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Superior Olfactory Language and Cognition in Odor Synaesthesia

Olfaction is often considered a vestigial sense in humans. This perspective is reflected in how we think and talk about smells in the West, with odor imagery and odor language reported to be difficult. In the present study we demonstrate odor cognition is superior in odor synaesthesia, where there are additional sensory connections to odor concepts. Synaesthesia is a neurological phenomenon in which input in one modality leads to involuntary perceptual associations. Semantic accounts of synaesthesia posit synaesthetic associations are mediated by semantic activation of inducing concepts. Thus, synaesthetic associations may strengthen conceptual representations. To test this idea, we ran 6 odor-color synaesthetes and matched controls on a battery of tasks exploring odor and color cognition. Synaesthetes outperformed controls on tests of both odor and color discrimination, demonstrating for the first time enhanced perception in both the inducer (odor) and concurrent (color) modality. Thus, synaesthetes not only experience additional perceptual experiences to non-synaesthetes, but their primary perceptual experience is also different. Synaesthetes were also more consistent and more accurate at naming odors than controls. We propose synaesthetic associations to odors strengthen odor concepts, making them more differentiated (facilitating odor discrimination) and easier to link with lexical representations (facilitating odor naming).