



Impact of product information and repeated exposure on consumer liking, sensory perception and concept associations of local apple juice



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ABSTRACT

The impact of product information and repeated exposure of local apple juice on consumer liking, sensory perception and concept associations was studied. Findings showed that consumers had high expectations towards the studied local apples juices. Consequently, the liking for the local apple juices was higher when the consumers were informed about the product versus blind tasting. This shift was explained by an assimilation effect i.e. the consumers rated the liking in the informed product condition closer to their expectations. However, the assimilation effect was incomplete as the product information did not fully determine consumer liking. Thus the sensory characteristics were also found to be of importance. Besides liking, the concept associations were also affected by product information. All local apple juices were associated as being more *exclusive* under informed tasting conditions. No effects were found for liking of the apple juices over repeated exposure. Also, the consumers did not change their sensory perception over repeated consumption. However, the local apple juices were conceptualised as more *familiar* but remained *exclusive* after repeated consumption. When local producers have to market their products, they are recommended to focus on product information as a selling point as this information strongly influences liking, concept associations and sensory perception of the product. However, in order to ensure successful products, the sensory characteristics of the product must not be compromised as these influence liking in a manner increasing over repeated consumption.

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1. Introduction

In order to adjust to an increasingly competitive internationalised market, local food producers seek strategies to differentiate their product from others (van Ittersum, Candel, & Meulemberg, 2003). As such, it has been observed that local producers communicate their products by providing additional product information to create a unique profile. The degree of product information available to the consumers determines the value that is associated to the product. It is well-known that non-sensory properties, such as product information and advertising, can influence expectations hereby influencing consumers' responses towards the product leading to choice or rejection (Caporale & Monteleone, 2004; Deliza & MacFie, 1996; Jacoby, Olson, & Haddock, 1971; Shepherd, Sparks, Bellier, & Raats, 1991/92; Siegrist & Cousin, 2009; Siret & Issanchou, 2000). However, product information is not only used to form preferences and purchase decisions, but also elicits emotions, feelings, imagery and fantasies (Verlegh & Steenkamp, 1999). Regional foods are strongly associated with a specific area (Kuznesof,

Tregear, & Moxey, 1997). Information about region or country of origin of a product is a cognitive quality cue, but it also has a symbolic and emotional meaning to the consumers generating expectations (Iaccarino, Di Monaco, Mincione, Cavella, & Masi, 2006; Verlegh & Steenkamp, 1999). Verlegh and Steenkamp (1999) compared 41 empirical studies on country of origin, finding that information about country of origin had a medium to large effect on consumer evaluations displaying the largest effect on perceived quality. The effect of region or country of origin can be described both directly and indirectly, i.e. either origin directly influences the value of food due to its symbolic or emotional role, or the origin indirectly impacts as a quality cue hinting to other properties such as sensory characteristics (Stefani, Romano, & Caviocchi, 2006).

Expectations play an important role because these can positively or negatively influence the perception of a product before it is tasted (Deliza & MacFie, 1996). The expectations can either be hedonic or sensory based. The hedonic expectations are generated from the emotional and cognitive processes leading to anticipation of how much the product is liked or disliked prior to consumption. The sensory based expectations are generated if one believes that a food product will feature certain salient sensory attributes (Cardello & Sawyer, 1992).

It can be analysed if the consumers' expectations are met by the product's actual performance, and if not how the expectations affect the consumers' perceived product performance. By *actual product*

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performance is referred to the consumer's experience of the product's sensory characteristics without influence by information of the product e.g. during blind tasting. If there exists a difference between expectations and actual product performance, the consumers' expectations are not confirmed as referring to disconfirmation (Cardello & Sawyer, 1992). Different theories on disconfirmation of expectations have been proposed, including *assimilation*, *contrast*, *assimilation-contrast* and *generalised negativity* effects (Anderson, 1973). *Assimilation* theory assumes that consumers try to be consistent with their created expectations. Thus, if the consumer experiences any discrepancy between expectations and actual product performance, the consumer will adjust his perceived product perception closer (assimilate) to the expectations (Anderson, 1973). Most studies about expectations found *assimilation theory* to explain how consumers change their perception when expectations are not confirmed (Cardello & Sawyer, 1992; Deliza & MacFie, 1996). *Contrast* theory is the inverse of *assimilation* theory, i.e. the actual product performance fails to meet expectations and consequently the perceived product perception will move away (become dissimilar) from the expectations (Anderson, 1973). No studies support theories of the *generalised negativity* and *assimilation-contrast* (Deliza & MacFie, 1996) and as such these will not be discussed further.

