Influence of chocolate texture on Belgian consumers' emotions and affective ratings

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Objectives

Research on emotions associated with food products is gaining popularity in food sensory and consumer research since emotions can influence consumers' consumption behavior and offer competitive advantages for food companies.

But there is currently little known about the influence of texture on consumers' emotions.

AIMS:

- ✓ Determine the influence of texture on Belgian consumers' emotions
- ✓ Link sensory attributes (incl. texture) to the hedonic ratings

Materials & methods

PRODUCTS:

Chocolate:

- Texture important for sensory quality
- Is associated with variety of emotions
- 3 commercial milk chocolates:
  - premium brand
  - private label brand
  - traditional brand

SENSORY PANEL ANALYSIS:

- Trained panel
- Quantitative Descriptive Analysis (QDA):
  - Appearance (2)
  - Aroma (4)
  - Texture (7)
  - Taste (2)
- 15 cm line scale

CONSUMER TEST (n = 126):

Questionnaire:

- Hedonic liking
  - Overall liking
  - 9-point hedonic scale
- Emotions
  - EsSense Profile ® (King and Meiselman 2010)
  - Check-all-that-apply (CATA) (Ng, Chaya and Chort 2013)
- Sensory analysis
  - Texture
    - 5-point just-about-right scale (JAR)
    - Much too soft (1) ⇔ Much too hard (5)
- Socio-demographic
  - Age group
  - Gender

STATISTICAL ANALYSES:

- ANOVA: differences of sensory attributes between chocolates
- Partial Least Square Regression (PLSR): QDA and overall liking
- Correspondence analysis (CA): emotions with overall liking as supplementary variable

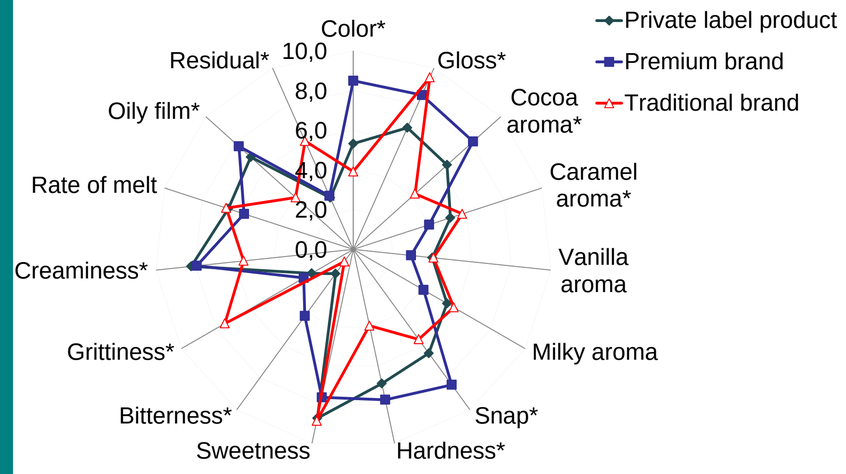
RESPONDENTS:

- 126 consumers
- 55,6% females
- 92,1% aged 18-25 years

King, S. C., & Meiselman, H. L. (2010). Development of a method to measure consumer emotions associated with foods. Food Quality and Preference, 21, 168-177.
Ng, M., Chaya, C. & Horta, J. (2013) Beyond liking: Comparing the measurement of emotional response using EsSense Profile and consumer defined check-all-that-apply methodologies. Food Quality and Preference, 28, 193-205,

Results

QDA



*ANOVA with p≤0,05

Overall liking

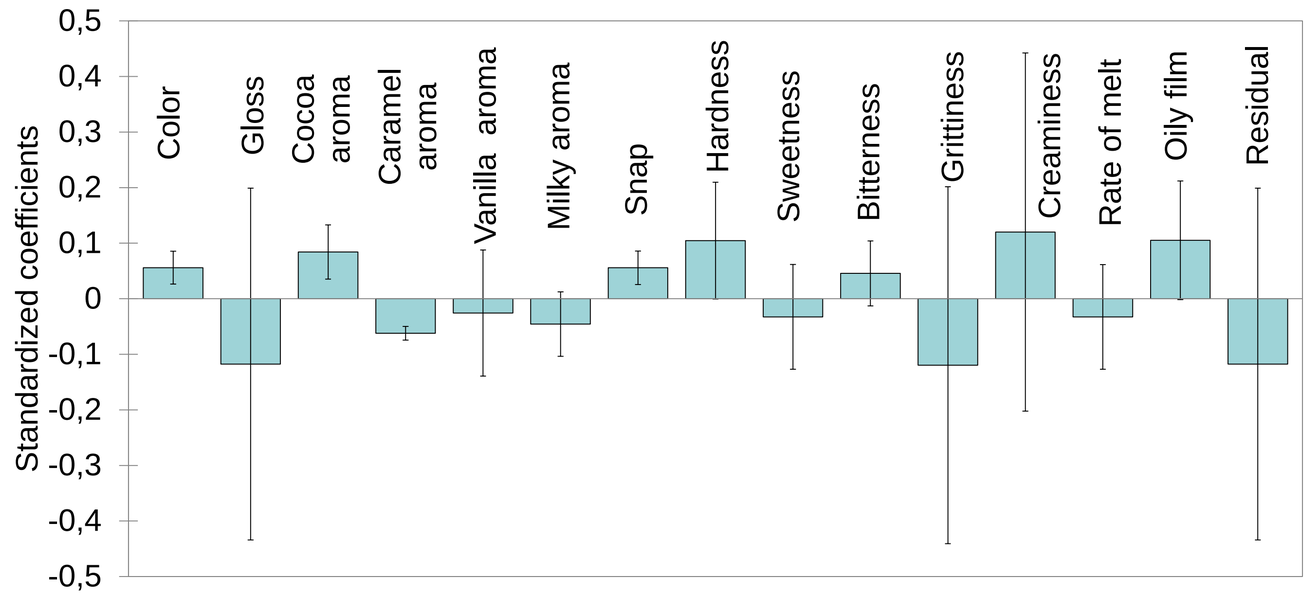
Sample	Overall liking	
	Mean	St. dev.
Premium brand	6.92[A]	1.78
Private label brand	6.19[B]	2.04
Traditional brand	4.72[C]	1.82

