IT'S ALL IN YOUR HEAD! THE UNCOUPLING OF PSYCHOLOGICAL AND BIOLOGICAL STRESS RESPONSES

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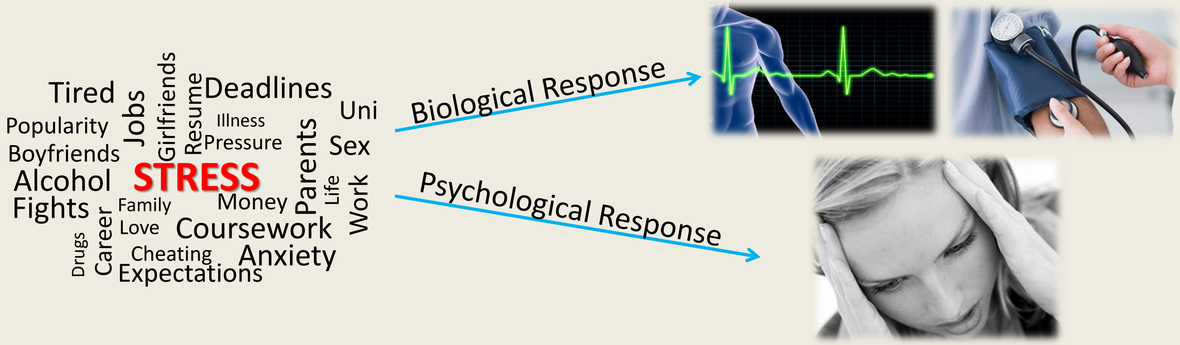
Introduction

- Blood pressure and heart rate have been shown to increase in response to acute stress
- How one perceives stressful situations (i.e., threatening, challenging) can influence the magnitude of cardiovascular responses to stress (Brindle et al., 2013; Ginty et al., 2011)
- Interoception, the awareness of one's internal physiological state, has been shown to influence emotional experiences, i.e., increase feelings of stress (Critchley et al., 2004)

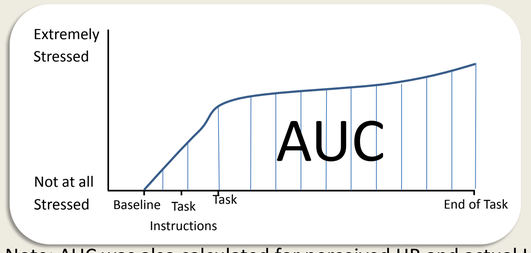


Overall Aim: Examine the relationship between actual and perceived psychological and biological stress responses

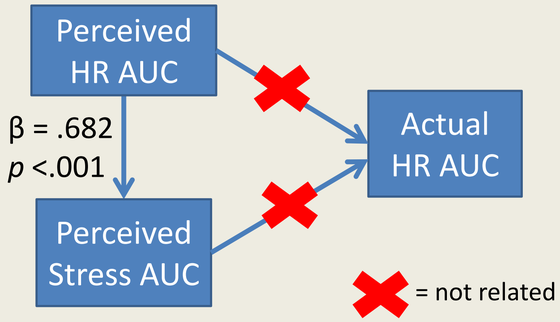
Study #1

Aim: Investigate whether perceptions of stress and heart rate relate to actual heart rate

- Participants (N=272, undergraduates) completed a 10-minute mental arithmetic stressor while **heart rate** (HR) was recorded via electrocardiography (ECG) at baseline and during the stress task
- Participants graphed their **perceived task stress** and **perceived HR** for baseline and stress phases
- Areas under each curve (AUC) were correlated



Note: AUC was also calculated for perceived HR and actual HR

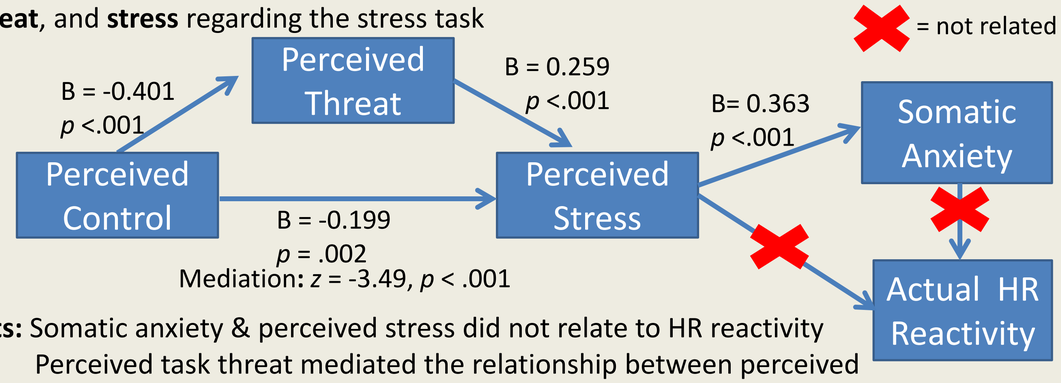


Results: Higher perceived HR AUC was related to higher perceived stress AUC but neither was related to actual HR AUC

Study #2

Aim: Replicate Study 1 results in another population and examine psychological factors that influence perceptions of stress

- Participants (N=180, sixth form students) completed a 10-minute mental arithmetic stressor while HR was recorded via ECG at baseline and during the stress task
- **HR reactivity** was calculated as stress phase HR – baseline phase HR
- Participants reported feelings of **somatic anxiety** (i.e., heart beating, butterflies), **control**, **threat**, and **stress** regarding the stress task



Results: Somatic anxiety & perceived stress did not relate to HR reactivity
Perceived task threat mediated the relationship between perceived control and perceived stress

Discussion

1. In both studies increased feelings of stress were associated with increased perceptions of heart rate reactivity
2. In both studies neither perceptions of stress nor perceptions of heart rate reactivity related to actual heart rate reactivity
3. Study 2 showed that perceptions of stress increased when there was an increase in threat perceptions caused by a perceived loss of control

Implications

1. Understanding the relationship between psychological and biological stress can aid in the treatment of anxiety disorders (i.e., post traumatic stress disorder)

2. Understanding the relationships between perceptions of control, threat, and stress can inform stress management interventions and aid clinicians in teaching individuals to manage stress (i.e., coping with cancer, starting university) by manipulating their views to feel more in control and less threatened