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## Sensory and consumer science: A complex, expanding, and interdisciplinary field of science

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### ABSTRACT

This paper proposes an updated, contemporary definition of Sensory and Consumer Science. We do so based on survey results from 221 professionals, meaning that the definition represents more than our personal views. Specifically, the proposed definition is: "Sensory and Consumer Science is an interdisciplinary field that encompasses sensory-only research and consumer-centric studies, focusing both on responses to specific products and consumer behaviour more generally. While the field is primarily centred on food, it also extends to non-food items. Researchers employ both quantitative and qualitative methods to conduct their studies. Sensory and Consumer professionals engage in both basic academic research and applied commercial research, operating within an increasingly global and multicultural context." All aspects of this definition were endorsed by a majority of the professionals participating in the surveys, and some aspects were nearly universally accepted. A longer version of the definition is also proposed, which helps to explain/elaborate on the different elements. We urge further discussion and refinement of the short and long definitions. This may lead to further variants that are narrower/broader in scope depending on personal and professional preferences and context.

### 1. Introduction and motivation for the paper

The science of how humans perceive sensory stimuli has a long history (e.g., (Fechner, 1860; Stevens, 1957; Thurstone, 1927; Wundt, 1910)). Now generally known as 'Sensory and Consumer Science', this field has undergone major changes and expansion as recently summarised in a paper by Meiselman et al. (2022), who also divided its development over the past ~ 100 years into three periods: (1) the early sensory phase, (2) the gradual addition of consumer science, and (3) the expansion of consumer research through new methods and a gradual shift away from reliance solely on measures of liking in product development. (Fig. 1).

Nevertheless, the same paper (Meiselman et al., 2022) also highlighted the lack of a formal definition of Sensory and Consumer Science and proposed certain elements of a definition: 1) a broad field extending to all consumer products, 2) multidisciplinary, 3) including both basic and applied research, 4) including both quantitative and qualitative research, and 5) which is global and multicultural. The paper questioned, for example, whether pure sensory research is part of the field, and whether non-human research is part of the field. The paper ended

with the hope that a good definition of Sensory and Consumer Science would be pursued. The present paper attempts this, drawing on input from professionals in the field, primarily obtained during the 2023 Pangborn Sensory Science Symposium in Nantes (France), where a workshop organised by the authors of this paper discussed the definition, hosted a discussion by three experts and surveyed the audience on what a definition of Sensory and Consumer Science might include.

It can be questioned whether it is important to define Sensory and Consumer Science. Defining this rapidly growing field would help to provide boundaries to the field as it continues to grow, give focus to topics that might be important in the future, and attract interest from researchers outside of this field which would help to broaden the scope and impact of the field. A definition would also be helpful to several practical ends such as, to name a few, developing teaching curricula for Sensory and Consumer Science courses, defining journal editorial policies, and providing a stronger identity for professionals in Sensory and Consumer Science when they apply for jobs within organizations.

The remainder of this paper is dedicated to the task of proposing a contemporary definition of Sensory and Consumer Science. To begin this process, and for historical context, we summarise past definitions and

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their evolution.

### 1.1. Evolving definitions over time

To our knowledge, attempts at formally defining Sensory and Consumer Science as a unified field of research are non-existent aside from Meiselman et al. (2022). However, others have provided definitions of Sensory Science or Sensory Evaluation, and their evolution aligns well with the history of Sensory and Consumer Science and its broadening scope.

