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Effects of non-sensory cues on perceived quality: The case of low-alcohol wine.

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Abstract:

On the basis of an experiment on expectancies disconfirmation and cognitive categorization, this research evaluates consumers' acceptability of low-alcohol wine. Using blind tasting and full tasting of three low-alcohol wines and three regular wines on a sample of 73 consumers, we show the impact of the "low-alcohol" cue on perceived quality. Our main results reveal no significant difference in liking between low-alcohol wine and regular wine. Expectations created by the "low-alcohol" cue have no negative impact on overall evaluation and individual characteristics have almost no effect on wine evaluation. Disconfirmation of expectations and assimilation and contrast effects are observed and discussed.

Key words: perceived quality, expected quality, disconfirmation, low-alcohol wine.

Résumé :

La comparaison des notes hédoniques données par 73 consommateurs entre une dégustation à l'aveugle et une dégustation en non aveugle permet d'identifier l'effet de l'information « allégé en alcool » sur la qualité perçue globale de trois vins « allégés en alcool » et de trois vins « normaux ». Les résultats de l'expérimentation ne montrent pas de différences d'évaluation significatives entre les vins et les caractéristiques individuelles influencent très peu ces évaluations. La non confirmations des attentes et des effets d'assimilation et de contraste sont néanmoins observés et discutés.

Mots clés : qualité perçue, qualité attendue, non confirmation des attentes, vin allégé en alcool.

Effects of non-sensory cues on perceived quality: The case of low-alcohol wine.

Introduction

The continual decline in wine consumption in France, global overproduction, increasing competition from new wine producing countries and beverages other than wine, such as bottled water and soft drinks, have all contributed to the crisis facing the French wine industry. Reducing the alcohol content of wine is one of the solutions being proposed to cope with this situation. Furthermore, the pursuit of wellbeing and the increasing awareness of health issues are influential trends, reinforced by public policy on road safety and public health. While the alcohol content of wines has continued to increase over recent decades (quality improvements, climatic conditions, etc.), a low-alcohol wine offers dual objectives; firstly, a response to these recent concerns and an introduction onto the market of a wine, which is pleasant to consume in all situations, e.g. as an aperitif, accompanying a meal or as a drink on an evening.

Whilst the technical side has made great advances in producing good quality wines of lower alcohol content, it is clear that this innovation has not been so readily accepted by the consumer, both at the affective level (gustatory practice) as well as at the cognitive (cognitive coherence between quality and alcohol content) and symbolic level, due to the predominance of the “traditional” wine model (Cohen and Basu, 1987).

In this article we will attempt to evaluate empirically this perceived distance between lower and higher levels of alcohol content in wine, on the basis of the concept of expectation disconfirmation (Anderson, 1973). Specifically, we measure the difference between the expected quality of a “low-alcohol wine” and its intrinsic quality evaluated in blind tasting. The interpretation of the results is backed up by a qualitative study carried out with experimental test groups.

