Measuring emotions in commercial products

May Ng
If liking is the first and only thing that came to your mind?
WHAT is emotion?

- Brief
- Intense
- Often focused on a referent

Example:
The chocolate made her happy

King & Meiselman (2010)
Multidimensional EMOTION MODEL

Larsen & Diener (1992)
Liking data is not enough

Emotional quality of products is important for:
- Differential advantage
- Purchase decision
HOW to measure emotion?

Examples:
- EsSense Profile
- Consumer defined Check-All-That-Apply (CATA)
EsSense Profile (King & Meiselman., 2010)

- Overall acceptability (9 point scale)
- Emotion terms (5 point scale)
  - 39 terms; most positive
  - Selected from published psychological emotion list

Reference:
COMPARISON

EsSense Profile v.s. Consumer defined CATA

EMOTION data

GO BEYOND LIKING???
METHODS & MATERIALS

Samples

11 UK Commercial Blackcurrant Squashes Labeled as P1-11

<table>
<thead>
<tr>
<th>Added Sugar</th>
<th>Niche Added Sugar</th>
<th>No Added Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Subjects

Group 1
n=100

Group 2
n=100

Methodologies

EsSense Profile

Consumer defined CATA
Methodologies

EsSense Profile
Predetermined psychological list
5 point scale (Quantitative data) Check-All-That-Apply

Consumer defined CATA
Consumer self generated & defined list
9 - point scale to measure liking (Qualitative data)

METHODS & MATERIALS

METHODS & MATERIALS
<table>
<thead>
<tr>
<th><strong>EsSense Profile (39)</strong></th>
<th><strong>C-defined CATA (36)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>25</strong> POSITIVE (+ve)</td>
<td><strong>11</strong> UNCLEAR (+/-ve)</td>
</tr>
<tr>
<td>Adventurous</td>
<td>Aggressive</td>
</tr>
<tr>
<td>Active</td>
<td>Daring</td>
</tr>
<tr>
<td>Affectionate</td>
<td>Eager</td>
</tr>
<tr>
<td>Calm</td>
<td>Guilty</td>
</tr>
<tr>
<td>Energetic</td>
<td>Mild</td>
</tr>
<tr>
<td>Enthusiastic</td>
<td>Polite</td>
</tr>
<tr>
<td>Free</td>
<td>Steady</td>
</tr>
<tr>
<td>Friendly</td>
<td>Tame</td>
</tr>
<tr>
<td>Glad</td>
<td>Understanding</td>
</tr>
<tr>
<td>Good</td>
<td>Wild</td>
</tr>
<tr>
<td>Good-natured</td>
<td></td>
</tr>
<tr>
<td>Happy</td>
<td></td>
</tr>
<tr>
<td>Interested</td>
<td></td>
</tr>
<tr>
<td>Joyful</td>
<td></td>
</tr>
<tr>
<td>Loving</td>
<td></td>
</tr>
<tr>
<td>Merry</td>
<td></td>
</tr>
<tr>
<td>Nostalgic</td>
<td></td>
</tr>
<tr>
<td>Peaceful</td>
<td></td>
</tr>
<tr>
<td>Pleasant</td>
<td></td>
</tr>
<tr>
<td>Pleased</td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td></td>
</tr>
<tr>
<td>Secure</td>
<td></td>
</tr>
<tr>
<td>Tender</td>
<td></td>
</tr>
<tr>
<td>Warm</td>
<td></td>
</tr>
<tr>
<td>Whole</td>
<td></td>
</tr>
</tbody>
</table>

| **3** NEGATIVE (-ve)    |                          |
| Bored                  |                        |
| Disgusted              |                        |
| Worried                |                        |

| **16** POSITIVE (+ve)   | **19** NEGATIVE (-ve)   |
| Approval               | Angry                  |
| At ease                | Annoyed                |
| Attentive              | Bored                  |
| Comforted              | Cautious               |
| Curious                | Confused               |
| Desire                 | Disappointment         |
| Good                   | Discontented           |
| Happy                  | Disgusted              |
| Interested             | Displeasure            |
| Pleasant               | Not refreshed           |
| Pleased                | Regret                 |
| Refreshed              | Resentment             |
| Reminiscence           | Sceptical              |
| Satisfaction           | Shocked                |
| Trust                  | Sickly                 |
| Warm                   | Uncomfortable          |
|                        | Unhappy                |
|                        | Unpleasant             |
|                        | Worried                |