Expectations for a product might also influence long term satisfaction. Knowledge about changes in liking over repeated exposure is important for product marketing (Zandstra, de Graaf, & van Trijp, 2000) and product development (Hetherington, Bell, & Rolls, 2000), since initial rating of liking has been found to be a poor predictor of liking over repeated consumption (Porcherot & Issanchou, 1998; Vickers & Holton, 1998). Köster, Rummel, Kornelson, and Benz (2001) support this and state that using a measure of first impression is merely guessing about the products potential success in the market. Consequently, it is of interest to study how products are perceived over the long term, as it is in the manufacturers' interest that a product stays liked and attractive to the consumers to ensure re-purchase. This is of particular relevance for local foods, since these foods are often unfamiliar to the consumer and require repeated purchase in order to gain a market share. Furthermore, consumers have specific expectations on the sensory and hedonic quality of local foods, which are expected to be reinforced by the situation at the location of purchase. Hence, local foods need special attention in how they can be introduced to the consumer in order to obtain sustainable market share.

The present study addresses that consumers might change their liking, sensory perception and concept associations depending on available product information and repeated exposure. The dynamics in the consumer responses challenge the local producers to design a product that is liked and positively conceptualised with repeated consumption. First of all, the impact of product information on local apple juice in a consumption situation will be studied based on consumers' liking, sensory perception and concept associations. These findings will support local producers to evaluate how consumers generate expectations to their products and understand how these expectations impact the experience of the products. Following the pattern of consumer liking, sensory perception and concept associations over repeated consumption allows local producers to understand whether liking and experience of local apple juices develop as a consequence of repeated exposure.

2. Materials and methods

2.1. Products

Different varieties of Danish local apple juice were selected (Table 1). A mainstream apple juice was also included to cover the span in the market for apple drinks. Each type of apple juice was from the same batch. These products were included due to their sensory main variation in acidity, sweetness and flavour intensity as found by Stolzenbach, Bredie, Christensen, and Byrne (in press-a). More specifically, the local apple juices Ingrid Marie and Elstar were similarly characterised by the sensory attributes sweet, mild, long aftertaste, apple, vinegar and pear-like. The local Blend was described as having high degree of acidity, being intense, aromatic and astringent. Lastly, the Mainstream apple juice was described as having no aroma, no acid and being simple.

2.2. Subjects

A total of 183 apple juice consumers (mean age 26.4 ± 6.0 years) participated in the study. Only young consumers were recruited since they have been shown to be more influenced by non-sensory variables in hedonic ratings (Guinard, Uotani, & Schlich, 2001) and more sensitive to monotonous consumption (Essed, van Staveren, Kok, Ormel, Zeinstra, & de Graaf, 2006; Pelchat & Schaefer, 2000). The consumers were unpaid for their participation, however 3 weeks rations of apple juice was allotted to the individual consumer for home consumption.

2.3. Consumer evaluation

2.3.1. Experimental procedure

A consumer evaluation of local apple juices and a mainstream juice was designed allowing for analysis on the impact of product information and repeated exposure on liking, sensory perception and concept associations of these products. The consumer evaluation consisted of 4 steps including 1) rating actual product performance by blind tasting (condition B), 2) showing the labelled product to the consumers as it appears on the market and asking the consumers to rate expectations and packaging characteristics without tasting the product (informed product condition), i.e. based on expectations (condition E), and 3) rating perceived product performance by tasting and being informed about the product and brand (condition I) and 4) repeated consumption of the informed product (see Fig. 1).

2.3.2. Blind product tasting

The consumers were invited to the Sensory laboratory at Department of Food Science, Faculty of Science, University of Copenhagen, Denmark. Each consumer was randomly assigned to one of the apple juice varieties, and was served the corresponding apple juice. The IM, Elstar, Blend and Mainstream juices were evaluated by 41 consumers (29 females, 12 males), 51 consumers (35 females, 16 males), 47 consumers (33 females, 14 males) and 44 consumers (32 females, 12 males), respectively. The sample of apple juices were served in black non-reflecting plastic cups to mask the colour differences and closed with a lid. Before

Table 1
The apples juice used in the experiments.

Sample	Type	Origin	Cultivars	Packaging	Volume (L)
Ingrid Marie (IM)	Local	Danish island Fejø	Ingrid Marie	Glass	0.5
Elstar	Local	Danish town Skørping	Elstar	Glass	0.75
Blend	Local	Danish town Slangerup	Tagesminde, Dronning Louise, Bramley, Ingrid Marie, Katrina & Bodil Neergård	Glass	1
Mainstream	Mainstream	Fabricate	Mixed unknown concentrate	Carton	1

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