Theoretical underpinning

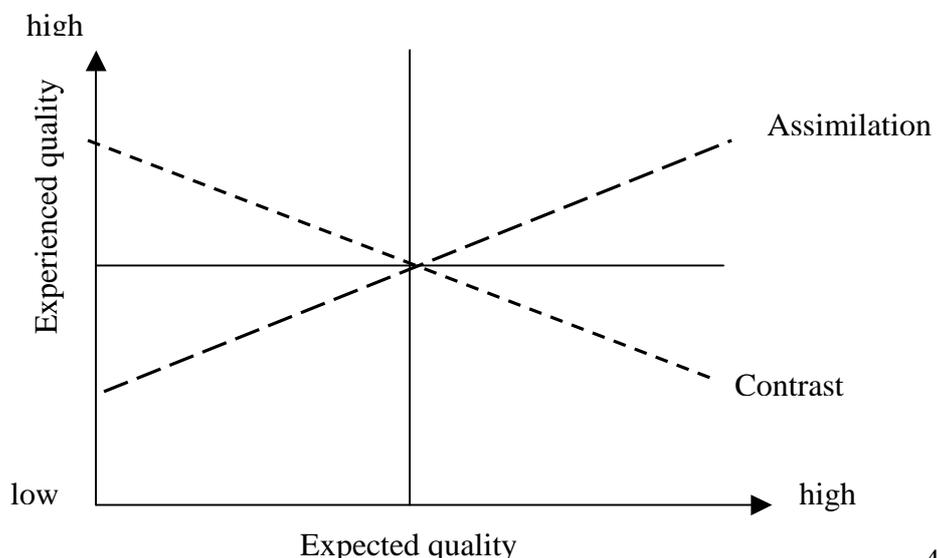
Consumers’ product evaluation is influenced by their prior knowledge of other competing products and by the attributes of the product in question. Thus, the concepts of cognitive categorization and perceived distance are useful tools in helping us to understand how consumers evaluate low-alcohol wine. In this way, the categorization process consists of making comparisons between a new element and extensive prior knowledge of the category already internalised in the memory. Set before a new element, consumers will then adopt, consciously or unconsciously, a categorization model (traditional, specimen or prototype model) (Cohen and Basu, 1987). The extent of prior knowledge is thus essential: it is the concept of familiarity, measured by the number of product tests which can be translated into consumption frequency. Consequently, consumers’ perceptions are dependent on cognitive categories (Ladwein, 1994) and their opinion on given product attributes can be influenced by this categorization (D’ Hauteville, 1994). An attitude transfer between the product category and the new element can occur and is evaluated by perceived distance. In order that the new element be evaluated positively by consumers, the

objective, then, is to reduce this perceived distance between the category elements and the new element.

The overall perceived quality of a food product is influenced simultaneously or successively by sensory cues as the product is tasted and by non-sensory cues (brand, type of wine, alcohol content, etc.). In purchasing situations, however, gustatory cues are seldom available. The consumer then relies on non-sensory cues to evaluate product quality and to make a selection among the various alternatives on offer. Expected quality, which encompasses non-sensory cues, can be defined as all of the expectations or beliefs regarding the anticipated performance of a product or service. Its study is of particular interest as it influences overall perceived product quality and consumer satisfaction. Expected quality itself is influenced by the consumer's experience with the product, the consumption context and quality indicators (Sirieix and Dubois, 1999). Quality indicators can be distinguished according to their intrinsic nature (they cannot be changed without modifying the product) or extrinsic nature (they can be changed independently of the product) (Oude Ophuis and Van Trijp; 1995, Sirieix, 1999). The low-alcohol wine cue, which is the subject of this study, belongs to the latter category.

Anderson (1973) uses several psychological theories to show the effect of the difference between expected quality and overall perceived product quality (see Figure 1). Cognitive dissonance (Festinger, 1957) or "assimilation" indicates that any divergence between product expectations and performances will be minimized or assimilated by the consumer adjusting his perception of the product with his expectations in order to maintain a certain degree of coherence. Conversely, the contrast theory suggests that if the actual performance of the product is not in keeping with expectations, the consumer will overestimate this mismatch in performance, thus giving an opposite evaluation to his initial expectations. For example, if expected quality is high and if perceived quality is low, the consumer will be disappointed and a phenomenon of contrast will occur. Similarly, a phenomenon of contrast will occur if expected quality is low and if perceived quality is high. In this case, the pleasantly surprised consumer will overestimate the perceived quality of the product (Heslon, 1964).

Figure 1: Adapted representation of the theories of assimilation and contrast (Anderson, 1973).



According to the above-mentioned theories and in an experimental context, the difference between perceived product quality in blind tasting and expected quality according to available cues can be explained by the effect of the non-sensory cue, which creates an expectation. An assimilation effect occurs when the full information evaluation of the product is in keeping with the expectations created by non-sensory cues and a contrasting effect occurs when the evaluation runs counter to expectations (Schifferstein *and al.*, 1999; Schifferstein, 1996).

