



TCATA Optimisation: Utilising Visual Cues for Enhanced Data Collection

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INTRODUCTION

Temporal Check-All-That-Apply (TCATA) method is a pivotal technique for tracking sensory attribute changes during product consumption, but its reliability may falter if assessors fail to deselect irrelevant attributes.

To avoid this, Fading TCATA was introduced, allowing attributes to fade out over time, reducing the need for active deselection and prompting assessors to reassess attribute relevance. However, this method can lead to data gaps if assessors delay in re-selecting perceivable attributes, potentially misrepresenting their duration.

This study introduces Evolving TCATA, which was developed in EyeQuestion Software. This alternative aims to improve upon the standard method by making attribute selections visibly glow over time, helping assessors to clearly see and review their choices.

Unlike Fading TCATA, this method does not automatically deselect attributes, ensuring assessors actively confirm or remove selections for more accurate data collection.

METHODOLOGY/STUDY DESIGN

DATA COLLECTION

- MMR's Sensory Descriptive panel (8 assessors) developed a lexicon in Dutch through training with various cheeses.
- With these attributes, the panel then assessed three cheeses in duplicate using (1) TCATA, (2) Fading TCATA, and (3) Evolving TCATA methods using EyeQuestion.
- The order of cheese presentation as well as TCATA methods used were randomised to avoid evaluation bias due to learning effects.
- Red lighting in booths and uniform cheese slicing were also used to avoid evaluation bias.
- After the assessment of the cheeses, ease-of-use questions were included for each of the methods.
- Upon completion of data collection, a group discussion was conducted to obtain qualitative feedback on the methods, enriching insights into the panel's experiences.

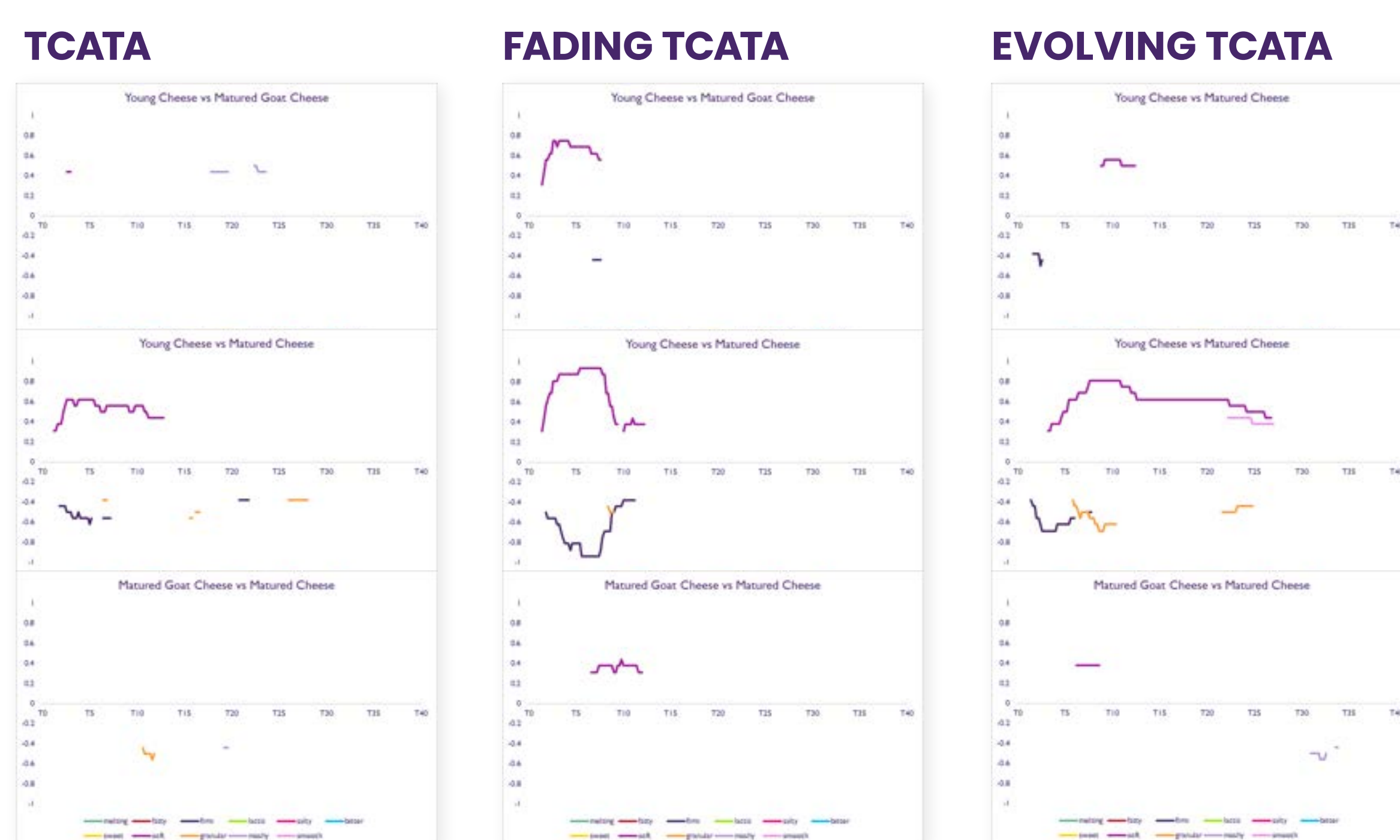
DATA ANALYSIS

- Attributes were translated back from Dutch to English.
- Comparative analysis was conducted using Comparison Curves to evaluate the level of differentiation each method provided.
- Regarding ease of use, the average agreement scores for statements on a 7-point scale were calculated and compared between the different methods.

