

Psychologist explores perception of fear in human sweat

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When threatened, many animals release chemicals as a warning signal to members of their own species, who in turn react to the signals and take action. Research by Rice University psychologist Denise Chen suggests a similar phenomenon occurs in humans. Given that more than one sense is typically involved when humans perceive information, Chen studied whether the smell of fear facilitates humans' other stronger senses.

Chen and graduate student Wen Zhou collected "fearful sweat" samples from male volunteers. The volunteers kept gauze pads in their armpits while they were shown films that dealt with topics known to inspire fear.

Later, female volunteers were exposed to chemicals from the "fearful sweat" when they were fitted with a piece of gauze under their nostrils. They then viewed images of faces that morphed from happy to ambiguous to fearful. They were asked to indicate whether the face was happy or fearful by pressing buttons on a computer.

Exposure to the smell of fear biased women toward interpreting facial expressions as more fearful, but only when the expressions were ambiguous. It had no effect when the facial emotions were more discernable.

Chen's conclusion is consistent with what's been found with processing emotions in both the face and the voice. There, an emotion from one sense modulates how the same emotion is perceived in another sense, especially when the signal to the latter sense is ambiguous.

"Our findings provide direct behavioral evidence that human sweat contains emotional meanings," Chen said. "They also demonstrate that social smells modulate vision in an emotion-specific way."

Smell is a prevalent form of social communication in many animals, but its function in humans is enigmatic. Humans have highly developed senses of sight and hearing. Why do we still need olfaction? Findings by Chen and Zhou offer insight on this topic. "The sense of smell guides our social perception when the more-dominant senses are weak," Chen said.

More information: The study, "Fear-related Chemosignals Modulate the Recognition of Fear in Ambiguous Facial Expressions," was published in the February issue of the journal *Psychological Science*.

Source: Rice University

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