| **19** POSITIVE (+ve)   | **1** UNCLEAR (+/-ve)  |
| Approval               | Guilty pleasure        |
| At ease                |                        |
| Attentive              |                        |
| Comforted              |                        |
| Curious                |                        |
| Desire                 |                        |
| Good                   |                        |
| Happy                  |                        |
| Interested             |                        |
| Pleasant               |                        |
| Pleased                |                        |
| Refreshed              |                        |
| Reminiscence           |                        |
| Satisfaction           |                        |
| Trust                  |                        |
| Warm                   |                        |
**EsSense Profile (39)**

- **25 POSITIVE (+ve)**
  - Adventurous
  - Active
  - Affectionate
  - Calm
  - Energetic
  - Enthusiastic
  - Free
  - Friendly
  - Glad
  - Good
  - Good-natured
  - Happy
  - Interested
  - Joyful
  - Loving
  - Merry
  - Nostalgic
  - Peaceful
  - Pleasant

- **3 NEGATIVE (-ve)**
  - Bored
  - Disgust
  - Guilty

- **11 UNCLEAR (-/+ve)**
  - Aggressive
  - Daring
  - Eager
  - Guilty
  - Mild
  - Polite
  - Steady
  - Tame
  - Understanding
  - Wild
  - Approved
  - At ease
  - Attentive
  - Comforted
  - Curious
  - Desire
  - Good
  - Happy
  - Interested
  - Pleased
  - Pleased
  - Satisfied
  - Whole
  - Approval
  - At ease
  - Attentive
  - Comforted
  - Curious
  - Desire
  - Good
  - Happy
  - Interested
  - Pleased
  - Pleased
  - Satisfied
  - Whole

**C-defined CATA (36)**

- **16 POSITIVE (+ve)**
  - Angry
  - Annoyed
  - Bored
  - Cautious
  - Confused
  - Disappointment
  - Discontented
  - Disgust
  - Displeasure
  - Not refreshed
  - Regret
  - Resentment
  - Sceptical
  - Shocked
  - Sickly
  - Uncomfortable
  - Unhappy
  - Unpleasant
  - Guilty
  - Pleased
  - Satisfied
  - Secure
  - Tender
  - Tame
  - Tame
  - Trust
  - Warm
  - Whole

- **19 NEGATIVE (-ve)**
  - Good
  - Happy
  - Interested
  - Pleasant
  - Pleased
  - Secure
  - Tender
  - Tame
  - Tame
  - Trust
  - Warm

- **1 UNCLEAR (+/-ve)**
  - Guilty
  - Pleased
  - Satisfied
  - Secure
  - Tender
  - Tame
  - Tame
  - Trust
  - Warm

**Guilty pleasure**
**EsSense Profile**

Quantitative data

- ANOVA
- Tukeys Multiple Comparison test

Principal Component Analysis (PCA)

*Emotion mean data* to determine product positioning

*Consumer liking as supplementary variable.*

**C-defined CATA**

Qualitative data

- ANOVA
- Tukeys Multiple Comparison test

Multiple Correspondence Analysis (MCA)

*Individual responses to CATA question*

*Products as supplementary variable* to determine product positioning

---

The University of Nottingham
## Results:

**EsSense Profile**

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Very</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>1</td>
<td>2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Adventurous</td>
<td>1</td>
<td>2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Affectionate</td>
<td>1</td>
<td>2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Attentive</td>
<td>1</td>
<td>2</td>
<td></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
### RESULTS: EsSense Profile

