

Original article

Consumer preferences for iced coffee determined by conjoint analysis: an exploratory study with Norwegian consumers

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Summary The main aim of this study was to investigate consumer preferences for extrinsic attributes of iced coffee, explore consumers' coffee consumption habits, find new market opportunities and segment consumers based on similar products preferences. A sample of 101 consumers of iced coffee was recruited during 2012 in Norway. Twelve iced coffee products combining different levels of attributes such as coffee type, origin, calories and price were presented on screen and rated according to consumers' willingness to buy (WTB). Mixed model ANOVA, principal component analysis (PCA) and partial least squares discriminant analysis (PLS-DA) were applied to analyse data. Results show that the most preferred products for the consumer sample as a whole were low-price low-calorie products, while age has a significant effect on WTB for different iced coffee products. Four different consumer segments based on type of iced coffee and country of production preferences were identified and discussed.

Keywords Conjoint analysis, consumers preference, iced coffee, Norway, rating, segmentation, willingness to buy.

Introduction

Iced coffee is now increasing its consumption in Scandinavian countries which have the world's highest levels of coffee consumption (International Coffee Organisation, 2011). Since the early 1980s, iced coffee has been very popular in the USA, Greece and Japan as a refreshing drink where it is usually drunk in small bottles for takeaway consumption or enjoyed for quenching thirst while sitting outside at a café (Petit & Sieffermann, 2007). In 1999, one of the main Norwegian food companies started introducing various types of iced coffee on the food market, and several other brands have followed as this product category has grown in popularity in the recent years. As the iced coffees on the Norwegian market do not have much variety except for the different types of coffee, more information is needed for understanding consumer preferences and choice attributes for this type of product. In addition, as Norwegian consumers have sensory experience with iced coffee, it is highly relevant to consider the impact of various factors such as nutritional, economic, ethnocentric and sensory properties. To the best knowledge of the authors, no studies are available which investigate the consumption of

iced coffee in Norway, with particular reference to extrinsic factors affecting consumption. Petit and Sieffermann (2007) investigated the effect of the physical testing environment on liking and consumption of iced coffee by French consumers. With regard to consumer motivations and attitudes, there is a general lack of studies that investigate consumer preferences and motivation for coffee consumption (Rozin & Cines, 1982), with the exception of fair trade or environmentally friendly coffee (Raynolds, 2004; De Pelsmacker *et al.*, 2005).

One of the most applied predictive statistical models that determine consumer response towards different product profiles is conjoint analysis (CA) (Annunziata & Vecchio, 2013; De Pelsmacker *et al.*, 2013; Saito & Saito, 2013). CA is defined as a method for analysing the effect of a number of designed factors (e.g. packaging, information factors, etc.) on consumer acceptance or choice (Næs *et al.*, 2010b). CA includes a set of techniques able to measure buyers' trade-offs among multi-attribute products or services, including foods (Cox *et al.*, 2007; Næs *et al.*, 2010a; Claret *et al.*, 2012). CA is used to estimate the structure of consumer evaluations on a set of product profiles consisting in predetermined combinations of product attributes (Green & Srinivasan, 1978). In this study, we will use willingness to buy (WTB) ratings collected on a 9-point category scale ranging from 1 'I would definitely not buy' to 9 'I

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will definitely buy'. In CA, relating consumer preferences to individual differences in demographics, attitudes, habits, etc. is important, because it helps to understand consumer behaviour and provides useful information for improving the process of product development and developing targeted marketing strategies (Endrizzi *et al.*, 2011). The data presented in this study are extracted from a large consumer experiment conducted in Norway during autumn 2012. In particular, this study investigates consumers' preferences for iced coffee varying in several extrinsic attributes. This information is particularly useful for iced coffee producers in Scandinavia, considering Scandinavia have the world's highest levels of coffee consumption. In this study, only the data concerning the rating group of participants will be investigated.

