Coherence and divergence in autonomic-affective response

Hélio Cuve1,2; Joseph Harper1; Caroline Catmur3; Geoffrey Bird12
1School of Psychology, University of Birmingham, 2Department of Experimental Psychology - University Of Oxford, 3OPPN – Kings College London

BACKGROUND

• Coherent mobilisation of autonomic and subjective response is central to many emotion theories (James, 1948; Canon, 1927).

• Degree of coherence within autonomic, and between autonomic and subjective response is unclear (Levenson et al., 2014; Norman et al., 2016).

• Investigated coherence in autonomic and subjective response to emotion by exploring their multidimensional organisation.

DESIGN AND METHODS

Task

• Participants (N = 56) completed visual emotion induction.

• Their physiological (pupil, skin conductance response (SCR), heart-rate (HR), eye-movements and subjective (valence and arousal) responses were monitored.

Analytical approach

• Multiple Factor Analysis (MFA) and clustering was used to explore the multidimensional organisation of autonomic and subjective responses to emotion.

• The stability and significance of dimensions were assessed using bootstrapping and permutations tests.

RESULTS

Autonomic-affective space (AAS) characterised by two dimensions.

• Dim1 (coherence) - loosely map to valence and arousal with significant covariance of autonomic and subjective response.

• Dim2 (divergence) - autonomic patterns that did not covary with subjective response.

AAS is reliable and generalises to unseen stimuli and participants.

DISCUSSION AND CONCLUSION

• Coherence and divergence may both be fundamental components of emotion response.

• Divergence may be driven by specific vs. non-specific autonomic response to emotion (e.g., physiological orienting response).

• Emotion theory and translation should consider factors driving divergence and coherence (e.g., regulation and autonomic-constraints).

• Value for multimodal research on autonomic and subjective responding (e.g., emotion, pain) and translation potential (clinical).

• Dimension vs. categories: might categories reflect homogeneous clustering within this space?

Selected References


ACKNOWLEDGEMENTS

Funding: The first author was funded by a Uni. Of Oxford, Medical Sciences Graduate Award, ref: 1819_MSDF_152472.

heliocelemente.c@gmail.com
https://github.com/hcuve

Fig.1. Schematic illustration of experimental and analytical approach