

To Appear in Sharna Olfman (ed.), *Drugging our Children*. New York: Praeger.

Building Healthy Minds: It takes a Village¹

Stuart Shanker

Over the past decade there has been an explosion in the number of children identified with mental health and behavioral problems. Current estimates suggest that as many as half of all children enter kindergarten with self-control issues that are likely to impair their ability to function productively in school. One in five children between the ages of 12 and 17 are said to have a diagnosable mental health problem and one in six children, a developmental disorder. It is far from clear whether these statistics reflect an increase in incidence rates, a heightened awareness of these problems, a shift in diagnostic criteria, advances in sampling techniques, or all of the above. What is clear however, is that these numbers represent a massive societal problem, requiring a concerted societal response. But this has not yet happened; instead, we have sought to respond to the problem with our existing medical resources, and the trends there are as worrying as the data reported above.

Prescription rates of atypical antipsychotics for middle class children have doubled over the past decade and quadrupled for children from lower income families. Antipsychotics, as Sparks and Duncan point out in chapter X, have become a first-line treatment for an alarming number of vulnerable children and adolescents.¹ Overwhelmed pediatricians with little or no training in developmental psychology and psychiatry are

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This paper was inspired by the life's work of Stanley Greenspan, and is dedicated to his memory. This research was made possible by the generous support of the Harris Steel Foundation and the Harris family, which made it possible to create the Milton and Ethel Harris Research Initiative. We are also grateful for the support we have received from the Unicorn Foundation, Cure Autism Now, the Public Health Agency of Canada, the Templeton Foundation, and York University. I am deeply indebted to Sharna Olfman for the many helpful comments she made on earlier drafts of this text.

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increasingly expected to care for these children as health insurance companies restrict access to specialists. Lacking the time and the training to deal with children who cannot control their anger, pay attention, or have trouble falling asleep, they frequently resort to drug therapies that they may know little about, beyond what they have learned from a pharmaceutical rep. The strain on the family is palpable, while the situation at school is becoming intolerable.

Even more disturbing is the knowledge that the most frequently prescribed drugs, stimulants and antipsychotics, do little to address the underlying causes of the child's difficulties. But what is the alternative: a massive investment in secondary care for children? That would be akin to responding to the medical crisis created by smoking by simply increasing the number of oncologists. Rather, we need to try to address these problems at their source, to embrace a preventative approach to mental health and behavior problems.

One of the reasons that drug therapies for mental health issues intensified in the 1990s was because of the increasingly popular belief that they result from genetically-caused neurochemical deficits that could be artificially corrected. There has been a significant advance over the past decade however, in our knowledge about the developmental origins of these problems, and correspondingly, a growing realization that drugs at best only serve to treat the resulting symptoms. If we want to adopt a preventative approach to mental health and behavior problems, we need to train health professionals and caregivers to support parents' efforts to respond sensitively to their children's needs before psychological disturbances arise or become entrenched.

In Search of the Source

Sociologists and psychologists have recently identified a cluster of individual traits that revolve around poor self-control and are correlated with mental health and behavioral problems. These traits include difficulty delaying gratification and ignoring distractions; poor ability to modulate intense negative emotions; and a higher than average frequency

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in the number of intense negative emotions that are experienced.² This cluster of traits can start to emerge as early as the second year of life.³

It must be emphasized, however, that children who exhibit these traits as infants or toddlers are *not* emotionally disturbed. Rather, they might be wired in ways that make them more reactive to stressors, and/or their lives may be replete with more stress than they can deal with. Identifying these children and training caregivers to react more sensitively to their developmental needs can circumvent their greater vulnerability to mental illness or behavior problems later in life.

An important longitudinal study just published by psychologist Terrie Moffit at Duke University confirmed that 4 year-old children who perform poorly on self-control tasks are at a much greater risk of developing mental health and behavioral problems later in life.⁴ This kind of research has led the Ministry of Children and Youth Services in the Province of Ontario to introduce a universal screening initiative for 18 month-old infants. Parents can complete a checklist, such as the Nipissing District Developmental Screen™, which provides a snapshot of a child's development and a starting-point for discussing their child's needs with their primary care physician. In addition, parents are provided with free tools to help them understand and enhance their child's development. Unlike so many screening programs in the U.S., which are heavily funded by the pharmaceutical industry and focus on diagnosis, the emphasis in this government-directed program is on ensuring that parents have the guidance and support they need to ensure that their children's developmental trajectories remain on track and that "states do not become traits".

