Cognitive Resilience

Enhancing Cognitive Resilience in Adolescence and Young Adults: A Multi-Dimensional Approach

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Abstract:
Resilience, as a trait, process, or outcome, is an important factor to explain behavioral diversity between individuals and population groups in face of stress and adversity. Individuals and groups who can bounce back shorty after stressful events, experience less severe negative emotions (depression, anxiety) and manage situations through efficient problem-solving strategies are categorized as resilient. Enhancing populations' and individuals' resilience becomes a central strategy for prevention of maladaptive behaviors, especially among adolescents. Several psychosocial interventions, mostly taking a positive psychology approach, improve resilience and reduce disruptive behaviors (e.g., using illicit drug and alcohol or self-harm behaviors) among adolescents. However, the role of brain awareness and training interventions targeting cognitive underpinning of resilience is not fully explored. In this chapter, we firstly review the existing literature and address the interventions that indirectly increase cognitive resilience among school-aged adolescents. Then we introduce the Promoting Cognitive Resilience (ProCoRe), a new multi-modal cognitive resilience training program, that taps different cognitive functions that are documented to be effective in the neuroscience literature. Clinical and public health implications of the ProCoRe as a prevention program to empower adolescents to avoid high risk behaviors in face of stressful through effective emotion regulation and impulse control. are discussed.

Key words: resilience, stress, substance use, cognitive resilience, ProCoRe, adolescence

Imagine A Day You Felt Stressed!

- For how long you felt stressed?
- Did it last for an hour? a day? a week?
- How long it took to rebound to normal state?

What Is Resilience?

- The process of **adapting well** in the face of adversity, trauma, tragedy, threats or even significant sources of stress (APA,2014)

- It means to return quickly to a normal condition after a difficult situation or event.

- A process? A trait? An outcome? Capacity?

- Binary approach (absent or present)

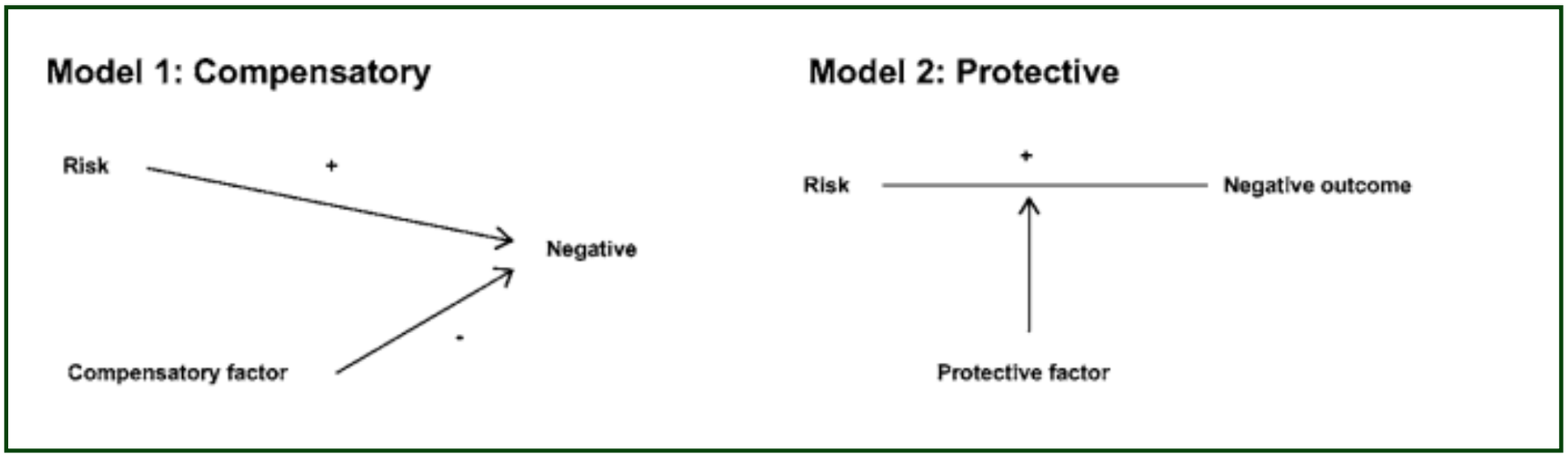
When the First Wave of Researches About Resilience started!