[A,B,C] ANOVA (Tukey HSD post-hoc) with p≤0,05

Samples are clearly differentiated in most attributes:

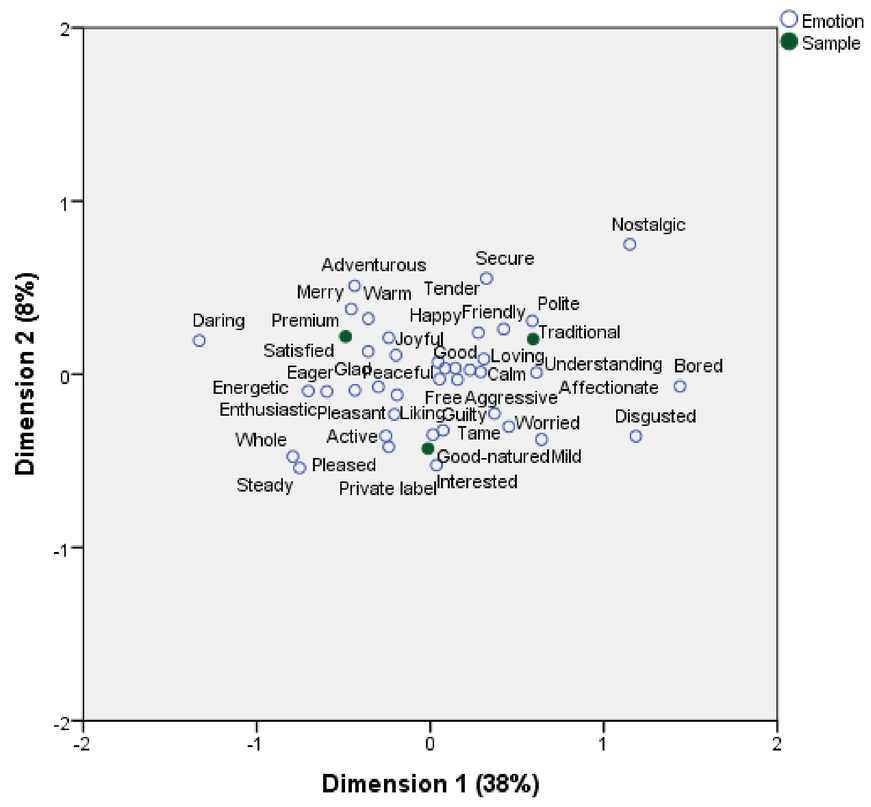
- Premium brand: more intense brown color, cocoa aroma, snap, hardness, bitterness and oily formation
- Traditional brand: highest gloss, caramel aroma, grittiness and residuals; lowest in brown color, snap, hardness, bitterness and oily film
- Private label brand: no distinct sensory attributes, mostly between premium and traditional brand chocolates

Relationship sensory attributes (QDA) and overall liking (consumers)



Positive drivers of liking: color, cocoa aroma, snap, hardness and oily-film formation. (=> JAR in premium brand)
Negative drivers of liking: caramel aroma, grittiness, residuals (=> intense level in traditional brand)

Relationship emotions and chocolate samples



Premium brand

Positioned with mainly positive emotions as 'joyful', 'happy', 'merry', 'warm' and 'adventurous'

Private label brand

Strongly associated with positive emotions such as 'pleasant', 'good-natured', 'active', steady' and 'whole'

Traditional brand

- Related to some negative feelings as 'bored' and 'disgusted'
- Associated with some positive emotions such as 'calm', tender' and 'friendly'
- Sample most correlated with 'nostalgic' feelings

Conclusions

This study shows that the overall acceptability and emotional profiles of chocolates are influenced by textural characteristics.

QDA is an effective tool in order to generate attribute descriptors regarding appearance, aroma, taste and texture and most (11 out of 15) were able to discriminate between the chocolate samples. The consumer test revealed significant differences between the overall liking of the samples.

PLSR showed the relationship between overall liking and sensory attributes and also revealed the major drivers of liking.

Correspondence analysis shows that the samples evoke different emotions. Emotions can provide additional insights in the overall liking.

In conclusion, sensory characteristics, overall acceptability and emotional responses are interrelated which can offer interesting insights for both scientific research as food companies.

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