse the body. In this sense, he pioneered not only a therapeutic approach but also an understanding of what it may take to live life more fully.

Today at the age of 77, Alfred Tomatis rarely travels from his home in Paris, but his theories on the centrality of the ear and the physiological distinction between hearing and listening have found fertile ground. There is a World Wide Web page devoted to his work, and his devotees continue to spread the word. Founded in 1978, The Listening Centre in Toronto is the oldest in North America of those that employ Tomatis Ear Training. Some 3,000 clients from Canada and elsewhere have received auditory training at the Toronto centre, with children representing two-thirds of the cases. "We often get people here who have been all over seeking help for their communication difficulties," says Paul Madaule, the centre's director. "We're often their last hope. Most of those who come have serious or complex disorders."

A warm, soft-mannered man chasing 50, Madaule has been deeply affected by Tomatis. As an 18-year-old, Madaule had met the physician in 1967 at the Abbey of En-Calcat in the south of France, where the teenager, diagnosed as dyslexic as a child, regularly sought refuge to escape the pain of failure in school. "I was miserable then," Madaule says slowly. "I couldn't read and write well; I couldn't express myself and relate well to others, including my parents. I was extremely shy, and I was very clumsy." As he did for the monks in the abbey, Tomatis used his still-evolving ear-training tool kit to help Madaule to embrace life. Again, as with the monks, Tomatis's techniques had the desired effect. Madaule went

on to study psychology at the Sorbonne in Paris and trained with Tomatis. After seven years working in Europe and South Africa, his next stop was Toronto, where he co-founded The Listening Centre.

From the beginning, Madaule has attempted to design a therapeutic centre that is “not too much a home, not too much a clinic, and not too much a school - a space that is likely to have no negative associations” for his clients. Giving me a tour of the three-floor building, Madaule takes pains to point out the soft-colour prints and playrooms throughout the building. “People can feel that they can have a new start here without the intimidating presence of a clinical environment or the negative memories of home or school.”

Leisurely touring the facility, we see several ear-training sessions underway: the children either lie quietly on mats or play with toys in their therapy rooms. The basement features a swing, a trampoline, and a tire hanging from the ceiling. All patients wear large, heavy headphones that are connected to an Electronic Ear, a sound-stimulation module that looks like a large, high-tech stereo system with an excess of fancy knobs.

The core of the Tomatis Method, the Electronic Ear is designed to manipulate sound frequencies. Tomatis believes that high-frequency sounds rich in harmonics, such as those coming from a violin, energize the brain, while low-frequency sounds, such as drum beats, sap energy. As Madaule explains it, a membrane in the inner ear is covered with cells that translate vibration into sound. There are more cells transporting high-frequency sounds than low-frequency to the brain. High-frequency sounds carry more vibrations and therefore pack more energizing power. The Electronic Ear essentially is a sound-amplification system that can increase or decrease the frequencies, or ranges, of sound in both ears. An automatic switch, or “gate,” in the machine can turn up one form of sound (such as the high ranges of a Mozart sonata) and then the other (the lower ranges), thereby giving the hammer and stirrup muscles of the middle ear a good workout. The machine can also reduce volume to the left ear, forcing the right ear to work harder to listen.

Most children undergo two intensive 30-hour phases of ear training, returning to the centre during each phase for two-hour sessions on 15 consecutive days. The two phases are interrupted by a four- to eight-week hiatus. At the cost of \$55 per hour, the average cost runs to \$3,300. In some cases, children return for one or more follow-up boosts.

On this day, Matt, 8 years old, has arrived with his parents for his second boost, all the way from Halifax. He first came to the centre in 1992 at the age of 4, experiencing serious difficulty in communicating, even with his parents. In Halifax, doctors had diagnosed him as having “severely delayed speech disorder and language development in the presence of poor social interactive skills.” One specialist categorized him as PDD, short for pervasive developmental disorder, a term often used when a child’s tendency to cut off from the world is not as extreme as in the case of autism.

Matt’s entry into the world was harsh. He was born severely hypoglycemic. Besides being hospitalized for three months, he suffered a mild heart condition and several seizures. Thereafter, he was plagued with a series of ear infections.

