Developing issues in Consumer and Sensory Science

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The interaction between consumers and food is a matter of interest to government because of the importance of agriculture to rural economies, and of food habits in determining the health and life expectancy of a nation. It is of interest to industry because of the size of food chain in relation to the national economy. Finally food is an essential part of every consumer's life and the role of cuisine in local cu can be an integral part of national and regional identity.

In this paper I would like therefore to review some of the major influences that impact on food choice generally before turning to some re developments from my own research.

We choose or reject food for three main reasons. There are the cognitive reasons. We may have a positive set of attitudes and beliefs abo the food; it may be important to our culture, it may be produced in a way that we find specifically acceptable, i.e. organically, without ma etc., or we may believe that it is nutritionally beneficial. The study of how attitudes and beliefs are developed and control food selection i particularly relevant in the context of understanding how consumers react to novel foods and novel production processes and why consu risk perception is different to that of government.

There are the psychobiological reasons. Our bodies require sustenance, and our brain learns quickly what foods or beverages satisfy its desires for nutritional intake or pleasure. Recent research at the IFR and elsewhere is showing how these post-ingestive effects can be ver influential in determining our preferences for particular foods and flavours. Rogers, Richardson and Elliman (1995)

Finally there are the perceived sensory properties. These properties have been widely studied using trained sensory panels and the analys this data for conventional is fairly well understood, although there is recent controversy about whether assessors should be treated as fixe random effects in the Analysis of Variance. However techniques for relating sensory properties to physical and chemical measurements a still very basic and do not acknowledge the likelihood of non-linear relationships. The application of one non-linear method was given fo the case of sausages in Liu(1990) and by MacFie and Hedderley (1993). The work of Bardot et al (1993) in developing and tuning neural networks methods for this application deserves further research.

However I believe too much emphasis has been put on the supposed properties of the food and not enough on the mechanisms of percep We still do not understand the mechanisms of odour perception although molecular biology appears to be the tool to give us the breakthr We still do not understand enough about the mastication process and its influence on texture perception and recent research at the IFR of potential to understand how consumers behave and the construction of novel instruments that will give better definitions of the physical properties that determine texture perception. Brown et al (1994)

For the future, I believe that research on meat and meat product quality should therefore be more focused on consumer behaviour. What is that makes consumers buy products, what is it that gives them satisfaction when consuming it, and what makes them have the intention to it again?

Preference mapping (for an introduction see Greenhoff and MacFie, 1994) offers the potential to link consumer preference patterns to sensory properties perceived by the trained panel. for a readable introduction. We first applied it to restructured steaks in UK and then to tinned catfood in Australia. (Jones et al 1989). We have developed and published experimental designs to balance out and remove the effe of sampling position that are very common in consumer testing. MacFie et al (1989) and have recently extended it to the case where consumers are not tasting all of the products. Wakeling and MacFie (1995). Recently we have applied it to UK consumer perception of a varieties to show a clear market gap. Daillant-Spinnler et al (1996) The potential to apply this technique to a wide range of meat cuts and processed products is signalled.

Defining consumer perception of quality as matching expectations, we show, using conjoint analysis and computer-generated label technology how giving improved information about products can increase perception of quality quicker and more cheaply than breeding n varieties. Deliza (1996). However our research also indicates that perception is a function of both expectations and sensory stimuli and o most recent studies are exploring the mechanisms that generate expectations and control whether we notice deviations from expectations the sense of poor sensory properties. Deliza, MacFie and Hedderley (1996). There are concepts here that can provide a bridge between marketing and R&D and minimise product failure and give better targets to new product developers. See Deliza and MacFie (1996) for a review.

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