The study addresses four questions: (i) What type of iced coffee attributes increases consumers' WTB, (ii) Are coffee consumption habits related to iced coffee consumption habits, (iii) Do conjoint experimental results match self-reported purchase habits for iced coffee and (iv) What are the main iced coffee preference WTB segments and who are the people in each of these segments. To achieve these goals, the study was organised in two complementary steps: (i) a qualitative approach and (ii) a quantitative approach. The qualitative approach aimed to identify, by means of, which attributes and levels were considered the most relevant in a decision-making process when choosing iced coffee. The quantitative approach applied CA to determine consumer preference for the different levels of the selected attributes and the relative importance that these attributes have for iced coffee buyers. The quantitative study was completed with a socio-demographic, attitudinal and behavioural questionnaire focusing in particular on iced coffee and (warm) coffee consumption habits.

Material and methods

Focus group: selection of attributes and levels

A discussion was carried out in October 2012 in the South of Norway, to identify the most relevant attributes that Norwegian consumers take into account when purchasing iced coffee. The participants were ten people ($N = 10$) aged between 21 and 56 years. Consumers were selected based on three main criteria: age, gender and frequency of buying/drinking iced coffee. The focus group (FG) was basically structured in two different topics. The first topic concerned the description of situation of buying/drinking iced coffee, such as motivations for buying/drinking, location, type of outlet, alone/with other people, time of the day, flavours, prices, brands, packaging and quantity. The second topic regarded the characteristics of a typical iced

coffee drinker, such as age, lifestyle, etc. The FG discussion was conducted by an experienced moderator while an assistant took notes. The most relevant attributes and levels from a consumer perspective were identified and selected to design the conjoint study. Moreover, the FG provided inputs on iced coffee consumption habits that were used to develop the conjoint study.

Conjoint study

Participants

A sample of 101 consumers ($N = 101$) was recruited in the region South of Oslo (Norway) in November 2012 with an online recruitment questionnaire using the EyeQuestion system (Logic8 BV, Elst, the Netherlands). Consumers were recruited according to three main criteria: usage frequency of iced coffee, gender and age. Regular consumers of iced coffee aged between 20 and 60 years were selected to take part in the experiment. Finally, for each participating consumer, a reward of NOK 300 was attributed to the leisure time organisation or club of their choice.

Consumer test

The consumer test was held in the sensory laboratory of Nofima (As, Norway) and included four sessions. In the introductory session, a sample of iced coffee was served to the consumers in neutral plastic cups to focus the consumers on the product as a warm-up sample. In the second session, the conjoint task, consumers rated their probability of buying for different iced coffee profiles presented on screen in the form of mock-up products. This session is described in details below. The third session involved hedonic ratings on iced coffee samples and is not investigated in this study. The last session consisted in a questionnaire investigating the consumers' consumption habits for coffee and iced coffee (frequency, location, usage of cream/sugar, etc.) and some socio-demographic characteristics. The participants were seated in separate booths. Data collection was performed on individual computers in the EyeQuestion system (Logic8 BV).

Selection of iced coffee attributes and levels: conjoint analysis design and iced coffee samples

Based on the results obtained from the FG, attributes were selected: coffee type, calories, origin and price. Regarding coffee type, two different levels were chosen: 'Espresso' and 'Latte' as they are among the most frequently consumed coffee types in Norway and they represent two distinct strengths of coffee taste. With concern to the calories, the FG discussion highlighted the importance of calories in consumer choice especially for older consumers. The two levels of calories ('60' and '90 kcal per 100 mL') were

chosen based on typical calorie levels of iced coffee products that are present on the market. Concerning the country of origin, two levels were chosen: 'Norway' as the market leader is a Norwegian company, and 'Italy' due to its high reputation for coffee products. Finally, as purchasing prices, three different levels were chosen, thus representing the high, middle and low end of the prices in the Norwegian market for iced coffee products ('NOK 17', 'NOK 23' and 'NOK 29', approximately from € 2.2, € 3 and € 3.8 per unit). Full factorial design was not appropriate in this study due to the large number of possible factor and level combinations ($2 \times 2 \times 2 \times 3 = 24$) that should be presented to consumers. To effectively test the attribute effects on buyer's preference while reducing the number of product profiles presentations, a fractional factorial design of twelve hypothetical products was constructed (Table 1). This orthogonal array design was created using the statistical package SAS version 9.3.