The cluster of traits that I am referring to here must not be confused with impulsivity. After all, as anyone who has lived through the 'terrible twos' will tell you, *all* toddlers struggle with impulse control. But a small percentage of children have greater than average difficulty learning *how* to control their impulses and emotions, and the critical question we are faced with is how we can best assist these children and their families.

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There has been no end of child-rearing authorities over the years who have insisted that toddlers' impulsivity is proof positive that we must not “spare the rod” lest we “spoil the child”. Some so-called childhood experts even counsel parents not to “indulge” a crying infant or to shame a 2-year-old when he cannot inhibit his impulses. But research suggests that the opposite is the case. Ignoring a baby's signals, or worse still, punishing a baby who is already in distress, places an already vulnerable child at a higher risk for developing psychological and behavioral problems later in life. Toddlers such as these, who are already in a chronically over-stressed state will quickly become overwhelmed when confronted with developmentally inappropriate forms of punishment. The issue with these toddlers is not they have not been sufficiently disciplined, but rather, that they are not capable of coping with stressors in an effective or efficient manner.

So what is a parent with a distressed or distressing child to do? What is a society to do? Should we resign ourselves to the fact that a certain percentage of children are born with unusually strong impulses that are very difficult to inhibit? Or that some children are born with a faulty braking mechanism that is highly difficult to repair? Or that some children simply don't want to submit to their parents' wishes? The answer to all of these questions is “No”.

At this juncture I need to introduce a subtle but critical distinction between *self-control* and *self-regulation* which is the biological substrate for self-control.⁵ A toddler may indeed be growing up in a permissive or authoritarian household that undermines his capacity for self-control, either because he fails to develop the mindfulness or the competencies that underpin self-control, or because his parents are actually exacerbating his stress levels. In other cases, while a toddler may *appear* to lack the discipline or the will to control his behavior, in fact, his autonomic nervous system is in such a depleted state – resulting from a bombardment of stressors that he cannot cope with – that he is subject to sudden and urgent needs and experiences intense frustration and anger if these needs are not instantly met. Such a child might not understand the feelings he is experiencing, or he might not be capable of experiencing different emotional gradations

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of being mildly annoyed, irritated, angry, and furious. For him, frustration results in a 0-60 reaction: a sudden and overwhelming rage. Unfortunately, his resulting tantrum is a coping mechanism that makes matters considerably worse; for now, on top of all of the biological and social stressors that he has to cope with the physiologically debilitating effects of negative emotions, which are dramatically intensified by the negative emotions that her behavior arouses in others.

Parents are to Blame

While it may seem intuitive that “bad” behavior results from “bad” parenting, the actual situation is far more complex because children in contemporary society are dealing with so many stressors that were far less prevalent in past generations, as Sharna Olfman discusses at greater length in chapter X. While a child might be able to cope with one or two stressors for a brief period of time, exposure to multiple stressors over an extended period of time overwhelms a young child's capacity to cope, especially if his ability to tolerate stress is already compromised. Some of the stressors that are now part of the cultural fabric include:

- exposure to neurotoxicants and endocrine disruptors in utero and early childhood (such as mercury, lead, pesticides and phthalates)
- in utero exposure to alcohol, cigarettes, and drugs (which disrupt the neurosystems that subserve self-regulation)⁶
- in utero exposure to excessive maternal stress⁷
- loss of stability of family life
- declining availability of extended family systems
- decline of stable neighborhoods and communities
- loss of opportunities for parents and children to interact meaningfully such as the family dinner hour⁸
- the loss of opportunity for unstructured creative play⁹
- over-exposure to TV, video games and other forms of artificial stimuli
- limited contact with nature¹⁰

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- limited exercise¹¹
- sleep deficits¹²
- fast food and junk food diets
- developmentally inappropriate “educational” stimulation
- overly programmed days that stress parents and children alike.

It is precisely because of the complex web of factors outlined above that we are faced with a massive societal problem requiring a concerted societal response. However, when faced with so many daunting issues, it is tempting to point a finger at the parents and charge them with being too lenient towards their “wild child.” Unfortunately, such a narrow view is deeply entrenched in Western attitudes towards child-rearing,¹³ resulting in even greater stress for both parent and child.

With the caveat that good parenting matters a great deal, it is important to recognize that when *responsible* parents are wrongfully blamed for their children's out of control behavior, and then coerced or shamed into punishing them, the family gets locked into a vicious cycle. The children become increasingly distressed and distressing, and the parents feel increasingly helpless and ineffectual. It may then feel like the key to the magic kingdom when a physician tells them that their children have a “disease” that can be corrected with drugs, despite their own misgivings about the effects that these drugs might have on their children's emotional vibrancy and their concerns about metabolic side-effects.