**Liking data**

<table>
<thead>
<tr>
<th>Product</th>
<th>Liking scores</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4.1</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>4.3</td>
<td>AB</td>
</tr>
<tr>
<td>10</td>
<td>5.0</td>
<td>BC</td>
</tr>
<tr>
<td>8</td>
<td>5.3</td>
<td>CD</td>
</tr>
<tr>
<td>6</td>
<td>5.5</td>
<td>CDE</td>
</tr>
<tr>
<td>5</td>
<td>6.0</td>
<td>DEF</td>
</tr>
<tr>
<td>2</td>
<td>6.0</td>
<td>DEF</td>
</tr>
<tr>
<td>1</td>
<td>6.3</td>
<td>EFG</td>
</tr>
<tr>
<td>9</td>
<td>6.5</td>
<td>FG</td>
</tr>
<tr>
<td>7</td>
<td>6.7</td>
<td>FG</td>
</tr>
<tr>
<td>11</td>
<td>6.8</td>
<td>G</td>
</tr>
</tbody>
</table>

**11 UK commercial blackcurrant juice squashes** (Labelled as P1 – P11)
- Added Sugar
- Niche Added Sugar

**Do products with similar liking scores induce different emotional responses??**
RESULTS: EsSense Profile

29/35 emotion terms were found significant in blind assessment.

Variables (axes F1 and F2: 89.28%)

Correlation circle:

22 +ve & 3+/- ve

3 -ve

Bored

Disgusted

Worried

Tame

Energetic

Good-natured

Interested

Calm

Joyful

Pleasant

Merry

Secure

Polite

Satisfied

Whole

Liking

Affectionate

Adventurous

Daring
RESULTS: EsSense Profile

PCA:

Biplot (axes F1 and F2: 89.28 %)

NEGATIVE Low liking

POSITIVE High liking

Liking

ESSENTIAL PROFILE

Biplot coordinates:

Liking

PC1

PC2

1 2 3 4 5 6 7 8 9 10 11

Low liking

High liking

The University of Nottingham
Q: Do products with similar liking scores induce different emotional responses?
A: Yes. There is a significant difference for some emotions. The difference in mean data is \( \leq 0.5 \) point over a 5 point scale.

### RESULTS:

#### EsSense Profile

<table>
<thead>
<tr>
<th>Added Sugar</th>
<th>Niche Added Sugar</th>
<th>No Added Sugar</th>
</tr>
</thead>
</table>

**Low liking scores:**

- 3
- 4
- 10

**High liking scores:**

- 1
- 2
- 5
- 7
- 9
- 11

- More 'Tame'
- Less 'Adventurous' & Less 'Daring'
Results:
C-Defined CATA
RESULTS: C-Defined CATA

Liking data

11 UK commercial blackcurrant juice squashes (Labelled as P1 – P11)
- Added Sugar
- Niche Added Sugar

Do products with similar liking scores induce different emotional responses??

<table>
<thead>
<tr>
<th>Product</th>
<th>Liking scores</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4.06</td>
<td>A</td>
</tr>
<tr>
<td>10</td>
<td>4.26</td>
<td>A</td>
</tr>
<tr>
<td>4</td>
<td>4.62</td>
<td>AB</td>
</tr>
<tr>
<td>8</td>
<td>4.81</td>
<td>AB</td>
</tr>
<tr>
<td>6</td>
<td>4.83</td>
<td>AB</td>
</tr>
<tr>
<td>2</td>
<td>5.45</td>
<td>BC</td>
</tr>
<tr>
<td>5</td>
<td>6.0</td>
<td>CD</td>
</tr>
<tr>
<td>9</td>
<td>6.36</td>
<td>D</td>
</tr>
<tr>
<td>11</td>
<td>6.57</td>
<td>D</td>
</tr>
<tr>
<td>1</td>
<td>6.61</td>
<td>D</td>
</tr>
<tr>
<td>7</td>
<td>6.62</td>
<td>D</td>
</tr>
</tbody>
</table>
MCA: F1 and F2: 93.99 %

Added Sugar
Niche Added Sugar
No Added Sugar

PLEASANT
High liking

Activated
Pleasant

Activated
Unpleasant

Unactivated
Pleasant

Unactivated
Unpleasant

(89.81 %)

LOW

HIGH

- Activated Pleasant
- Activated Unpleasant

- F2 (4.18 %)

- PLEASANT
High liking

- UNPLEASANT
Low liking

- C-Defined CATA

RESULTS:

- Results:
C-Defined CATA

- Low liking
- High liking

- P-8
- P-7
- P-6
- P-5
- P-4
- P-3
- P-2
- P-1
- P-10

- Activated
- Unactivated

- Friendly
- Unfriendly

- Desired
- Trust

- Warm
- Comforted

- Attentive

- Guilty
- Responsible

- Approval
- Satisfaction

- Pleased
- Reminiscence

- Good
- Interested

- At ease
- Happy

- Sure

- Cautious
- Sickly

- Uncomfortable
- Discontent

- Displeasure
- Disappointment

- Confused
- Sceptical

- Not refreshed

- Bored

- Angry
- Resentment
- Shocked
- Worried
- Annoyed
- Disgust
- Unhappy
- Regret

- Unpleasant surprise

- Unpleasant

- The University of Nottingham
Multidimensional EMOTION MODEL

Larsen & Diener (1992)
**RESULTS:**

C-Defined CATA

**MCA:**

F1 and F2: 93.99 %

- **Higher activated pleasant emotion**
- **Desire**
- **Interested**

- **Higher activated unpleasant emotion**
- **Angry**
- **Discontent**

**Added Sugar**

**Niche Added Sugar**

**No Added Sugar**

- P-1
- P-2
- P-3
- P-4
- P-5
- P-6
- P-7
- P-8
- P-9
- P-10
- P-11

**Emotions**:

- Trust
- Comforted
- Guilty pleasure
- Pleased Reminiscence
- Good
- At ease
- Happy
- Approval
- Satisfaction
- War
- Sickly
- Uncomfortable
- Caution
- Confused
- Disappointed
- Sceptical
- Not refreshed
- Bored
Q: Do products with similar liking scores induce different emotional responses?

A: Yes. Key examples:

Low liking scores:
- 3
- 4
- 10

More 'Refreshed'
4

More 'Attentive'
3

High liking scores:
- 1
- 5
- 7

Frequency count for 'Refreshed'
- 33 consumers
  - 4
- 18 consumers
  - 3

Furthermore, consumers with same liking have different emotional responses.

RESULTS: C-Defined CATA
More consumers have selected pleasant/positive emotions

Same liking scores of 7 but different emotions

MCA: Product 7 (Highest Liking)
Key Findings
Liking data is not enough

Similar product/emotion plot

Emotions can be explained using degree of pleasantness and activation as illustrated by Larsen and Diener (1992)
EsSense Profile

- Easy and straightforward to use
- Limited number of negative emotion terms

C-Defined CATA

- Reported more negative emotions
- Better discrimination
- Time consuming and limited statistical analysis
Emotion data were also collected under different conditions:

- Condition 1: Product
- Condition 2: Packaging
- Condition 3: Informed tasting

Can sensory properties evoke emotions?? YES!!
Take home message

Exploiting emotional responses is crucial to connect people to brand via sensory experience.
REMINDER: POSTER

Measuring emotional response to food products

Eaton C¹, Bealin-Kelly F² & Hort J¹
¹Sensory Science Centre, University of Nottingham, UK.
²SABMiller, Woking, UK.

Poster Board 1, Training room 1.
Supervisors:
Dr Joanne Hort (UoN)
Dr Carolina Chaya (UPM)

Acknowledge:
Dr Ben Lawlor (GSK)
Dr Tracey Hollowood (Sensory Dimensions)
Prof Hal MacFie (Consultant)
& all the volunteers who have taken part in my study!

Sponsor:
SPECIAL THANKS TO:
The PFSG 2011 Student Travel Award
Thank you for your attention
Any Questions?

Contacts
May Ng : stxmln@nottingham.ac.uk
Dr. Joanne Hort : joanne.hort@nottingham.ac.uk
• **Reference:**

• **Reference:**
● Popular technique to explore the relationships among multiple categorical variable

● Data input: Individual CATA questions and 11 products

<table>
<thead>
<tr>
<th>2</th>
<th>C</th>
<th>P</th>
<th>Happy</th>
<th>Unhappy</th>
<th>Uncomfortable</th>
<th>At ease</th>
<th>Pleasant</th>
<th>Unpleasant</th>
<th>Not refreshed</th>
<th>Refreshed</th>
<th>Disappointed</th>
<th>Satisfied</th>
<th>Dislike</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>11</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>14</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
## Principal Component Analysis

