

SHORT CIRCUITS

An adoptive mom's exploration of the neurological impact of trauma, neglect, and sensory deprivation

One cold early Spring morning a beautiful, healthy baby girl, three days old, wakes up to find herself alone on a deserted street, hungry and cold. Her mother does not answer her cries, and in fact no one responds for hours. The baby, increasingly agitated and distressed, screams with primal urgency. Eventually a stranger happens by, picks up the crying baby and delivers her to the police station. Through several more intermediaries, the baby is eventually delivered to the local social welfare institute.

Examined by a doctor and then wrapped in blankets and fed a bottle, she is deposited into a crib and left alone for much of the rest of the day. That night, no one comes to answer her frantic cries. More days go by, more cries unanswered. Feeding and diapering are administered on a rigid schedule, since the caregivers have so many babies to attend to, and there is minimal opportunity to be held, carried, or spoken to. Stimulation is limited to what the baby can see, hear and feel from her crib. Feedings are piping hot bottles of formula, propped for maximum efficiency, delivered through extra large holes in the nipple. Occasionally the baby's mouth loses its place on the nipple and the entire contents of the bottle pours onto her body. When that happens she misses her feeding, and her wet clothes aren't changed for another hour or more.

Eventually the baby stops crying altogether because she has learned that crying rarely draws anyone to her. She is often lonely and scared, especially at night. The sounds of other babies crying and in distress cause her great anxiety, which she learns to tolerate by shutting down and withdrawing deeper inside herself in an attempt to protect herself from the constant stressors in her environment.

One day many months later, the baby is bundled up and brought by bus to a city several hours away. She is handed to a stranger with just the clothes on her back and one bottle of prepared formula. Otherwise, everything of her old life has vanished in an instant. The stranger brings her to a hotel across town, where she is changed into new, peculiar-smelling clothes. The stranger shakes a brightly colored rattle in her face. The baby's environment has gone from one of minimal stimulation to one of hyper stimulation; new sounds, new smells, new sights, new sensations, delivered in rapid-fire sequence. The stranger tries to feed her a Cheerio, but the baby reflexively gags because she's never had solid food in her mouth. The stranger tries to bathe her in the sink but the sensation is unfamiliar and terrifying. The stressed baby, overwhelmed, sinks deeper and deeper into a state of shock and withdrawal.

And they lived happily ever after.

I adopted Sal when she was thirteen months old. Malnourished and developmentally delayed, it was a long time before she caught up to her chronological peers. She received eighteen months of Early Intervention services, a federally mandated and state funded program administered to children at risk for developmental delays. She was also physically sickly for a long time, plagued by chronic infections, unexplained rashes, gastrointestinal problems and general frailty.

During this time I could also easily observe that her attachment to me was tenuous. She was stoic and independent. For the first couple of years she would not seek me out for comfort, even when hurt. If she fell, she would simply get up and keep going. I didn't even fully realize the extent of it until the first time she spontaneously came to me for a hug, when she was three. The way she threw her arms around my neck and leaned into my body was a visceral shock because I understood for the first time that she had merely been tolerating my hugs up until then.

I had a great belief in the resilience of children, and felt myself relaxing as I saw more and more evidence that Sal had overcome the deprivations of her first year in an orphanage. She grew physically strong and healthy, and began to meet all of the developmental milestones for her age. I also had my first adoption as a frame of reference. I had adopted Jenny three years before Sal, when she was nine months old. Clearly healthy and robust, precocious developmentally, Jenny had always been happy and successful, excelling in school, well liked by her peers, confident, curious, compassionate and thoughtful. Surely with time and TLC, Sal would follow in her sister's footsteps.

The first tangible clue that this was wishful thinking on my part didn't surface until Sal was five years old. When it happened, it was like a deep well suddenly overflowing from an underground source.

Sal had grown into a funny, spirited and joyful child. More than one friend had observed that she was the happiest child they had ever met. She laughed frequently, enjoyed playing with friends, was something of a clown. She entertained children and adults alike, who were drawn to her charming antics and her exuberant magnetism.

One day we were driving somewhere in the car and suddenly Sal started crying convulsively. I thought at first she had been injured, the sobs were so urgent. I whirled around and asked her what was going on, and after a few hiccupping gulps she blurted out "' miss... my bouncy seat!" The last word was swallowed by a wrenching wail erupting from deep in her gut.