A proper study of the origins of the ‘parental responsibility’ outlook would take us back to Proverbs 23:13-14. These sentiments were echoed in the Victorian era and in the writings of Freud and the founders of behaviorism. In the 1960s, a number of studies were published that reiterated the sentiment that a child's impulsivity is due to lax parenting in the early years of life. It was around this time that Walter Mischel began his groundbreaking research on self-control, in which he showed that a young child's inability to restrain herself in an experimental paradigm designed to provoke anxiety in

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the face of temptation is a significant predictor of the child's educational outlook and long-term well-being.¹⁴

At the same time that Mischel was studying the significance of a child's ability to delay gratification, Diana Baumrind was developing her 'parenting style' taxonomy. What Baumrind identified as permissive parenting – the warm but overly indulgent parent who makes few demands on the child and readily gives in to the child's impulses—is associated with poor impulse control and increased aggression in children.¹⁵ Authoritarian parenting – the cold and rejecting parent who makes many demands and uses coercive measures to control the child's behavior – is linked to an increased incidence of mood disorders and behavioral problems in preschoolers.¹⁶ Best of all is authoritative parenting – warm, responsive, and attentive care that is sensitive to a child's needs as Myers and Berk describe in chapter X. The most damaging form of parenting is harsh or uninvolved parenting, which is a significant predictor of problems of aggression in an older child.¹⁷

Baumrind's research resonates with the work of renowned child psychoanalyst Margaret Mahler, who posited that as an infant starts to become more aware of his own wishes and desires he becomes increasingly engaged in a battle of wills with his mother and frequently resorts to tantrums in order to get his way.¹⁸ She argued that how a mother responds to these challenging behaviors plays a critical role in how well the infant will begin to develop inhibitory control. She believed that it was particularly worrying when a mother responds with anger herself, which can intensify the infant's feelings of anger or helplessness; or when she responds by simply giving in, which fails to help the infant develop inhibitory control.

However, some parents discover that their toddlers are particularly susceptible to tantrums, or take a very long time to calm down once a tantrum begins even when they practice authoritative parenting. These children might be higher in the cluster of traits that I referred to earlier either because of their innate temperaments and or exposure to the myriad chronic stressors – ubiquitous in Western culture – that overwhelm their coping

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mechanisms. As a consequence, they may be more reactive to stress than the average child; or demonstrate an extreme reaction to restraint; they might have low frustration tolerance; be high in novelty-seeking; demonstrate low harm-avoidance; or have low reward-dependence.¹⁹ And they may overwhelm their parents' ability to cope.

In the early 1990s the view emerged that each of the traits described above can be tied to a deficit in the amount of serotonin, dopamine or noradrenaline that the child produces, or the speed at which she can replace these depleted resources.²⁰ A child with a neurochemical imbalance was thought to be much more prone to anger or anxiety, and just correcting this deficit by providing a pharmaceutical “tune-up” would bring about a positive change in the child’s behavior.

The reality has turned out to be far different. But at the same time that we were embarking on this pharmaceutical experiment – without realizing that it was an experiment – another group of researchers was charting a very different course in their efforts to understand and respond to these children's behavioral challenges. There is a growing realization that children with a propensity to sudden and intense feelings of frustration, anger, or anxiety can, with sensitive caregiving, learn how to modulate their negative emotions and thereby become much less prone to impulsivity. But what exactly is ‘sensitive caregiving’, and how can we encourage parents to become more keenly attuned to their children's needs while navigating their way through a cultural minefield that seems to be challenging their child’s wellbeing from a multitude of directions?

Greenspan’s Theory

Stanley Greenspan introduced a new dimension of critical importance to understanding children who are mired in and overwhelmed by negative emotions. On the basis of his clinical observations, he agreed with Mahler that an 18-24 month-old toddler is undergoing a psychological transition that lays the foundation for the acquisition of self-control. However, Greenspan believed that the Freudian prescription that a child’s infantile rages should be met by a firm response intended to develop an internal “braking mechanism of shame, which leads to inhibition and ‘drive restraint’” was too limited.²¹

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Instead of viewing this important developmental transition in terms of acquiring the (shame-induced) desire to restrain her impulses, he explained it in terms of the infant's burgeoning ability to use gestures and language to express her emotions and modulate her desires, with the support of an empathic caregiver.²²

The young child's emerging capacity to communicate with and understand his caregivers changes the very manner in which he copes with situations that he previously found to be overwhelming. Just knowing that he has tools that can help him to stay calm alters his sense of self-efficacy and his belief in his ability to deal with potentially overwhelming situations.²³ However, more is involved here than language as a regulating mechanism. The key here lies in Greenspan's argument that while there is a close link between self-regulation and self-control they are not one and the same; rather, the latter is made possible by the former. A child must be calmly focused and alert in order to learn the various skills – communicative, self-soothing, anticipatory – that underpin self-control. A child may have the desire and may even have mastered strategies for modulating his anger or anxiety, but his state of arousal has a huge bearing on whether or not he can do so. This is true even before a child begins to develop such a desire.

