



The MEHRIT Centre, Ltd.

Self-Regulation:

A Discussion Paper for Goodstart Early Learning in Australia

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Self-Regulation:

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Everyone now knows about the famous “marshmallow task” that Walter Mischel developed back in the 1960s, in which a child is given double the reward if he can wait before consuming the marshmallow in front of him. This “delay of gratification” task has even become the theme of a Sesame Street song circulating the Internet. But what is not well known is that you can manipulate how a child will perform on the task – and for that matter, a teenager, a college student, even an adult. If you tire out the child before the task, or make the child anxious, the chances rise dramatically that he won’t be able to wait: even one who previously had no trouble. In fact, if you have the child do the task in a noisy or crowded or strong-smelling environment, or just prime him with some sort of negative thought or emotion, he’ll have a hard time waiting.

As we’ll discuss in this paper, this finding has profound implications for our understanding of self-regulation, and even more important, for our views about early childhood education. It highlights a fundamental distinction between *self-control* and *self-regulation*. The former is about *inhibiting impulses*; the latter is about identifying and reducing the causes of those impulses. This distinction has not been clearly understood; indeed, the two are often conflated. As we’ll show, self-regulation is fundamentally different from self-control, and what makes self-control possible – or, as the marshmallow task demonstrates, beyond the reach of many young children.

Unless we understand this fundamental distinction, we run the risk of adding to the factors contributing to a young child’s poor self-regulation, rather than helping him develop the foundation he needs to succeed in school and in life.

The Importance of the Early Years

There is no longer any debate over the benefits of investing in the early years. Study after study has shown that trajectories are set early and that, once set, they are difficult to change (see McCain & Mustard, 1999; McCain, Mustard & Shanker, 2007; McCain, Mustard & McCuaig, 2011). The major problem we are faced with today, however, is what exactly children, especially young children, should be learning in order to experience these benefits. And here there is a continuing and quite substantial debate.

A great deal of research has been done since the early 1990s establishing the importance of a small number of core social and emotional capacities for children’s wellbeing and academic success. This research has spawned a widespread effort to bring “Social-Emotional Learning” (SEL) into the school system. But the effects of these programs, while promising, have not been as great as originally hoped (see

Shanker, 2014 for a meta-review of the extant meta-reviews, and Rimm-Kaufmann et al., 2014 for the results of a randomized control trial).

Accordingly, attention has shifted over the past few years on the development of children's *self-regulation* in the early years as the underlying foundation of the core SEL capacities (Shanker, 2012; Sklad, Diekstra, de Ritter, Ben, & Gravelstein, 2012). This is both an exciting and yet a worrying development: exciting because self-regulation has hitherto been largely overlooked; but worrying because there are so many different definitions of "self-regulation."

A recent meta-analysis by Burman, Green, & Shanker documented 446 different uses of the term "self-regulation" in the psychological literature, and not only is it often uncertain which meaning is being used, but different meanings are frequently jumbled together within the same study (*Child Development*, in press). As a result *it is not always clear that psychologists and educators are talking about the same thing, or, for that matter, that the same things are being measured.*

These multiple uses of "self-regulation" can be broken down into a small number of "concept-clusters," the most important of which are: self-control, emotion-regulation, self-monitoring, agency, and self-regulated learning. In many ways, *self-control* serves as the overarching construct for these multiple meanings, in large part as a result of the "delay of gratification" studies that began to appear in the late 1960s (Mischel, 2014; Mischel et al., 1972).

These studies show that problems in self-control can be detected in children as young as four, and that these problems are associated with challenges in emotion-regulation and executive functions (Eisenberg et al., 1995; Blair & Razza, 2007; Diamond & Lee, 2011). The main reason why the self-control paradigm became so dominant was because of the longitudinal studies showing that the children who had been identified at a young age as having poor self-control fared worse over the long run both physically and academically, and had significantly higher rates of internalizing and externalizing disorders as young adults (Moffitt et al. 2011; Mischel et al. 1989). This research then led some to conclude that children should be taught in primary school how to control their impulses (Schlam, Wilson, Shoda, Mischel, & Ayduk, 2013; Diamond, Barnett, Thomas, & Munro, 2007).

But a self-control focus overlooks the major research question of whether such programs are, in fact, beneficial. Even if it were shown that teaching children to control their impulses is effective in primary school (which is not yet the case), we would still be left with the serious question of whether it would be beneficial to attempt something similar in early learning centres; or whether using behaviour modification techniques to try to instil self-control in young children might lead to problems in mood, attention, and behaviour. In fact, we have strong reason to believe the latter to be true. For the children who need it the most, it is more likely that it may actually makes things worse.

The chief danger here is that a child might well become more compliant – at least for the short term – as a result of such practices, while undergoing and even becoming habituated to a state of heightened arousal (see www.endcorporalpunishment.org). It is important to keep in mind that *quiet and still* should not be conflated with his being *calm and attentive*. These concepts belong to very different “families” with very different histories and, indeed, are sub-served by very different parts of the brain. The former is concerned with acquiring the “cognitive competencies” (Mischel, 2014) and even the “willpower” (Baumeister & Tierney, 2011) to inhibit impulses and ignore distractions; the latter is concerned with understanding and reducing the causes of heightened arousal that leads to impulsivity and distractibility. If learning and well-being are our priorities, we are after “calm and attentive”; “quiet and still” denotes compliance (or worse a “freeze” response to stressors) and these states seldom live side by side.

In other words, there is a fundamental conceptual distinction between *self-control* and *self-regulation*, as the latter term is understood by psychophysiologicalists. It is an absolutely critical distinction for this group to address: first, for clarifying what exactly we are measuring. Here too we have seen psychologists vacillate between the two concept families, the psychological and the psychophysiological. As a result it is not at all clear, when a program has to be shown to have had some positive effects, whether these were due to the self-control or the self-regulation component, or possibly a synergistic effect between the two.

But there is a second and even more pressing reason why it is vital to be clear on this distinction; for it brings to the fore the question of what we should be endeavouring to teach young children and their families in early learning centres: is it indeed self-control, or is it self-regulation in the manner as this is understood by psychophysiologicalists?

The “Psychophysiological Definition of “Self-Regulation”

The father of modern physiology, Claude Bernard, inaugurated the scientific study of what came to be known as “self-regulation” in 1865. Bernard was interested in the mechanisms that enable an organism to maintain a stable internal state in response to both internal and external “perturbations”: what Walter Bradford Cannon defined as “stressors.” Following in Cannon’s footsteps, Hans Selye, the founders of Artificial Intelligence (e.g., Alan Turing, Herb Simon, Warren McCulloch, Karl Pribram), and most recently, physiologists (e.g., Bruce McEwen, Fraser Mustard, Steven Porges) and psychologists (e.g., Alan Fogel, Stuart Shanker) and clinicians (e.g., Stanley Greenspan, Berry Brazelton, Connie Lillas, Pat Ogden, Bessel van der Kolk) began studying the effects of *excessive stress* on cognitive, emotional and social, as well as metabolic functioning.

In its original psychophysiological sense, *self-regulation* refers to the manner in which a child recovers from the expenditure of energy required to deal with stressors. The reason why Porges’ research in particular has been seen as heralding the

dawning of a new paradigm in early childhood development (ECD) was because of the effects of *allostatic overload* – the consequence of prolonged and excessive stress – on those systems in the prefrontal cortex that subserve such “higher” functions as language, social cognition, executive functions, and, indeed, self-control (see van der Kolk’s Forward to Porges, 2011).

The more a child is chronically hypo- or hyper-aroused as a result of excessive stress (Lillas & Turnbull, 2008), the more readily that child goes into fight-or-flight, or freeze (which is a primitive neural response to threat that is easily misconstrued as *compliance*). These stressors come from a number of domains: e.g., environmental, emotional, cognitive, and social. Quite often it is heightened stress rather than poor self-control that leads to the negative downstream consequences noted above.

In a state of heightened stress, a child is unable to benefit from training designed to foster self-control. Rather, the key to changing such a child’s trajectory is to identify and reduce his stress load, rather than trying to teach better self-control; the latter emerges naturally as a result of improved self-regulation. But the major challenge here is that what is a stressor for one child may not be for another; and even for the same child, what may be a stressor in one moment may not be in another when the child is in a different physical or emotional state.

It is this “individual variability” of stress-reactivity that represents our greatest challenge as we undertake to institute and assess universal approaches to enhancing self-regulation. Clinical studies have demonstrated that it is indeed possible to alter a child’s self-regulation, and that doing so results in meaningful developmental changes (Casenhiser et al., 2015; Casenhiser, Shanker, & Steiben, 2013). But the great challenge that we face is to take such a clinical approach to scale: not only to help those children who might be struggling a little, but to enhance the self-regulation of all children.

