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FAMILY TIES IN CONSUMER TESTING OF LAMB

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INTRODUCTION

The meat industry has changed to become consumer driven and therefore consumer issues and consumer research are becoming more prominent. The differences between consumer and sensory testing are in the choice of assessor and in role of the context. Sensory evaluation tries to eliminate this effect of context by controlling all the cooking and presentation of samples given to each experienced individual in separate booths. In all consumer tests, the consumers are "naive" that is to say, they are not trained in sensory assessment nor are they experienced in evaluating products. There are basically 2 ways of conducting consumer tests each with advantages and disadvantages. In the 'hall test', consumers are invited to assess samples under controlled conditions. In this all the external factors contributing to the context can be controlled. In the 'home test', consumers test the product in their home with little or no advice. In this case the conditions can be as they would be during normal consumption of the product but may be unknown to the experimenter.

This paper shows the relationship between consumer assessments of lamb meat from different panels carried out in their homes.

MATERIALS AND METHODS

Lamb meat: Eighteen lambs of each of 2 production types were obtained from France, England, Spain, Italy, Greece and from Iceland. Lamb production was typical of the region and included different breeds raised on a variety of diets. They were slaughtered locally at average weights for the 12 types (6 countries by 2 production types) of 1.0, 2.4, 3.3, 3.5, 4.3, and 7.4 months. The carcasses, weighing 5.4, 11.2, 15.3, 15.4, 15 and 15.3 kg for the 12 types, were held for 6 hours at 10°C before being chilled. After 7 days the legs were removed, vacuum-packed and frozen. One leg from each carcass was distributed to each of the testing institutes when any identifying labels were removed before being re-vacuum packed and stored at –20°C.

Consumer tests: Thirty-six households in Central France (Clermont Ferrand), Eastern Spain (Zaragoza) and SW England (Bristol area) were asked to take part in a study of lamb quality. Each family received one frozen, vacuum-packed leg from each of the 12 types of lamb over a period of 6 months. Roasting, tasting and assessments were done at home. The cook was asked to assess the aroma during cooking and then each member of the household completed individually a questionnaire for texture, juiciness, flavour and overall acceptability (on line scales marked at the ends "-" and "+"). Assessments were scored from 0 to 100 (or 0 to 10 for the French panel).

Analyses: Results were analysed by ANOVA with an arrangement of hierarchical structure. Clustering was carried out using SAS (1985).

RESULTS

The range of scores (on a scale of 0 to 100) for the 12 types of lamb for texture, juiciness, flavour and overall liking were 46-60, 49-56, 55-71 and 55-71 respectively for the French panel; 53-77, 52-62, 49-84 and 50-84 for the English panel and 47-74, 44-76, 50-75 and 48-76 respectively for the Spanish panel. Overall therefore, the lamb was considered of good quality.

The variability between families and between individuals within a family was analysed by ANOVA (Table 1). Variability in scores for overall liking (Table 1) among families was about ten times that among individuals within families in England and France and was about 35 times for the Spanish consumers. Significant variation also occurred among lamb types and interactions between lamb type and family within each panel. Similar effects were shown for the other assessments.

TABLE 1. Variation in overall liking within and between families in 3 panels

Values are the degrees of freedom and mean squares of an hierarchical analyses of variance. All sources were statistically significant.

	French		Spanish		English	
	df	ms	df	ms	df	ms
Family	35	43.4	35	90.0	35	34.7
Individual (family)	83	4.6	145	2.0	88	2.8
Lamb type	11	19.5	11	106.6	11	15.8
Family x Lamb type	374	8.5	384	9.5	383	6.4

Individual distances between consumers are shown for the Spanish consumer panels in Figure 1. Globally there were about 5 to 6 main groups of consumers. There were also 12 of the 36 families in which all the members were clustered together. All members except one from another 5 families were clustered together.

