


# COMMUNICATING RESULTS FROM TEMPORAL SENSORY STUDIES

## INTRODUCTION TO THE WORKSHOP

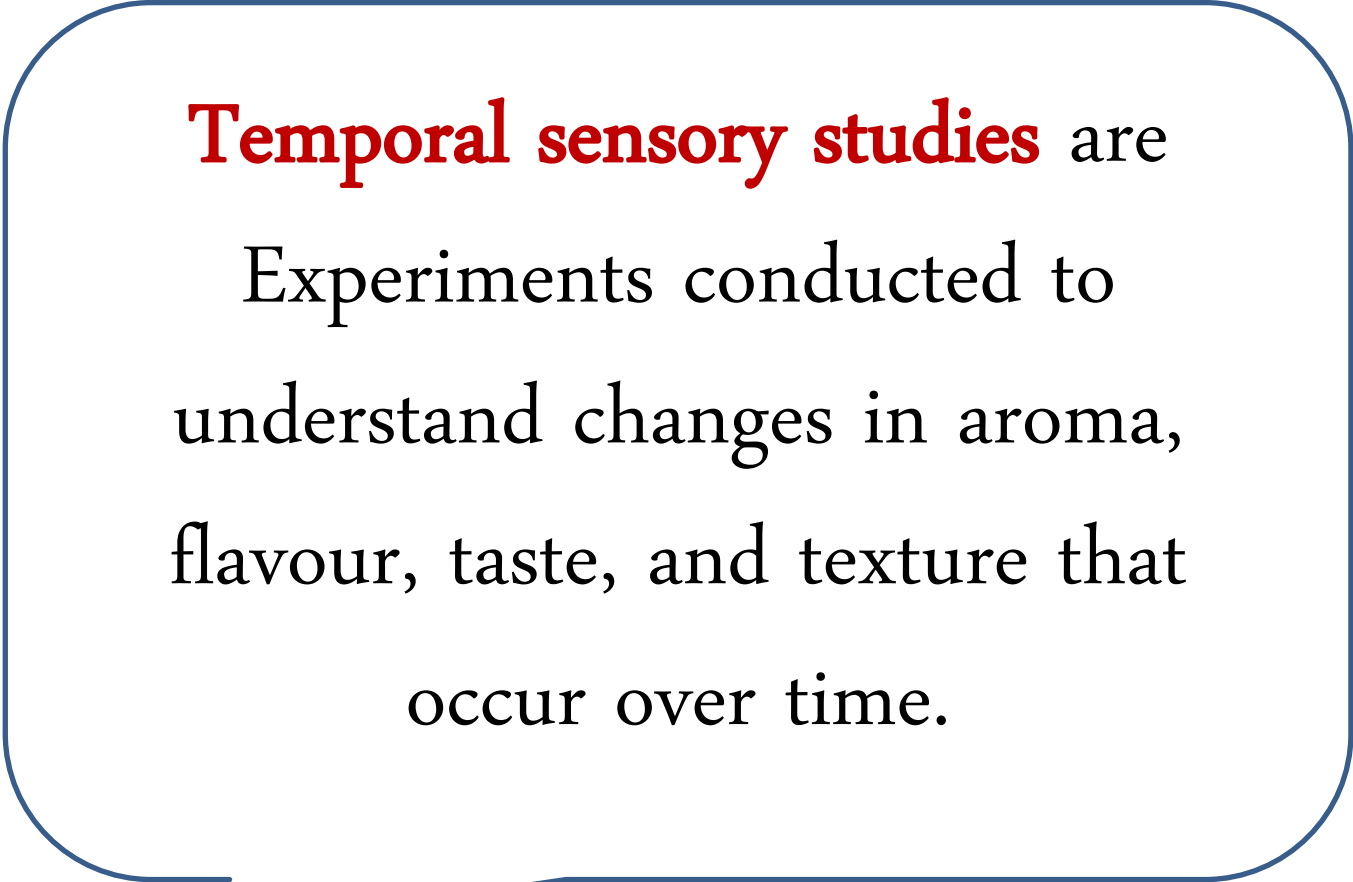
John Castura

Compusense Inc., Guelph, Ontario, Canada

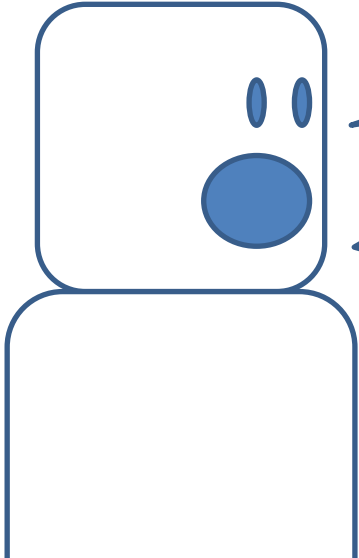
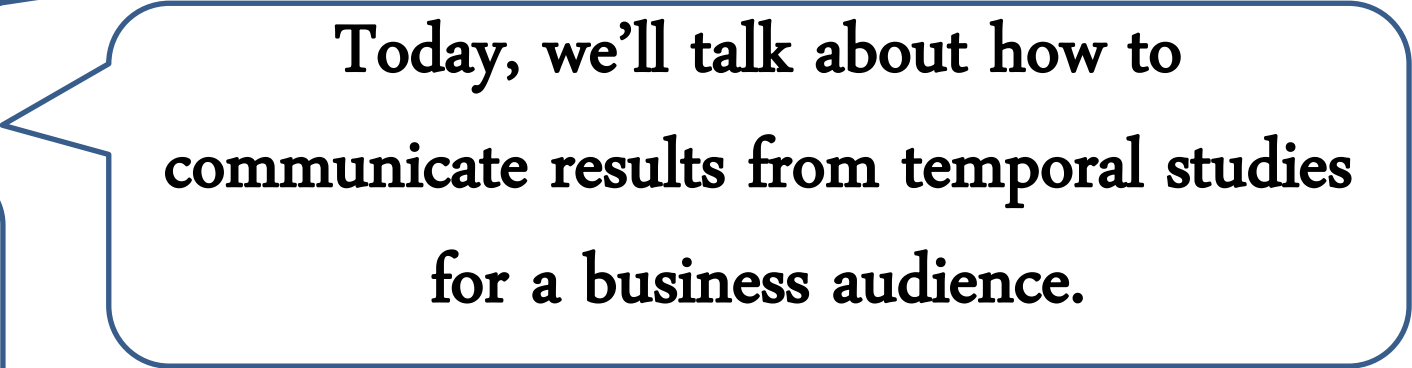