“Matt was the classic case of a child who has a difficult start in life, gets ear infections, and then develops serious listening problems,” Madaule says while watching his young patient relax on a mat with his headphones on. “When I first saw him, he was hypersensitive to certain sounds, including his father’s electric shaver and the microwave beeping at home. He basically was not in control of his listening.

He couldn't tune in to what he wanted at will and tune out what he didn't want." Matt's listening test showed he had difficulty processing sound in general. "It suggested very convincingly that he was a very disorganized child," says Madaule. "We thought that ear training here could help Matt improve his attention span and become more socially aware, that a greater motivation to be social might facilitate speech."

Madaule, however warned Matt's parents that it would not be easy. On the basis of the child's history and interviews, Madaule was convinced Matt would fight change tooth and nail. "I try to tell parents very directly what I feel we can do, if anything," he says.

Nevertheless, Madaule's clear-eyed assessment was comforting to Matt's parents, who had all but given up hope on mainstream treatment. "The fact that we had some idea of what we were dealing with was the beginning of a healing process for the entire family," says Matt's mother.

Like all children at the centre, Matt began listening to tape recordings of Mozart while he rested or played; the lower ranges were gradually filtered out so that the muscles in his middle ear were forced to open to the high ranges, which sound like scratches and squeaks.

High ranges of sound are also employed to mimic the conditions in the womb, where, Tomatis claimed, listening actually begins. He originally believed the fetus could hear only high-frequency sounds that are filtered through the amniotic fluid, since the fluid filters out the low-frequency sounds. In fact, scientists would discover in the 1960s that the fetus hears by at least 4 1/2 months in utero and that by the sixth month, acoustic nerves are capable of transmitting information to the developing brain.

Tomatis also observed that the higher ranges of the mother's voice seemed to have a powerful effect on some children, leading to a greater desire to connect to the world. This, too, was later confirmed by scientists, although the precise mechanism of how the fetus tunes in to the mother's voice remains unclear.

With the crucial role of the mother in mind, Tomatis used the Electronic Ear to move his young patients gently from the prenatal sound environment to the fuller world of sound outside the womb, to allow them to experience a "sonic rebirth." The ear-training program involved first filtering and then broadening the range of the mother's voice, whenever a recording could be made, as well as selections from Mozart. Toward the end of the regimen, the child would hear the lower ranges of the mother's voice.

A curious by-product of sound stimulation is that it seems to make the children more affectionate and attentive. "They start to listen, speak more; you can even see a shift taking place often after only a few sessions," says Madaule. In fact, that is what happened with Matt soon into his ear-training sessions. "He was more communicative and attention-seeking," his mother says. "He even looked at me, touched my face, and said, 'Mommy's pretty face.' He never before said anything like that."

Phase two of ear training is more active. The children, speaking into a microphone, use their own voices, amplified and modified by the Electronic Ear, to stimulate listening and to gain better control over their voice production. They might even sing and chant.

In Matt's case, the prognosis appears to be positive. He is still in regular school and performing above the average in academic subjects. But it is not all roses, as Madaule expected. Matt still has difficult days both at school and at home. He is likely to remain a child with "an edge." "What we've given him is a platform to stand on, but much will depend upon how those in life relate to him in the years ahead," says Madaule. "I hope and am pretty sure that Matt will encounter on his way to adulthood significant others who will understand him, link up with him, like him, and help him to look at his edge as an asset."

Matt's story offers insight for anyone; to a varying degree, we all live with an edge, a certain twist in personality. Because we move in a world that bombards us with sounds, anyone can begin to show signs of poor listening and, consequently, personal breakdown. One might wonder how many individuals there are with whom we relate daily who have an edge caused by some deficiency in the way they process sound. It also raises the question of how much we contribute to that breakdown by not providing the tiny bit of support that could make a difference.

