Learning a Healthy Rhythm: An Arts-Based Intervention to Improve Heart Health Among Children

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Abstract

Background & Significance: Allostasis is a physiological dynamic, adaptive regulatory process to maintain homeostasis when exposed to stressors (McEwen & Gianaros, 2010). Allostatic load refers to the cumulative, multisystem physiological dysregulation that results from repeated cycles of activation and deactivation of allostasis (McEwan & Gianaros, 2010). Chronic or recurrent stress interacts with genetic predispositions and acquired environmental risks leading to cascading and potentially irreversible harmful interactions over time. Children are at risk for exposure to chronic stress because they experience many stressors that they cannot control such as family adversity, issues of their parents, poverty, discrimination, and violence. These chronic stressors can contribute to their allostatic load. Even growing up in impoverished neighborhoods, independent of household poverty, increases allostatic load (Rainisch & Upchurch, 2013; Schulz et al., 2012). Increased allostatic load contributes to increased cardiovascular (CV) risks including hypertension, abdominal obesity, dyslipidemia, insulin resistance, and increased inflammatory markers including c-reactive protein, albumin and fibrinogen (Beckie, 2012; Rainisch & Upchurch, 2013).

Theoretical Framework: This study was supported by the cognitive activation theory of stress (CATS) (Ursin & Eriksen, 2004). This theory supports the premise that individuals can learn to alter their response to stimuli that in turn will prevent the physiologic arousal and activation of a systemic stress response. Less frequent and less sustained activation lowers allostatic load. Lower allostatic load contributes to more positive CV health now and into the future.

Purpose: To promote heart health in children by increasing their expectations that they can personally cope with stressors and alter their physiologic response to those stressors.

Design: This study utilized a mixed-measures, non-randomized control design to test an arts-based intervention.

Setting: An Afro-Latino percussion performance ensemble for children, housed at an urban elementary school in which 77% are from poor families

Participants: 18 children ages 9 – 12 years (M= 10), 50% girls; 50% boys, 100% reported some Latinx ethnicity

Procedure: The intervention included 1) content on stress including physiologic responses and breathing & visualization exercises; 2) creation of a cohesive performing troupe to engender positive social relationships and feelings of belonging; and 3) lessons regarding Afro-Latino instruments, rhythms, and songs, and the related social and cultural history.

Data Collection: Quantitative measures were completed at baseline (October 2016) and 6 months later (April 2017) and included a demographic form; biometrics (BP, pulse, BMI, & waist circumference), hair specimen to measure ambient cortisol level for past month, and completion of seven instruments to assess stress, ethnic identity, peace skills, hopefulness, self-esteem, self-confidence and conflict resolution. Qualitative measures included written recording of observations during sessions (field notes), and audio recorded and transcribed group discussions about stress.
**Data Analysis:** Descriptive statistics will be used to analyze demographics of participants and baseline measures. The primary outcome of the intervention is increased expectations for coping with stressful stimuli which in turn reduces physical arousal and changes the stress experience. Analysis of data will include regression models. Aspects of environmental and social stressors will be examined as well age and gender. The essays and verbatim transcripts of the interviews will be read and coded to identify themes and subthemes. A constant comparative approach will be used for qualitative data analysis.

**Results:** Quantitative analysis is in progress. Qualitative analysis revealed that children identified parental stress, exertion of adult authority, and being over or under scheduled as stressful. They could accurately identify symptoms of stress responses. They identified how to assess their level of stress and measures to alter their current level and stress symptoms. They did not demonstrate understanding how to apply stress altering measures to change their response to anticipated stressors.

**Conclusions:** Results of analysis of qualitative data established feasibility of teaching stress management to children. Children can identify stressors, their stress symptoms and measures to change their current stress response. Children in this age group are concrete thinkers with limited ability to think abstractly. Their lack of understanding regarding their future responses to anticipated stressors may have been due to their limited abilities to think abstractly.