Hi! i'm  
John.

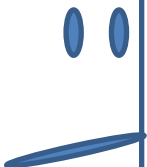
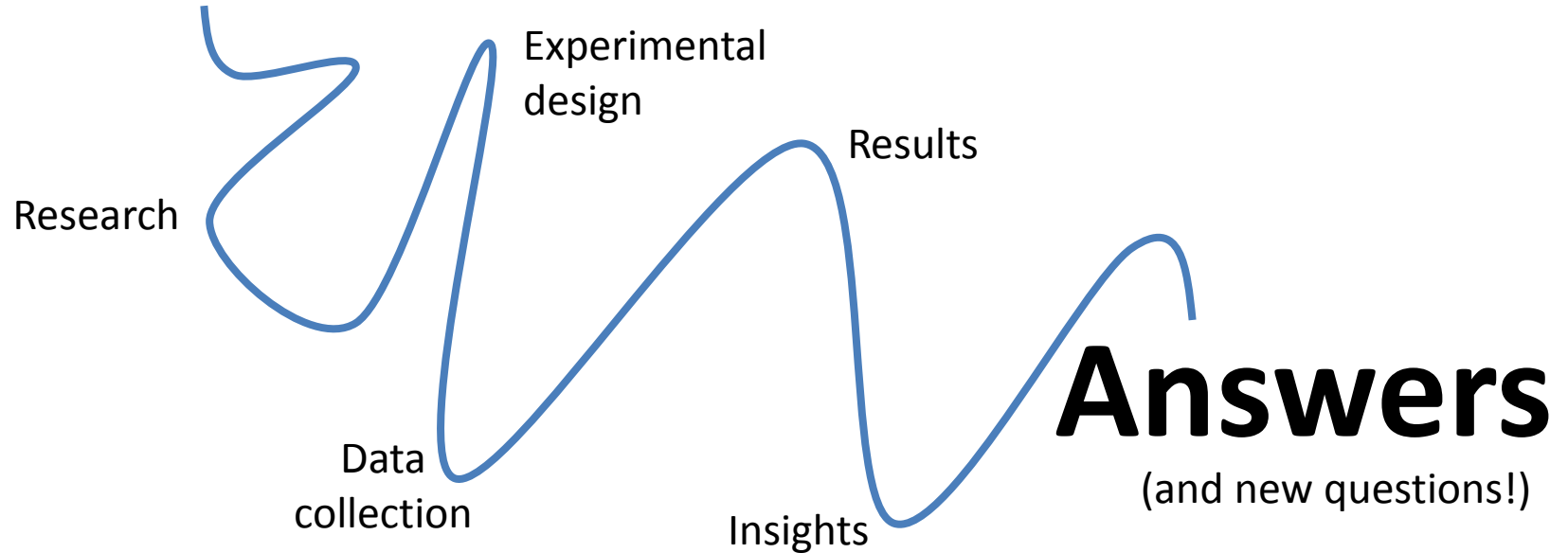


**Temporal sensory studies** are  
Experiments conducted to  
understand changes in aroma,  
flavour, taste, and texture that  
occur over time.



