REVIEW

Effect of expectations induced by information on origin and its guarantee on the acceptability of a traditional food: olive oil

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SUMMARY

Two home-use tests were conducted to investigate the effects of consumer expectations, which are produced by the information given on an origin, on the acceptability of virgin olive oil. In the first experiment, 50 consumers from Potenza (Southern Italy), rated their liking for one type of commercial olive oil presented in three different conditions: carrying no label (blind), with a com-
mmercial brand label and with a guaranteed origin brand label. In the second experiment, four consumer groups rated their liking for two different oils which had been presented in two different ways: an imaginary brand name and the same imaginary brand name with a guaranteed origin. Each group tested only one sample and only one commercial brand. The results following these experiments showed a significant effect, caused by information on the origin, on the acceptability of virgin olive oil. This effect is also true for products with a different sensory profile. Our results revealed that consumers' liking scores moved toward their expectation, which is consistent with an assimilation effect.

Key-words: consumer expectation, food preference, liking, olive oil sensory evaluation.

1 - INTRODUCTION

Studies on sensory evaluation and acceptance of food products need to consider several important factors, some of which depend on the environmental conditions of the tests, while the others, which are more difficult to keep under control, depend on psychological, cognitive, social and cultural factors. The attention toward these latter factors has progressively changed. They are now studied for themselves, in order to understand the mechanisms governing acceptability of food products.

Cognitive mechanism of consumers and perception of product properties may be markedly affected by information. Consumers face a wide variety of product information supplied through packaging, branding, advertising and other channels. This information is used by consumers to form preferences and purchase decisions, but it also elicits emotions, feelings, imagery and fantasies (VERLEGH and STEENKAMP, 1999).

Recent studies were conducted to investigate the effects of information about health and nutrition on product liking (SOLHEIM, 1992; DAILLANT and ISSANCHOU, 1993; AARON et al., 1994; KÄHKÖNEN and TUORILA, 1995; WEST-COMBE and WARDLE, 1997; SIRET and ISSANCHOU, 2000). However, the effect of background information specifically related to the origin of the product has been less studied. Information about the country of origin has a “tremendous influence on the acceptance and success of products” (DICHTER, 1962). Other authors showed that country of origin has a strong influence on product evaluation (PETERSON and JOLIBERT, 1995). In particular, country-of-origin information may be studied as a cognitive cue, an informational stimulus about or relating to a product that is used by the consumers to infer beliefs regarding product attributes such as quality (BILKEY and NES, 1982; STEENKAMP, 1990). In addition, country of origin has symbolic and emotional meaning to consumers. So there are cognitive, affective and normative mechanisms which govern country-of-origin effects (VERLEGH and STEENKAMP, 1999).

Quality brands, characterised by the origin evoking traditional-type products, generate positive stereotypes and great expectations. However, we still do not know how they influence product acceptability and the sensory properties of the product.
Consumer expectations, related to the familiarity of the products as well as to its real background information, could be well defined as conceptual models which the real product could be compared to and therefore evaluated with. In most sensory applications “expectations” can be thought of as being of two general types: 1) a sensory-based expectation, which leads the consumer to believe that the product will possess certain sensory characteristics, with a definite intensity and influence subsequent perception during consumption; 2) a hedonic expectation, related to like/dislike to a certain degree (CARDELLO and SAWYER, 1992). Hedonic expectations, which are the object of this study, include those that are likely to occur in response to new package designs and brand labels, or when other ideational stimuli, (CARDELLO, 1994), elicit a general expectation for a good or a poor product. Hedonic expectations are not necessarily correlated to specific attribute expectations (CARDELLO, 1994). A mismatch between expected and actual liking will give way to a “disconfirmation”. Several authors (CARDELLO and SAWYER, 1992; TUORILA et al., 1994; LANGE et al., 1999) have defined the hedonic disconfirmation as the difference between the expected acceptability for the product and the acceptability of the product before any influence of the expectation effects. In these conditions, when the stimuli/product is better than expected, the disconfirmation is positive, on the contrary when the stimuli/product is worse than expected the disconfirmation is negative.

