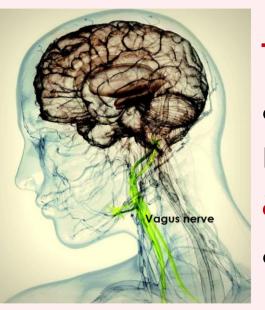




Autonomic Flexibility in Childhood Anxiety Disorders

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Background



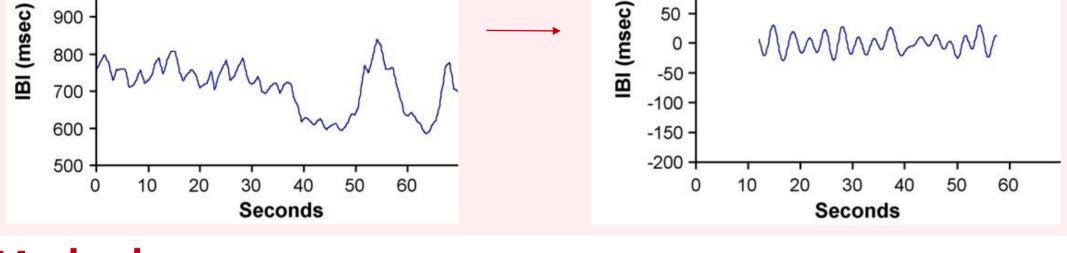
The vagus nerve, the 10th cranial nerve, acts like a brake to the heart, responds to changes in respiration, and is associated with **appropriate** autonomic responding to stress. It's activity is approximated using respiratory sinus arrhythmia.

Respiratory Sinus Arrhythmia (RSA) (respiratory induced heart rate variability): taking the natural logarithm of .12-.40 Hz filtered time-sampled interbeat interval (IBI) series

200 T
150 -
100 -

Introduction

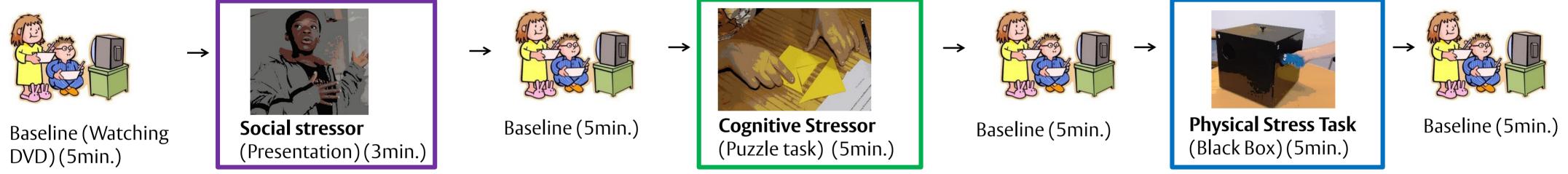
The clinical presentation of anxiety includes physiological reactions to a stressor. Whether anxious populations are chronically physiologically dysregulated, however, is unclear. Whereas some studies have shown that anxious children show greater decreases in respiratory sinus arrhythmia (RSA) and greater increases in heart rate (HR) in response to stress, some studies have shown the opposite effect (i.e., smaller decreases in RSA and smaller increases in HR in anxious vs nonanxious populations in response to stress)^{1,2}. This study aimed to establish whether clinically anxious children are autonomically dysregulated at rest and/or in response to stress compared to controls.