Speechless, I kept driving, trying to understand the disproportion between the stated source and the impact. Sal had occasionally played in a bouncy seat suspended in a doorway when she was first home, but within a few weeks had lost interest and so I had given it away years ago. In all that intervening time, she had never once spoken of it. Though we didn't know what to say, Jenny and I tried to be consoling, and by the time we arrived at our destination Sal's sobbing had snuffled to a stop.

Thus introduced an era of mysterious outbursts. Sal began to have these episodes regularly, multiple times a week, when she would dissolve in gut-wrenching sobs for no apparent reason. They would occur while driving in the car, while eating meals, before bedtime, at moments of quiet and relaxation. She would attempt valiantly to name her grief, as she tried on one explanation after another. "I miss... my ayis... my jingly toy... Grandma... my bottle... China... my crib."

Around the same time she began to have explosive rages. Her emotional state was so heightened in these episodes that she seemed to be having an out-of-body experience. The rages were often around issues of territory, often happening when friends with children came to the house, sometimes happening when I was with her out in the world. The rages were always triggered by other children and this time the source was clear, at least to Sal. She was mad because she "hated the babies."

Attachment is the trusting bond that first develops between a mother and child, beginning in infancy. Healthy attachment is formed through repetition of the cycle of needs being expressed and then met. A baby is hungry so she cries. The mother hears the cries, and she immediately responds. The baby is fed while the mother actively works to soothe the baby's agitated state. As the cycle is repeated and reinforced thousands of times, the baby learns to trust that her needs will be met and that the world is a safe and good place. If this cycle is not regularly completed, it can have devastating implications for the emotional health of the baby.

Having a primary emotional bond with an attuned caregiver who predictably meets a baby's emotional needs is foundational for healthy psychic development and the ability to form healthy relationships with others. The ability to process and regulate one's own emotional state effectively, to delay gratification, to problem solve, to have empathy for others, are all critical for a healthy and secure sense of self. These are skills that are developed through the formation of healthy attachment.

In early developmental stages, an agitated or hyperaroused baby must be soothed by her primary caregiver in order to feel calm, safe and secure. The baby actually experiences her own emotional state as an extension of her caregiver. If her emotional needs are consistently met, over time the baby is able to take on some of this emotional regulation herself. Throughout early childhood, skills of self-awareness and self-regulation are reinforced. From there the child is able to begin to process the emotions of others, to develop a sense of empathy and to form healthy relationships beyond the primary one. These are lessons with clear and lifelong repercussions.

On the other hand, lack of healthy attachment can have devastating emotional repercussions. During the heightened state of arousal that occurs when a baby's cries are not answered, she grows increasingly frustrated, distressed, angry, or hopeless. When her needs are not met, or met unpredictably, the baby does not develop trust. She might shut down emotionally and remain stuck at this stage of emotional development. Stunted emotional development can also negatively affect cognitive development.

If the child moves forward developmentally with unresolved attachment issues, she may develop pervasive feelings of isolation, anger, lack of self worth, or shame. She may have a deeply internalized sense that the world is not a safe place and that she can't fully trust anyone. She may be noticeably emotionally immature, have difficulties with social relationships, suffer from low self-esteem, or develop an inordinate need for control.

As an adoptive parent, I had a rudimentary understanding of attachment theory. I knew, and I could see it in Sal, that babies and children who spend time in institutions, or who experience multiple ruptures in caregivers, have not had the opportunity to form healthy

attachment to anyone. I understood that this was a process she would have to undergo with me, and I understood some basic strategies for promoting attachment. I understood that in many ways I needed to respond to Sal at thirteen months as though she were a newborn. I understood that she needed to learn to rely on me to meet her needs. I understood the importance of promoting eye contact, skin contact, little forms of intimacy to which she was not accustomed. I understood that she might need to be carried on my body, to co-sleep, to feed from a bottle, for a prolonged period of time, long past the age when these habits are indulged in biological children.

What I didn't understand was that these strategies, time, and a mother's love would not be enough.