To complicate the issue still further, what applies to the individual child also applies to groups of children. That is, what proves to be effective might vary from centre to centre, classroom to classroom, community to community. So rather than thinking of instituting a universal self-regulation *program*, we need to be thinking of self-regulation as an educational *process*.

An alternative response has been to teach young children various types of relaxation and meditation practices in order to help them learn how to control their thoughts and emotions. But here too we see mixed results: many children find such activities taxing, either because they are not yet developmentally ready to focus on their breathing, or indeed, to sit still for longer than a few minutes; because they have not yet developed sufficient “emotional intelligence” to understand, much less identify and express what they are feeling; or because of sensory-motor compromises that render these exercises highly stressful rather than calming.

It is understandable that early childhood educators might be drawn to programs that promise a “quick fix” to problems in self-regulation, but our experience has been that there really is no such a thing: especially with young children. All too often, the “quick fix” in question turns out to be trying to teach the children *about* self-regulation, as opposed to helping them learn how to self-regulate.

Suppose, for example, you shake a bottle filled with sand and glitter and tell the children that it takes their amygdala as long to settle as the grains in the bottle. Or you give the child a chart and get them to identify whether their engine is sluggish, running too fast, or is just right. The problem is that a young child finds it very hard to internalize what you’re endeavouring to teach here. All too often what happens is that the child ends up just parroting whatever it is that you’re saying: words that the child might master, but without any embodied understanding.

Take a concept like *calmness*, which is actually quite complicated: it has a physical component (the feeling of relaxed muscles, your heart and breathing slowing down); an emotional component (the child enjoys the feeling of calming down); and a cognitive element (the child is aware of what he is experiencing). Without a mastery of all three elements, children can easily confuse *being quiet* with *being calm*. They really don’t know, in their body, what ‘calm’ means, let alone regard this as a pleasant state. In fact, just the opposite is often the case: they might comply, but only from a wish to please their teacher, or because of the power dynamics, and not from any genuine awareness of their tension and a desire to release it. So it turns out once again that it is self-control that we are unwittingly working on, and not self-regulation.

Thus, the better we can be clear on the different meanings of “self-regulation,” and above all, how the variations on the “self-control” paradigm all differ from the psychophysiological definition, the better we can determine what we are and, for that matter, should be measuring in young children.

Summary Points: Self-Regulation and the Early Years

- Trajectories are set early and once set are difficult to change.
- Anyone concerned with the healthy development of a child needs to pay close attention to the child's self-regulation.
- The problem is that there are over 400 different uses of the term "self-regulation" in the psychological literature.
- The term self-regulation is regularly confused with self-control, emotion-regulation, self-monitoring, agency, and self-regulated learning.
- Self control is not self-regulation.
- Behaviour modification techniques do not foster self-regulation instill self-control in young children and while short term compliance is possible, this might also lead to problems in mood, attention, behaviour, and make things worse.
- SEL programs in education systems, while promising, have not been demonstrated the outcomes originally hoped for.
- The development of children's self-regulation in the early years is the underlying foundation of the core SEL capacities.
- Self-regulation refers to the manner in which a child recovers from the expenditure of energy required to deal with stressors.
- Prolonged and excessive stress (allostatic overload) on the systems in the pre-frontal cortex can subserve such "higher" functions as language, social cognition, executive functions, and, indeed, self-control.
- A child that is chronically hypo- or hyper-arousal as a result of excessive stress more readily goes into fight-or-flight, or freeze.
- Stressors come from a number of domains: e.g., environmental, emotional, cognitive, and social.
- Heightened stress leads to the negative downstream consequences.
- To change a child's trajectory identify and reduce her stress load as a first step.
- What is a stressor for one child may not be for another; and even for the same child, what may be a stressor in one moment may not be in another when the child is in a different physical or emotional state.
- Clinical studies have demonstrated that it is indeed possible to alter a child's self-regulation, and that doing so results in meaningful developmental changes.
- What applies to the individual child also applies to groups of children and might vary from centre to centre, classroom to classroom, community to community.
- Rather than thinking of instituting a universal self-regulation program, we need to be thinking of self-regulation as an educational process.
- There is no such a thing as a "quick fix".

Reflection Questions 1-2: Self Regulation as a Process

Goodstart has the opportunity to position itself as a world leader in quality early education by focusing on developing children's capacity for *self*-regulation.

1. An important first step for the Goodstart planning is to unpack the significance of choosing self-regulation (in the original, psychophysiological sense) over a focus on self-control or compliance models. It truly cannot be "both."
 - a. What is Goodstart's definition of self-regulation? How do various Goodstart staff—at all levels—currently define it?
 - b. What common language is needed and how can shared understandings be developed across stakeholders?
 - c. What is the current state of Goodstart and where are the gaps in relation to self-regulation across its 642 centres?
 - d. What strengths and opportunities does Goodstart have to build on as a foundation for a self-regulation focus?
 - e. What barriers and challenges will Goodstart need to address to transition from its current state to a leader in the movement of self-regulation in early childhood education?
2. To apply the science to practice in Goodstart centres, self-regulation will need to be approached as an educational *process* not a pre-packaged program or curriculum that can be purchased and rolled out universally.
 - a. What are the implications of approaching self-regulation as an educational process versus purchasing a program and rolling it out widely for?:
 - i. Goodstart leaders
 - ii. Early childhood educators
 - iii. Parents and families
 - iv. Health partners /specialists
 - v. Researchers
 - b. Self-regulation as an educational process requires ongoing information collection and analysis to inform practice and next steps. What is needed to build a Goodstart culture of evidence-based decision making inclusive of?:
 - i. Goodstart leaders
 - ii. Early childhood educators
 - iii. Parents and families
 - iv. Health partners /specialists
 - v. Researchers

The Five Domains of the Self-Reg Framework

There have been three major waves so far in Early Child Development over the past 25 years, largely driven by where the science was at the time. The first wave was in the late 1980s. The emphasis was on providing babies, infants, and young children with sufficient stimulation, as a result of the famous Greenough & Black studies of “enriched environments” (Black & Greenough, 1986; Greenough, Black, & Wallace, 1987; Greenough & Black, 1992). Much of Latin America for example, is still locked into this mindset, not yet recognizing the significance of “individual differences”: i.e., the fact that what is stimulating for one child may be aversive for another (Green-span & Shanker, 2004). Different children, depending on their biological predispositions, sensory thresholds, and schemas, perceive stimulation in different ways.

In the second wave, emphasis began to shift to parenting *education* (“Nobody’s Perfect”, 2011). The idea here is that parents need to be *taught* how to parent. “Defective” parents have to be induced/compelled to attend parenting classes so that they *understand* the importance of secure attachment. I absolutely love John Hoffman’s critiques of this (Hoffman, 2000; Hoffman, 2001).

Epigenetics represents the “third wave” (driven, among other things, by the ACE study; Shonkoff et al., 2012). Early experiences impact the expression of genes and thus contribute to the architecture of the brain and health outcomes. In this wave, the emphasis is on the effects of “toxic stress” with little sense of a universal model. The recently released working paper *Supportive Relationships and Active Skill-Building Strengthen the Foundations of Resilience* (National Scientific Council on the Developing Child, 2015) holds promise with the emphasis on healthy relationships. But the movement remains short on the practical.

Self-regulation is the next wave, beginning with the distinction between self-regulation and self-control (driven now by Porges’ “polyvagal theory”).

As previously discussed, the psychophysiological view of self-regulation is concerned with the manner in which a child deals with stress, in all its many forms, and then recovers from the energy expended. Should a child be exposed to too much stress, the recovery mechanism loses its resilience. Such children may develop a “kindled alarm system,” in which even relatively minor stressors can send them into fight-or-flight or freeze. In this state various cognitive as well as metabolic processes are compromised.

Self-Reg Framework

There are five domains in the *Self-Reg Framework*: biological, emotional, cognitive, social and prosocial (Shanker, 2012). It is important to stress that each of these are tailored to the individual child. There is no standard that fits all children with each

domain. This is an important part of the Self-Reg Framework; it is not a program – it is a practical paradigm through which parents and teachers can better understand a child or student and others. This particular framework is helpful to early childhood educators as it addresses the major needs a child may have. We have split this up into five domains as we believe these are the essential components necessary to holistically understand, and to integrate understanding, about why children may be acting the way they are and how we can help them to achieve their potential. Enhancing a child's self-regulation in all five domains lays the foundation for long-term mental and physical wellbeing. The Framework provides an organizational structure for thinking about self-regulation with considerable flexibility and adaptability for application.