<table>
<thead>
<tr>
<th>Product</th>
<th>Liking</th>
<th>Active</th>
<th>Adventurous</th>
<th>Affectional</th>
<th>Bored</th>
<th>Calm</th>
<th>Daring</th>
<th>Disgusted</th>
<th>Eager</th>
<th>Energetic</th>
<th>Enthusiastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-B</td>
<td>6.29</td>
<td>2.56</td>
<td>2.26</td>
<td>2.43</td>
<td>1.55</td>
<td>2.33</td>
<td>1.91</td>
<td>1.47</td>
<td>2.27</td>
<td>2.6</td>
<td>2.73</td>
</tr>
<tr>
<td>P2-B</td>
<td>6.04</td>
<td>2.33</td>
<td>2.07</td>
<td>2.06</td>
<td>1.63</td>
<td>2.4</td>
<td>1.68</td>
<td>1.46</td>
<td>2.24</td>
<td>2.43</td>
<td>2.4</td>
</tr>
<tr>
<td>P3-B</td>
<td>4.25</td>
<td>1.93</td>
<td>1.86</td>
<td>1.71</td>
<td>1.81</td>
<td>1.98</td>
<td>1.67</td>
<td>2.16</td>
<td>1.82</td>
<td>1.89</td>
<td>1.89</td>
</tr>
<tr>
<td>P4-B</td>
<td>4.07</td>
<td>1.84</td>
<td>1.82</td>
<td>1.7</td>
<td>2.03</td>
<td>2.14</td>
<td>1.74</td>
<td>2.33</td>
<td>1.84</td>
<td>1.83</td>
<td>1.88</td>
</tr>
<tr>
<td>P5-B</td>
<td>5.93</td>
<td>2.4</td>
<td>2.15</td>
<td>1.99</td>
<td>1.7</td>
<td>2.21</td>
<td>1.74</td>
<td>1.43</td>
<td>2.11</td>
<td>2.32</td>
<td>2.27</td>
</tr>
<tr>
<td>P6-B</td>
<td>5.48</td>
<td>2.16</td>
<td>2.01</td>
<td>1.88</td>
<td>1.76</td>
<td>2.31</td>
<td>1.75</td>
<td>1.74</td>
<td>1.96</td>
<td>2.31</td>
<td>2.43</td>
</tr>
<tr>
<td>P7-B</td>
<td>6.72</td>
<td>2.61</td>
<td>2.17</td>
<td>2.22</td>
<td>1.47</td>
<td>2.36</td>
<td>1.9</td>
<td>1.34</td>
<td>2.34</td>
<td>2.63</td>
<td>2.55</td>
</tr>
<tr>
<td>P8-B</td>
<td>5.31</td>
<td>2.35</td>
<td>2.15</td>
<td>2.05</td>
<td>1.5</td>
<td>2.06</td>
<td>1.98</td>
<td>1.79</td>
<td>2</td>
<td>2.33</td>
<td>2.31</td>
</tr>
<tr>
<td>P9-B</td>
<td>6.47</td>
<td>2.65</td>
<td>2.46</td>
<td>2.32</td>
<td>1.5</td>
<td>2.21</td>
<td>1.99</td>
<td>1.42</td>
<td>2.31</td>
<td>2.61</td>
<td>2.57</td>
</tr>
<tr>
<td>P10-B</td>
<td>4.96</td>
<td>2.2</td>
<td>1.93</td>
<td>1.88</td>
<td>1.77</td>
<td>2.24</td>
<td>1.78</td>
<td>1.82</td>
<td>1.96</td>
<td>2.1</td>
<td>2.07</td>
</tr>
<tr>
<td>P11-B</td>
<td>6.83</td>
<td>2.55</td>
<td>2.41</td>
<td>2.29</td>
<td>1.42</td>
<td>2.4</td>
<td>2.02</td>
<td>1.25</td>
<td>2.39</td>
<td>2.69</td>
<td>2.83</td>
</tr>
</tbody>
</table>
C-defined CATA
Process of terms generation & selection

● Stage 1: Terms elicitation
  - 1:1 Rep Grid Interview (n=29)
  - Subjects presented with triads of products

● Stage 2: Defining constructs
  - Every subject has his/her own list of constructs
  - Product assessment using individual constructs

● Selection of terms based on word frequency table

Please indicate how two products differ in the same way from the third