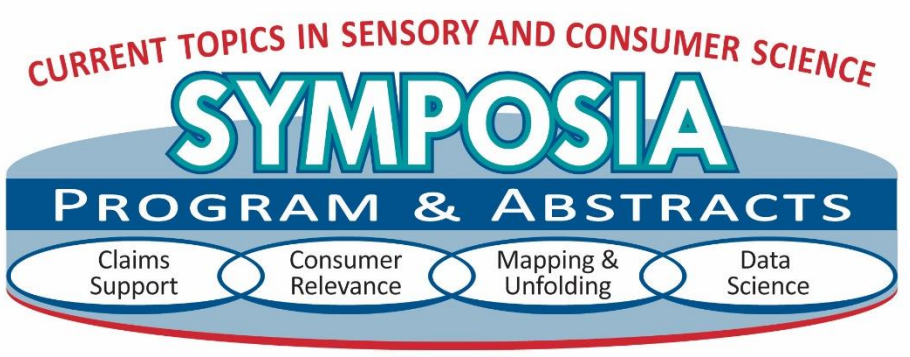

Presented by The Institute for Perception on May 8, 2018 at the Williamsburg Lodge in Williamsburg, VA

8:00AM – 8:30AM **Opening Remarks by Dr. Daniel Ennis**

Symposium 1: Statistical Issues in Claims Support | 8:30 - 10:00

Competent and Reliable Scientific Evidence in NAD Decisions

Annie Ugurlayan - *Assistant Director, Communications, NAD*

ABSTRACT: An overview of the advertising self-regulatory system will be presented. Over the last two decades, a number of technical issues that arise in claims support have challenged the NAD in its decision-making. Some of these issues include what to do with no preference/difference counts, how to handle ratio or multiplicative claims and count-based claims in general, power, and how to evaluate equivalence. We will explore a number of NAD cases that touch on these issues, some of which have now been addressed in the ASTM Claims Guide.

Historical Developments in the ASTM Guide for Sensory Claim Substantiation

John Castura - *Vice President of Research & Innovation, Compusense*

ABSTRACT: The manner in which "no preference" responses have been treated in the E1958 Standard Guide for Sensory Claim Substantiation has evolved between 1998 and the current (2016) guide. For example, the 1998 guide proposes that an interviewer present consumers with a forced-choice preference question, and accept a "no preference" response from consumers who indicate that they do not have a preference. By contrast, the 2016 guide advocates that the consumer be presented with a ballot in which a "no preference" option is provided. A forced-choice preference question is easily modelled using a binomial distribution, but what is the meaning of a preference response in a ballot without a "no preference" option for those consumers who perhaps have no preference? And what is the meaning of a "no preference" response in the context of claims related to superiority, unsurpassed, and equivalence? In each type of claim, current and historical guides have redistributed the trinomial data (prefer A, prefer B, no preference) to form binomial data that enables a binomial analysis. The assumptions that underlie these redistribution strategies are discussed.

Issues in Assigning "No Preference/Difference" Responses

Andy Basehoar - *Senior Statistician, Family Care, Kimberly-Clark*

ABSTRACT: Analysis of preference questions has traditionally utilized a binomial model to assess statistical significance thresholds for claims substantiation. As the ASTM standards have evolved, now incorporating splitting the "no preference" response for superiority claims, there is an opportunity explore other statistical approaches. The current and alternative statistical approaches to handling "no preference" data and their advantages and disadvantages are discussed. These methods may be useful to resolve some of the paradoxical results from the E1958 superiority and unsurpassed standards.

Superiority, Unsurpassed, Equivalence and Multiplicative Claims and Their Paradoxes

Dr. Daniel Ennis - *President, The Institute for Perception*

ABSTRACT: An overview of statistical issues in substantiating different types of advertising claims is provided. Current and alternative approaches to allocating the no difference/preference counts in paired testing will be discussed with respect to power. Some paradoxical results due to different standards used to test for superiority, unsurpassed and equivalence claims are discussed. The lack of and need for multiplicative claim statistics in the E1958 ASTM Standard Guide for Sensory Claim Substantiation is mentioned with a recommendation on how to make multiplicative and other count-based claims.