The disconfirmation affects food perception and acceptance, therefore a number of predictive models have been suggested in order to explain the effect of discrepancies between expectations and actual product performance on acceptance (ANDERSON, 1973; CARDELLO and SAWYER, 1992).

It is important to mention the assimilation model which occurs when actual liking of the product moves in the expectation direction as well as the contrast model which is given when the actual acceptability changes in the opposite direction of expectation, thus increasing the discrepancy between the expectations and the actual liking of the product.

The study of the expectation effects on food product acceptability raises certain questions on method as far as the experimental procedures are concerned. For instance, in recent studies (CARDELLO and SAWYER, 1992; TUORILA et al., 1994; DELIZA, 1996), when judges evaluated acceptability with information just after the expected measurements, as supposed by LANGE et al. (1999), they could have tried to stay consistent with their expected scores. It could be considered as an “assimilation” effect partly due to an experimental bias. In order to limit this possible bias, LANGE et al., (1999) have intentionally collected expectation measurements at least one week before actual liking measurements and they still observed an assimilation effect probably due to laboratory conditions which induce consumers to assimilate in a greater extent than they normally do in a natural situation of consumption. In fact another important aspect to be considered is the effect of the environmental conditions at the moment the sampling takes place. It is essential that the conditions for a proper evaluation are as close as possible to a situation of habitual consumption.

The aim of this study was the investigation of the effect of expectations generated by information on product origin and its guarantee, on the acceptability of virgin olive oil performed under naturalistic conditions (home-use test).

This work involved the possibility of predicting how specific origin information may influence the degree of product acceptability by a selected consumer.
target (experiment 1) and whether the effect of information about the origin on the acceptability of traditional-type products (e.g. extra virgin olive oil in Mediterranean countries) holds true also for products with a different sensory profile (experiment 2).

2 - MATERIALS AND METHODS

2.1 Experiment 1

2.1.1 Subjects

Fifty subjects of Potenza, Southern Italy, were selected from a list of 400 consumers on the basis of sex, age, socio-economic class, habit on extra virgin olive oil purchasing and frequency of consumption of guaranteed origin products. As the study was a home-use test, the 50 subjects were recruited from 50 families. Subjects consisted of 54% female and 46% males with a mean age of 41 years and an household income of at least 26,000 Euro per year; 60% of these people buy the oil directly from the oil mill, while 92% of them are aware of products with a guaranteed origin, so much in fact that they regularly consume these products.

2.1.2 Products

A commercial extra virgin olive oil which was very well known and easy to find in Potenza was chosen for this experiment. The oil was produced in November 1999 and tested within the end of February 2000 in order to keep stable its sensory properties. During the experiment, the oils were kept out of light and were stored at a controlled temperature (12°C) and humidity (65%).

2.1.3 Information

The product was presented to the subjects in a 100 mL bottle, in three different conditions: 1) blind bottle, 2) bottle carrying its real commercial brand label and 3) bottle carrying a guaranteed origin brand label with the logo of a well known protected geographic area of Southern Italy (the Pollino National Park), which is popular around Potenza for its environmental and cultural characteristics, and the following wording: “The origin of this product is guaranteed by the Pollino National Park Board”.

Graphic differences between labels used in the presentations 2 and 3 were avoided. Two different additional information cards were created and presented with the 2 and 3 labelled oil conditions, using respectively the headed paper of the real commercial company and a headed paper of an imaginary company along with the logo of the protected area. In the first case, the following informative note was presented: “This oil has always been a product that characterises our brand name”; while in the second case the note stated: “An extra virgin olive oil made exclusively from olives grown in this protected area. The Board guarantees its origin”.

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2.1.4 Acquisition of the data

The subjects participated in three tests with six-week intervals between each test.

