AGING EFFECTS ON HEAT PAIN: EVIDENCE FOR AGE-DEPENDENT CONTRIBUTIONS OF PSYCHOLOGICAL VARIABLES TO THERMAL PAIN THRESHOLD

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INTRODUCTION / AIM

Pain sensitivity is known to change with age. While approaches examining neurophysiological changes have been able to account for a portion of such age-related pain differences, adopting other approaches may yield more contributing variables to help to paint a more complete picture. Notably, aging leads to changes in executive functions, and to differences in the vulnerability to and consequences of anxiety-depressive symptomatology; both in turn are known to modulate pain perception. We therefore propose to examine whether alterations in cognition and in psychological variables underlie differences in thermal pain sensitivity between young and elderly adults.

METHODS

Forty-one young and forty older healthy elderly adults were administered a series of thermal stimulations between 40 and 49°C with the method of constant stimuli and provided ratings of warmth and pain. Executive functions were measured with a Stroop task and a dual-task, and psychological variables were measured via questionnaires.

RESULTS

Pain threshold was significantly higher in the older group ($t(79) = 2.338, p = .022$) than in the younger group, an effect that was not found to be mediated by psychological and executive differences (all mediation regression coefficients $p > .05$). In fact, while psychological and executive functions factors did not correlate with threshold in the young group, pain threshold in the older group was correlated with depression ($r = -.555, p < .001$), trait anxiety ($r = -0.351, p = .026$), pain catastrophizing ($r = -.442, p = .007$). The correlations were nearly significantly higher ($z = 1.847, p = .065$) for anxiety and significantly higher ($z = 2.697 p = .007$) for catastrophizing.

DISCUSSION / CONCLUSIONS

There is experimental evidence for an age-dependent contribution of psychological factors to heat pain sensitivity. The processes underlying such differences, including the effects of potential age-related frontal lobe changes, are discussed.

OTHER AUTHORS

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