Feedback Calibration
A training method for descriptive panels.

C.J. Findlay*¹, J. Castura¹, I. Lesschaeve²

¹Compusense Inc., Canada; ²Inno Vinum, Canada.
Descriptive Analysis

• Accuracy & precision
• Panel & panelist performance
• Replication of panel results
• Statistical treatments
• Post-hoc evaluation

• Can we get it right from the beginning?
• What is the best possible panel?
A Sensory Order of Operations

• What is an “order of operations”?
  – BEDMAS (Brackets, Exponents, Divide, Multiply, Add & Subtract)

• The Sensory Order
  – Identify the attribute
  – Rank its intensity
  – Scale the intensity
### Attribute Difficulty

<table>
<thead>
<tr>
<th>ATTRIBUTE</th>
<th>Full</th>
<th>Rankable</th>
<th>Off/On</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group of Attributes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal or Evocative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Objective

• To investigate the use of immediate feedback with calibration standards as a method to improve the training process and to provide anchors which permit comparison between panels.
Targets and Ranges

The current approach
Numerical Feedback

Panelist Result Summary

Panelist: n/a

<table>
<thead>
<tr>
<th>Attribute</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweetness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>6.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Mean</td>
<td>5.20</td>
<td>5.80</td>
</tr>
<tr>
<td>Standard Deviation (+/-)</td>
<td>(1.92)</td>
<td>(1.79)</td>
</tr>
<tr>
<td>Target &amp; Range</td>
<td>7 (6-9)</td>
<td>8 (7-9)</td>
</tr>
<tr>
<td>Saltiness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>3.70X</td>
<td>5.80</td>
</tr>
<tr>
<td>Mean</td>
<td>4.00</td>
<td>5.10</td>
</tr>
<tr>
<td>Standard Deviation (+/-)</td>
<td>(2.11)</td>
<td>(1.16)</td>
</tr>
<tr>
<td>Target &amp; Range</td>
<td>5 (4-7)</td>
<td>4 (3-6)</td>
</tr>
</tbody>
</table>
The Red Wine Study

Using the Feedback Calibration Method
Determination Panel

• An experienced determination panel performed descriptive profiling of 20 red wines. Their results were used to establish the attributes and targets for the second phase of the research.
Research Panels

- Sixteen inexperienced panelists were recruited and given 20 hours of common training over 10 days. They were then divided into two panels, control and experimental, composed of 5 women and 3 men each.
The Study

- The control panel was trained using conventional debriefing at the end of each session.
- The experimental panel only received immediate computerized feedback in the booths during evaluation.
- Both panels saw the same 10 wines and used the same scales and attributes.
- The research continued daily over a three-week period.
Panelist Screen

Attribute 1
Sample 236
NONE | INTENSE

Attribute 2
Sample 236
NONE | INTENSE

Attribute 3
Sample 236
NONE | INTENSE

Attribute 4
Sample 236
NONE | INTENSE

Finished

Question 1 of 1
Sample 2 of 2
Immediate Feedback

Attribute 1
Sample 236
NONE

Attribute 2
Sample 236
NONE

Attribute 3
Sample 236
NONE

Attribute 4
Sample 236
NONE

Finished

FEEDBACK
Immediate Feedback

Attribute 1
Sample 236
NONE
INTENSE

Attribute 2
Sample 236
NONE
INTENSE

Attribute 3
Sample 236
NONE
INTENSE

Attribute 4
Sample 236
NONE
INTENSE

Next Sample
FEEDBACK
Results

- Extensive statistical analysis indicated that both the experimental and control panels were able to reproduce the results obtained by the determination panel.
- Panelist and panel accuracy and precision were obtained by measuring the difference from the target values.
- Both panels demonstrated similar learning curves.
GPA of Panel replicates
Feedback Frequency

- Feedback Frequency and MV Distance from Target

Number of times feedback provided:

- Experimental panel
- Control panel
- Number of Times feedback provided

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Panel Performance

Pearson's r

Experimental panel
Control panel

Pearson's r values range from 0.6 to 1.0.
Conclusions

- Feedback Calibration provides an effective and unbiased training for descriptive panelists, regardless of the style, skill or experience level of the trainer.
- Training times can be cut significantly.
Acknowledgements

NRC– IRAP
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Karen Phipps
Amanda Bartel
Compusense Panelists
Future Work

• Further research will be conducted to determine if the combination of both techniques will result in faster or more accurate descriptive panel training.

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Suspending continual feedback and its effect on panel performance
C. J. Findlay¹, J. Castura¹, I. Lesschaeve²
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