

Examining the Association of Trait vs. In-Vivo Catastrophizing and Experimental Pain Sensitivity

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Catastrophizing cognitions, consisting of rumination, helplessness, and magnification, are associated with increased pain intensity and pain behaviors in individuals with chronic pain. Research suggests that higher levels of pain catastrophizing are associated with increased experimental pain sensitivity and that situation-specific (i.e. in-vivo) catastrophizing has a stronger relationship with pain sensitivity than does general (i.e. trait-like) catastrophizing. The current study examined the extent to which trait-like and in-vivo pain catastrophizing are differentially related to experimental pain tolerance. We hypothesized that: (1) in-vivo catastrophizing would have a stronger relationship with pain tolerance than trait-like catastrophizing, and (2) different components of catastrophizing (i.e. rumination, helplessness, and magnification) would be differentially related to pain tolerance. One hundred thirty-one students completed the Pain Catastrophizing Scale (PCS) prior to completing a cold pressor task. Pain tolerance was measured by the amount of time participants kept their hand submerged in the water. Participants completed the PCS again after the pain task to measure their in-vivo catastrophizing (i.e. how much they engaged in catastrophizing during the pain task). The results of a Fisher's r -to- z transformation, used to compare differences in relationships between variables, indicated a trend ($z = 1.69, p = 0.09$) that in-vivo catastrophizing was more strongly related to pain tolerance ($r = -0.40, p < 0.001$) than was trait-like catastrophizing ($r = -0.21, p = 0.02$). Further, in-vivo rumination ($r = -0.45, p < 0.001$) was most strongly related to pain tolerance, followed by helplessness ($r = -0.35, p < 0.001$) and magnification ($r = -0.25, p < 0.01$); however, the magnitude of these associations was not significantly different. Although these results suggest that catastrophizing – particularly situation-specific catastrophizing – affects pain sensitivity, future research should experimentally manipulate catastrophizing to confirm the causal relationship. Such research could inform the development of psychosocial interventions for chronic pain management.

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