

Adaptation and Resilience in Early Life: Implications of the New Developmental Neurobiology for Clinical Practice

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Full Text: Headnote ABSTRACT: Growing research interest in the connections between early experience and developmental outcome-in combination with technological innovations that have made possible measurement of mental process in a way never before possible-have wiped out the last vestiges of dichotomous (mind-body) thinking, and have opened the way to new understandings about how we become the people we become. This paper summarizes some aspects of the new research in developmental neurobiology, and suggests implications for understanding the behavior of both children and adults. In particular, it is suggested that most behavior-including behavior that typically warrants a diagnosis-often turns out to be strikingly adaptive, often evidences resilience, and is, therefore worthy of respect. KEY WORDS: adaptation, resilience, neurodevelopment, neurobiology, memory. It's a new day in developmental and clinical psychology. And it's a very exciting time to be alive, if you happen to have discovered that it is illuminating to think of people as whole creatures, whose hearts and minds are linked, whose physical health is connected to-if not rooted in-their mental health, whose present feelings and behavior and traits and ways of adjusting are inextricably linked to where they have been before. Contributions to the literature in infant mental health, prenatal psychology, developmental neurobiology, neuropsychology, and psychoneuroimmunology over the past two decades have stunned us. Entirely new ways of thinking about early memory have taught us that virtually no life experiences are cast aside (Perry, et al., 1995; Schore, 2002). New definitions of working concepts like "adaptation" and "resilience" (Perry, et al., 1995) have helped us do our work differently, to do case formulation differently, to better predict the behavior of both children and adults under a variety of challenging conditions, and to understand why a toddler rejects foster mothers, or a grade-school child hits, or a middle-school child cannot concentrate, or an adolescent lapses into depression each spring, or an adult finds it impossible to trust. It has not been easy for us to take in this information. It can flat take the joy out of adoption work when we realize that these babies are actually going to remember, that they are actually paying attention while we shuffle papers and then hand them over to loving, adoptive parents. It was easier when we deluded ourselves into thinking that would be the end of it, that babies were too little and too dumb to catch on to the big shift from one mother to another mother, or to have noticed they were being carried inside someone who had no intention or desire to raise them. Newborn circumcision-and even surgery on one-year-olds-was much easier when we carried on the fantasy that babies don't feel pain, or notice the removal of their own body parts. It was easier when we knew it was just plain righteous to take kids away from abusive or neglectful parents. Now, we have to face the complexities: that kids are changed forever not only from abuse and neglect, but also from multiple foster placement, from repeated loss, even from interruption of their attachment with the abusive parent. We are suddenly thrust into complicated decision-making that must balance the risks of staying with an abusive parent against the iatrogenic risks: those that are introduced by the very system designed to save the children in the first place. It was easier to guide parents-it was easier to be a parent-when we could soothe them, and ourselves, with the vague notion that kids are resilient-and, perhaps, stupid. It was so simple when we could complain that foster kids have lots of respiratory problems because, during visits, their uneducated or uncaring birthmothers were lackadaisical about dressing them properly, or keeping the house warm. Now we have come to see that loss produces colds, that stress creates suppression of the immune system, that broken hearts turn into asthma (Scaer, 2001; van der kolk, et al., 1996). But when it is our goal to never stop struggling to

