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# Sensory description labels for food affect consumer product choice

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## Abstract

**Purpose** – This observational study set out to investigate the effect of sensory description labels on consumer choice of apples in a grocery retail store.

**Design/methodology/approach** – An independent observation study was conducted in a retail grocery store setting. A total of 1,623 consumers were observed over a four-day period in four different sessions, each using three apple varieties (JONAGOLD, INGRID MARIE, and ELISE). Marketing strategies differed between the sessions as follows: sort name labelling only, sort name and sensory description labelling, sort name and sensory semantic description labelling, and sort name labelling and allowing consumers to taste the apples before choosing.

**Findings** – Consumer product choice was affected by the sensory description labels. When only the sort name was given on the label, the consumers tended to choose INGRID MARIE, which has a strong sort name. With the addition of sensory description labels, the consumer choice shifted to ELISE, which had been chosen with a low frequency when only sort name was given, but was chosen with a high frequency when sensory description labelling was used.

**Research limitations/implications** – The study was limited to red apples and one national market.

**Practical implications** – Practitioners, managers, and marketers may benefit from using proper sensory labelling as a marketing tool for various food products, such as apples, in a grocery retail store.

**Originality/value** – This study shows the importance and value of sensory description label marketing for food products in grocery retail stores. Little attention has previously been paid to the research area within sensory marketing communication concerning the interplay of sensory perception of food and the formulation of marketing labels, or taste marketing. This paper also addresses the possible interaction between the disciplines of sensory and marketing science.

**Keywords** Labelling, Decision making, Sensory description, Food, Grocery retail store, Preference, Consumer behaviour, Marketing strategy

**Paper type** Research paper



## Introduction

When aiming to influence consumer decision making, marketers and practitioners should try to engage and stimulate the consumers' senses, which might affect their

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behaviour. It has already been noted that the marketing and advertisement of products generally addresses only our higher senses, sight and hearing, and tends to neglect the other senses (Lindstrom, 2005; Krishna, 2010). Instead of concentrating solely on sight and hearing, it would also be worth trying to take advantage of the other senses, such as taste, to increase the appeal and sensation of a product and make it more interesting to its intended consumers. Lindstrom (2005), Hultén *et al.* (2009), and Krishna (2010) argue that sense or sensory marketing is becoming more important for companies' marketing strategies, for practitioners, and within academic research. For example, many grocery retail stores now use the scent of freshly-baked bread to entice the consumer into the store (Donovan and Rossiter, 1982). As Krishna (2010) puts it, "Sensory marketing will persist since senses can affect the marketing of products in many ways". Elder *et al.* (2010) recommend devoting further attention to the interplay between taste experiences and cognition within sensory marketing. For example, in the purchase situation of a food product such as fresh fruit and vegetables, in most cases the colour and visual appearance of a product are quite obvious to consumers. We usually make our decision according to a "sniff-and-feel" test (Lindstrom, 2005), but it is worth considering the impact of taste preference too – how do the consumers know what kind of sensory eating experience and quality they are looking for and willing to pay for?

Sensory marketing could be seen as an important and growing research area in general. In this study, we suggest ways of combining the two disciplines, sensory science and marketing science, to enhance a sensory marketing communication approach in grocery retail stores and thus affect consumer choice of food products, in this case apples. It is well known that different attributes are relevant in consumer preference for products such as apples (Hedderley *et al.*, 1996; Jaeger *et al.*, 1998), and it is essential to elicit attributes that can be used in marketing labelling in a way that allows the consumer to relate to them (Wansink *et al.*, 2000).

Exploitation of the sensory characteristics of a food product in a marketing strategy may affect or capture the attention of the consumers, and hence affect the often-habitual behaviour in a grocery retail store, which could be considered quite a difficult task (Kahn and Wansink, 2004). The average consumer makes about one major trip to the store per week (Caswell, 1997), spending approximately one hour in the store and being exposed to around 15,000 to 17,000 items (Caswell and Padberg, 1992). A consumer in a grocery retail store is exposed to around 300 items per minute (Kotler *et al.*, 2008), most of them with some type of external information provided by advertisements, packaging design, and so on.

To sum up, there are many variables that affect consumer choice of purchase of a food product in a grocery retail store. Fruit and vegetable departments generally do not provide any information about the sensory characteristics of their products; at most the price, brand, and sometimes origin are communicated. It would be of great interest to get the consumers to look and screen for their preferred sensory characteristics instead of, for example, the price. The importance of labels and descriptions in relation to consumer decision making in a grocery retail store raises the question of how sensory description of food products could affect consumer choice. Therefore, the overall objective of the present study was to evaluate the effect of sensory description labels on consumers' choice of apples in a grocery retail store.