Conjoint analysis data collection

Photographs of twelve mock-up products, one for each product profile was created and presented monadically on computer screen and following a balanced randomised order across consumers. Prior to the task, a standard profile picture was shown pointing at the four attributes of interest (only indicating 'country', 'price', 'calories' and 'coffee type' without any specific level) to make participants aware of the location of relevant information on the pictures. For each picture, consumers' probability of buying was elicited with the question: 'Imagine that you are purchasing iced coffee. How likely is it that you would buy this particular iced coffee?' Answers were gathered on a 9-point scale from 1 (Extremely unlikely) to 9 (Extremely likely).

Table 1 Hypothetical iced coffee profiles obtained by means of the orthogonal array design

Product	Type of coffee	Calories (kcal per 100 mL)	Country of origin	Price (NOK)
1	Espresso	90	Italy	29
2	Latte	90	Norway	23
3	Latte	60	Norway	23
4	Espresso	60	Norway	17
5	Latte	90	Norway	29
6	Espresso	60	Norway	29
7	Espresso	90	Norway	17
8	Latte	90	Italy	17
9	Latte	60	Italy	29
10	Espresso	90	Italy	23
11	Latte	60	Italy	17
12	Espresso	60	Italy	23

Statistical data analysis

The conjoint rating data were analysed with the purpose to identify significant effects at population level, then define and characterise consumer segments based on individual preferences. This was achieved by applying the following statistical models: mixed model ANOVA, principal component analysis (PCA) and partial least squares discriminant analysis (PLS-DA).

Mixed model ANOVA

In conjoint experiments based on rating scales, the population effects from consumer evaluations are typically analysed by mixed model ANOVA (Næs *et al.*, 2010a,b). This model includes calories, coffee, origin and price as main effects, and of the six possible two-way interaction effects, the following four were included: Price*Calories, Coffee*Calories, Calories*Origin and Price*Coffee. These main effects and interactions were included as fixed factors, while a consumer effect was included as random factor. Furthermore, random interaction effects between consumer and the four factors were included to account for individual preferences. The model is written:

$$\begin{aligned} \text{Probability of buying} = & \text{Mean} + \text{Consumer} + \\ & \text{Price} * \text{Calories} + \text{Coffee} * \\ & \text{Calories} + \text{Calories} * \text{Origin} \\ & + \text{Price} * \text{Coffee} + \text{Consumer} * \\ & \text{Coffee} + \text{Consumer} * \text{Calories} + \\ & \text{Consumer} * \text{Origin} + \text{Consumer} * \\ & \text{Price} + \text{random noise} \end{aligned}$$

Mixed model ANOVA was run in Minitab v. 16.2.3 (Minitab Inc., Coventry, UK). Further details can be found in Data S1.

Segmentation: principal component analysis and partial least squares discriminant analysis

Principal component analysis and PLS regression are statistical methods that allow to interpret complex multivariate data in a manageable and useful way (Cruz *et al.*, 2011; Souza *et al.*, 2011; Cadena *et al.*, 2012). These methods determine latent variables which are linear combinations of original measured variables. Taking advantage of variable correlations, the methods reduce the dimensionality of the original data and summarise it to structured information.

We conducted a segmentation of consumers based on individual preferences by applying PCA on the WTB matrix. Then, common socio-demographic and behavioural characteristics were investigated within segments by performing PLS-DA. Further details can be found in Data S1 (Tables S1 and S2).

Results and discussion

Sample description: socio-demographic characteristics

The sample includes 101 consumers ($N = 101$). Around 2/3 were women, while in terms of age consumers were between 19 and 57 years with a mean of 35 years. Concerning the area of living, almost 75% live in towns, while 25% live in cities or countryside. In terms of occupation, about 39% were students, while 60% had a professional occupation.

Drivers of iced coffee consumption

The four main drivers that lead consumers to drinking iced coffee are 'I want to indulge myself' followed by 'It will keep me awake' and 'I need new energy' (Fig. S1). Therefore, consumers' main motivations for iced coffee consumption are enjoyment and relaxation, as well as energy and caffeine intake.

Most preferred iced coffee products

To identify the most preferred type of iced coffee for the consumer sample as a whole, we analysed the WTB of consumers for the twelve different iced coffee products by applying the mixed model ANOVA as described above. The residuals approximate a normal distribution quite well supporting the tests below for indicating the relative importance of the factors.