Panel Discussion and Q&A

10:00AM – 10:30AM **Break and Refreshments**

Symposium 2: Consumer Relevance of Sensory Measurements | 10:30 - 12 Noon

The Importance of Consumer Relevance, and How to Measure It

Dr. Benoit Rousseau - *Senior Vice President, The Institute for Perception*

ABSTRACT: Sensory and consumer scientists are interested in the degree of similarity, or dissimilarity, between foods, beverages, or personal care products. Since stimuli will never be identical, we need two fundamental tools:

- A basic theory to generate standardized measures of sensory differences
- An experimental approach to establishing the relative importance of the size of sensory differences

In this presentation, we will review Thurstonian modeling, a theory providing a structure to quantify the size of sensory differences. We will then use these ideas to establish the consumer relevance of sensory differences using the degree of difference and paired preference test methodologies.

Establishing the Consumer Relevance of a Sensory Difference Using the Same-different Method

John Castura - *Vice President of Research & Innovation, Compusense*

ABSTRACT: Establishing the consumer relevance of a sensory difference is essential to reach a conclusion of "similarity" or "difference". Rousseau and Ennis (2013) propose conducting a designed same-different study using a Thurstonian-derived model to obtain discriminal sensory distances (*d'*) and the consumer-based threshold tau. This threshold corresponds to a decision boundary where a momentary sensory distance between two products will result in a "same" response if smaller than tau, a "different" response otherwise. Thus, tau may be interpreted as a quantification of consumer relevance.

We conducted an empirical consumer study to evaluate this proposal. In addition to collecting same-different data from consumers, we collected tetrad results in order to compare the discriminal distances estimated with each method. Results indicate that d' estimates from the tetrad method are lower than those from the same-different method (this could be due at least in part to increased perceptual noise) and that the tau estimate from the same-different must be adjusted if it is to serve as the consumer relevance threshold when using the tetrad test method. In this presentation, we will outline the successive steps that were followed and provide suggestions for future consumer relevance investigations.

Measuring Consumer Relevant Differences:
Project Babysteps - Silently Changing Product Formulations Without Losing (Loyal) Consumers

Dr. Danielle van Hout - *Science Leader, R&D, Unilever*

ABSTRACT: Signal detection theory & Thurstonian modelling allow the standardized quantification of the size of sensory differences using assumptions of perceptual variability and cognitive processes. They are uniquely valuable to measure the sensory similarity of two or more products.

Their usefulness for industrial research is demonstrated in the case study of project Babysteps, in which a successful product needs to undergo a silent reformulation without losing (loyal) consumers; a frequently occurring FMCG challenge! Discrimination tests with consumers and with a trained sensory panel, and hedonic consumer tests were conducted to identify the size of steps in reformulation that could be taken (each smaller than a consumer relevant size), and to determine how many steps would be needed to reach the specified target product. The relationship between consumer and trained panel discrimination results made the translation in product formulation design factors easy, so that reformulation steps could be accurately defined. By integrating discrimination and consumer hedonic results, potential risks of introducing the reformulated products could be estimated.

Planning for Precision when Designing Difference Tests

SPEAKER: Dr. John Ennis - *Vice President of Research Operations, The Institute for Perception*

ABSTRACT: Once a consumer relevant difference is identified, it is still necessary to determine the business relevant details of optimal difference test design. To ensure that important differences are detected when they exist, the design of sensory difference tests has traditionally focused on achieving high test power. While there are historical reasons for this focus, the business role of difference testing within modern sensory programs necessitates a shift in focus from the "yes"/"no" answers of null hypothesis testing to a measurement-based approach in which the size of the sensory difference is estimated and the precision of the estimate is computed. With this new focus, it is possible to design a difference test with a consumer relevant difference in mind, and to quantify the risk associated with various business decisions. We will discuss how to design a sensory difference test around a specific business goal, using the concepts of precision of measurement and consumer relevant difference, and will highlight the advantages over power and statistical significance.

