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Ideal Profile Method (IPM): The ins and outs

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ABSTRACT

The *Ideal Profile Method* is a sensory methodology mixing classical profiling (such as QDA®) and *JAR* scale. It is performed by consumers who are asked to rate each product on both their perceived and ideal intensities for a list of attributes. In the same test, consumers also rate the products on liking.

The strength of such methodology is that it brings a lot of information about the products and the consumers. Indeed each consumer provides the sensory profile of the products (*i.e.* how do they perceive the products), their liking ratings (*i.e.* how do they appreciate the products) as well as their ideal profiles (*i.e.* what are their expectations).

The ideal profiles are directly actionable to guide for products' improvement. However, this particular information should be carefully managed since it is obtained from consumers and it describes virtual products. It relies on three main assumptions: (1) consumers should rate a unique and stable ideal product, (2) consumers can describe different ideals and (3) the ideal profiles provided by consumers should be consistent with the other descriptions (sensory and hedonic).

The study of these assumptions on 24 projects help understanding the consumers and how they define their ideals. It comes out that, although some consumers' ideal ratings are slightly influenced positively by the products, most of the consumers are reliable. Indeed, the consumers rate unique ideal products which are consistent according to the *sensory* and *hedonic* descriptions also provided. It also appears that it needs all to make a world, as consumers show differences in their ideal products.

1. Introduction

In sensory analysis, one of the main objectives is to characterize a set of products according to the way they are perceived. To do so, a common practice consists in asking subjects to rate the products on the perceived intensities of a list of attributes. This practice, also known as descriptive analysis (such as QDA®, Stone, Sidel, Oliver, Woosley, & Singleton, 1974), results in the definition of the sensory profile of the products, that is to say, a description of how these products are perceived by the subjects. *In fine*, the objective of such methodology is to obtain a product space, which is a map positioning the products that are perceived as similar close to each other, and placing apart those that are perceived as different. For this task, the subjects considered are usually experts or trained panelists (*i.e.* subjects who have training sessions during which they have learned to recognize and rate the perceived intensities of the pre-established list of attributes).

Although this methodology is extensively used, some alternative methods have been developed. These methods differ according to the points of view adopted. Subjects can:

- be free in the choice of attributes used to describe the products in a sequential monadic way, as for example in *Free Choice Profiling* (Williams & Langron, 1984) or *Flash Profiling* (Dairou & Sieffermann, 2002; Sieffermann, 2002);
- assess the entire product set simultaneously, as for example in *Napping®* (Pagès, 2005) or *Ultra Flash Profile* (Perrin et al., 2008);
- use holistic approaches to compare the products as in the case of *Free Sorting Task* (Cadoret, Lê, & Pagès, 2009; Lawless, 1989), *Hierarchical Sorting Task* (Cadoret, Lê, & Pagès, 2011) or *Sorted Napping* (Pagès, Cadoret, & Lê, 2010).

All these methodologies are defined as rapid methodologies because no or short training is required (Dehlholm, Brockhoff, Meinert, Aaslyng, & Bredie, 2012). The different alternatives highlight different approaches, for example: detailed *vs.* short description of the products, analytic *vs.* holistic approaches, use of trained panelists/experts *vs.* naïve consumers (Gazano, Ballay, Eladan, & Siefferman, 2005; Nestrud & Lawless, 2008).

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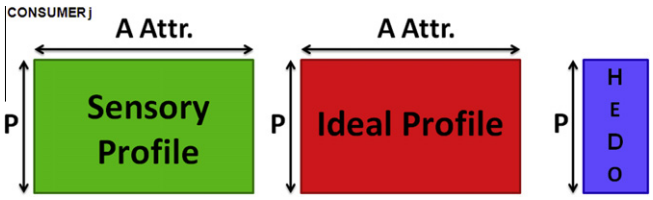

Fig. 1. Data provided by each consumer during the *IPM*.

Due to the fact that consumers are being more and more involved in the product development process, their points of view are currently often required. Moskowitz (1996), Husson, Le Dien, and Pagès (2001) and more recently Worch, Lê, and Punter (2010) showed in different studies that consumers can profile products while meeting the requirements of discrimination, consensus and reproducibility of a sensory panel. This is particularly true when the attributes which are evaluated are not complex and understandable by naïve consumers.

It has also been shown that subjects can use an internal imagined product as reference to compare products (Booth, Conner, & Marie, 1987). Such comparison is done when using tasks involving *Just About Right* (*JAR*) scales, in which consumers are asked to rate the intensity of the products on each attribute by indicating whether the intensity of that attribute is *just about right*, *too strong*, or *too weak*. The idea behind this is that if consumers can rate the perceived intensities of the products in function of an imagined ideal that works as a reference, one can also expect them to be able to rate their ideal explicitly.

Moskowitz (1972) worked on this idea and proposed to extend the classical sensory evaluation by integrating the opinion of the subjects who test the food in the optimization process. To do so, he proposed to give the subjects the opportunity to suggest the degree on a scale to which they would alter products for the given attribute set so that the products would be closer to the representation of their ideals. Depending on the study, the subject was either asked to rate the ideal directly (*IPM* type of measurement), or to rate the perceived intensity relatively to this ideal (*JAR* type of measurement). Some years later, Szczesniak, Loew, and Skinner (1975) proposed a derivative of the texture profile technique (Brandt, Skinner, & Coleman, 1963) using consumers. In their study, apart from providing descriptions of the texture of the products, the consumers were also requested to rate the ideal intensity on the specific texture attributes. Hoggan (1975) applied a similar technique for optimizing beers, by including taste attributes as well. In these two studies, the ideal intensity was rated only once by each consumer.

The *Ideal Profile Method* (*IPM*), which is presented in this paper, is a variant of these methodologies. After presenting in detail the protocol as used routinely at OP&P Product Research (Utrecht, The Netherlands), guidelines for a better understanding of how consumers define and rate their ideals towards a product are given.

2. The *Ideal Profile Method*, in practice

The *Ideal Profile Method* (*IPM*) is a descriptive analysis performed by consumers where additional questions about the ideal intensities and liking are asked. In practice, each consumer assesses a series of products, and rates each product on the same set of sensory attributes. The products are presented in randomized monadic sequence in order to avoid first-order and carry-over effects (MacFie, Bratchell, Greenhoff, & Vallis, 1989). For each attribute, both the perceived and ideal intensities are rated on the same type of scale (here, an unstructured scale with unique unlabeled anchors at 10% and 90% is used). So, if the first question is: "Please rate the *sweetness* of this product", the second question will be: "Please rate your *ideal sweetness* for this product". This methodology has been adopted with the aim to mimic the *JAR* scale, but using the perceived and ideal intensities instead of the difference with an imagined ideal.

At the end of the task, each consumer has rated as many times the profile of his/her "ideal product" (also called *ideal profile*) as he/she has tested products using the same set of attributes. Thus, if a consumer rates the profiles of *P* products, he/she also rates *P* times his/her ideal profile. As mentioned earlier, also hedonic questions

Table 1
(a) Organization and notation of the sensory data provided by each consumer. (b) Organization and notation of the ideal data provided by each consumer.

(a)

Consumer j	Attribute 1	...	Attribute a	...	Attribute A
Product 1					
...					
Product p			y_{jpa}		
...					
Product P					
			$mean = \bar{y}_{j.a}$		

$y_{j.a}$

(b)

Consumer j	Attribute 1	...	Attribute a	...	Attribute A
Product 1					
...					
Product p			z_{jpa}		
...					
Product P					
			$mean = \bar{z}_{j.a}$		

$z_{j.a}$