



Community voices: A different approach to study low-income populations in consumer research

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ABSTRACT

Vulnerable consumers can be defined as individuals facing a disadvantage, where the origin of that disadvantage is usually beyond their control and stems from multiple sources and circumstances. The impact of consumer vulnerability extends to billions of individuals, one of its major circumstances is poverty, or low-income consumers. An estimated 2.4 billion of persons are considered low-income, and yet it is not a common research objective in scientific publications. Our objective is to bring a social approach to study low-income populations called Community Voices, where we partner with local NGO's to better recruit, perform fieldwork, and return valuable insights to the low-income populations. In our research, three studies were conducted to understand the impact of studying low-income populations. Study 1 focus on comparing the effect of fieldwork environment: impersonal face-to-face interviews versus Community voices approach (N160 per study), Study 2 focus in studying the effect of income differences in participants (low versus high-income, N120 per study), and the effect of type of fieldwork in low-income consumers (online versus face-to-face, N120 per study). The results of study 1 showed significant differences in liking across conditions, study 2 showed significant differences in liking and product perception, but not in emotions. Study 3 showed significant differences in uses and habits towards food choice of plant-based products. Overall, our findings suggest that to study low-income populations, the researcher cannot generalize the results of other populations (e.g., high-income) to lower income populations, and con not use standard methodologies and expect the same results.

1. Introduction

Eradicating poverty on our planet is one of the biggest challenges that we face. “No poverty” is United Nations’ first sustainable goal, yet close to 735 million persons still endure extreme poverty and are surviving on less than \$2.15 USD per day (UNDP, 2024). The current pace of progress suggests that the world is unlikely to achieve the target of ending extreme poverty by 2030 (UN, 2023). An estimated 29.6 % of the global population – 2.4 billion people – are moderately or severely food deprived, with no access to adequate proper hygiene. Two billion people lack basic sanitation, affecting both food consumption and overall hygiene, including 653 million with no handwashing facilities at all (UN DESA, 2023).

The recent COVID pandemic, current international conflicts, climate change, cost of living crisis, and growing inequalities are exacerbating this situation (UN DESA, 2023). Extreme poverty is predominantly concentrated in regions where eradication poses the greatest challenge – namely, the least developed countries, conflict-affected zones, and remote rural areas. With this global situation in mind, we need to ask, what is our role as consumer scientists, and how can we make “sensory and consumer research for common good” (Gomez-Corona, 2020)?

1.1. Transformative consumer research

In 2006, a formal movement emerged with the objective of designing consumer research for the greater common good. In his presidential

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address to the Association for Consumer Research, David Mick (2006) coined the term “Transformative Consumer Research” (TCR). Mick argued that TCR is not something new, nor has it been dormant, but the TCR initiative calls for scholarly research to improve “life in relation to the myriad conditions, demands, potentialities, and effects of consumption.”.

TCR is a movement that seeks the adoption of a more consumer-centric stance with a focus on societal well-being; it encourages scholars to engage in a research agenda that is guided by fundamental problems in our society and aims to enhance and uphold better life conditions. TCR seeks to enhance consumer well-being by tackling some of the more difficult and intractable social problems and getting the results into the hands of stakeholders who can apply the research findings (Crockett et al., 2013). The goal of TCR is to do practical research that can be used by consumers, activists, policy makers, and businesses to improve consumer well-being, rethinking the way that research is traditionally conducted in order to make it more socially responsible (Ozanne et al., 2011). For a descriptive review on TCR, see Zeng and Botella-Carrubi (2023).

Using this TCR approach, we have been engaging in the study of consumption in vulnerable consumers for several years (Gomez-Corona & Schleiss, 2021; Archipel & Co, 2019; 2021). Our objective has been to study consumption in vulnerable populations in different countries, using a socially responsible approach in which we aim to do more than have the consumer as a source of information to extract insights and then return home; rather, we try to give something back to consumers and society. We explain this approach, which we call Community Voices (Community V.), in the following sections. But first, we need to define vulnerability and what that means in terms of consumer research.