The ANOVA model is significant ($P < 0.01$) which means that there are significant statistical differences on WTB among the twelve iced coffee products presented to consumers. Then, Tukey's test was computed

to discover which of the twelve presented iced coffee products consumers were most willing to buy. The most preferred product is P11 (Latte, low calories, produced in Italy and at the lowest price) followed by P4 (Espresso, low calories, produced in Norway and at the lowest price) and P3 (Latte, low calories, produced in Norway and at medium price). Accordingly, no systematic preferences emerge in terms of iced coffee type and country of production. This hints to the presence of consumer segments with diverging preferences, as will be investigated below.

Population effects

Main effects

The mixed model ANOVA results shows that both calories and price present significant effects ($P < 0.01$), while the factors coffee and origin are not statistically significant at a 5% level. The significant effects are estimated to be negative, that is, to say that consumers on average prefer low calories and low prices to high calories and higher prices (Fig. 1). Based on the fitted model, consumers' WTB increase by 12.6% (0.5 units on the 9-point WTB scale) when reducing calorie content from 90 to 60 kcal per 100 mL, and consumers' WTB increase by 37.7% (1.5 units on the 9-point WTB scale) when reducing price from 23 NOK to 17 NOK per 250 mL (Fig. 1). These results indicate that there may be a market potential for calorie-reduced iced coffee products. It is, however, important to note that in this experiment, product profiles were presented on-screen without involving tasting. Research studies have demonstrated that low-calorie products often perform poorly in hedonic tests compared with their

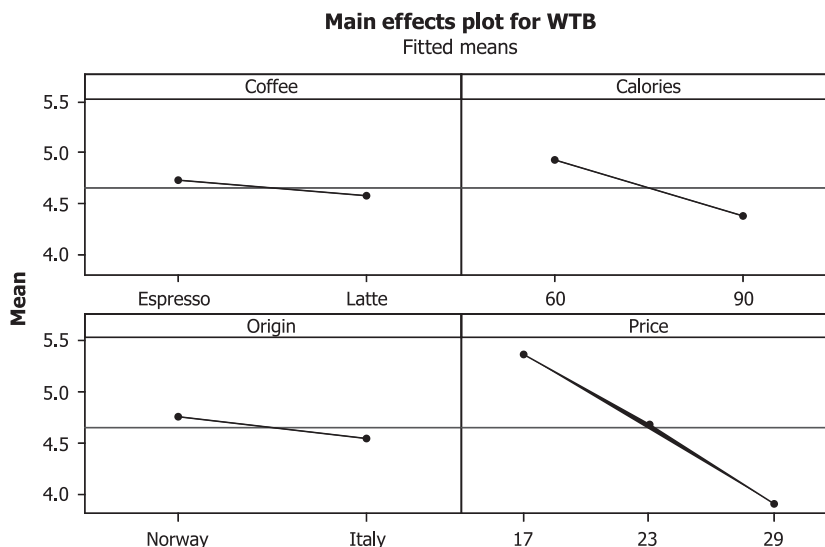


Figure 1 Main effects of the four factors in conjoint rating. Calories and price have significant main effects, while coffee and origin do not.