All the subjects were involved in the sampling of the oil presented in three different ways. In the first test all the subjects tested the sample without any type of information. During the second test half of the subjects were presented with the commercial brand, whereas the other half was presented with the guaranteed origin brand. For the third test, these conditions were reversed.

A home-use test was used and so the experimenters handed out oil samples at home. In each test, the subjects were instructed to use the sample during their main meal in the next three days, at least once, in the way they normally prefer to use a raw virgin olive oil. The subjects were asked to rate their liking after tasting the oil. For this purpose a 9-point scale anchored at the left end with “extremely unpleasant” and at the right end with “extremely pleasant” (KÄHKÖNEN et al., 1996) was used. Before starting the first test, experimenters made sure that the subjects were clear on all the given instructions and the use of the scale. In the second and third tests, before rating the product liking, the subjects were asked to have a look on the label of the presented oil and to read the attached information. Then the experimenters asked subjects to rate how much they had expected to like the product using the same 9-point scale. The experimenters were present when subjects filled in the answering forms. The actual liking of the product was evaluated one week after the level of expectation was measured in order to minimise the effects of assimilation which are caused by experimental bias. Again the experimenters handed out oil sample and the attached information at home. The following instruction was given: “Please taste the oil during your main meal in the next three days at least once. Use it raw in the way you normally prefer to use a raw virgin olive oil. Before tasting the sample, please have a look on the brand label and read the attached information. Rate your liking by ticking a box of the scale”. The same 9-point hedonic scale was used. The experimenters returned to the subjects’ homes to obtain the ratings.

2.2 Experiment 2

2.2.1 Subjects

Two hundred and forty four subjects living in Potenza, were recruited from the pool of 400 consumers following the same procedures as in Experiment 1 and were randomly divided into four groups of 61 subjects.

As the study was a home-use test, the 240 subjects were recruited from 240 families. Each group was made up by 54-56% males, while the other 44-46% of the group consisted of females, each with an average age of 44 and an household income of at least 26,000 Euro per year; 41% of these people buy the oil directly from the oil mill, while 73% of them are aware of products with a guaranteed origin, so much in fact that they regularly consume these products.

2.2.2 Products

Two different types of commercial oil were used: the oil sampled in the first experiment (A), and another well-known product (B).
Sensory differences between the two oils were tested by a “quantitative descriptive analysis”. The analysis was performed according to previous works published elsewhere (MONTELEONE et al., 1996; MONTELEONE et al., 1997). Data were submitted to a mixed ANOVA model (F sample = MS sample/MS sample × judge). Significant differences between samples, for each of the evaluated sensory attribute which showed a significant effect of factor sample, were tested by a LSD post-hoc test (NÆS and LANGSRUD, 1998). The products presented significant differences (p < 0.05) in intensity for their yellow colour, in aroma of green olive, in bitter taste and in pungent mouth-feel.

As already reported in the “products” paragraph of experiment 1, oils were produced in November 1999 and tested within the end of February 2000 in order to keep stable their sensory properties. During the experiment, the oils were kept out of light and were stored at a controlled temperature (12°C) and humidity (65%).

2.2.3 Information

Both samples were manufactured in a 100 mL sample bottle in two different forms: 1) an imaginary brand, 2) the same imaginary brand with an inscription on the label written by the Board of the same protected area mentioned in the first experiment which guaranteed the origin of the product. Four different experimental conditions were used.

As far as the “company brand” was concerned, the subjects involved in this experiment received this additional information: “This oil is a traditional product that characterises our company”.

As for the “guaranteed origin brand”, the sample was presented with an additional informative note saying: “An extra virgin olive oil made exclusively from olives grown in this protected area. The Board guarantees its origin”.

2.2.4 Acquisition of the data

In this experiment a between-subject design was utilised as reported by CARDELLO et al. (1985). Each different group evaluated only one oil sample (A or B) and only one commercial label.

