

The Effects of Body Awareness on Hemodynamic Reactivity

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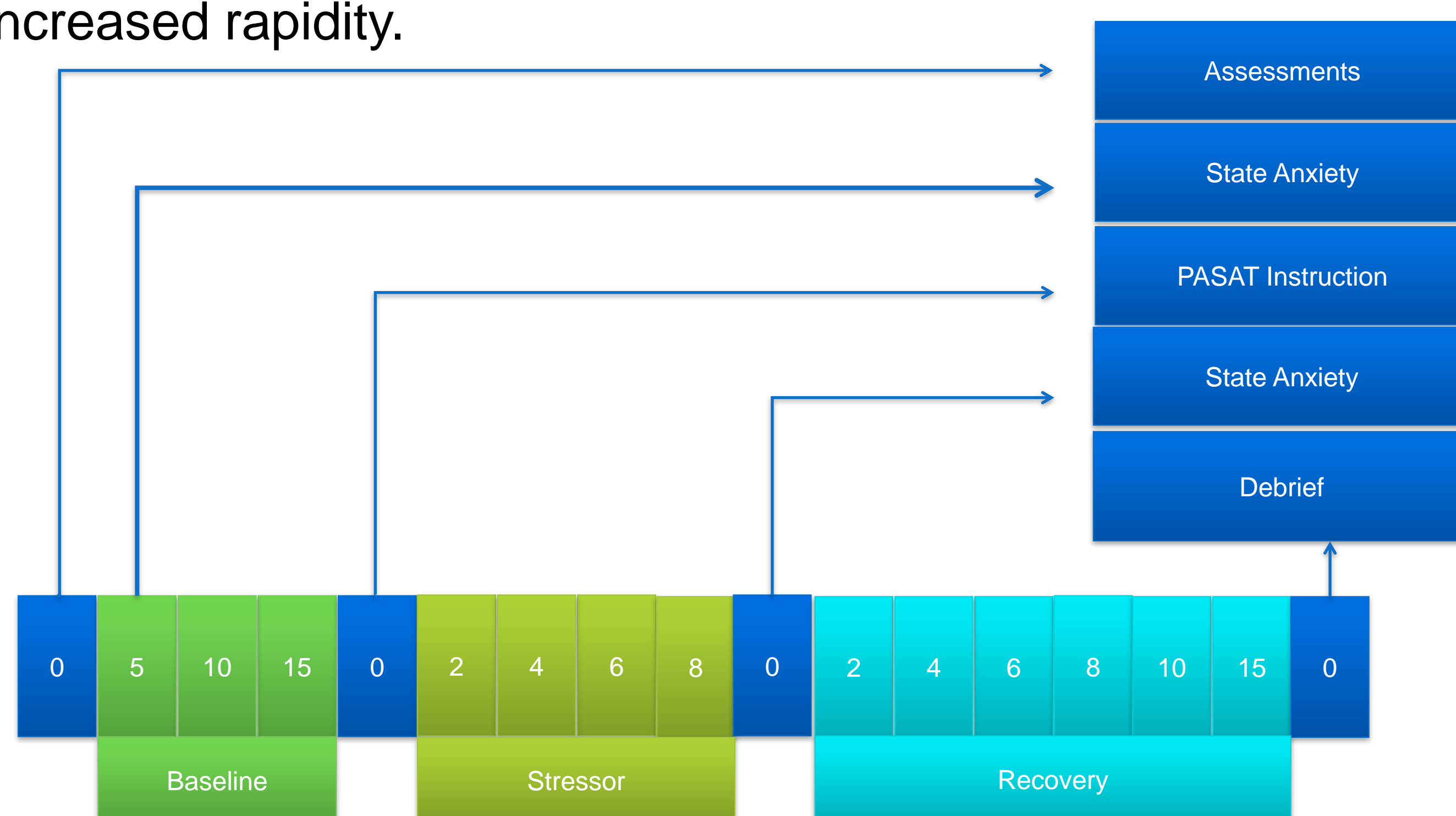
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Introduction

