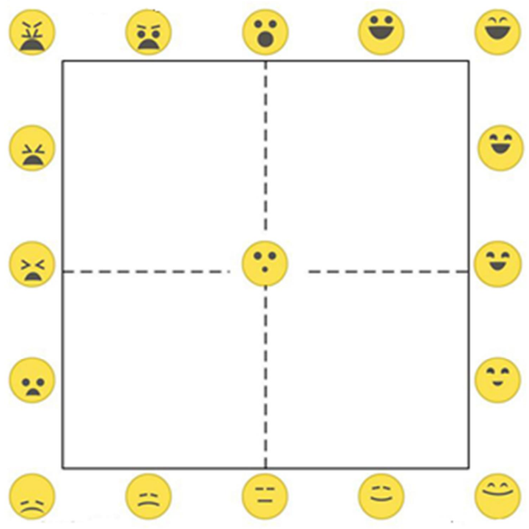
Assessment of Odor Evoked Emotions using the EmojiGrid

Alexander Toet[1], Sophia Eijsman[1,2], Yingxuan Liu[1,2], Stella Donker[2], Daisuke Kaneko[1, 3], Anne-Marie Brouwer[1], Jan van Erp[1,4]
[1] TNO, The Netherlands, [2] Utrecht Univ, The Netherlands, [3] Kikkoman Europe R&D Lab. B.V., The Netherlands, [4] Twente Univ., The Netherlands

Introduction

- Odors are increasingly used to induce various emotional states (e.g. in retail, entertainment, public environments)
- This is reflected in an increasing availability of digital scent delivery and communication systems
- Efficient and intuitive self-report tools are needed to assess whether the desired emotions have been evoked.
- Current affective measurement tools are language-dependent.
- The EmojiGrid however is an intuitive graphical (language-independent) emotional self-report tool.

The EmojiGrid

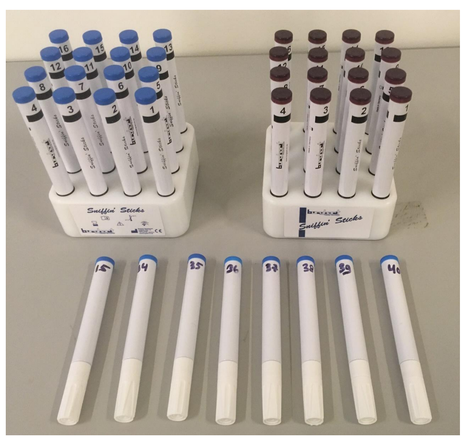


- The emoji-labels express different degrees of valence (horizontal axis) and arousal (vertical axis).

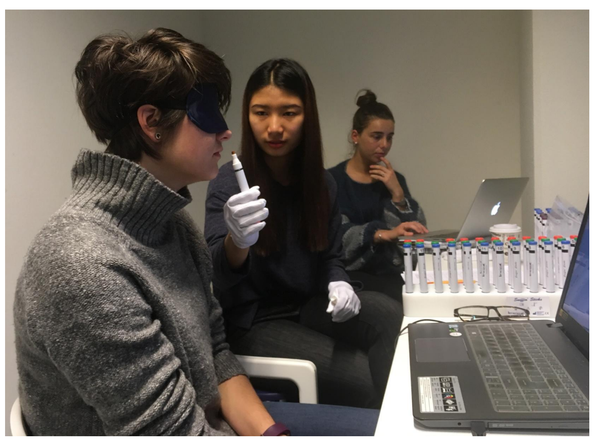
- This study was performed to evaluate the EmojiGrid as a self-report tool for the assessment odor-evoked emotions.

Methods & Procedure

- Participants (N=56, 24 males, mean age=24.3±4.6 years) briefly (about 5s) smelled 40 odors, presented in random order.
- The odors ranged from very unpleasant (e.g., feces, fish) to very pleasant (e.g., peach, caramel).
- At the start of the experiment participants inspected the EmojiGrid without any further instructions.
- After smelling each odor participants reported their emotional response by a single click on the EmojiGrid.