So let's look a little closer at each of the five domains of the self-reg Framework.

1. Biological Domain

Recent advances in science have allowed us to make some remarkable discoveries about the development of a child's brain. These discoveries have extensive implications for the early years and their effects on long-term mental and physical health.

There is so much that Goodstart needs to consider within the biological domain:

Secondary Altriciality

Secondary Altriciality is a term, coined by Portman (1941), which refers to human newborns' need for nourishment from their caregivers, due to their physical, neurological, and behavioural vulnerabilities. Human neonates are born prematurely, with brains less than 30% of their adult size (Dunsworth, Warrener, Deacon, Ellison, & Pontzer, 2012). The consequence of this is that our newborns are utterly helpless and therefore are highly dependent on their caregivers for support. However, this vulnerability opens babies' brains to an extraordinary ability for post-natal plasticity - enabling children to become highly attuned to the environment in which they are born into and adapting to it accordingly.

The synaptic growth experienced in the first two years of life is enormous: 700 new synapses are formed every second. This huge over-production of synapses begins being pruned at 8 months. Synaptic pruning is regulated by a baby's dyadic interactions with caregivers.

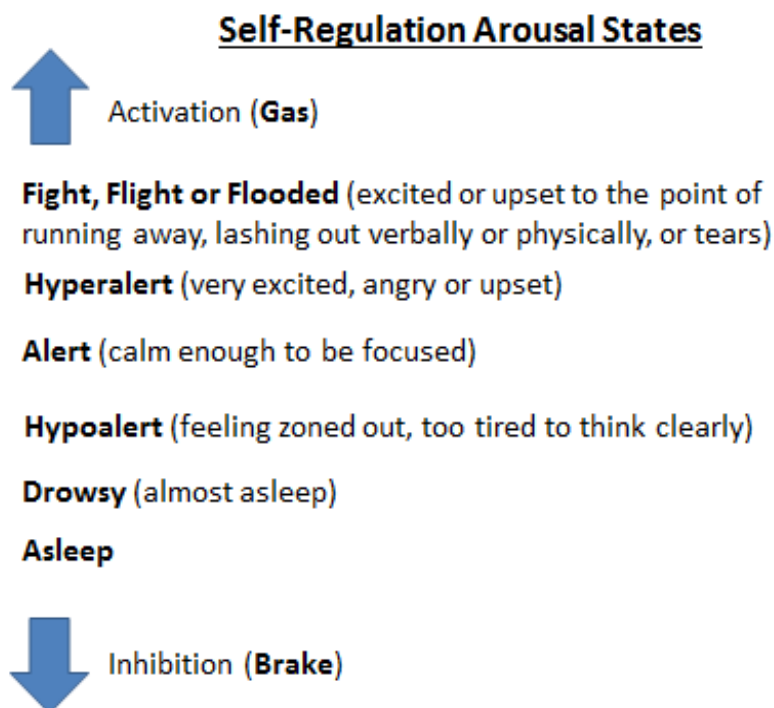
The role of the Interbrain up- and down-regulating

The single most important discovery that scientists have made about the early years is that it is by being regulated that a child develops the ability to self-regulate. The mechanism which facilitates this process is called the Interbrain. The Interbrain acts like a wireless connection between the baby's and caregiver's brains. Since new-

borns' brains are premature and Executive Functions within them have not yet formed, the baby requires a higher order adult brain to serve as an 'external brain' to regulate the baby's physiological states. The higher order brain reads the baby's cues - such as facial expressions, posture, movements, and sounds - and adjusts actions accordingly to up- (stimulating) or down-regulate (regulating) the baby as necessary. These dyadic experiences are vital to help the baby to develop: the capacity for self-regulation, emotions, the HPA axis (our central stress response system), perceptual skills, cognitive skills, and communicative skills.

Six stages of arousal

The six stages of arousal are important to recognize for self-regulation. They are illustrated in this diagram below. The children in the Goodstart Centres will be experiencing different arousal states throughout the day, but so will their parents and all of the staff. We all fall somewhere on the continuum all the time. This is very relevant to Goodstart's work. If a child comes to the Center in the morning after just being yelled at by mom in the car she may arrive in a hyperalert or flooded state of arousal. Or she may arrive in a hypoalert state, withdrawn and appearing "zoned out". These are stress responses and they can vary across the continuum. What is important to note with arousal states is that a child cannot simply think their way out of the state. In fact asking them to do so ("calm yourself down") can actually add to the stress a child is already experience. An arousal state is not a choice, anymore than it would be a choice for an early childhood educator who arrives to work in the morning after having missed the bus and arriving very late to simply "calm down".



Arousal regulation

Arousal regulation is best understood as the competing forces of the Sympathetic Nervous System's (SNS) *activation*, fight-or-flight responses, and the Parasympathetic Nervous System's (PNS) *inhibition*, feed-and-breed responses. In effect, how much activation or recovery is necessary for any particular task is going to vary from child to child and situation to situation. It is important that parents learn to recognize these states of arousal so that they can adjust through up-regulating or down-regulating their behavior to maintain optimal regulation.

The "hierarchy" of stress mechanisms

Porges (2001) has identified a "hierarchy" of four neural mechanisms for dealing with stress:

1. Social Engagement
2. Fight-or-flight (sympathetic arousal)
3. Freeze (parasympathetic arousal)
4. Dissociation

The "hierarchy" represents an application of MacLean's (1990) "triune" model of the brain, from the "newest" to the most ancient mechanisms in the brain for responding to threat. If one proves inadequate to deal with the present stress, the brain shifts to the next.

Operations of the "limbic system"

The brain stem and limbic system are evolutionarily older than the prefrontal cortex. Both the brain stem and the limbic system will change with experience; however they are less plastic than parts of the prefrontal cortex. The structures, which make up the limbic system include the thalamus, hypothalamus, hippocampus, and amygdala. The limbic system involves the limbic-hypothalamic-pituitary-adrenal (LHPA) axis: a central control for reactions to stress and regulates for many bodily processes including digestion, moods and emotions, and energy storage and expenditure. The quality of exchanges between an infant and caregiver determine the foundation for the infant's signaling system and affect how the LHPA axis and associated nervous systems develop. This subsequently influences the development of children's mental and physical health.

Effect of fight-or-flight on cognitive processes

Prolonged activation of the fight-or-flight or freeze response disrupts the development of the brain. More specifically, it disrupts the LHPA axis. As a result, the child chronically becomes hypo-aroused or hyper-aroused because their central control system for stress has become overwhelmed and loses its resilience. As a result, the child has difficulty staying focused and alert, which is the optimal state for learning to occur. The more hypo- or hyper-aroused a child becomes, the more vulnerable he

or she is to 'shutting down' or impulsivity. Children that are chronically zoned out, hyperactive, and/or aggressive are not somehow 'weak' or purposefully acting out – it means they are experiencing too much stress for Social Engagement or their cognitive processes to cope with.

The effects of stress on “sensitive caregiving”

In fight-or-flight or the brain shifts from “Social Brain” to what is essentially a “pre-Social Brain” state in which our capacity to “mindread” is significantly reduced. Far from being some sort of sign of parental “ignorance” or “negligence,” or simply the consequence of never having experienced sensitive caregiving, the theory of self-regulation tells us that this is an important sign of a caregiver who is in a state of chronic allostatic overload. So what such a caregiver desperately needs is help herself with self-regulation, and not “education.” Goodstart would be pre-eminently situated to inspire and guide this invaluable process.

Reframing parental as well as child behaviour

As a society, we need to “reframe,” not just children’s behavior, but parenting styles as well. Self-Reg was designed with precisely this purpose in mind.

Self-Reg is a five-step method to enhance self-regulation in children, youth, young adults, and adults:

- (1) Learn how to distinguish between “misbehaviour” and “stress behaviour” and “reframe” a child’s behaviour accordingly
- (2) Identify the stressors
- (3) Reduce the stressors
- (4) Help the child (or the parent) become aware of what it feels like to be calm and when they’re in fight-or-flight or freeze
- (5) Figure out what brings you or your child back to being calm (Shanker, 2012).