The oil samples presented with the additional information were tested at the subjects’ homes. They were asked to follow these instructions “Please taste the oil during your main meal in the next three days at least once. Use it raw in the way you normally prefer to use a raw virgin olive oil. Before tasting the sample, please make sure you had a look at the brand label and read the attached information. Rate your liking by ticking a box of the scale”. After testing the sample, subjects rated the acceptability of the oil by using a 7-point labelled hedonic scale ranging from “very unpleasant” to “very pleasant” with the central point “neither pleasant neither unpleasant” (LÄHTEENMÄKI and TUORILA, 1998). The experimenters made sure that the subjects were clear on all the given instructions and the use of the scale. The experimenters returned to the subjects’ homes to obtain the ratings. Table 1 summarises the design of each experiment.
Table 1
Summary of the experimental design for each experiment utilised in the consumer study

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Oil</th>
<th>Information</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>3 conditions:</td>
<td>Within subject 50 consumers Expectation hedonic scores and hedonic scores after home-use test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– no information (blind test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– real commercial brand + additional information</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– guaranteed origin brand + additional information after home-use test</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A, B</td>
<td>2 conditions:</td>
<td>Between subject Four groups of 61 consumers. Hedonic scores after home-use test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– imaginary brand</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– same imaginary brand + origin guaranteed</td>
<td></td>
</tr>
</tbody>
</table>

3 - RESULTS AND DISCUSSION

3.1 Experiment 1

The results of the first experiment are shown in Table 2. The mean of the liking scores for the oil presented in the blind condition was 5.74 with a standard error of 0.23.

Table 2
Commercial brand vs guaranteed origin brand
Effect of expectation on virgin olive oil acceptability

<table>
<thead>
<tr>
<th>Brand and information</th>
<th>E (E-B)</th>
<th>A (A-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed origin brand</td>
<td>7.10 (0.15)</td>
<td>6.84 (0.23)</td>
</tr>
<tr>
<td>Commercial brand</td>
<td>5.64 (0.23)</td>
<td>6.16 (0.24)</td>
</tr>
</tbody>
</table>

B = mean of acceptability scores without information (blind condition) = 5.74 (0.23); E = mean of expected acceptability scores; A = mean of acceptability scores with information; M = mean standard error of the means in brackets.

A paired t-test, performed to compare expectation ratings obtained for the two labels (guaranteed origin and commercial), showed a significant difference (t_{98} = 5.27, p < 0.001). The “guaranteed origin form” obtained a higher mean rating than the “commercial form”. 
A paired t-test was performed to test the significance of the differences between the hedonic ratings of the oil after consumption in the two different information forms. Results showed that the mean scores of liking of the brand with a guaranteed origin are significantly higher (t_{98} = 2.03, p < 0.05) than the level of liking of this same product presented with a company brand label, a brand that consumers were familiar with and appreciated.

A further paired t-test conducted to compare the ratings of sample in blind with guaranteed and commercial brand conditions showed a significant effect (t_{98} = 3.34, p < 0.001 for guaranteed brand and t_{98} = 1.26, p < 0.05 for commercial brand) of the product’s origin information (brand label + information) on the degree of oil acceptability. In order to study the nature of this difference, for both products, the differences between the means of expected acceptability (E) and the baseline (B), which represents food liking before having dealt with any information concerning the product, were calculated. A t-test showed that the expectations of the brand product with a guaranteed origin are significantly higher (t_{98} = 4.88, p < 0.001) than the baseline acceptability. This significant difference reveals that a negative disconfirmation occurred. On the contrary, no disconfirmation was observed for the differences occurred between the expected acceptability induced by the company brand and the liking of the blind product.