- The first was interested in identifying a short list of protective/buffering factors (internal and external) when facing risk and trauma.

Source: 10.3389/fpsyg.2017.00612

When the Second Wave of Researches About Resilience started!

- The second was interested in understanding how protective and risk factors interact in the process of building up resilience, and different models of resilience were developed

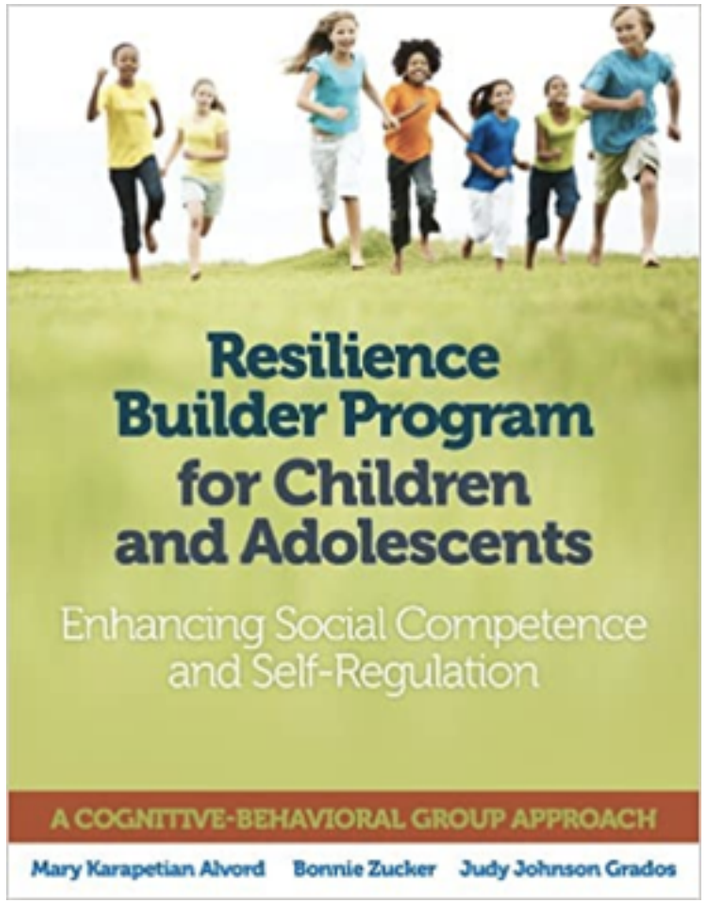


Source: Adolescent resilience: a framework for understanding healthy development in the face of risk (2005)

When the Third Wave of Researches About Resilience started!

- The third was interested in fostering well-being in children and young people who have grown up in adverse circumstances, placing greater effort on promoting resilience through prevention or intervention, and developing educational and healthcare policies along these lines.

Resilience Builder Program for Children and Adolescents. Enhancing Social Competence and Self-Regulation (2011)



How to Foster Resilience?