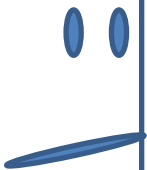
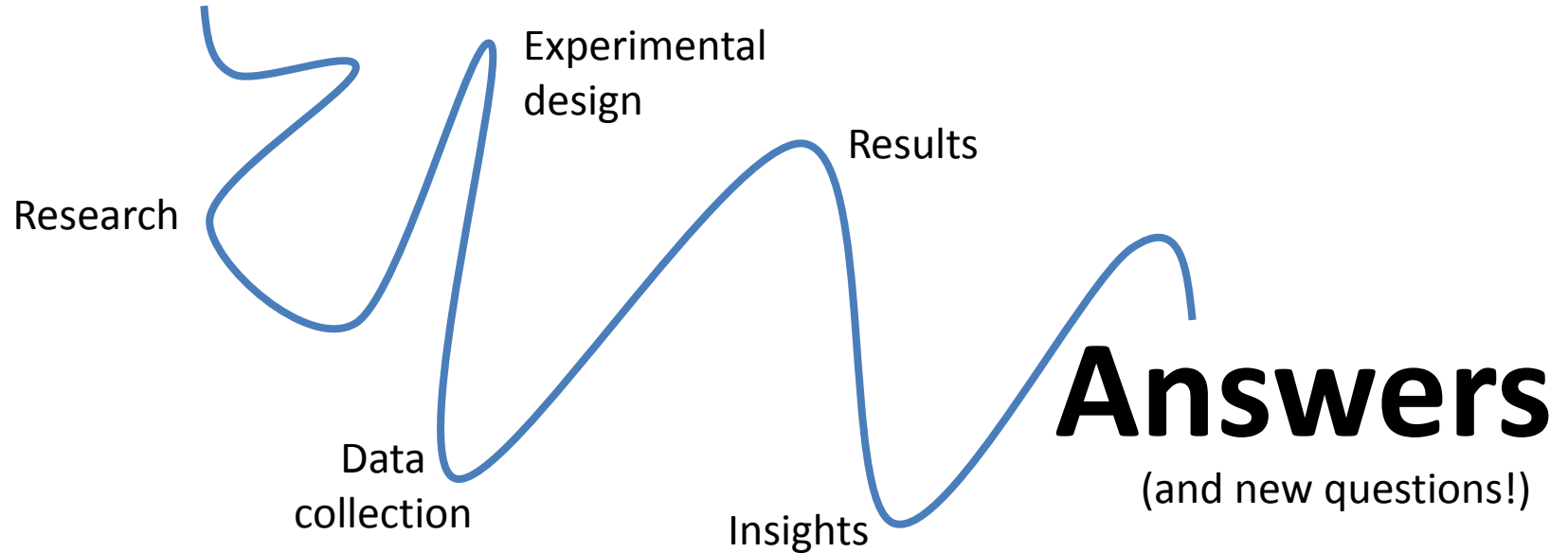
Today, we'll talk about how to  
**communicate results from temporal studies**  
for a business audience.

# Questions



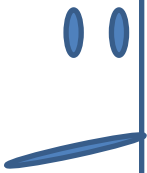
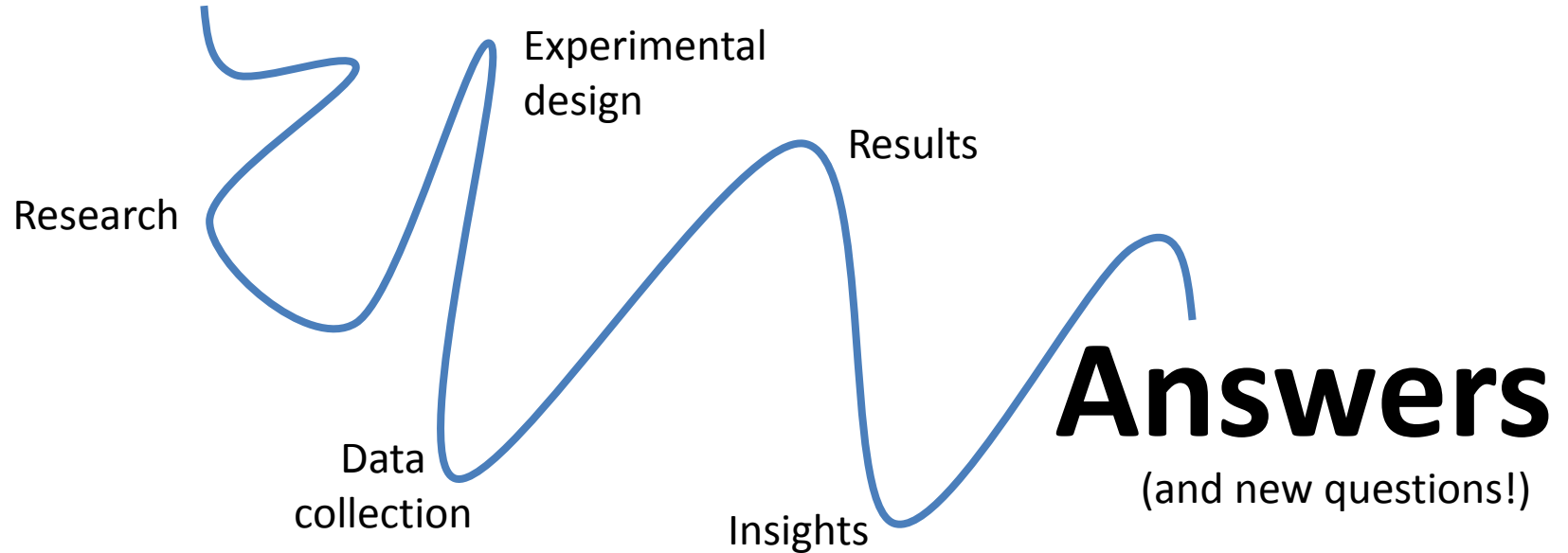
to learn about products, I follow a **process**. It involves empirical tests.

# Questions



In peer-review journals text is organized to facilitate critical review.