## Literature review

### *Sensory marketing*

Sensory marketing in general has been defined by Krishna (2010) as a marketing strategy that engages the consumers' senses and thus affects their behaviour. We are surprisingly unaware of the way our senses interact with our day-to-day experience. By engaging the senses in the grocery retail store decision-making process, marketers could influence buying behaviour by stimulating interest and emotional response among the consumers, which might affect their rational thinking (Kennedy, 2008). Sensory marketing could be seen as a positive addition to today's more traditional methods within marketing, to send a certain message to a more rational part of the consumer's consciousness (Murphy, 2005). In the present study, sensory marketing communication may be a relevant approach which contributes to a multi-sensory atmosphere around a food product in a grocery retail store, by communicating the sensory characteristics and taste of the product itself. However, research within sensory marketing to date has mainly been focused on vision and hearing (Lindstrom, 2005; Hultén *et al.*, 2009; Krishna, 2010), and there has been little focus on how to increase a product's appeal by emphasizing or drawing attention to the other sensations associated with it. The reason for this may be that our senses are attuned for danger detection rather than sensory delight. However, the relationship and links between marketing and the way our senses work raise a number of questions. Sensory marketing could be considered a useful approach, since senses can affect the marketing of products in different ways (Krishna, 2010).

Sensory science with a focus on food is defined by the Sensory Evaluation Division of the Institute of Food Technologists as the attempt to "evoke, measure, analyze and interpret reactions to those characteristics of food as they are perceived by the senses of sight, smell, taste, touch and hearing". Sensory science has been used in different areas of sensory marketing; for example, Lee and O'Mahony (2005) studied the concept of commercial toothpaste and appearance in relation to freshness, using a ranking test for consumers. Moreover, within sensory science, the primary reason for developing a sensory language for a food product is to allow communication of the product's sensory characteristics within different areas such as product development, quality control, and communication between sensory personnel, engineers, marketers, and other parties (Rodbotten, 2009, Lawless and Heymann, 1999). According to Lindstrom (2009), the concept of sensory food design is an important one; taste and smell will be ranked as very central, and the industry will adjust flavours to create a new level of sensory preference. Much of the research on sensory language for food products has focused on the development of a sensory terminology, lexicon, and dictionary for a specific product; this aspect is well covered in different articles such as Noble *et al.* (1987), Hongsoongnern and Chambers (2008), and Civille *et al.* (2010), for wine, tomatoes, and almonds respectively. However, valuable though these language tools are, they are rarely if at all used in marketing to communicate with consumers in settings such as grocery retail stores. For example, Enneking *et al.* (2007), who studied consumer decision making regarding soft drinks, argued that focusing on a product's intrinsic attributes is not enough to meet the requirements of today's fast moving markets, and that extrinsic product information such as innovative labelling is important and may influence consumer choice. Wansink *et al.* (2001, 2005) found that the use of descriptive names on restaurant menus (e.g. "Succulent Italian seafood filet"

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rather than simply “Seafood filet”) could increase sales by 27 per cent and also affect the consumer’s perception of the meal. However, they generated these descriptive names based on brainstorming food-related associations within the research group; they did not conduct a sensory analysis of the product to create a proper flavour profile. Swahn *et al.* (2010) proposed a suitable sensory language model for red apples along with a method to construct this kind of label for marketing food products; this is used in the present study. This raises the question of whether this approach could show the same success as that reported by Wansink *et al.* (2001, 2005), when used in a grocery retail store setting for the purpose of affecting consumer choice and preference of food products.

Another relevant factor is the model developed by Akerlof (1970) concerning information on product quality, using the “market for lemons” (used cars) as an example. This model suggests that the market for quality products may disappear, and be replaced by one in which only the lowest quality products are sold, if the seller is unable to communicate the quality aspects to consumers. It could be assumed that grocery retail stores which make claims about the quality of their products, or which make a point of marketing their products’ sensory characteristics, would be perceived as having high quality products. Caswell and Padberg (1992) have similarly argued that manufacturers who market their quality status will be so perceived, and manufacturers who do not will likely be perceived by the consumers as having a lower quality of product.

The process of making decisions about a food purchase is a complex one, and could be influenced by several marketing, psychological, and sensory factors which could be referred to as marketing-related (Carneiro *et al.*, 2005). Food labels are associated with the food purchase decision, and assist consumers in making food choices (Kriflik and Yeatman, 2005).

### *Sensory descriptions when searching food product*

Food labelling in a grocery retail store is meant to provide different types of information and knowledge about the food item (Dimara and Skuras, 2005), and it may act as an external influence on the consumers in their search for an appropriate purchase. However, labelling research to date has predominantly focused on aspects such as nutritional and health claims, product ingredients, policy, product origin, and safety (Caswell and Mojduszka, 1996; Miller *et al.*, 1998; Baltas, 2001; Bureau and Valceschini, 2003; Wansink, 2003; Wansink *et al.*, 2004; Borra, 2006), rather than the value of communicating the product’s sensory characteristics. Dimara and Skuras (2005) argued the relevance of food labels as an important marketing strategy, concluding that food labelling should be carefully designed to effectively communicate relevant quality attributes to the consumer in order to create a need. The wine industry is a good example of this; they have established a sensory language and methods for describing the product’s sensory characteristics (Herdenstam *et al.*, 2009). This type of language is used in marketing in many ways to influence and communicate, for example in advertisements, on bottle labels, on restaurant menus, by sommeliers, in beverage stores, and so on. Wine labels are considered important by wine consumers, in that they provide information such as location, certifications, and sensory attributes (Dimara and Skuras, 2005).