Flexible interpretation

Stress reduction

Positive psychology

Self-management

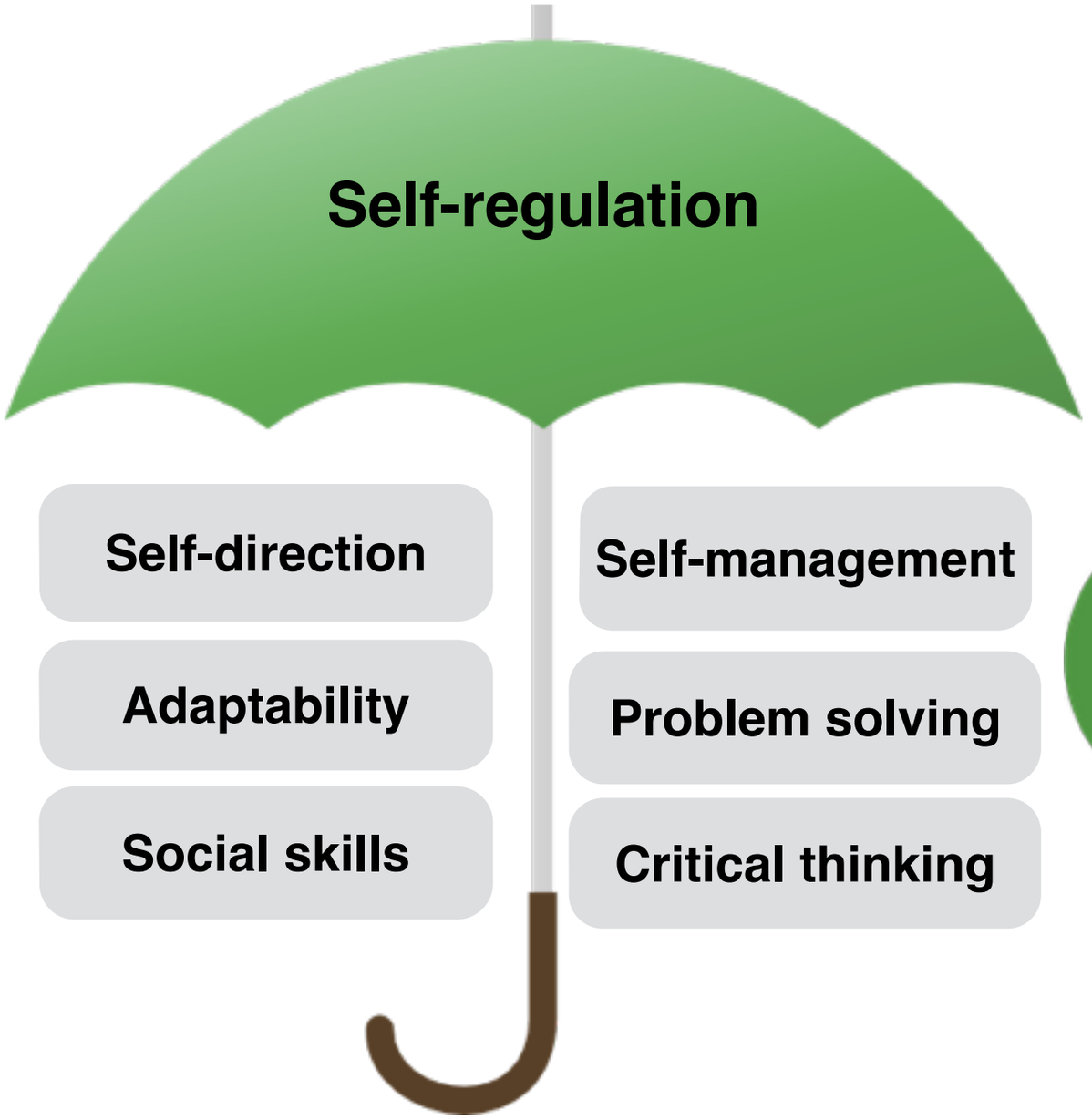
Decision making

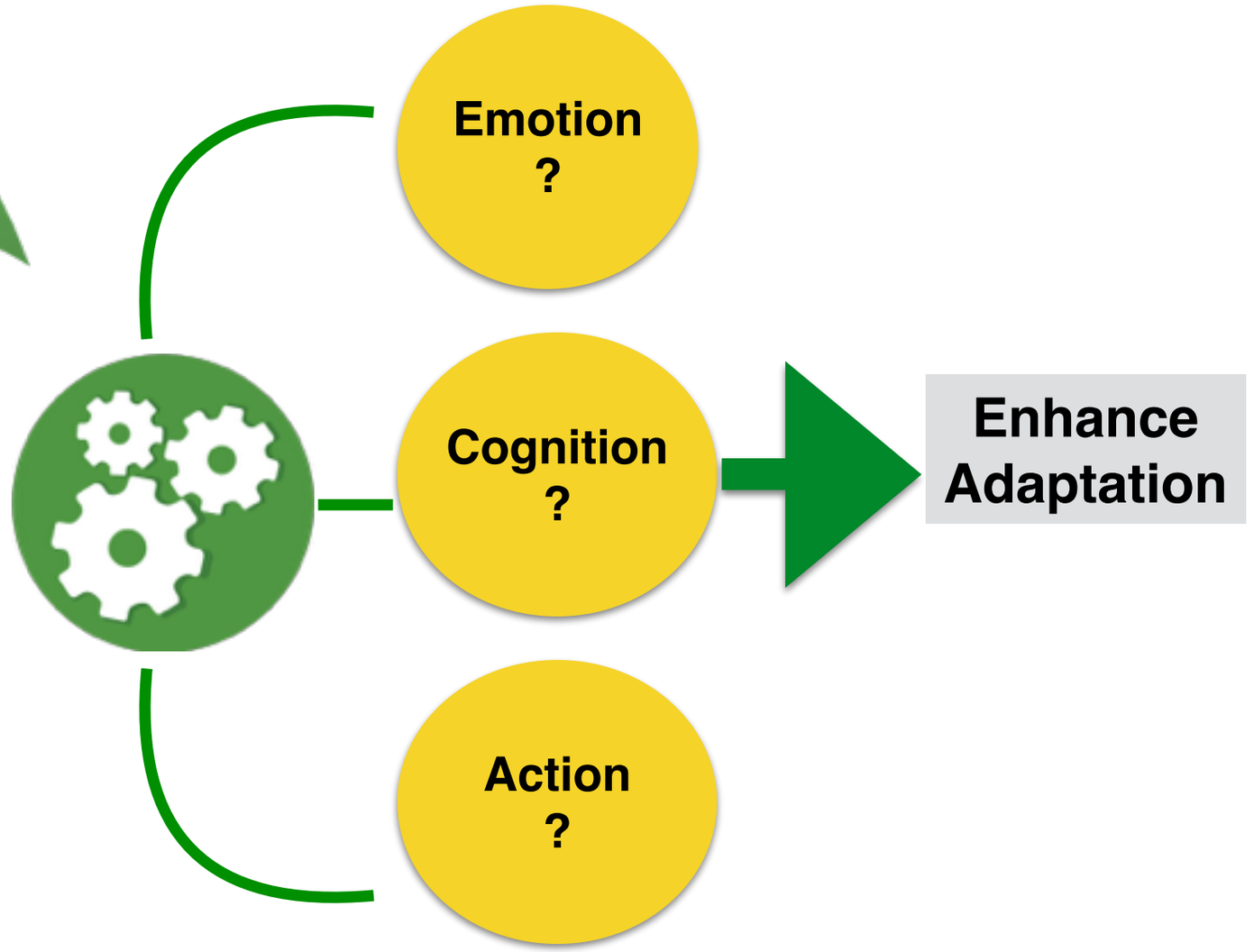
Self-awareness

Social skills

Self-care techniques

The Core Component of Resilience Enhancement Intervention





Source: 10.3389/fpsyg.2017.00612, 10.1111/jcpp.12675

When the NEW Wave of Researches About Resilience started!

- The fourth wave is now paying increased attention to **biological (NEURAL) and genetical variables** in the study of resilience, even though for decades the main focus has been on psychological or behavioral variables

Neural circuitry of reward (including VTA, amygdala, hippocampus, and medial PFC)

Neural circuitry of fear (including amygdala, hippocampus, medial PFC, nucleus accumbens, ventromedial)