For example, an infant quickly becomes enraged if her arms are held to her sides.²⁴ If, however, the baby is hypoaroused at the time, there is generally a muted reaction; and the more the baby is hyperaroused the more intense is her reaction.²⁵ To be sure, for biological and possibly genetic reasons, some children seem to be much more susceptible to sudden and over-powering feelings of frustration and anger.²⁶ But Greenspan argued that even with these children, their development of self-control skills can be significantly enhanced; but to do that we *first have to work on their self-regulation*.²⁷

The heart of the theory that we spelled out in our book *The First Idea* is that it is by being regulated that a child develops the ability to self-regulate.²⁸ The reason why there is such a close relationship between arousal and impulsivity is both biological and social. Take the biological first: when we are confronted by stressful situations our bodies undergo a number of changes that help us to cope. This set of responses is known as the

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“fight, flight or freeze” response. For example, blood pressure increases, which in turn increases blood flow to the brain, the sweat glands open to prepare for a cooling response (resulting in the galvanic ‘itches’ or emotional impulses that we all experience under stress) and various metabolic systems work harder, resulting in urgent demands for a high energy activity, and frustration if an outlet is not provided.²⁹

If a child is chronically hypo- or hyperaroused, he has less capacity to “co-regulate”, in other words to be responsive to his caregivers' efforts to calm and soothe him if he is angry or agitated, or alternatively to stimulate and energize him if he is sad or despondent. Because it is harder for his parents to “up- or down-regulate” his emotions, he has less capacity to learn how to self-regulate. A chronically hypo- or hyper-aroused child is, by definition, less aware of and responsive to signals (both his own bodily signals and other people's communications), and less able to regulate his facial muscles to give a big smile or an angry glare. He is less able to look where he wants to or away from something that is aversive. His field of awareness is inner-directed and dominated by all-consuming negative sensations.

In the first year of life much of the caregiver’s regulating behavior is primarily 'proximal'; through touch³⁰ along with modulating vocalizations and looks. But with an actively mobile toddler, the caregiver must increasingly resort to ‘distal’ modes of emotional signaling (e.g., using voice, gestures, facial expressions, looks) in order to up- or down-regulate her baby as necessary. At around 18 months the toddler is starting to take a more active role in this process, using emotional signals herself in place of discharge behaviors (such as bursting into loud sobs) in order to communicate her desires or needs. While at a younger age, the child primarily communicated her anger or frustration with a rage response, she now uses emotionally expressive gestures and language to convey her feelings. While developing communicative skills, the child learns how to tame catastrophic feelings like fear and rage, and how to modulate and regulate her behavior and moods.

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For example, if the child is annoyed she can make a look of annoyance or utter an expressive sound or hand gesture. Her mother may respond with a gesture indicating “I understand” or “OK, I’ll get the food more quickly,” or indicating “Can’t you wait just one more minute?” Her anger may be reduced by the mere awareness that her mother is going to do something, even if she can’t do it immediately. Just the sound of her voice signals that she is getting the milk bottle ready and it’s coming soon. An even better response is if she uses a soothing voice and meets her at her fast-paced, frantic rhythm of back-and-forth cueing and gradually slows down and calms her by introducing a calming interactional rhythm (i.e., down-regulates her). Over time, the child acquires becomes increasingly more effective at self-regulation. We often do this intuitively when someone is upset or angry. Some of us get nervous, however, and start to gesture or speak more quickly, or “up the stakes” by taking the other person’s anger personally. We escalate the interactional rhythm rather than slowing it down and in the process we further excite rather than calm the person.

Consider another example. A toddler is pushing his bottle away with an angry glance at his mom. She puts her hand out to take it from him and uses soothing tones to convey empathy. She slows down the pace of their communication, offering her finger to make contact. He squeezes it, feels a bit reassured, and looks expectantly as mom holds up a piece of food to see if he wants it. He waves his hand to convey that he does. He knows that his anger is being responded to. Consider a toddler who is looking a little sad, subdued, and self-absorbed. Mom energizes her by pulling her into a joyful interaction. Mother puts her toddler's favorite squeeze toy on her head and flirts with her. She giggles and reaches for it and Mom then hides it in her hands. She opens up her hand and presents it with a great sense of mystery. Through this type of interaction, the child gets a sense that she can modulate her sadness or fear through the regulating responses she gets from her caregiver.