Research concerning the importance of wine labels for consumer buying behaviour and consumer preference in the context of consumption has been highlighted in a number of studies (Dimara and Skuras, 2005; Charters and Pettigrew, 2003; Ling and Lockshin, 2003; Thomas, 2000). Moreover, wine labels are considered to be an important and cost-effective marketing strategy when it comes to communicating and affecting consumers' evaluation of alternatives for wine purchase (Rocchi and Stefani, 2005). Mueller *et al.* (2010) reported that the message on the wine bottle and the information on the back label had a positive effect on the overall decision-making process. It could be considered that wine is a relatively complex product with regard to aspects such as region, sub-region, origin, style of vineyard, vintage, grape variety, style, history, and narrative. Also, short health claims on the front of a package are sufficient for the less involved consumer, while more comprehensive health information on the back of a package is sought by more involved consumers (Wansink, 2003). However, it has been found that too much information can lead the consumer to make a poorer decision, while too little information may be misleading (Jacoby *et al.*, 1974; Wilkie, 1974).

#### *Sensory descriptions when comparing food products*

Bettman *et al.* (1998), in their discussion of the theory of constructive consumer choice processes, stated that consumers may not have a master list of preferences in memory, based on past experience, when making a choice. The process of evaluating the alternatives depends on the consumer's ability to perceive and process the information given on the label (Dimara and Skuras, 2005). Wansink *et al.* (2004) reported that shorter descriptions may lead to more positive beliefs about the product, which may affect the consumer's evaluation during the search process. Consumers who ignore or do not understand the descriptions or labels are considered to be more likely to evaluate the product as "good" or "bad" in comparison to consumers who read and understand these descriptions, and who most likely are able to express themselves in more specific terms. This might depend on a person's ability to process and reflect the types of thoughts generated when reading the labels, and it may also be affected by the fact that not all consumers will be influenced equally by the labels (Wansink and Park, 2002). It could be argued that consumers need marketing information, such as sensory description labels, to inspire them and allow them to solve the problem of evaluating the alternatives, for instance when trying new food products, and also to act as a retrieval cue at the time of the decision-making process. The grocery retail store offers a large number of products, and most consumers think about their choice of product for no more than two seconds (Lindstrom, 2009).

Wansink *et al.* (2005) proposed a theory for why labels have an impact on consumers; the descriptive labels allow consumers to concentrate more on their feelings and on the expected taste of the food during the decision-making process. Using the right type of description or words in a marketing strategy could be essential for the information search; for example, Wansink *et al.* (2000) showed that describing the content of nutrition bars as "soy protein" had a negative effect on consumer liking, and that the bars were more likely to be described as grainy and having a strong aftertaste in comparison to when the word "soy" was excluded. It could be argued further that the use of the word "soy" may correlate with a negative past experience. Carneiro *et al.* (2005) addressed a similar theory in their investigation of consumers'

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intention to purchase soybean oil with different labels and information; they found that the attribute “transgenic” had a negative effect. According to the previous discussion, the efficiency of labelling has been questioned as an informational source, and how efficient the labels are as direct shopping aids depends on how comprehensible and complete they are (Dimara and Skuras, 2005).

Grundvåg and Østli (2009) revealed in a store observation concerning unbranded and unlabelled food products that the consumers not only evaluated the visual appearance of the product, but also touched and smelled it to determine its quality while evaluating alternative products. The touch and feel procedure for fruit in a grocery retail setting has also been shown by Peck and Childers (2006) to affect consumers’ evaluation of alternatives. While this typical procedure could allow consumers to determine the quality and ripeness of the product, for example with an avocado which must be touched in order to gauge its ripeness, it will not provide any information on the expected sensory eating quality.

The search stage of evaluation could be critical in some cases; Park *et al.* (1989) argued that the decision-making process might deteriorate if the consumer is under time pressure. However, the consumer’s ability to remember information in the evaluating process is quite limited (Baddeley, 1997; Baars *et al.*, 2003). It is worth asking how the communication of a product’s sensory characteristic appeal could be improved. The manner in which language is used on the labels also influences how consumers process and access information, and the choice of words and terminology can influence how the label information is categorized and further evaluated to form a choice or judgement (Meyers-Levy *et al.*, 2010). The expectations arising from labelling communication can cause olfactory illusions; for example, odours were evaluated as more pleasant when they were presented with positive rather than negative labels. Parmesan cheese with an odour described as “isovelric + butric acid” was more likely to be eaten than the same cheese with its odour described as “vomit” (Herz and von Clef, 2001). This shows that consumer decision making can be affected by the communication of sensory experiences; or, as stated by Herz (2010) concerning sensory stimuli and odour: “The shrewd sensory marketer could use these factors to elicit maximum impact in product labelling and branding”. However, communicating the sensory characteristics of a food product in a grocery retail store might not be as straightforward as one might think; the use of sensory language or descriptions and the choice of words are essential for consumer credence (Swahn *et al.*, 2010).

