

The painful awareness of death: Influence of thoughts of death on behavioural and cerebral activity associated with painful nociceptive stimuli

ABSTRACT:

Background

There is overwhelming evidence that reminding people of their own death triggers a unique anxiety mechanism, which differs from any other symbolic threats, and affects social behaviour. Previous research into the neuronal mechanisms of this phenomenon seems to provide supporting evidence. However, no research has questioned the neural substrates associated with the idea of our close ones' death nor there is sufficient information on what factors could down-regulate the anxiety mechanism.

Aims

Here we tested the two hypotheses that 1) the effects of thinking about a romantic partner's death would modulate perception and brain activity, and 2) the meditation practice (as well as the mindfulness personality trait) would buffer the effects of death-related anxiety, thus shielding the self from existential threat.

Method

We measured electroencephalography (EEG) in the context of a classical mortality salience (MS) manipulation whereby participants were exposed to reminders of mortality in a single reflective induction event. Before and after the induction they were submitted to electrical painful stimuli on the dorsum of their left hand. These were suggested being more or less safe for the skin on the basis of their waveform. Yet, in reality the stimuli were all having the same physical features. Such psychological manipulation, in interaction with the MS induction, was expected to increase the chance of perceiving a somatosensory stimulus as more painful as well as increasing the magnitude of brain responses when compared to a negative control mind-set. In turn, these effects were expected to be dampened by the cognitive and emotional regulation exerted by meditation in expert practitioners as well as by the individual's mindfulness trait.

Results

We provide evidence that both ratings of pain and EEG responses to somatosensory painful stimulation are affected by reminders of death. We found that the thought of one's romantic partner death is associated with a modulation of perceived painfulness of the electrical stimuli as well as of the EEG responses to somatosensory stimuli. This finding is less robust in participants exposed to the thought of their own death. Finally, we also detected a buffering effect of meditation expertise and mindfulness trait on MS effects.

Conclusions

Together these results lay out the neural correlates of reminders of a significant other's death. Moreover, for the first time, they outline how the effects associated with reminders of death are buffered by meditation practice and mindfulness trait.

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Keywords

Electroencephalography, Meditation, Mindfulness, Mortality salience, Pain

Published Work:

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Valentini, E., & Gyimes, I. L. (2019). Visual cues of threat elicit greater steady-state electroencephalographic responses than visual reminders of death. *Biological Psychology*, *139*, 73-86. doi: 10.1016/j.biopsycho.2018.10.004

Researchers' Contacts:

Elia Valentini, PhD
Senior Lecturer
Department of Psychology & Centre for Brain Science
University of Essex
Phone: +44(0)1206 873710
Email: evalent@essex.ac.uk

Istvan Laszlo Gyimes
Email: ig16036@essex.ac.uk