Through daily co-regulated emotional signaling of the type described above, child acquires the capacity to interpret and express increasingly fine-tuned emotions rather

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than being limited to global or extreme feelings such as rage. The child no longer has to have an “all-out” tantrum to register his annoyance: he can now convey his displeasure with just a withering look. If mother doesn’t agree with him or can’t bring that food right away, he can now understand her words or gestures, and they help him to modulate his feelings. If he does escalate up to a tantrum because mother hasn’t responded with sufficient speed or empathy, it is after he has communicated his feelings more subtly, not from a 0 to 60 in a split second. All of his feelings ranging, from joy and happiness to anger, assertiveness and sadness are becoming fine-tuned regulated emotional interactions rather than all-or-nothing ones.

The Transition from Being Regulated to Self-Regulating

As we explained in our book *The First Idea*, the 18-month old is beginning to make the critical transition from *being regulated* to *self-regulating* as her capacity to convey her own emotions to others and to understand her caregivers' emotional signals grows. The caregiver’s role in this transition remains paramount. The examples above all involve invitations or demands from the child for the caregiver to help him cope with a stressor. But if a caregiver responds to a toddler’s intense emotional expressions with emotional intensity of her own, rather than soothing and calming signals, the toddler might become overwhelmed and even more anxious. On the other hand, if in response to a toddler’s intense emotional signals a caregiver tunes out, freezes, or slows down too much, the infant might become sad or despondent.

Of all the infant emotions caregivers have to regulate, perhaps the most difficult is anger, which often begets anger or frustration in themselves, or causes them to shut down or shift attention especially when we can’t discern the cause of the child’s anger, or the child has trouble picking up or understanding his emotional cues. When a toddler expresses anger that is not regulated by a pattern of back-and-forth signaling and negotiation, but instead is routinely dealt with by caregiver withdrawal, avoidance, or the anger, this places the toddler at risk for becoming a child whose dominant emotional state is aggression and impulsivity.

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Research strongly suggests that children are biologically predisposed to transition from needing their parents to co-regulate their emotions to self-regulating. Thirty years ago, Charles Wenar noted that it takes far more energy for an infant or toddler to have a full blown tantrum than to emphatically say NO.³¹ Tantrums are perhaps the most physiologically taxing mode of behavior a child can adopt, which is one reason why excessive anger has such long-term negative consequences for a child's wellbeing.³² But an emotionally overwhelmed baby isn't *choosing* to have a tantrum; the overwhelmed baby isn't capable of choosing anything (which is another way of saying that he is overcome by impulses).

The connections between emotion-regulation and energy-modulation are intricate. An organism is wired to maintain positive emotions (e.g., interest, curiosity), which promote energy. In contrast, negative emotions (e.g., fear, anger, anxiety) drain energy. Hence the child is biologically driven to avoid energy-draining negative emotions and maximize energy-promoting positive emotions.³³ This is why a preponderance of negative emotions is such a potent indicator of excessive stress.

Given how draining and devitalizing a tantrum is, very powerful biological needs must be driving a baby who engages in one. By acquiring the communication skills that enable her to forestall this state, she takes a major step forward in her ability to self-regulate. Not only is the 18 month-old learning how to signal her desires and emotions; more fundamentally, she is learning the connection between bodily sensations and emotions and subsequent physical/emotional states, and developing communicative techniques to avoid aversive feelings. But for certain babies it is very hard to make this transition: *not because they lack a sufficiently strong 'inhibitory muscle'*, and not necessarily because a caregiver is incapable of responding consistently to the baby's tantrums. In many cases the baby's needs may be over-powering, or the infant may have a very low threshold for coping with stress.

This is not to deny the relevance of limit-setting on the part of parents as an essential element in self-regulation. One of the reasons why authoritative parenting is associated

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with such positive child outcomes is because limits are set in a consistent and supportive manner. Parents set limits precisely because they can anticipate the costs to the child's (and one's own!) nervous system that will otherwise result. And they set limits in the hope that the child will eventually come to do so on his own. But the emphasis here is on *self-regulation*, not *suppression*. That is, on down-regulating an overly aroused state and mitigating the intensity of the child's impulses, rather than trying to suppress them, and thereby helping the child to turn his anger or anxiety into a positive source for energizing his actions and spurring him on to overcome a challenge.³⁴

Building Healthy Minds

Ten years ago, Greenspan and I started working on a 'Building Healthy Minds' program, based on the book of the same title that he published in 2000.³⁵ Our idea was to create multi-disciplinary teams built around a primary care physician, and involving various early childhood specialists. Given that pediatricians or family doctors see infants and children on a regular basis, we felt that they would be ideal to earmark for specialized training in recognizing self-regulation challenges. Diverse specialists such as early childhood educators would then coach parents on the nature of the stressors their child is trying to cope with and how to best reduce the stress load on the child, thereby enhancing his ability to stay calmly focused and alert.