Panel Discussion and Q&A

12:00Noon – 1:00PM **Break for lunch in the Traditions Restaurant at the Williamsburg Lodge**

Symposium 3: Developments in Multivariate Mapping and Unfolding | 1:00 - 2:30

Methods for Mapping Consumer Hedonics

Dr. Benoit Rousseau - *Senior Vice President, The Institute for Perception*

ABSTRACT: Numerous mapping techniques are available when investigating reasons behind consumer likes and dislikes. While these methodologies will generally use the same basic information - hedonic/liking information from the consumer and product descriptive data from an expert panel or lab instruments - their respective underlying models are different and will often result in different, if not incompatible, conclusions.

In this presentation, we will review the common goals of these methodologies which include uncovering a product category's liking drivers, population sensory segmentation, and defining optimal product characteristics. Three broadly used mapping techniques will be compared and contrasted: External Preference Mapping and two forms of unfolding - Internal Preference mapping and Landscape Segmentation Analysis®. The objective of this talk is to clarify the assumptions underlying the model for each method and to describe the characteristics of a technique to successfully unfold the rich information contained in consumer liking data.

Testing the Single Ideal Assumption Using the Ideal Profile Method (IPM)

Dr. Thierry Worch - *Statistician, QI Statistics*

ABSTRACT: Ideal point modeling is a type of multivariate mapping in which consumers are assumed to use internal ideals in their hedonic evaluation of products. In their calculation processes, these techniques typically assume that consumers have a unique ideal for the product set tested. But this assumption is difficult to verify from the liking data alone, and may be violated if different subcategories of products, such as light and dark chocolate, are included in the same experiment.

As an alternative, the Ideal Profile Method (IPM) is a sensory methodology in which consumers are asked to rate explicitly the products on both the perceived and ideal intensities on a list of attributes: In an IPM test, the consumers provide a description of their ideals for each product tested. This allows comparing the ideal ratings between consumers, but also between products, the latter being primordial to check for the assumption of a single ideal.

By going through different test cases, we will see how IPM data can be used to check whether consumers have a single or multiple ideals as well as the decisions it implies.

Application of an Unfolding Model to Utilities from Conjoint Analysis

Dr. MaryAnne Drake - *Professor, North Carolina State University*

ABSTRACT: Conjoint analysis is a widely used method for determining consumer preferences toward components of a product, with consumer scientists often relying upon conjoint analysis to gain insight in such applications as concept testing, packaging development, and pricing research. While it is possible to derive individual utilities associated with various component combinations from individual responses, it can be challenging to know how to interpret individual level results from conjoint analysis. In this talk, we demonstrate how this challenge can be overcome through the unfolding of individual utilities in much the same way that liking can be unfolded. We then illustrate, through an example with sour cream, how sophisticated insights can be revealed by unfolding that would otherwise have remained hidden.

A Process Model for Multivariate Mapping

Dr. Daniel Ennis - *President, The Institute for Perception*

ABSTRACT: This presentation explores why experimenters should consider the process assumptions behind the methods they use for multivariate mapping of hedonic data. There are many methods to be considered from the hedonic or utility continuum to various types of multivariate mapping including external preference, internal preference, and ideal point mapping. Modelling hedonic data based on the idea of unfolding to individual ideal points, is an idea proposed more than a half century ago by Clyde Coombs but unsuccessful in applications until 2001. Some examples of the value of this model will be discussed and related to the presentations of previous speakers in the symposium.

Panel Discussion and Q&A

2:30PM – 3:00PM **Break and Refreshments**

Symposium 4: Data Science for Consumer Scientists: Staying in the Loop | 3:00 - 4:30

Why Should Consumer Scientists Care About Data Science?

