Patterns of Autonomic Activity Differentiate Emotions Induced by Film Clips

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The present study aimed to investigate whether the response pattern of the autonomic nervous system (ANS) is emotion specific. One hundred young healthy participants viewed film clips that evoked the following emotions: neutral, anger, sad, surprise, content, disgust, fear and amusement. ANS responses were measured through electrocardiogram, skin conductance, finger temperature, and facial electromyography. Following each film clip, participants were asked to self-report their subjective affect. The results of a one-way analysis of variance indicated that the ANS response change is significantly different among the various emotions. ANS-related variables were further analyzed by principal component analysis. Variables with higher weighting in each principal component were selected as emotional indicators. The emotion-specific ANS response patterning was detected by pattern classification analysis, with 6 different classification algorithms tested. The results indicated that the classification rate is higher than the chance level among most of the classification algorithms. The current findings thus support the hypothesis of emotion-specific ANS response patterning.

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