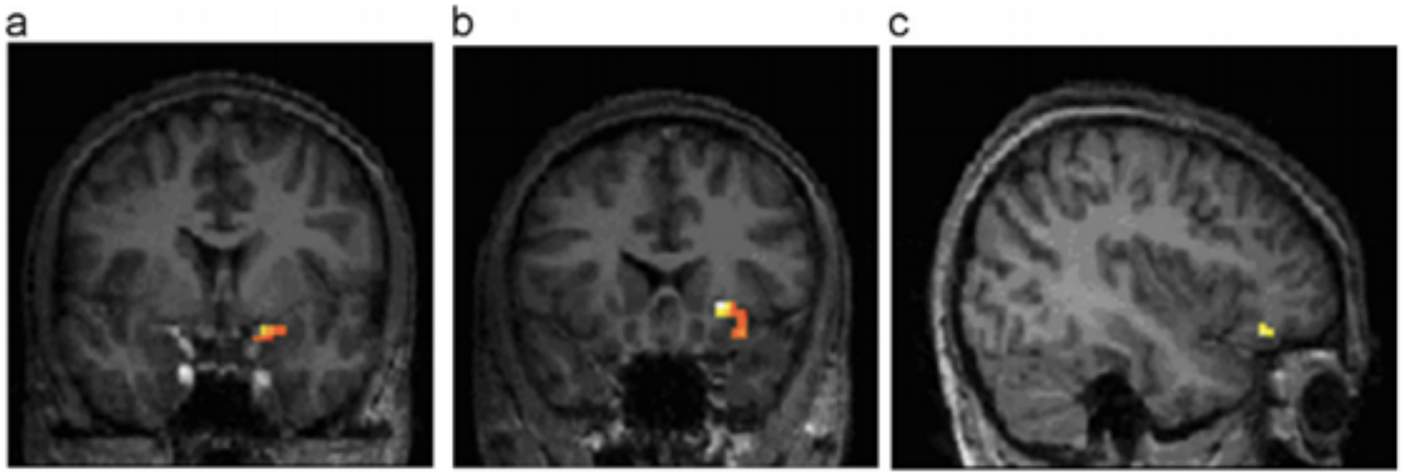
Neural circuitry of emotion regulation (including amygdala, insular cortex, OFC)

Contents lists available at SciVerse ScienceDirect

Neuropsychologia

journal homepage: www.elsevier.com/locate/neuropsychologia

Relationship between emotional experience and resilience: An fMRI study in fire-fighters



Cognitive Resilience as a New Concept

- The balanced interaction between various neural regions, networks, and processes underlying “cognitive resilience” is a novel target for exploration.

- Neuroscience-based cognitive resilience is defined as a “set of brain-derived abilities and processes for coping with the negative consequences of stress, adversity and negative emotions while maintaining proper level of cognitive functions that are necessary for activities of daily living and avoiding high risk behaviors”.

