Scents of Perception: The Influence of Physiological and Cognitive Interpretation of Odors on Mood

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BACKGROUND

- The brain processes odors together with internal states, and odor-related memories contain strong emotional contents.
- Systematic associations arise automatically according to an odorant's color and label.
- Other people's reactions to the smell of an odorant can determine the modality of one's sensory experience to that same odorant.
- Early experiences can cognitively impact odor perception and influence the emotions elicited by odors.
- Perceptions of, and reactions to, odors are also significantly affected by beliefs about the possible health consequences of environmental exposure to odorous compounds.
- Perception is contextually and subjectively dependent, which explains why conception versus sensation determines hedonic value of an odor.
- When given verbal labels with opposing hedonic connotations, it will significantly effect the perception of odors.

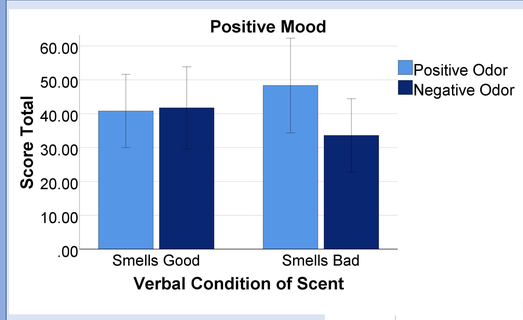
OBJECTIVE

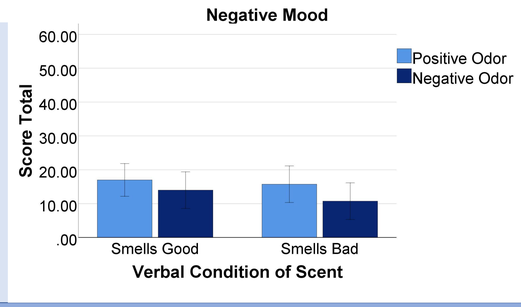
- The study evaluated whether physiological sensation to an odor or the cognitive interpretation of the odor is more influential on mood.

METHODS

- Participants: 1
  - 18 full time students, aged 18-21+ years, from Pennsylvania State University, Berks campus.
- Materials:
  - Vanilla and Cedar essential oils.
  - Cotton balls- used to soak inside essential oils.
  - Positive and Negative Affect Schedule Likert Scale- a self-reported questionnaire that consists of two 10-item scales that measure both positive and negative affect.
  - State-Trait Anxiety Inventory for Adults- a self-reported questionnaire that measures subject's trait and state anxiety levels through a 4-point Likert scale by answering 40 statements in which people have used to describe themselves.
- Procedure:
  - After providing informed consent, the researcher verbally verified that participants do not smoke tobacco products, have allergies, nor are sick with a cold, flu, or any illness effecting their sinuses and nasal cavity.
  - Participants were then asked to complete the State-Trait Anxiety Inventory (STAI) Form Y-2 questionnaire, that is distributed electronically, to measure their trait anxiety levels.
  - The experimenter then soaked some of the cotton balls with the first odorant (vanilla) and some with the second odorant (cedar).
  - After that, participants were told the odorant either had a positive or negative scent (regardless of actual scent).
  - Next, participants were instructed to smell the odorant and rate the scent's pleasantness.
  - Following this, participants completed the Positive and Negative Affect Schedule (PANAS-SF) and the STAI Form Y-1.

RESULTS

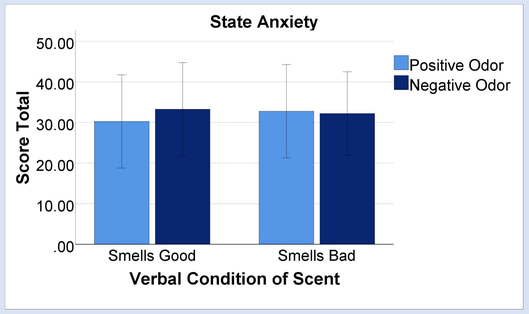




RESULTS

Participants reported a more positive mood for objectively pleasant odors (and more negative mood for objectively unpleasant odors) regards of whether they are told the odor smells good (or bad).

- Positive affect: F(1,13)=1.993, p<.181, n^2p=.133
- Negative affect: F(1,13)=.168, p<.688, n^2p=.013



State anxiety stayed the same regardless of odor and condition.

- F(1,13)=.118, p<.737, n^2p=.009

DISCUSSION

- Overall, there was no significant difference in participants' mood, regardless of condition, when smelling a positive and negative odorant. The result of the study provides evidence that physiological sensation is more influential on mood when smelling an odorant. Some limitations that were found in the study involved sample size and lack of resources. For future replications of the study, a larger sample size may help the data to be more representative and more than one positive and one negative odorant should be used among participants.