Temporal Check-All-That-Apply (TCATA)

John C. Castura

Florencia Alcaire
Shari Zorn
Leticia Vidal
Lucía Antúnez
Ana Giménez
Gastón Ares

Compusense.

UNIVERSIDAD DE LA REPUBLICA
URUGUAY

ELSEVIER
EuroSense 2014: A Sense of Life
6th European Conference on Sensory and Consumer Research
7-10 September 2014 | Bella Center, Copenhagen, Denmark

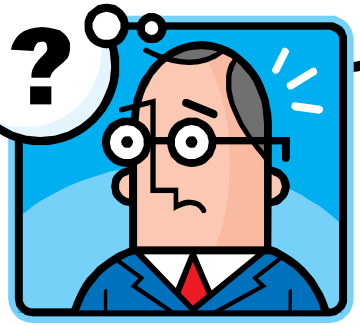
My Goal for this Presentation

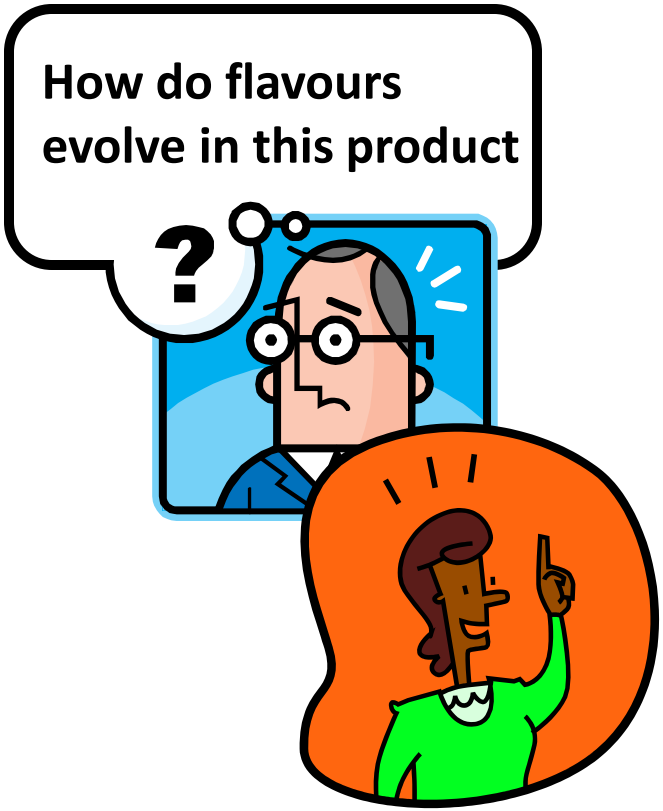
I want to make you curious about temporal sensory methods and what they do and don't deliver. Especially **Temporal Check-All-That-Apply**, the method that I'm about to present.

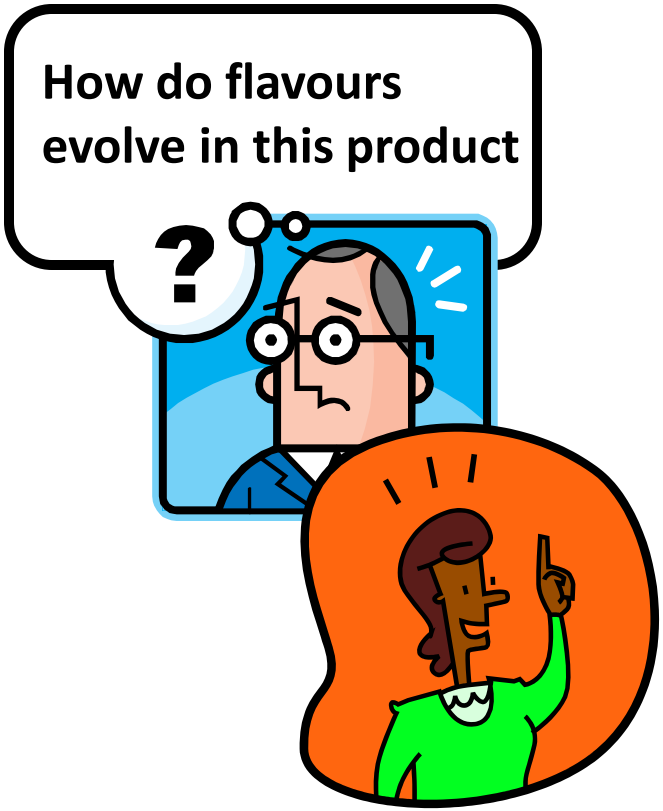
I want you to become interested in its potential, to want to play with it, and to get real benefit from it.

I also want you to learn from it, criticize it, tweak it, and to try to improve it. Then I want for you, and I, to take what we've learned and to create new methods that surpass it, so that we can throw it away, and start again with something even better.

How do flavours evolve in this product



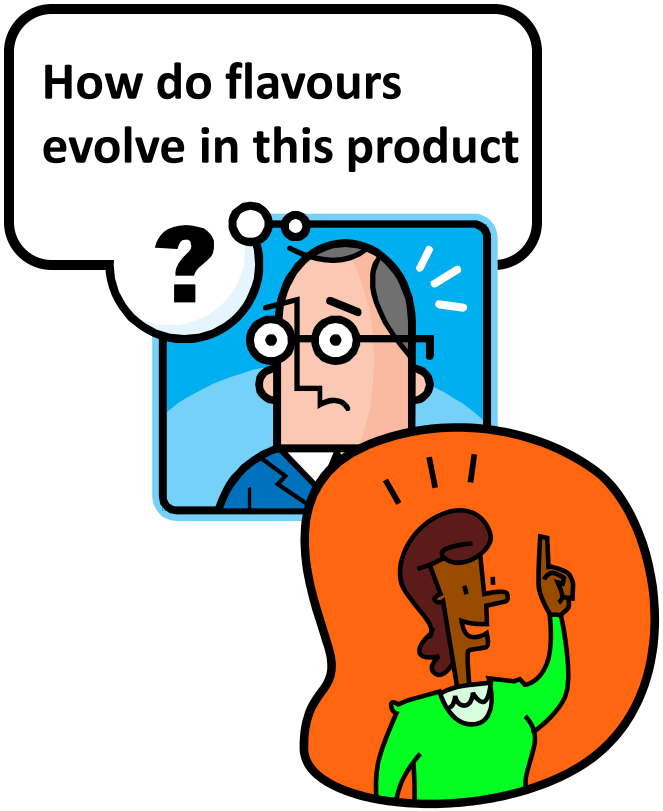

How do flavours evolve in this product
?



Flavor Profile method

(cf. Caul, 1957)

Order of elicitation of flavour characteristics is one aspect of the characterization of complex food… especially important is the early development of appropriate sensations.



Flavor Profile method

(cf. Caul, 1957)

Order of elicitation of flavour characteristics is one aspect of the characterization of complex food… especially important is the early development of appropriate sensations.

