

Inside Consumer Experience: Studying human food choice in real-life contexts

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Introduction

The food and drink industry annually spends large amounts of money to introduce new food products to the market. In spite of all this money, almost 90% of the new products fail [1]. In the laboratory, test panels said they like the products, but in real-life contexts the products fell short. The growing insight that situational influences may be more prominent in the determination of food choice than general overall preferences [2-4], has been the incentive to start the Inside Consumer Experience (ICE) project. The aim of the project is to develop novel instruments and mobile services for the objective measurement of food selection and consumption in real-life contexts.

Food choice

Currently, almost 90% of the new food products that are launched, disappear from the market within one year [1]. One of the main reasons for this high failure rate is the underestimation of the role that situational factors play in food choice [2-4]. Consumer tests are often carried out without taking the particular consumption situations and the related experiences into account. Testing of consumer preferences is primarily done in food laboratories that offer a highly controlled testing environment. The results of these tests cannot be generalized easily to more natural environments.

The gap between laboratory and real-life situations is currently bridged by studies that use typical marketing research techniques such as interviews and questionnaires. The major drawback of these techniques is that they address the consumer's conscious food experience by measuring its verbal expressions. Unconscious processes, nonverbal reactions and important context factors which strongly influence consumer attitudes and behavior cannot be considered.



Figure 1. Cameras allow you to study eating behavior under natural conditions.

Restaurant of the Future

Food scientists agree that a new approach to research is needed and that it is necessary to study unconscious consumer behavior. This has led to the design and construction of a highly advanced facility for research on food-related behavior in an indoor setting: the Restaurant of the Future in Wageningen (The Netherlands). The restaurant offers a flexible eating environment where food choice and eating behavior can be observed under natural conditions with the help of state-of-the-art observation and sensor technology (for more information, see www.restaurantofthefuture.nl).

Obviously, not all eating environments can be created or simulated in the Restaurant of the Future. Examples are settings such as daycare centers, elderly homes, or events for teenagers (pop festivals, dance parties, etc.).



Figure 2. In the control room, the researchers can watch views from several cameras on a big screen.

Mobile lab

The ICE project takes the concept of situational research a major step further by designing a mobile observation laboratory to study food selection and consumption in real-life contexts, and a suite of corresponding research services. The services which will be offered, include consultation, design and planning of research, execution, data analysis, reporting and advice, with a minimal turn-around time. In addition to behavioral observation, monitoring the physiological and emotional state of the consumer will be part of the service.

The techniques, methodology and service developed in the project can be used by the food and drink industry to (a) develop products for specific target groups (toddlers, teenagers, elderly people) that are hard to reach with traditional consumer research methods; (b) develop products for special occasions (party snacks, sports drinks, meal substitutes for elderly), or (c) check to what extent their general products are appreciated in different situations. The service can also be used by other organizations with an interest in food and eating and drinking behavior, including health aspects, such as hospitals, care centers, patient groups and insurance companies. It will contribute to a better understanding of eating and drinking habits and to ways to influence food choice behavior in a positive manner.

The service being offered enables the conduction of consumer behavior research on different locations under realistic conditions. Target groups that could not be reached before, can now be reached, which means that research can be done in more relevant target groups. Since food selection and consumption will be measured directly (and not indirectly via questionnaires or interviews), the objectivity and accuracy of the data will increase. Furthermore, the use of advanced computer software will make it possible to automate the measurement and analysis process to a great extent, allowing a drastic reduction in effort needed to execute studies and analyze results and thus a faster turn-around time of consumer testing.

Example: studying food consumption in a daycare center

An interesting setting to study eating behavior could, for instance, be a daycare center. Newborns, infants or toddlers can be observed while being fed or having their lunch at the center. Cameras and microphones will be set up in a room of the center. The setting will be recorded on video, with close-up view of the children's response to the food presented to them. After the session, caretakers are invited for a focus group discussion, which is recorded as well. This way, there is minimal disturbance of the normal daily activities at the daycare center.

The observed facial expressions, gestures, verbal and non-verbal behavior of the children will show what they like or



Figure 3. In the control room, the researchers can control the cameras, make video recordings, watch the videos, and annotate interesting behaviors using the latest observation software.

dislike at what time of the day, to what extent they like variation, and in which frequency. The focus group discussions will reveal background information about the children and their eating habits. Strategies how to teach children to eat healthy food, and in what form, can be investigated.

In all tests, we will make sure that all activities are checked against privacy legislation to prevent any possible violation.

Project consortium

The project consortium consists of four partners with complementary assets and expertise:

- **Noldus Information Technology BV**, innovative developer of software, hardware and integrated solutions for research on human behavior, coordinates the project.
- **Centre for Innovative Consumer Studies (CICS)**, a leading research group of Wageningen University and Research Centre in the field of sensory science and food related consumer behavior. Together with Noldus Information Technology and two other partners, CICS has set up the Restaurant of the Future.
- **VicarVision BV** (Amsterdam), an R&D company in computer vision and the creator of FaceReader, a unique tool for the automated assessment of consumer emotions.
- **Symrise GmbH & Co KG**, a global supplier of fragrances, flavorings and active ingredients for the Fast Moving Consumer Goods industry – belonging to the top four in the international flavors and fragrances market.

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