Distinct psychophysiological profiles associated with experiencing the pain of others

ABSTRACT:

Background
The notion of shared neural representations for both physical pain and vicarious pain has been very influential but also controversial. A possible resolution lies in individual differences and here we bring to bear a novel method for identifying individual differences in vicarious pain such that some people (around a quarter of the population) report conscious pain-like experiences when observing pain in others.

Aims
We aim to determine, using multivariate fMRI and psychophysiological measures, whether vicarious pain and physical pain share neural resources considering, for the first time, individual differences in the tendency to report experiencing the pain of others.

Method
Our vicarious pain questionnaire (VPQ) was used to identify three groups of participants (sensory-localised vicarious pain, affective-general vicarious pain; controls) who were then selected to take part in neuroimaging and psychophysiological investigations that contrast physical pain (mild electric shocks) and vicarious pain. The latter was induced in one of two ways: a cue indicating a shock to another person or images of physical pain to the hands/feet.

Results & Conclusions
Multivariate and univariate analyses support the conclusion that there are shared neural resources between vicarious pain and physical pain. We observe these results across all groups (i.e., they are not limited conscious experiences of pain). Group differences are observed in behavioral ratings (people with vicarious pain experiences show less self-other discrepancy between real and imagined pain) and when applying a biomarker of physical pain (the NPS, neurologic pain signature) to mere observation of pain (versus no-pain) images.

Keywords
Vicarious pain, Consciousness, Interoception, Unusual experiences

Published Work:

Li, M., Racey, C., Rae, C. L., Strawson, W., Critchley, H. D., & Ward, J. (2024). Can the neural representation of physical pain predict empathy for pain in others?. *Social Cognitive and Affective Neuroscience, 19*(1), nsae023. doi:10.1093/scan/nsae023

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