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Trait anxiety modulates negative affect-cued distribution of visuo-spatial attention.

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Abstract

Spatial deployment of visual attention in humans is crucial for selecting and prioritizing task-relevant visual information for efficiently navigating natural visual environments in daily life. As prominent landmarks of social environments, human faces conveying salient emotion information, have been found to influence attention. We investigated if facial emotions also modulate the spatial distribution of visual attention and whether any such effect associates with individual differences in internal affective states, e.g. anxiety. Participants (n = 28) discriminated the orientation of target Gabor patches co-presented with distractors, speedily and accurately. The key manipulation was randomly presenting a task-irrelevant, face emotion prime briefly (50 ms) at unexpected time points, conveying either Neutral/Disgust/Scrambled (null) emotion signal 150 ms before the target patches. Disgust signal modulated the gradient of attention (change in negative inverse attentional efficiency with unit change in distance from the source of emotion signal) in significant association with trait-anxiety scores, such that the direction of attention gradient flipped (spatial attentional shift) with increasing severity of trait anxiety. Neutral signal yielded attention gradients comparable to Scrambled with no clear association with anxiety, implying the presence of no anticipated effect. Altogether, the results suggest that individual trait-anxiety levels condition the effect of negative and physiologically arousing emotion signal (e.g., Disgust) on spatial distribution of visual attention. The findings may help furthering the understanding of visual distortions underlying affective states and disorders.