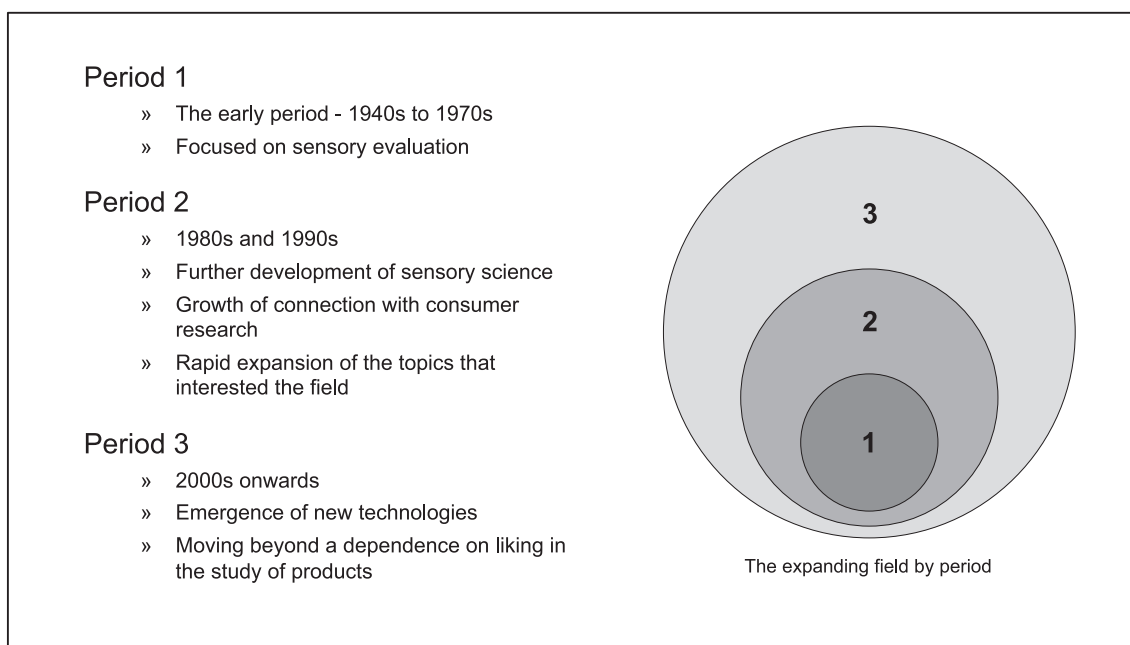
The very early development of sensory evaluation, especially as influenced by psychophysics, can be traced almost 150 years back (Moskowitz & Meiselman, 2020), although at this stage the field did not have a separate identity. In 1973, toward the end of Period 1, the definition provided by the Sensory Evaluation Division of the Institute of Food Technologists (IFT) was: “Sensory evaluation is a scientific method used to evoke, measure, analyse and interpret reactions to those characteristics of foods and materials as they are perceived by the senses of sight, smell, taste, touch and hearing” (Anon., 1975). The narrow focus of Sensory Science has been echoed in more recent times when (Köster, 2009), for example, noted the link to psychophysics for the improvement of the use of “the human measuring instrument and to the development of better scaling techniques and better methods to exclude ‘subjective’ influences” (p. 71).

Illustrative of the field’s development in Periods 2 and 3, is the name change of the IFT ‘Sensory Evaluation Division’ to ‘Sensory and Consumer Sciences Division’, and its international expansion to more than 1900 members from more than 60 countries. Definitions from Period 2 explicitly included the understanding of human behaviour. For example, Martens (Martens, 1999) wrote: “Sensory science is a multidisciplinary field comprising measurement, interpretation and understanding of human responses to product properties as perceived by the senses such as sight, smell, taste, touch, and hearing.” Additionally, there was a suggestion, spearheaded by Michael O’Mahony to differentiate between “Sensory Evaluation I” and “Sensory Evaluation II” (O’Mahony & Goldstein, 1987; Thieme & O’Mahony, 1990) and more clearly categorise product evaluation tasks (by whom and for what purpose) but it did not become widely adopted. Had it been, it may have added more depth to explanations about what sensory testing is, including this example:

“Sensory tests can be divided into two basic groups: analytical tests and affective tests. Analytical tests are generally product-focused, and affective tests are generally consumer-focused.” (Prinyawiwatkul et al., 2023) (p. 427).

At the start of Period 3, the more traditional view of sensory evaluation co-exists with the more modern view of the field as one that is merged with consumer science. Reflecting the former, Stone states: “Sensory evaluation is a science that measures the responses of people to products as perceived by the senses” (Stone, 2005). The further broadening of the scope in Period 3 is exemplified differently by various contributors. For instance, Richard Popper summarized his company’s total qualitative and quantitative consumer research services: “Our services help clients identify the attributes that drive consumer liking, providing companies the understanding needed to optimize new products and to enhance the profitability of existing ones. We offer specific methodologies for consumer needs exploration, product benchmarking, category appraisals, product optimization, and concept-product fit studies” (in Duxbury (2005)). Furthermore, the definition “Sensory food science is a discipline dealing with human sensory perceptions of and affective responses to foods, beverages, and their components. It is multidisciplinary by its nature, deriving research questions from food science and applying behavioural research methods to solve these questions” was proposed by Tuorila and Monteleone (2009). Prescott et al. (2014) further defined Sensory Science by distinguishing it from Sensory Evaluation and its more applied focus on methods for studying products. Sensory Science, on the other hand, “includes study of the participant in addition to the product”, although in this definition the emphasis on studying the person is more biological than psychological and social.

Two definitions from 2023 make the field’s expanding scope very explicit: “Sensory science is a multidisciplinary field that encompasses a wide variety of established and newly developed tests to document human responses to stimuli” (p. 427) (Drake et al., 2023) and “Sensory evaluation is a fast-evolving discipline that incorporates methodologies from different disciplines. In recent years, many advanced sensory methods, both qualitative and quantitative, have been introduced” (p. A2) (Prinyawiwatkul et al., 2023). The latter two definitions are extremely broad, possibly to the extent of providing no boundaries. We strive to arrive at a definition that captures the broad scope while



**Fig. 1.** Illustration of the three periods (colour coded) of the field of Sensory and Consumer Science and their inclusive and expanding scope. Slide used at the 2023 Pangborn workshop, based on Meiselman et al. (2022).

providing a clear identity and boundaries that differentiate Sensory and Consumer Science from adjacent fields.