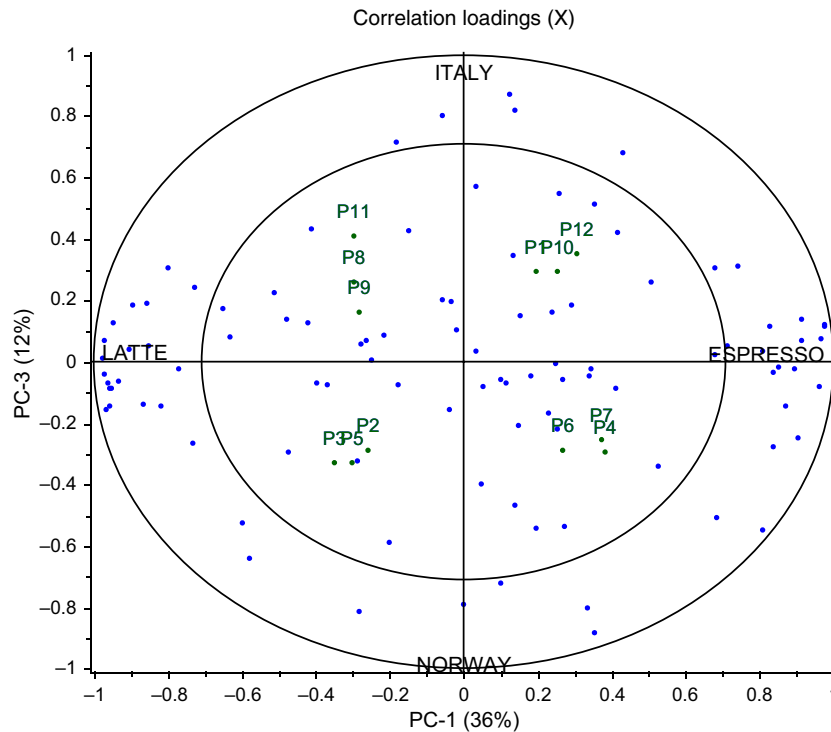


Figure 2 Principal component analysis correlation loadings showing sample and consumer distributions according to attributes coffee (PC1) and origin (PC3).

full-calorie counterparts (Roininen *et al.*, 2000; Ares *et al.*, 2008).

Interaction effects

Only one interaction between conjoint factors is significant: Calories*Price, confounded with Coffee*Origin ($P < 0.01$). The confounding means that it is not statistically possible to identify which of the two interactions is observed presents both these potential interactions. Consumers on average are more reluctant to pay increasing prices for iced coffee products at low calorie content, decreasing their WTP faster than for high calorie content and has a preference for Espresso iced coffee is associated with a preference for production in Norway. On the other hand, preferences for Latte iced coffee are independent of production origin. Note that as both calories and price show significant main effects on consumer's WTB, while neither coffee nor origin showed significant main effects, it is reasonable to identify the observed interaction effect as that of Calories*Price.

Preference heterogeneity and consumer segmentation

Coffee type and origin segments

To determine consumer segments based on individual preference patterns in the conjoint rating task, a PCA

model was run on the data matrix of consumers' WTB for each product profile as described above. We identified four principal components (PCs): coffee type (on PC1, restituting 37% of the variance), price (on PC2, 24%), origin (on PC3, 12%) and calories (on PC4, 8%). Further details can be found in Data S1. Thus, consumers mostly differed in their coffee type preferences, such that it is interesting to conduct a consumer segmentation on that attribute. Further details can be found in Data S1. Figure 2 shows the PCA correlation loadings plot for PC1 and PC3, where distinct product groups appear according to coffee type and origin attribute levels. We created manually four consumer segments directly corresponding to the distribution of consumers in the four quadrants. As the clusters were defined based on consumers' similarity of WTB for attributes coffee type and origin, they will be referred to as 'Latte/Italy' (twenty-six consumers), 'Espresso/Italy' (twenty-four consumers), 'Espresso/Norway' (thirty consumers) and 'Latte/Norway' (twenty-one consumers).

Segment characteristics

Willingness to buy product profiles. The four consumer segments are presented by calculating their respective mean WTB values for each of the factors investigated

(Fig. S2a–d). The two Latte groups clearly prefer iced coffee ‘Latte’ to ‘Espresso’ and *vice versa* for the Espresso groups. All segments prefer low-calorie to high-calorie iced coffee, while the production origin plays a role in segmenting consumers in the four identified groups, and finally, all segments prefer lower prices. To describe the consumer segments by socio-demographic characteristics, warm coffee consumption habits and iced coffee consumption habits, a PLS-DA approach was applied as described above (Fig. S3). In the following, only statistically significant results are reported.

Personal attributes. Results indicate significant relationships between age and the first segment (Latte/Italy) and the fourth segment (Espresso/Norway) but in opposite directions. More specifically, younger consumers are more attracted to Latte iced coffee from Italy, while older consumers prefer Espresso iced coffee from Norway. In terms of general characteristics such as health conscious, ethnocentrism, taste, place of living (e.g. countryside, city), gender and BMI, we did not detect any significant difference among the four segments.