1.2. The vulnerable consumer and the low-income effect

In simple words, vulnerable consumers can be defined as individuals who are facing a disadvantage in transactional relationships, the roots of this disadvantage being predominantly beyond their control (Andreasen & Manning, 1990). This vulnerability is often the effect of multiple circumstances, rather than a single source. Some of these circumstances can be access to healthcare and retail facilities, quality of products, changes in patterns of consumption due to migration, physical or mental disabilities, or income, the latter of which is probably the vulnerable variable most studied in consumer research (Gomez-Corona, 2020).

The impact of consumer vulnerability extends to billions of persons; nonetheless, consensus is lacking regarding the definition of this condition and its repercussions for consumers. Although consumer vulnerability is frequently referenced in consumer research, it is typically addressed in an informal manner, lacking substantial conceptual grounds (Hill & Sharma, 2020; Baker et al., 2005). In 1998, Henderson noted that the neglect of such consumers may be due not only to their invisibility, but also to researchers’ fear of challenging current epistemology and theory. Such neglect may also occur because the study of vulnerable populations makes the researchers “vulnerable.” There is a situation of personal security for the researcher that must be acknowledged and about which little is mentioned.

Focusing on income as one of the main reasons for consumer vulnerability, we can see that people with low income contend with a multitude of factors that shape their life quality, encompassing physical deprivation, pain (e.g., hunger, inadequate healthcare, and abuse), exclusion from relationships and communities, marginalization, anxiety, and fears about the future, as well as challenges related to health, work quality, and the looming threat of violence (Gomez-Corona, et al., 2020). Low-income consumers represent most consumers in certain countries and hundreds of millions of people in certain regions. Yet, most scientific publications on food acceptability and behaviour have considered middle- or high-income populations their priority target group when evaluating consumer research. Research that focuses on low-income populations deserves attention, considering that millions of

people worldwide suffer from undernutrition and/or food insecurity (Hough & Sosa, 2015). Echoing the words of de Kock and Mademgne (2018), there is a need for increased focus on applying sensory and consumer science to enhance products for those with limited means, along with the development of appropriate testing methodologies for this purpose.

When studying low-income populations, several authors suggest that we cannot use the same approaches as is done when studying WEIRD populations: people from Western, educated, industrialized, rich, and democratic societies. According to Henrich (2020), a prevalent assumption in research on human behaviour and psychology is that most people exhibit similar fundamental cognitive and affective processes. This assumption implies that findings derived from one population can be generalized to other populations. However, a growing body of evidence suggests that this is not the case (see Otterbring & Folwarczyn, 2024, for a recent WEIRD review).

De Kock and Mademgne (2018) highlight that some of the characteristics of a low-income environment may influence the design of consumer research studies due to the limitations of disposable income, schooling, access to basic resources, employment opportunities, or poor health and nutrition status. The implication is that many traditional test conditions in sensory and consumer research are simply not always adapted to the needs of low-income populations. Rakotosamimanana and de Kock (2020) advocate for the adaptation of traditional consumer test methodologies to better handle the possible limitations related to language capabilities (e.g., lack of literacy among participants). But limitations can also take the form of the high cost of transportation (from home to fieldwork), time invested in the study, or even the use of digital tools (e.g., online studies or access to a stable internet connection).

Another point highlighted by Rakotosamimanana and de Kock (2020) concerns the test environment. According to these authors, the test environment can have an impact on responses and should be selected with care. The authors recommend using a central location with low-income populations or a community centre close to their homes. And finally, researching vulnerable and low-income populations can make the researcher more sensitive to the demands of the individuals studied. Such increased sensitivity presents itself in data collection methods that emphasize and support the informants’ empowerment when in the presence of the researcher (i.e., an outsider), which may enhance and exaggerate vulnerability (Downey et al., 2007). This “outsider” effect can have a negative impact on data acquisition, and participants could give “socially acceptable responses” instead of “real” or direct responses. Bias can be seen in the results of an acceptability test as “flat results” in which no differences are observed across a set of products tested (e.g., all products have similar liking or purchase intent scores).

