

# The Effects of Verbal Context on Olfactory Perception

Herz, R.S. (2003). The effects of verbal context on olfactory perception. *Journal of Experimental Psychology: General*, 132(3), 595-606.

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# Important Terms

## Olfactory System

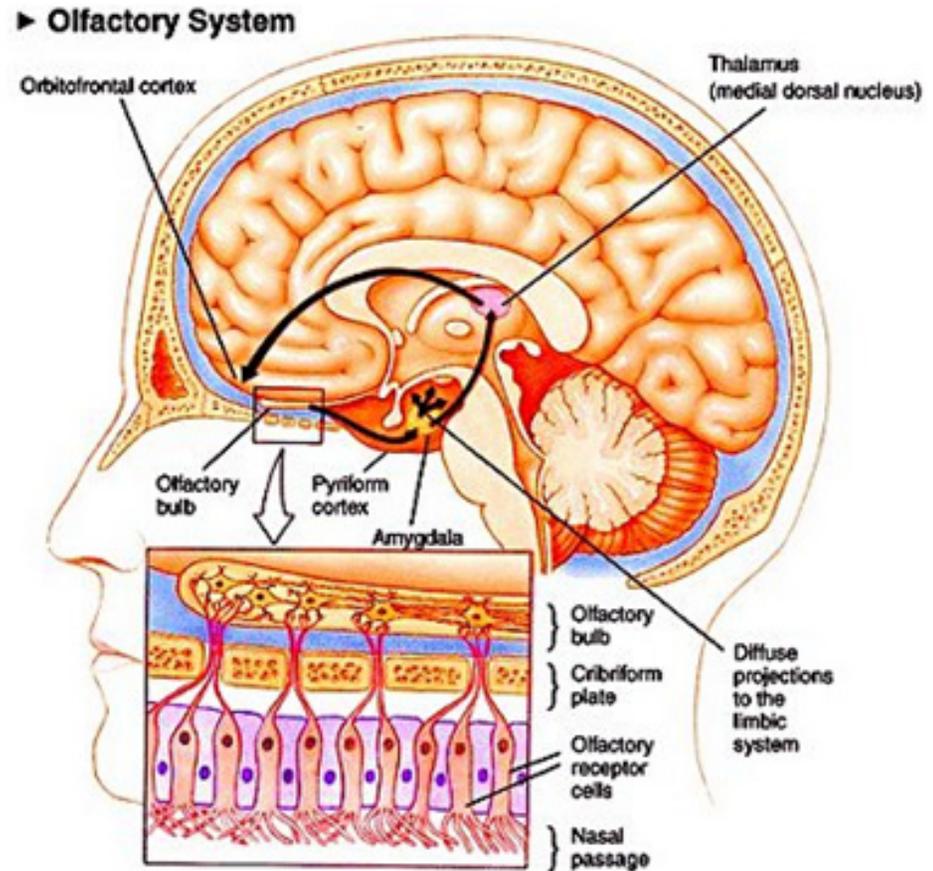
Sensory system involved in smell.

## Dual-Coding Theory

Allows both verbal and visual information to be processed separately, establishing two different forms of information representation (Paivio, 1986).

## Example

You are currently processing verbal (recital of definition) and visual (picture based) representations of the olfactory system.



# The Effects of Verbal Context on Olfactory Perception

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## □ Aim

To examine how the theory of dual-coding can explain the way verbal context interacts with sensory stimulation to determine odor perception

## □ Experiments (3)

1. Examine how the sensory properties of an odorant in conjunction with source labels influence odor judgments.
2. Examine how odor perception based in sensory experience differs from odor perception embedded in verbal connotation and classification.
3. Examine how odor-source classification biases odor evaluations.

# Stimuli

Odors

Source

Positive

Negative



Natural

Synthetic



# Odor Evaluations

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- Pleasantness
- Familiarity
- Safety

# Experiment 1

## □ Four phases

1. Self-generated source label & assessment

**Odor**



**Self-generated label**

natural/synthetic/combination



2. Discrimination test

**Odors**



**Discriminate**

natural v. synthetic



3. Label Alone

**Label**



**Evaluate**

“Natural Bad Breath”