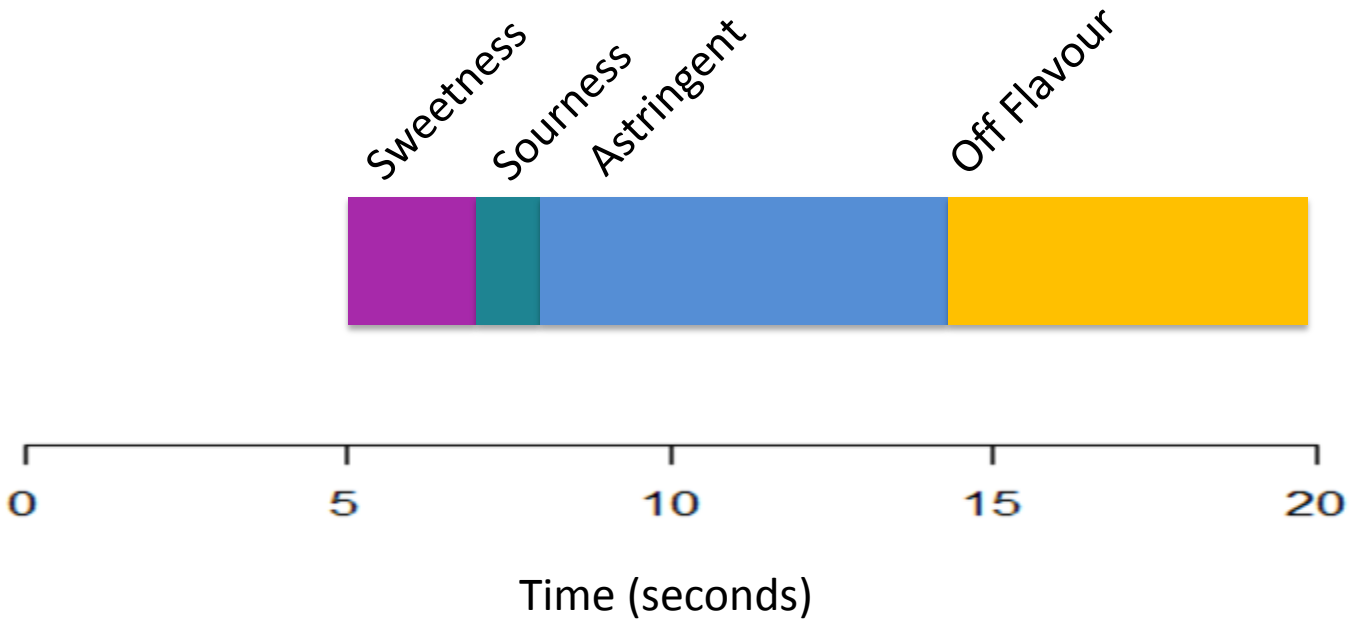
Temporal Dominance of Sensations (TDS)

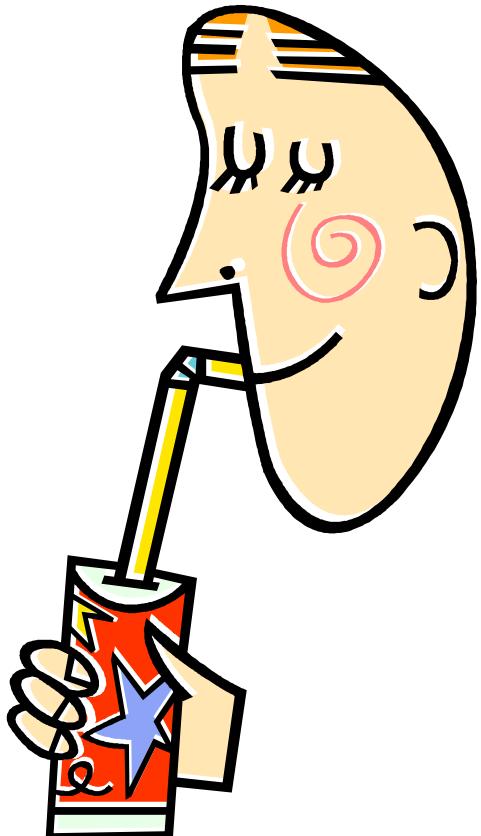
(Pineau et al., 2009)

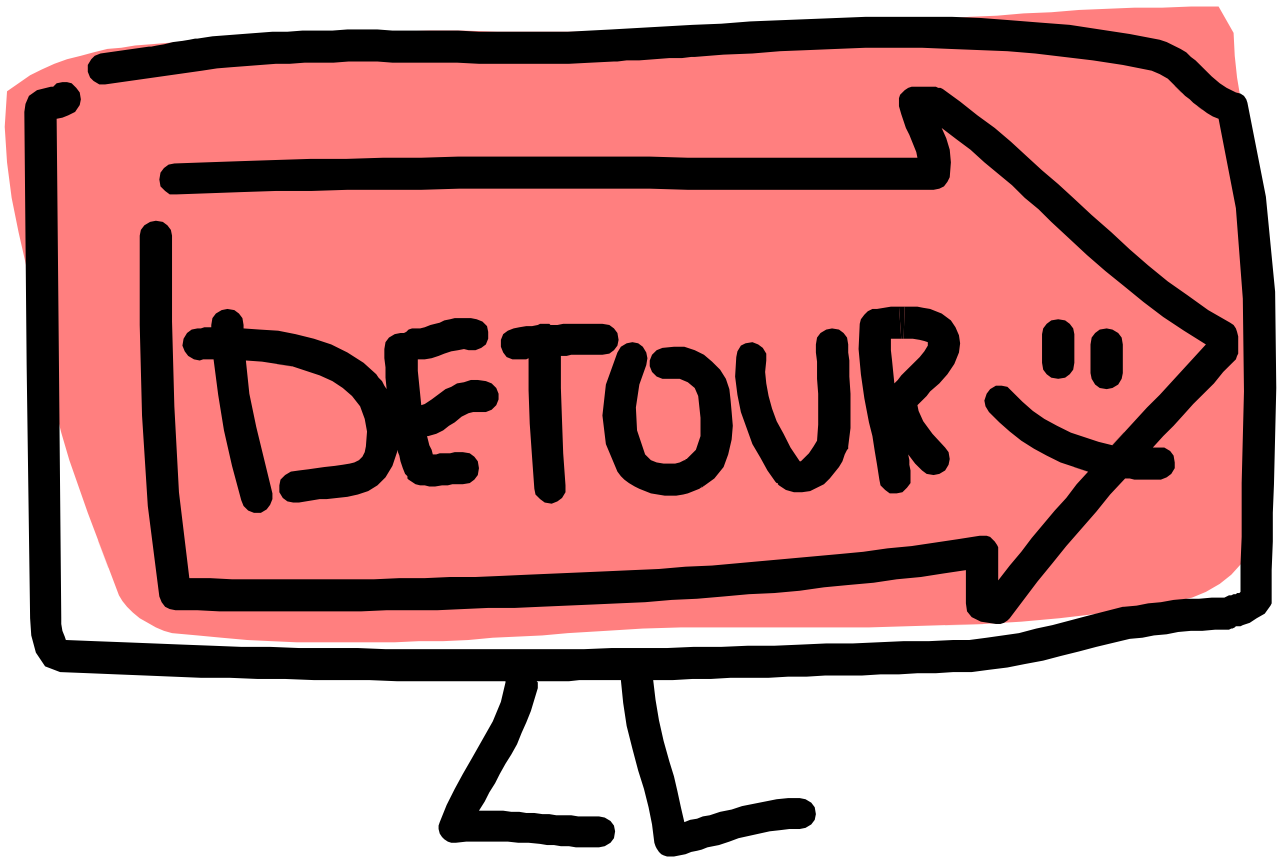
"…the new sensation popping up at a given time…"

TDS

Data provides **a sequence of dominant sensations** over time.






DETOUR

Check-All-That-Apply (CATA)

From the following list, check the **words** that **describe** the **orange juice** that you just tasted (check ***all*** that apply).

- ☐ Astringent
- ☐ Sourness
- ☐ Sweetness
- ☐ Off flavour
- ☐ Bitterness
- ☐ Orange flavour

Temporal Check-All-That-Apply (TCATA)

- Extends CATA to **continuously track sensory properties**.
- Builds on earlier methods

  (Flavor Profile, TDS, …)
- Could be used by trained assessors or consumers.