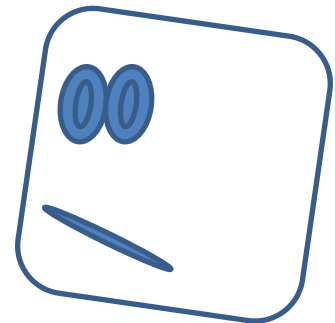
# Questions



But This is **not** how to present results to business folks.

instead, **start at the conclusion.**

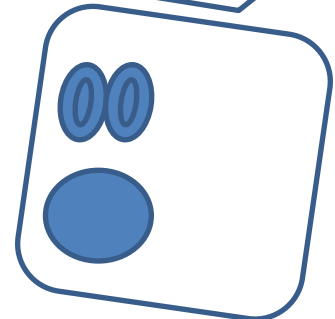
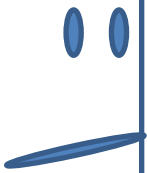
How else will i know if what  
you're about to say is relevant  
to me?



Avoid Detail.

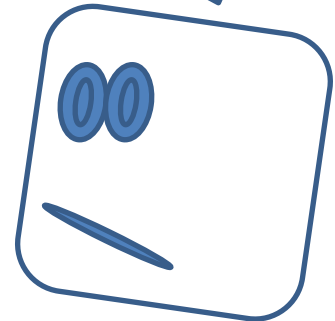
What was learned?  
WHY Does iT MATTER?  
WHAT Should I DO next?

to Answer these questions  
memorably, **Show, don't tell.**



**Show, Don't tell!**

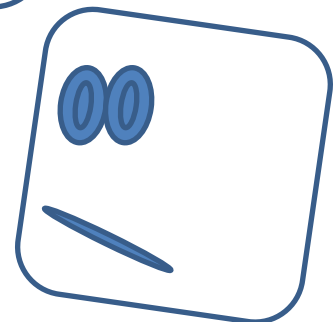
Have business folks evaluate the products.  
taste food, drink beverages, and smell scented  
products.





**Engage their minds and senses!**

characterize the solution.  
Focus on outcomes and  
recommendations for action.



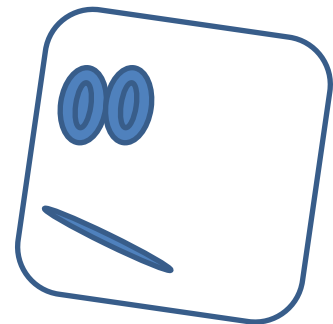
Fortunately we have three great speakers here today who will share hard-won communication tips:

**Tom Carr** – Time Intensity

**Amanda Warnock** – Temporal Dominance of Sensations (TDS)

**Suzanne Pecore** – Temporal Order of Sensations (TOS)

But this presentation is not  
a one-way street. Stick  
around to contribute to the  
discussion!



COMMUNICATING RESULTS FROM TEMPORAL SENSORY STUDIES

SSP/SENSOMETRICS 2012 WORKSHOP

# COMMUNICATING RESULTS OF TRADITIONAL TIME-INTENSITY EVALUATIONS

Tom Carr

Carr Consulting, Wilmette, Illinois, USA



# Traditional TI Method



- One (maybe two) attributes evaluated over time.
- Assessors continuously track and report the perceived intensity of the attribute.
- Key features of the TI curve are extracted from each assessor's curve.
- Test products are compared statistically by performing ANOVA or MANOVA on the key-features data.

# Summarizing Average TI Curves

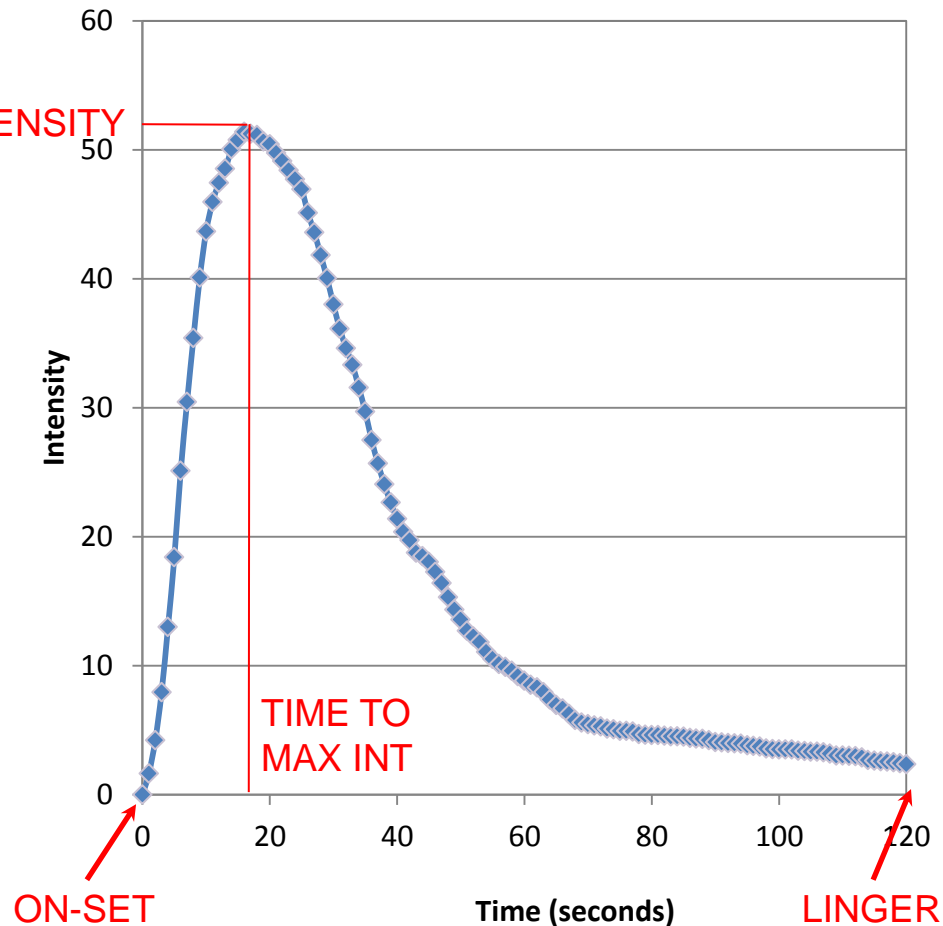


- TI evaluations lend themselves to graphical summaries.
- To avoid confusion, tabular and graphical summaries should communicate the same information.
- Averages of key features (tabular results) should match the graph of average intensities.