Dr. Thierry Worch - *Statistician, QI Statistics*

ABSTRACT: When consumer scientists encounter data science, they are often led to the encounter by questions such as: Which analysis should I perform? What form should my data take? How should I run this analysis? While these questions are all valuable, they disconnect various parts of data science - data collection, data formatting, data analysis, and so on - by treating them as unrelated to other parts - objectives of the test, data collection methodology and so on. But what if these parts were, in fact, all interrelated? What if quality data science was, in fact, an integral part of quality consumer science?

Through the examples of several real-life consumer studies, we show in this talk how data science influences consumer science from the very beginning, as the way data are collected influences the questions the data can answer. Moreover, the objectives of a study determine the general choice of the data collection tool and the specifics of that tool - experimental design, sample size, number of products, scale used, and so on - as well as the analyses to perform and the interpretation of results.

From Statistics to Data Science: The Evolving Role of Data Analytics within Consumer Science

Frank Rossi - *Director of R&D, PepsiCo / Frito Lay*

ABSTRACT: The very nature of Consumer Science has been evolving over the last 30 years. The definition of a large dataset has gone from hundreds of consumers in the 1980s, to thousands with the emergence of internet studies at the start to the 21st century, to millions and more with the advent of social media. More powerful computing and increasingly sophisticated data analysis tools give us the opportunity to perform analyses that were once unthinkable. Though this brings seemingly endless possibilities for consumer insights, organizations will need to build strategies for big data collection and analytics. Inherent in this is a well-defined problem statement, a determination of what data will be relevant and choosing analytic methods that will most likely produce meaningful information. Without thoughtful consideration of these elements consumer scientists risk drowning in the big data pool.

Insight Triangulation at Netflix: Data Science + People Science

Dr. Zachary Schendel - *Director of UX Research, Netflix*

ABSTRACT: At Netflix, data science powers everything - our AB testing infrastructure allows us to detect minute differences in user behavior across millions of global members to make evidence-based decisions about which innovations are moving the business forward, and which innovations are distractions. Personalized recommendations, the selection of ideal title art, and globally delivering a consistent and high-quality video stream are just three aspects of our business that are influenced by data science. Despite the power of data science, however, our members are not merely numbers or data files. They are real people with sometimes quirky and unpredictable behaviors, and with personalized opinions that matter. Thus, to incite innovation, we've found the most success within our Consumer Insights team by combining the big data approach for which Netflix is well known with lessons gathered through direct communication with members. In this talk, we will discuss some of the approaches we've used to harmonize these two approaches and show how consumer scientists can apply them.

How Consumer Scientists Can Thrive in the Coming Age of Automation

Dr. John Ennis - *Vice President of Research Operations, The Institute for Perception*

ABSTRACT: We stand on the brink of an age both exciting and frightening, while machines stand ready to perform the bulk of human labor at a seemingly exponential rate. But the labor that machines can and will perform is not merely physical - already machines are helping navigate us to locations, assisting with travel planning, providing introductions in settings both social and professional, and even participating in medicine through activities such as identifying tumors in radiological scans. The rise of machine labor will bring greatly increased productivity, but with the risk that those who failed to prepare for this change will find themselves marginalized. Hence, it is essential that all professionals prepare for this coming change. In this talk we discuss specific topics on which consumer scientists can focus to thrive in the coming age of automation.

Panel Discussion and Q&A

4:30PM **Closing Remarks by Dr. Daniel Ennis**

Master Classes to discuss issues in more detail from the Symposia are offered on the following two days:

Wednesday, May 9
- Claims Support: Preference, Equivalence, and Multiplicative Claims
- Setting Consumer Relevant Action Standards

Thursday, May 10
- Unfolding to Individual Ideals
- Computational Advances in Consumer-Centric Analyses

Please visit www.ifpress.com for online registration and complete details.