Consumer perception of portion size workshop

IFST Sensory Science Group Conference

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Agenda

1. What is the right portion size to get accurate consumer perception data?
2. Factors to take into account
3. Ethics
4. Leatherhead’s research
What is the right portion size to get accurate consumer perception data?
Exercise

Company A has produced 5 variants of cereal bars. What would be the right portion size to get accurate consumer perception data? In front of you there is one sample only.

1. Work in teams and discuss the **factors** you need to take into account when serving samples to assessors.

2. Decide **how much** sample they should eat and split it in different portions.

3. Depending on the number of portions you have decided assessors should consume, **try yourself** and **rate the overall liking** in a 9-point hedonic scale.

<table>
<thead>
<tr>
<th>Portion 1</th>
<th>Dislike extremely</th>
<th>Dislike very much</th>
<th>Dislike moderately</th>
<th>Dislike slightly</th>
<th>Neither like nor dislike</th>
<th>Like slightly</th>
<th>Like moderately</th>
<th>Like very much</th>
<th>Like extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portion 2</td>
<td>Dislike extremely</td>
<td>Dislike very much</td>
<td>Dislike moderately</td>
<td>Dislike slightly</td>
<td>Neither like nor dislike</td>
<td>Like slightly</td>
<td>Like moderately</td>
<td>Like very much</td>
<td>Like extremely</td>
</tr>
</tbody>
</table>
Factors to take into account

- Number of samples
- Boredom of assessors
- Satiety - liking
- Ethics
Ethics 1/2

- Use of **humans** to evaluate products will always raise ethical and H&S issues
- Ethical issues, for example:
  - Population: children, elderly, other vulnerable groups
  - Intake calories
  - Fat, sugar, salt content
  - Alcohol
  - Active ingredients
  - Non-food (e.g. tobacco, cosmetics, etc.)
- Reduce any **risks** to the health of the participants by assessing severity and likelihood
Ethics 2/2

- **Organisational ethical policy/code of conduct**
  - Permitted tests using human volunteers
  - Testing on non-standard products or with non-standard tests
  - Clear guidance to employees on what is required

- **Organisation governance committee**
  - Review of proposed study to determine if organisations are prepared to take responsibility to sanction the study

- **External ethics committee (NHS or independent)**
Exercise

Considering the information shown, what ethical issues do you face when testing your products? Discuss in teams your ideas.
Leatherhead’s research

G. De Turenne, R. Kralemann, S. Peleteiro, A. Goupil De Bouille
Research study

Aim
To examine which serving size is most suitable for accurate consumer perception

Approach
• Trained panel: Descriptive test – most important attributes
• Consumer test: to discover the ideal serving size
Portion size

Approach with consumers (n=100)

Samples

3 snacks products

- Brownies
- Cereal bars
- Mini pork sausages

Portions

Recommended portion size

- Package
- Food Standard Agency (FSA)
## Portion size

<table>
<thead>
<tr>
<th>Product</th>
<th>Recommended serving size = 100% (g)</th>
<th>One sample = 25% (g)</th>
<th>Total amount received = 150% (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brownies</td>
<td>68</td>
<td>17</td>
<td>102</td>
</tr>
<tr>
<td>Cereal bars</td>
<td>42</td>
<td>10.5</td>
<td>63</td>
</tr>
<tr>
<td>Sausages</td>
<td>67</td>
<td>16.7</td>
<td>100.5</td>
</tr>
</tbody>
</table>

![Diagram showing portion sizes](image-url)
Portion size

Approach with consumers

Samples

- 3 snacks products
  - Brownies
  - Cereal bars
  - Mini pork sausages

Portions

- Recommended portion size
  - Package
    - Food Standard Agency (FSA)

Appetite questionnaire

- Participants filled it before each sample
  - Desire to eat
  - Hungriness
  - Fullness
  - Boredom
  - How much they thought they could eat before tasting the products
Appetite questionnaire

How strong is your desire to eat?
- Weak
- Strong

How hungry are you?
- Not
- Very

How full do you feel?
- Not
- Very

How much food do you think you could eat?
- Very little
- Very much

How bored are you?
- Not
- Very
Portion size

Approach with consumers

Samples • Brownies
• Cereal bars
• Mini pork sausages

Portions • Package
• Food Standard Agency (FSA)

Appetite questionnaire • Desire to eat
• Hungriness
• Fullness
• Boredom
• How much they thought they could eat before tasting the products

One sample • Participants instructed to eat the whole sample
• “How much did you just eat?”
  • “nothing”
  • “part of the sample”
  • “the whole sample”.

Liking • Dislike extremely (1)
• Neither like nor dislike (5)
• Like extremely (9)

Sensory attributes • Assessors selected the attributes that apply to the sample

3 snacks products

Recommended portion size

Participants filled it before each sample

25% of the recommended portion size

9-point hedonic scale

CATA

Assessors selected the attributes that apply to the sample
Please select amongst the following attributes the ones that you think apply to the sample.

<table>
<thead>
<tr>
<th>Honey</th>
<th>Toasted oats</th>
<th>Cereal</th>
<th>Crumbly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense</td>
<td>Butter</td>
<td>Sweet</td>
<td>Grainy</td>
</tr>
<tr>
<td>Roasted</td>
<td>Hard</td>
<td>Crunchy</td>
<td>Dry</td>
</tr>
<tr>
<td>Nutty</td>
<td>Salt</td>
<td>Bitter</td>
<td>Other</td>
</tr>
</tbody>
</table>
Evolution of consumers' perception during the consumption of cereal bars

% participants

Portions

- liking
- Desire to eat
- Hungry
- Full
- How much food
- Bored
CATA results - cereal bars

F1 (69.05 %)

F2 (13.39 %)

-0.6 -0.5 -0.4 -0.3 -0.2 -0.1 0 0.1 0.2

Bitter
Salt
Dense
Grainy
Nutty

Honey
Toasted oats
Roasted
Hard
Crunchy
Sweet
Butter
Cereal
Dry
Crumbly

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Conclusion

• Consumer perception is linked to the amount of food consumed
• The amount of sample eaten in the session:
  ↑ fullness
  ↓ desire to eat and liking
• Split between the first and last 3 portions
• After portion 3 measured parameters didn’t significantly change further
• 75% of the FSA recommended portion size appears to be a reliable amount to give assessors during consumer studies
Any discussion points?
Thank you

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