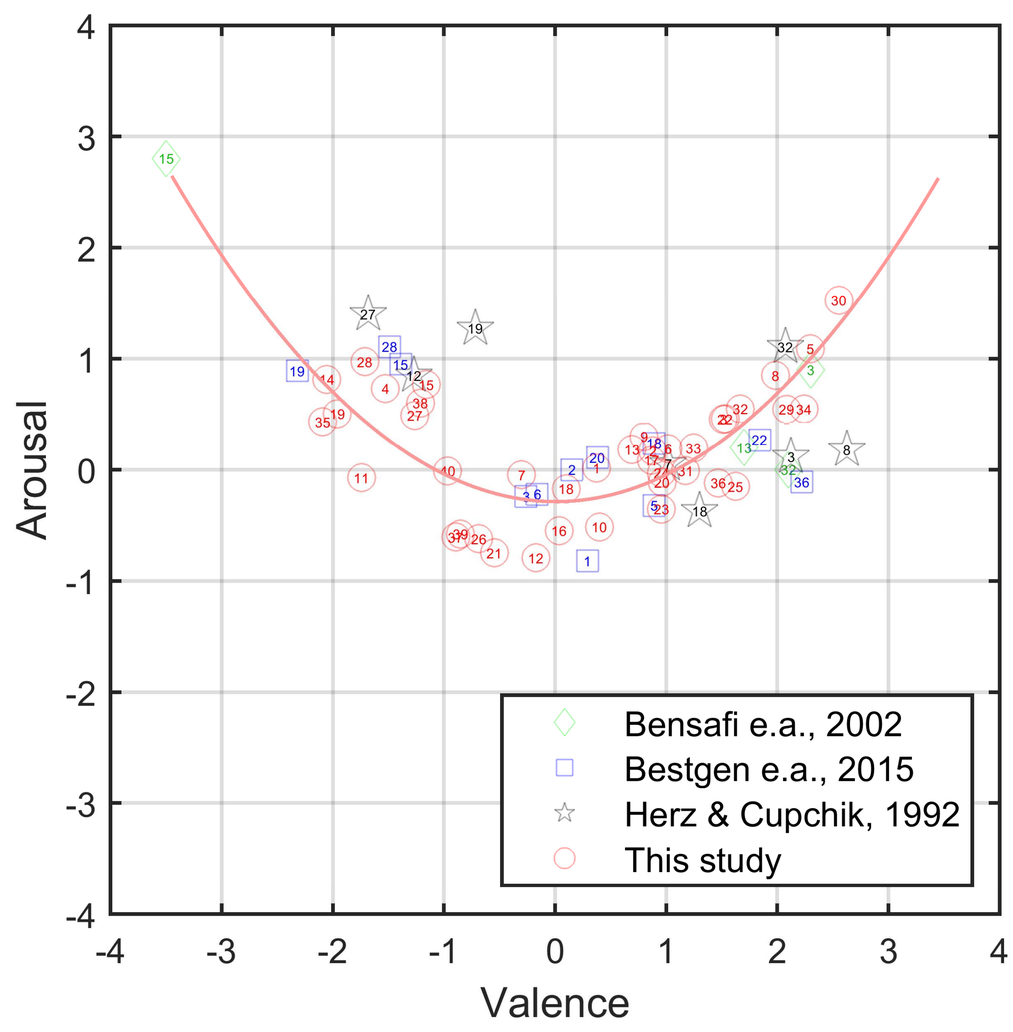
Stimuli



Stimulus presentation

Results

- The odors successfully elicited a wide range of different emotions.
- Fruit (e.g., peach, raspberry, banana) typically yields the highest positive mean valence ratings, while fish, garlic and onion give the most negative mean valence ratings.
- Mean valence and arousal ratings agree with those from previous studies.
- The relation between mean valence and arousal shows the typical U-shaped relation that is also found for affective stimuli in other sensory modalities (e.g., music, paintings, food).



Discussion

- The EmojiGrid is a valid affective self-report tool for the assessment of odor evoked emotions.
- Participants were able to use the EmojiGrid without verbal instructions.
- This makes the EmojiGrid a valuable instrument for cross-cultural research.

References

Kaneko e.a. (2018). EmojiGrid: a 2D pictorial scale for cross-cultural emotion assessment of negatively and positively valenced food. Food Res. Int. 115, p. 541-551.
Toet e.a. (2018). EmojiGrid: A 2D pictorial scale for the assessment of food elicited emotions. Frontiers in Psychol. 9, # 2396.

Other authors:
Bensafi e.a. (2002) Autonomic nervous system responses to odours: the role of pleasantness and arousal. Chem Senses 27: 703-709.
Bestgen e.a. (2015) Odor emotional quality predicts odor identification. Chem Senses 40: 517-523.
Herz & Cupchik (1992) An experimental characterization of odor-evoked memories in humans. Chem Senses 17: 519-528.

Acknowledgements

We thank Jos van den Enden (Retroscent, https://retroscent.com) for kindly providing us with additional odor samples. This work was supported by Kikkoman Europe R&D Laboratory B.V.