Body Awareness (BA) is characterized by the awareness and recognition of internal nonemotive body processes and physical sensations. BA considers one's sensitivity to these sensations, and one's belief in how well they sense, predict, and describe their bodily functions. Mindfulness is a common feature of "third wave" therapies (Öst, 2008) that promotes symptom improvement or management, in part, through body BA. Mindfulness has been incorporated into behavioral treatment strategies shown to be effective in both medical and mental health-care settings (Kabat-Zinn et al., 1992; Witkiewitz, Marlatt, & Walker, 2005; Hayes, Strosahl, & Wilson, 1999; Linehan, 1993). In particular, mindfulness has been associated with improvements in women's health. Research has shown reduced stress and improved outcomes in pregnant women (Vieten & Astin, 2008), post-menopausal women (Carmody et al., 2006), and breast cancer patients (Shapiro et al., 2003). Additionally, body psychotherapy, which aims to incorporate sensory information (e.g., BA) and internalized emotional awareness, has shown success improving psychological and physiological wellbeing in women with a history of childhood sexual abuse (Price, 2002; 2005). One proposed mechanism of action for symptom improvement is stress reduction. Yet, to date there is a dearth of research that investigates the effects of BA on stress responses in women. One way to study stress is to assess psychophysiological responses to a standardized laboratory stressor. In this study we examined the effects of BA on psychophysiological stress reactivity and recovery as measured by changes from baseline in state anxiety and hemodynamic variables in response to a standardized laboratory stressor. We hypothesized that BA would be associated with less psychophysiological stress reactivity and more rapid post-stressor recovery in women.

Method

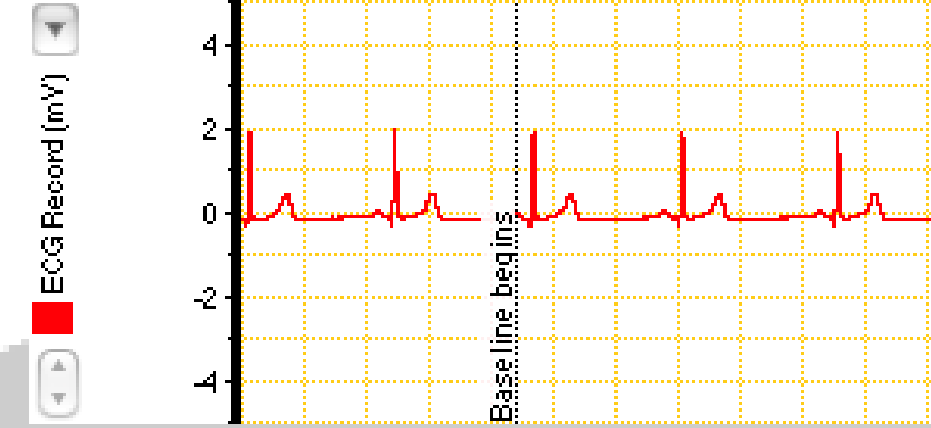
Women ($n = 40$, 18-45 years old, 70% Caucasian,) completed the Paced Auditory Serial Addition Test. (PASAT; Gronwall, 1977) during the follicular phase of their menstrual cycle (days 5-9). The PASAT is a cognitive stressor involving addition of numbers in serial order with increased rapidity.



Measures

Hemodynamic Variables

Heart Rate (HR): Measured continuously via electrocardiography.



Diastolic (DBP) and Systolic (SBP) Blood Pressure: Assessed at varying time intervals with auto-inflating sphygmomanometer.

Psychological Measures

Body Awareness Questionnaire (BAQ): self reported BA was assessed pre-stressor.

Spielberger State/Trait Anxiety Inventory (State/Trait; Spielberger, 1983): Self-reported trait and state anxiety. State/Trait were assessed pre- and post- stressor.

Results

Data Reduction: Time across testing was reduced to five time points: Baseline, Stressor, Recovery 1, 2, and 3 (equal time blocks). Median split was applied to the continuous measure of body awareness.

Repeated Measures ANOVA: Results revealed women with low BA displayed higher BP (Systolic BP $F(1, 38) = 94.81, p < .001$; Figure 1) Diastolic BP ($F(1, 38) = 5.48, p < .001, p < .001$; Figure 2) and HR reactivity ($F(1, 38) = 25.345, p < .001$; Figure 3) in response to the stressor than women with high BA.

