

Involvement of nasal trigeminal function in human stereo smelling

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Wu et al. (1) show that human motion perception is influenced by odors presented simultaneously to the left and right nostrils. They conclude that this does not involve trigeminal intranasal sensitivity. This is not fully supported by their data.

The odor used in most experiments can be localized in the lateralization test (2), activates the trigeminal brainstem nuclei, and can be detected by 1 of 15 people without a sense of smell (3). The second odor, vanillin, appears to be more of a selective olfactory stimulant, but it also activates trigeminal TRPV3 and TRPV1 receptors (4, 5). In addition, this lipophilic molecule barely dissolves in water, which was used as a solvent. The data also show that lateralization could only be excluded for 3 of the 10 experimental series (Bayes factor₁₀ < 0.3) (1).

Trigeminal activation depends on stimulus concentration (6) and duration of presentation (7). The

latter was 5 min to 6 min (1). This is about 100 times longer than presentation time during a typical lateralization test, with prolonged trigeminal stimulation possibly leading to sensitization (8).

The authors (1) refer their interpretation to the anterior olfactory nucleus of the olfactory bulb and a cross-link between the two bulbs through the anterior commissure. As shown in cats, the contralateral neuropeptide Y projections decrease rapidly after birth (9), so that it has been stated that “few, if any, . . . olfactory fibers use commissural tracts to enter contralateral brain areas” (10).

In conclusion, we congratulate the authors (1) for their elegant study. However, in our view, the publication does not demonstrate a noninvolvement of the trigeminal nerve.

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The authors declare no competing interest.

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First published October 6, 2020.