Differences between the actual liking of the product (A) and the baseline (B) showed the effect of negative disconfirmation on the acceptability of the brand product carrying the guaranteed origin label. This difference may be attributed to a significant effect of the product’s origin information on the acceptability of the labelled products. In such cases, two patterns can occur: (E-B) / (A-B) > 0 revealing an assimilation effect; or (E-B) / (A-B) < 0 revealing a contrast effect (LANGE et al., 1999). Results of this study showed an assimilation effect, so that the acceptability of products carrying information on their origin moves in the direction of the expected acceptability. Figure 1 shows (A-B) values vs. (E-B) and a regression line was fitted for the origin guaranteed product. The positive correlation confirmed an assimilation model of the effect that the disconfirmed expectation has on the acceptability of the product. However, the regression coefficient (0.496 ± 0.27) differed from 1 and indicated that consumers did not completely assimilate towards their expectation. Therefore, one may wonder if there is a chance that repeated disconfirmations may not lead to a decrease in expectation and in liking as suggested by LANGE et al. (1999).

Assimilation was observed in most of previous studies conducted on different types of food products (SIRET and ISSANCHOU, 2000). As these studies were carried out in laboratories, the data of the present study, which were gathered during a home-use test, may provide some external validity to some of the earlier research.

Results of this experiment reveal the important effect of information about the origin of a product in modifying the acceptability of products which are deeply rooted in food traditions.

### 3.2 Experiment 2

The aim of this experiment was to verify whether the effect of information on the product acceptability, observed in the first experiment, was also confirmed for oils with different sensory properties.
Figure 2 shows the results of the experiment. Data were submitted to a two way ANOVA according to the following model: hedonic score = oil (2 levels: A and B) + information (2 levels: company brand and origin guarantee brand) + information × olive oil. Table 3 shows the results of this analysis. Both factors showed a significant effect on acceptability scores. The effect of the interaction (information × olive oil) was not significant. The Least Significant Difference (LSD) was computed to test the significance of the differences between the
mean scores of each sample condition \( (p < 0.05; \text{df} = 240; \text{LSD value} = 0.42) \).

Results showed that the mean scores of the oils carrying the additional origin information were significantly higher than the scores of the same oil with the company brand information. Despite the fact that in both versions oil B showed a lower acceptability score than oil A, it is interesting to observe that when oil B is presented with information on its origin, its acceptability increases such as for oil A. No significant difference was found comparing the mean scores of the oil A carrying the commercial brand label with the oil B carrying the guaranteed origin brand label.

**Table 3**

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>1</td>
<td>86.168</td>
<td>86.168</td>
<td>60.889</td>
<td>0.000</td>
</tr>
<tr>
<td>Oils</td>
<td>1</td>
<td>38.561</td>
<td>38.561</td>
<td>27.249</td>
<td>0.000</td>
</tr>
<tr>
<td>Information ( \times ) Oils</td>
<td>1</td>
<td>2.168</td>
<td>2.168</td>
<td>1.532</td>
<td>0.217</td>
</tr>
<tr>
<td>Error</td>
<td>240</td>
<td>339.639</td>
<td>1.415</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results drawn from this experiment confirm that information about the origin of olive oil affects product acceptability. The effect is still clear when oils with a different sensory profile are tested. This evidence suggests the need of further studies aimed to evaluate whether guarantee of origin could also induce specific sensory expectations.

### 4 - CONCLUSIONS

Results revealed that information about the origin of virgin olive oil may influence product acceptability.

Negative disconfirmation observed in products carrying a guarantee on their origin influences consumer perceived acceptability, which is consistent with a positive assimilation effect. However, consumers did not completely assimilate towards their expectation and one may wonder if there is a chance that repeated disconfirmations may not lead to a decrease in expectation and in liking.

The effect of the information about the origin on product acceptability held true also for products with a different sensory profile. This result would make interesting further experiments to evaluate whether guaranteed origin also induces specific sensory expectations and what the effect of disconfirmation about these specific sensory properties would be.

Data of the present research were gathered under naturalistic condition, that is during home-use test. As most of expectation researches was performed in
laboratory, the present data may provide some external validity to earlier studies. Anyway, further studies are needed to verify if results obtained under naturalistic conditions (home-use test) are still affected by experimental conditions.

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