

# **Non-Cognitive Skills Development and School-Based Violence Reduction in Central America**

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**2021 Psychology and Economics of Poverty (PEP) Convening**

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# Our project in a nutshell

## Motivation

- Violence and crime → constrain human capital acquisition and economic growth (Soares and Naritomi, 2010; Monteiro and Rocha, 2017.)
- In the context of **poverty, stress and emotional instability** may lead to short-sighted and risk-averse decision making (Haushofer and Fehr, 2014, Weber and Johnson, 2009)

## Context

- Central America → The most violent (non-war) region in the World, highest homicide rates among adolescents.

## Solution

- After-school program (EA) that includes two psychology-based curricula:
  - Character Strengths Development (CSD)
  - Mindfulness-based stress coping (MF)
- Implemented in schools by trained mentors
  - 2 sessions per week for 7 months in 2019.
  - Participants: 1,975 adolescents 12-16 yo.



# What is emotion regulation?

## What is emotion regulation

- Consists of processes that amplify, attenuate, or maintain an emotion (Davidson et al. 2008).

## Reactiva

- Is a platform (app) that uses computer vision to proxy emotional reactions
  - More objective way than using self-reported tests
  - Relatively easier to implement in the field (e.g., compared to low-cost EEG).
- The “brain” (the algorithm and training) was developed by *Affectiva* ([www.affectiva.com](http://www.affectiva.com))
  - A spinoff from the Affective Computing Group at the MIT Media Lab.

# How can be emotion responsiveness measured?

## Reactiva/Affectiva works in four phases

1. Face detection: It uses front cameras of smartphones and tablets
2. Facial features extraction: Computer vision algorithms identify key landmarks on the face.
3. Expression classification: ML algorithms (classifiers) analyze pixels in those regions to classify facial expressions.
  - Affectiva uses Facial Action Coding System (FACS) to classify facial expressions
4. Mapping facial expressions to emotions. Emotion predictors use the observed facial expressions as input to calculate the likelihood of an emotion.



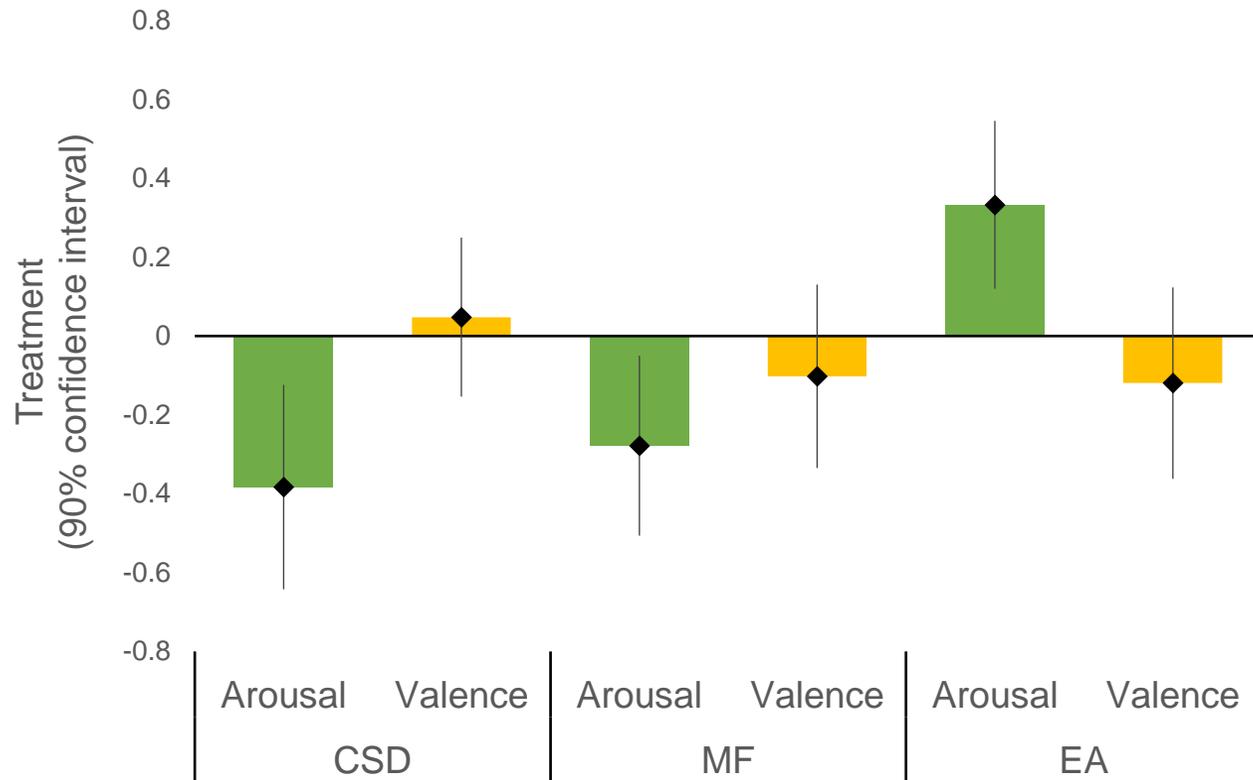
# How did we collect these data in schools?

- Reactiva was installed in tablets.
- We visited schools and scheduled the data collection per groups of participants.
- How we created the stimuli? With videos!
  - We showed short emotionally-laded videos from GAPED database that work as positive or negative stimulus.
- Reactiva extracted facial features before and during each of the videos.
- Using all these features, the App classified and mapped them to measures of arousal and valence.



*Facilities requirements:* internet connection and an illuminated room.

# What are our findings?



1. The intervention reduced arousal (0.28-0.38sd).
  - No differences by type of curriculum.
2. EA can have unintended effects: It can increase arousal (0.33sd).

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