With this background in mind, we aim in our research to assess the impact of a different approach to the study of low-income populations. This approach, called Community Voices (Community V.), consists in partnering with local non-governmental organizations (NGOs) that are present where we want to perform the fieldwork and where the interviewers are either members of the NGO or trained individuals from the vulnerable population that we want to study. Three studies were conducted to assess the effect of the fieldwork environment: impersonal face-to-face interviews versus the Community V. approach (local NGO with interviewers from the local community: Study 1), income differences in participants (low- vs. high-income participants: Study 2), and type of fieldwork in low-income consumers (online vs. face-to-face: Study 3). For the Community V. condition in the three studies, the interviewers of the community were trained and paid to create a positive impact in the local community. The results of the study were shared with the NGOs for them to review to see how they could use the insights for specific actions within the community.

In the three studies, the people interviewed received an oral and written statement to inform them of the purpose of their participation. No personal information was collected, and the results were averaged,

with only demographic data being shown (age, sex, income, etc.). The methodology was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki). The study characteristics were approved by a dsm-firmenich review committee: Community Voices FY23-3480.

2. Study 1: Low-income consumers in two different fieldwork conditions

The objective of this study was to explore differences in the liking response of participants with two different types of fieldwork: Regular condition (Regular C.) recruitment and interviewing (agency type) versus Community V. approach (recruitment and interviewing with a local NGO, performed by persons from the local community).

2.1. Material and methods

The study consisted of a home use test (HUT) following a sequential monadic approach (mutually orthogonal Latin squares incomplete block design, minimum N of 96 readings per product, each consumer evaluating three of five products) to a four-day placement per product in Chennai, India. Five different products were used in the study, consisting of detergent powder samples. All products were evaluated in blind conditions. In the regular sampling condition, the participants were recruited from a consumer research agency panel and met the consumption criteria (in the regular condition recruitment was done by a third party in a formal way); they were then interviewed by regular employees of the agency. Questionnaires were written in a traditional formal language in Tamil. In the second condition, Community V. participants were recruited through a local NGO (Naandi Foundation in collaboration with Archipel & Co) that worked closely with the low-income communities of Chennai, in which interviewers from the local community were trained to interview and perform the study interviews; thus, there were similar backgrounds between interviewers and interviewees. The questionnaire consisted of identical questions to those used in the Regular C., but they were written in a more colloquial Tamil language.

2.1.1. Procedures and respondents

The questionnaire was administered by interviewers with pen and paper in the local language for both conditions. Respondents were recruited based on their age (20 to 45 years), sex (100 % women, understood as biological sex: women or men), living area (Chennai low-income community), and income level (participants living on a household daily income between 2.8 and 9.3€). It is globally recognized that an income of less than \$2.15 USD per day is the poverty line (World Bank, 2024).

The questionnaire consisted of 15 questions, with a mix of open-ended, single-choice, check-all-that-apply (CATA) questions and five- to seven-point liking and agree/disagree scales. It included demographics and a callback stage with questions on overall product opinion, overall fragrance opinion, overall cleaning performance, and overall whiteness performance. The callback stage was recorded one week after the first evaluation, when the interviewer returned to the consumer's house a second time. The callback stage included ratings on specific benefits to the washed laundry: overall product opinion, overall fragrance opinion, overall whiteness performance, and the amount of foam experienced.

2.1.2. Data analysis

The questions containing a scale were analysed with a two-tailed *t*-test between each of the samples versus the market benchmark (Rin South), with the differences marked at 80 %, 90 %, 95 %, and 99 % significance levels. The objective of this analysis was to be more conservative in the significant differences that can be established between two products. Data were analysed at mean score, and top-box level

(participants scoring at only the higher "box of the scale," either 7 for a seven-point scale or 5 for a five-point scale, to better discriminate the proportion of participants who expressed a higher liking).

Only the CATA questions were analysed with a correspondence analysis (CA), in which only mean frequencies higher than 3 % were considered to avoid a large influence of the low frequency elicited words. After the CA, we performed an adjusted RV coefficient in all dimensions of the principal coordinates of the products and attributes. The objective of the RV coefficient is to test the correlation that exists between two matrices of the CA (Community V. vs. Regular C.). The analyses were done with XLSTAT, version 2023.2.1414.