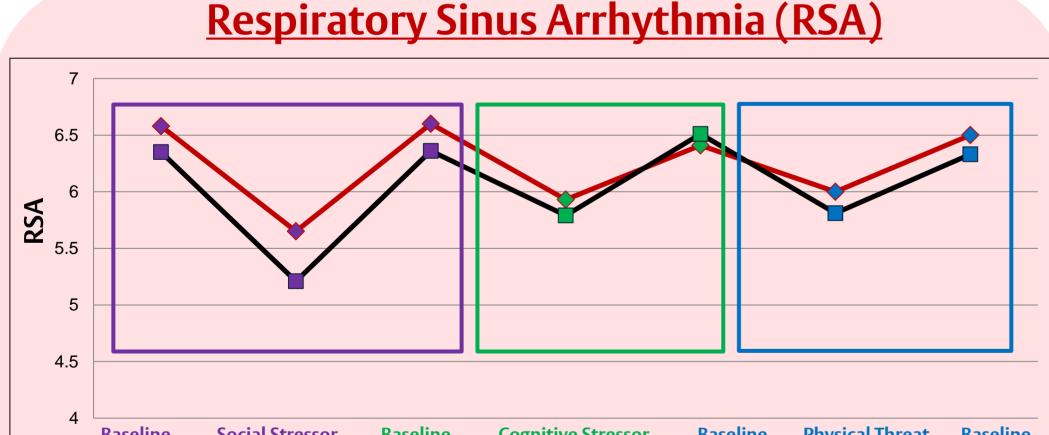
Method

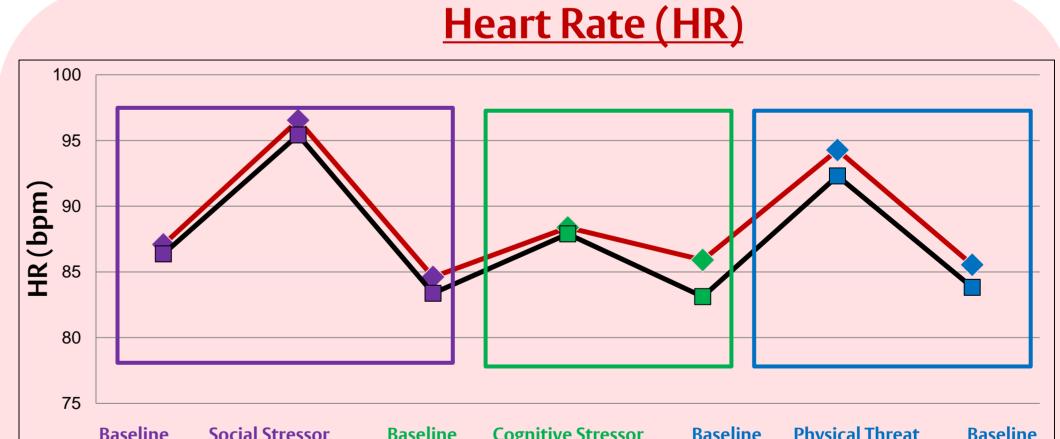
RSA and HR were measured using Actiheart heart rate monitors and software (Version 4) during stress and non-stress

conditions in 60 clinically anxious and 30 non-anxious, age- and gender-matched, 7-12 year olds.



Results





Baseline Social Stressor Baseline **Cognitive Stressor** Baseline Physical Threat Baseline

• Significant main effect of task, such that RSA decreases in response to stress and increases during rest regardless of group

Significant main effect of tasks, such that HR increases in response to stress and decreases during rest- regardless of group

Discussion

The results suggest that anxious and non-anxious children do not differ in RSA and HR at baseline and in response to stress. This shows that anxious children show a different pattern of physiology compared to anxious adolescents and adults who evidence diminished RSA and increased HR at rest, and a blunted response to stress³. The findings of this study suggest that physiological

dysregulation might therefore be the result of chronically maintained anxiety rather than a causal factor in its development.

Contact information

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References 1. Schmitz, J., et al. (2011). Restricted autonomic flexibility in children with social phobia. The Journal of Child Psychology and Psychiatry, 52 (11), 1203-1211., 2. Kossowsky, J., et al. (2011). Separation anxiety disorder in children: disorder-specific responses to experimental separation from the mother. The Journal of Child Psychology and Psychiatry, 53 (2), 178-187. 3. Lyonfields et al. (1995). Vagal tone in generalized anxiety disorder and the effects of aversive imagery and worrisome thinking. *Behavior Therapy*, 26 (3), 457-466. Acknowledgments • Berkshire Child Anxiety Clinic