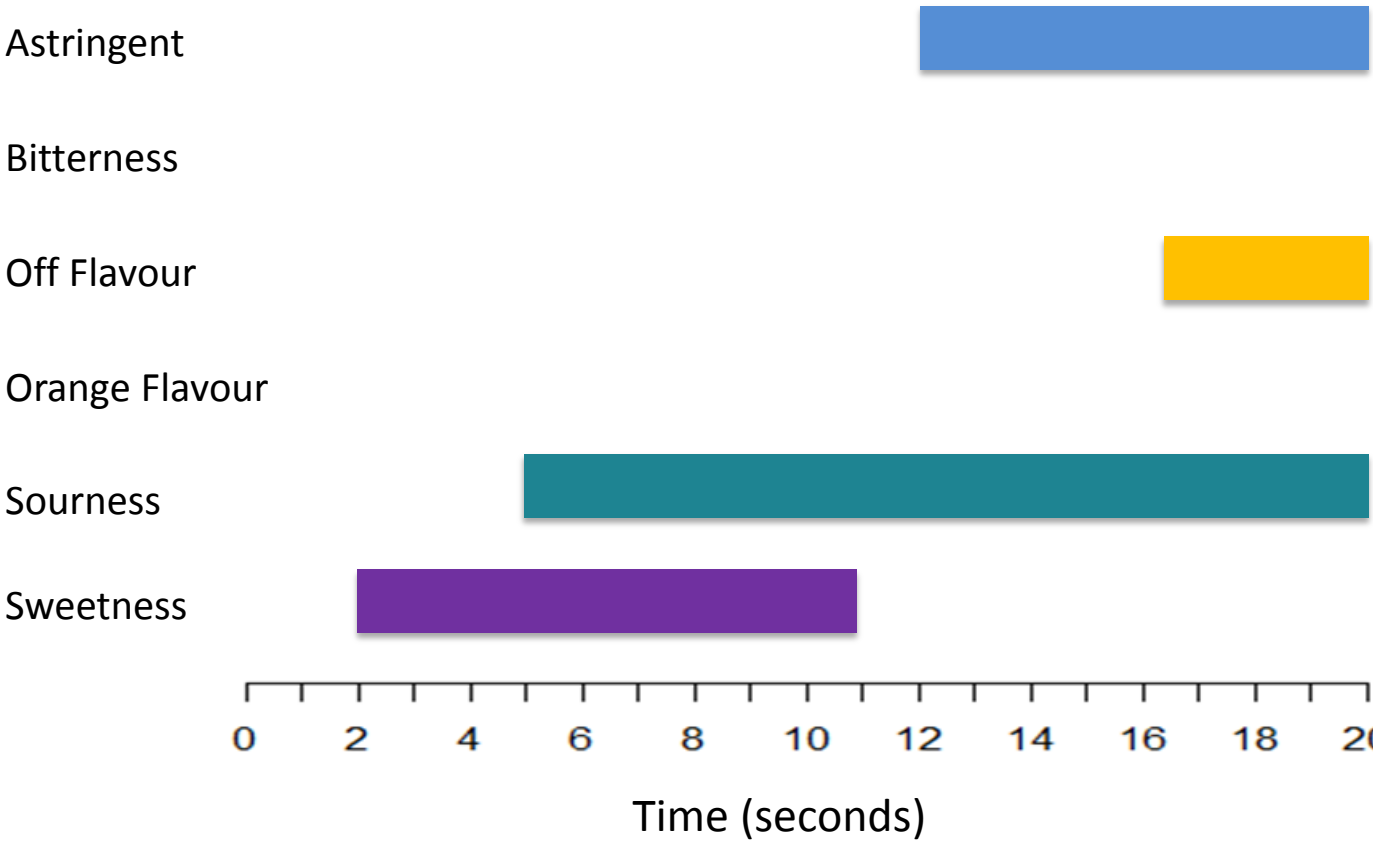
Temporal CATA

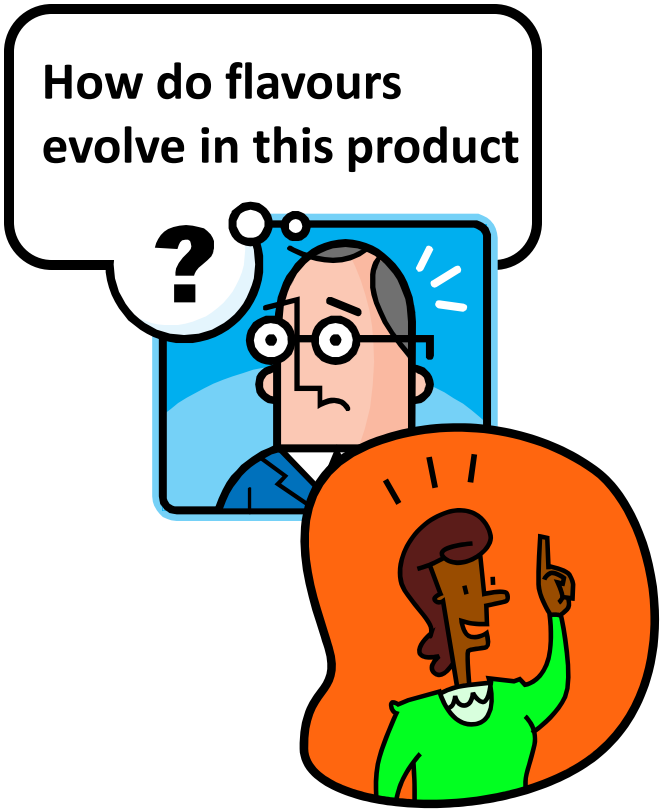
Check and uncheck words to track changes in the orange juice. At each moment, the words that are **checked** should **describe** the **orange juice** (check *all* that apply, in that moment).

0:20

- ☐ Astringent
- ☐ Off flavour
- ☐ Sourness
- ☐ Bitterness
- ☐ Sweetness
- ☐ Orange flavour

Temporal CATA





Flavor Profile method

(cf. Caul, 1957)

Order of elicitation of flavour characteristics is one aspect of the characterization of complex food… especially important is the early development of appropriate sensations.

Taste Quality Tracking

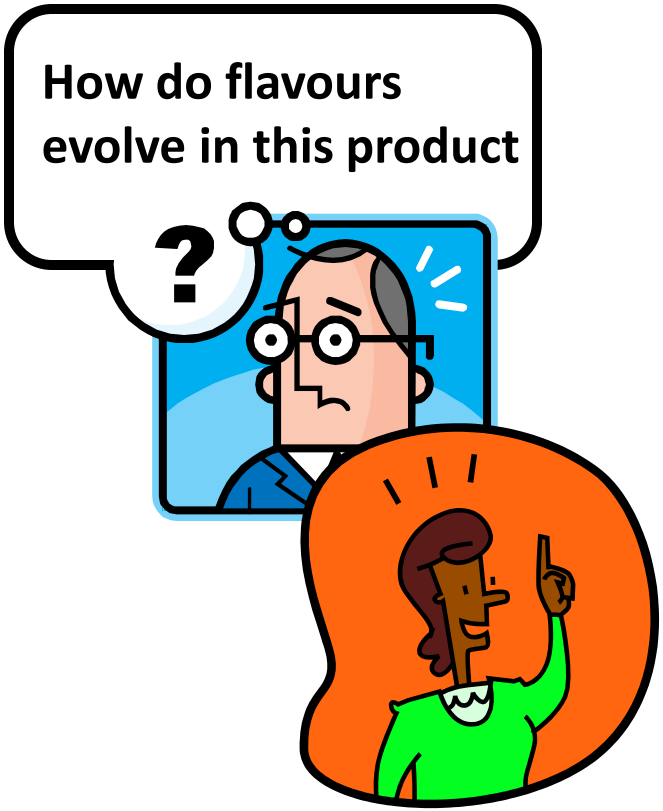
(Zwillinger & Halpern, 1991)

TQT is highly similar to TDS. The authors find evidence of assessors processing sensations in parallel, suggesting a limitation with TQT.

Temporal Dominance of Sensations (TDS)

(Pineau et al., 2009)

"…the new sensation popping up at a given time…"



Flavor Profile method

(cf. Caul, 1957)

Order of elicitation of flavour characteristics is one aspect of the characterization of complex food… especially important is the early development of appropriate sensations.

Taste Quality Tracking

(Zwillinger & Halpern, 1991)

TQT is highly similar to TDS. The authors find evidence of assessors processing sensations in parallel, suggesting a limitation with TQT.

