

# RHYTHM AND SELF-REGULATION



## EXECUTIVE FUNCTIONING

Executive functions are skills that involve flexible and goal-oriented cognitive processes. These skills are responsible for much of our behavioural control. These include: cognitive planning, impulse control, focused attention, memory, and self-regulation.

---

## SELF-REGULATION

Self-regulation is the self-directed ability to modulate emotions and related behaviours. Self-regulation develops at a young age (before 5 yrs) and continues to grow in complexity as our inner emotional world matures. Self-regulation helps us manage how we act on certain emotions as well as how we experience emotions. This can affect how we feel, how we interact with others, and how we cope with stress long-term.



---

## NEURAL PROCESSES

Self-regulation is associated with four major regions of the brain: the amygdala, anterior cingulate cortex (ACC), orbitofrontal cortex (OFC) and lateral prefrontal cortex (IPFC). When experiencing regulation, activation in the ACC, OFC, and LPC all increase, which decreases the activation in the amygdala. This indicates that the brain is not processing emotionally complex or threatening material.



---

## RHYTHM

Rhythm is a component of music that involves the abstract organization of time and time's value. This mirrors the abstract processes of executive functioning such as planning, focused attention, and impulse control. Rhythm also helps to synchronize cognitive functioning. This is called "rhythmic entrainment." This occurs when the brain's functioning organizes around strong rhythmic stimuli, including processes that control motor movement and emotionally-initiated behaviours.



---

## RHYTHM AND REGULATION

Rhythm activities can be used to work on strengthening executive functions such as impulse control, planning, memory and emotional (and self-) regulation. Rhythm may be used to process and explore the intensity of emotions as well as modulating between emotions. Research shows that pleasant music and rhythm increases activation in the ACC, OFC, and IPFC which decreases activation to the amygdala.



---

## THERAPEUTIC FUNCTION

Music is used therapeutically when the facilitator has an explicit understanding of why and how music affects a desired change. This knowledge informs the intentional, therapeutic use of music in a clinical practice. **Music Therapists** are professionals who are qualified to use music therapeutically and are certified in Canada and the United States as MTA and MT-BC respectively.