understand what makes children tick, and why particular children turn into the particular adults that they do, this returns to being an undeniably exciting time to be alive, and to be in clinical practice. One of the most astonishing thrusts of research has investigated just exactly how genes work. This is big, for those of us who everlastingly ponder developmental continuity, for those of us who wonder how a certain child will turn out. Most of us were taught that genes predict traits, and predict behavior. It turns out this is wrong. Genes work more like switches, waiting to be turned on-or not-by experience. They are highly transactional with the environment. And we are, as prenatals and babies, constantly re-wiring ourselves. If we were to isolate a "gene for violence," we would still be stuck with trying to explain how a certain child with such a genetic makeup turned out to be strikingly peaceful, because it happened that he grew in the tummy of an unusually peaceful mom, and was touched and cuddled and responded to in just the way he needed. A child with a genetic predisposition for shyness or withdrawal may turn into a fighter, because her environment was sufficiently terrifying that survival seemed assured only if she loudly defended herself. A child with a gene for cancer may never get the disease, because he happened to grow up in an area with few carcinogens in the air, while a sibling, with the same gene, may be stricken in his 50's, because of the happenstance of spending every summer, as a child, with relatives who lived near a particular type of smokestack. As prenatals and babies and toddlers live through chaos, neglect, assault and shallow attachment, they are busy re-wiring their own brains, changing their own genetic makeup, developing new traits, acquiring new behaviors. During the Dutch "Winter of Hunger" in late 1944 and early 1945, the German occupation meant that food was in extremely short supply. Guess what happened to babies being gestated during that period of deprivation, when calories for grownups were limited to 400-800 per day? It happens that we know, as many of the babies born after that winter have been followed and studied for many years: a great many of them were born with disproportionately big heads and small bodies, and grew up to be obese. Their little unborn bodies detected the lack of food, and re-shaped the system for distributing the available nutrition. Human adaptation prefers brain development over the rest of the body. So food was shunted off to these prenatals' heads, in order to assure survival. This had multiple effects: the kids were born with disproportionately large heads and small bodies. But their livers had changed expectations about the amount and quality of food that would be available, and were, later-after birth, and after the war, when food was more readily available-unable to cope with the changed circumstance. They converted more of the incoming food to fat, struggling to store it for future needs, and unable to process it for daily use. The children grew obese, and, as adults, had elevated cholesterol (Jones and Friedman, 1982; Lumey, et al., 1992; Ravelli, A., et al., 1998; Ravelli, G., et al., 1976; Stein, et al., 1975; Winick and Noble, 1966). This is how our bodies work. Yes, genes do suggest directions in which we may go, with respect to height, and proneness to anger, and hair color, and the way we react to danger. But it is our environmentour world, at least the way we perceive it, modulated by mother, and her perceptions, during pregnancy, and by all our primary caregivers, after birth-that actually determines which of those genes will be turned on, and which will not, and, therefore, how we will turn out. One of the discoveries that has particular meaning to those of us in clinical practice-since we, of course, are always pursuing etiology, are devoted to social history, are always wishing for an informant who was actually present at all points in the life of the patient-is that our models for understanding memory in children were all wrong. More to the point, they were marred by being adult-amorphized. We thought of memory as a principally cognitive process, and one dependent on language for proper retrieval. We were sure babies didn't do much of it, because their brains were too small, their mylenization incomplete, and they rarely said much to us about their earliest experiences. We were a little slow to take note that pre-verbal experiences were unlikely to be stored verbally. In other words, a three-year-old-or a grownup, for that matter-would be unlikely to recall something that happened at three months of age, or in utero-both times when the baby was a little short on words-by telling us about it. Not until we began to expand our notions about what storage or retrieval might look like if done non-verbally did it dawn on us that an older child who tugs constantly on his collar, or an adult who hates turtlenecks-and who also happens to have earlier had the cord wrapped around his neck, during his own

