

# Using Integral Theory to Study the Effectiveness of HeartMath Biofeedback and Social-Emotional Learning in Adolescent Emotion Regulation

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**Abstract:** The purpose of this study was to address the effectiveness of teaching social-emotional learning (SEL) and mindfulness with biofeedback to help Grade-9 students manage and regulate stress and anxiety. As a classroom teacher, I have been noticing a recent uptick in internalizing (withdrawal and avoidance) and externalizing (outbursts and aggression) student behaviours within the classroom and hallways. Students described being stressed, and uncertain, with many lacking self-confidence and emotional regulation skills. While rates of adolescent stress and anxiety have been slowly increasing (CAMH, 2021), the COVID-19 pandemic has since contributed to even higher stress, greater depression, and increased loneliness in adolescents (Ellis et al., 2020). Additionally, students transitioning from middle school to high school often experience additional stress and worry, which, if not addressed, can lead to further downstream negative mental and emotional effects (Evans et al., 2018)

## Introduction

Students have recently faced large-scale disruptions to their daily lives, including the threat of illness, social isolation, loss of important milestones, school disruptions, and other related stressors. In response to this current state of adolescent emotional dysregulation, I was tasked with designing a targeted positive psychology option class to provide students with opportunities to calm down through focused attention on the breath. HeartMath sensors provide biofeedback in the form of heart rate variability (HRV), a measure of autonomic nervous system control and regulation.

## Discussion

Integral Theory informed the methodological framework to study these phenomena through four irreducible ontological perspectives. An empirical study using surveys found that students in the experimental group (EG) increased social awareness, focused attention, positive affect, and coping self-efficacy, while decreasing feelings of anxiety in a variety of situations over time and compared to a control group. Through sustained heart focused breathing practice with sensor and app, the EG significantly increased HRV over the 12-week time period. A phenomenological approach using semi-structured interviews found that students were experiencing anxiety and stress, however practicing mindfulness breathing every day helped them feel calmer, more emotionally regulated, focused, and better able to handle the stressors in their life. A structuralist approach using a perspectives study found that the EG were mainly operating at an ego/ethnocentric level of development, whereas the alumni students had shifted towards a worldcentric level, meaning they were more attuned to diversity, exceptions, and tolerance for differences than the Grade 9s. Focus groups provided insight into the coherent classroom culture and shared meanings between students and allowed them to engage in an authentic and commensurate way.

## Conclusion

An in-depth analysis of existing educational policies and practices found that infusing SEL in the curriculum and creating inclusive classrooms are expected, however, the means and resources to implement these elements are not always available and accessible to schools and teachers. Adding social and emotional literacy instruction to the playbook of numerical, read/write, and physical literacy is essential to the effective development of the whole child, particularly during these times of uncertainty and elevated levels of stress.

## References

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