# Summarizing Average TI Curves

- Note that key features of the average TI curve (graph) do not match the average of the key curve features (table).

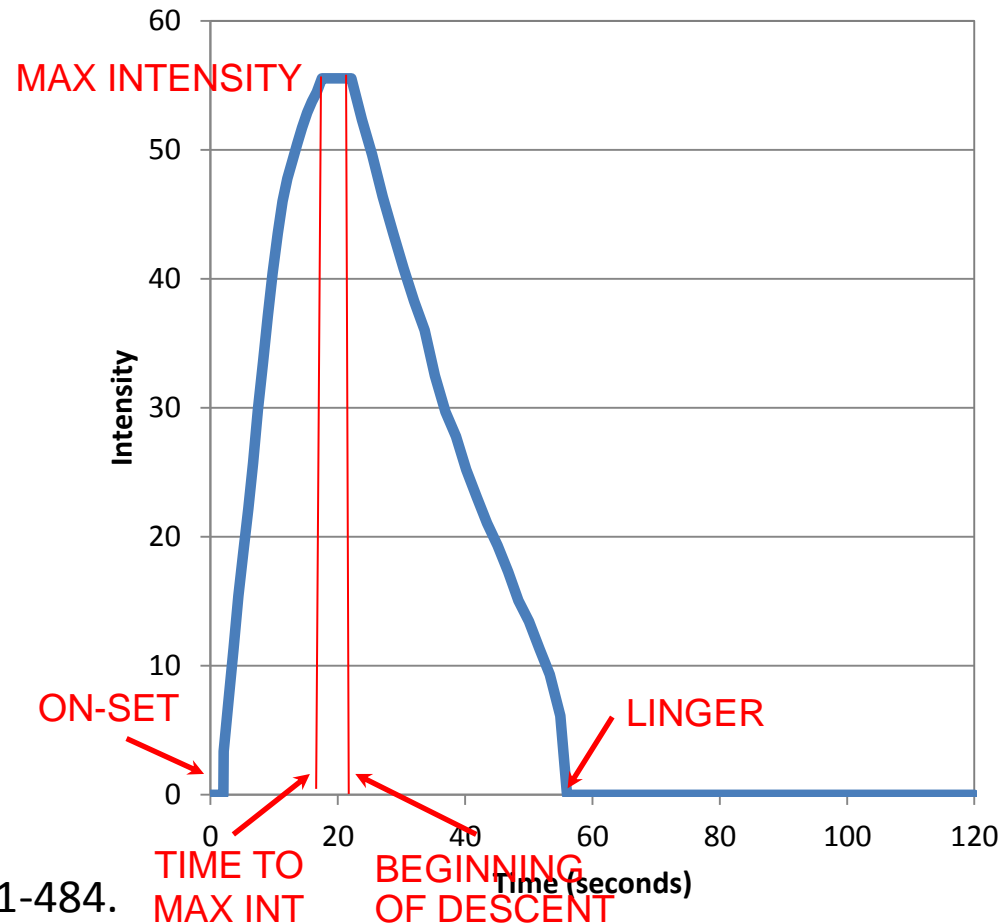
| Response          | Sample |
|-------------------|--------|
| Max. Intensity    | 55.5   |
| On-Set Time       | 2.1    |
| Time to Max. Int. | 17.5   |
| Linger            | 55.7   |



# Summarizing Average TI Curves

- Liu and MacFie (1990) propose a method where the TI curve (Graph) matches the average of the key curve features (table).

| Response          | Sample |
|-------------------|--------|
| Max. Intensity    | 55.5   |
| On-Set Time       | 2.1    |
| Time to Max. Int. | 17.5   |
| Linger            | 55.7   |



# Reporting Results

- Focus on What You Learned, Not What You Did.
  - State Objective of the Study.
  - Briefly summarize what samples were tested and the basics of the methodology.
    - Number and Qualifications of Assessors.
    - Attribute(s) Evaluated.
    - How were Data Collected and Sampling Frequency.
    - Duration of Evaluations (Fixed Time or Until Extinction).
- One Slide – Anything More is a Methods Document.



# Reporting Results

- Speak to Your Audience.
  - How you present results to product developers can be different than how you present results to marketing and upper management.
- Report Results as They Relate to the Objectives.
  - Focus on the relevant curve features.
  - Do not present a laundry list of significant differences.
- For a Non-Technical Audience, Discuss Key Curve Features Non-Technically.
  - e.g., “Sample A achieved its maximum intensity 4 seconds earlier than Sample B” as opposed to, “ $T_{\max}$  of Sample A was significantly lower than  $T_{\max}$  of Sample B.”
- Draw Conclusions Relative to The Objectives.

