

Sensory differences between low-fat and regular yogurt measured by instrumental analyses and consumer evaluation

Sofie Lagast¹, Joachim Schouteten¹, Sara De Pelsmaecker¹, Xavier Gellynck¹

¹Ghent University, Department of Agricultural Economics, Coupure Links 653, Gent, Belgium

Sofie.Lagast@UGent.be, tel: +32 9 264 5945, fax: +32 9 264 6246, www.sensolab.be

Objectives

Nowadays consumers consider health aspects when choosing food products. For most dairy products, consumers have the option to choose between products with low or regular fat percentage.

AIMS:

- ✓ Examine if the difference in fat content of yogurt could be measured by instrumental analyses.
- ✓ Testing if consumers are able to distinguish two different products based on specific sensory attributes and which product they prefer
- ✓ Application of the theory of planned behaviour on low and regular fat yogurt

Materials & methods

PRODUCTS:

Two commercial yogurts:

Yog 1: regular fat percentage yogurt (3,64 %)

Yog 2: low fat percentage yogurt (1,07 %)

INSTUMENTAL ANALYSIS (IA)

- **Syneresis**
- **Waterholding capacity**
- **Gel rigidity index**

CONSUMER SENSORY TEST

- Pre-test with 25 people
- A total of 214 people from Flanders participated in the questionnaire and the sensory evaluation of yogurts

• Sensory analysis (SA)

- White colour, gloss, intensity yogurt smell, intensity sour smell, fat content, graininess, yogurt taste, sour taste
- 5-point JAR scale

• Hedonic liking

- Overall liking
- 7-point hedonic scale

• Theory of planned behaviour (TPB)

- Behavioural beliefs:
 - Attitude toward behaviour (AT)
- Normative beliefs:
 - Subjective norm (SN)
- Control beliefs:
 - Perceived behavioural control (PBC)
- Behavioural intention (BI)
- Behaviour (B)

STATISTICS

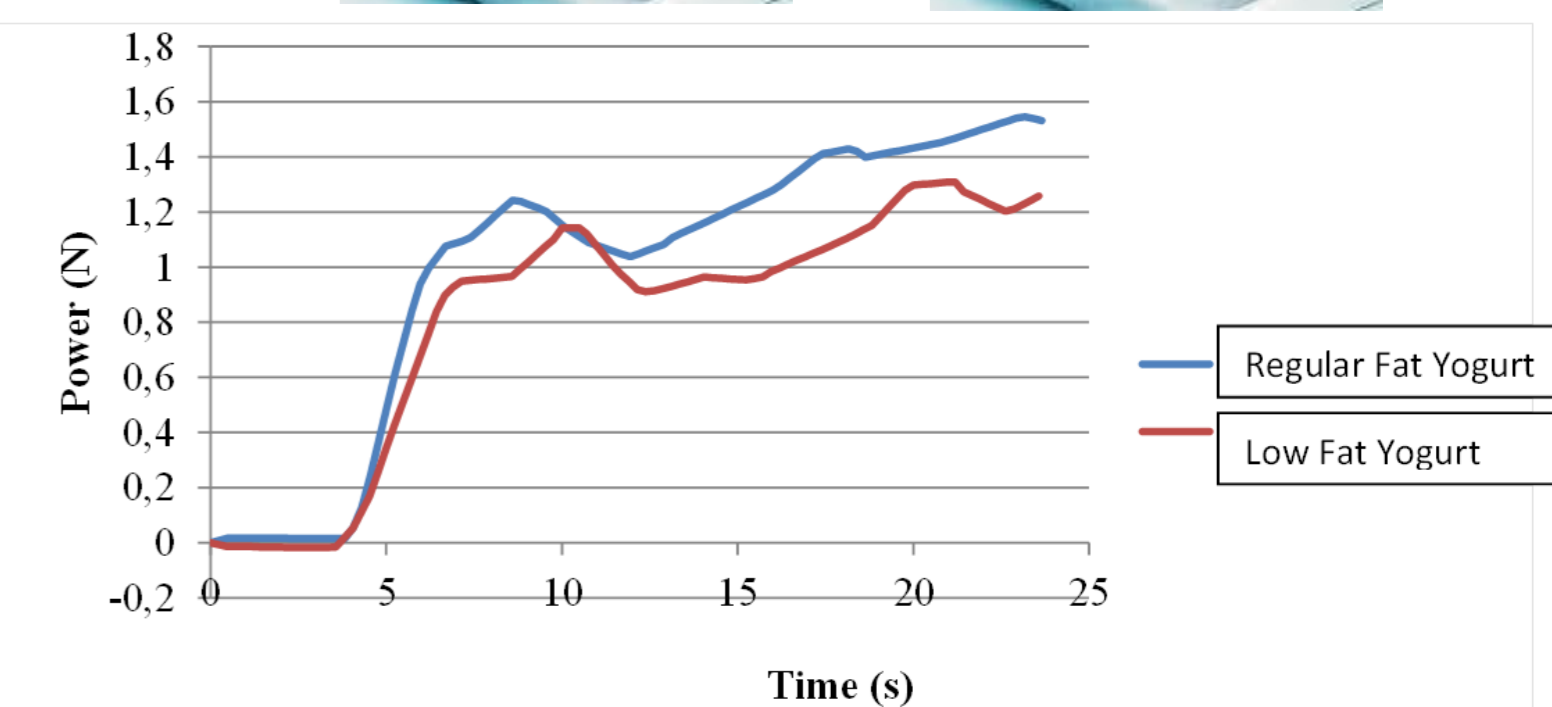
- T-test (IA, SA)
- Pearson correlation (TBP)
- Stepwise regression analysis(TPB)
- Factor analysis (TPB)