## 2. Draft definition: Quantitative surveys and qualitative feedback

Unable to find an existing definition of Sensory and Consumer Science, Meiselman et al. (2022) sought to develop one. In their own words, they, however, “failed to do so” (p.10), and instead identified some elements that would likely be part of a definition. Seeking the opinions of other Sensory and Consumer Science professionals on these “definitional elements” (hereafter draft definition), a survey was developed. Survey statements sought, as far as possible, to preserve the wording used in Meiselman et al. (2022).

### 2.1. Draft definition: Data collection and analysis

#### 2.1.1. Survey 1

Initial feedback on the draft definition presented in Meiselman et al. (2022) was sought in late 2022 and early 2023 from a convenience sample ( $n = 48$ ) of professionals in sensory and consumer science, attending respectively the 2nd SenseLATAM (online international conference for Latin American Sensory and Consumer Science professionals) or a workshop for an EU-funded research consortium with invited Danish, Spanish and Polish delegates (seasonedproject.eu). The 10 statements were developed based on Meiselman et al. (2022) and are shown in full in Section 2. They took the form of statements about sensory-consumer science, and for each statement, participants could select one of the answer options ‘yes,’ ‘no’ or ‘don’t know’ (refer to results section for full wordings). The statements were written in English and administered using an online interface. Due to time restrictions, no demographic or other background questions were asked. Access to the questions was via links to online survey platforms.

#### 2.1.2. Survey 2

The questions from Survey 1 were used in a workshop held at the 2023 Pangborn Sensory Science Symposium (i.e., convenience sample). Some modifications were made to statement wordings (e.g., improving clarity, giving examples) and a total of 11 questions were used (refer to results section for full wordings). The response options were the same as those used in Survey 1. After the questions, participants could share other thoughts and perspectives (free-text responses). In a further change from Survey 1, four participant profiling questions were included: gender, age group, years of professional experience and educational background. Quantitative data were obtained from 173 workshop attendees using an online interface, and a summary of participant characteristics is given in Table 1. The survey questions presented to the participants in both surveys are given in Table 2.

#### 2.1.3. Data analysis

The data from each survey were analysed separately. For each question relating to the draft definition, percentages of participants responding ‘yes’ (agreement with the statement), ‘no’ (disagreement with the statement) or ‘don’t know’ were calculated. In Survey 2, chi-square tests were used to explore if answers differed according to participant characteristics. The analysis for gender was based on 172 responses (excluding answers from one participant who selected the ‘prefer to not answer’ option). For age, the two youngest age groups were merged to a single category, as were the two oldest age groups, retaining four categories for the analysis. For years of professional experience, the categories 0–2 and 3–5 years were merged. For educational background, responses from those with a background in Food Science and Technology were compared to a merged category of all other educations.

Content analysis was applied to open-ended comments ( $n = 41$ ) from Survey 2. The initial coding was developed by one author and revised by

**Table 1**

Summary of participants in Survey 2 (workshop attendees at the 2023 Pangborn Sensory Science Symposium). Data were obtained from 173 people.

Participant characteristic	Percentage (%)
1. What is your gender?	
Woman	82
Man	17
Prefer to not answer	1
2. What is your age?	
18–25 years old	3
26–35 years old	32
36–45 years old	30
46–55 years old	23
56–65 years old	10
66 years old or older	2
3. How many years have you worked in the field of sensory and consumer science?	
0–2 years	8
3–5 years	16
6–10 years	20
11–20 years	28
21 years or more	28
4. What is your main educational background?	
Food science and technology	58
Human nutrition	5
Marketing/consumer behaviour	7
Mathematics/statistics	4
Psychology/Neuroscience	8
Other (not listed)	17

a second author.

### 2.2. Draft definition: Results

The results are presented – question by question – by combining quantitative (Survey 1, Survey 2) and qualitative data (Survey 2) with key points from the three invited roundtable participants at the workshop at the 2023 Pangborn Sensory Science Symposium, who were Paula Varela, Hans van Trijp and Richard Popper (see, for example, LinkedIn for more information on each). Table 2 contains the quantitative results. Refer to Supplementary Materials for the full list of open-ended comments.