Summary Points: The Biological Domain

The Self-Reg Framework

- Self-regulation is concerned with the manner in which an individual deals with stress, in all its many forms, and then recovers from the energy expended.
- An individual (be they a child, parent or early educator) exposed to too much stress in the early years, may develop a “kindled alarm system,” in which even relatively minor stressors can send them into fight-or-flight or freeze.
- There are five domains in the Self-Reg Framework: biological, emotional, cognitive, social and prosocial
- The Self-Reg Framework is not a program – it is a practical paradigm through which parents and teachers can better understand a child or student and others.
- Self-Reg is a five-step method to enhance self-regulation in children, youth, young adults, and adults:
 - (1) Learn how to distinguish between “misbehaviour” and “stress behaviour” and “reframe” a child’s behaviour accordingly;
 - (2) Identify the stressors;
 - (3) Reduce the stressors;
 - (4) Help the child (or the parent) become aware of what it feels like to be calm and when they’re in fight-or-flight or freeze; and,
 - (5) Figure out what brings you or your child back to being calm

The Biological Domain

- The development of a child’s brain has extensive implications for the early years and their effects on long-term mental and physical health.
- By being regulated a child develops the ability to self-regulate. Being regulated does not mean being managed.
- Early childhood educators can learn to recognize a child’s states of arousal and up-regulate or down-regulate their behavior to maintain optimal regulation.
- There are four neural mechanisms for dealing with stress: (1) social engagement; (2) fight-or-flight (3) freeze; and, (4) dissociation. The brain uses the “hierarchy” for responding to threat. If one proves inadequate to deal with the present stress, the brain shifts to the next. Social engagement is the goal.
- A child becomes chronically hypo-aroused or hyper-aroused if their central control system for stress has become overwhelmed and loses its resilience.
- A chronically hypo-aroused or hyper-aroused child has difficulty staying focused and alert, which is the optimal state for learning to occur.
- Children that are chronically zoned out, hyperactive, and/or aggressive are not somehow ‘weak’ or purposefully acting out – it means they are experiencing too much stress for social engagement or their cognitive processes to cope with.
- We need to “reframe,” not just children’s behavior, but parenting styles as well. Self-Reg was designed with precisely this purpose in mind.

Reflection Question 3: The Biological Domain

A *self-regulating* child becomes aware of his/her brain-body responses to stressors in every day life and applies personalized strategies to return to a state of calm, alert focus. When a child's stress levels are too high various systems for thinking and metabolic recovery are compromised. The signs of *dysregulation* show up in the child's behaviour, mood, attention, and/or physical well-being.

3. Regular information gathering on the biological domain of self-regulation can be used for practice improvement across 642 early learning centres. If the goal is practice improvement and better outcomes for children in the biological domain, what information would be valuable to support this at the:
- Environmental level
 - Population level?
 - Individual level?

2. The Emotional Domain

The standard definition of “emotion regulation” is that children need to learn how to “monitor, evaluate, and modify” their emotions. For example, children need to recognize when they are anxious or angry; consider whether their emotion is appropriate to the situation; and be able to calm themselves down. But these are precisely the things that children, especially young children, find so hard to do.

On the standard approach you engage children in various kinds of exercises designed to help them identify what they're feeling. The hope here is that by getting them to tune into their emotions they will naturally become more aware of when they are anxious or angry and can then apply emotion-regulation strategies, which are also taught, to calm down; for instance, breathe deeply and count to ten.

The three R's

But one big problem is that children often don't know and may even deny that they are anxious or angry. A deeper problem, especially in the moment that a child is anxious or angry, is that you're using the wrong channel. The problem is that of trying to use “left-brain processes” like language and executive functions to regulate a child's emotions when these processes have gone off-line as a result of all the adrenaline the child is pumping in the hyperaroused state. That is, the more flooded the child, the less capacity he or she has to “monitor, evaluate and modify” her emotions. Self-Reg teaches that what parents and early childhood educators need to do in such situations is to help the child calm down, not try to force them to monitor, evaluate and modify what they're feeling.

When children are young their emotional reactions are sudden and feel catastrophic—all-or-nothing. What parents naturally find scary—perplexing, challenging, frustrating—is when they can't seem to help their kids calm down or cheer up.

The child is so overwrought or angry that nothing that you say or do seems to help. This happens, not because a child's "braking mechanism" is defective, and certainly not because they aren't "trying hard enough," but because they are so aroused that they can't register what we're saying or doing.

The lesson here: parents and early childhood educators alike need to soothe before they try to "educate." Identify and reduce whatever stress they can. So before they try to help the child learn how to monitor, evaluate and modify her emotions, they need to focus on the "three R's" of emotion-regulation: *Recognize. Reduce. Restore.* Recognize the signs of escalating stress. Reduce the stress. Restore energy.

Summary Points: The Emotional Domain

- Many children, especially young ones, find it very difficult to "monitor, evaluate, and modify" their emotions.
- Using "left-brain processes" like language and executive functions to regulate a child's emotions will not be effective if the child is "off-line" as a result of all the adrenaline pumping in the hyperaroused state.
- The more flooded the child (see arousal states) the less capacity he or she has to "monitor, evaluate and modify" her emotions.
- If a child is in a flooded state, parents and early childhood educators need to help the child calm down, not try to force them to monitor, evaluate and modify what they're feeling.
- Young children experience intense emotional reactions that can be sudden and feel catastrophic—all-or-nothing.
- It can feel overwhelming to a parent or early childhood educators when they can't seem to help a child calm down or cheer up.
- Sometimes a child is so overwrought or angry that nothing that you say or do seems to help. This happens, not because a child's "braking mechanism" is defective, and certainly not because they aren't "trying hard enough," but because they are so aroused that they can't register what we're saying or doing.
- Parents and early childhood educators need to soothe before they try to "educate."

Reflection Question 4: The Emotional Domain

4. Regular information gathering on the emotional domain of self-regulation can be used for practice improvement across 642 early learning centres. If the goal is practice improvement and better outcomes for children in the emotional domain, what information would be valuable to support this at the:

- a. Environmental level
- b. Population level?
- c. Individual level?

3. Cognitive Domain

“Cognition” is a very big word that covers an awful lot of territory in psychology. It refers to any of the mental processes involved in knowledge-acquisition: things like attention, perception, memory, and problem-solving. But when we do Self-Reg in this domain, we are only concerned with the cognitive foundation of these processes: the so-called *roots of attention*. This refers to the child’s ability to take in and process different kinds of sensory information: internal as well as external. Pushing a child to master “higher” types of cognitive skills before this foundation has been strengthened can be incredibly frustrating: for the child, for her parents, and for her teachers.

As their name portends, one of the primary mandates of early learning centres is to enhance school-readiness, yet to be effective in this regard demands a developmentally appropriate approach. The basic principle here must be to work on strengthening the young child’s *core cognitive competencies*, and not be overly focused on specific concepts or skills or executive functions, let alone trying to develop meta-cognitive skills. It is the roots of child’s ability to pay attention that need to be strengthened.

Attention and the body

To that end, Self-Reg emphasizes two key principles. The first is that *attention involves the body as much as the mind*. Watch a child immersed in a problem you can see how every muscle is tensed as she concentrates. Sustained concentration makes a high-energy, high-cost demand on a child’s autonomic nervous system. The energy used to focus and accomplish cognitive tasks can seriously deplete the energy needed for self-regulation in other domains, and, of course, vice versa. A child who is uncomfortable for any reason in a learning situation will have to work harder to concentrate than a child who is calm and alert.

If a child has any problem self-regulating in the other domains this can seriously constrain his or her ability to focus on a task. If too much energy is spent trying to sit still or inhibit an impulse there may not be enough left to work through a problem step-by-step. Maybe the greatest mistake we can make is to view children as needing to struggle on their own, both with learning and with learning how to control their attention. Some children need a lot of support to reach the point of working quietly on their own.

Roots of attention

The second key principle, which arises directly from this last point, is that we need to work on the *roots* of attention in the early years. Especially important is when attentional problems are due to processing challenges, which can be subtle and easily overlooked. These include the way the brain processes auditory, visual, and other

cues. In such cases a child's attentional problem is never the result of a lack of motivation, although processing challenges can lead to a lack of motivation.

When we work on the roots of attentional problems we look at things like the child's ability to register and integrate different kinds of sensory information. There are various play-based techniques for effectively addressing such deficits. Another common "root" is when a child finds it difficult to sequence and modulate his movements and vocalizations; to help a child with this sort of problem we might play games in which he imitates the different movements and sounds of animals in the jungle, or have him navigate his way through space in an activity with a maze or an obstacle course.

But above all we work on the child's self-regulation. Self-regulation is not, however, just *another* root: it is the "taproot" that feeds all the smaller, lateral roots. To understand why this is the case, you need only consider how each of the "roots" serves to reduce the stress created by the stimuli impinging on an infant's senses, internal as well as external: the trouble she has getting her hands or her mouth to do what she wants; the gravity that makes it so hard for her to sit up or walk; the actions of those around her, which she's desperately trying to understand.