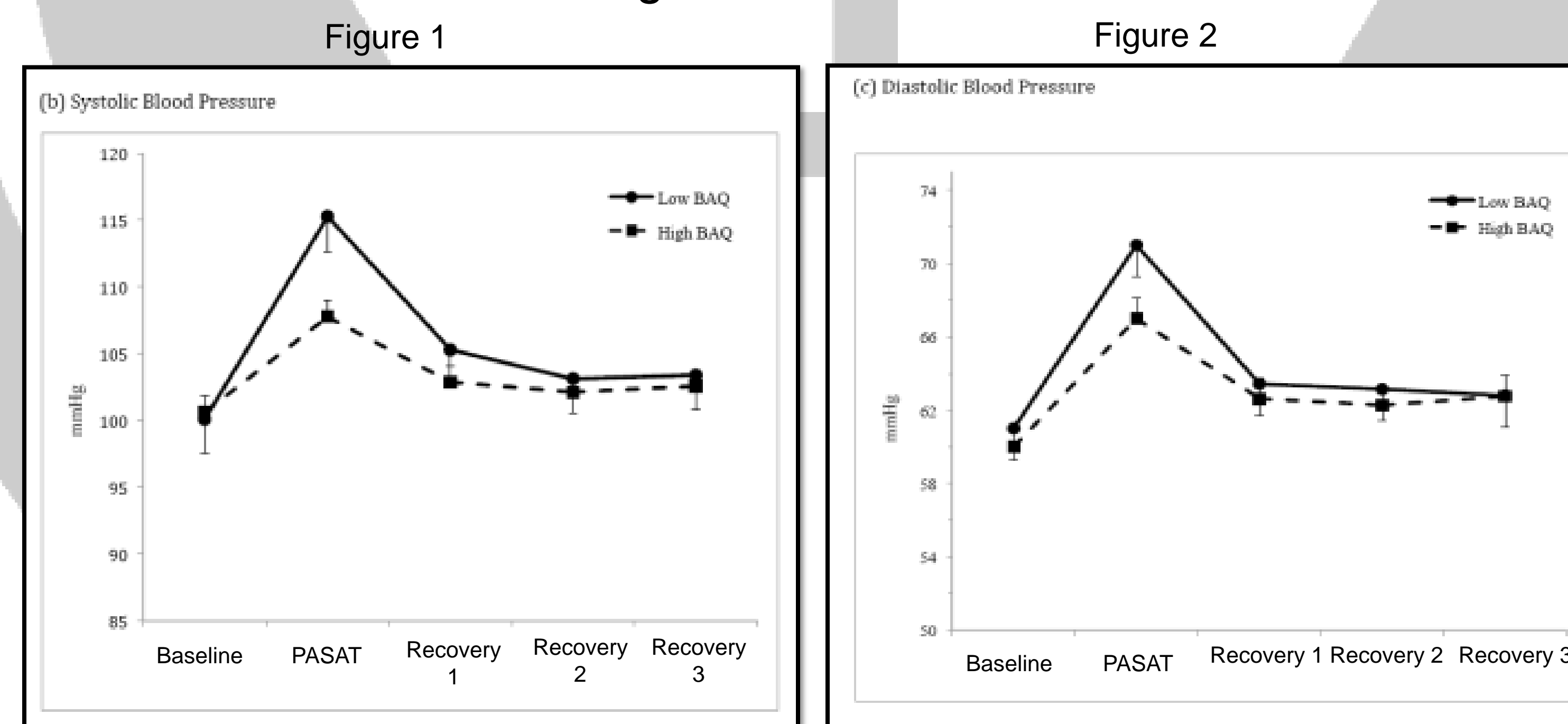