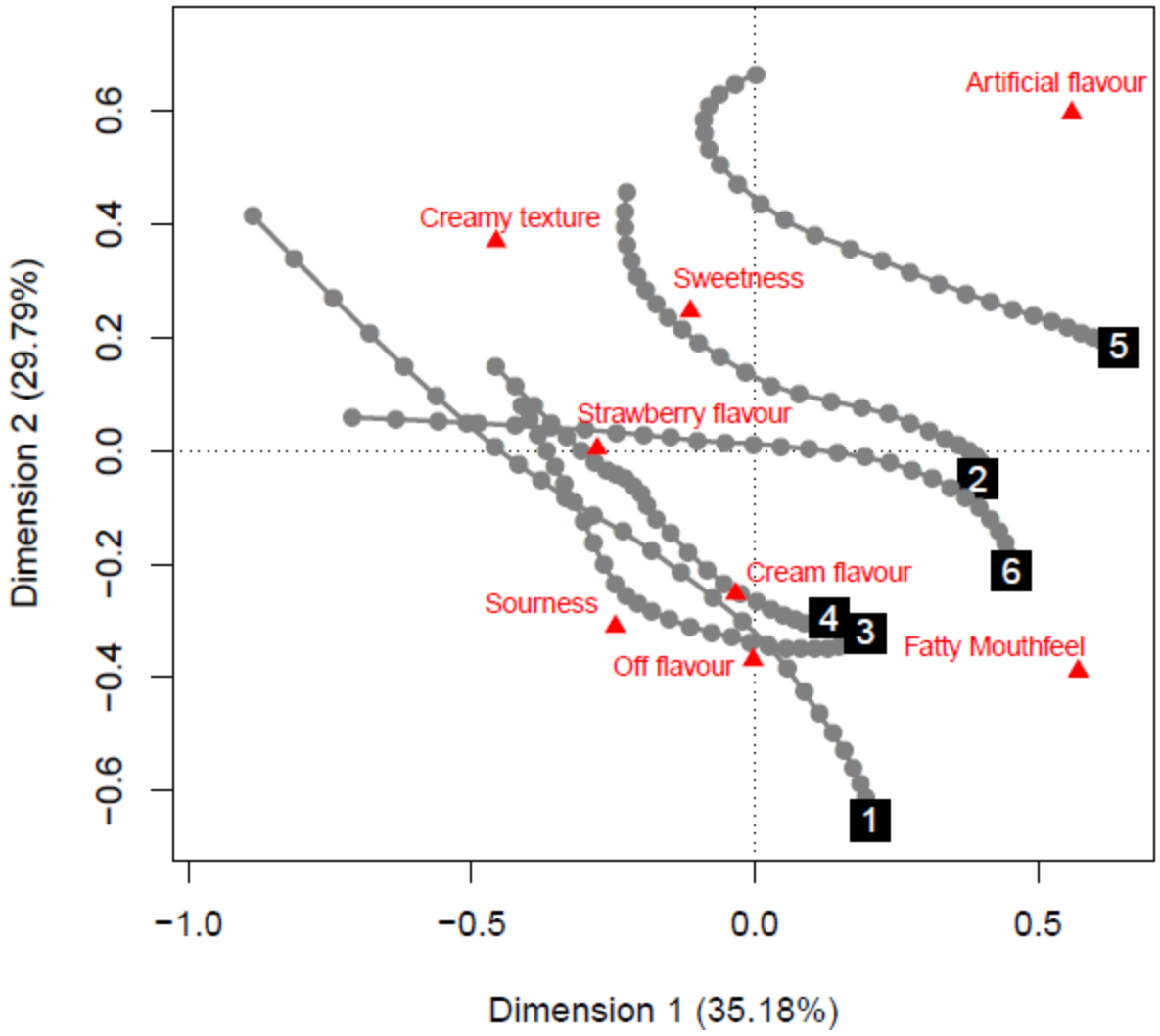
Temporal Dominance of Sensations (TDS)

(Pineau et al., 2009)

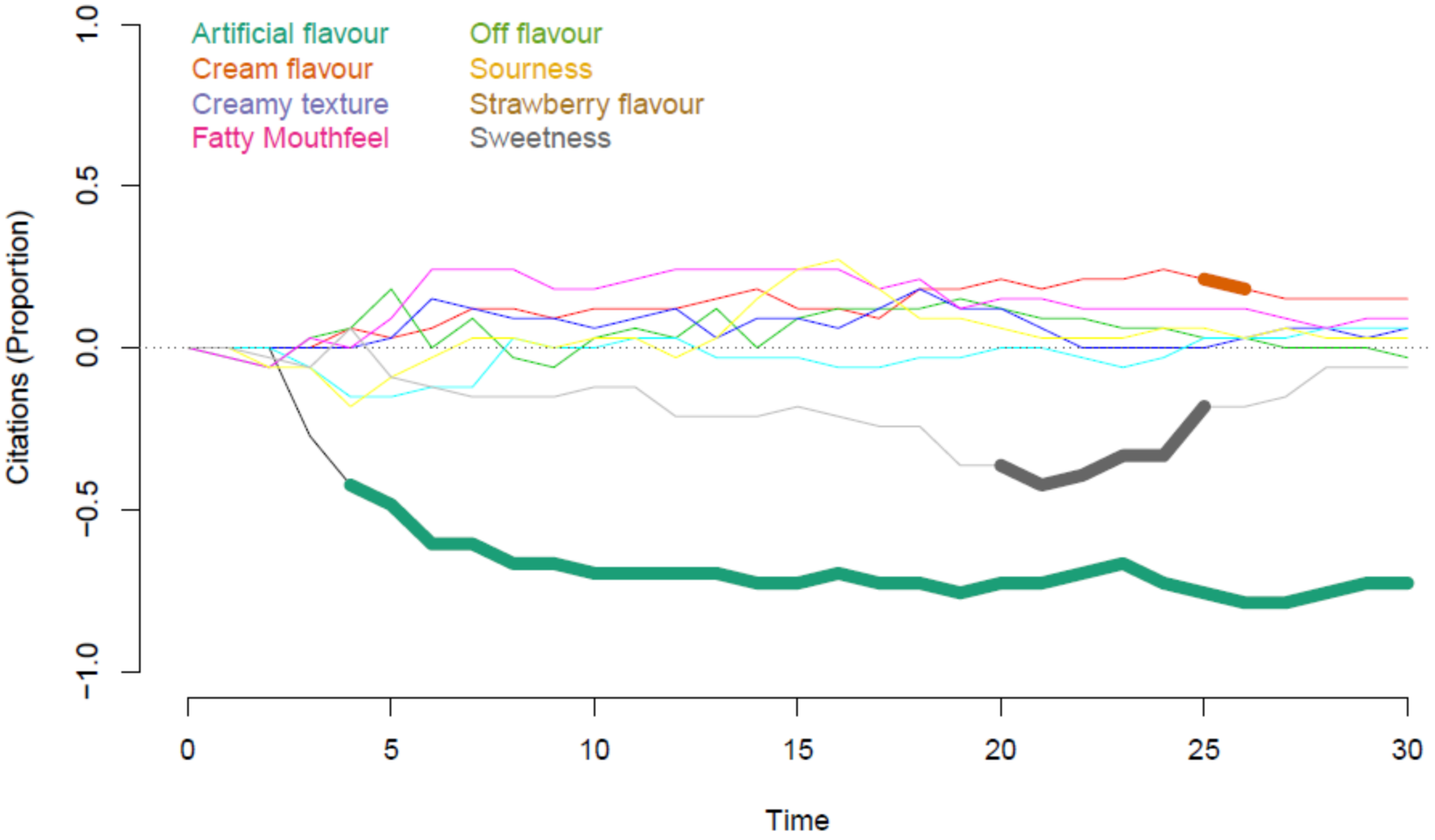
"…the new sensation popping up at a given time…"

	TDS	TCATA
Respondent's task	Indicate the dominant attribute at each moment	Describe the sample at each moment
Underlying model for processing sensations	Sequential, slow	Sequential Parallel
Data	Multinomial (often treated as binomial for simplicity)	Binomial (straightforward statistics)

TCATA @ Sensometrics 2014



TCATA @ Sensometrics 2014

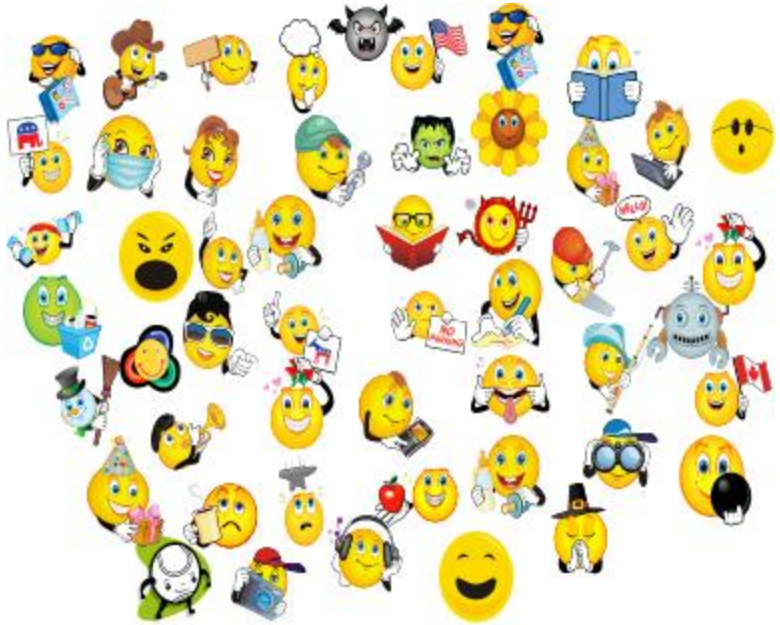


Orange Juice Study

(March 2014)