It is extremely stressful for children when they don't see patterns. They don't understand what they're experiencing or observing; don't know why people are acting the way they are; don't know what to expect; no longer feel safe. As a result, they become hyperaroused.

The child's distraction, impulsivity, inability to listen, low frustration tolerance and other challenging behaviors are all a consequence of hyperarousal. The more stressed he becomes the less he can attend to what he's looking at or feeling and anticipate what is going to happen next, which increases his stress and renders him even more inattentive. Shutting down or hyper-focusing on something are ways of blocking out the stress.

Self-Reg enables us to break this "arousal cycle" by keeping a child's stress load within a manageable band, and then teaching the child how to manage this on his own. The better the child learns how to identify and reduce the stressors that render him inattentive, the better he will be recognize patterns in what hitherto has been a "blooming, buzzing confusion."

Summary Points: The Cognitive Domain

- Cognition refers to any of the mental processes involved in knowledge-acquisition: things like attention, perception, memory, and problem-solving.
- Self-Reg in this domain is concerned with the cognitive foundation of these processes: the so-called *roots of attention*.
- *Attention involves the body as much as the mind*; the roots of child's ability to pay attention can be strengthened.
- Sustained concentration makes a high-energy, high-cost demand on a child's autonomic nervous system.
- A child who is uncomfortable for any reason in a learning situation will have to work harder to concentrate than a child who is calm and alert.
- Problems self-regulating in any of the other domains can seriously constrain his or her ability to focus on a task.
- For some children just trying to sit still or inhibit an impulse takes an enormous amount of energy and there may not be enough left to sustain attention.
- Many children need our help to gradually reach the point of being calm, focused and working quietly on their own.
- Many attentional problems are due to processing challenges, which can be subtle and easily overlooked (auditory, visual processing etc.)
- If a child has a processing problem, his inability to attend and focus is never caused by a lack of motivation but over time it can lead to a lack of motivation.
- When we work on the roots of attentional problems we look at things like the child's ability to register and integrate different kinds of sensory information.
- There are various play-based techniques for effectively addressing the roots of attention; but above all we want to work on the child's self-regulation.
- A child's distraction, impulsivity, inability to listen, low frustration tolerance and other challenging behaviors are all a consequence of hyperarousal.
- The more stressed he becomes the less he can attend to what he's looking at or feeling and anticipate what is going to happen next, which increases his stress and renders him even more inattentive.
- Shutting down and hyper-focusing on something are ways of blocking out the stress.
- Self-Reg enables us to break the "arousal cycle" by keeping a child's stress load within a manageable band, then teaching the child how to manage this on own.
- The better the child learns how to identify and reduce the stressors that render him inattentive, the better he will be recognize patterns in what hitherto has been a "blooming, buzzing confusion."

Reflection Question 5: The Cognitive Domain

5. Regular information gathering on the cognitive domain of self-regulation can be used for practice improvement across 642 early learning centres. If the goal is practice improvement and better outcomes for children in the cognitive domain, what information would be valuable to support this at the:

- a. Environmental level
- b. Population level?
- c. Individual level?

4. The Social Domain

Self-Regulation adds a new dimension to how we look at children's social development in the early years. We tend to assume that if a child is having trouble in this domain he has to be taught social skills and he may have to *work* at mastering these skills—or suffer the consequences. But being urged to *try harder* can actually make things worse: make the child even more tense and unsure of himself in social situations. For the problem here is not one of motivation. It lies deeper, in the arousal created by the very system that serves as a child's first line of defense for dealing with stress, the *social engagement system*.

How a child reacts to other people has a profound effect on the other domains of self-regulation, and the other domains of self-regulation have a profound effect on how a child responds to other people. What we need to understand is why it is so hard for some kids to engage with others, and more generally, what we can do to enhance the capacity for *connectedness* in kids who find social interaction stressful.

If a fight-or-flight reaction to social situations becomes entrenched, the child will shy away from what she most desperately needs when she is frightened or anxious: the calming presence of a caregiver or other children. She will turn inward, into herself. That is what is really involved if we go into fight-or-flight: the brain has shifted from the most recent human evolutionary adaptation for dealing with threat to a much more primitive mechanism designed to protect an isolated animal: the so-called “survival brain.”

That is very much how it feels to be in fight-or-flight: on one's own, desperate to escape. It is extremely hard for children to use words to communicate when they are feeling this way, but we can help them by finding some nonverbal way for them to tell us when this happens. In fight-or-flight, even the most benign of social acts can be interpreted as a threat. These sorts of distortions are one of the invaluable “signs” that a child has gone into a state of low energy/ high tension. When this happens, the child's immediate need isn't to be corrected, but just to be soothed.

Instead of trying to reason with or *teach* children who are experiencing this kind of *negative bias*, or what is much worse, discipline them, we have to bring them back to *the world of social engagement*, and for that to be possible we have to re-establish their sense of safety. The primary duty of the Interbrain is *to make a child feel safe*.

The key here is to bear in mind how “threats” come in all shapes and sizes. Some threats are very easy to define; for example, threats to our physical safety. Sometimes the threat is simply being removed from a comfortable routine. A look, a vocalization, a gesture, a movement—even a child’s worry about one from previous experience can be threatening. So too can the lack of a look, vocalization or gesture.

Sometimes what is threatening is the demand being made on the child; or not knowing how what she is doing or saying will be received. Sometimes what is threatening is not knowing what someone is thinking, or an action whose intention the child doesn’t understand. Sometimes the threat comes from a group’s shared understanding that the child doesn’t understand.

When a child feels threatened the result can be sympathetic flooding (anger and aggression, flight or desertion) or parasympathetic flooding (withdrawal, paralysis). Such dysregulation can have a profound effect on her tension, emotions, and self-awareness. The restorative state that she experiences when she feels safe is more than just pleasurable: it is the state in which learning and growth can occur. In this case the growth is social: the skills that enable a child to deal with increasingly complex social challenges.

If, for whatever reason, a child finds it hard to engage in social engagement, this learning process will be diminished. The child will find herself overwhelmed by situations that outstrip her social abilities, and she will be likely to respond aggressively to or withdraw from such situations. Such a response then further compounds her social deficits, for she needs to engage in more complex interactions in order to develop more sophisticated mindreading and mind-displaying skills.

The problem for such a child is that the social expectations on her are growing exponentially but she can’t keep up. She can’t “read” what other children are feeling from their faces, or has trouble following conversational twists and turns. She doesn’t understand why what she said or did elicited a fear or anger response on the face of the child she was engaging with. Everyone in the group seems to be on the same page except her; everyone laughs at the joke except her.

These are feelings that many children experience, and instead of being gently guided into social understanding, they are often met with harsh and even punitive responses that send them into a heightened state of social anxiety. Children need to learn to do Self-Reg in social situations, because first and foremost they have to learn what they can do to feel safe.

Nature’s mechanism for socialization in the early years is play. Play can strengthen social sensitivities and engagement, reduce attentional challenges and facilitate learning. Panksepp’s (2007) suggestion of investing in “play sanctuaries”—places where we meld joyful play and emotionally-fulfilling education (Panksepp, 2007, p. 64) may hold promise for children’s self-regulation across multiple domains. .

Summary Points: The Social Domain

- Problems in the social domain lie in the arousal created by the system that serves as a child's first line of defense for dealing with stress: the *social engagement system*.
- Urging a child *try harder* in the social domain can make the child even more tense and unsure of herself in social situations.
- What we need to understand is, what we can do to enhance a child's capacity for *connectedness* in kids who find social interaction stressful.
- If a fight-or-flight reaction to social situations becomes entrenched, the child will shy away from what she most desperately needs when she is frightened or anxious: the calming presence of a caregiver or other children.
- Turning inward is what is really involved if we go into fight-or-flight: the brain has shifted to the so-called "survival brain."
- It is extremely hard for children to use words to communicate when they are feeling this way
- In fight-or-flight, even the most benign of social acts can be interpreted as a threat. These sorts of distortions are a "sign" that a child has gone into a state of low energy/ high tension. The child's immediate need is to be soothed and caregivers need to re-establish their sense of safety.
- "Threats" come in all shapes and sizes. Some threats are very easy to define; sometimes the threat is simply a look, a vocalization, a gesture, a movement or alternatively the lack of a look, a vocalization, a gesture, a movement
- When a child feels threatened the result can be sympathetic flooding (anger and aggression, flight or desertion) or parasympathetic flooding (withdrawal, paralysis).
- . A child will find herself overwhelmed by situations that outstrip her social abilities, and she will be likely to respond aggressively to or withdraw from such situations.
- The problem for such a child may be that she can't "read" what other children are feeling from their faces, or has trouble following conversational twists and turns. She doesn't understand why what she said or did elicited a fear or anger response on the face of the child she was engaging with. Everyone in the group seems to be on the same page except her; everyone laughs at the joke except her.
- What they most need is to learn to do Self-Reg in social situations, because first and foremost they have to learn what they can do to feel safe.
- Nature's mechanism for socialization in the early years is play

Reflection Question 6: The Social Domain

6. Regular information gathering on the social domain of self-regulation can be used for practice improvement across 642 early learning centres. If the goal is practice improvement and better outcomes for children in the social domain, what information would be valuable to support this at the:

- a. Environmental level
- b. Population level?
- c. Individual level?