The program came to a sudden halt, not because there wasn't great interest in such a preventative model, but because I received a large grant to create the Milton and Ethel Harris Research Initiative (MEHRI), a state-of-the-art developmental and cognitive neuroscience center at York University in Toronto. The ideas that we had for Building Healthy Minds became the basis for MEHRIT, the relational based form of therapy (based on Greenspan and Wieder's Individual Differences/Relationship Based therapy³⁶) for children with autism that we have studied at MEHRI over the past seven years³⁷. Still, the desire to introduce some form of Building Healthy Minds program for the general

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public remained very much on our minds, as we thought about the potential benefits of a modified version of DIR for each and every child.

With that in mind, I received funding from the International Development Research Centre of Canada to take a group of scientists down to Cuba to study their model of preventative medicine. Our findings are summarized in *Maternal Health and Early Childhood Development in Cuba*, a Report presented to the Canadian government by the Canadian Senate Sub-committee on population health.³⁸

The reason that I was so interested in the Cuban model was because they have created a system built around what they call polyclinics that is remarkably similar to the model that Stanley and I were considering. Polyclinics are local neighborhood health units designed to promote the integration of science, knowledge transfer, parent education and community mobilization, in addition to providing primary health care. These multi-disciplinary clinics are built around a primary care physician, and include nurses, community workers, nutritionists, athletic coaches, early educators and teachers. The focus is strongly on prevention, beginning with prenatal care and with outreach programs designed to ensure regular visits to the clinic, universal screening and immunization. They serve as a primary site for medical school training and researchers work closely with parents.

The Cubans recognize that, while the array of environmental stressors listed above can severely strain a child's nervous system, sometimes it is the parental or family environment that is the most toxic. But they approach this issue, not with a 'blame the parent' mindset, but with an understanding that parents who are very young and don't have a support network, or parents who were themselves raised in abusive homes, can benefit greatly when exposed to the ideas outlined in this paper. It turns out that these parents are very grateful for having the opportunity to participate in parenting groups, where a leader gives them a chance to talk about issues like sleep hygiene, nutrition, dealing with tantrums, discipline, age appropriate expectations.

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What perhaps impressed us most about the Cuban medical system is how focused they are on identifying the potential sources of mental health and behavioral problems as early as possible and then intervening to reduce the downstream consequences of biological and/or social drains on the child's self-regulation. This is very much the focus of the work we do at MEHRI (www.mehri.ca). As discussed at length, our findings indicate that the capacity for self-regulation is critical for healthy development and that a successful intervention should be grounded in the following ten principles:

1. Figure out why a child is chronically hypo- or hyper-aroused and what can be done to reduce the stress load on him.
2. Expand the range of stressors with which he can cope.
3. Enhance his ability to communicate his emotional needs.
4. Expand his emotional range.
5. Help him to become mindful of his own arousal states.
6. Help the child develop strategies for staying calmly focused and alert.
7. Help parents understand their child's behaviors and develop strategies for dealing with potentially dysregulating (emotionally overwhelming) experiences.
8. Help parents understand the importance of activities that promote optimal self-regulation: e.g., exercise, playing outside, increasing creative playtime, improving diet, beneficial sleep routines, interactive family time, etc.
9. Help parents understand the importance of limiting activities that inhibit optimal self-regulation: taking the TV out of their child's bedroom, reducing or eliminating screen time, reducing structure, reducing developmentally inappropriate formal educational demands, etc.
10. Help parents become mindful of their own arousal states and develop their own self-regulating strategies.

In order for primary care physicians to play the central role that I have outlined, they will need to make a major modality shift, away from treating symptoms with psychiatric drugs to addressing the causes. With each and every child the physician should be

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working to identify the sources of potential downstream problems and discussing strategies with the family for strengthening the child's developmental trajectory. Even with an older child we need to reduce the impetus to reach for the prescription pad and focus instead on ways to reduce the drains on his nervous system and enhance his capacity to deal with stressors.