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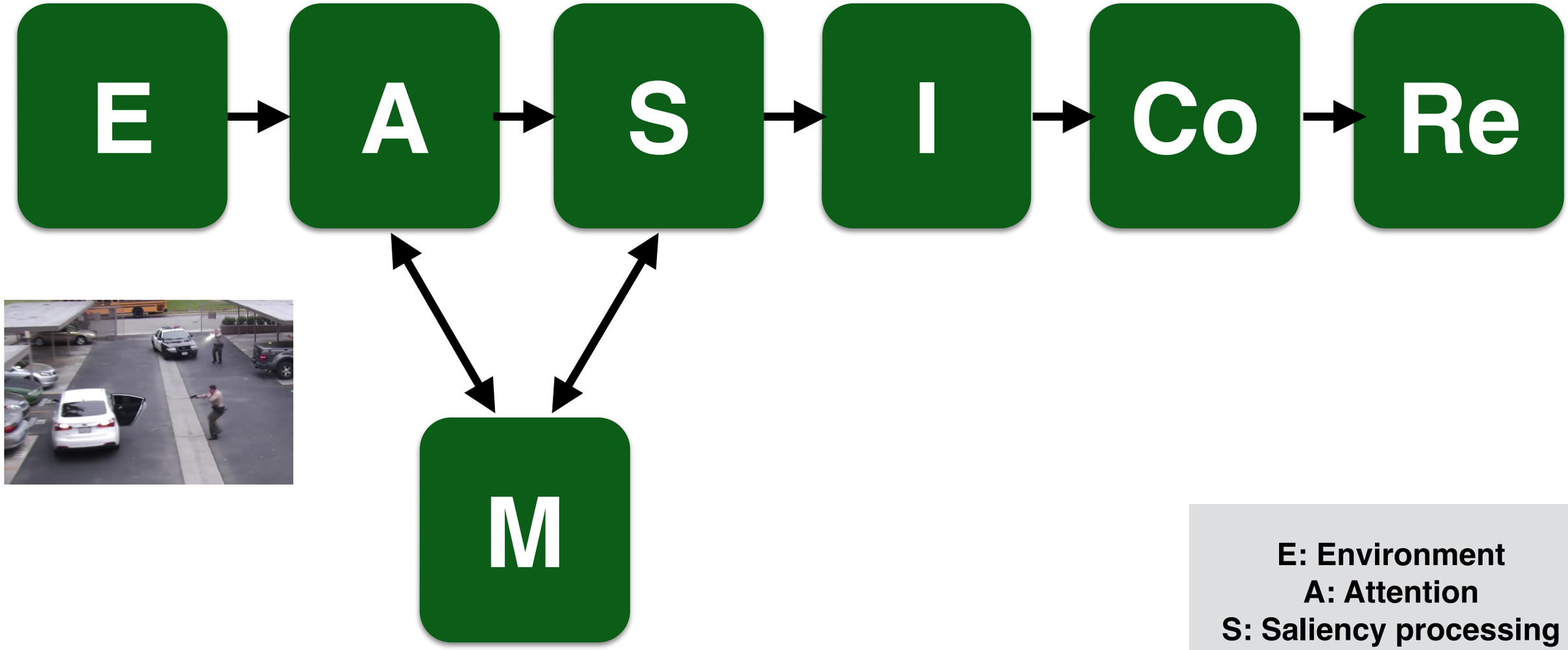
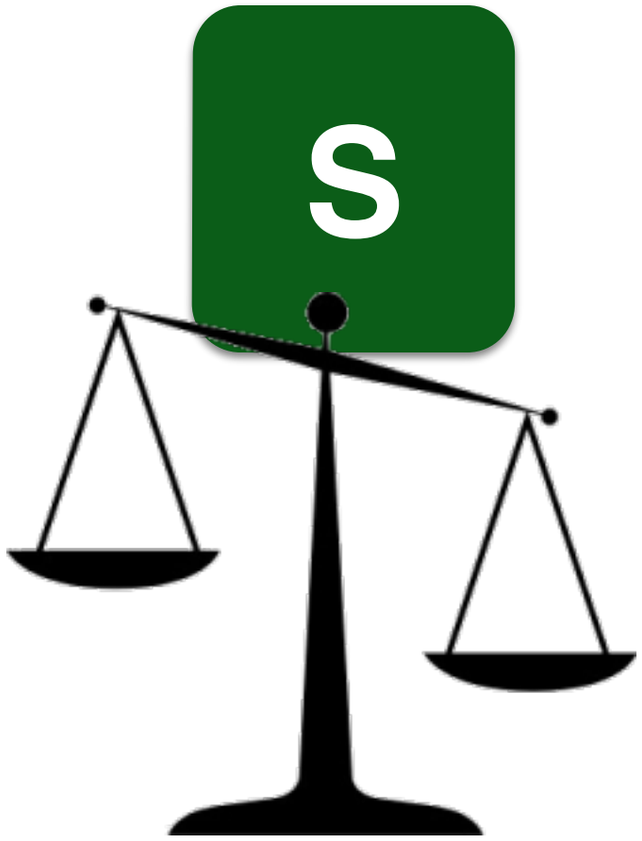
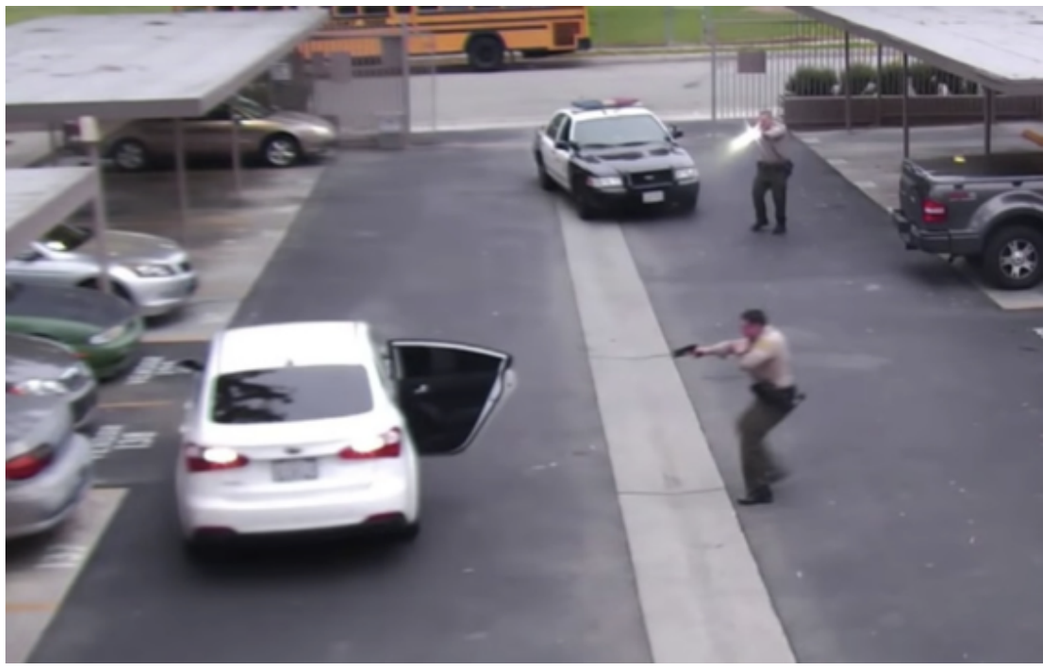
EASICoRe model as a neuroscience informed conceptual framework indicates the interaction between cognitive modules which are activated in response to impulsive, emotional, and stressful triggers