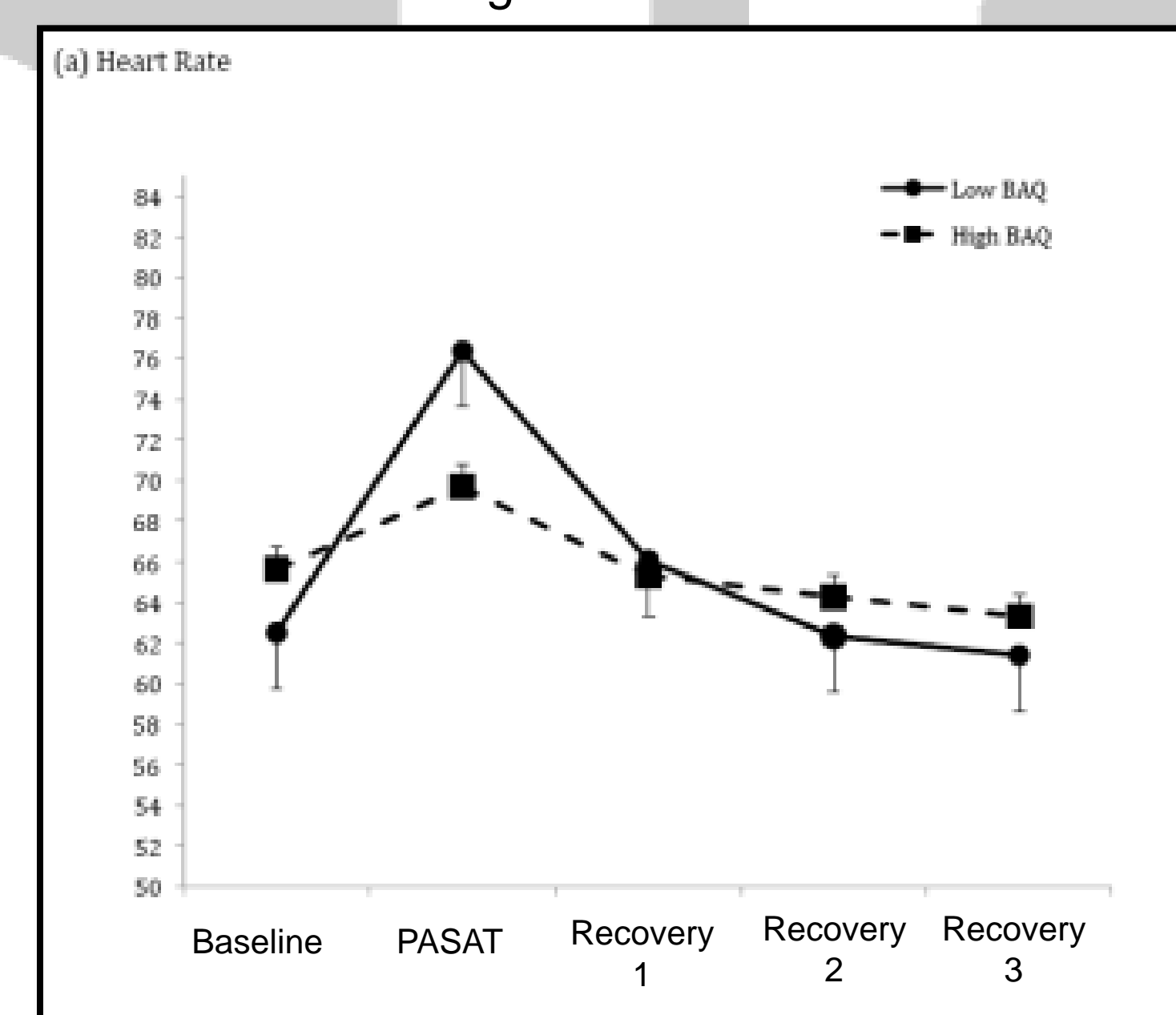