A large number of empirical results validate these theories, the majority of them on the assimilation side rather than the contrast side. In this way, Oude Ophuis (1994) shows that brand can have an influence on the sensory evaluation of porc meat. Siret and Issanchou (2000) note that cues on traditional production methods have a positive effect on consumers choice of *pâtés de campagne*. Tuorila *and al.* (1998) confirm the positive effect of cues on the hedonic evaluations of unfamiliar foodstuffs. Schifferstein *and al.* (1999) emphasize the role of cues (brand, producer, nutritional information, price, etc.) and of packaging on the hedonic evaluations of yogurts and support the assimilation theory. Lange *and al.* (1999) show the impact of the “type of orange juice” cue and of packaging cues (“glass or cardboard”) on the overall preference and obtain expectancy disconfirmations with assimilation effects. Lange *and al.* (2002) explain the clear preference for champagnes by brand and not by sensory characteristics. D' Hauteville *and al.* (2006) show that the region of origin influences the evaluation of overall perceived quality, but differently according to the type of wine and the subjects' level of expertise. In a study on orange juices Fornerino *and al.* (2006) obtain an assimilation effect on four brands and a contrasting effect on one brand. They also observe a strong brand impact on the overall perceived quality of two products. Using these studies as benchmarks, we will thus attempt to validate the following propositions:

P1: An effect of expectation disconfirmation, which is a consequence of the negative impact of the “low-alcohol” cue on consumer preferences, leading to a better acceptability of “standard” wines compared to “low-alcohol” wines.

Moreover, in accordance with consumers' opinions during group discussions and their representations of wines which usually vary according to colour, rosé wine emerges as a light summery wine to be consumed on holiday, as an aperitif or with a barbecue. Conversely, red wine is characterised as a wine with a deeply symbolic value - a “sacred” identity - on which modifications such as alcohol reduction should not be attempted. We suggest therefore a second proposition:

P2: The impact of cue on evaluation varies in accordance with the colour of the wines (white, rosé, red), with greater acceptability for rosé, and significant rejection for red wine.

We can make a hypothesis, then, about evaluative differences in relation to consumer characteristics. This is shown by numerous empirical surveys on wine consumption (Laporte and al., 2001). Age, gender, profession, consumption frequency, expertise, involvement and innovativity are the most commonly-used criteria to explain variations in wine preferences and in new product acceptance. Finally consumption

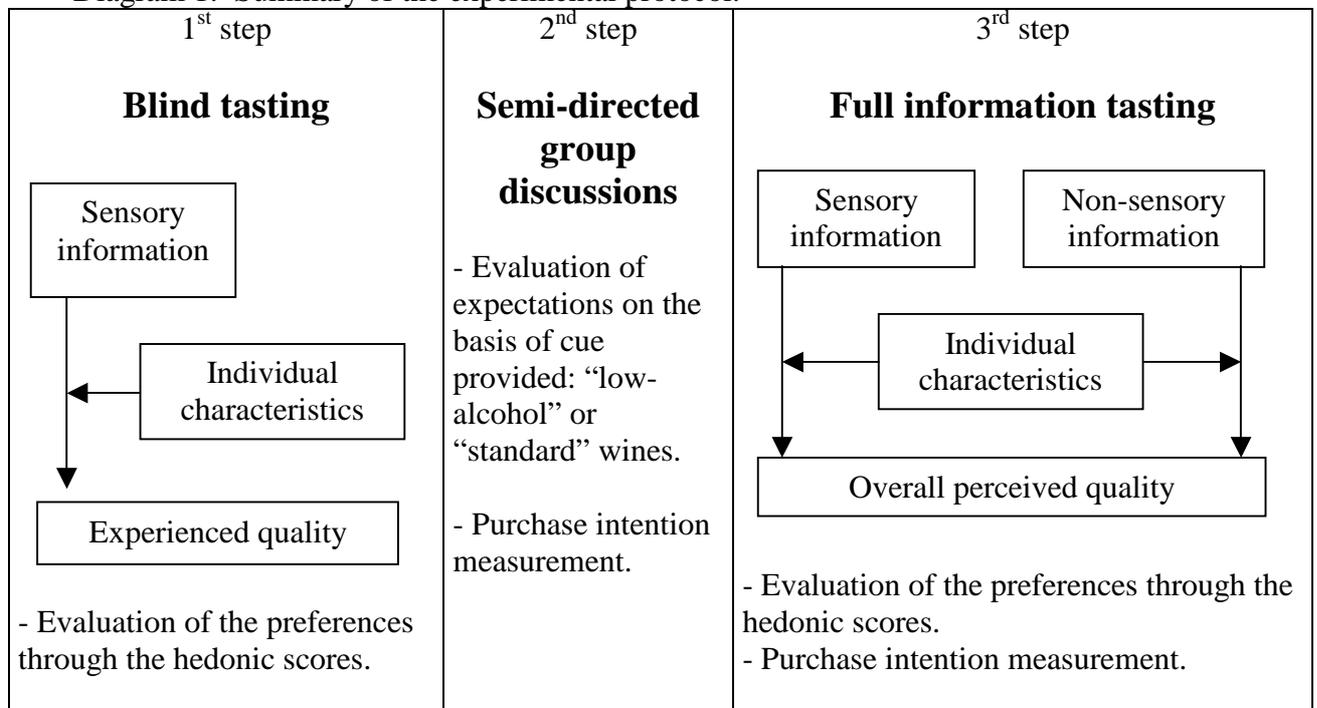
frequency may be an indicator of consumer familiarity with the product in question and this behavioural variable could have an influence upon “low-alcohol” wine being classified in the “wine” cognitive category. Thus we propose :

