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## **Pain Catastrophizing, Pain Intensity and Perceived Injustice Do Not Predict HRV in Acute Pain**

Jacqueline Diulio SPT  
*University of Puget Sound*

Hailey Kettel SPT  
*University of Puget Sound*

Karin Steere DPT, PhD  
*University of Puget Sound*

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### Background and Aims

The nature of chronic pain conditions is well documented, with systemic biological, psychological and social factors interacting in an emergent fashion. Autonomic nervous system dysregulation, reflected as decreased heart rate variability (HRV), is suggested to be a biomarker of systemic dysfunction. Previous research has demonstrated correlations between numerous chronic pain disorders and diminished HRV.

### Purpose:

The purpose is to determine the relationship between pain and HRV in the acute phase of pain and to examine the predictive value of psychosocial variables on HRV. This study may enhance our knowledge of how early in the pain experience decreased HRV may occur.

### Methods

94 subjects completed a survey on an iPad while seated as HRV was collected through a Polar H10 chest strap. The Pain Catastrophization Scale (PQS) and Injustice Experience Questionnaire (IEQ) were used to measure thoughts and behaviors regarding pain. Multiple linear regression was used to test if average pain intensity, total PCS and total IEQ scores were able to predict HRV.

Figure 1:

#### Patient Demographics

Average Age	Gender	Pain Duration	Worst Pain 0-10	Current Pain 0-10	Average Pain 0-10
28.18 years	76 Male 18 Female	2.28 weeks	6.8	3.2	3.8

Figure 1: Participant demographics and pain characteristics reported

Figure 2: Statistical significance for pain catastrophization, pain intensity, and perceived injustice to HRV (high/low frequency power).

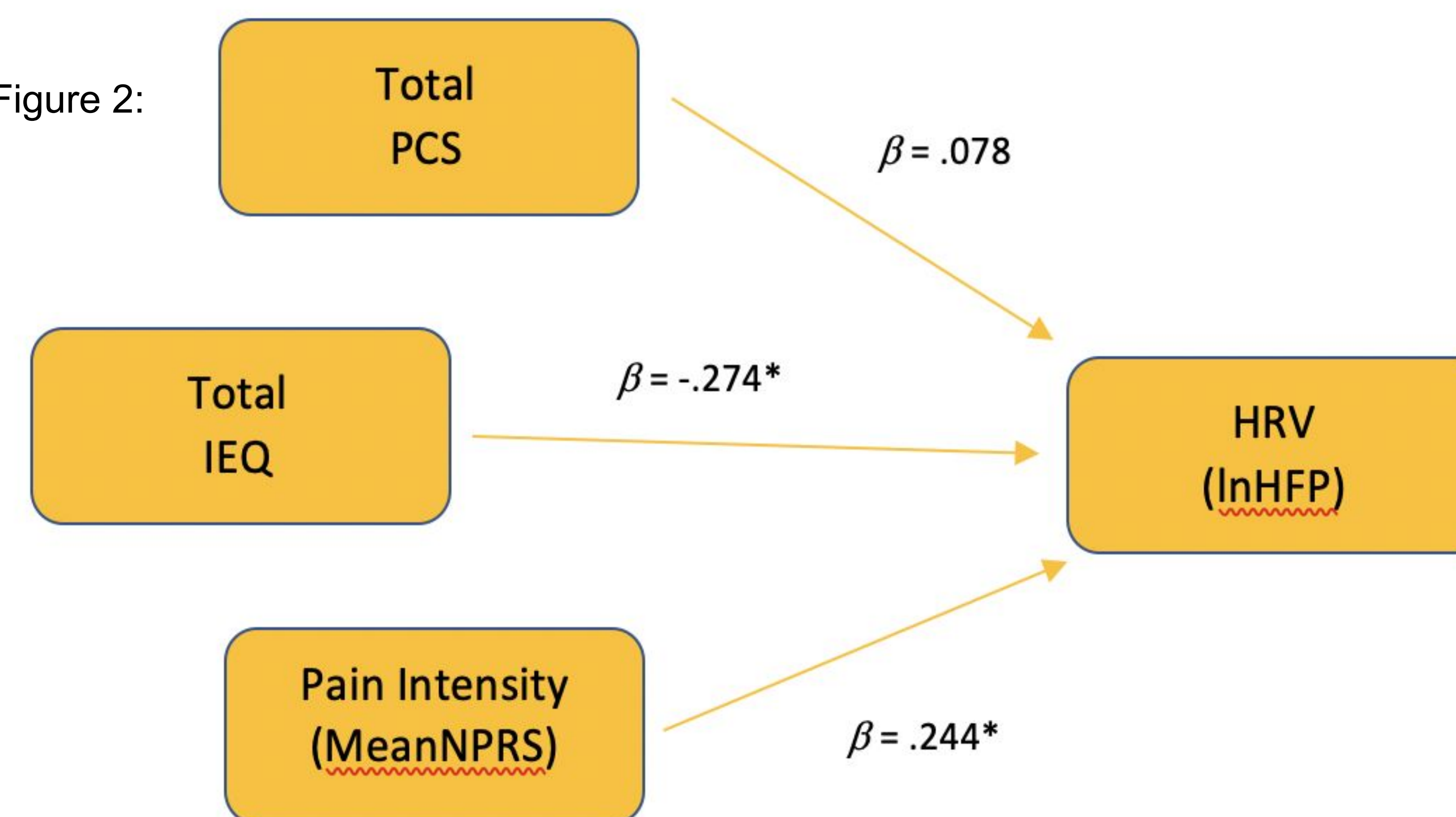


<https://pixels.com/featured/heart-and-brain-erzebet-s.html>

### Results

The overall regression was not statistically significant ( $R^2 = .037$ ,  $p = .348$ ) and none of the variables contributed significantly to the prediction model. Perceived injustice and catastrophizing demonstrated moderate correlation to each other but no other correlations were found.

Figure 2:



\*statistically significant at 0.05 level

### Conclusions

Despite the correlations between diminished HRV and these variables in chronic pain, the relationship appears to be different in acute pain.

### Discussion

The younger and more active characteristics of this sample may be influencing HRV, along with the mechanical nature of the musculoskeletal injuries. Since a subset of this sample demonstrated diminished HRV, the contribution of other factors or interaction from covariates warrants further investigation.

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