Nosewitness identification: Effects of negative emotion

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When the perpetrator and the victim are close up (e.g., crimes of sexual abuse) olfaction may provide important cues towards the identity of the body odor (BO) of the perpetrator. Each individual has a unique BO signature, as an "odorprint", that conveys genetic information and information about personal environmental variables (e.g., diet, hygiene). Furthermore, smell has been shown to be a powerful trigger for memory. However, in forensic research, identification of human BOs has been performed by trained dogs but not by humans. The possibility of identifying individuals in a forensic setting by way of odor, referred to as nosewitness identification, was investigated for the first time at the PsyLab, University of Aveiro. In two pioneer studies, we explored nosewitness identification following emotional videos of crimes. In Experiment 1 we tested an experimental model of nosewitness identification to investigate human olfactory memory for BO in a forensic setting, including emotion-evoking crimes.

Experiment 2 expanded on this issue by testing the memory effect of negative emotion using a conventional lineup identification test. Results of both experiments showed that participants who viewed a real crime, while instructed to smell the BO of the presumed perpetrator, were better than their emotionally neutral counterparts when identifying the culprit BO in a lineup with four other BOs. The results of Experiment 2 also indicated a superiority of the lineup identification for target-present trials, compared to target-absent trials (Fig. 1 and 2), which is consistent with the notion that olfactory cognition is especially prone to false alarms.

Witnessing a disturbing event, such as a crime, elicits negative emotions. Although the effects of stress in eyewitness memory have been studied, little is known regarding the effects of other emotional states in testimony for the different sensory modalities. Since our findings are contradictory to those of eyewitness studies, they may point towards different roles of negative emotion for visual and olfaction memory.

The experimental model for nosewitness presented in this study paves the way for future studies investigating the interplay between emotion and olfaction and the possible use of the sense of smell in forensic settings.