2.2. Results

The results of Study 1 are split into two sections: liking-performance questions, and CATA lists of product attributes. For liking-performance questions, Table 1 shows five key variables; however, the other attributes followed a similar pattern, and the questionnaire and database can be shared on request. Overall fragrance opinion was measured on-site, and the other attributes were evaluated at the callback stage.

In the Regular C., there was no significant difference in the mean scores between the product benchmark (Rin South) and the other products for any of the five variables presented in Table 1. There were, however, significant differences in the top-box scores across samples, where Ayana scored significantly lower in overall fragrance opinion on-site and at the callback stage. For the Community V. condition, there were significant differences across all five key variables in both mean scores and top-box percentages. The differences in the table are marked as from 80 % to 99 % confidence intervals. In this condition, there was high discrimination across products and a different ranking in product liking. The products Ayana, Tenacity, and Rainforest were higher in liking versus Rin South and Jasmine tea that scored significantly lower. Differences were evident across the evaluation of samples in the different conditions. All comparisons were significantly different, indicating a difference between Regular C. and Community V. conditions.

Besides the liking scores shown in Table 1, a CA was performed to analyse the perception of product attributes across conditions. In Fig. 1A, the CA of the regular condition shows Factor 1 with 41 % variance, with some attributes going from artificial to floral, and woody attributes to the right (jasmine, sandalwood, lemony). Factor 2 goes from soapy to new. However, the map of these two factors shows little discrimination between products and attributes, with most of the products close to the barycentre. In the case of the Community V. condition (Fig. 1B), Factor 1 explained 58 % of the variance with a factor that is easier to explain, going from feminine, natural, and rose to harsh, soapy, artificial, and bleach at the right. Factor 2 with a variance of 24 % goes from lemony, sandalwood, and jasmine at the bottom to fruity and soft at the top of the CA. The map also shows larger discrimination across products, and attributes dispersed in the space of the map.

The results of the adjusted RV coefficient showed a correlation of -0.305 for the product matrices of the CA; there was not a strong relationship in the product map of the CA. In other words, the maps issued from the CA differ depending on whether they come from the Community V. or Regular C. In the case of the variables (CATA list attributes), the adjusted RV coefficient was -0.046 .

2.3. Conclusions

The results of this first study comparing two different evaluation conditions (Regular C. and Community V.) highlight the impact that the approach and environment of the fieldwork has on liking and product perception. In the Regular C., no significant differences were observed in mean liking scores. In comparison, the Community V. condition yielded a higher differentiation across products, with significant differences in the mean scores and top-box percentages. In addition, the results of a comparison of product perception (through the CA) showed different

Table 1

Liking and product performance of five key variables across different laundry products. The table is separated into the Regular C. (left) and Community V. condition (right). Significant differences across columns are marked in the table. Scales are anchored from the positive to the negative direction.