delivery-might actually be showing us that he remembers. Is the eight-month-old who jumps at every sound, or the three-year-old who rushes to his mother's side whenever he thinks she is in danger, telling us that he remembers the domestic violence that both of them experienced while he was still inside her? What is the nine-year-old adoptee telling us that she remembers, when she stands by the window, day after day, staring outside? Adopted at six weeks of age, it surely could not be that she remembers something, and that now she is "looking" for it, out there, somewhere? Daniel Siegel suggests a particularly stunning model for understanding memory, and its function in development: Memory can be seen as the way the mind encodes elements of experience into various forms of representation. As a child develops, the mind begins to create a sense of continuity across time, linking past experiences with present perceptions and anticipations of the future. Within these representational processes, generalizations of mental models of the self and the self with others are created; these form an essential scaffold in which the growing mind interacts with the world (Siegel, 1999, p. 5). The new brain research-the new neurobiology of development-even speaks to our understanding of evolution, and the continuous adaptation that it requires. New models suggest that the human brain is not just a computer; it is an evolutionary device for assuring survival. It is, for example, responsible for arousal when danger is near. Sometimes, trying to do its job, it is too vigilant, seeing danger everywhere. Sometimes, it fails to shut off, causing the foster child to be sure he will be brutalized by his teacher or a playmate if he disappoints them, because he was, in fact, brutalized by a previous parent under such circumstances. Sometimes it fails to differentiate, causing the child to lash out indiscriminately against a world he thinks is always trying to hurt him. But this brain always means to do its job of ensuring survival by being alert, vigilant, smart. After the brain arouses, it must process. What happened? What does it mean to my survival? Sometimes the child's brain makes mistakes in this process. Maybe the child decides that whatever bad thing just happened took place because she had a naughty thought. So maybe she sets about to punish herself for naughty thoughts, for years to come, with self-abuse, or suicide attempts. Or maybe the child decides that whatever just happened will always happen: It is inevitable, for example, that attachment will be followed by loss, so trust would certainly be a maladaptive characteristic of relatedness, wouldn't it? But the child's brain always means to do its job of ensuring survival by processing events, struggling to make sense of them as best it can, with the mental equipment and experience it has, at the moment. One of the brain's jobs is to remember, to hang onto crucial information it can use to develop short-term and long-term adaptive strategies that optimize the child's chances for survival (Perry, et al., 1995). If an adult penis enters the mouth of a 10-month-old, it would be a poorly-adapting baby who failed to put the feelings generated by that act into storage somewhere. Evolution-survival-demands it. The child having such an experience may not "remember" in the way we adults usually recognize memory: by having an "ah ha!" experience, and speaking of the abuse, in words. What she may do, instead, in fact, is to refuse to speak at all, refuse to open that orifice that is so contaminated with pain and fear. Or she may eat voraciously-or not eat at all-in the process of trying to control what goes in or out of that opening. But she can't do something adaptive-something that will, in the most primitive sense, promote survival-if she doesn't remember it in the first place. And so she will, in some form, in some part of her body. Finally, the brain is responsible for directing action, in response to what has been perceived, processed, and stored. The action depends-as do all of the other mental processes involved in this struggle to adapt, and to survive-on the particulars of the child: his history, her genetics, her lived experience and perceived experience (including experience before birth). One child may flee, another may withdraw; one may cling, while the other avoids further attachments; one may fight, while another assaults himself; one may become hypervigilant and nervous, while another engages in excessive risk-taking. One may dissociate-the ultimate in trying to pretend it never happened-while another becomes hypersensitive to any circumstance that includes a similarity to the anxiety-producing event (so that, even years later, a certain smell, or color, or air temperature, or sound will catapult the child into terror, or lashing out, or depression). These capabilities of the human brain may seem to send us in maladaptive or nonsensical directions, behaviorally, as when the child of an alcoholic-who spends her early

years trying to learn how to control her parent's drinking (because her survival depends on it), and imagining that she actually can-grow up to be a controlling person, or grows up dissatisfied with relationships in which she is not called upon to "fix" something. It strikes us as not very adaptive when a child whose mother attempted to abort in October, grows up to feel suicidal in the fall; or when children whose mothers are given high levels of analgesia during labor grow up to be several times more likely to abuse drugs, than are children who were delivered without such medication. But this largely right-brain activity means to do what is necessary, to cleave to what is familiar, to reduce anxiety in the child by whatever means are available. And this is our new understanding of the concept, "adaptation." We do not necessarily become better when we adapt; we just survive. In discussing the increased responsiveness of the HPA axis of mothers stressed during pregnancy (which imbues the pre-born baby with personality traits and behavior patterns it may not have had before), Marcy Axness reports that this does not indicate a breakdown or failure in the biologically- and psychologically-transactional system that is the mother-infant dyad. Instead, she asks, "But what if that is not the case at all? What if those circumstances represent the perfect functioning of the system? . . . What [after all] is the objective of the system?" (Axness, 2003, p. 86). The new neuropsychology teaches us that the objective, in the case of elevated responsiveness of the HPA axis in mothers stressed during pregnancy, is to teach the baby about the world, to warn the baby about imminent danger, to prepare the baby's entire emotional and physical self to be ready for what it may encounter after birth. As Axness puts it: "What I have just described is nature's perfect system for keeping offspring alive in the animal kingdom: when a giraffe is pregnant during a particularly heavy lion season, for example, her calf will need two strong tendencies to remain alive: 1.) the hyper-reactivity of a sensitive stress axis, and 2.) the disinclination to "stop and smell the roses," to relax and enjoy the finer things in life . . . lest he be caught unawares and end up as dinner on the savannah." (Axness, 2003, p. 87). Siegel's paradigm about memory would suggest that the unborn giraffe "remembers" the heavy lion season, and the lessons mom passed on about how to cope with such dangers. He states, "Memory is more than what we can consciously recall about events from the past. A broader definition is that memory is the way past events affect future function" (*italics his*) (Siegel, 1999, p. 24). We don't always make the most adult decisions about how to adapt, when we are little; we just make the decisions that seem to make sense at the time, so that we can survive. So, the little girl who loses her daddy when she is one year old, and grows up to date only boys who are likely to use her and then leave, is not being too smart, we would say. But she is doing what she knows. And, as many of us have discovered when we tried to use adult logic to convince a wayward child to behave differently, we are very unlikely to be successful in changing a thought process rooted in a primitive, early-childhood adaptive response. Only when we try to look at the world as little children do will we begin to see how sensible is even their most annoying or self-destructive behavior. But aren't children tough? Aren't they resilient? You bet they are, and we all have stories about kids who have risen far above their circumstances, to achieve successes few thought possible. But we must not misunderstand what happened in those cases; we must not misunderstand "resilience." To be resilient is not, as we tend to believe, to be unflappable, to be untouched by life circumstances (Perry, et al., 1995). To be resilient is to be adaptive, to keep trying to find a way to cope. To be resilient is to watch your mommy kill your baby brother (and blame you for it, when the police come), then withdraw from your foster mom, then ride your bike into the street at least eleven times a day for the first six months of placement. Why is that resilient? Because it would be pretty maladaptive, according to the new models of mental process and development, to let yourself get close to your foster mom, after being treated so horribly by your birthmother. Yet closeness is, indeed, what you need more than anything. So how could you get closeness without taking too many chances? How could you get closeness without admitting you wanted it, without admitting your vulnerability? The resilient child pushes further than most, develops strategies, until her needs get met. And now she has figured out just how to do it: she will ride her bike into the street over and over, stimulating her amazingly intuitive foster mother to run after her over and over and give her a good talking to each and every time about how no precious little girl of hers is going to get hurt around this house.