P3: the disconfirmation model on low alcohol is mediated by individual characteristics such as gender, expertise, involvement, self knowledge, and frequency of consumption.

Methodology

The experiment comprises three phases (see Diagram 1). It begins with a blind tasting, continues with a semi-directed group discussion and ends with a tasting with cue provided as to whether the wine is “standard” or “low-alcohol”.

Diagram 1: Summary of the experimental protocol.



The two tastings are based on a factorial experimental design combining two conditions (“standard”/ “low-alcohol wine”) with three product varieties (red, rosé, white), i.e., six wines (a standard white wine and a low-alcohol white wine, a standard rosé wine and a low-alcohol rosé wine, a standard red wine and a low-alcohol red wine). The low-alcohol wines have an alcohol content of 9 %. The “standard” wines have been awarded medals in wine contests, conferring upon them a quality reference for our test and their alcohol content ranges around 13 %. The low-alcohol wines were not produced from the wines of origin, but they were produced from the same type of vines as the low-alcohol wines. Their temperature was maintained at around 12° for the white and rosé wines and around 16° for the red wines. The wines were served in carafes in order to avoid the influence of other product features. Only the colour could be seen, which could explain some of the

perceived differences in the experiment. The only difference between the blind tasting and non-blind tasting is the cue provided.

Between the two tastings, consumers took part in a semi-directed group discussion in order to collect their perspectives and representations on wine in general and low alcohol wine in particular. But the discussion also gave an opportunity to gauge consumers' expectations of the six wines and to provide an interval of approximately an hour between the two tastings in order to erase from consumers' memories their main perceptions of the wines they tasted during the first session. Expectations were measured after the group discussion so that consumers could think about the subject and hear the different views as may be the case in real situations where they can be influenced by their social circle.

During the second tasting we pointed out to participants the low-alcohol wines. In order to counter the bias effect of the order in which the different wines are presented, the order was drawn up for half of the tasters, as well as for the other half, in the same way for the first and second tastings.

The experiments took place on an afternoon and lasted a little under three hours. They were conducted in four French cities (Montpellier, Aix-en-Provence, Paris and Metz) in order to counter possible influences of the local culture on the low-alcohol cue. The experimental protocol was based on seven target groups of ten to fifteen consumers, which were formed as much as possible according to age, gender, expertise and frequency of wine consumption (Laporte, 2001). The sample, consisting of 73 consumers, was recruited randomly by telephone and by newspaper advertisements.

A questionnaire was completed at each tasting and at the end of each group discussion. The perceptions of the reduced alcohol and non-reduced alcohol wines (hedonic score) were measured during the two tastings with a ten centimetre unstructured line scale (I do not like it at all/I like it a lot). "Expected" quality for the six wines at the end of the group discussion (hedonic score) was measured using the same scale. Measurements of consumer involvement, expertise and innovativity were carried out using a five-point Likert scale (totally disagree/totally agree). The acceptability of low-alcohol wine was measured by purchase intentions, in addition to hedonic scores, which were collected at the end of the group discussion and after the second tasting, by means of a ten-point structured scale.