#### 2.2.1. Sensory (Q1)

In Survey 1, participants’ answers to the question “Sensory-Consumer Science should include sensory-only research as well as consumer-centric research?” (Q1a) were nearly evenly divided between ‘yes’ (i.e., agree) (48%) and ‘no’ (i.e., disagree) (50%). Considering that sensory science has been more prevalent than consumer science for many of the past 100 years, this answer was unexpected and prompted wording changes for Survey 2 to improve clarity. The wording used in Q1b (i.e., “Sensory-Consumer Science should include sensory-only research (i.e., with a primary focus on how products are experienced through the senses) as well as consumer-centric research (i.e., with focus on consumer understanding including both sensory and non-sensory aspects”) attracted a higher percentage of ‘yes’ answers (77%) and many fewer ‘no’ answers (17%).

In the open-ended comments, sensory perception as essential to the field was a point made several times, for example: “Sensory perception is the main [thing],” “Perceptions by all senses from both trained (analytical) and untrained (consumer) perspective,” “The field can be broad as long as the connection with sensory perception remains.”

#### 2.2.2. Consumer (Q2)

Question 2 sought to capture the consumer-centric part of the definition of Sensory and Consumer Science. In Survey 1, there was strong agreement (81%) that Sensory and Consumer Science should include consumer-centric product-focused research and consumer behaviour

**Table 2**

Results from surveys with sensory and consumer science professionals regarding their opinion on draft definition proposed by Meiselman et al. (2022). Within surveys, shown values are percentages. Survey 1 comprised responses from 48 people from Latin America and Europe (2022 and 2023); Survey 2 comprised responses from 173 people attending the 2023 Pangborn Sensory Science conference. Some statement wordings differed between the two surveys.

Statement	Survey 1 (%)			Survey 2 (%)		
	Yes	No	Don't know	Yes	No	Don't know
Q1a. Sensory-Consumer Science should include sensory-only research as well as consumer-centric research?	48	50	2			
Q1b. Sensory-Consumer Science should include sensory-only research (i.e., with a primary focus on how products are experienced through the senses) as well as consumer-centric research (i.e., with focus on consumer understanding including both sensory and non-sensory aspects)				77	17	6
Q2a. Sensory-Consumer Science should include consumer-centric product-focused research and consumer behaviour research more generally?	81	4	15			
Q2b. Sensory-Consumer Science should include product-focused consumer research (e.g., acceptability, sensory evaluation by consumers and other product perceptions)				95	2	3
Q2c. Sensory-Consumer Science should include consumer behaviour research more generally (e.g., attitudes, expectations, behaviour)				85	10	5
Q3. If the definition allows any consumer research to be part of Sensory-Consumer Science, the field becomes too broad and at risk of losing its identity?	28	54	18	28	60	12
Q4. Sensory-Consumer Science should encompass consumer products more broadly (i.e., non-foods)?	80	9	11	97	3	1
Q5. Sensory-Consumer Science should encompass non-human responses (e.g., pets)?	65	21	14	76	10	14
Q6. Sensory-Consumer Science encompasses both basic (academic) and applied (commercial) research?	96	0	4	98	2	1
Q7. Sensory-Consumer Science is multi-disciplinary?	98	0	2	99	0	1
Q8. Sensory-Consumer Science is global and multi-cultural?	96	0	4	98	2	0
Q9. Sensory-Consumer Science should encompass quantitative and qualitative research (incl. multi-method and mixed-method designs)?	94	2	4	99	0	1
Q10. The definition of Sensory-Consumer Science should mention ethical issues such as sustainability and meat avoidance?	55	28	17			
Q10a. The definition of Sensory-Consumer Science should mention working towards greater global sustainability (environmental, social, and economic)?				45	39	17

research more generally (Q2a). In Survey 2, this question was broken in two and examples were added. There was very high agreement that product-focused consumer research such as acceptability, sensory evaluation by consumers and other product perceptions was included (95%) (Q2b). Slightly less, but still very strong agreement (85%) was observed regarding the inclusion of consumer behaviour research more generally (e.g., attitudes, expectations, behaviour) (Q2c). There were 10% of participants in Survey 2 who answered 'no' to Q2c.

There were numerous comments relating to the issue of the field being product-centric, and many expressed their agreement but with different emphasis or from different perspectives. For example, "the focus of sensory-consumer science should be on products, and on repeat purchase" (Popper), "the field is based on the interaction of a product and the person" (Varela) and "sensory and consumer science is used to create products and enhance the experience of that product or event" (survey participant). However, the view that the field is product-centric was not universal. One participant made the following open-ended comment: "It should be perception centric not product centric. I.e., human centric not product centric. The field is not just about products."

