THE MIND AND MOUTH IN SENSORY QUALITY, CULTURE AND EATING BEHAVIOR

SINDET OG MUNDEN I SANSEKVALITET, KULTUR OG SPISEADFÆRD

Professor & Science Team Leader: Derek Victor Byrne
ABSTRACT

The mind and mouth in sensory quality, culture and eating behavior

› The human senses are in themselves central to determining the quality of foods consumers choose in different cultural contexts. i.e. the mouth

› However, it is also very important to understand the consumer’s ‘mind’ in terms of eating behaviour.

› When we talk about ‘taste’ in food we mean personal preference as much as the influence of taste, flavour and texture as determined by the human senses.

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FOOD, METABOLOMICS & SENSORY SCIENCE

The Science Team Food, Metabolomics & Sensory Science

Food Metabolomics

The science team employs LC-MS and NMR-based methods to investigate the metabolomics of a variety of food items (milk, meat, plants) in order to understand the effect of metabolites on sensory and technological properties. In addition, the team investigates the effect of the intake of food products in relation to human health. This entails intervention studies in humans and animal models carried out in collaboration with researchers from leading health research environments. The Department of Food Science has a 600 MHz NMR spectrometer and modern LC-MS equipment.

Sensory Science

Sensory science is a unique method for describing and measuring food quality based on the use of human senses. A trained sensory panel quantifies the sensory attributes within appearance, odour, taste and texture. In addition, consumer analyses are performed to determine consumer acceptance and preferences. This knowledge helps identify the sensory attributes that can enhance consumer acceptance, desire and consumption of healthy foods.

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2. QUALITY, QUALITIES AND UNIQUENESS....
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4. FROM NUTRITION TO EATING BEHAVIOUR....
5. PERSPECTIVES....
1. HUMAN SENSORY PERCEPTION & EATING

The mind & mouth....
Does the Mind Reflect the Mouth? Sensory Profiling and the Future

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Descriptive Sensory Profiling methods have been used for over half-a-century. As the application of these methods obviously does not occur in a vacuum, we sketch the contextual basis of these methods. A unifying model, illustrating the tasks required from a sensory panellist, is presented with the aim of illuminating some major differences between methods. The history and main developments in the field of descriptive sensory profiling are outlined in a basic pedigree of methods. The authors suggest an approach to sensory profiling where taylor-made, problem oriented, methods are devised and used.

Keywords  descriptive sensory profiling, future of sensory profiling, sensory panels, sensory psychology, sensory science
- Our perceptual interaction with food........& food quality/ies
2. QUALITY, QUALITIES.... UNIQUENESS....

What do we mean by ‘quality’ today....

Back to the future....
- What constitutes the qualities / uniqueness of a food?
  › It can be grown and let's imagine it is more healthy..... But......its red

What are the implications of this scenario? Who would eat the red one as a healthy option - How can it become the new normal?
MANY MORE EXAMPLES....
WILL ‘NOVEL HELATHY’ WORK ON THE MASS MARKET CONSIDERING MIND AND MOUTH?
PERHAPS NOT?

The Cultural World

Product has initial impact & but fails on market

HOW TO MAKE ‘DIFFERENT/NEW’ A SUCCESS = ENSURE ‘ADAPTATION’
2. SENSORY PERCEPTION STUDIES

Finding solutions....
THESIS - HONEY

SENSORY UNIQUENESS AND DYNAMICS IN CONSUMER UNDERSTANDING OF LOCAL FOODS

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› Sensory Science
› Department of Food Science

› Supervisor
› Professor Derek V. Byrne

› PhD

What is local?
LOCAL FOOD? - CULINARY REVOLUTIONS VS. LOCAL TRADITIONS....

WHICH IS A LOCAL FOOD STORY?

Spam musubi

New Nordic Food
STUDY I.