#### *Sensory descriptions when purchasing and evaluating food products*

Attributes such as taste and texture will most likely be determined by the consumer after the product is purchased and consumed (Dimara and Skuras, 2005). If the consumer’s perception of the sensory attributes is at odds with the information and labels provided by the grocery store, the consumers could lose confidence in the product (Caswell and Mojduszka, 1996). Moreover, consumers may have different levels of product knowledge and past experience of the food product, and so the labels may help them to interpret new information in the pre-purchase search (Peter *et al.*, 1999). Conversely, consumers may construct their preference on the spot when reading the labels at the point where they must make a choice of what to purchase (Bettman *et al.*, 1998).

de Chernatony and Harris (2000) declared that providing an added value for the consumer might lead to higher prices and higher margins for the selling company. Furthermore, different products will have different sets of sensory characteristics, and the importance of the attributes that are present and communicated could also affect the consumers' willingness to pay (McCluskey *et al.*, 2007). Fotopoulos and Krystallis (2003), who examined the Greek market and consumers' attitudes towards quality labels, found that consumers might be more willing to pay a higher or premium price for apples with a quality label.

### **Experimental approach**

To fulfil the aim of this study, an observational survey was conducted with a quantitative, independent, and prospective design (Altman, 1999). The study was performed over a four day period in the fruit and vegetable departments of two different grocery retail stores. These stores were selected to provide a typical sample of consumers in a grocery retail store. A total of 1,623 consumers were observed (47% male; age divided into three different subgroups;  $\leq 25$ , over 25 but under 65, and  $\geq 65$  (Note that age and gender are not analyzed further in this report). The observations during the study period were distributed between both grocery retail stores. Consumers were observed in three major parts of the day (morning, afternoon, and evening) across the two stores in order to reduce biases due to shopping environment and age. Each consumer's choice of apple was documented together with age and gender on protocol sheets. There were four assessment sessions in the study: sort name labelling, sensory description labelling, sensory semantic description labelling, and tasted the apples before choosing in combination with sort name on the label and three different apple varieties were used: JONAGOLD, INGRID MARIE, and ELISE (see Figure 1). The difference between session two and session three involved just a few extra semantic attributes, which are shown in italics in Figure 1. In designing the labels, we used the sensory description for red apples based on the sensory study by Swahn *et al.* (2010) for the labels in session two. Labels in session three we developed an extension of the labels in session two by using the semantic frame theory. The samples were also selected according to the result of Swahn *et al.* (2010) and to be distinguished by their sensory profile (note: the INGRID MARIE and ELISE were grown in Sweden, while JONAGOLD apples were imported). The labels were designed along the same lines as existing labels in the grocery retail stores; A4-format, black and white, and using the companies' own fonts and sizes, in order to blend in with the actual grocery retail stores' labels.

A station was set up within the fruit and vegetable department at each grocery retail store. The apples were presented in baskets in front of each label, and were selected and matched by colour and size in order to minimize any visual differences, since sometimes the greatest variation of the product occurs in its appearance (Risvik, 1994). The baskets contained an even distribution by amount. The presentation order of the apples was the same during the entire study, because of the impracticality of changing the presentation order. Before beginning the observations, a trial session was conducted to detect and prevent any ambiguities. The consumers were free to read and interpret the labels and taste the apples in any order they liked. Consumers were approached in the store by the observer and asked to participate in a short study involving preference of choice for apples. Once the consumer agreed to participate, the



Session 1 (S1) 411 Consumer's <i>Sort name</i>	JONAGOLD	INGRID MARIE	ELISE
Session 2 (S2) 400 Consumer's <i>Sensory description</i>	JONAGOLD High odour intensity in peel and flesh, odour of pear Very juicy and tender, some mealiness, low chewing toughness Sweet apple, low acidity, flavour of pear, quite high flavour intensity	INGRID MARIE Some citrus odour in flesh Quite juicy, crisp, firm apple, some chewing toughness Low sweetness, quite acidic	ELISE High odour intensity in flesh, odour of citrus Very firm and crisp, relatively high chewing toughness Low sweetness, high acidity, high flavour intensity and some astringency
Session 3 (S3) 413 Consumer's <i>Sensory and semantic description</i>	JONAGOLD High odour intensity in peel and flesh, odour of pear and perfume Very juicy and tender, some mealiness, low chewing toughness Sweet apple with a touch of banana and grape; low acidity, flavour of pear with a touch of perfume, quite high flavour intensity	INGRID MARIE Some citrus odour in flesh Quite juicy, crisp, firm apple, some chewing toughness Low sweetness, quite acidic with a touch of lemon and orange	ELISE High odour intensity in flesh, odour of citrus Very firm and crisp, relatively high chewing toughness Low sweetness, high acidity with a touch of lemon, high flavour intensity and some astringency
Session 4 (S4) 399 Consumer's <i>Sort name and taste preference</i>	JONAGOLD Taste preference	INGRID MARIE Taste preference	ELISE Taste preference

Sensory  
description  
labels

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**Figure 1.**  
Labels for three apple varieties (JONAGOLD, INGRID MARIE, and ELISE) for four sessions (sort name, sensory description, sensory and semantic description, and sort name and taste in combination)

observer welcomed and instructed him or her in the following order: welcomed the participant, instructed the participant to read and evaluate the labels and to make a choice according to preference and in session four the consumers were instructed to taste all three apples and then make their choice, and urged the participant to take the selected apple and have a bite (this part was neither registered nor analyzed in present paper).