5. The Prosocial Domain

According to the classic, Hobbesian view of human nature, children are fundamentally selfish and in many cases, aggressive, and they have to be forced to become 'prosocial' for their own good as well as that of society. *Self-regulation turns this outlook on its head*: Instead of asking how you compel a child to behave prosocially, it asks: what sets a child on an antisocial path?

The crux of Self-Reg is that we born with a brain that *expects* social engagement. Newborns are distressed when they hear another baby crying; when toddlers see someone upset they will try to hug or distract them. Why would a child need to be *compelled* to be prosocial when children naturally demonstrate this inclination?

Clearly there are biological mechanisms that, in the wrong circumstances lead to antisocial behaviour. Equally clearly there are biological mechanisms that in the right circumstances lead to prosocial behavior. Antisocial behaviour in a child is the *anomaly*, not the norm.

It is by being regulated that a child develops the ability to self-regulate. Every child has to make the same journey in life, from one pole of the Interbrain to the other: from *being regulated*, to being *the one who regulates*; from having all of one's needs met to being the one who meets the needs of others. So what turns a child away from this path?

We can ask the same question about childrearing: why do some caregivers neglect or even abuse their child? The answer to both questions lies in stress overload: a caregiver who can't cope with her own state finds a baby's distress more than she can bear and something that she can't understand.

Fight-or-flight shuts down digestion, cellular repair, immune system, and PFC systems that subserve mindreading and communication. It shuts down the very systems that enable us to experience "cognitive empathy": not just being affected by, but aware of what someone else feels. When social engagement shuts down, ancient systems run the show: systems that predate the Social Brain and rely on aggression or escape to deal with a threat.

There can be many reasons why a child finds journey from one pole of the Inter-brain to the other hard. Some are born susceptible to limbic arousal, or something happened that kindled the limbic system. If hyperaroused, impulses intensify while social and self-awareness decline: the child can't share, sympathize, or communicate. He finds someone else's arousal so stressful that it triggers fight-or-flight or freeze.

What is critical in such situations is how we respond to the child's anxiety, which can manifest in acts of aggression. When a child becomes anxious he doesn't simply go into fight-or-flight or freeze; negative bias, hoarding, changes in proxemics can also occur. Instead of sharing his toy a child tries to grab his friend's as well; or explodes when another child enters his personal space or takes one of his possessions or teases him

We instantly respond angrily to child's behaviour because this is an ancient response, lodged in our own limbic system. If adults consistently chastise a child for his lack of empathy, shouting when they should have soothed, escalating when they needed to down-regulate, this can push the child towards becoming antisocial. Instead we have to do Self-Reg, on ourselves as well as with the child.

Early Learning centres provide us with the perfect opportunity, not just to explain, but also to model this behaviour for parents.

Summary Points: The Prosocial Domain

- The crux of Self-Reg is that we born with a brain that *expects* social engagement.
- Antisocial behaviour in a child is not the norm.
- Clearly there are biological mechanisms that, in the wrong circumstances lead to antisocial behaviour.
- Equally clearly there are biological mechanisms that in the right circumstances lead to prosocial behaviour.
- Instead of asking how you compel a child to behave prosocially, through a lens of self-regulation we ask: what sets a child on an antisocial path?
- The answer lies in stress overload: Fight-or-flight shuts down digestion, cellular repair, immune system, and PFC systems that subserve mindreading and communication.
- Stress overload shuts down the very systems that enable us to experience “cognitive empathy”: not just being affected by, but aware of what someone else feels.
- When social engagement shuts down, ancient systems run the show: systems that predate the Social Brain relying on aggression or escape to deal with threat.
- Some children are born susceptible to limbic arousal, or something happened that kindled the limbic system. If hyperaroused, impulses intensify while social and self-awareness decline: the child can’t share, sympathize, or communicate. Someone else’s arousal is so stressful that it triggers fight-or-flight or freeze.
- What is critical in such situations is how we respond to the child’s anxiety, which can manifest in acts of aggression.
- Chastising a child for his lack of empathy, shouting when a child needs to be soothed, escalating when the child needs to down-regulate, can make things worse. Instead we have to do Self-Reg, on ourselves as well as with the child.
- Early Learning centres provide us with the perfect opportunity, not just to explain, but also to model this behaviour for parents.

Reflection Question 7: The Prosocial Domain

7. Regular information gathering on the prosocial domain of self-regulation can be used for practice improvement across 642 early learning centres. If the goal is practice improvement and better outcomes for children in the prosocial domain, what information would be valuable to support this at the:

- a. Environmental level
- b. Population level?
- c. Individual level?

Self-Regulation Theory to Practice Principles

In our work in Canada and internationally, we have had the opportunity to observe the effect of the leading “self-regulation programs” currently on offer. These programs have been carefully developed and contain some wonderful elements. Yet we have consistently observed a couple of significant problems that need to be carefully considered.

The first is that every program seems to very effective for a small number of children; but an equal number actually find the program aversive. While in between there is a large body of children who seem neither particularly interested in nor bothered by the program. Often these programs are built on an assumption that the children are regulated enough to be reflective, mindful and then learn and apply these learnings in their everyday interactions. This often just isn't so and most especially for those young children already struggling with self-regulation. One-size fits all no more applies to self-regulation or a program designed to build skills related to some area of self-reg, than it would apply to teaching at one level for a group of children's emergent literacies or even their bike riding skills.

A second problem is that whatever the program, it has been designed for a target demographic that is significantly different from the cultural milieu in which it is being implemented. One of the unfortunate consequences of these “cultural clashes” is that parents and communities are even further alienated from the centre, rather than eagerly embracing the program. In a worrying number of cases there have been serious cases of hostility, with the result that Centre or school staff spent more time on the defensive than on implementing the program.

A third problem we have observed is that the issue of fidelity invariably comes to the fore. Here the undesirable consequence relates to the stress that this creates on the staff, as well, of course, of the need to bring in external ‘advisors’ to oversee the training and evaluation. But this has the unfortunate consequence that, far from empowering the staff, they become increasingly uncertain of their actions and reluctant to experiment with new ideas and techniques. Often we see educators have been mandated to use a certain program without the proper training or time allocated for development of knowledge and understandings to apply it with fidelity. And so even if the off-the-shelf programs were the best practice to enhancing children's self regulation, which they are not, the components within these that could be helpful as part of an overall practice focus, are often misunderstood and misapplied.

For all these reasons we have noted, at the MEHRIT Centre we have come to strongly believe that the emphasis must be on *process* rather than *program*. In every case, the greatest effects are observed in initiatives that are culturally-relevant and driven by interest and curiosity rather than a manual.

We have identified ten key principles that should guide this process.

Build a relationship

Self-regulation is only made possible, and proceeds from a strong relationship. If left to cope with their stress on their own, children frequently develop maladaptive coping strategies: e.g., they might become highly withdrawn and shut down, or constantly seek out experiences that will trigger the release of adrenaline. It can be very difficult to dislodge a child who has habituated to such constrictive forms of self-regulation. One has to be very gentle and patient, and follow the child's lead, so that he feels safe and secure in your presence.

Keep your Eyes on the Target

Parents invariably come to learning centres for help with specific problems: for example, getting their child to eat, or go to sleep at night, get up in the morning, get dressed, brush his teeth, stop hitting or shouting, get off his video game, mix with other children. Or they are worried about their child's mood, or learning problems, or oppositional tendencies, or his lack of empathy. The focus, when we're working on self-regulation, has to be on the self-regulation itself and not some secondary problem that may have arisen from or been exacerbated by an excessive stress load.

