

A trifactorial model of detection of deception using thermography

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Abstract

Most theories of detection of deception relate lying to three factors: (1) cognitive load, (2) subjective arousal, and (3) convincing impression. The evidence suggests that a higher temperature of the forehead is related to cognitive load, a lower temperature of the nose is associated with subjective arousal, and a higher temperature of the cheeks is related to convincing impression. Here, we took into account these three factors and, at the same time, associated the thermal change in specific facial regions of interest (ROIs) with each one of them. More importantly, we studied the combination of the thermal changes in the ROIs to establish the best combination to detect deception. Our results confirm an association between thermal changes in different ROIs and the three factors above. The best combination in the thermal changes of the ROIs for detecting deception (producing 83% accuracy and 13% false alarms in Experiment 1) is the one that was termed 'at least two of the three ROIs' where there is a lower temperature of the nose and/or a higher temperature of the cheeks and/or a higher forehead temperature. This finding constitutes an advance for detecting deception in multiple forensic contexts.

Author keywords

detection of deception
facial temperature
forensic assessment
subjective experience
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