Perceived and revealed attitudes towards “complexity” and “flavour development in the glass”: a case of inconsistency?

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Motivation

• The concept of a wine’s “flavour development in a glass” (FDG) is becoming increasingly present among the traits perceived by the wine consumers. This has been already documented for Chinese consumers (Yip, Song & Charters, 2017), when we studied French and Chinese consumers’ perception of the meaning of wine.

• Subsequently, we hypothesized that, while French consumers rely for their enjoyment on wine’s “complexity” (Solomon, 1997), Chinese consumers rely for their enjoyment on how the wine evolves, i.e. how they enjoy the wine’s FDG.

• However, from a series of informal discussions with experts, concerns have been raised that the term may not be different from a wine’s complexity.

Research Questions

• What is the perceived attitude on ‘FDG’ and complexity by the French and Chinese?

• Is there consistency on their attitude revealed towards ‘FDG’ and complexity in a tasting experiment?

Methodology

• A tasting experiment with 6 Bordeaux varietal red wines
  • In France (N=280) – Burgundy, Bordeaux and Paris
  • In China (N=303) – Shanghai, Shenzhen and Chengdu

• Pre-tasting survey
  • Consumers are asked to respond whether ‘FDG’ and complexity are the same?
  • Binary scale (0 or 1)

• Tasting survey
  • Evaluation of the wine quality by ‘FDG’ and complexity, with 11 other attributes unreported here.
  • Likert scale (1-7), 1 = least desirable, 7 = most desirable
Pre-tasting survey

15. Do you think "flavour development in the glass" and "complexity" are the same?
☐ Yes
☐ No

Tasting survey

Stage 2 of tasting - The origin information is provided
8.1 Please tell us your evaluation of the wine (7 is most desirable, 1 is least desirable)

<table>
<thead>
<tr>
<th>Country of origin: CHINA</th>
<th>Country of origin: FRANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region of origin: Ningxia</td>
<td>Region of origin: Bordeaux</td>
</tr>
</tbody>
</table>

| Wine 3 | | | | | | | Wine 4 | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| colour       | F   | S   | 4   | 5   | 6   | 7   | colour       | F   | S   | 4   | 5   | 6   | 7   |
| aroma        |      |      |      |      |      |      | aroma        |      |      |      |      |      |      |
| acidity      |      |      |      |      |      |      | acidity      |      |      |      |      |      |      |
| menthol      |      |      |      |      |      |      | menthol      |      |      |      |      |      |      |
| alcohol      |      |      |      |      |      |      | alcohol      |      |      |      |      |      |      |
| tannins      |      |      |      |      |      |      | tannins      |      |      |      |      |      |      |
| wood tinge   |      |      |      |      |      |      | wood tinge   |      |      |      |      |      |      |
| balance      |      |      |      |      |      |      | balance      |      |      |      |      |      |      |
| length       |      |      |      |      |      |      | length       |      |      |      |      |      |      |
| smoothness   |      |      |      |      |      |      | smoothness   |      |      |      |      |      |      |
| mouthfeel    |      |      |      |      |      |      | mouthfeel    |      |      |      |      |      |      |
| complexity   |      |      |      |      |      |      | complexity   |      |      |      |      |      |      |
| (perceived)  |      |      |      |      |      |      | (perceived)  |      |      |      |      |      |      |
| flavour      |      |      |      |      |      |      | flavour      |      |      |      |      |      |      |
| development  |      |      |      |      |      |      | development  |      |      |      |      |      |      |
| in the glass |      |      |      |      |      |      | in the glass |      |      |      |      |      |      |
### Descriptive statistics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>N/A</th>
<th>Chinese</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>101</td>
<td>201</td>
<td>2</td>
<td>33.3%</td>
<td>50.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>18-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-60</th>
<th>over 60</th>
<th>N/A</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>115</td>
<td>108</td>
<td>47</td>
<td>21</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>179</td>
<td>155</td>
<td>15.5</td>
<td>32</td>
<td>11.4</td>
<td>6.9</td>
<td>0.3</td>
<td>280</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education level</th>
<th>Chinese</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>no university degree</td>
<td>71</td>
<td>40</td>
</tr>
<tr>
<td>studying, or with university degree</td>
<td>193</td>
<td>132</td>
</tr>
<tr>
<td>master, PhD or higher</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>N/A</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

### Findings – Perceived attitude

**Findings – Perceived attitude**

- **FDG and C are different**: 79%
- **FDG and C are the same**: 21%

### Findings - Revealed attitude

**Findings - Revealed attitude**

- **Mean Differences**: -0.18, -0.17, 0.11, 0.00
- **Mann-Whitney test**: p<0.234, p=0.009

### Findings – Stated and revealed attitude

<table>
<thead>
<tr>
<th>Traits result</th>
<th>Different trait</th>
<th>Same trait</th>
<th>Different trait</th>
<th>Same trait</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>234 (90%)</td>
<td>33 (12%)</td>
<td>238 (79%)</td>
<td>64 (21%)</td>
</tr>
<tr>
<td>French</td>
<td>3.58</td>
<td>3.76</td>
<td>4.04</td>
<td>4.23</td>
</tr>
<tr>
<td>r result</td>
<td>0.7937</td>
<td>0.7024</td>
<td>0.5711</td>
<td>0.009</td>
</tr>
</tbody>
</table>

**Wilcoxon test**
- **Z** = -5.654, **p** = 0.000
- **Z** = -1.906, **p** = 0.057
- **Z** = -0.138, **p** = 0.890

**Mann-Whitney test**
- **p** = 0.234
- **p** = 0.009
A matter of consistency between the French and Chinese

**French**

- the French sample exhibited similar valuation differences of complexity and FDG, irrespective of their stated attitude of similarity or difference between these two traits. Most importantly, the correlation of valuations between complexity and FDG has been above 0.7 for most of the samples. This implies that the two traits are strongly correlated, especially and paradoxically within the subsamples of subjects who have declared to perceive them as different.

**Chinese**

- weak evidence of consistency between stated and revealed attitude within the Chinese sample, although overwhelming support received by the stated attitude obtained in the first place by our survey.

Conclusions

- FDG and Complexity are DIFFERENT and are perceived so by the majority (80%) of consumers
- FDG and Complexity Scores are highly correlated (up to r=0.8)
- Therefore, FDG and Complexity cannot be considered independent traits of wine in consumers’ perceptions