Warm coffee habits. With regard to warm coffee consumption habits, four subgroups of variables successfully discriminated the consumer segments: warm coffee type, cream and sugar, consumption frequency and location. Results show that from a general perspective there is a strong relationship between warm coffee habits and iced coffee preferences reflected in the segments belonging. For example, consumers in Espresso/Norway segment show the highest consumption of ‘Regular’, ‘Espresso’ and ‘Americano’ warm coffee types and the lowest consumption of ‘Latte’. An opposite relationship has been found for segment ‘Latte/Italy’. Further details can be found in Data S1.

Iced coffee habits. The PLS-DA results indicate that none of the iced coffee characteristics investigated, such as when drinking during the day (e.g. wake up, afternoon, etc.), location of drinking (e.g. home, work, university, etc.), motivation of drinking (e.g. thirsty, energy, etc.), frequency consumption, how long drink, etc., significantly differentiated the four consumer segments. The questionnaire also investigated consumers’ purchase habits in terms of brands and iced coffee types, with special emphasis on a Norwegian brand (A) and a foreign brand (B). Results show that consumers in Latte/Italy and Latte/Norway segments were regular purchasers of a Latte product from brand A, while this product was negatively linked to segment Espresso/Norway.

Consumers in segment Latte/Norway were also purchasers of a caramel flavoured product from brand B,

while the same product was significantly *not* characteristic of purchases by consumers in segments Espresso/Italy and Espresso/Norway. On the other hand, these groups typically purchased a caffeine-rich product from brand A which was not consumed by consumers in segments Latte/Italy and Latte/Norway.

Conclusively, there is a clear consistence between consumers’ iced coffee product choices in real life and their willingness-to-buy ratings from the conjoint experiment, which are reflected in their segment belonging.

Conclusions

This study aimed at exploring consumers’ iced coffee consumption habits and investigating consumer preferences for extrinsic attributes of iced coffee. As our aim was not to provide representative data for all the country, but rather it was to explore the relationships among variables (e.g. coffee habits, purchase motivations, etc.), we state a positive argument for the validity of our results related to sample size ($N = 101$). Experience from literature shows that above $N = 100$ consumers, a sample is good enough for detecting important effects. This validity is also supported by the fact that the results (ANOVA) are significant. A larger sample was impossible for economic reasons, while we did not provide any economic benefits for consumers, therefore no social bias. Results show that the most preferred products for the consumer sample as a whole were low-price low-calorie products. This indicates that there may be a market potential for calorie-reduced iced coffee products. Further, four consumer segments were identified that differed in coffee type and production origin preferences: Latte/Italy, Latte/Norway, Espresso/Italy and Espresso/Norway. In terms of personal and socio-demographic characteristics attributes investigated, only age has a significant effect on consumer’s WTB various coffee types: younger consumers present higher WTB for ‘Latte’ products, while older consumers show higher WTB for ‘Espresso’ and *vice versa*. None of the other personal characteristics investigated, such as health conscious, ethnocentrism, taste, place of living (e.g. countryside, city), gender and BMI, present significant effect on WTB of the four segments.

The two consumer groups attracted by the espresso mock-ups reported a high warm coffee consumption and typically purchase iced coffee products with a high caffeine content. The two consumer groups attracted by the latte mock-ups reported lower warm coffee consumption levels, usually add milk, cream and/or sugar in their coffee, and typically purchase latte iced coffee products with low caffeine content and flavoured iced coffee products. Thus, there is a clear consistence between consumers’ attributes preferences in the

conjoint experiment, their real-life choices in terms of iced coffee and their warm coffee consumption habits.

Finally, as we did not find in the literature any similar studies about iced coffee, it is not possible to compare our findings with other researches. Future researches maybe conduct similar studies in other countries to compare the results and investigate whether the WTB for low-calorie iced coffee products persists after product tasting and product exposure over time. Therefore, a final recommendation for further research is also to refine a methodology that incorporate sensory characteristics within (CA) to provide more valuable information and asset for the food industry (De Pelsmaecker *et al.*, 2013).