Take Kathy, now 15. She is talkative, outgoing, and friendly but also the kind of person you might meet and think odd or a little kooky or off-beat. She has bursts of enthusiasm when words come streaming out of her mouth, then she will abruptly shut down and draw inward. She first came to the centre in 1995 at the age of 13, having experienced difficulties at school. One specialist said she had an "auditory processing problem" in association with distractibility, one aspect of attention-deficit disorder. Like Matt, Kathy also had a history of coordination problems, delay in speech development, and bouts with ear infection. Her assessment at the centre showed that she exhibited "interpretive listening," a tendency to anticipate the end of what someone started to say and to not listen long enough to sounds. She was more sensitive to sounds and thoughts coming from within than from without. This showed up in her habit of interrupting others who were speaking. "She never let me finish a sentence," her mother says. It is just the sort of behaviour that can lead to misinterpretation of messages and misunderstandings, which, in turn, lead to conflict. Kathy's listening style also revealed that she lacked the ability to discriminate adequately between sounds. "The typical person in this condition," Madaule says, "seems to live in a daze."

When she arrived at the centre, Kathy had no friends and seemed to be withdrawing from life. Now, after ear training, she is talking more and her focus is sharp. She says she enjoys her friendships and is receiving high marks in school. "She's becoming a well-rounded adolescent without losing her edge," Madaule says. "She is a youngster with a style."

Sophie Garceau, Madaule's assistant director and chief listening therapist, has seen this transformation before. "There are so many teenagers like Kathy who never receive any help," she says. Prior to arriving in Toronto, Garceau worked for four years with high school dropouts in Montreal. "They had little motivation to continue their schooling. They tuned out, much like Kathy."

How does one evaluate the effectiveness of the Tomatis method to improve listening - and life? There still is no easy answer. The supporting hard science on the effectiveness of Tomatis ear training remains weak; as is often the case with therapeutic regimens, very little rigorous science has been attempted, mainly because of lack of money to fund research. "The centres doing Tomatis don't have the kind of money it takes to do big double-blind research," Madaule says. Some small and uncontrolled studies conducted over two decades suggest, however, it is beneficial. So does a surveylike study of 400 children at The Listening Centre that required parents to grade the performance of their children.

On the value of the work as a practical, conceptual tool for child development, the praise often is very high. For example, Madaule's 1994 book, *When Listening Comes Alive*, which includes an account of The Listening Centre's employment of the Tomatis Method, has drawn praise from such prominent Toronto medical professionals as Thomas Verny, who is known for his writings about prenatal life. Stanley Greenspan of Bethesda, Maryland, widely considered one of the leading child therapists in the world and particularly expert with autistic children, thinks highly enough of Tomatis Listening Training to have referred about 200 children, including cases of autism, to a centre in Bethesda that functions much like The Listening Centre. "The approach can help some children who have difficulties with auditory

processing,” he says, cautioning, however, that a variety of programs may be required, such as speech therapy and extensive counselling to help some children open up to the world.

Ultimately, the parents and clients decide whether the Tomatis approach works. “We see that it works in a variety of ways in many of the children,” Madaule says, shuffling a handful of case files. “Their parents are the ones who see the results most vividly. Interest in what we can accomplish spreads by word of mouth. If people call in to ask about the method, we tell them that we hold a monthly open house and they are welcome to attend. I feel that we give them a realistic picture of what may be possible. Then it’s up to them.”

As we wrap up our discussion in Madaule’s office on the first floor, my mind goes back some 20 years to my encounter in Montreal with Alfred Tomatis. At that time, I left intrigued by his ideas but never once considered that I, myself, needed a tune-up. Madaule leaves me with the stronger implication that everyone’s listening skills need a boost. Perhaps I have underestimated how powerful cultural stimuli wear me down and disturb my ability to be selective in my listening habits.

For those who are not on a high-priority waiting list for intensive ear training, Madaule is hoping to develop a small, portable ear trainer. “I’m playing with the idea,” he says, handing me a prototype. I switch it on and listen on lightweight headphones to the same high-pitched, scratchy sounds that filtered music on the Electronic Ear produces. It may not be Mozart, but the sense that my ears are getting an aerobic workout is unmistakable. Watching me, Madaule senses he has reeled in another convert. “Whatever your problem looks like,” he says with a smile, “it’s core is poor listening.”

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