IMAGES METHOD/STUDY DESIGN



THE LEVEL OF DIFFERENTIATION



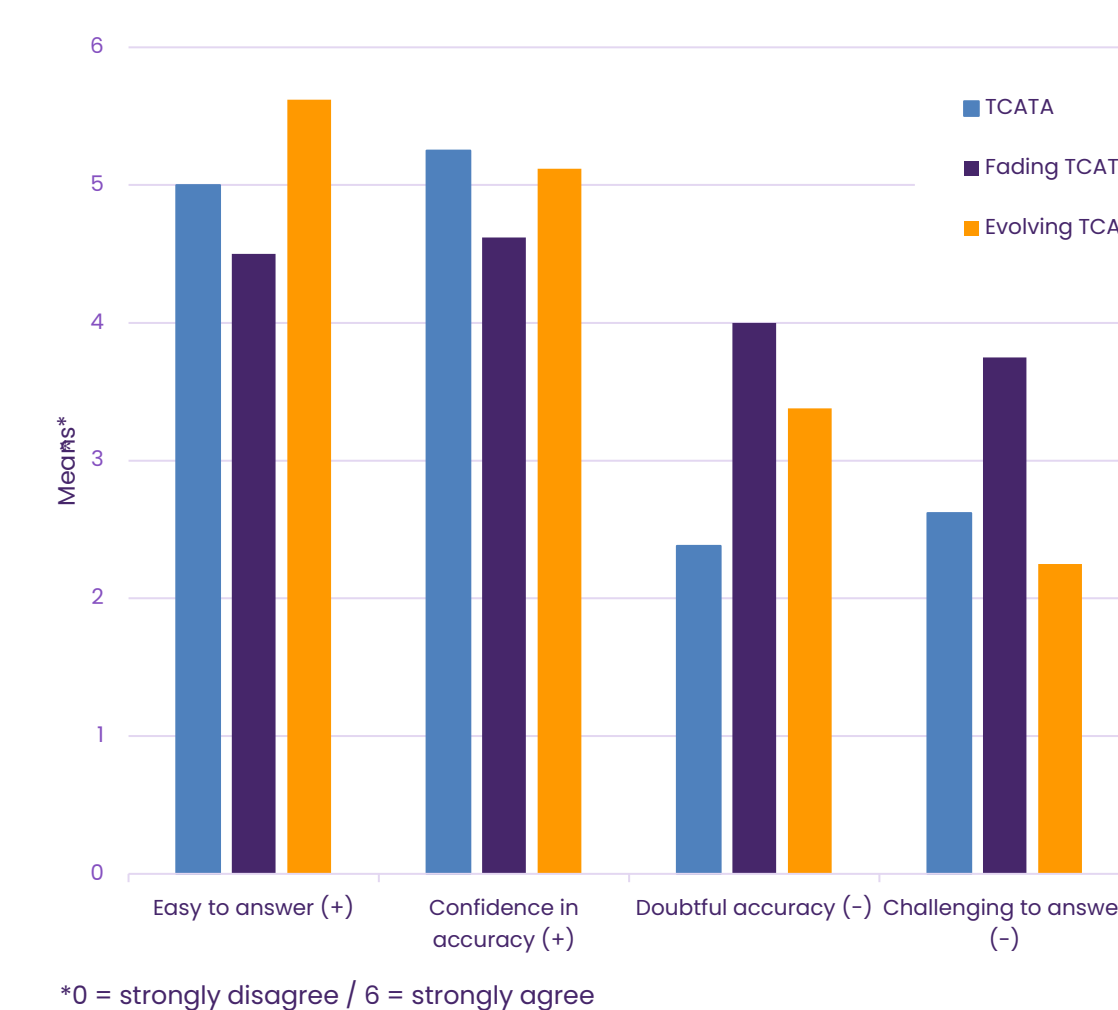
KEY FINDINGS

Level of Differentiation

- Uniform attributes were used across TCATA, Fading TCATA, and Evolving TCATA for the discrimination of cheese types.
- The Evolving TCATA analysis identified more distinguishing attributes, particularly in the comparison of Young and Matured Cheeses, with 4 attributes being discriminative for at least 5 seconds in Evolving TCATA, compared to 3 significant attributes, some for only 3 seconds, in the standard and Fading TCATA.
- Fading TCATA displayed higher proportions on discrimination curves, showing improved discrimination over standard TCATA, yet closely followed by Evolving TCATA.
- A broader spectrum of discriminating attributes at different consumption time points was observed with both Evolving TCATA and standard TCATA.
- Evolving TCATA seems to stand out as the most proficient method, detecting a greater number of discriminating attributes over a longer period and achieving a higher number of mentions per evaluation compared to standard TCATA.

Ease of Use

- The standard TCATA method was found to produce the most reliable accuracy according to the panel, who felt more confident that their results reflected their actual sensory experiences.
- Evolving TCATA was perceived as the most user-friendly method for tracking sensory experiences, as indicated by responses to statements 1
- In contrast, Fading TCATA was considered more difficult to use and resulted in greater uncertainty regarding the accuracy of the results.
- Panel discussions further revealed that Fading TCATA's design, which does not permit manual deselection, posed issues for correcting mistakes if a wrong attribute was inadvertently selected.



Conclusions

- All three TCATA methods—standard, Fading, and Evolving—were effective in discriminating cheese types.
- Evolving TCATA excelled in identifying a greater number of attributes over an extended period.
- Fading TCATA showed improved discrimination but was more challenging in use and perceived as less accurate.

- Standard TCATA was considered to most accurately collect the sensory experiences by the panel.
- Evolving TCATA was noted for its user-friendliness and ease of tracking sensory experiences.
- Overall, Evolving TCATA emerged as a promising method for detailed and user-friendly sensory evaluation.