Hence, we have measurements of perceived "sensory" quality, "expected" quality and "overall" perceived quality (sensory plus "low-alcohol" cue). We can therefore note the confirmation or disconfirmation of consumers' expectations and the effect of the "low-alcohol wine" cue on "overall" perceived quality.

Results

The differences in evaluation, between the hedonic scores awarded to the six wines at each step of the experiment (blind tasting, expectations, full information tasting), are based on mean tests on matching samples.

Table 1 shows that, in the blind test, consumers do not evaluate differently “low-alcohol wines” and the “standard” wines, regardless of the wine colour. This means either that consumers are not sensitive to alcohol content, or that the organoleptic qualities of these wines are equal to those of “standard” wines. Indeed, these two explanations may be not unrelated.

	mean	s.d	t	p value
white	0.365	3.307	0.943	0.349
rosé	0.493	3.371	1.241	0.219
red	0.466	3.107	1.264	0.210

On the other hand, we see in Table 2 that the “low-alcohol wines” cue give rise to significantly different expectations compared with the “standard wines” cue. This result demonstrates an (expected) consumer reluctance towards reducing the alcohol content of wines and thus a negative influence of the “low-alcohol” cue on expected quality, which would tend towards proposition P1. As we have already stated, the measurement of expectations is taken after the group discussion. It is therefore linked to the information exchanged during this period, during which the issue of alcohol content was raised, among other attributes.

	mean	s.d.	t	p value
white	2.192	2.553	7.335	0.000
rosé	1.685	2.437	5.906	0.000
red	2.685	2.843	8070	0.000

Table 3 presents differences in evaluation during the second tasting. The results tend towards a deterioration of scores with the “low-alcohol” cue, but the differences are not significant, therefore proposition P1 cannot be validated. Consequently, we cannot draw the conclusion that the “low-alcohol” cue brings down the overall perceived quality of “low-alcohol” wines (taste is also a factor).

	mean	s d	t	p value
white	-0.360	2.931	-1.028	0.308
rosé	-0.518	3.011	-1.450	0.151
red	-0.408	3.530	-0.975	0.333

This idea is confirmed by the results in Table 4. Even if we see a deterioration in the perceived quality of “low-alcohol” wines between blind and non-blind tasting (and

conversely, an improvement in the perceived quality of “standard” wines), the differences in evaluation (full information or blind tasting) are not significant, except for “standard” rosé. Thus, in Tables 3 and 4, overall perceived quality remains similar to perceived sensory quality and the only significant impact the cue appears to have is on the evaluation of “standard” rosé.

Table 4: comparing overall and blind evaluation of standard vs. low alcohol wines

	mean	s.d.	t	pvalue
White low alcohol	-0.160	3.095	-0.435	0.665
White standard	0.550	2.947	1.584	0.118
Rosé low alcohol	-0.345	2.988	-0.973	0.334
Rosé standard	0.603	2.371	2.157	0.034
Red low alcohol	-0.515	3.115	-1.413	0.162
Red standard	0.320	2.644	1.006	0.318

Next, a mean test carried out on the hedonic scores of the two differences in evaluations (expected – experienced , expected - perceived) enables us to highlight the effects of expectation disconfirmation. Table 5 shows the mean scores as well as the significant differences.

Table 5: an analysis of the assimilation/contrast effects of the information on alcohol content

Wines :	(expected – experienced)		(perceived – experienced)		(expected – perceived)		(expected – experienced)/ (expected – perceived)
	mean	p	mean	p	mean	p	
White low alcohol	-0.7938	0.073	-0.1599	0.665	-0.6972	0.063	0.201
White standard	1.7630	0.000	0.5500	0.118	1.2569	0.000	0.312
Rosé low alcohol	0.1375	0.753	-0.3451	0.334	0.4903	0.176	-2.510
Rosé standard	2.2740	0.000	0.6028	0.034	1.6083	0.000	0.265
Red low alcohol	-0.6808	0.124	-0.5151	0.162	-0.1658	0.693	0.757
Red standard	2.4972	0.000	0.3203	0.318	2.1000	0.000	0.128

Recall that an effect of disconfirmation occurs when there is a difference (Cue - Blind tasting) between the evaluation of the cue (expectation) and the evaluation in blind tasting (experience). The variation is significant for the three “standard” wines, it is less so for “low-alcohol” white wine and not significant at all for “low-alcohol” rosé wine and “low-alcohol” red wine.