**COMMUNICATING RESULTS FROM TEMPORAL SENSORY STUDIES**

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# **COMMUNICATING RESULTS INVOLVING TEMPORAL DOMINANCE OF SENSATIONS**

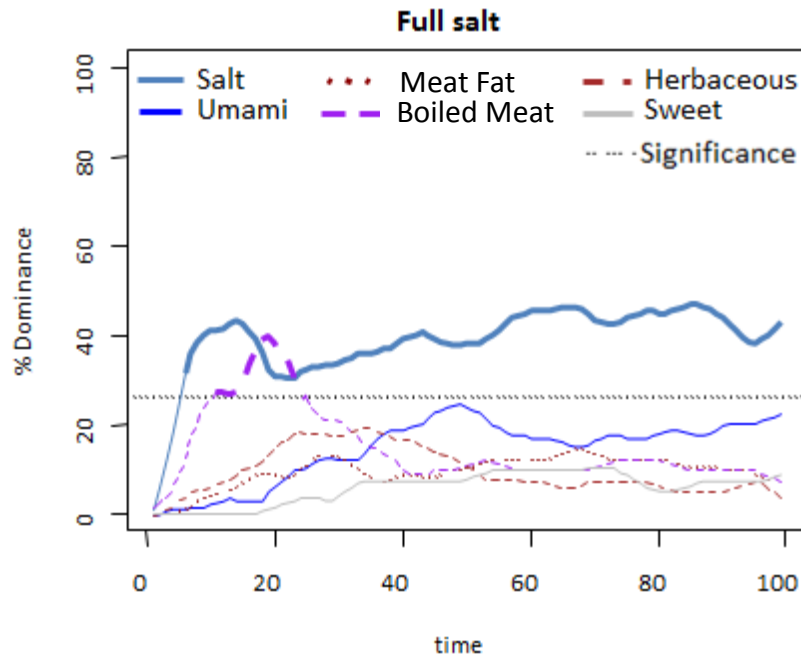
Amanda Warnock

Givaudan Flavours, Cincinnati, Ohio, USA



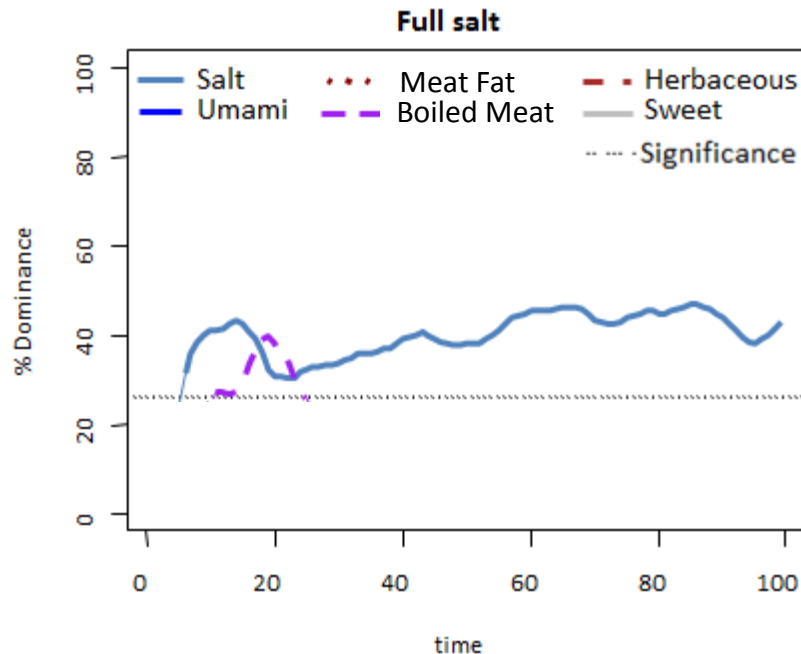
# What are we looking at?

- Dominance, NOT intensity
- What is dominance?
- Dominance scale is a proportion