TDS consumers

TCATA consumers



Each panel evaluated the same 6 orange juices

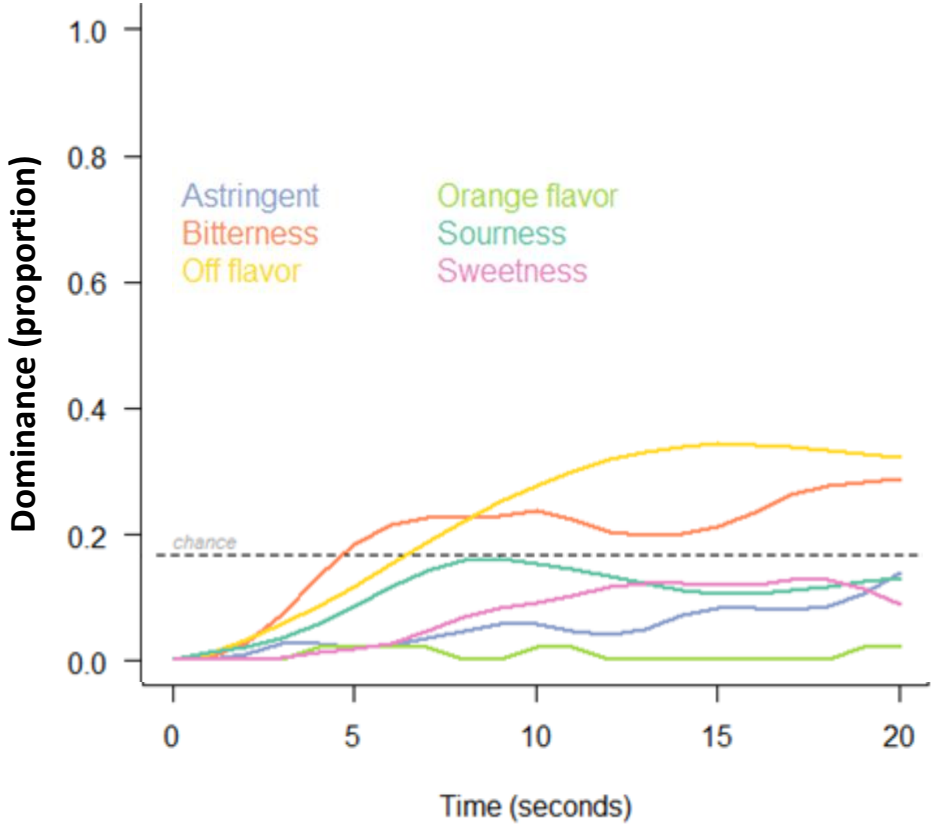
Key findings: TDS – TCATA

1. **TCATA and TDS orange juice profiles are similar for several juices.**

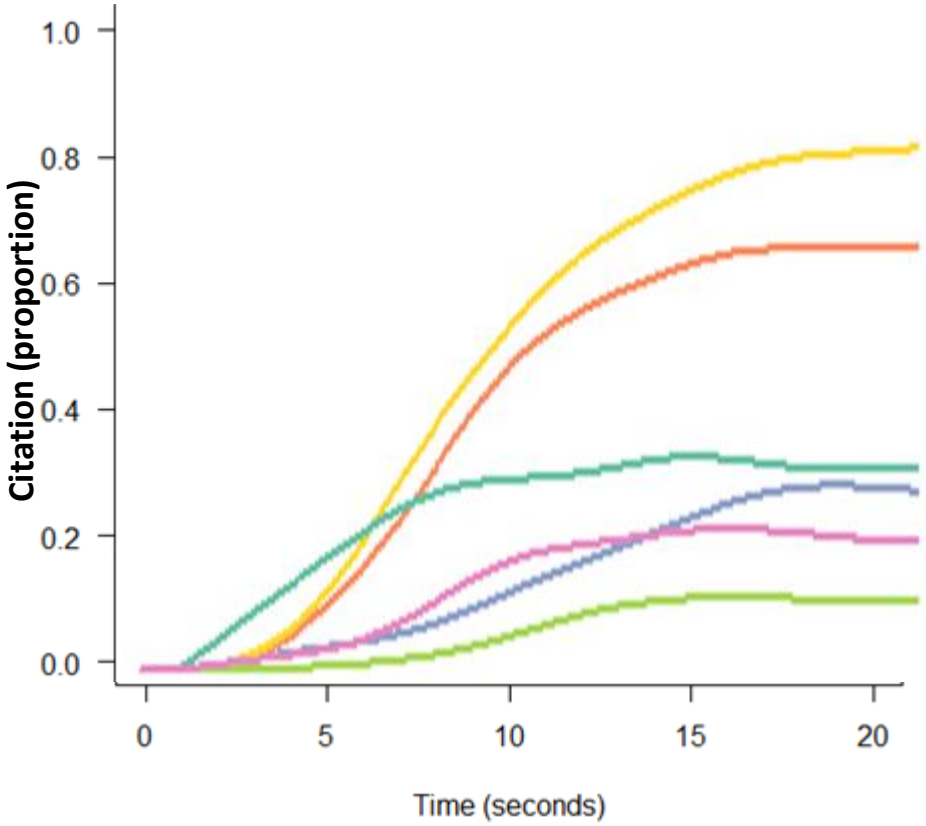
   This tells us that both methods are capturing “signal” (not just noise).

