Pain anxiety is associated with pain sensitivity even after controlling for anxiety sensitivity
Shreela T. Palit, MA, Bethany L. Kuhn, BS, Edward W. Lannon, BA, Heather B. Coleman, BA, Michael F. Payne, BS, Lucinda Chee, BA, Kathryn A. Thompson, Joanna O. Shadlow, PhD, & Jamie L. Rhudy, PhD
Department of Psychology, The University of Tulsa, 800 S. Tucker Drive Tulsa, OK 74104

Introduction
Pain anxiety has sometimes been characterized as a type of “specific phobia” of pain; however, there is some question in the literature regarding the relationship between pain anxiety and pain sensitivity (a general sense of fear about anxiety-related symptoms; e.g., racing heart, sweating). The Pain Anxiety Symptoms Scale (PASS-40) is a 40-item scale that was developed to assess avoidant and fear-related behaviors related to pain. Most of the research on this measure has been on the validation of this scale in chronic pain populations. Past research has questioned the independence of pain anxiety from anxiety sensitivity, positing that pain anxiety may just be a manifestation of anxiety sensitivity, rather than a separate construct. This study examined if the PASS-40 is significantly related to experimental pain (i.e., cold, heat, & ischemia tolerances) after controlling for anxiety sensitivity.

Objective
To investigate if pain anxiety is related to pain sensitivity, after controlling for anxiety sensitivity.

Participants
•Healthy Participants: N = 24
  •Characteristics: 9 Women; average age ± 32.8 yrs (SD=12.3), White non-Hispanic (37.5%), single (45.8%), and employed (66.7%).
•Exclusion Criteria:
  •< 18 years of age
  •BMI>35
  •Current acute illness
  •Cardiovascular, neurological, and/or circulatory problems
  •Recent use of anxiolytic, antidepressant, antihypertensive, or antihypertensive medication
  •Recent psychological trauma
  •Chronic pain condition
  •Raynaud’s disease

Experimental Procedure
•Informed Consent + Demographics
•Cold Pain Tolerance Testing:
  •Participators placed their left hand in cold water (6°C)
  •Pain tolerance was defined as the time (in sec.) from the hand being submerged in the water to the point at which the individual reported they could no longer tolerate the pain from the cold water
•Heat Pain Tolerance Testing:
  •Heat probe placed on left forearm
  •5 tolerance trials
  •For each trial, heat increased from 32°C in 0.5°C increments until participant reached tolerance, with the last 4 trials averaged
•Heat Pain Tolerance:
  •Heat pain was rated as maximum tolerable (rating = 100 on VAS)

Cold Pain Tolerance
•Non-dominant hand placed in 6°C water (Cold pressure)
•Pain was reached continuously using a Visual Analog Scale (VAS)
•Cold Pain Tolerance: Tolerance was defined as the time (in sec.) when participant rated cold pain as maximum tolerable (rating = 100)

Heat Pain Tolerance
•Thermal heat probe placed on left forearm
•5 tolerance trials
•Heat Pain Tolerance:
  •Heat pain was rated as maximum tolerable (rating = 100 on VAS)

Ischemia Pain Tolerance
•2 min. of hand exercises at 50% maximum grip strength
•15 sec. of arm elevation for exsanguination
•Blood pressure cuff inflated to 220 mm/Hg and left inflated until participant reached tolerance
•Pain was rated continuously
•Ischemia Pain Tolerance: Tolerance was defined as the time (in sec.) when participant rated ischemia pain as maximum tolerable (rating = 100 on VAS)

Pain Anxiety Symptoms Scale (PASS-40)
•40-item self-report scale administered during a 20-minute questionnaire break
•Developed to assess avoidance and fear of pain
•Higher scores = higher pain anxiety

Anxiety Sensitivity Index-Revised (ASI-R)
•36-item self-report measure administered during a 20-minute questionnaire break
•Aims to determine the extent to which individuals fear annual-related sensations arising from beliefs that the sensations have adverse consequences

Results: Pain Anxiety & Pain Sensitivity Outcomes, Controlling for Anxiety Sensitivity

•Results indicated significant relationships between the PASS-40 and cold (p=0.05), heat (p=0.01), and ischemia (p=0.05) tolerances, such that higher pain anxiety was associated with lower pain tolerances
•Furthermore, the PASS-40 uniquely accounted for 27-29% of the variance in pain outcomes, above and beyond ASI-R

Conclusions
•These results support pain anxiety and anxiety sensitivity are separate constructs
•Future research is necessary to clarify this relationship and further examine this in chronic pain populations

Funding Support: Research supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number R18MD007807. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.