### 2.2.3. Breadth and scope of Sensory and consumer Science (Q3)

Regarding the breadth and scope of sensory and consumer science, Meiselman et al. (2022) took the position that "...if the definition allows any consumer research to be part of Sensory-Consumer Science, the field becomes too broad and at risk of losing its identity" (p. 11). Q3 addressed this aspect of the draft definition, using identical wording to the quote above. The majority answer in both surveys was 'no' (respectively, 54% and 60%). This was followed by 28% answering 'yes' and 12–18% answering 'don't know'. Years of professional experience modulated answers to this question ( $p = 0.027$ ). The highest proportion of 'yes' answers was observed in the group of people with 21 or more years of experience (35%). Those with less experience (0–10 years) were more likely to answer 'don't know' (20–24 %) to this question. Men and women (Survey 2 only) differed in their responses to this question also ( $p = 0.01$ ), and men were roughly equally divided between 'yes' (50%) and 'no' (47%), with few being undecided (3%). Fewer women answered 'yes' (24%), with an increase in 'no' and 'don't know' (respectively, 63% and 13%).

### 2.2.4. Non-food (Q4)

The position that Sensory and Consumer Science should encompass consumer products more broadly (i.e., non-foods) was strongly supported in the two surveys (respectively, 80% and 97%) and endorsed by roundtable participant Popper who made the point that the emphasis on food is too limited and that the field should include personal care and home care products. Van Trijp disagreed and expressed the opinion: "The uniqueness of the field is the food-consumer connection; While we can study non-food products, there is more coherence in focusing on food."

### 2.2.5. Non-human (Q5)

There was strong agreement that sensory and consumer science should encompass non-human responses (e.g., pets) (Q5). In Survey 1, 80% answered 'yes,' while 97% did so in Survey 2. Few participants disagreed (3–9%) with this characteristic of sensory and consumer science, although gender ( $p = 0.049$ ) and educational background ( $p = 0.013$ ) influenced answers. Agreement (i.e., 'yes') remained the dominant answer for men (87%) and women (74%). The answer 'no' was given by 13% of men, while 13% of women answered 'don't know'. Agreement that non-human responses were part of sensory and consumer science was the dominant answer regardless of educational background (food science and technology vs any other field). However, there was a greater tendency to answer 'no' when participants had trained in any other field (17%), and those with a food science and technology background were more likely to answer 'don't know' (18%).

On the matter of the field being non-human one survey participant

commented: “The non-human statement is interesting which mentions pets. But what about basic research on the chemosensory response and behaviour of animals.” This comment pointed to the potential ambiguity of the survey wording, as chemosensory response and behaviour of animals could have been implied, but the meaning could also have been more narrowly used for human evaluations of pet products. There are examples of sensory methodology being used to for the study of animal chemosensory perception, but they are rare (for reviews see [Koppel, 2014](#); [Samant et al., 2021](#)).

#### 2.2.6. Strong agreement on Q6, Q7, Q8 and Q9

In both surveys, the results showed very strong agreement with several aspects of the draft definition ([Table 1](#)). Specifically, for Questions 6, 7, 8 and 9 the proportion of respondents who answered ‘yes’ ranged from 94% to 99%. That is, there was almost universal agreement that Sensory and Consumer Science: i) encompasses both basic (academic) and applied (commercial) research, ii) is multi-disciplinary, iii) is global and multi-cultural, and iv) encompasses quantitative and qualitative research (incl. multi-method and mixed-method designs). Participant background characteristics (Survey 2 data only) did not modulate these results except for the definitional element relating to sensory and consumer science being global and multi-cultural. Among women participants, 99% agreed (1% answered ‘no’), while among men, the percentage of ‘yes’ responses was slightly lower (90%), with 7% answering ‘no’ and 3% answering ‘don’t know’ ( $p = 0.007$ ).

The basic and the applied nature of Sensory and Consumer Science (Q6) is visible – to different degrees – at meetings like Pangborn Sensory Science Symposium, EuroSense, SSP and IFT. Industry conducts and reports research at conferences, and in journals, especially larger industries with in-house research capability. Research suppliers (consulting firms) also contribute to published research. Further to acknowledging these two important aspects, a revised definition could also be clear about these two “parts” of Sensory and Consumer Science interacting with and strengthening each other, and about their different impact.

There was near full agreement (94–99%) on the general characteristics of Sensory and Consumer Science being multidisciplinary (Q7), global and multi-cultural (Q8), and quantitative and qualitative (Q9) ([Table 2](#)). It is part of the field’s “DNA” to have multiple contributing disciplines including product science and technology, social sciences, biological sciences, statistics, and others. Emphasizing this characteristic in a revised definition is perhaps less important than considering if and how the field should be limited. In other words, what are the boundaries of Sensory and Consumer Science? When is a topic/project “in scope” vs “out-of-scope?”

The term multidisciplinary as used in the survey, nonetheless, deserves some attention, in so far as it is not sufficient to capture the true nature of Sensory and Consumer Science. Multidisciplinary science represents the lowest form of integration among disciplines; where these contribute to a field but do not change/transform/modulate each other and researchers “return” to their home disciplines at the end of a joint project. Drawing on [Klein \(2010\)](#), it may be more appropriate to regard Sensory and Consumer Science as more than multidisciplinary. The field is cross-disciplinary and possibly interdisciplinary since there is some form of integration across disciplines and some concepts/approaches become unique to the field. This aligns with [Choi and Pak \(2006\)](#) who in a parallel to equating multidisciplinary with “additive” refer to interdisciplinarity as “interactive.” For this reason, we use the term interdisciplinary in the title of this paper and the definition below, rather than multidisciplinary as used in the survey.