We can see that the disconfirmation is expressed negatively (the mean of the Cue - Blind tasting differences is negative) for “low-alcohol” red wine and white wine, which means that expectations created by the cue are “neutral” or rather negative and devalue the product. Thus, “low-alcohol” white wine and “low-alcohol” red wine are wholly acceptable as far as taste is concerned, but the psychological barrier towards

them remains high. The same cannot be said about rosé. This result is in line with our group discussion analysis where rosé appears to be the most acceptable candidate for alcohol content reduction.

The (Full information-Blind tasting)/(Cue-Blind tasting) ratio reveals whether it is an assimilation effect (positive relation) or a contrast effect (negative relation), in accordance with the chart in Figure 1. The only significant assimilation effect is observed for “standard” rosé. A non-significant assimilation effect appears for “low-alcohol” and “standard” white wines and “low-alcohol” and “standard” red wines, and a non-significant contrast effect for “low-alcohol” rosé. The overall evaluation of the latter thus appears to run counter to expectations created by the non-sensory cue.

The difference between expected quality and perceived quality (Cue-Full information) makes it possible to evaluate whether the assimilation effect is limited or total. For the three “standard” wines, the significant difference indicates that the assimilation effect is only very limited. This result can no doubt be explained by the fact that the “standard alcohol content” cue provides no real information to consumers, and thus no specific expected quality. As a consequence, consumers rely only on their gustatory evaluation. For white and red “low-alcohol” wines, on the other hand, the small or non-significant difference between the cue and the full information evaluation indicates a clear assimilation effect (overall perceived product quality is close to expected quality), thus suggesting that the effect of the “low-alcohol” cue influences the final verdict. Assimilation is negative for these two wines and they feature in the lower left-hand segment of Figure 1.

The other measurement of acceptability we used is purchase intention. Purchase intention was measured at the end of the group discussion, and after full information product tasting. Their non-significant difference shows a changing pattern in the evaluation towards an improvement in second purchase intention (table 6). As is often the case, experimental product testing tends to lead to improved acceptability.

	mean	s.d.	t	p value
purchase intention #2 - purchase intention #1	0.219	1.694	1.106	0.2725
	mean	s.d.		
purchase intention #2	5.822	3.025		
purchase intention #1	5.603	2.928		

Finally we wish to find out whether characteristics of the respondents, the meetings or the type of wine can influence the evaluation differences of the wines between blind tastings and full information tastings. Table 7 shows the results of an anova model including gender, age, level of involvement, expertise and the innovating profile of the tasters in our sample as well as the type of wine (i.e., white, rosé, red) have no effect on the product which has been evaluated. The lack of influence of these characteristics on individuals’ behaviour is somewhat unexpected. Indeed, the colour of wines usually evokes varying representations and it generally leads to particular behavioural patterns. Similarly, men’s behaviour towards wine and its consumption is

generally different to women's behaviour, in the same way that experts differ from novices.

On the other hand, the locations where the experiments took place (Montpellier, Aix-en-Provence, Paris, Metz), the profession and consumption frequency have a slight impact on the difference between blind evaluations and full information evaluations. Remember that the local groups were rather homogeneous in term of wine drinking frequency, it is not therefore surprising that there is a location effect in the results.

Tableau 7 : effect of individual characteristics on hedonic scores changes between blind and full information conditions, an ANOVA model.

	Sum of sq.	ddf	Sq.mean	F	p value
Anova model :	2199.234(a)	176	12.496	2.348	0
Constant	0.243	1	0.243	0.046	0.831
(information-blind)	1879.869	149	12.617	2.371	0
gender	0.875	1	0.875	0.164	0.685
Socio economic status	64.087	6	10.681	2.007	0.066
Age	29.617	4	7.404	1.391	0.238
Group	96.397	7	13.771	2.587	0.014
Wine consump. frequency	58.208	4	14.552	2.734	0.03
Wine colour	5.453	2	2.726	0.512	0.6
Self knowledge	7.944	1	7.944	1.493	0.223
involvement	0.174	1	0.174	0.033	0.857
innovativity	0.013	1	0.013	0.003	0.96
Error	1144.299	215	5.322		
Total	3348.619	392			
Total corrected	3343.534	391			

Dependent variable : (overall- blind) score

a R² = ,658 (R² adj. = ,378)

Discussion

By using the theory of expectation disconfirmation within an experimental framework we may observe (or not observe) differences in perceptions between tastings, (whether blind or full information), and the perceived distance between products. This protocol also enables us to measure the influence of a non-sensory cue on overall perceived product quality evaluation.

