The Importance of Self-Regulation for Student Achievement
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The Science of Self-Regulation

- There has been a scientific breakthrough over the past ten years in our understanding of the factors that promote academic achievement
- Self-regulation more important than IQ
- The core of this breakthrough lies in the work done by physiologists on the systems in the brain that regulate energy expenditure and recovery
The Difference between Self-Control and Self-Regulation

- Two distinct concepts, with different conceptual histories: **self-control** and **self-regulation**
- Self-control: Plato's view of resisting temptation
- Develop self-control in the same way as any muscle
- Child who lacks self-control is somehow weak

*Self-regulation seeks to understand the causes of problematic behaviors, not suppress them!*

History of Self-Regulation

- Claude Bernard: Mileu Intérieur (1865)
  - All organisms are ‘self-regulating’
- WB Cannon: homeostasis (1932)
- Hans Selye: Organism responds to stressors that require energy expenditure, then recovers to restore energy (1936)
- Example of hypothermia
What is Self-Regulation?

How effectively and efficiently a child deals with a stressor and then recovers from the effort

• Ever time a child has a stressor the brain responds with processes that consume energy
• This is followed by restorative processes to recover from this energy expenditure

Stress-Response Systems

Three core systems for responding to stress:

1. Social Engagement
2. Fight-of-Flight
3. Freeze

There is a fourth, very worrying stage, dissociation, which is a last-ditch mechanism for dealing with excessive stress
The Effects of Trauma

- Working on self-regulation is especially important for children that have been traumatized, or raised by caregivers that have been traumatized
- Shift from the Learning Brain to the Survival Brain
- Chronic state of fight-or-flight, freeze, or even dissociation
- Chronic fight-or-flight is extremely energy expensive, reducing child’s ability to pay attention, inhibit impulses, regulate mood, co-regulate

Five Domains of Self-Regulation

1. Arousal: Environmental stressors (e.g., visual, auditory)
2. Emotion: Modulate negative and positive emotions
3. Cognitive: Sustain and switch attention
4. Social: Master the skills of co-regulation
5. Prosocial: development of empathy
Arousal Regulation (Domain 1)
Underpins the other 4 Domains of S-R

• *Arousal regulation* is a function of Sympathetic Nervous System (SNS) *activation* (e.g., adrenalin) and Parasympthetic Nervous System (PNS) *inhibition* (e.g., cortisol)
• In effect, putting your foot on the gas to deal with a stressor and then on the brakes to recover from the effort

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Stages of Arousal

Inhibition (PNS)

↑ 1. Asleep
   2. Drowsy
   3. Hypoalert
   4. Calmly focused and Alert
   5. Hyperalert

↓ 6. Flooded

Activation (SNS)
Driving Analogy

• helpful for understanding the subtle adjustments in energy expenditure involved in regulating attention
• To maintain a speed of 100 km/hr we are constantly pressing and easing up on the gas depending on the state of the road, incline, wind speed etc.
• Learning how to drive involves learning how to smoothly adjust the amount of gas or braking required for the current conditions

Allostatic Load Conditions

• When child subjected to too much stress result is:
  • prolonged over-activation of SNS and/or PNS
  • inappropriate activation of SNS or PNS (i.e., in situations not warranting a heightened stress response)
  • sudden transitions between energy states
  • diminished ability to return to baseline after activation of the stress response
Effects of Allostatic Load

- Disrupts brain development (e.g., hippocampus; HPA pathway)
- Child chronically hypo-aroused or hyper-aroused
- Finds it difficult to stay focused and alert
- Poor interception/exteroception
- Heightened impulsivity or numbing

Sitting in Class

- Suppose we are dealing with a child who finds sitting in a classroom very demanding, for different reasons:
  - maybe he finds the visual and auditory stimuli distracting and he has to work hard to filter this out in order to pay attention to his teacher
  - Or he finds the other children taxing
  - or he finds the hard seat uncomfortable and it is taxing for him to sit still for too long
The Effects of Excessive Stress

- Child who has heightened stress has to work much harder to pay attention
- Negative effects caused by falling further behind, being yelled at, having greater social problems, etc., exacerbate the drain on nervous system
- Leads to a chronic state of heightened anxiety

Signs of Excessive Stress

1. Chronic hyper-arousal
2. Chronic hypo-arousal
3. Heightened stress reactivity
4. Increased sensitivity to pain (physical and emotional)
5. Reduced ability to regulate negative emotions
6. Negative bias
7. Reduced ability to read affect cues, show emotions
8. Reduced ability to hear human voice
9. Blunted reward system
10. Increased immune system problems
The Three Stages of Self-Regulation

1. Identify and reduce Stressors

2. Develop Self-Awareness (interoception and exteroception)

3. Develop self-regulating techniques, learning what to do to mitigate a stress response and what to avoid

1. Identifying and Reducing the Child’s Stressors

- Auditory
  - Use headphones, sound machine
  - Create micro sound controlled environments in classroom
- Visual
  - Reduce Visual Noise
  - Have different kinds of lighting zones
- Social
2. Developing Self-Awareness

- ALERT
- Mind-up
- Yoga
  - Children with high anxiety may lack core body strength or have problems with motor control
  - For all children Judith Lasater is very effective

3. Self-Regulating Techniques

- Every child is different. Some are upregulated by Snoozelen or loud music; some overwhelmed
- Trial-and-error to learn what works with which child at what time
- Children are constantly changing
- Experiment with various fidget toys, play dough, seating, exercise equipment
- Experiment with iPads (e.g, Facetime, multi-modal learning programs)
1. Regulating Adult
2. Healthy sleep regimen
   • Critical for restoring bodily functions
   • Critical to be aware of fatigue
   • Impact of screen time on sleep
   • Distinction b/w tense and restorative sleep
3. Limit screen time before bed
4. Limit superstimulants

Working with Adolescents

• A number of key changes in brain begin just before puberty
• Need for peer interaction increases dramatically
• Significant changes in the Reward System
• Heightened vulnerability to social anxiety

• Need to promote group involvement, healthy risk-taking, and most important, self-regulation as opposed to suppression (e.g., alcohol)
Attend to Your Own Needs!

1. Working with children and teens having trouble self-regulating is highly demanding
2. Attend to your own self-regulation and be aware of the signs of compassion fatigue
3. Studies show that the better you can help your students to self-regulate, the more your own stress levels will decline

Readings

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