I reached a point when I had to admit that my methods in dealing with Sal were not adequate. The intuitive style of parenting that had worked so well with Jenny was not helping me reach Sal. No amount of loving or reasoning or logical consequences or discipline had any impact on her difficult behaviors. I felt like I was spinning my wheels, and started seeking out books and Internet sites devoted to adoption issues in post-institutionalized children, hoping to find some insight.

Much of the available information on adoption issues focuses on attachment. But reading about attachment didn't help me to fully understand Sal's inexplicable out-of-body rages and grief, or the times she would dissociate under stress and just freeze. She had few of the other red flags for attachment impairment; she was affectionate and loving to me and her sister, had learned to come to me for comfort, was often joyful and exuberant. She had come so far from the withdrawn, affectless and listless baby that I had brought home. Deep down, I questioned whether Sal had any attachment issues at all.

Trauma occurs when an event elicits a real or perceived threat of danger, injury or death. An abandoned newborn, completely dependent on her mother, experiences trauma; physical abandonment is literally a life or death threat to her. Trauma triggers certain neurobiological responses, a primitive survival mechanism. The body experiences a fight, flight or freeze response to the threat. Stress hormones, mainly adrenaline and cortisol, flood the body and brain. The body is thrown into a state of hyperarousal and hypervigilance; heartbeat races, muscles tense, breathing accelerates. An adult in this hyperaroused state is unable to access higher order thinking, as the body is primed for an immediate response on a primitive level to the threat. Fight? Or flee?

Neglect, while not a single traumatic act, can be experienced by an infant as ongoing trauma. The neurobiological responses are similar. An infant left alone physically and emotionally may live in a state of prolonged fear and hyperarousal, causing the brain to be awash in large amounts of stress hormones. Unable to summon help, and unable to physically flee, an infant might respond by dissociating from her body, another primitive coping mechanism.

While these are effective neurobiological strategies for dealing with actual threat in the short term, they can be damaging to endure in the long term. Prolonged exposure to trauma can permanently alter the biochemistry of the brain. Over time the amount of cortisol and adrenaline released in the body can cause a sensitization in the part of the brain associated

with the stress response. The repeated triggering of this stress response can result in the child persisting in this state of fear long after the threat has passed. Symptoms can persist for years after the actual trauma in the form of hyperactivity, anxiety, sleep disturbances, impulsivity or emotional hypersensitivity, as well as episodes of reliving the trauma. Maladaptive brain function on this primitive level can also have profound implications for development of higher brain executive functions. Scientists report that in abused children the parts of the brain responsible for regulating emotion and memory are significantly smaller than in non-abused children. Many traumatized children develop symptoms that resemble ADD/ADHD, such as inattentiveness, aggression, and noncompliance.

In the end, I was not able to crack the mystery of Sal's behaviors on my own. A friend urged me to consult with an attachment therapist to whom she had taken her own adopted daughter. Thinking this could be useful, while at the same time half fearing what I would learn, I made an appointment.

The therapist spent one session interviewing me extensively about Sal, and one more session observing her directly in facilitated play before offering her diagnosis: Sal had Post Traumatic Stress Disorder, a condition that was interfering with her forming a secure attachment to me. The diagnosis was like a sucker punch to my stomach. Yet I felt an almost simultaneous sense of relief that there was an identifiable syndrome underlying Sal's behaviors, and so the possibility of therapeutic intervention and healing.

The diagnosis also joined several disconnected dots for me. Sal's behaviors were related to an attachment problem, but could only be understood within the broader context of trauma. With PTSD, a trigger can transport the afflicted person instantly to the neurobiological state of trauma and she can experience the trauma anew as though it is something happening in the present, even if it happened years ago. In this state, the higher functioning brain is disengaged. My trying to deal with Sal's episodes by using logic, discipline, time outs, or worse: reacting with my own heightened emotional state, was ineffective and counterproductive.

Armed with this theoretical framework, we began to peel back the layers of Sal's behaviors. I began to understand what her triggers were, and I was astonished to discover how much of her infant experience had been stored in her brain. I had always believed that pre-verbal memory was not accessible. And yet, it became clear that Sal's pre-verbal experiences were being accessed when the PTSD was flaring up.