Discussion of proposition 1 (P1):

First of all, we were unable to observe any differences in blind tasting evaluation between "standard" wines and "low-alcohol" wines in our study. This outcome is in line with the result found in Lange *and al.*'s study (2002), while for other studies, the differences in blind tasting are minimal or in all cases lower than the evaluation differences in full information tasting (Fornerino *and al.*, 2006; D' Hauteville *and al.*, 2006).

Secondly, and rather predictably, quality expectations created by the “low-alcohol” cue are unfavourable as anticipated in our first hypothesis. As in all the other studies quoted above, the level of expectation derived from the information is quite differentiated, between “standard” and “low alcohol”.

In the situation of full information however, no statistical difference was noted between “low-alcohol” wines and “standard” wines, which is rather surprising. With regard to “low-alcohol” wines, an effect of either contrast or of negative assimilation was expected. Assimilation effects, observed in other studies where brands are introduced, (Lange *and al.*, 2002; Fornerino *and al.*, 2006), are not significant in our study. In other words, the “standard wine” or “low-alcohol” cue seems to offer little by way of explanation for the overall perceived quality of the product. One interpretation could be that the “standard wine” cue is unlikely to give rise to particular expectations of quality in the same way a brand or a label of origin would do, for example. An other explanation could be an experimental effect, where subjects are becoming familiar with the concept of low alcohol wine through the focus group discussion, and therefore become much less emotional during the tasting with full information. The cue causes no cognitive dissonance according to Festinger’s definition of the term (1957).

In these conditions, P1 is only partially validated.

Discussion of proposition 2 (P2):

The difference in expected quality is smaller for rosé wines. For white and red “low-alcohol” wines, expected quality tends towards a deterioration. Hence, wine status seems to vary according to colour. Associating rosé wine with reduced alcohol content appears to be more acceptable to consumers. Thus, our research partially validate proposition P2 by way of specific consumer behaviour in relation to rosé.

Discussion of proposition 3 (P3):

We find that individual characteristics play a modest role, except for the frequency of consumption. It is not as surprising as it may seem. We know that wine consumption is indeed moderated by the gender and the age, as well as the degree of involvement of the consumers. Most surveys however show that the symbolic values of the wine is shared by all these groups. A recent survey in France suggests that the acceptability of low alcohol content wines is not very sensitive to these characteristics. Therefore the fact that the frequency of consumption moderate the results cannot be easily interpreted.

P3 is only partially validated.

From a theoretical point of view, our experiment shows that the question of the asymmetrical effect of positive and negative disconfirmation persists. For Deliza (1996), Siret and Issanchou (2000), positive disconfirmation should involve greater assimilation from individuals (this hypothesis was not validated statistically in these two studies). On the contrary, Schifferstein (1997), Schifferstein *and al.* (1999) find weaker assimilation in the case of positive disconfirmation. Moreover, Lange *and al.* (1999) observe no significant difference in the degree of assimilation between positive and negative disconfirmation. Finally, we believe that the results obtained

depend to a great extent on the experimental conditions, the brands and the products selected.

The results of this study clearly need to be considered in the light of its limitations. First of all, the sample was quite small with little “ex ante” control over its characteristics. This makes it difficult to observe significant effects, but also to identify a sufficient number of respondents that would be “experts”, “involved” “innovative”. Although not identical, these personal traits are sufficiently close, which would necessitate larger samples in order to detect differences.

Secondly, expected wine quality was measured by asking individuals to make projections and to give their views on a hypothetical appreciation of a general - and not a particular - “low-alcohol” wine or a “standard” wine. This approach is undoubtedly less effective than using a real region or brand, which already enjoys a certain cachet and a reputation capable of creating different levels of expectation. We may suppose that the information “normal wine” may not be the relevant cue to oppose the “low alcohol” cue.