In the following section, we first present the findings from the observation study for each product and session, and then expand on these results by fitting a nominal logistic regression model to analyse the probability of choosing an apple in each session.

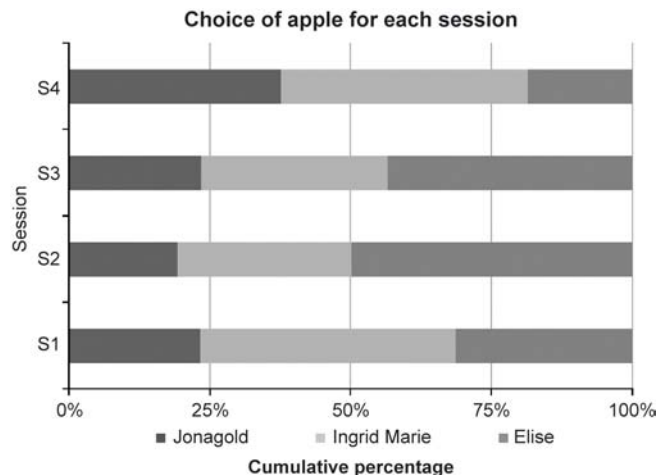
### Findings

This section first presents the frequency distributions of the preferred apples in the different sessions as bar charts to allow visualisation of the ranking for each session. The second part presents the choice of an apple within sessions.

#### *Choice of apple with different labels*

The frequency distributions of apple choice in the different sessions are shown as bar charts in which the median and quartiles were indicated (the 50th, 25th and 75th centiles) in order to allow visualisation of the rankings of the most frequently chosen apple of each session (see Figure 2).

Figure 2 shows that in the first session (S1), when only the sort name was given, 45 per cent of the 411 consumers chose INGRID MARIE, 31 per cent chose ELISE, and 23 per cent chose JONAGOLD. In session two (S2), when the labels also contained sensory descriptions, 50 per cent of the 400 consumers chose ELISE, 31 per cent chose INGRID MARIE, and 19 per cent chose JONAGOLD. Session three (S3), using labels with sensory semantic descriptions, revealed results quite similar to those in session two; 43 per cent of the 413 consumers chose ELISE, 33 per cent chose INGRID MARIE, and 23 per cent chose JONAGOLD. The order changed again in session four (S4), when the consumers chose apples according to sort name in combination with taste preference;



**Figure 2.** Cumulative percentage frequency histogram of consumer choice of apple (%) for each apple and session in which the median and quartiles were indicated (the 50th, 25th and 75th centiles)

44 per cent of the 399 consumers chose INGRID MARIE, 38 per cent chose JONAGOLD, and 19 per cent chose ELISE (see Figure 2).

To extend the analysis of Figure 2, we also conducted a *t*-test with significance set at  $p < 0.05$  to investigate the differences between apple varieties and sessions (see Table I).

The JONAGOLD apple was chosen with the lowest frequency when sort name, sensory description, and sensory semantic description labels were shown. On the other hand, in session four, when sort name and taste were used in combination, this variety was chosen with a higher frequency. By comparing the sessions, it can be seen that the consumers preferred JONAGOLD with sort name and taste in combination.

As seen in Figure 2, INGRID MARIE was chosen with a relatively high frequency for both sort name alone and sort name and taste in combination. A comparison of the sessions shows that consumers were more likely to choose INGRID MARIE when sort name or sort name and taste were given, in comparison to when sensory characteristics were given.

ELISE scored the highest frequency in sessions two and three, when sensory or sensory and semantic descriptions were given. It scored the lowest frequency in session four, when sort name and taste were given in combination (see Figure 2). Comparing the sessions for ELISE reveals that communicating sensory and sensory semantic descriptions was more favourable than communicating sort name and sort name and taste in combination.

#### *Choice of an apple within sessions*

To expand the results shown in Figure 2 and Table I, the data were fitted to a nominal logistic regression model, with odds ratios (ORs) used to estimate probabilities. The reference category for the session was session four, JONAGOLD and ELISE was used as reference category in the first and second regression model, respectively, and was used as the reference category for the dependent variable and different sessions for the independent variables to analyze the consumers' choice between apples (see Table II).

The probabilities of choosing INGRID MARIE and JONAGOLD did not obviously differ between the sessions. However, INGRID MARIE could be considered to be more popular in session one, when sort name was communicated, though with a fairly small margin between the two (1.68).