#### 2.2.7. Ethical and sustainability issues (Q10)

Support for the suggestion that the definition of sensory and consumer science should mention ethical issues and sustainability (Q10) was divided. In Survey 1, where ethical issues, sustainability and meat avoidance were mentioned in the question wording (Q10a), 55% of

participants indicated support while 28% were against and 17% were undecided. In Survey 2, the question was focused on sustainability (environmental, social, and economic) (Q10b) and the undecided remained at 17% while those for and against were roughly equally divided, respectively 45% and 39%.

Although sparse, the open-ended comments to Q10 reflected this duality of opinion. One participant thought that “to attract students / newcomers to our field, it would be great to include some examples of how our field positively impacts the world. Maybe not as part of the core definition, but a sub-bullet.” The opposite view was expressed by another participant who said: “Please avoid making this a political thing and do not include ethical things like meat avoidance and global warming or other topics along those lines. Our profession and companies need to be able to make those types of decisions independent of any definition of the field.”

#### 2.2.8. Missing from the draft definition

One of the open-ended comments suggested that a potential aspect missing from the draft definition related to data and analysis (incl. sensometrics): “There should also be a focus on data, understanding it, how to analyse and interpret and make sense of the world around us. That’s a huge part of the field. Including it in the definition might help with skilling-up the field with more data skills.” Some participants also felt that the use of digital and technological methods and tools warranted mention.

#### 2.2.9. What should the field be named?

In the two surveys, the field was named “Sensory-Consumer Science.” This raised several negative comments including “What is sensory-consumer?”, “Sensory-consumer science is a strange term” and “Sensory-consumer is misguided.” In the open-ended survey responses, one Study 2 participant wrote “Doesn’t sensory science encompass both analytical- and consumer-sensory science?” Following up on his remark that the name sensory-consumer is misguided, Richard Popper said “There is a field of sensory science and a field of consumer science, and there is overlap between sensory and consumer.” Taken together, these comments suggested that the name is associated with some confusion, and leaves room for different interpretations and emphasis on what’s the core aspect of the field. One survey participant suggested “to consider behavioral science instead of consumer science and perception science instead of sensory science.” While expressed differently, this comment also suggested that the name of the field was not optimal – “We tend to oppose the two terms sensory one side and consumer other side. Maybe a more inclusive wording should be interesting to evaluate.” A few comments were noteworthy in their language use referring to “sensory” but clearly including consumer aspects, for example: “Behavioral research, while important to our field, falls more into consumer psychology and marketing” and “If we dilute the definition of *sensory science* (emphasis added) too much, we run the risk of companies and universities eliminating positions or rolling it into other fields.”

Which other fields exactly is perhaps less clear, as expressed by Varela “We know the definition of sensory but what is the definition of consumer?” Q3 in the survey (i.e., “If the definition allows any consumer research to be part of Sensory-Consumer Science, the field becomes too broad and at risk of losing its identity?”) relates to this, and some of the free-text responses indicated concern over too broad a scope, including: “There is consumer market research area as well, how to differentiate sensory-consumer research vs. that? It’s critical in company organization settings,” “The definition should capture the objective(s) of the research which should fall within the Consumer/Product/Sensory remit and not, for example, marketing focused consumer/marketer research objectives,” and “Must also keep in mind .... for example, behavioural psychology and economics. We are not the leaders here and should not try to be, as we will never supplant those fields.” The multidisciplinary mindset of the field was also acknowledged as a strength (e.g., by Van Trijp) and some of the survey participants echoed this sentiment in the

free-text responses, e.g., regarding the role of sensory professionals within organisations: “We are connectors: within our organisation between the different functions, we are also responsible for being the voice of consumers within our organisation”, and “We collaborate with other fields (...), perception and gauging responses is key.”.

### 3. Definition of Sensory and consumer Science

Drawing directly on the results presented above, we propose a definition in two variants, where the first, and shorter definition is a condensed version of the second. We consider that it may be more suitable when presenting to others what Sensory and Consumer Science is. We anticipate that the longer version can be suitable for audiences where detail and depth matters (e.g., within the field, for teaching). As seen below, the two variants present the same definition, but in varying length and detail.

**Shorter version:** Sensory and Consumer Science is an interdisciplinary field that encompasses sensory-only research and consumer-centric studies, focusing both on responses to specific products and consumer behaviour more generally. While the field is primarily centred on food, it also extends to non-food items. Researchers employ both quantitative and qualitative methods to conduct their studies. Sensory and Consumer professionals engage in both basic academic research and applied commercial research, operating within an increasingly global and multicultural context.