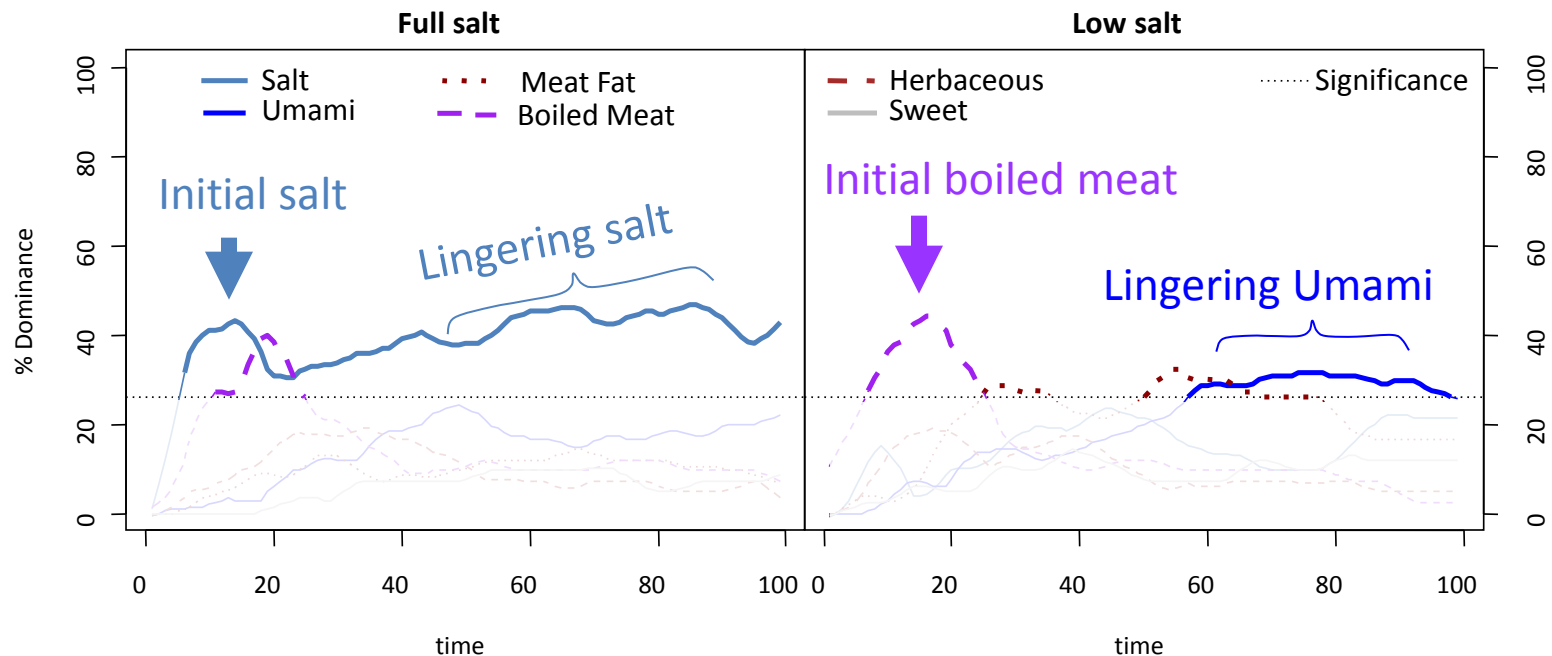
# Noise Obsession

- Have a significance line to keep the focus on the meaningful output
- Do not create chances for obsessing over noise



# Simplify & Compare

- Highlight the main points/conclusions
- Useful to compare two TDS curves side by side when comparing samples or products



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# TEMPORAL ORDER OF SENSATIONS... IN PRACTICE

Suzanne D. Pecore

General Mills, Inc., Product Guidance & Insights, Minneapolis, Minnesota, USA



# TOS COMPLEMENTS DESCRIPTIVE ANALYSIS

- Traditional Descriptive Analysis illustrates “maximal intensity” of attributes but does not capture temporal differences.
- TOS can clarify if there are differences in:
  - Onset or linger of key flavors
  - Flavor release
  - Upfront tastes with each bite across the eating experience

# CASE OF THE DELAYED SPICINESS

- Alternate source of meat topping was suspected in new formula
- TOS offered efficient means to capture appearance of spiciness over eating experience

☐ 1<sup>st</sup> Spoonful:

Take a teaspoonful of the product and quickly check which attributes hit 1st - 2nd - 3rd in the order they are perceived. Do not give intensity ratings.

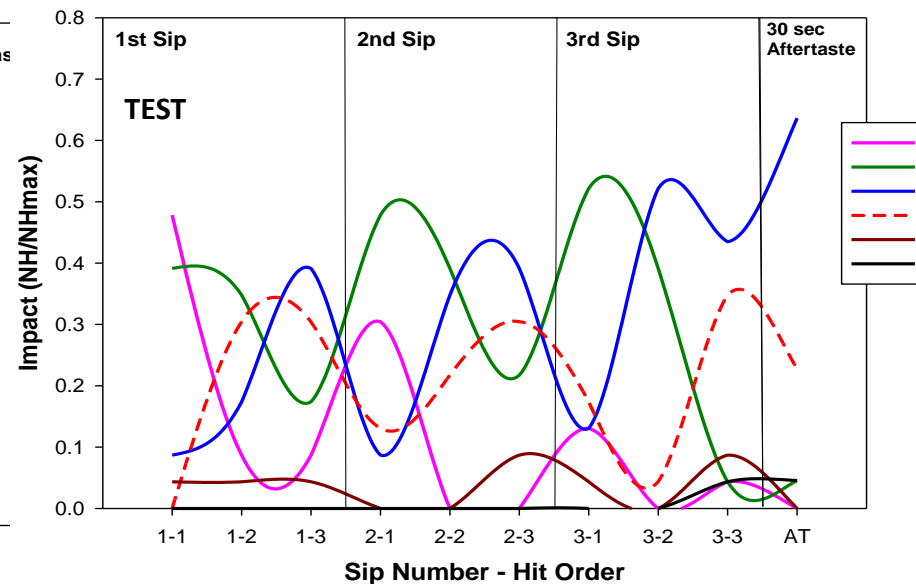
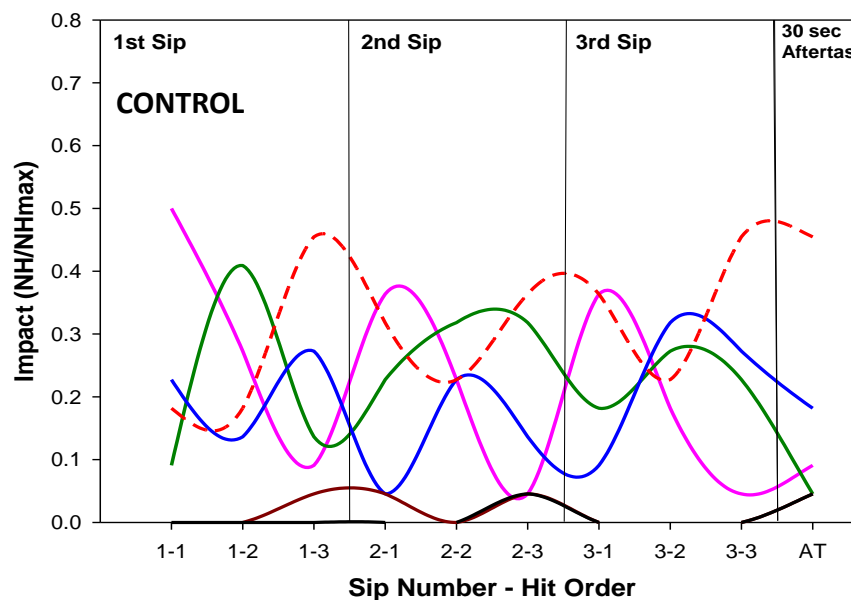
|          | Order Perceived |          |          |
|----------|-----------------|----------|----------|
|          | Hits 1st        | Hits 2nd | Hits 3rd |
| Meat     |                 |          |          |
| Spice    |                 |          |          |
| Meat Fat |                 |          |          |
| Salt     |                 |          |          |
| Umami    |                 |          |          |
| Heat     |                 |          |          |