When comparing ELISE and JONAGOLD in session two, the estimated probability was 5.17, showing that consumers were more likely to choose ELISE than JONAGOLD when sensory description labels were communicated. The results were similar when comparing ELISE and JONAGOLD with sensory semantic description labels (session three), ELISE calculated to be chosen with a higher probability (3.16). However,

	Session 1 and 2 <i>p</i> -value	Session 1 and 3 <i>p</i> -value	Session 1 and 4 <i>p</i> -value	Session 2 and 3 <i>p</i> -value	Session 2 and 4 <i>p</i> -value	Session 3 and 4 <i>p</i> -value
Jonagold	0.077	0.5	0.001	0.077	0.001	0.001
Ingrid Marie	0.001	0.001	0.344	0.270	0.001	0.001
Elise	0.001	0.001	0.001	0.040	0.001	0.001

**Table I.**  
Comparison of the  
differences of percentage  
(see Figure 2) between  
sessions and samples.  
Differences with a *p*-value  
< 0.05 are considered  
significant

**Table II.**  
Results of fitting the nominal logistic regression model with session four as reference category (explanatory variables are different sessions, reference category for response is JONAGOLD and ELISE)

Parameter $\beta$	Estimate b	Std. error	Odds ratio, OR = $e^b$	95 per cent confidence interval
INGRID MARIE vs JONAGOLD				
log ( $\pi_2/\pi_1$ ):				
$\beta$ (constant)	-0.058	0.222		
$\beta$ (session1)	0.519	0.314	1.68	(0.91, 3.11)
$\beta$ (session2)	0.444	0.314	1.56	(0.84, 2.88)
$\beta$ (session3)	0.293	0.314	1.34	(0.72, 2.48)
ELISE vs JONAGOLD				
log ( $\pi_3/\pi_1$ ):				
$\beta$ (constant)	-0.945	0.264		
$\beta$ (session1)	0.647	0.374	1.91	(0.92, 3.97)
$\beta$ (session2)	1.643	0.374	5.17	(2.49, 10.76)
$\beta$ (session3)	1.151	0.374	3.16	(1.52, 6.58)
INGRID MARIE vs ELISE				
log ( $\pi_2/\pi_3$ ):				
$\beta$ (constant)	0.887	0.261		
$\beta$ (session1)	-0.128	0.369	1.13	(0.43, 1.81)
$\beta$ (session2)	-1.199	0.369	3.33	(0.15, 0.62)
$\beta$ (session3)	-0.858	0.369	2.38	(0.21, 0.87)

JONAGOLD was more likely to be chosen by the consumers when sort name and taste were given in combination.

Comparison between INGRID MARIE and ELISE showed that consumers were more likely to choose ELISE when sensory descriptions or sensory semantic descriptions were given (3.33 and 2.38, respectively). On the other hand, ELISE was less likely to be chosen when sort name and taste were given in combination.

### Discussion

Our findings show that the consumers chose a certain apple to a higher extent when only sort name was communicated; unsurprisingly, INGRID MARIE, which is a very popular apple on the Swedish market, was chosen with the highest frequency. In this first session, the consumers did not spend a great deal of time evaluating the sort name labels, and the observer observed a more habitual behaviour. In this session, the consumers were not particularly interested in the task of choosing an apple; there was nothing there to get their attention and thus affect their involvement. This might be because the communication of sort name is normal for apple labels in a grocery retail store setting, an assumption supported by general comments from the consumers during session one, for example; "This is an easy task, I choose [...] that's my favourite apple, I purchase that all the time". Hence, our findings indicate that consumers are most likely to make a more habitual choice of product, with low involvement, when only the sort name is communicated in a marketing strategy. The difficulty of actually getting the consumer's attention during the purchase decision in grocery retail stores has also been discussed by Kahn and Wansink (2004). When the consumers were exposed to the sensory description and sensory semantic description labels in sessions two and three, respectively, their choice of apple shifted, with ELISE now being chosen

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with the highest frequency. This is quite a surprising finding, considering that ELISE was chosen with the lowest frequency when only sort name and sort name and taste in combination were communicated to the consumers. In addition, ELISE was considered as quite unfamiliar by the consumers' compared to INGRID MARIE which the consumers' were familiar with. This is hence an important result which indicates that consumers are affected by sensory and sensory semantic description labels for apples. In this case, ELISE is to be considered as an example for communicating some appealing attributes in sessions two and three (see Figure 1). It is well known that different attributes have different relevant importance for consumer preference regarding apples (Hedderley *et al.*, 1996; Jaeger *et al.*, 1998), and it is essential to elicit appropriate attributes for use on marketing labels, to allow the consumer to relate to them (Wansink *et al.*, 2005). This is one of the reasons why the approach of combining the two disciplines of sensory and marketing science is important, and why advantage should be taken of the terminology used within the sensory science procedure.