E: Environment
A: Attention
S: Saliency processing
M: Memory
I: Interoception
Co: Control
Re: Response

- Sustained attention (e.g., self-talk)
- Flexible attention (e.g., shifting between several tasks)
- Emotional attention (e.g., paraphrasing in a positive manner)



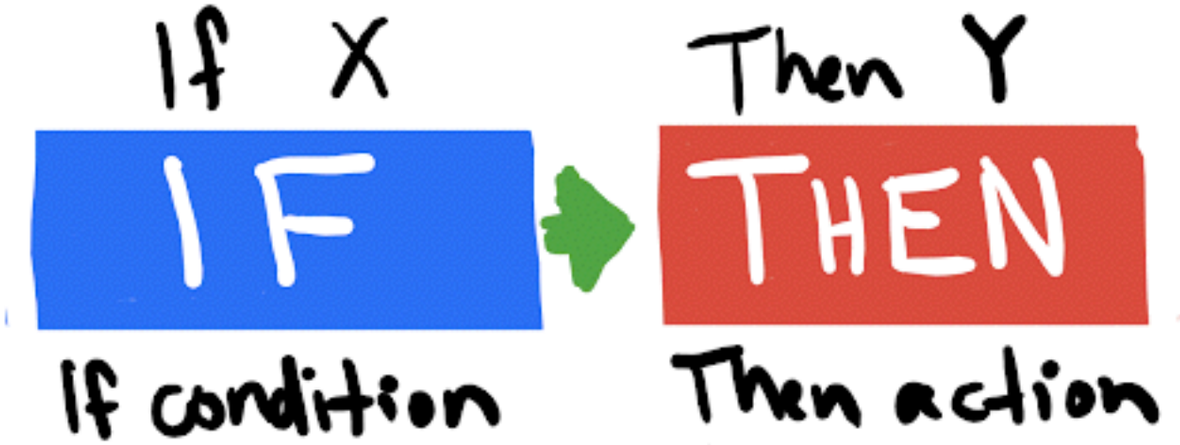


- Tuning down the saliency attributed to emotional events by practicing strategies including gaze training, behavioral activation, and different types of reappraisal techniques

- Declarative memory (e.g., episodic memory)
- Emotional memory (e.g., tunnel memory)
- Future memory (e.g., mental imagery)

I

- Focusing on their internal signals (e.g., heart rate, muscle tension, gut feeling and cold feeling in extremities) to consider these signals as a sign for specific emotion (e.g., anxious or anger) and use them to properly guide reciprocal behaviors



- Executive control including inhibition, future thinking, planning, self-monitoring, problem solving, and decision making (e.g., ready to go plan, GMT)

What Cognitive Resilience Means to Us!