I finally understood that Sal's rages were manifestations of the extreme stress and threat she had felt as an infant in her orphanage, neglected and frightened, unable to summon help. One of her triggers was babies or small children crying or yelling; exposure to this would instantly transport her to a hyperaroused trauma state. Sharing or shedding old belongings was another trigger; long past the age when most kids learn to share, Sal was unable to do so. On a fundamental level, she was unable to share because she perceived other children as a threat. She had no internalized sense that the world was a good, bountiful and safe place. Her primitive brain had learned that her needs would not be met, and she responded in a primitive way-with fear and anger.

Once I began approaching her behaviors with this framework, her relief was palpable.

All of this time she had been valiantly trying to put words to what she was feeling. Once I was able to react to her outbursts calmly and provide the right words, give her a context for these large, scary feelings and help her begin to process them, she began to respond. It was counterintuitive at first because it involved going right to the source of her pain: her first year in the orphanage, the loneliness, the fear, the anger, the hurt she had endured as a helpless baby. As her mother, my first impulse had been to protect her from that pain by avoiding it. What I learned from our therapy was that the only way through it was to confront it dead on.

The first time I had the opportunity to practice the theoretical information I had learned was one night at bath time. I had drawn a bubble bath, a treat for Sal and Jenny. But almost immediately I heard Jenny loudly complaining that Sal was hoarding all the bubbles. I walked back into the bathroom, exasperated, to see that Sal had pulled all of the bubbles to her side of the tub. The two girls were arguing, and Sal's body was tensed as she guarded the bubbles with her arms

My first impulse was to tell Sal that she needed to share with her sister, even though this approach had always resulted in angry, tearful noncompliance in the past. But I stopped myself. Instead, I knelt down on the bath mat, leaned into Sal and wrapped my arms around her.

"I bet this reminds you of when you were a baby," I said. Sal started sobbing quietly. "Does this make you think of a time when you were little and didn't get what you needed?" I asked softly into her hair. Sal continued sobbing, nodding her head.

"Sweetie, that was terrible what happened to you. No baby should have to go through that. But you're with me now and I will always give you what you need. You see all these bubbles in the tub? I have more. See that bottle on the shelf? It's only half gone. And when it's empty, I'll go to the store and buy another one. You don't have to worry anymore." Sal snuffled a bit, then started pushing half of the bubbles to Jenny's side of the tub. I was stunned. How could it be this easy? What power there was in this simple acknowledgment of a piece of her pain. For the first time, I was able to talk her down from her hyperaroused state. For the first time I felt like I held the key to an impenetrable door.

I began to see how inextricably linked trauma and attachment are. I saw how PTSD was preventing Sal from handing over the last modicum of control necessary to trust that her needs would absolutely be met. Even though I had always done my best to consistently meet those needs, the PTSD returned her to a time when she had no one. On some primitive level, she felt that she needed to be vigilant and protect herself, whether by hoarding the bubbles, dissociating from her body, or raging at the perceived threat of another child.

As I saw more and more positive results that came from this new paradigm and from my mindful responses to Sal's difficult behaviors, I became more interested in learning about brain development in infants. From the first moments with Sal as a listless thirteen-month-old, I had had the nagging feeling that there was something wrong with her neurologically. I didn't know what, but something felt off. At the time I couldn't get past the sense that her first year would leave a deep imprint on her, without knowing what that would be. Over time that feeling had dimmed, but had never gone away entirely.

The newborn infant brain is quite immature and plastic. Up until birth, it is responsible for regulating bodily systems and little else. Over time, the brain develops sequentially, from the bottom up, starting with the brain stem and moving up to the cerebral cortex. Primitive functions develop first and lay the groundwork for more complex functions like emotional regulation and higher order thinking. Brain growth and development are governed by experience; experience determines the organizing framework of the infant brain. Experience also dictates neural wiring; the central nervous system is a self-organizing and dynamic system that develops in direct response to life experience. The central nervous system is the conduit for complex patterns of neural pathways that transmit outside stimuli to the brain, where it is processed. Through repeated exposure and processing of stimuli, neural connections are built and the brain learns to organize and integrate sensory information efficiently.

Gathering and processing sensory information is the normal developmental task of the infant. This information is brought in through all of her senses through interaction with her environment. Seeing, hearing, tasting, touching, development of muscle tone and balance are some of the interactive experiences that build neural connections critical for development and for moving on to higher levels of functioning.