And slowly-so slowly that foster mom may need some special encouragement to keep up her brilliant treatment plan-the little girl's brain begins to shift: "Maybe I could be looked after. Maybe children don't always get hurt. Maybe I'm worth chasing. Maybe I could trust." We will get better at understanding the children and the adults who come to us when we learn to see the world through the eyes of the baby, the toddler, the pre-schooler, even the pre-nate. Then we will develop the habit of forcing ourselves to wonder, "What is this behavior really about? Since the new models tell me that no behavior is capricious, that all behavior makes sense, and since I know that most behavior is, in some way, adaptive, how can I understand this placement disruption, this learning problem, this marital discord, these night terrors, this somatizing, this refusal to eat, this series of colds, this self-mutilation, as adaptive?" It is here-in this new way of thinking about adaptation-that the implications of the last couple of decades of research become most salient for clinical practice. We now have neurodevelopmental research that affirms our long-held principle: that many of the acute matters, as well as many of the lifelong patterns, that our patients present to us represent the very best efforts of an organism-albeit, perhaps, a primitive, non-verbal organism-to make sense of his world at the moment, and to adapt to it.

The man who is having an affair with his 28-year-old secretary-a secretary who happens, it turns out, to look just like the woman in the crumpled picture in his wallet, the adopted man's birthmother, who happened to be 28 when she relinquished him-is a man on a search. Unless we can image him as a lost newborn, watching the only mother he has ever known go away from him, struggling to catch on to the new kinesthetic rhythms and smells and sounds of his new, adoptive mother, then we will only choose to deal with the present-day marital issues that seemed to precede the commencement of the affair. We will miss the whole point. We will miss the adapting baby in the picture and, thereby, we will miss the chance to help.

Wanda attended one of my lectures about babies. Soon thereafter, she called and asked for an appointment. She couldn't think what to say about why she had come. She was in her mid-40's, her two daughters were nearly grown, she was successful in her work, she had a loving marriage, she was close to her extended family, and nothing was actually "bothering" her. Of course, she explained, she had always been very good at coping, so she probably wouldn't actually know it if something was amiss. She thought I might be almost as smart as she, which tickled her. She wanted to come back, so she could "run a few things past me." It was, frankly, pretty monotonous for the next few weeks, as she fumbled about, as if looking for something but not remembering what it was, exactly. And then the most unexpected thing happened: she announced that she was pregnant. It was most assuredly not planned, she reported. She was beside herself. Her customary sure-footed, confident self was absent, replaced by a fretful, angry, child-like figure who appeared to be sitting on the tracks, waiting to be run over by a train. The baby was in danger, she said. No, she wouldn't hurt it, nor would her husband. But the baby was definitely in danger. So was she. She would have to be looked at by doctors and others who were supposed to be caring for her, but who might do bad things while looking and caring. And she would be put in positions in which her control would be reduced: medicated, perhaps; being asked to spread her legs apart for residents; things shoved down her throat. Wanda birthed a happy, healthy, daughter-"Faith"-at full term. And her anxiety got worse. She began to have horrible dreams about harming the baby. She rushed her to the emergency room one night because Faith had stopped breathing. Except she hadn't. The physician on call-who knew Wanda as an occupational therapist and talented clinician-asked her what was really wrong, since Faith was fine, and he was sure Wanda must know it. This began a series of panic-driven trips to the hospital, each characterized by a terrified mom declaring that her baby was choking, and was going to stop breathing. No choking was ever observed by anyone else, and no breathing problem was ever discovered. Wanda sent me a poetic email late one night: If there is no voice no sight no sound no way to move the hands Does that mean there is nothing important to be said? And then another line: "So here is a thought, Michael. If I have to translate an event to you where I couldn't see, hear, speak, or move-what language do I use? How will you understand?" And then the zinger: "Do you speak that language?" As Faith approached her first birthday, Wanda stopped using her as a transference object, and began speaking a little more directly about her life when she was Faith's age.