- ☐ Repeat for TWO MORE samplings
- ☐ Aftertaste Checklist follows 4<sup>th</sup> sampling



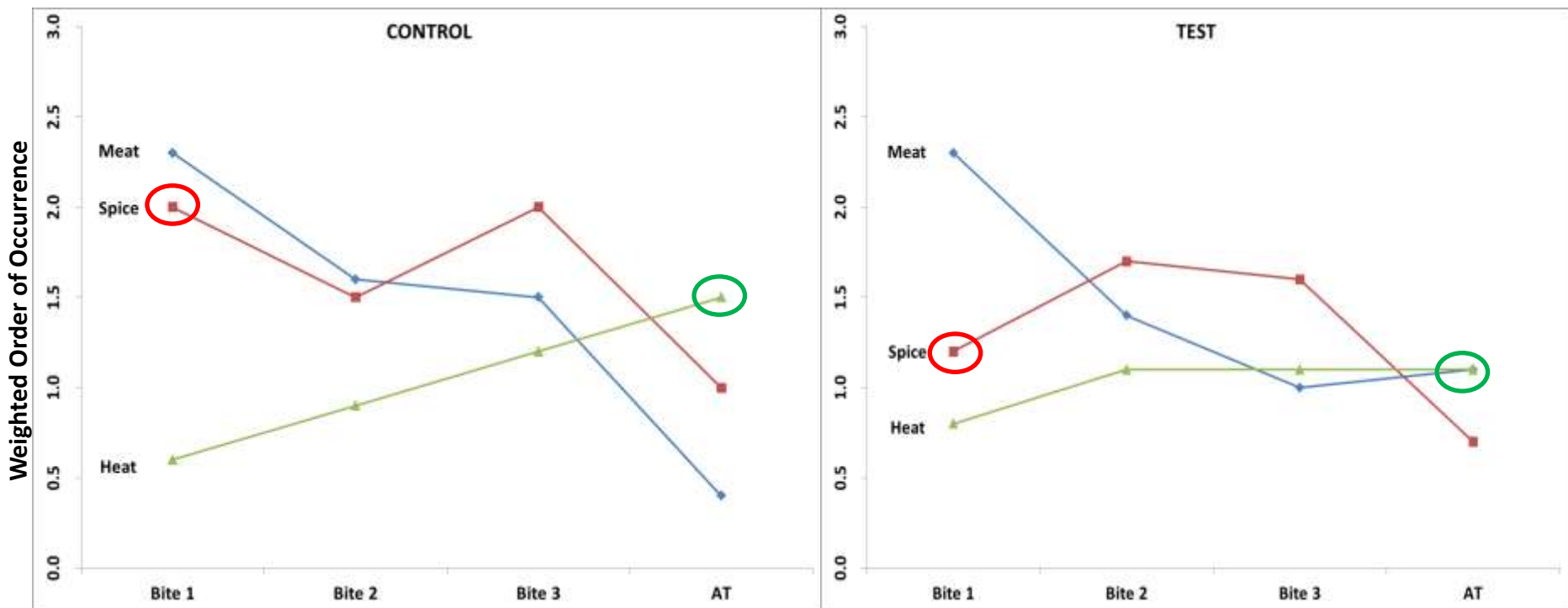
# AIM FOR CLARITY, NOT CONFUSION

- Differences visually apparent, but not intuitive... plots took too much “explaining”
- Smoothed curves often mistaken for intensity changes; connecting “proportions” does not make intuitive sense



# PLOTS SHOULD SUPPORT KEY POINTS

- Plot only differentiating attributes
- Highlight difference of interest (Delivery of Spicy Flavor )
- Include additional learning (Aftertaste Heat)



# EMPHASIZE KEY POINTS IN CONTEXT

- Mention other data that is relevant to the project

*Traditional Descriptive Analysis shows Spiciness Intensity is on target*

- Clarify how TOS adds key reformulation information

*TOS shows Spiciness needs to be more Upfront, and Heat needs to Linger more*

**Result?** Supplier increased spice content to deliver earlier Spiciness + Heat in aftertaste, then blended with other flavors to maintain Spice intensity

# Discussion