The aim of the observational study did not include observation of the overall consumer behaviour during the choice of apple, though a higher involvement by the consumers was noticed by the researchers when the consumers evaluated the labels with sensory characteristics. This result is in line with previous work showing that sensory description menus in a restaurant setting affected consumer choice (Wansink *et al.*, 2001, 2005); our findings indicate similar results with more extensive sensory description labels. Wansink *et al.* (2001, 2005) also reported that descriptive labels have a positive influence on customers' attitudes toward a restaurant and their intention to return. This is a very interesting perspective; one of our intentions in developing sensory descriptive labels is that the customer is satisfied with the product and thus acquires the intention to revisit the store and repurchase the product (note that this was not the aim in the present study). Moreover, another effect of this might be that described by de Chernatony and Harris (2000), who declared that this kind of approach may lead to higher consumption, prices, and margins of the product. Wansink *et al.* (2001) also showed that descriptive labels increased sales by more than a quarter and increased the likelihood that customers would purchase the products again on return visits.

When only the sort name is communicated, the screening process could be assumed to be quite an easy task for the consumers, but when text covering the sensory characteristics is provided, the screening process is more time consuming and not that obvious. A more thorough label, such as a sensory descriptive label, requires the consumer to interpret and evaluate their own preference in their choice of purchase. As mentioned earlier when describing the theoretical background, labelling communication today mainly focuses on nutrition and health claims, product ingredients, policy, origin, and other such aspects (Caswell and Mojduszka, 1996; Miller *et al.*, 1998; Baltas, 2001; Bureau and Valceschini, 2003; Wansink, 2003; Wansink *et al.*, 2004; Borra, 2006), and therefore sensory characteristics labels for apples might be seen and interpreted as quite new and unfamiliar to consumers. The general information provided today in apple labelling mainly covers price, origin, and sometimes a quality classification, but most people are unlikely to be used to communicating the sensory characteristics of food products with a specific sensory vocabulary, and therefore this type of marketing label could be considered to be an interesting and unfamiliar approach for the consumers in a grocery retail store. Another aspect of interest is that

the consumers in our study interrupted their habitual behaviour, and took their time to evaluate the labels in the effort to make their choice. In this case the consumers had to construct their preference on the spot when reading and evaluating the labels which may affect the consumer's choice, as argued by Bettman *et al.* (1998). Given this, a sensory descriptive label might be one way to actually capture attention and interrupt the often habitual behaviour, as described by Kahn and Wansink (2004), of the consumers in a grocery retail store. Several other aspects concerning the impact of consumer decision making in the grocery retail store may also affect this issue further, for example time pressure (Park *et al.*, 1989), which could be a critical aspect when it comes to descriptive label advertisements. The number of products in the store (Caswell and Padberg, 1992) poses another dilemma when using descriptive labels. It is also worth asking how the labels should be used, for example as big posters or as labels on the shelves. Consumers are exposed to a large number of items per minute within the grocery retail store (Kotler *et al.*, 2008), which makes the competition even harder. It could also be assumed that shorter descriptions could be easier for the consumers to comprehend and screen, allowing them to compare the products' favourable and unfavourable attributes within the choice of purchase. This also corresponds with the findings from different studies highlighting how the extent of the labels is essential for the consumers (Jacoby *et al.*, 1974; Wilkie, 1974; Wansink, 2003; Wansink *et al.*, 2004). The extent of the sensory description in sessions two and three, sensory description and sensory and semantic description respectively could be argued to be quite excessive in terms of the number of communicated words. For example, the consumers seemed to struggle when trying to compare the labels, and had usually forgotten the message from the first label by the time they had read all three labels. As human beings, our visual memory is restricted in how many units we are able to remember (Baddeley, 1997; Baars *et al.*, 2003) and therefore this should be taken into account in the future applications. The strategy mentioned by Wansink (2003), of providing short health claims on the front of the package and more extensive information on the reverse, may offer one way to overcome the problem with too much information on the label. In this case, this would involve advertising the essential sensory characteristics in bigger fonts, with just a few words (unique selling points), followed by a more thorough sensory description at the lower end of the label in a smaller font. It should also be taken into account that this approach may vary in relation to product, for example it could be useful for premium products to brief a short explanation showing what a product tastes like or how to use it etc.

The present study was focused on the use of sensory description labels in grocery retail stores and their effect on the consumer's choice of product. The effect of communicating both sort name and taste preference (session four) was also observed. While INGRID MARIE was considered as the winner when the consumers were given only the sort name, it is also worth considering what happened when the consumers made their choice based on sort name and taste in combination. Taste experience may be the best way to actually get a proper perception of the quality of the product. This type of procedure is used from time to time in grocery retail stores, especially during promotion of a certain product, but it is not possible to use it at all times and for all products. An interesting finding was that the consumers still chose INGRID MARIE with the highest frequency when they were given sort name and taste in combination. This might be because INGRID MARIE is a well-known sort and quite popular, as

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shown in session one (sort name), and therefore the consumers in session four were already familiar with its taste. Surprisingly, the consumers chose ELISE with the highest frequency when sensory and sensory semantic descriptions were shown and with the lowest frequency when sort name and taste were given in combination. As mentioned previously, the descriptions for ELISE in sessions two and three could be considered as quite favourable for the consumers. Moreover, the consumer was not consistent in choice of apple when comparing sensory and semantic description labels in session two and three with the taste experience in session four. It would be of interest to further investigate how a sensory description label in relation with experienced taste is affecting the consumers' choice.