Something happened, she said, vaguely. There were loud noises, people were mad, and somebody went away. Her parents separated when she was one, because of something big. She didn't know what. She had heard stories about domestic violence, but her more startling "memories" were about her mouth, and choking on something. She drew a picture of a baby being held upside down, with her face at the level of a man's crotch. Meanwhile, in the real interaction between the two adults who sat together in my consultation room, Wanda pushed and pulled at me. She had never been able to hold on to an idea of me between sessions, she said. As an experiment in establishing and maintaining contact, I gave permission for her to email, if she wished. She sent flurries of messages, in most of which she asked for connection, for assurance that I was still there. She found me dangerous. She asked to look at my hands, and said she could tell, by looking at them, whether or not I was safe. Once, after looking at both sides of my right hand, I asked, "Was it there?" (making reference to whatever in the world she was looking for). She replied, "You are Michael Trout." Wanda knew of my boundaries about touch, and seemed glad for them. But she asked for a departure ritual, in which she would stand close to my right side each week, before she left. Wanda often stared at me for disconcertingly long periods, as if struggling to memorize me, while also taking in the landscape of my face and my affect to discern who I was. Was I the same person I had been during the last session? Or was I posing as Michael, while actually being someone who could hurt her? We talked about the mental growth that permits object and person constancy around age one, and what-the actual loss of a parent, for example, or the particularly insidious brand of betrayal that is experienced by the baby when a good parent turns suddenly into a raging parent, or a sexually assaultive parent-can stop the development of person constancy right in its own tracks. She seemed to be stuck at one year of age, waiting for some other shoe to drop: for me to forget my boundaries, for me to change, for me to disappear, for me to betray her. When our work was interrupted briefly by a vacation, she brought in "Buddy," a stuffed dog that had been hers as a baby. She decided to leave him in the crib in my office, until she returned. It remains there, still. She picks him up from the crib, each week, holds him throughout the session, then dutifully puts him back at the end of the hour. She said she wondered if I would lose him, or if something bad would happen to him, between sessions. One week, Wanda walked into the office with a particularly childlike, bouncy gait. She was humming to herself. After picking up Buddy, she put my afghan on her lap and twisted her fingers and arms through it in a particularly childlike-if not also feminine-way. I smiled, then asked, "Who's this?" She pretended to not know what I was talking about, continued to watch my face carefully, then acknowledged a playful, happy child inside her, whom I had not met, before. She said it disturbed her, at first, that I could see the little character. But the gleam in my eye, she said, encouraged the playful child to stay. Later that night, in an email, she said, "Thank you for acknowledging the existence of the one who knows." I had just met the character who holds the story, who remembers it all. I had stumbled into a new kind of engagement with Wanda. While I don't know why she is the one, this character holds the keys. This very young child-character doesn't like to be serious. She needs lots of encouragement to come out and play. She knows when she is welcome, from the look in a person's eyes. I have met her, now, and maybe she will decide to tell me all about it. Wanda is a trauma victim. She has characteristics of Borderline Personality Disorder, where, according to Schore, there is a not-uncommon crossover with Post-Traumatic Stress Disorder and early trauma (Schore, 2002). Her primary attachments were likely of the "D" classification (insecure-disorganized/disoriented type) in which, "... the infant, instead of finding a haven of safety in the relationship, is alarmed by the parent ... because the infant inevitably seeks the parent when alarmed, any parental behavior that directly alarms an infant should place it in an irresolvable paradox in which it can neither approach, shift its attention, or flee." (Schore, 2002, p. 11). This is precisely the frozen, terrified, yearning affect she often displayed in sessions with me, when she would sit, utterly silent and unable to respond to my questions, for upwards of 30 minutes. As I slowly discovered that domestic violence had been the order of the day in Wanda's house, beginning somewhere in her first year of life, I began to understand that she had repeatedly seen terror in her mother's face, on those many occasions when she turned to her mother for comfort and safety. Cells in