Pay Attention to Individual Differences

Children need to be presented with all sorts of choices and allowed the opportunity to experiment. The power of self-regulation as a process and not a program lies in the choosing. Granted, this may make things a bit more complicated; how much easier it would be if every morning, at 9:15 sharp, all of the students would do fifteen minutes of a breathing exercise followed by three hours of educational bliss. Doing self-regulation is a lot messier — and a lot more effective! For the truth is that not all children benefit from breathing exercises; in fact, some actually find this dysregulating. What's more, even those children who do benefit can be incredibly variable in terms of when it has this positive effect.

Proceed gradually (*paulatinamente*)

The Spanish word *paulatinamente* means doing something gradually, and nothing could be more important when it comes to doing self-regulation. Saying that you need to teach self-regulation step-by-step sounds simple enough in theory, but it can be surprisingly difficult to figure out in practice. Going step-by-step often requires tremendous patience: a matter of not trying to go too far too fast.

Don't go too meta-cognitive

Whenever we work with young children on self-regulation we have to find ways to present the concepts involved in ways that they can fully grasp, in their body as well as in their minds. What this means is that we have to try to communicate at the children's developmental level, where this applies to all the different domains. This can be tricky if a child is at a high level in one domain – e.g., cognitive – but a relatively

low level in another – e.g., emotional. Even within domains we might encounter disparities: for example, a child might be at a high level of abstract reasoning yet a low level of self-awareness. So you might find that the child can use a word like ‘calm’ correctly, even define it when asked, yet not have an embodied understanding of what the word means.

Expect the unexpected

What works beautifully for one child may have the opposite effect on another, even though the two seemed to have very similar needs. Or something that has worked beautifully stops working. Sometimes something works, but for none of the reasons you expected; and sometimes something doesn’t work, for reasons that you’ll never understand. All too often, you’ll find that what you love the children hate, and vice versa. Sometimes, what you thought was working was actually making things worse. And sometimes, something that you were sure wasn’t working turns out to be terrific: it just took a bit longer than you expected.

Change a trajectory

We can help every child, even the ones that present serious emotional, behavioral or attentional problems find their way onto a healthy developmental trajectory. But the starting point for changing a child’s trajectory begins with our perception of that child; for this has far more bearing on how he perceives himself than we might ever dream.

Don’t expect everyone to have the same capacities

The reason why some children may have so much less capacity than others to concentrate, or much slower rates of recovery from sustained concentration, is because they approach the task with less ‘gas in the tank’, or because they are burning too much energy during the task. If you push a child when he is overly depleted, there is a risk that his brain will respond by producing still more adrenaline to keep going, when what he really needs to do is recover. What so often happens then is that, although the child might be able to comply with the demands imposed on him for a while, the eventual meltdown is going to be even more pronounced and the child’s recovery even more prolonged.

Be culturally attuned

All too often, the notion of being *culturally attuned* is interpreted as meaning that one needs to translate one’s model into terms that a community will accept. But for self-regulation, what is involved here is approaching different cultures with an open and inquiring mind. That has certainly been our attitude in our work with First Nations communities across Canada, and as a result, it is TMC that has gained the most from this experience. In part this is because of what we have learnt about self-regulation from Aboriginal Elders and healers; and in part, because of what we have learnt about ourselves.

It came as something of a shock to realize that the science of self-regulation is essentially searching for the neurobiological and physiological underpinnings of the traditional Cree view of *mino-pimatisiwin*. The five domains of self-regulation (biological, emotional, cognitive, social and prosocial) cover the same ground as the four quadrants of the Aboriginal Medicine wheel (physical, emotional, mental, and spiritual). As for the *social*, far from being 'missing' in the Medicine Wheel, belongingness is the overarching principle that holds all four domains in place.

The key to the Aboriginal view of 'wellness' is the concept of balance. This is also the core principle of self-regulation: the balance between sympathetic and parasympathetic nervous systems. But the aboriginal view sees the wellness afforded by balance as a continuum, whereas we are prone to look at 'mental health' and 'illness' as discrete states. Even our tendency to look at 'regulated' and 'dysregulated' states in binary terms is alien to *mino-pimatisiwin*. On the aboriginal view, all children experience moments when they slip out of balance, and what those who are finding it a little difficult to get back to a balanced state need from us is more support, not censure.

I know from my visits to the Pilbara and my conversations with Fiona Stanley, Michael Wright, and Aboriginal leaders across the country that the same point is manifestly true in Australia.

Take it personally

Some of the most rewarding sessions we've had with early educators in Canada have dealt with their own wellbeing, their own personal need to do Self-Reg. It is no doubt a topic that we need to start addressing seriously in ECE training. Parents also need to be made aware of the challenges that early educators face and explore how they can support the work around self-regulation that is taking place. But more is involved here than the educator's wellbeing, as crucial as this is; what is really at stake is that very first principle with which we started: the importance of relationships to all the work we are doing in the centres.

What Should We be Measuring?

The ten principles for practice of course raise the question of measurement and evaluation. Where are we, where do we need to go next, how do we get there and how will we know when we are there are all part of the theory to practice process.

There are many standardized measurement tools that we can consider here: e.g., cortisol assays, the Achenbach, ASQ, BASC, SEGC, FEAS, BRIEF, PSI (see Appendix for examples). But what we really need to be thinking about at the outset are what sorts of things we should be measuring. It would make sense to look at:

- Changes in children's baseline arousal
- How smoothly they up- and down-regulate through the different arousal states
- How easily tripped into hyperarousal or flooded
- How long it takes them to calm down once hyperaroused or flooded
- How labile their mood is
- Whether they have an entrenched negative bias
- Whether they have trouble initiating social interactions
- How well they handle interpersonal conflicts

We are currently working with Steve Porges on a technology he has developed to measure vagal tone, looking at ways in which we could apply this technology in large sample studies. This might be something very interesting to explore down the road. It is absolutely vital that as we consider what to measure, that we go beyond individual measures of self-regulation. Goodstart can consider promising approaches to gather deeper understandings at the whole group level as well as taking an ecological lens to the environments of children, inclusive of the learning centre.

Summary Points: Self-Reg Theory to Practice Principles

- 1. Build a relationship:** self-regulation is only made possible, and proceeds from a strong relationship.
- 2. Keep your eyes on the target:** the focus, when we're working on self-regulation, has to be on the self-regulation itself and not some secondary problem that may have arisen from or been exacerbated by an excessive stress load.
- 3. Pay attention to individual differences:** We need to present children with all sorts of choices, allowing the opportunity to experiment. The power of self-regulation as a process and not a program lies in the choosing
- 4. Proceed gradually (*paulatinamente*):** self-regulation takes time to figure out. Going step-by-step often requires tremendous patience: a matter of not trying to go too far too fast.
- 5. Don't go too meta-cognitive:** present the self-regulation concepts in ways children can fully grasp, in their body as well as in their minds. Children need an embodied understanding of what words like "calm" mean for them.
- 6. Don't expect everyone to have the same capacities:** Some children have less 'gas in the tank', or are burning too much energy during a task and so must work much harder to concentrate on a task.
- 7. Expect the unexpected:** Expect that works beautifully for one child may have the opposite effect on another, or something that has worked beautifully will suddenly stop working for reasons that you may never understand.
- 8. Change a trajectory:** the starting point for changing a child's trajectory begins with our perception of that child; for this has far more bearing on how he perceives himself than we might ever dream,
- 9. Be culturally attuned:** Successful self-regulation initiatives are culturally-relevant and driven by interest and curiosity rather than a manual. What is involved here is approaching self-regulation in different cultures with an open and inquiring mind.
- 10. Take it personally:** self-regulation is always personal. Building relationships is the first principle of practicing self-regulation, we need to honour our own personal needs to do Self-Reg and address this in training and supports for early childhood educators.

Reflection Question 8: Theory to Practice

8. These 10 principles actually began as a documentation of lessons learned working with various jurisdictions implementing self-regulation initiatives. In a sense, they are reminders for us at The MEHRIT Centre and they are and will continue to grow and change as we experience more, learn more and most importantly take the time to consider the implications of these reflections on our future work.

- a. Which of the 10 principles resonated with you and why?
- b. What categories or considerations would a set of Goodstart guiding principles need to include and why?
- c. How could research inform the development of Goodstart “lessons learned” that gradually are transformed into guiding principles?
- d. What should Goodstart be measuring and why?

Concluding Thoughts

The report of the Productivity Commission on “Childcare and Early Childhood Learning” that was released on February 20 of this year marks a watershed moment in Australia’s commitment to enabling all of its children to have “the best possible start in life.” But the Report also raises the huge challenge of “putting the science into practice.” And the biggest question we face right at the outset is: “Which aspect of the science is it that we should be putting into practice”?