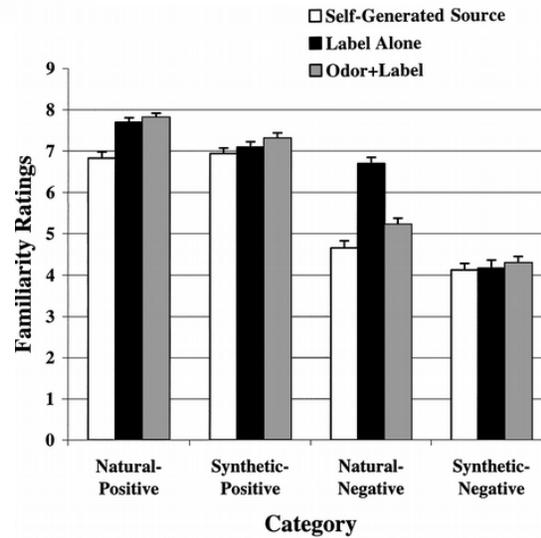
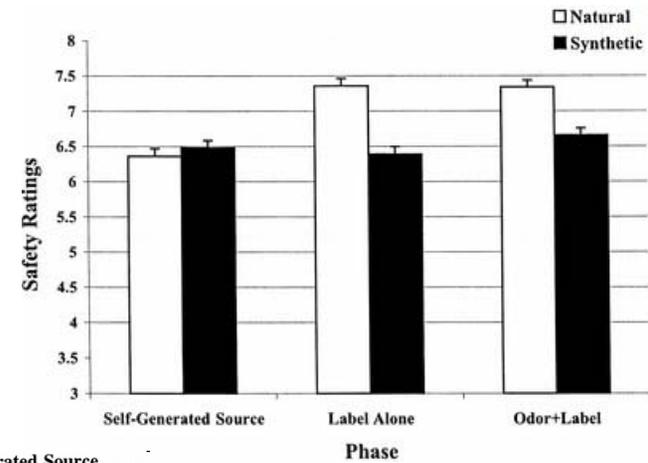
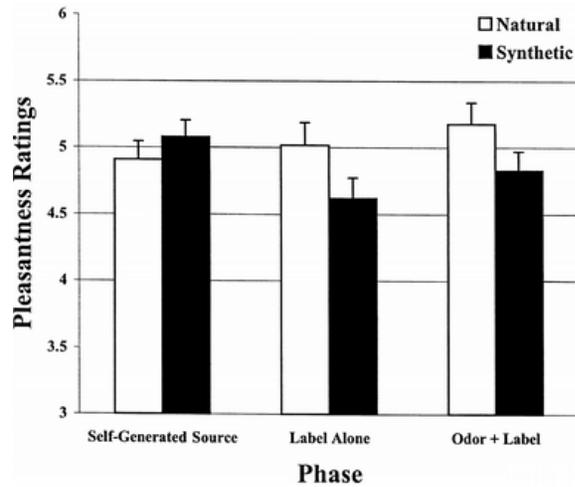
4. Odor & Label assessment

**Correct Odor**



**Evaluate**

# Experiment 1



# Experiment 1

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## □ Phase 1

- When the odor was positive, participants gave lower pleasantness ratings when they were in the self-generated-source phase than in either phase where explicit labels regarding name and source were given. In contrast, when the odor was negative, it was rated more pleasant when participants were in the self-generated-source phase than in either of the explicit label phases

## □ Phase 2

- When the odor was presented without explicit verbal labels and participants were instructed to generate their own (i.e., in the self-generated-source phase), true natural and true synthetic odors did not differ in pleasantness ratings. However, in both phases where labels were explicitly given (label alone, odor and label), odorants designated natural were rated as more pleasant than odorants designated synthetic. Across the three phases, ratings for true natural odors were not significantly different; however, true synthetic odors were rated more pleasant in the self-generated-source phase than in the label-alone phase.

# Experiment 1

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## □ Phase 3

□ When participants were in the self-generated-source phase, there were no differences in ratings between true natural and true synthetic odors. However, when the odor was identified with name and source labels (in both the odor-and-label and label-alone phases), true natural odors were rated significantly safer than true synthetic odors and significantly safer than when the same odors were smelled in the self-generated-source phase. Safety ratings given to true synthetic odors were not affected by the labeling manipulations.

## □ Phase 4

□ When the odor was natural and positive, labels increased familiarity ratings, whereas when the odor was synthetic and positive, familiarity was not affected by the labeling manipulation. However, when the odors were synthetic and negative, familiarity was low regardless of phase. Thus, label information had no effect on familiarity for negative synthetic odors.

# Experiment 2

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## □ Two phases

### 1. Blind odorant evaluation

**Odor (No Label)**



**Rate**

Pleasantness

Familiarity

Safety

### 2. Natural v. synthetic discrimination

**Odor 1**



**Odor 2**



**Rate**

Natural v. Synthetic

# Experiment 2

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- No verbal context resulted in
  1. Higher familiarity with synthetic than natural odorants
  2. Higher ratings for synthetic positive odorants over synthetic negative odorants
  
- This demonstrates that
  1. High frequency of interaction with synthetic scents in commercial products
  2. Higher ratings for positive synthetic scents on safety indicate that the more familiar scents are the more acceptable they are (i.e. safer)
  3. experience & familiarity → framework for Olfactory perception

# Experiment 3

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## □ One phase

1. Present odors with incorrect source label

<b>Label (mislabeled)</b>	<b>Odor</b>	<b>Rate</b>
Synthetic		Pleasantness
Natural		Familiarity
Natural		Safety
Synthetic		

# Experiment 3

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- Misrepresentation resulted in
  1. Higher ratings for safety on explicitly labeled natural than synthetic odors
  
- This demonstrates that
  1. Classification of a natural or synthetic source is less influential in odor perception than name connotation
  2. Source classification only becomes a significant modulator of perception when it is paired with the name of the odorant.

# Findings

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- The interactions between experiments 1,2, & 3 showed us...
  - Olfactory Perception is mediated by 2 independent yet interactive codes
    1. Verbal context
    2. Sensory experience/familiarity
  - This supports the theory that dual-coding plays a role in sensory perception

# Practical Implications

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- Effects of dual-coding on perceptual representations of certain scents on consumerism

Ulrich, R. & Bourrain, A. (2008). The influence of nostalgic memories on consumer exploratory tendencies: Echoes from scents past. *Journal of Retailing and Consumer Services*, 15(4), 277-287.

# References

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- Herz, R.S. (2003). The effects of verbal context on olfactory perception.  
*Journal of Experimental Psychology: General*, 132(3), 595-606.
- Paivio, A. (1986). *Mental representations: a dual coding approach*. Oxford, England: Oxford University Press.