her amygdala that were responsible for primitive face-recognition-the kind that looks for fear or anger-developed rapidly. She used that input to regulate her own internal state, and developed what Siegel calls the "... excessively sensitized amygdala's fight response" (Siegel, 1999, p. 138). No wonder Wanda described herself as "someone you don't want to mess with," as someone who-for as long as she can remember-had been on a hair trigger for danger (or perception of danger), always ready to turn from a sweet sister or wife or mother into what she called "a raging bull, who would not stop until I won the fight." How does the new research in developmental neurobiology contribute to clinical practice? In the case of Wanda, it is less that the contributions are new and startling than that there is now clear affirmation of several principles that should have always guided us, out of instinct: 1. Wanda is not crazy, in the sense that her behavior, her responses to her baby, and her affect are random or inexplicable. 2. Wanda's borderline characteristics make sense. The signs of both BPD and PTSD that were present when she panicked over her baby's safety, when she was completely certain that this perfectly healthy child was choking to death right in front of her eyes, make sense. As Schore puts it: "... traumatic attachments, occurring in a critical period of organization of the right brain, will create an enduring vulnerability to dysfunction during stress and a predisposition to posttraumatic stress disorders." (Schore, 2002, p. 4). Further, her absence of person constancy (present in most of her significant relationships, but evidently driven into particular frenzy as she struggled about her growing attachment with me) makes sense. While we don't know all the details of what happened, yet, we do know that the family broke down when Wanda was age one, because of something that involved violence in the family (probably directed toward Wanda's mother) and, possibly, sexual trauma (probably directed toward Wanda). In all likelihood, Wanda's mother had been living with whatever ultimately caused the breakdown for some time before she and her husband actually separated. This affected mother's own affective and emotional availability (not to mention mother's own internal state of vigilance and fear, which she communicated affectively to baby Wanda). Thus, Wanda was deprived of the self-regulating assistance that normally flows from a secure attachment, leaving her with no confidence that homeostatic disruptions would be set right, no core belief that betrayal was only temporary, no sense that people who leave will come back. 3. Wanda's difficulty in accessing her own affective states-much less in remembering events connected to those affective states-makes sense. Like any good dissociater, Wanda has lived a lifetime of disconnection from her own inner life, because it was better that way. As Schore puts it, "... traumatic attachments in childhood lead to self-modulation of painful affect by directing attention away from internal emotional states" (Schore, 2002, p. 17). 4. Wanda is, in a sense, brain-damaged. Rather than encouraging a biological view of psychopathology, however, the new neurobiology understands that actual lived experience-including perception of experience gained through the primary caregiving relationship-creates neurological change. If our other postulates about Wanda's experience and development are true, then she probably has altered function in the orbitofrontal and amygdala areas of her brain, on the right side. Environment came first, and neurological change-brain damage, to use a no-longer-adequate term from the old neurology-followed. The new research teaches us that the young human child-the pre-nate, the newborn, the baby, the toddler-is an astoundingly capable and complex creature, who feistily struggles to adapt, whose brain is so plastic that he can literally remake himself in order to cope with what goes on in the uterus or the house in which he lives. We now know how to create a child who cannot read, who cannot sit still, who is attracted to violence or chaos, who is physically sick a good deal, who is on hair-trigger alert for rejection or other danger. We also know what sort of adult such a child typically becomes. Perhaps we will soon be ready to tackle the pathogenic conditions (in our hospitals, in our homes, in our technology addictions, in our ignorance of the lessons that third-world nations have to teach us about living peaceably together and supporting each other around birth) that provoke the emergence of such children. In the meantime, the least we can do with the new developmental neurobiology is to let it inform our clinical practices, let it engender appreciation and respect for the work our patients have done to stay alive, and let it urge us to approach healing with respect for the total person that got involved in adapting just exactly the way he or she has. References REFERENCES Axness, M.

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