For post-institutionalized babies and children, it is normal that they have had lapses in this process because it is likely that they have had minimal opportunity to interact in a sensory-rich environment. While they may appear to "catch up" developmentally once they're adopted into loving homes, in many cases critical gaps in neural pathways will persist. Much like trying to build a house on a wobbly foundation, moving forward developmentally without revisiting the site of the gap often results in a sensory processing or integration dysfunction. These kinds of dysfunctions can be extremely subtle and hard to detect for someone not trained to recognize them. Young children learn effective ways to compensate for sensory processing weakness, but unless the source of the dysfunction is treated, it's likely to surface as a learning or behavior issue around the time the child enters school. Sensory integration dysfunctions often result in a child having difficulties organizing and interpreting information, which can make it very difficult for the child to keep up with the challenges of elementary school. The child works so hard to just make it through the day that learning, remembering, organizing and planning ahead are much more difficult than for the child who is integrating typically.

Difficulties can emerge as auditory or visual processing disorders, or they might emerge as hyperactivity or difficulty focusing. Sensory processing disordered children can easily be misdiagnosed as ADD/ADHD because the symptoms are so similar. Sensory issues can also show up as behavior issues; inefficient or disorganized sensory integration can affect emotional equilibrium as the child struggles with the higher levels of functioning and more sophisticated learning that are the normal expectations of elementary school students.

If it weren't for the suggestion from our attachment therapist that I might want to have Sal evaluated for sensory processing issues, I would never have thought to pursue it. I didn't know much about them, but nothing in Sal's behavior had sparked concern. Though once delayed, she now seemed coordinated and active. She didn't display any obvious signs of sensitivities to texture or noise or other stimuli.

But once I started researching sensory processing issues, I realized the signs were there. Among the red flags was her love of spinning and swinging. She loved tire swings, and could spin endlessly and never get dizzy. She was very active, hyperactive even, moving during every waking minute. She hopped and wiggled constantly, sometimes choosing to cross the room in deep, squatting hops rather than walking. On the other hand, there were a couple of peculiar gaps in her fearless, high-energy antics. She showed occasional clumsiness, which seemed oddly out of context with her general confidence and coordination. She was reluctant to get on a bike, even with training wheels. And she was tentative on the monkey bars, unable to master the hand-over-hand technique that other kids picked up easily.

These were clues of a dysfunction in her vestibular system, which regulates balance and how a body perceives itself in space. Many of Sal's activities were attempts to stimulate that system. Her difficulty with the monkey bars betrayed poor bilateral coordination, a skill that ends up having profound implications for learning how to read.

She was late to develop hand dominance, and her writing and drawing skills lagged behind her peers. Though she showed a solid understanding of phonics and letter recognition, she seemed to have difficulty replicating letters, often writing them transposed or at odd angles. Her drawings were unsophisticated, demonstrating little understanding of spatial concepts. All were indications of difficulty in organizing visual information.

Though she was very verbal, there were times when she seemed to speak in startling non-sequiturs, blurting out a narrative that I couldn't easily follow. Her soliloquies were often hilarious, stream of consciousness shaggy dog stories, which I thought of as original and charming. But I came to see that they belied a disorganization of thought and difficulty sequencing events.

I sought out an Occupational Therapist trained in sensory issues and we went in for an evaluation. The evaluation consisted of an extensive intake questionnaire about Sal's habits and development, and an observation of her engaged in specific physical activities. Sure enough, Sensory Processing Dysfunction was identified. By then she had been home for five years, and the signs had been missed by me, by her teachers, by her pediatrician, and by all of her Early Intervention therapists, including a Speech Therapist, an Occupational Therapist and a Physical Therapist.

The treatment for SPD is a set of targeted activities customized by the Occupational Therapist. Her treatment, in effect, is a comprehensive overhaul of her central nervous system, designed to stimulate neural connections and systems that went awry or never optimally developed. This kind of repair is possible because of the amazing plasticity of the brain and central nervous system, especially in young children. Activities target the vestibular system, muscle tone, core strength, tactile sense, auditory sense, and visual sense. Over the course of several months we attended weekly sessions with the OT, and still incorporate many of the therapeutic activities as part of a home curriculum.