The sheer number of infants and toddlers struggling with self-regulation issues should alert us to the undue stress that all children are placed under today. This is the reason why we are encouraging pediatricians to offer, during check-ups, general guidelines to ALL parents to reduce stress such as: for example, no screen time for children under 2 years, in keeping with the American Academy of Pediatrics Guidelines; and more generally, encouraging all parents to make time for creative play and spending time outdoors. Similarly NO infant should be babysat or put to sleep or breast-fed in front of a TV; no infant should spend time crawling on a yard sprayed with pesticides

The pediatrician is the ideal person to deliver this information, perhaps with pamphlets that can be handed out and discussed with parents during their first few visits. But we can go even further with this model. My colleague Lori Nichols, the Senior Health Services Resource Nurse at the Children's Aid Society of Toronto, has shown how even the most routine of office procedures can be transformed into a profound learning experience for doctor and parents alike, once viewed through the lens of self-regulation. This starts from the moment that a family enters the waiting room by observing how they deal with the stress of waiting for an appointment in an environment that, despite the omnipresent aquarium, is rarely designed to maximize self-regulation. Then we want to see how the child responds to being poked and prodded by a strange adult, or being weighed and measured on a machine that might be unsteady or noisy. An immunization offers the physician a wonderful opportunity to actually feel and hear through her stethoscope how the child responds to a stressful situation, and to observe how parents distract and comfort their child. It also offers an opportunity for the physician to help the child

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become mindful of his own strategies for dealing with stress (“I saw that, even though you were so scared, your whole body began to calm down when I asked you to take a deep breath”). Even something as innocuous as an eye exam offers a wonderful opportunity to observe how well a child complies with a request or responds to a mild stressor, such as not being able to read a line they find difficult.

If the physician suspects that a child has mild problems in sensory regulation or integration, emotion-regulation, or executive functioning, she can begin discussing effective strategies that the parents can employ to help their child. Just having their attention drawn to how anxious their child was and how calm she became when comforted can have a dramatic effect on a parent’s awareness of their child’s needs and their own parenting tendencies. Regular immunization visits offer the perfect opportunity to monitor the family’s progress in dealing with the myriad stressors that have become ubiquitous in contemporary culture.

We also need to tap into existing resources in the community who can work with parents on an ongoing basis to enhance their awareness of the often very subtle signs children display that reveal that they are over-stressed, or to develop strategies for helping their children stay calmly focused and alert. Caregivers and early childhood educators are invaluable resources. We have found in our work with early childhood educators, who already have a strong background in human development, that they are remarkably effective at implementing individualized programs based on Jean Ayers’ ideas about sensory integration and Stanley Greenspan’s ideas about enhancing communicative skills. And programs like *Kids Have Stress Too!* have demonstrated that it is possible to teach even preschoolers strategies for remaining calmly focused and alert, and to provide teachers and parents with practices that enhance such mindfulness.³⁹

What about enhancing the child’s emotional range? Programs like *Roots of Empathy* have shown how in-class activities led by instructors trained in social-emotional learning can have a powerful effect on a child’s ability to modulate their negative emotions or to understand what others are thinking and feeling.⁴⁰ And programs like *Tools of Mind* have

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shown that it is possible to teach meta-cognitive strategies while at the same time working on literacy and numeracy.⁴¹

Coaches, choir leaders, art and drama teachers, mentors, families who go for long nature walks on the weekend, the scouts and the Y, 4-H and Right to Play: there are no end of potential mentors and activities to promote healthy self-regulation in children. But this isn't just about the beneficial effects of such activities on the autonomic nervous system⁴²: it is just as much a story about weaning the child from those sources of a rapid energy fix such as fast food and electronic media, that have a long-term wearing effect on the child's ability to respond to stressors.

If we are serious about reducing the use of psychiatric drugs to control children's "out of control" emotions and behaviors, then we need a broad-based effort, addressing all of the different elements involved in optimal self-regulation. And the starting-point is to reframe children's behavior for parents, teachers, doctors, and policy makers. We need everyone to understand that there is no such a thing as a bad child, a lazy child, or a dull child. But if we do the wrong things we can certainly cultivate these traits in our children.

We especially need parents to understand that some children are wired to find very elementary actions, like sitting up or walking or going downstairs very taxing; or that some children have trouble knowing when they are hungry or tired or cold; that some children become very anxious or excited when they are exposed to bright lights or noisy environments or strong smells or new tastes and textures, or even just to people who gesture a lot or who speak very quickly; that some children find learning itself very taxing, both physiologically and emotionally; or that some children find it very difficult to express what they are feeling. Still other children may be overwhelmed by stressors that are ubiquitous in contemporary culture such as violent media, developmentally inappropriate academic demands, lack of access to the outdoors, exposure to toxins etc.