Figure 3



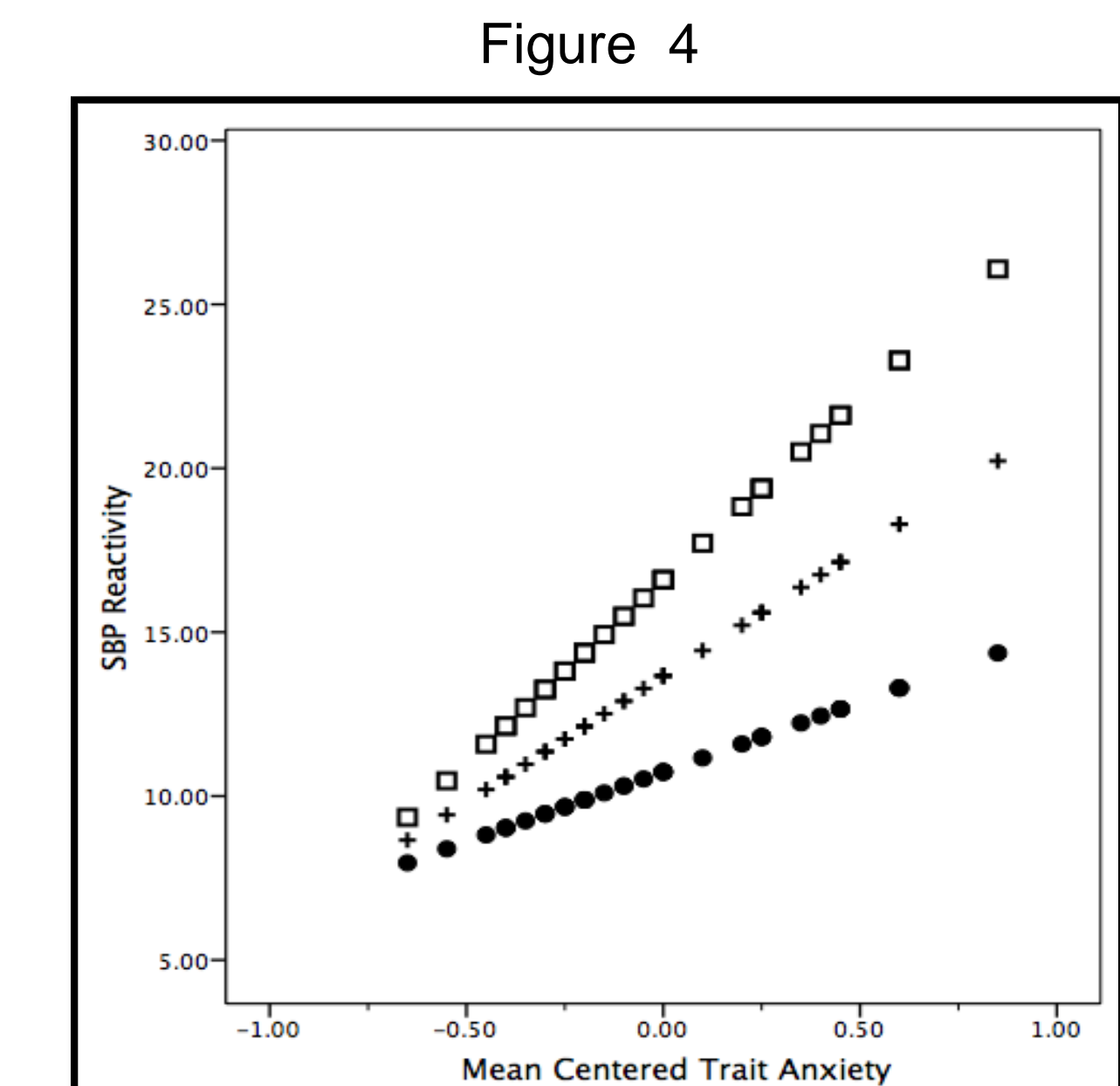
Results

Partial Correlations: Partial correlations revealed BA was a significant predictor of hemodynamic reactivity over and above trait anxiety (Table 1).

	Partial correlation controlling for body awareness	Partial correlation controlling for trait anxiety
Δ Heart rate (beats per minute)	-.16	-.53*
Δ Systolic blood pressure (mm Hg)	.33*	-.36*
Δ Diastolic blood pressure (mm Hg)	.27	-.40*

Note: Δ = delta or peak stressor period value minus average baseline, * $p < .05$

Multiple Regression: Multiple regression with post-hoc probing for interactions using the methods of Aiken and West (1991) was performed to assess combined contribution of body awareness and trait anxiety on SBP reactivity. Since trait anxiety is known to affect reactivity to laboratory stressors (Pollatos, et al. 2007), analyses were performed with trait anxiety in the model. Although the interaction was non-significant, an interesting pattern emerged suggesting that the relationship between trait anxiety and SBP reactivity was moderated by body awareness, albeit non-significantly.



Conclusions

In sum, our hypotheses were partially supported. Women with low BA displayed higher HR and BP reactivity than women with high BA suggesting that increases in BA may regulate internal states in order to reduce stress reactivity in women. Exaggerated cardiovascular reactivity and delayed cardiovascular recovery are predictive of illness (e.g., cardiovascular disease; Krantz & Manuck, 1984; Steptoe & Marmot, 2006). Thus, it is reasonable to postulate that increasing body awareness may be associated with more favorable health predictions in women. Although increasing BA may not affect stress responses in women by reducing the effects of trait anxiety, as BA is one of the four foundations of mindfulness (Kornfield, 2001), the significant inverse relationships among BA and stress in women warrants further study.