The goal of this ambitious and inspiring Report is to have all children arrive in school ready to learn; but that requires not just basic literacy and numeracy skills, but the desire as well as a burgeoning ability to regulate one’s emotions and behaviour; the ability to pay attention, process and retain information; the ability to manage interpersonal conflicts and experience empathy for others.

The four hugely influential charitable organizations that came together to form Goodstart have long fought to promote these core capacities in children. They now have the opportunity, through the network of GS centres, to turn this dream into a reality by focusing on the foundation of these skills in optimal regulation. The opportunity here is to help families recognize when their children are over-stressed and then develop effective self-regulation strategies so that all of Australia’s children arrive in school calm, alert, and ready to learn.

Final Reflection Question: Knowledge to Action

Goodstart is positioned to become a leader in leading edge practice that enables self-regulation in the children, families and early learning teams across the organization. Regular, ongoing research and evaluation for the purpose of informing the continual development of practice is critical.

Given what we have uncovered in our guided dialogue using the eight reflection questions embedded throughout this discussion paper, what should be the next steps? Consider the following levers for change (and perhaps add additional levers to the list):

- Relationships with parents, families and communities
- Training, professional development and self-regulation needs of our early childhood educators and all staff in our centres
- Partnerships with other practitioners and organizations providing services to support children and families in the communities where we work
- Gaps in the research and evidence needed to guide theory to practice shifts needed
- Leadership: vision, governance and change

Glossary

Self-Regulation

Self-regulation refers to the neural processes that control the energy expended to deal with a stressor and then recover.

Self-Reg

Self-Reg is a five-step method developed by Dr. Shanker to enhance self-regulation in children, youth, young adults, and adults:

- (1) Read the signs and “reframe” the behaviour;
- (2) Identify the stressors;
- (3) Reduce the stressors;
- (4) Become aware of what it feels like to be calm and when you’re in fight-or-flight or freeze; and,
- (5) Figure out what brings you back to being calm

Dysregulation:

When a child's stress levels are too high various systems for thinking and metabolic recovery are compromised. The signs of dysregulation show up in the child's behaviour, or mood, or attention, and physical well-being.

Self-Regulating:

A self-regulating child or youth become aware of her/his brain-body responses to stressors in every day life and applies personalized strategies to return to a state of calm, alert focus.

Self-Reg Framework

There are five domains in Dr. Shanker’s Self-Reg Framework: biological, emotional, cognitive, social and prosocial. The Framework provides some organizational structure with considerable flexibility and adaptability for application.

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Appendix A: Self-Regulation Related Measurement Tools

Pre- and Primary School (Denham, Ji & Hamre 2010)

Aspects of School Context

- Arnett Caregiver Interaction Scale (CIS)
 - This scale evaluates the behavior of child-care providers in their interactions with children. It measures sensitivity, harshness, detachment, and permissiveness
- Assessment Profile for Early Childhood Programs (APECP)
 - Provides a global assessment of preschool classroom environment. Scales include (1) learning environment; (2) scheduling; (3) curriculum (4) teacher-child interaction; and (5) support for individualized learning experiences.
- Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)
 - Designed to assess process quality in an early childhood or school age care group. Looks at the interactions between teachers and children, staff, parents, and other adults; interactions among the children themselves; and the interactions children have with the materials and activities in the classroom.

The following scales are also widely used:

- Classroom Assessment Scoring System (CLASS)
- Preschool Program Quality Assessment, 2nd edition (PQA)
- Early Childhood Classroom Observation Measure (ECCOM)
- School-Age Care Environment Rating Scale (SACERS)
- Student-Teacher Relationship Scale (STRS)
- Assessment of Practices in Early Elementary Classrooms (APEEC)

The Five SEL Core Competencies

- Behavior Assessment System for Children, Second Edition (BASC-2)
 - Standard tool used by teachers, parents, and clinicians to measure behavioral and emotional strengths and weaknesses. It enables us to identify adaptive and problem behaviors in both home and classroom settings.
- Emotion Regulation Checklist
 - Measures the child's self-awareness of emotion, appropriateness of emotional displays, empathy. In particular, it looks at the student's positive emotion strategies (e.g., can recover from stress; is empathetic) and negative emotion strategies (falls to pieces under stress; is

easily irritated)

- Preschool Self-Regulation Assessment (PSRA)
 - Designed to assess self-regulation in emotional, attentional, and behavioral domains using a brief, structured battery of tasks. Captures children's emotion regulation and attention/impulsivity.

In addition, the following scales are widely used:

- Challenging Situations Task (CST)
- Denham's Affect Knowledge Test (AKT)
- The Devereux Early Childhood Assessment (DECA)
- Minnesota Preschool Affect Checklist (MPAC)
- Penn Interactive Preschool Play Scales
- Self Description Questionnaire for Preschoolers (SDQP)
- Social Competence and Behavior Evaluation
- Southampton Test of Empathy for Preschoolers (STEP)
- Battelle Developmental Inventory (BDI), 2nd Edition
- Berkeley Puppet Interview (BPI)
- Coping with Emotional Situations
- Emotion Regulation Checklist
- The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSAYC)
- Positive and Negative Affect Scale (PANAS)
- Positive and Negative Affect Scale, Child Version (PANAS-C)
- Rothbart Temperament Scales – Infant, Early Childhood, Child
- Social Skills Rating System (SSRS)
- Social Skills Improvement System (SSIS)
- Sociometric Ratings and Nominations
- Assessment of Children's Emotion Skills (ACES)
- Behavioral and Emotional Rating Scale-Second Edition: (BERS), Parent Rating Scale (PRS)
- Youth Rating Scale (YRS)
- Bryant Empathy Scale for Children
- Child/Teacher/Parent Rating Scale
- Children's Emotion Management Scales: Anger and Sadness
- Devereux Student Strengths Assessment (DESSA)
- Emotion Expression Scale for Children (EESC)
- Feelings about School (FAS)

Compendium of SEL and Associated Assessment Measures

- Multidimensional Self-Concept Scale (MSCS)
 - Assesses global self-concept and six sub-domains for youth and adolescents: social, competence, affect, academic, family, and physical. Very useful for identifying students who have low self-esteem.
- Resilience Factory Inventory
 - Designed to help students understand and work on their own thoughts and behaviors. The key domains covered are:
 - Emotion regulation, looking at how well students can manage their emotions, attention and behavior under pressure
 - Impulse control and delay of gratification
 - Ability to identify the causes of stress
 - Self-efficacy
 - Realistic optimism
 - Empathy
 - Reaching out to others for assistance

The following scales are also widely used:

- Friendship Quality Questionnaire
- How I Feel Scale
- Katz-Gottman Regulation Scale
- Kusché Affect Interview – Revised
- Measure of Prosocial and Aggressive Behavior
- Relationship Questionnaire (Rel-Q)

Academic-related SEL Competencies

- Behavioral and Emotional Rating Scale: Second Edition (BERS-2)
 - This is a standard tool designed to be used in schools, clinics, juvenile justice settings and child welfare agencies. It is used to assess a student's personal strengths and the areas that need to be strengthened in regards to: interpersonal relations, involvement with family, intrapersonal resources, school functioning, emotion regulation and career strength.
- Child Behavior Checklist (CBCL)
 - Designed to detect emotional and behavioural problems in children and adolescents. Focuses on eight areas: anxious/depressed; depressed; somatic complaints; social problems; thought problems; attention problems; rule-breaking behaviour; aggressive behaviour.

The following tools are also widely used:

- Preschool Learning Behaviors Scale (PLBS)
- The Teacher Rating Scale of School Adjustment (TRSSA)
- Learning Behaviors Scale (LBS)
- Revised Children's Manifest Anxiety Scale (RCMAS)
- Sense of Classroom as a Community Scale – “Feelings about My Classroom”

Middle and Secondary School (Haggerty, Elgin & Woolley 2011)

- Strengths and Difficulties Questionnaire (SDQ)
 - The SDQ is a screening questionnaire for students 3-16 year olds. It is designed to identify emotional problems; conduct problems; hyperactivity/inattention; problems in peer relationships; and problems in prosocial behavior.
- The Comprehensive School Climate Inventory (CSCI)
 - After extensive study, six key factors have been identified that go into creating a positive school climate: order and safety -- social and emotional; order and safety -- physical; collaboration and communication; quality of instruction; parent/guardian and community involvement; expectations for student achievement.
- Communities That Care (CTC) Survey
- Developmental Assets Profile (DAP)
- Devereux Student Strengths Assessment (DESSA)
- School Social Behaviors Scale, Second Edition (SSBS-2)
- Social Skills Improvement System Rating Scales (SSIS-Rating Scale)
- Washington State Healthy Youth Survey (HYS)