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References

- Annunziata, A. & Vecchio, R. (2013). Consumer perception of functional foods: a conjoint analysis with probiotics. *Food Quality and Preference*, **28**, 348–355.
- Ares, G., Giménez, A. & Gámbaro, A. (2008). Understanding consumers' perception of conventional and functional yogurts using word association and hard laddering. *Food Quality and Preference*, **19**, 636–643.
- Cadena, R.S., Cruz, A.G., Faria, J.A.F. & Bolini, H.M.A. (2012). Reduced fat and sugar vanilla ice creams: sensory profiling and external preference mapping. *Journal of Dairy Science*, **95**, 4842–4850.
- Claret, A., Guerrero, L., Aguirre, E. *et al.* (2012). Consumer preferences for sea fish using conjoint analysis: exploratory study of the importance of country of origin, obtaining method, storage conditions and purchasing price. *Food Quality and Preference*, **26**, 259–266.
- Cox, D.N., Evans, G. & Lease, H.J. (2007). The influence of information and beliefs about technology on the acceptance of novel food technologies: a conjoint study of farmed prawn concepts. *Food Quality and Preference*, **18**, 813–823.
- Cruz, A.G., Cadena, R.S., Faria, J.A.F. *et al.* (2011). Consumer acceptability and purchase intent of probiotic yoghurt with added glucose oxidase using sensometrics, artificial neural networks and logistic regression. *International Journal of Dairy Technology*, **64**, 549–556.
- De Pelsmaecker, P., Driesen, L. & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of Consumer Affairs*, **39**, 363–385.
- De Pelsmaecker, S., Dewettinck, K. & Gellynck, X. (2013). The possibility of using tasting as a presentation method for sensory stimuli in conjoint analysis. *Trends in Food Science & Technology*, **29**, 108–115.
- Endrizzi, I., Menichelli, E., Johansen, S.B., Olsen, N.V. & Næs, T. (2011). Handling of individual differences in rating-based conjoint analysis. *Food Quality and Preference*, **22**, 241–254.
- Green, P.E. & Srinivasan, V. (1978). Conjoint analysis in consumer research: issues and outlook. *Journal of Consumer Research*, **5**, 103–123.
- International Coffee Organisation. (2011). Available at: <http://www.ico.org/>.
- Næs, T., Almli, V.L., Bølling Johansen, S. & Hersleth, M. (2010a). Alternative methods for combining design variables and consumer preference with information about attitudes and demographics in conjoint analysis. *Food Quality and Preference*, **21**, 368–378.
- Næs, T., Brockhoff, P. & Tomic, O. (2010b). *Statistics for Sensory And Consumer Science*. Chichester, UK: Wiley.
- Petit, C. & Sieffermann, J.M. (2007). Testing consumer preferences for iced-coffee: does the drinking environment have any influence? *Food Quality and Preference*, **18**, 161–172.
- Raynolds, L.T. (2004). The globalisation of organic agro-food networks. *World Development*, **32**, 725–743.
- Roininen, K., Lähteenmäki, L. & Tuorila, H. (2000). An application of means-end chain approach to consumers' orientation to health and hedonic characteristics of foods. *Ecology of Food and Nutrition*, **39**, 61–81.
- Rozin, P. & Cines, B.M. (1982). Ethnic differences in coffee use and attitudes to coffee. *Ecology of Food and Nutrition*, **12**, 79–88.
- Saito, H. & Saito, Y. (2013). Motivations for local food demand by Japanese consumers: a conjoint analysis with reference-point effects. *Agribusiness*, **29**, 147–161.
- Souza, S.S., Cruz, A.G., Walter, E.H.M. *et al.* (2011). Monitoring the authenticity of Brazilian UHT milk: a chemometric approach. *Food Chemistry*, **124**, 692–695.

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Data S1. Material and Methods.

Figure S1. Iced coffee consumption motivations expressed in percentage frequency with standard errors.

Figure S2. Average WTB value and standard errors on mock-up products varying in attributes a) Coffee type, b) Calories, c) Origin and d) Price for each of the four consumer segments.

Figure S3. PLS regression loadings plot of the main segment characteristics. LI, Latte/Italy; LN, Latte/Norway; EI, Espresso/Italy; EN, Espresso/Norway).

Table S1. Structure of PCA data matrix for willingness to buy (WTB).

Table S2. Structure of PLS-DA matrix for consumer segments description.