Dit congres wordt mede mogelijk gemaakt door:
Wim Vaessen – Essensor/OP&P
Future challenges for Sensory & Consumer Science
Introduction

- Sensory Research: finally grown-up? (1991)

- Look back & value our achievements

- Next steps
A bit of history: Sensory Science

- Cornell Agricultural Experiment station: Oxidation taste of Milk / Reliability of panel members.

- Rosemary Pangborn

- Profile methods
  - Flavor Profile (model substances as references for the attributes)
  - Texture profile (description of (in mouth) techniques in rating the mouthfeel attributes)
  - QDA; Spectrum; fast & flash profiling,

- Psychometrics: Thurstone, Cronbach
  - Difference and similarity testing
  - Generalizability (improving quality & optimizing efficiency of descriptive work)
A bit of history: Consumer science

• Lewin
  • Organized reorientation of the US Food Supply during World War 2
    "Experience alone does not create knowledge."
    "There is nothing so practical as a good theory."
    "If you want truly to understand something, try to change it.”
  • Founded one of the MIT institutes and pioneered in organizational change and group dynamics.

• Kahneman:
  • Conscious and automated processing
  • Sparked attention for implicit measurements

• Liking and Wanting
  • Conscious evaluation after consumption \textit{versus}
  • Desire to consume
In Summary

- Experimental Psychology
- Knowledge Building (Theoretical)
- Food Quality
- Practical Testing

Sensory & Consumer Science
A bit of History: Dutch developments

- Profgroep Sensory Research founded

- Quality as a leading principle
  - Educate professionals
  - Proeven van Succes
    Textbook and a reference book in one
  - Courses: Level B and level A
  - Examinations

- Many students introduced in Sensory Research
  - And many specialized.
# Business relevance, and how to improve it: Better Decision Making

<table>
<thead>
<tr>
<th>Criterion (Market)</th>
<th>STOP</th>
<th>CONTINUE (REWORK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO SUCCESS</td>
<td>Correct rejection</td>
<td>False Alarm Money Wasted</td>
</tr>
<tr>
<td>SUCCESS</td>
<td>Missed opportunity Missed Revenues</td>
<td>Hit</td>
</tr>
</tbody>
</table>
**Sensory owns repurchase: Three domains of Tasting**

**Acceptance**
Determine success on the market

**Subject**: Consumer
**Method**: Preference / acceptance test
Representativity (N>80)
Validity

**Difference & descriptive**
Translating acceptance into action

**Subject**: Product
**Method**: Sensory sensitivity
Learned and trained language
Reliability

**Action!**
Connects to ingredients and processes

**Subject**: Product
**Method**: Technical knowledge & experience

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**Consumer acceptance**

**Sensory analysis**

**Product development**
Experts panel measurements

- Aimed at describing the perceivable effects of ingredients and processes.

- Regardless the consistency of panel members and the difference between them

- Criterion: differences in ingredients and processes that really change consumers reactions.

- *E.g.* if a sensory panel smells a chemical citrus like odor in a particular non-citric fruit and it appears that the neighbor orchard citrus fruits are grown; that would mean something for the validity of panel measurements.
Generalizability in panel research

Owner of the results: Index of Quality

Panel member
Occasion
Product

Owner of the results: Index of Quality

Panel management: Specific feedback for assessors

Assessor Discrimination
Assessor Repeatability
Assessor contribution to the interaction.

Generaliseability

Improved results
QI if data deleted

Assessor Repeatability
Assessor contribution to the interaction.
We often see that tests & techniques used in the sensory domain are also used in the consumer domain.

Hall McFie – in a previous meeting here- identified the risk of focusing on test with power in the consumer domain.

And proposed to measure (appropriate) behavior.

He propagated increasing the (face) validity of the methods.
So, in the consumer domain

- Aim at measuring **realistic consumer behavior** in stead of the behavior that is implied in tests with high power.

- Where we are doing research: we should validate the results.

- Where we use tests we should validate these tests.
• However,
  
  • Face validity simply is not enough.
  
  • We cannot keep with face validity and heuristic value.
  
• How?
Four main types of validity:

- **Face validity**
  Face validity is the degree to which a test is *subjectively thought to measure what it intends to measure*. In other words, does it “look like” it will measure what it should do. The subjective opinion for face validity can come from experts, from those administering the instrument, or from those using the instrument.

- **Construct validity**
  Construct validity is the extent to which the instrument specifically measures *what it is intended to measure*, and avoids measuring other things. For example, a measure of intelligence should only assess factors relevant to intelligence and not, for instance, whether someone is a hard worker. Construct validity subsumes the other types of validity.

- **Content validity**
  Content validity describes whether an instrument is *systematically and comprehensively representative of the behavior it is measuring*.

- **Criterion validity**
  Criterion validity involves comparing the instrument in question with another criterion which is taken to be representative of the measure. This can take the form of *concurrent validity* (where the instrument results are correlated with those of an established, or gold standard, instrument), or *predictive validity* (where the instrument results are correlated with future outcomes, whether they be measured by the same instrument or a different one).
Validity in consumer preferences: Let's first have a look at some work presented 25 years ago

  - Who is tasting? Type of respondents
  - What to taste? Type of stimuli
  - How to taste? Measurement procedure
Who is tasting?

1991 Schutz
- Expert judges
- Lab subjects
- Judgement consumers
- Random consumers

2018
- Those involved in the project
- Internal personnel
- Personnel and family
- Consumers
- Consumers from target group
What is tasted?

1991 Schutz
- Pure substances
- Food names
- Foods

2018
- Model systems
- Test products
  - Lab scale
  - Pilot plant scale
  - Full production scale
- Branded
- As marketed
How is it tasted (Which method)

1991 Schutz
• Hedonic preference
• Use intension
• Measured consumption

2018
• Behavioral
  • Preference evaluation
  • Choice (implicit measures)
  • Actual usage
  • Usage over time
• Situational
  • In lab (standardized)
  • Context added
  • Expectations added
  • In context | In situ

1991 Schutz
2018
Validation needs a criterion

- Closer to the real world
- Better predicting business results
We would be testing:

• Products as marketed
• With consumers from the target group
• In situ
• Measured over time

That is charting a map as big as the country itself
• Which axis of validation is important now? (who; what; how)

• Validate against a criterion higher ranking in real life closeness

• Best fitting criterion within practical reach?

• Sample the test conditions against that criterion

• Validated tests profit from repeated use and fine tuning.

• Awareness on these points bring more valid results.
• Keep the final criterion in mind

• Before starting, decide on which ladder it is most useful to scale up.
Is business relevance enough forward looking to develop our sensory field?
There you are, behaving perfectly.
Extend our horizon beyond business relevance to societal impact

- The obesitas epidemic is still growing
- Unhealthy and too much eating is still common
- The food-related carbon footprint is still large reduced

In real life, over time

Impact in society

What

Business relevance

Products as marketed

Consumers of target group
Thinking of Kurt Lewin’s work: These are the big questions of our time

• What can sensory contribute in the next 10 years?
  • to help solve these issues?
  • to work on the methods needed to further improve business relevance and societal impact?

We have the knowledge, the experience and the people available.

So: “Yes, sensory has grown up!”

“If you want truly to understand something, try to change it.”