Results

INSTRUMENTAL ANALYSIS

	Low-fat yogurt	Regular yogurt
Syneresis (% weight whey/ weight yogurt)	2.69	1.71
Waterholding capacity (weight yogurt pallet/ weight initial yogurt)	0.61	0.77
Gel rigidity index	0.32	0.43
Power snap (N)	0.90	1.04
Penetration labor (N.mm)	18.53	23.01
Maximal Power (N)	1.24	1.53
Hardness (N)	1.31	1.54



Calculation of parameters: gel rigidity index, power snap and maximal power

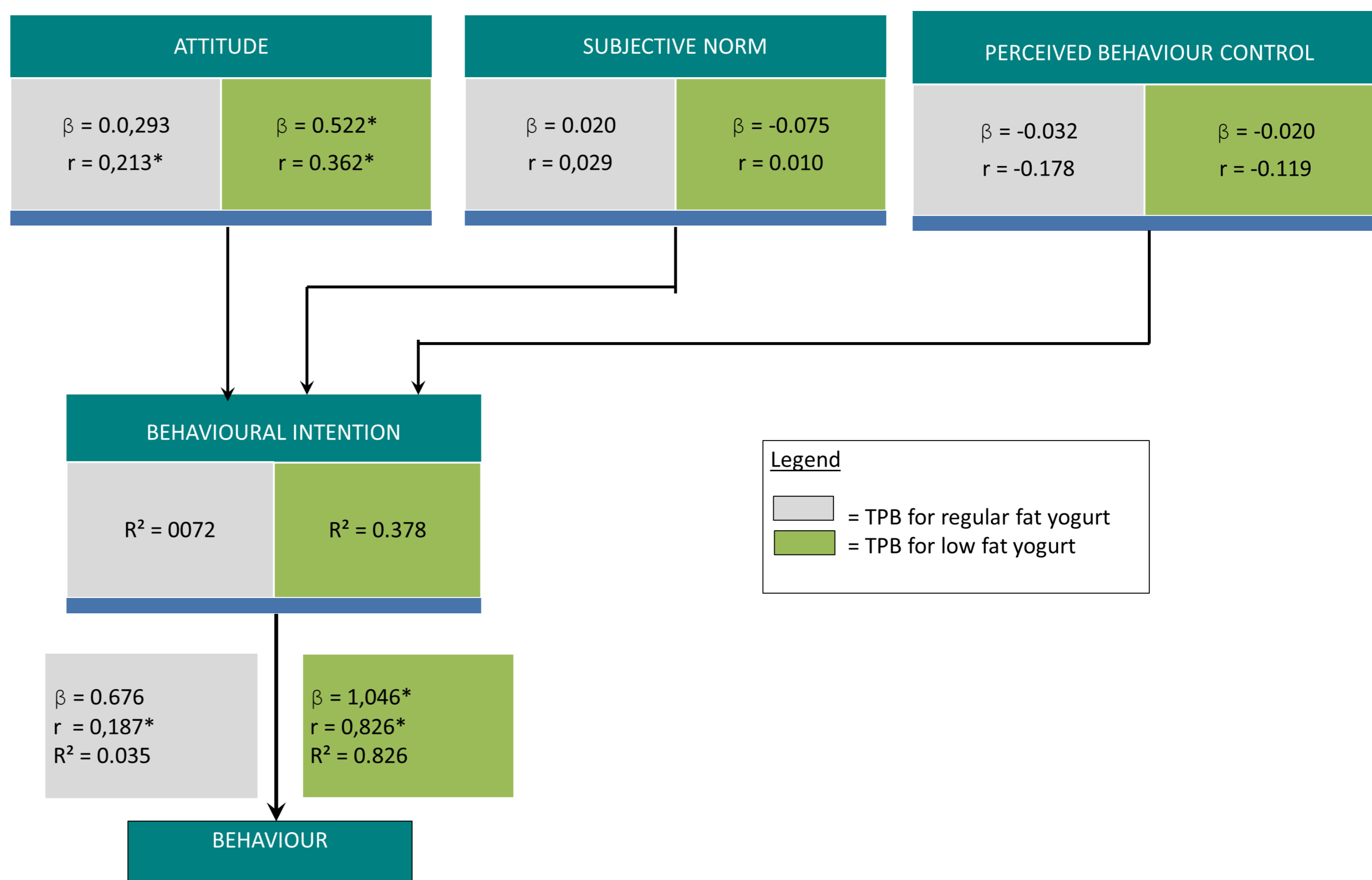
CONSUMER SENSORY TEST

	Left anchor	Right anchor	Mean low-fat yogurt	Mean regular yogurt
White color ^a	Too light	Too dark	3.2*	2.9*
Gloss ^a	Too dull	Too glossy	3.3*	2.9*
Intensity yogurt smell ^a	Too weak	Too strong	2.7*	3.0*
Intensity sour smell ^a	Too weak	Too strong	2.8*	3.2*
Fat content ^a	Too fatty	Too less fatty	3.0	3.0
Graininess ^a	Too granular	Too homogeneous	3.1*	2.9*
Yoghurt taste ^a	Too soft	Too strong	2.7*	2.9*
Sour taste ^a	Too soft	Too strong	2.9*	3.4*
Hedonic liking ^b	Dislike very much	Like very much	4.8*	4.3*

^ameasured on a 5-point JAR scale, ^bmeasured on a 7-point hedonic scale

*Paired samples T-test with $p \leq 0.05$

THEORY OF PLANNED BEHAVIOUR



Conclusions

The results of this study show that the sensory properties of regular and low-fat yogurt are different and can be measured with instrumental analyses.

The results of the consumer test confirmed that differences exist between both yogurts. Consumers preferred the low-fat yogurt which could be due to the better balanced sour taste compared with the regular yogurt.

The theory of planned behaviour explains the consumption of low fat yogurt. The attitude toward low fat yogurt is correlated with the intention to buy yogurt. The intention to buy is also positively correlated with the actual consumer behaviour. The theory of planned behaviour doesn't explain the consumption of regular fat yogurt.