CONSUMER CONCEPTS IN NEW PRODUCT DEVELOPMENT OF LOCAL FOODS: TRADITIONAL VERSUS NOVEL HONEYS

DK HONEY

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› Supervisor
  › Professor Derek V. Byrne

› PhD
Consumer concepts in new product development of local foods: Traditional versus novel honeys

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ARTICLE INFO

Article history:
Received 22 December 2012
Accepted 16 February 2013

Keywords:
Local foods
Conceptualisation
Appropriateness
Novelty
Uniqueness

ABSTRACT

To understand consumer perception of local foods and guide product development for small scale producers, the present study focuses on consumer concepts and appropriateness for use of traditional versus novel local honeys. Traditional and novel local honeys were distinguished by the different concepts, and these concepts captured additional product information other than purely how much one ‘liked’ the product. The traditional local honeys were predominantly liked and understood from a conceptual perspective as familiar, typical Danish (related to national identity) and balanced, leading to emotional responses of joy and excitement. All the novel local honeys were associated with unique. However, the results for the novel local honeys displayed mixed conceptual associations and elicited surprise and some negative expressions of emotions. Thus, familiarity appeared to be positively considered with respect to the local honeys whilst novel honeys could be ‘too’ novel for the consumers resulting in negative emotional responses. The appropriateness measurements were very important to indicate potential barriers for purpose of use. This study provided consumer concepts linked to traditional and novel products which may be useful in positioning and communication about local foods in the marketplace.

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**AIM:** To investigate how consumers conceptualize traditional versus novel local foods by the use of abstract, functional and emotional concepts and appropriateness for use attributes.
### Traditional

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heather</td>
<td>Heather honey</td>
</tr>
<tr>
<td>Mostly-liked</td>
<td>Spring honey. The honey was the mostly liked among trained panellists</td>
</tr>
<tr>
<td>Basic</td>
<td>Summer honey. The honey worked as basic honey for the novel honeys</td>
</tr>
</tbody>
</table>

### Novel

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horseradish</td>
<td>The basic honey with grated fresh horseradish</td>
</tr>
<tr>
<td>Peppermint</td>
<td>The basic honey with chopped peppermint</td>
</tr>
<tr>
<td>Mustard</td>
<td>The basic honey with mustard and crushed mustard seeds</td>
</tr>
<tr>
<td>Apple</td>
<td>The basic honey with apple syrup and dried apples</td>
</tr>
<tr>
<td>Sea buckthorn</td>
<td>The basic honey with crushed sea buckthorn</td>
</tr>
</tbody>
</table>
THE EXPERIMENT

Paper IV: Consumer concepts in new product development of local foods: traditional versus novel honeys
Conceputal Attributes

Background
- Gender
- Age
- Frequency of consumption
- Regular honey usage
- Hedonic
- Liking

Abstract concepts
- Familiar
- Ordinary
- Exclusive
- Traditional
- Modern
- Typical Danish
- Complex
- Balanced
- Unique
- Feminine
- Masculine
- Tastes like more
- Appetising
- Disgusting
- Fun

Functional concepts
- Makes a meal more interesting (Meal more interesting)
- Inspires one to try other novel honeys (Trying other novel honeys)
- Convenient to use in food preparation (Convenient)

Emotional concepts
- Joy
- Surprised
- Disgusted
- Sad
- Angry
- Fear
- Excited
- Annoyed
- Disappointed
- Bored

Appropriateness for use
- Spreading on bread
- For baking of bread and cakes (Baking)
- Sweetener in hot drink e.g. tea
- Topping on ice cream/desserts (Ice cream/dessert)
- Topping on yoghurt (Yoghurt)
- For preparation of muesli (Muesli)
- For preparation of salad dressing (Salad dressing)
- Consumed with cheese and crackers (Cheese)
- Served with hot cooked meat (Hot meat)
- Served with hot cooked fish (Hot fish)
- Served with cold fish e.g. salmon, sushi (Cold fish)
- Consumed without any supplement (No supplement)
- Appropriate for something other than listed (Other)

So does honey make you angry, sad, happy?
Paper IV: Consumer concepts in new product development of local foods: traditional versus novel honeys

Concepts/Emotions re local honeys

Component 1 (Y-explained variance 21%)

Component 1 (Y-explained variance 70%)

TRAD

NOVEL

BAD

NOVEL

GOOD

Bored

Sad

Disappointed

Annoyed

Angry

Fear

Disgusted

Surprised

Joy

Liking

Familar

Ordinary

Traditional

Typical Danish

Mostly-liked

Clove

Basic

Rape

Masculine

Masculine

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CONCLUSIONS

• Traditional and novel local honeys were separated by different concept associations, and provided more product information from consumers than simple product liking.