**Longer version:** The field of Sensory and Consumer Science is interdisciplinary and remains loosely defined as it continues to expand. It includes (i) sensory-only research (i.e., with a focus on how products are experienced through the senses) and (ii) consumer-centric research (i.e., with a focus on consumer understanding including sensory and non-sensory aspects). Further, the field encompasses (iii) product-focused consumer research (e.g., acceptability, sensory evaluation by consumers and other product perceptions), and (iv) consumer behaviour research more generally (feelings including attitudes, emotions, expectations, and affective behaviours). The field is (v) food-centric but extends to non-foods (e.g., personal and household care, pet products). The research methods are (vi) quantitative and qualitative. The field (vii) includes sensory research, food consumer research, sensory-nutrition research, contextual research, sensometrics, and more. Professionals in the field of Sensory and Consumer Science (viii) conduct basic (academic) as well as applied (commercial) research, and they do so in an increasingly (ix) global and multicultural setting.

### 4. Discussion and conclusions

We set out to develop a contemporary definition of Sensory and Consumer Science that would reflect its historical evolution and broadening scope. A strength of the definition we have proposed is that it draws directly on the opinions of professionals in Sensory and Consumer Science, and, therefore, represents more than the opinion of the authors. Yet, we acknowledge that the proposed definition is unlikely to be final. The diversity of opinions uncovered in the survey and the workshop discussion showed that there is ample scope for further revision and evolution. We welcome and encourage this!

#### 4.1. Name and breadth of the field

Our name, the one we refer to our field by is an important first indication of who we are, what we do and how widely we scope. In this paper, we have used “Sensory and Consumer Science” (i.e., an interdisciplinary field of science), but suggest that “Sensory and Consumer Sciences” (plural version of science) may be preferred by some. This resonates with the view that Sensory Science by definition is multidisciplinary (Prescott, Hayes, & Barnes, 2014), and acknowledges that Consumer Science may not be a single field but multiple fields. Others may prefer “Sensory-Consumer Science” as done in the survey, and to

some, this latter name could imply a narrow lens that only includes the combination of sensory and consumer research.

Another reason to continue conversations on the name of the field beyond this paper is that it relates directly to a question where a consensus of opinion is lacking – how broadly Consumer Science as part of the field of Sensory and Consumer Science should be scoped. This was a key point of disagreement as exemplified by the divided opinions to survey questions Q2 (i.e., is the field primarily about products or is also general consumer research part of it?) and Q3 (i.e., is there a risk of the field losing its identity if everything is “allowed in”?). While the inclusive perspective prevailed and the majority of participants agreed that general consumer research is part of the field and can be so without blurring its identity, this topic was the most divisive and the one that took most of the discussion time at the workshop. An interesting observation was that concern over defining the field too broadly appeared to be more strongly expressed by professionals with longer careers (21 + years). Tentatively, younger professionals, who have only been active in the field during Period 3 may have a more flexible identity and be more accustomed to multiple disciplinary perspectives. Further exploration of this experience/age difference would be relevant. Some may wish to explore gender differences further, including the apparent skew of women professionals.

It also emerged that some professionals view “Sensory and Consumer Science” as synonymous with “Sensory Science.” This perspective was evident in the open-ended survey comments and during the workshop discussion. It was also eloquently expressed at the workshop by one of the conference chairs, Pascal Schlich, who noted that “if there is no connection to sensory, you are not in our field”. In contrast, the position, which may be seen as representing the other pole of a continuum of definitions is that Sensory and Consumer Science does not even exist as a single, unitary field. For instance, during the workshop views were expressed that Sensory Science and Consumer Science are two separate fields that may or may not overlap (Popper) and that the consumer is the primary object of study and sensory one of the (many) possible lenses through which one can study it (Van Trijp).

To illustrate that definitions of the field that vary in scope could exist, we present in the [Supplementary Material](#) two variants of the definition presented in [Section 3](#). One is narrowly scoped and emphasises the joint use of sensory and consumer science methods. The other is broadly scoped and allows for Sensory Science and Consumer Sciences as different and distinct fields. We offer these two variants to stimulate further conversations.

#### 4.2. A multidisciplinary, interdisciplinary or transdisciplinary field of science?

Intertwined with the discussion on the scope of Sensory and Consumer Science is a discussion on the ontological foundation of the field, which, can be rephrased as asking if it is multidisciplinary (“additive”), interdisciplinary (“interactive”) or transdisciplinary (“holistic”). In [Section 2.2.6](#), we argued for regarding the field as being beyond multidisciplinary, and in the proposed definition, hence, used the term interdisciplinary.