Results for Orange Juice 4

TDS



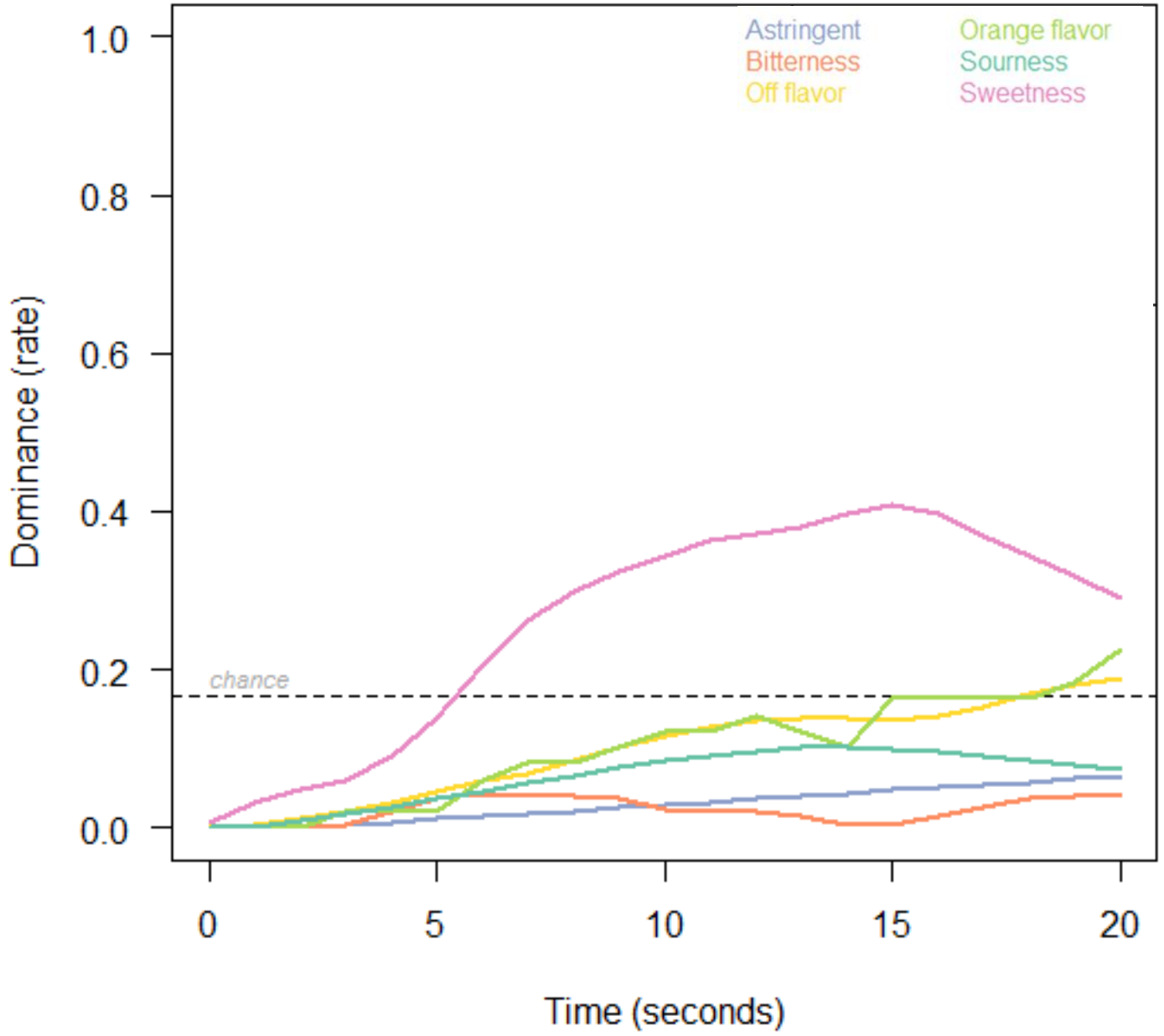
TCATA



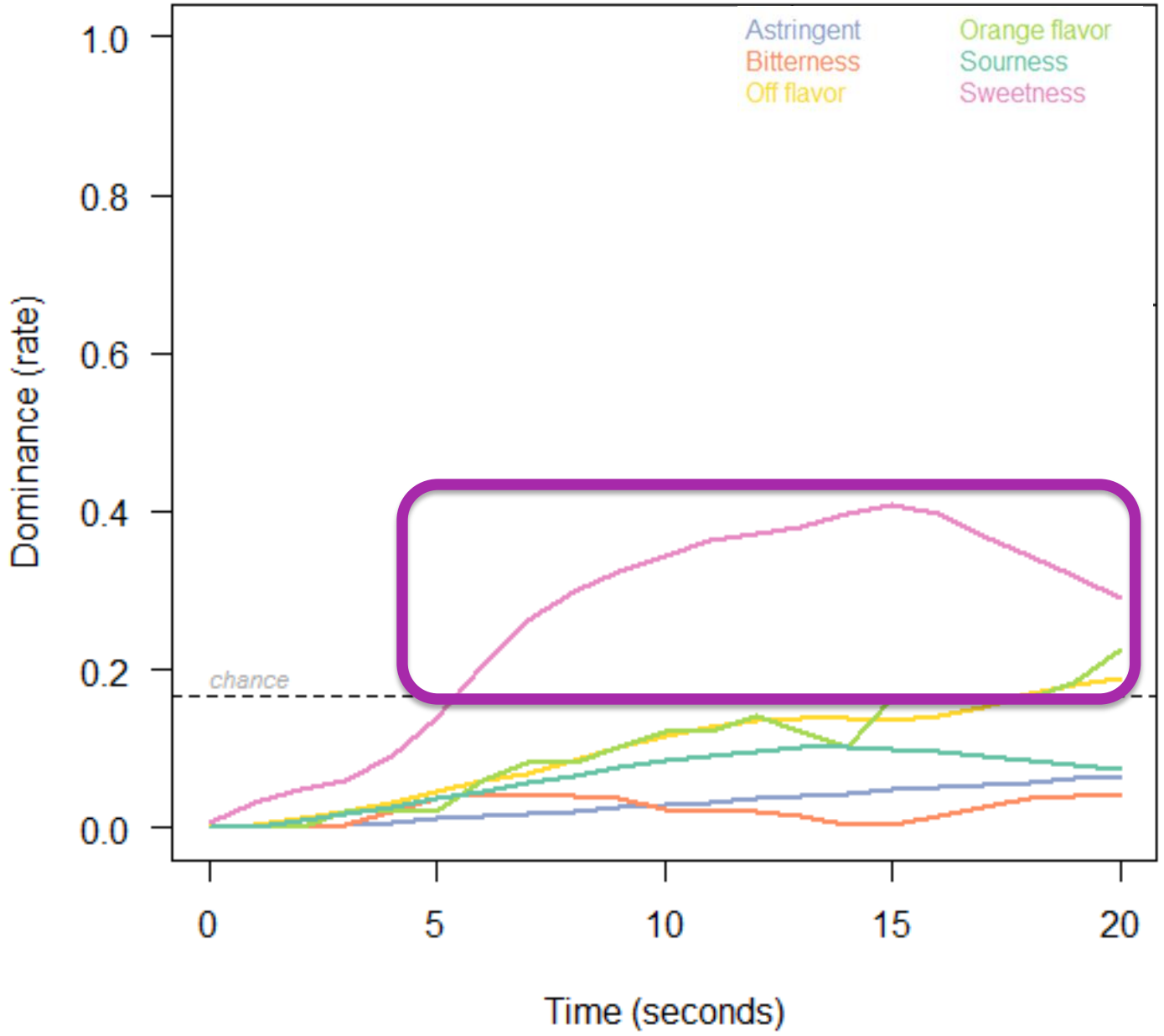
2. TDS shows a “kingmaker effect”.

We gain information about one attribute, at the expense of other attributes.