• **Familiarity** had a positive impact on the conceptualisation of the traditional honeys. The level of novelty and its conceptualisation are critical to the market success of *unique* novel products.

• The **appropriateness** measures (not shown in Fig.) were very important as indicators of potential barriers for purpose for use.

• when we combine the sensory/conceptual/use mouth + mind indifferent contexts

• **A novel local product** 1. *must be liked on a sensory basis*, 2. *fill a unique and pleasant conceptual space* and 3. *be provided with suggestions for usage* if there are no pre-existing common guidelines........
Crossmodal Research Laboratory

We study the integration of information across the various different sensory modalities (hearing, vision, touch, taste, and smell) using a variety of paradigms and techniques. This exciting area of research is changing the way we view our senses, and contributing important new insights to the understanding of the brain. These insights can have major implications in the real world.

SELECTED PUBLICATIONS

Multisensory integration and attention in developmental dyslexia.

How automatic are crossmodal correspondences?

Multisensory flavour perception.

Crossmodal correspondences: a tutorial review.

Crossmodal spatial attention.
Do you say it like you eat it? The sound symbolism of food names and its role in the multisensory product experience

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b Crossmodal Research Laboratory, Department of Experimental Psychology, University of Oxford, Oxford, UK

ABSTRACT

The aim of the present study was to investigate whether the name of the product—in terms of the phonetic speech sounds—conveys sensory (appearance, odours, basic tastes, flavours, textures, mouthfeeling and aftertaste) associations to consumers. Moreover, the existence of conceptual associations to the sound of the product’s name was also analysed, in order to add a further level of analysis to the crossmodal interaction. Participants assessed three pairs of sandwiches, culturally defined by specific names, in a novel and traditional form, and rated them using four pencil-and-paper based line bipolar scales. The results revealed that the sounds of the product names were associated with both sensory and conceptual attributes. Consumers associated a different sounding name (and different sensory-conceptual attributes) to the novel food product than to those suggested by its traditional form. These findings have a number of important implications for the naming, branding, and advertising of food products—both traditional and novel. Marketers can enhance their consumers’ product experiences by ensuring that the sound symbolism of the product name sets up the right (i.e., congruent) product-related sensory and cognitive expectations in the mind of the consumer. Hence, these findings suggest that when innovation occurs in a new food product, companies should think carefully about whether to modify the name of the food product as well.

The study constitutes an advance in sound symbolism knowledge as it broadens the known associations to appearance, odour, basic taste, flavour, texture, mouthfeeling and aftertaste sensory attributes. The findings, indicating the central and fundamental role of the product name in and of itself in the multisensory product experience, constitute also an advance in the consumer product perception.
4. FROM NUTRITION TO EATING BEHAVIOUR....

›A gap – perception science as a bridge....
a Paradigm shift: focus on this ‘translation’
5. PERSPECTIVES....

What are we aiming for?....
A QUOTE

‘The only way to keep your health is to eat what you don’t want, drink what you don’t like and do what you would rather not.....’

Mark Twain – ‘following the equator’

Should it have to be like this.....
A BOTTOM LINE – 2050+

› The human mind & mouth as a key to unlocking future ‘healthy eating’ ‘food happiness’

› Where the mind, mouth, culture and societal needs merge.....

› To understand and promote societal shifts in eating behaviour

› From a past, present and future perspective....
FOOD FOR THOUGH..... OUR CHALLENGE

Can we teach an old dog (public/science) new tricks?
THANK YOU