If, as [Choi and Pak \(2006\)](#) suggest, multidisciplinary, interdisciplinary and transdisciplinarity are regarded on a continuum that captures the involvement of multiple disciplines, then transdisciplinarity can be regarded as an extension of interdisciplinarity. It transcends traditional disciplinary boundaries and integrates insights from distinct disciplines to address complex real-world problems ([Choi & Pak, 2006](#)). A discussion on adopting this perspective as a foundation of Sensory and Consumer Science has merit.

It may also inform an outstanding issue, whether or not to mention ethical issues and sustainability in the definition. Opinions among professionals were very divided on this point and excluded from the proposed definition since it was only endorsed by 55% of the survey participants. Since the workshop lacked time to discuss this point, we

speculate that opposition to including specific issues in the definition could be that they are not seen as reflecting something intrinsic about the field, but rather capture market trends and research funding opportunities. A challenge linked to the inclusion of named specific issues in the definition is that socio-political agendas change over time and differ across countries and cultures, and, therefore, the definition, to quote a workshop participant very critical on this point, “would have to be updated every 5 years”. An apt illustration of this point is the current focus on sustainability, whereas obesity prevention and other public health issues had higher priority not that long ago.

In light of the discussion on scope and boundaries of Sensory and Consumer Science, it could make sense to not define the field adhering to only one of the three types of disciplinary foundations. Instead, some projects will be multidisciplinary and draw on knowledge from different disciplines that stay within their boundaries. Other projects will be interdisciplinary and synthesise links between disciplines into a coherent whole. Finally, some projects, possibly the minority, will transcend the traditional boundaries of different sciences and humanities with the explicit aim to address societal challenge which present in the real world as complex problems. All have merit, but not all may be regarded as being Sensory and Consumer Science.

#### 4.3. Conclusions

It is our hope that the definition of Sensory and Consumer Science presented in this paper reflects the contemporary view of the field by a majority of professionals working in the field. As discussed above, some areas of disagreement remain, and it will be interesting to see whether these can be reconciled at some point in the future. It is therefore important to continue the conversation about a definition for Sensory and Consumer Science and this paper serves as an initial step towards sparking that conversation. We encourage others to join the conversation and disseminate their views in subsequent papers, now and in the future.

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#### CRediT authorship contribution statement

**Sara R. Jaeger:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Herbert L. Meiselman:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Davide Giacalone:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization.

#### Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Given their roles as Editors at the time of submission, authors SRJ and HLM were not involved in the peer review of this article and had no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to another editor, as per the journal guidelines. Author DG declares no conflict of interest.

#### Data availability

Data will be made available on request.

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survey participants.

#### Human ethics statement

Attendees at the events where survey data were collected were invited to take part in the survey if they wished to. They did so voluntarily and could leave the survey at any time they wanted. No information that could identify individual participants was collected.

#### Appendix A. . Supplementary material

##### A1. A narrower (more restrictive) definition

The field of Sensory and Consumer Science is highly interdisciplinary, with an emphasis on sensory and consumer research methods being used in synchrony. It excludes (i) sensory-only research (i.e., with a focus on how products are experienced through the senses) and (ii) consumer-centric research done by itself (i.e., with a focus on consumer understanding including sensory and non-sensory aspects) but includes the combination of sensory and consumer research. Further, the field encompasses (iii) product-focused consumer research (e.g., acceptability, sensory evaluation by consumers and other product perceptions), and (iv) consumer behaviour research more generally (feelings including attitudes, emotions, expectations, and affective behaviours). The field is (v) food-centric but extends to non-foods (e.g., personal and household care, pet products). The research methods are (vi) quantitative and qualitative. The field (vii) includes sensory science, food consumer research, sensory-nutrition, contextual research, sensometrics, and more. Professionals in the field of Sensory and Consumer Science (viii) conduct basic (academic) as well as applied (commercial) research, and they do so in an increasingly (ix) global and multicultural setting.

##### A2. A broader (more inclusive) definition

The field of Sensory and Consumer Science is multidisciplinary and remains loosely defined as it continues to expand. It includes (i) sensory-only research (i.e., with a focus on how products are experienced through the senses) and (ii) consumer-centric research (i.e., with a focus on consumer understanding including sensory and non-sensory aspects). Further, the field encompasses (iii) product-focused consumer research (e.g., acceptability, sensory evaluation by consumers and other product perceptions), and (iv) all aspects of consumer behaviour. The field (v) deals in all product types, and all attitudes and behaviours related to product acceptance and use. The research methods are (vi) quantitative and qualitative. The field (vii) includes all research and technology related to consumer choice and consumption of products (food and non-food). Professionals in the field of Sensory and Consumer Science (viii) conduct basic (academic) as well as applied (commercial) research, and they do so in an increasingly (ix) global and multicultural setting.

A3. Refer to the online part of the supplementary material for a full listing of open-ended comments made in Survey 2.

#### Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.foodqual.2024.105298>.

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