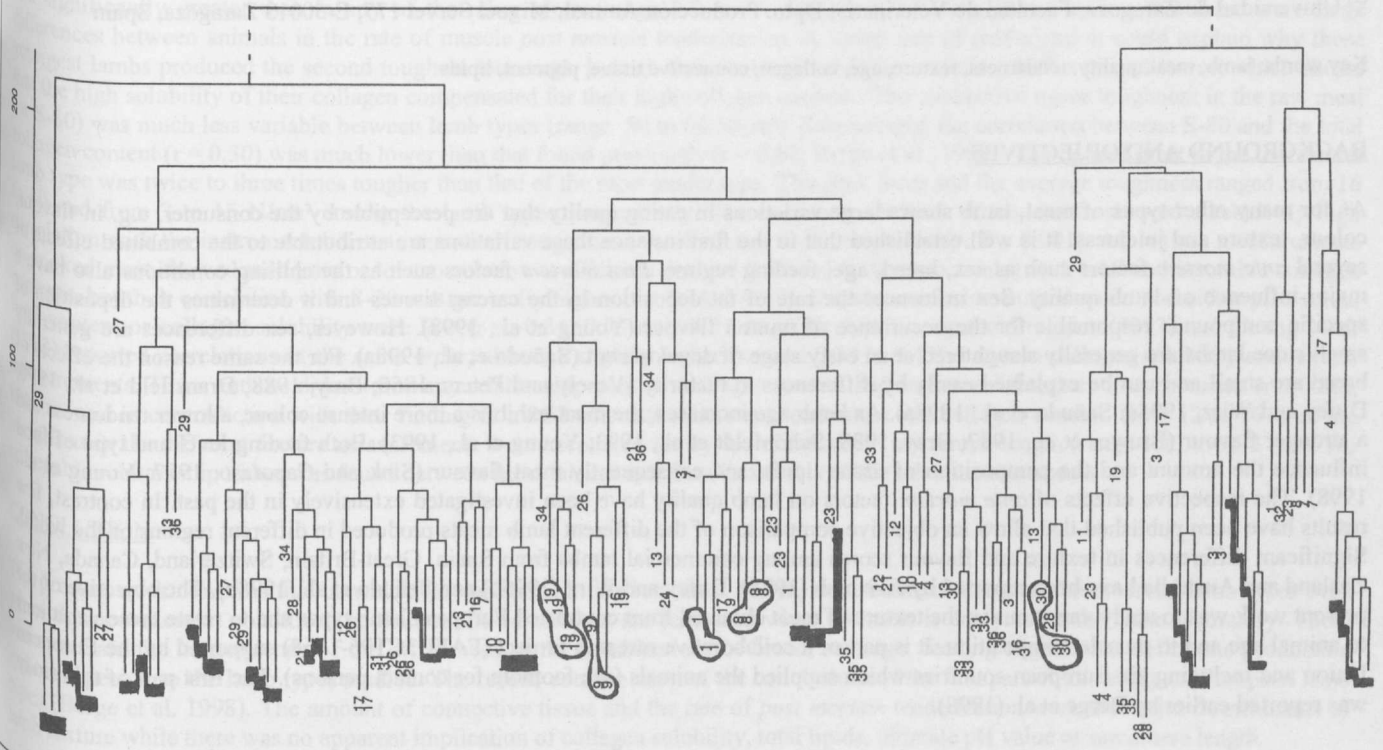
The relationship between members of a family appears strongly also when considering the relationship between the assessments of the cook during the cooking and the quality of the cooked meat assessed by all members of the household (Figure 2). The percentages of the variation at tasting explained by the scores before tasting were 48% for the English panel, 50% for the French and 81% for Spanish consumer panel. Low significant correlation coefficients were also found between the cook's assessment and that of the family when considering the average of each the lamb types and also when considering all lamb joints.

DISCUSSION

Home testing has the advantage that this is the usual way foods are consumed but has the disadvantage in that the conditions of preparation, cooking and serving cannot be controlled. Tasting fresh whole meats poses a further problem because of its heterogeneity. Variations occur between animals, sides of carcasses, cuts of meat and individual muscles that compose the joints. With lamb legs used in this study, one whole leg was given to one family and therefore replicates between families were not possible. Slicing the leg joints and giving different slices to different families would not be conventional and would not overcome the variation among muscles within the slice.

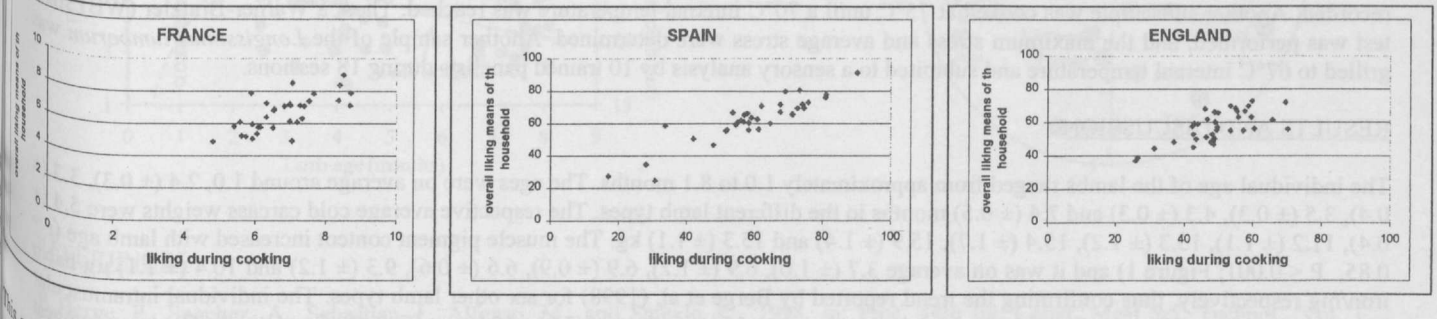
The study showed that there was much more agreement between individuals within a family and than between families in the 3 panels from France, Spain and England. Furthermore the assessments given by the cook during the cooking, particularly for the Spanish consumers, were

FIGURE 1 Similarities and differences among individual consumer and families for the Spanish consumer panel
The figure shows the groupings of individual consumers. Those individuals who are close and form an entire family are joined in black. Those who are close and form all but one member of a family are circled. Different numbers denote different families.



highly correlated with the assessments of meat quality given by each of the family members after tasting. This suggests that the cook had had a large influence on the assessments of the rest of the family. This 'family halo' effect is seldom taken into account when analysing and interpreting consumer data. By the nature of the home test, the origins of this effect are difficult to determine. It could have been that the cook had formed a general assessment and this was transferred to the rest of the family, influencing their assessments. Although only odour was asked of the cook, it was clear that the appearance of these joints coming from a wide range of different production systems might have been unfamiliar to the consumers.

FIGURE 2. Relationships between the assessments of the cook and those of the consumers.
For the 3 panels in 3 countries, the average overall liking of all lamb legs for all the members of the family is plotted in relation to the average overall liking assessed during cooking by the cook.



This could have been particularly so for Spanish consumers who usually consume only lean meat from young lambs. However the effects were seen in the other 2 panels. So, we cannot rule out that some consumers did not assess the meats totally independently and may also have been surveyed by the findings of the cook who may have anecdotally remarked on the composition and cooking properties of the meat. The usefulness of the home test, in relation to other forms of consumer testing, should be re-evaluated, particularly for meat testing.

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