TDS Results for Orange Juice 2



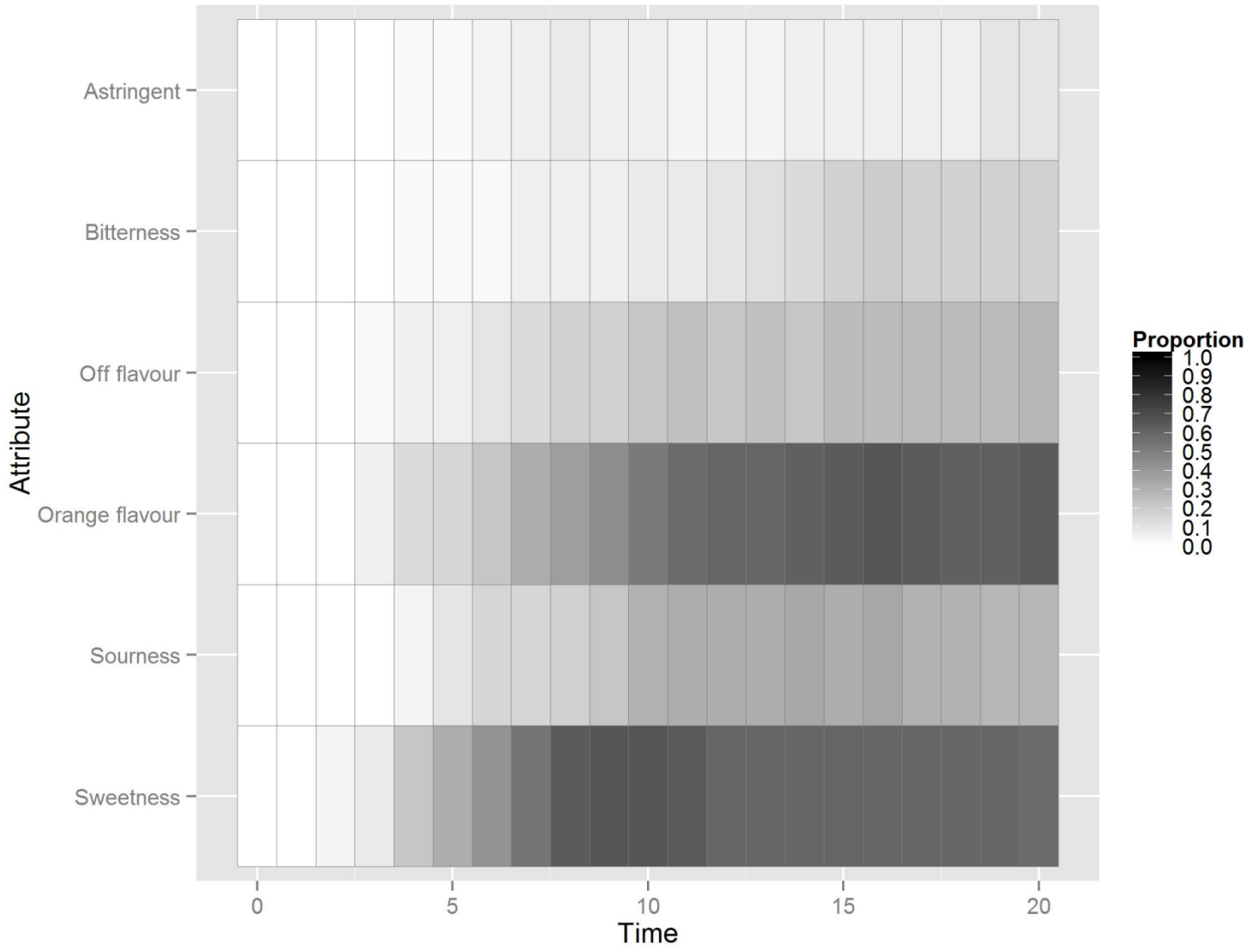
TDS Results for Orange Juice 2



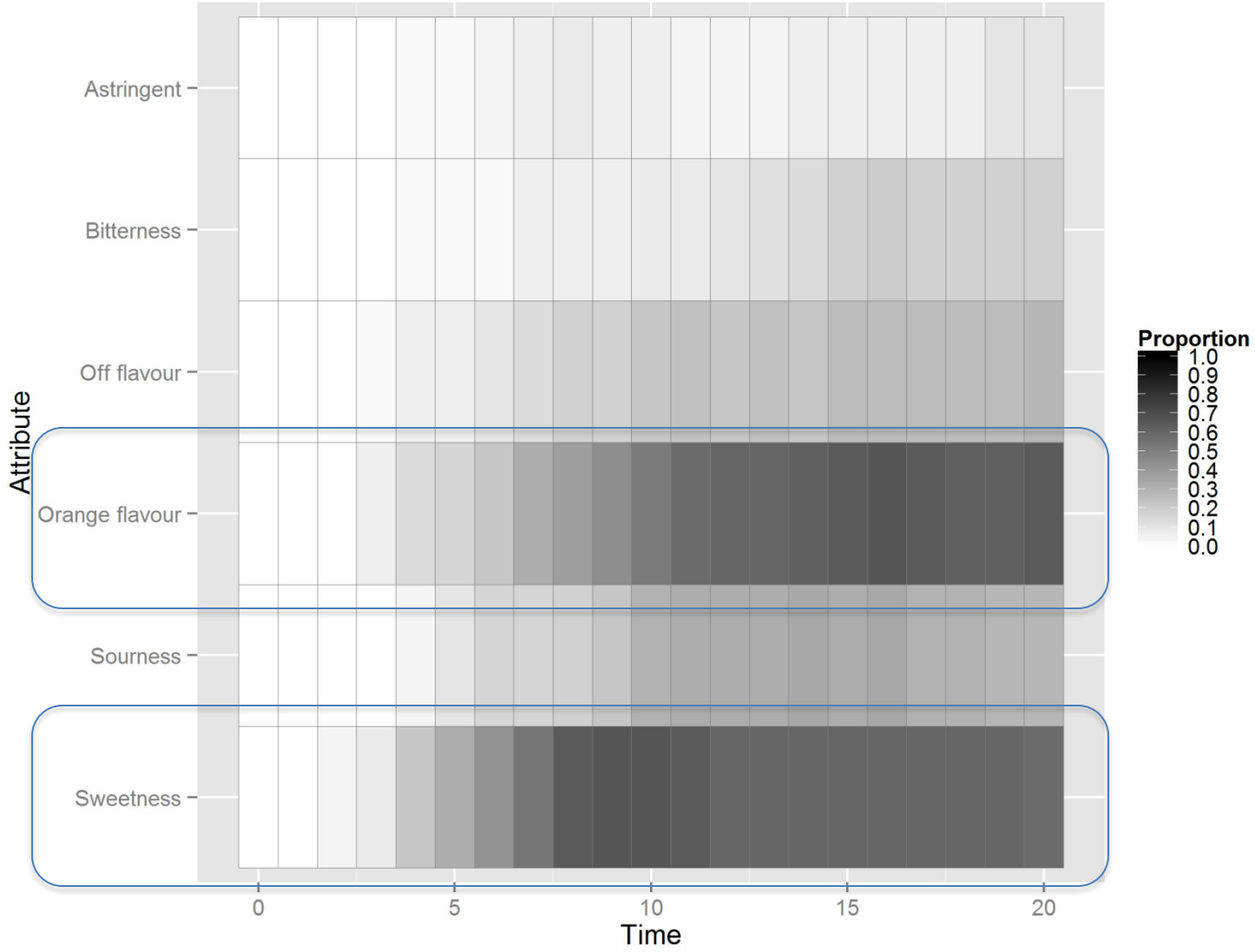
TCATA allows multiple attribute selection so there is no "**kingmaker effect**".

It gains information about secondary attributes at the expense of the primary attribute.