Sal was identified as a good candidate for the treatment, and after several months I saw convincing results. Her muscle tone and core strength improved, which in turn helped

her sense of coordination and balance. She worked hard and mastered bilateral movements such as swinging on the monkey bars. Her ability to organize the visual world improved, which helped with residual clumsiness as well as writing, drawing, and pattern recognition. But I was also somewhat surprised and delighted to see improvements in other areas. I didn't anticipate that her ability to regulate herself emotionally would improve, that she would seem less anxious, more loving, and more mature. Her speech became more sophisticated, and her reading skills took off.

The benefit of tuning up her central nervous system is that her brain is working more efficiently, which in turn is helping her reach higher levels of functioning. What I came to realize is that doing the foundational work of filling in the gaps in her neural circuitry was also tangibly enhancing her ability to recover from the trauma and attachment disorders. Therapies that I had thought of as unrelated to each other were actually working in support of each other.

It was a light bulb moment.

One of the most painful things for me as an adoptive parent is that I wasn't there for my daughter when she was at her most vulnerable. I recognize in myself a deep desire to believe that she was well taken care of in that first year, needs consistently met, soothed when she was afraid at night, perhaps even beloved by somebody. One of the first steps toward healing her has been to fully acknowledge that this idealized image of her care is a fantasy. Step 2 was to understand that my love and best intentions alone were not enough to overcome the effects from that first year and for her to develop to her full potential. Another important step was the epiphany that her issues do not exist in isolation from one another; her insecure attachment is linked to both her PTSD and to her SPD. They are intertwined like an intricate Gordian knot, as tangled as her neurological circuitry itself. Understanding that and approaching her issues as a spectrum, with a holistic framework in mind, I believe has been key to her good progress.

But more fundamentally, it took attunement to my daughter and a willingness to view her behaviors in a context and understand what I was seeing. Many well-intentioned friends assured me that Sal's emotional outbursts were developmentally normal and that their own children had done the same things. It took some extra sensitivity, and trusting my gut, to see that something was indeed amiss. Her episodes were too intense, lasted too long, and persisted past what was typically age appropriate.

Initially, seeking out therapy was crushing; the last thing I wanted was for Sal to be slapped with a scary sounding acronym. But after the blow of that first diagnosis, I quickly learned to look past the labels and see that they don't define who my daughter is. Sal is not a pathology or an aberration. Her neurobiological and psychological responses to her experiences were completely normal. It was the circumstances that were extraordinary. Extraordinary, and yet typical for institutionalized children. I don't believe that Sal is an isolated case. The severity of her syndromes is mild to moderate. How many others are out there occupying other spots on the continuum?

Why is it that some children fare better than others in the same context? How is it that some are able to get enough of what they need in sub-optimum environments? Of course,

there is the unquantifiable element of resilience. How does resilience intersect with experience to jump start, or short circuit, brain development?

In my own personal study of two, I have one who sails through life and one who struggles. Tellingly, the one who sails never spent a day in an institution, but lived with an exceptional foster family from three days old until she was handed to me at nine months old. It was clear from day one that she was firing on all pistons.

We are still in contact with that foster family, and in one of our early correspondences the foster mom told me that Jenny was held, carried and played with almost constantly. She also told me that she spoke directly to Jenny all day long because she believed it helped with brain development. I was grateful at the time, without fully comprehending the enormity of the gift she had given Jenny: the gift of an optimum beginning, full of nurture and love and sensory rich, the gift to develop her potential without struggle or impediment.

Though this should be every child's birthright, Sal was given no such gift. But somewhat paradoxically, she has bestowed unexpected gifts upon me. It's easy to love the child who sails and excels, but for the child who struggles the depth and quality of love ends up being breathtaking. Sal has stretched me the furthest and taught me the most. She has taught me about bravery and perseverance, strength, grace and humility.

When I look at her I see the courage of a fighter and the heart of a hero. With only a small child's understanding of the therapeutic paths we pursue, she intuitively embraces her therapy with enthusiasm. In this simple and affirming act of trust, I see someone who works hard every day to fully integrate the experiences of her first year. While experience perhaps isn't destiny, it has molded who she is today. With full acceptance of that, I am working hard to help her become who she will be tomorrow.

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