Communicating sensory qualities is not as straightforward as one might think; it is essential to communicate the right sensory characteristics. As shown by Wansink *et al.* (2000), who reported that the use of the phrase "soy protein" on nutrition bars had a negative effect, it is possible that the JONAGOLD apple could have suffered from the use of the word "perfume" in the description given in the present study. Both comments by the consumer and observations by the moderator suggest that the consumers may have experienced the attribute of "perfume" in a negative way, thus affecting their choice of product. Caswell and Mojduszka (1996) have stated regarding the importance of informational labelling that the consumers' perceptions of the product must be in line with the sensory description label, or they will not purchase the items again. Another interesting finding by the moderator was that the origins of the apples were important to the consumers. Origin was not a variable we intended to communicate during the observation, but when the consumers asked about the origin of the apples we were obliged to notify them about the history of the product. When the consumers were informed that JONAGOLD were an imported apple, this had a negative effect on the consumer choice.

Previous research on sensory perception within marketing has mainly focused on the higher senses, vision and hearing (Lindstrom, 2005; Krishna, 2010), leaving out taste (including odour) and touch. The overall aim of this observation study was to investigate a possible way to take advantage of the sensory perception of food products to formulate marketing labels to affect and help consumers in their choice of food products, in this case apples. To date, sensory perception and vocabulary development have predominantly been used within the discipline of sensory science in areas such as product development and quality control (Lawless and Heymann, 1999; Rodbotten, 2009); the products' sensory characteristics have not been used further as a marketing tool. Rectifying this situation was another primary objective of the present study; to apply sensory descriptions within marketing to show that labelling of the food product may affect consumer purchase behaviour. Previous research has used sensory description labels in a restaurant setting (Wansink *et al.*, 2001, 2005) with some surprising results. However, it could be argued that the sensory descriptions used in the study by Wansink *et al.* (2001, 2005) were quite limited; the labels were not very informative and were quite restricted in their precision and detail; for example, the name "Seafood filet" was changed to "Succulent Italian seafood filet". When developing sensory descriptions for food products within the discipline of sensory science, a more thorough vocabulary is used, and relevant attributes and intensities are considered (Lawless and Heymann, 1999).

In line with the related research mentioned previously, the findings of the present study reveal that this type of sensory marketing or taste marketing approach, with a focus on taste and consumer behaviour, is relevant in the marketing of food. Food is essential for sustaining life, and human beings naturally exert daily efforts to eat the proper food with the right amount of calories and other nutrients, but the taste of the food is also important; we as humans are becoming more interested in what we eat and what we can expect from a product. However, our research shows some interesting findings concerning sensory description labels in a grocery retail store and how they affect the consumer's choice of product. The findings reveal that sensory description labels do affect the consumer's choice, in this case when studying three different apples in two grocery retail stores. Of all the ways we could affect consumer purchase decisions in a grocery retail store (e.g. the smell of bread), communicating the sensory characteristics may be an innovative way to market food products in a grocery retail store setting.

### **Limitation and future research**

There are several limitations to this research. For example, it focuses only on consumers in the Swedish market and on the choice of apples available in a certain time period in a single country. It is not certain that our results can be replicated elsewhere in the world, but they do give some hints about what practitioners, marketers, and managers can do to affect consumer choice in a grocery retail store.

As highlighted by Elder *et al.* (2010), the interplay within taste experience and sensory marketing needed further attention, and has been shown in the present study to affect the consumer's choice of product. However, this is an interesting field of sensory marketing, combining sensory and marketing science, and particular taste marketing. Over the years, the wine industry has successfully and impressively taken advantage of sensory descriptions and applied them as a marketing tool. Hence, this approach deserves greater attention within taste marketing, to allow practitioners to take advantage of the sensory science approaches and findings and use them as a marketing tool in settings such as grocery retail stores. Sensory scientists are expert at the task of attempting to use humans to evoke measure, analyze and interpret reactions to those characteristics of food as they are perceived by the senses of sight, smell, taste, touch and hearing and applying this knowledge within sensory marketing could be a factor in success. What this means for managers and practitioners within grocery retail stores is that sensory descriptive labels can help and stimulate first-time consumption, and maybe help encourage repeat sales. An important question before using a similar approach in a grocery retail store is to consider and take into account that this may not be a suitable approach for all products in a grocery retail store.

Future research concerning sensory descriptive labels could also look into the effect of label information in relation to price, visual appearance, and taste preference to see how consumers change or do not change their choice of product. Also, how could we develop symbols communicating taste attribute and intensity to make it easier for the consumers' to screen and interpret the labels?

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#### About the authors

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