Emotional Reactions to Natural and Technological Disasters; A Possible Case for Evolutionary Mismatch.

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Introduction

Anecdotal observations (e.g., Baum et al., 1983) and a few questionnaire-based studies (e.g., Siegrist & Sütterlin, 2014) suggest technological disasters evoke stronger negative reactions than natural disasters, but it is not clear whether these findings can be replicated in other samples, all examples of disasters, and using other methods.

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Methods

We hypothesized that technological disasters would be rated as more unpleasant and more arousing than natural disasters.

We investigated eight commonly-used standardized datasets of affective visual stimuli to find pictures of natural and technological disasters and compare valance and arousal ratings of those photos.

To rule out the alternative explanation that any difference between natural and technological disasters can be attributed to their severity and not their evolutionary age we used EM_DAT disaster loss dataset to quantify the severity of disasters.

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Results

We found 38 photos depicting natural disasters and 33 photos of technological disasters in Nencki Affective Picture set, Open Affective Standardized Image Set, and EmoMadrid and calculated *z* scores of valence and arousal ratings.

Pictures of technological disasters were rated as more unpleasant than stimuli showing natural disasters ($t(70)= -7.28$, $p < .0001$) but arousal ratings of disasters were not significantly different ($t(70) = -0.70$, $p = 0.25$).

EM_DAT data shows that natural disasters are more frequent, kill more people, and cause more injuries than technological disasters.

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Discussion

Although natural disasters cause more harm than technological disasters, technological disasters are perceived more negatively. This might distort risk analysis.

Evolutionary mismatch framework can be used to explain the results and to expand this line of research.

As natural disasters are on the rise and new technological disasters emerge researchers should include more disaster-relevant stimuli in affective datasets to facilitate psychological and neuroscientific studies of disasters.

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