TCATA Results for Orange Juice 2



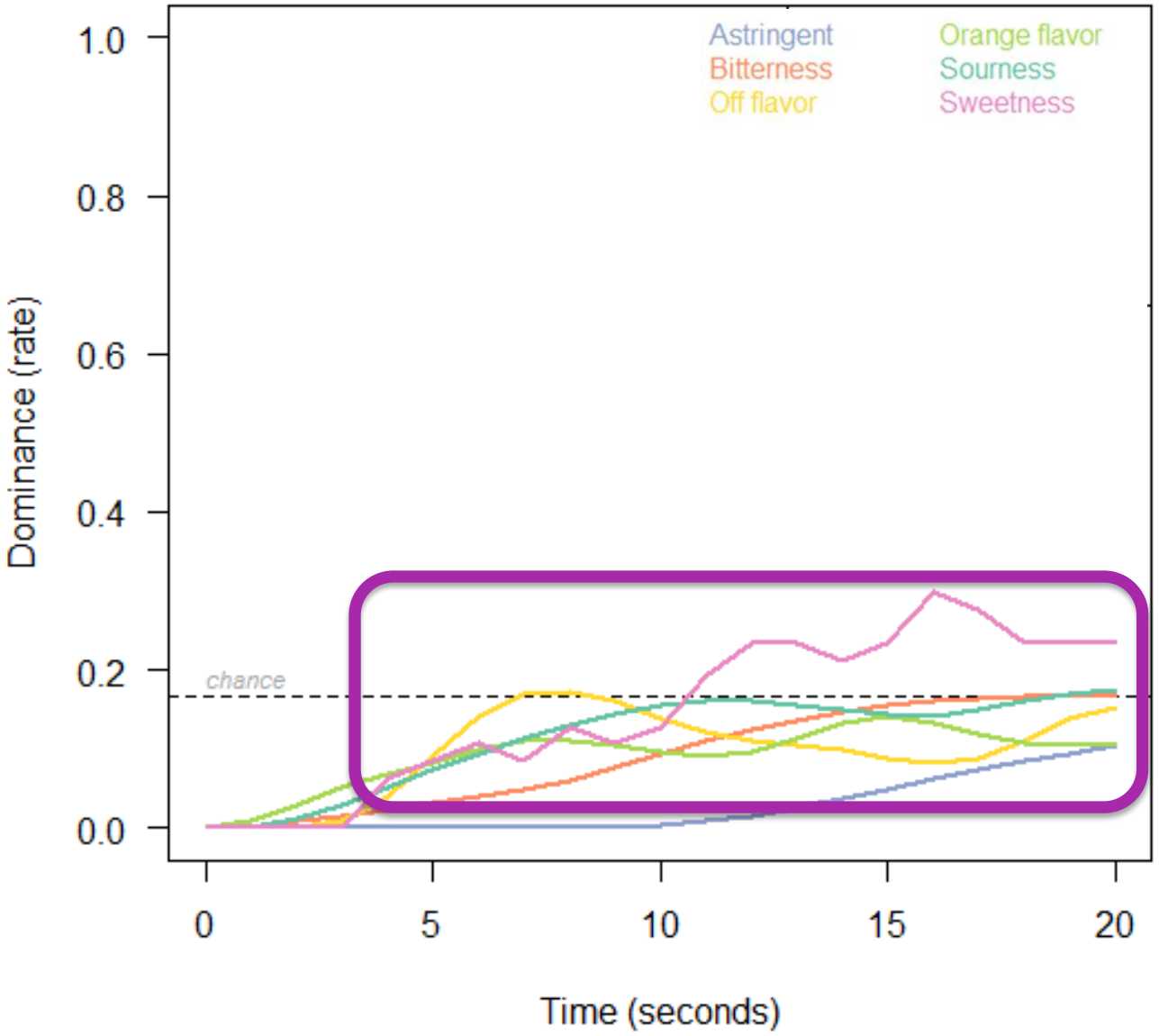
TCATA Results for Orange Juice 2



3. **TDS is affected by a “damping effect”.**

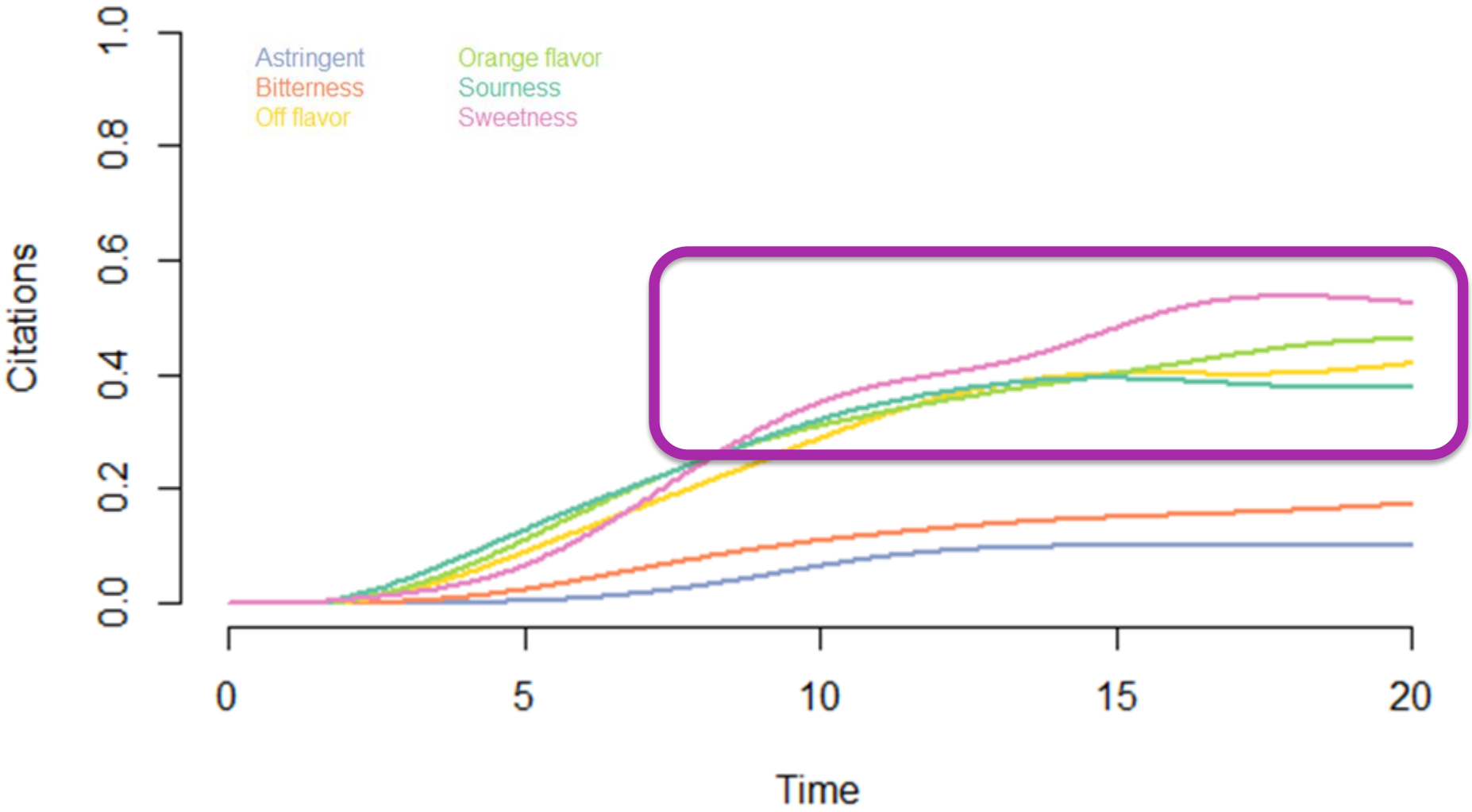
   Temporal sensory information is lost.

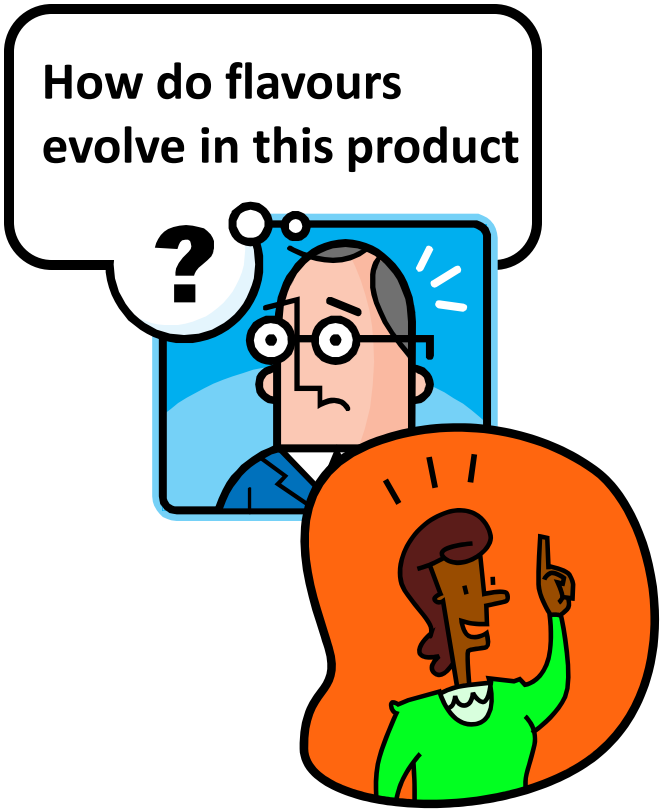
TDS Results for Orange Juice 5



In TCATA, there is no “**damping effect**”.

TCATA Results for Orange Juice 5





Flavor Profile method

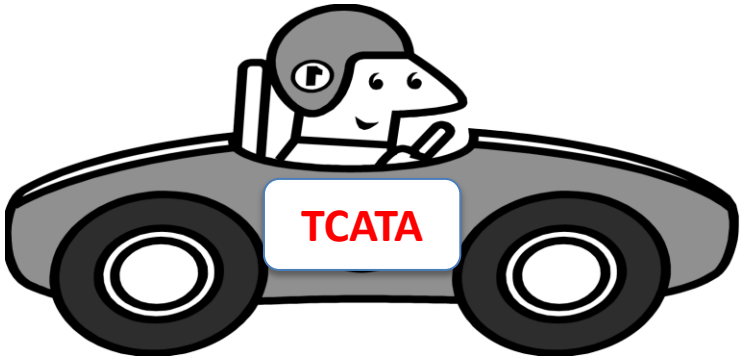
(cf. Caul, 1957)

Order of elicitation of flavour characteristics is one aspect of the characterization of complex food… especially important is the early development of appropriate sensations.

Taste Quality Tracking

(Zwillinger & Halpern, 1991)

TQT method is highly similar to, but with more control than, TDS. The authors find evidence of assessors experiencing sensations in parallel, suggesting a limitation with TQT.



Temporal Dominance of Sensations (TDS)

(Pineau et al., 2009)

"…the new sensation popping up at a given time…"

Some thoughts…

1. Evaluate methods critically.

2. Systematically investigate strengths / weaknesses / limitations, *on a per product category basis.*

3. Openness to new ideas and possibilities.

Thank you for your attention!

John C. Castura

Florencia Alcaire
Shari Zorn
Leticia Vidal
Lucía Antúnez
Ana Giménez
Gastón Ares

Compusense.

UNIVERSIDAD DE LA REPUBLICA
URUGUAY