Finally, we had no control sample which would have allowed us to observe whether the changes between the different experimental steps could be attributed to controlled factors or to participants’ interaction with the protocol. Indeed, the experiment was limited in itself as the subjects could raise their own level of awareness on the question under discussion and, by acquiring information, play down the importance of the reduction in wine alcohol content, as the protocol proceeded.

In order to take this study to the next step, further research needs to be carried out in tests using authentic consumption situations. Then, there remains the question of acceptability of the level of alcohol reduction in two very different contexts. Indeed, two alcohol reduction strategies in wines were identified in our research ; firstly, a reduction in wine alcohol content by a few degrees (e.g., from 14 % to 11 % alcohol). Alcohol reduction in wine belongs to the wine-maker’s techniques, which little-known to the public at large. Secondly, we suggest a greater reduction in alcohol content to 9 % or even less, as well as a move towards developing a “new beverage”. The reduction in alcohol content would be communicated to the consumer and would be used in the sales pitch since, the “low-alcohol” attribute of wine appears not to devalue its overall perceived quality, as we have already noted. Being aware of this consumer behaviour in relation to these two strategies is important because it will allow wine growers to opt for one of the two positionings: “wine” or “non-wine”. Finally, it would be interesting to replicate this study with products such as “low-alcohol” wines and “standard” wines of origin, from which the “low-alcohol” wine is produced, because there is a likelihood of substitution between these two products.

For wine growing professionals the most interesting result which emerges from this research is that alcohol reduction does not seem to result in the product being devalued, either because the reduction is not perceived, or because the new gustatory balance of the partially reduced wine is at least as pleasant as the “standard” wine. The study has highlighted the overwhelming effect of the sensory quality of wine on perceived quality. Consequently, the taste of wine plays an important role in overall perceived quality, and wine growers should prioritise this factor in their promotional strategies.

In addition, we were able to confirm that “low-alcohol” wine does indeed belong to the “wine” category. This result should reassure those who are concerned about the possibility of a considerable mismatch between this product and “traditional” wines. Moreover, even if an identifiable behavioural pattern seems to be taking shape around “low-alcohol” rosé, reducing the alcohol content of red and white wines should not be ruled out. What is more, socio-demographic criteria generally had no impact upon the perception of wine quality, consequently all consumer groups can be targeted. Finally, wine growers will need to pay particular attention to the selection of their product ranges in order to avoid cross-cannibalization between “low-alcohol” wines and “standard” wines.

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Appendix 1: Summary of expectancies disconfirmation and assimilation and contrast effects.

	hedonic score of blind tasting	"low-alcohol" cue evaluation	hedonic score of full information tasting	expectancies disconfirmation	assimilation or contrast effect
low alcohol white wine	mean = 5.698 ; s.d. = 2.3023	mean = 4.90 ; s.d. = 2.506	mean = 5.542 ; s.d. = 2.6191	Negative	Full assimilation – n.s.*
standard white wine	mean = 5.333 ; s.d. = 2.4258	mean = 7.10 ; s.d. = 2.042	mean = 5.854 ; s.d. = 2.4818	Positive	Partial assimilation + n.s.
low alcohol rosé wine	mean = 5.140 ; s.d. = 2.2484	mean = 5.26 ; s.d. = 2.759	mean = 4.829 ; s.d. = 2.3994	n.s.	Contrast n.s.
standard rosé wine	mean = 4.671 ; s.d. = 2.6963	mean = 6.95 ; s.d. = 2.034	mean = 5.322 ; s.d. = 2.4231	Positive	Partial assimilation +
low alcohol red wine	mean = 4.955 ; s.d. = 2.7733	mean = 4.27 ; s.d. = 2.668	mean = 4.440 ; s.d. = 2.7681	n.s.	Full assimilation – n.s.
standard red wine	mean = 4.517 ; s.d. = 3.0479	mean = 6.96 ; s.d. = 2.514	mean = 4.801 ; s.d. = 3.0093	Positive	Partial assimilation + n.s.

* n.s. : not significant

Appendix 2: Graphic representations of average hedonic scores.

- 1 : blind evaluation
- 2 : expectancies evaluation
- 3 : full evaluation