The better parents understand the reasons why their child might be acting up, or not paying attention, or having trouble falling asleep, or being aggressive on the playground, or insensitive to the feelings of others, the better they can help her to stay regulated. The

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better the child can stay regulated, the better she will learn how to regulate herself. And the better she can self-regulate, the greater will be her capacity to harness all that energy so that, instead of spilling over into those actions that we are trying to suppress with drugs, it can be channeled into great works of art and science.

¹ Sparks & Duncan, this volume.

² Hirschi, T. (2004). Self-control and crime. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory and applications*. New York: Guilford Press.; Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

³ Tremblay RE, WW Hartup & J Archer (eds), (2005). *Developmental Origins of Aggression*. New York: The Guilford Press.

⁴ www.pnas.org/cgi/doi/10.1073/pnas.1010076108

⁵ Shanker, S, D Casenhiser & J Stieben Understanding the Nature of Self-Regulation, Submitted.

⁶ www.environmentalhealth.ca/fall08brain.html

⁷ Field, T (2007). *The amazing infant*. New York: Wiley-Blackwell.

⁸ http://www.mflmarmac.k12.ia.us/School%20Website/high_school/student_gallery/writing/family_decline.htm

⁹ Hirsch-Pasek, K, M Golinkoff, L Berk, D Singer (2008). *A Mandate for Playful Learning in Preschool: Applying the Scientific Evidence*. New York: Oxford University Press.

¹⁰ Louv, R (2005) *Last child in the woods*. New York, Algonquin books.

¹¹ Ratey, JR (2008) *Spark: The revolutionary new science of exercise and the brain*. Little Brown & co.

¹² Staples, AD & JE Bates (in press). Children's Sleep Deficits and Cognitive and Behavioral Adjustment. To appear in El-Sheikh, M. (Ed.). *Sleep and Development: Familial and Socio-Cultural Considerations*

¹³ Shanker, S (in press)), 'Emotion Regulation through the Ages', in A Foolen, U Luedke, J Zlatev, & T Racine (eds), *Moving ourselves, moving others: The role of (e)motion in intersubjectivity, consciousness and language*. London, John Benjamins.

¹⁴ Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science*, 244, 933-938

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¹⁶ Robinson, C., Mandlenco, B., Olsen, S. F., & Hart, C. H. (1995). Authoritative, authoritarian, and permissive parenting practices: Development of a new measure. *Psychological Reports*, 77, 819-830.

¹⁷ O'Keefe, M. (2005, April). *Teen Dating Violence: A Review of Risk Factors and Prevention Efforts*. Harrisburg, PA: VAWnet, a project of the National Resource Center on Domestic Violence/Pennsylvania Coalition Against Domestic Violence. Retrieved month/day/year, from: <http://www.vawnet.org>

¹⁸ Mahler, M, F Pine, & A Bergman (1973). *The Psychological Birth of the Human Infant*, New York: Basic Books.

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- ²⁰ Cloninger, CR (1987) Neurogenetic adaptive mechanisms in alcoholism. *Science*, 236, 410-416.
- ²¹ Schore, A (1994). *Affect regulation and the origin of the self*. New York: Psychology Press.
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- ²⁹ Porges, S (2011). *The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation*. New York: W.W. Norton.
- ³⁰ Duhn, L (2010). The importance of touch in the development of attachment. *Advances in Neonatal Care*, (10), 294- 300.
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- ³⁵ Greenspan, SI & NB Lewis (2000) *Building Healthy Minds*. Cambridge, Mass: Da Capo/Perseus books.
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towards greater and greater mastery of his social, emotional and intellectual capacities. But the immediate goals are to encourage the child's initiative and purposeful behavior, deepen his engagement, enhance his capacity to initiate joint attention, and develop his communicative capacities, always following the child's lead.

³⁷ Casenhiser, D, S Shanker & J Stieben (in press). Learning through interaction. *Autism*.

³⁸ www.parl.gc.ca/Content/SEN/Committee/392/soci/rep/rep08feb08-e.pdf

³⁹ www.psychologyfoundation.org/kidshavestresstoo.php

⁴⁰ Gordon, M (2007). *Roots of empathy: Changing the world child by child*. Thomas Allen Publishers.

⁴¹ Diamond, A., W.S. Barnett, J. Thomas & S. Munro (2007) Preschool program improves cognitive control. *Science* 318, November 30 2007, 1387-1388 + 24pp Supplemental Online Material available at www.sciencemag.org/cgi/content/full/317/5838/1387/DC1

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