	Regular condition					Community V. condition				
	Rin South N = 97	Rainforest N = 98	Jasmine tea N = 96	Ayana N = 98	Tenacity N = 97	Rin South N = 96	Rainforest N = 96	Jasmine tea N = 96	Ayana N = 97	Tenacity N = 96
Overall fragrance opinion (7 points)										
Mean	5.8	5.8	5.7	5.7	5.8	2.6	4.1 ⁺⁺⁺	2.9 [°]	4.5 ⁺⁺⁺	4.1 ⁺⁺⁺
Top-box %	23 %	22 %	21 %	14 % [°]	23 %	14 %	52 % ⁺⁺⁺	19 %	69 % ⁺⁺⁺	58 % ⁺⁺⁺
Overall product opinion (7 points) – callback stage										
Mean	5.8	5.7	5.5	5.7	5.8	2.4	4 ⁺⁺⁺	2.6	4.5 ⁺⁺⁺	4.1 ⁺⁺⁺
Top-box %	27 %	27 %	14 % ^{xx}	18 % [°]	29 %	13 %	52 % ⁺⁺⁺	16 %	70 % ⁺⁺⁺	57 % ⁺⁺⁺
Overall fragrance opinion (7 points) – callback stage										
Mean	5.7	5.8	5.4	5.7	5.9	2.5	4.1 ⁺⁺⁺	2.6	4.5 ⁺⁺⁺	4.1 ⁺⁺⁺
Top-box %	23 %	32 % [°]	10 % ^{xx}	16 %	29 %	18 %	55 % ⁺⁺⁺	15 %	70 % ⁺⁺⁺	55 % ⁺⁺⁺
Overall whiteness performance (7 points) – callback stage										
Mean	5.6	5.8	5.4	5.6	5.8	2.4	4 ⁺⁺⁺	2.5	4.4 ⁺⁺⁺	4 ⁺⁺⁺
Top-box %	19 %	29 % [°]	10 % [°]	13 %	29 % ⁺	11 %	53 % ⁺⁺⁺	14 %	63 % ⁺⁺⁺	51 % ⁺⁺⁺
Has the right amount of foam (5 points) – callback stage										
Mean	4.1	4.2	4.1	4.3	4.2	2.8	3.9 ⁺⁺⁺	2.9	4.4 ⁺⁺⁺	4 ⁺⁺⁺
Top-box %	24 %	32 %	41 % ⁺⁺	37 % ⁺	30 %	11 %	39 % ⁺⁺⁺	18 % [°]	58 % ⁺⁺⁺	41 % ⁺⁺⁺

The commercial names of the products are shown to provide more information to the reader, but the products were evaluated as blind samples. Significance levels: superior/inferior +++/xxx 99%, ++/xx 95%, +/x 90%, °/° 80%, versus benchmark (Rin South). Top-box % refers to the proportion of persons who selected the highest score on the scale (7 for seven-point scale, 5 for five-point scale).

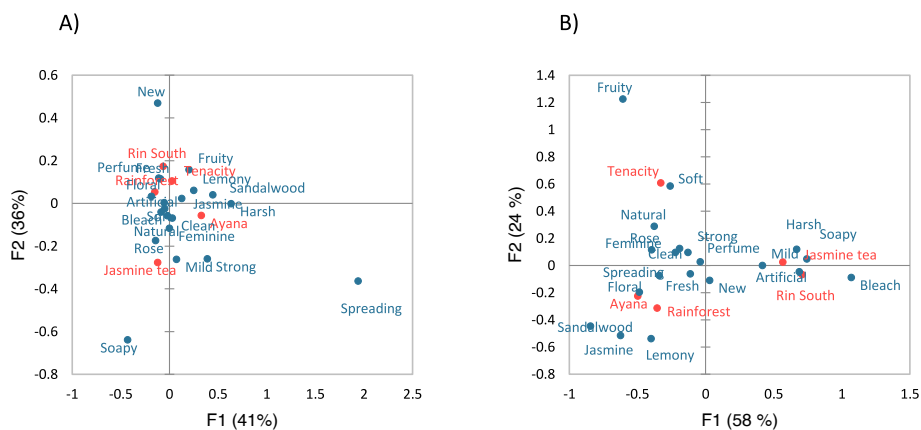


Fig. 1. CA of Regular C. (A) Little discrimination shown between products and attributes, as they are close to the barycentre. (B) The Community V. condition shows higher discrimination between products and attributes. F1 = Factor 1; F2 = Factor 2.

perceptions across conditions.

3. Study 2: Low- versus high-income participants

The objective of this study was to understand the differences in response of the consumers in liking and emotions evoked when we performed the study with two different income levels: low versus high.

3.1. Material and methods

The study was performed as a central location test (CLT) following a sequential monadic approach with a complete block design of five products (chicken nuggets). The study was divided into two conditions: high-income participants (recruitment and fieldwork with a consumer agency) and low-income participants (recruitment and fieldwork in a local NGO, Community V. approach). For each condition, 120 participants took part in the study, and both types of fieldwork were conducted in Sao Paulo, Brazil. All products were served with identical cooking

conditions and serving temperatures. In both studies, the participants recruited met the target criteria for consumption (frequent consumers of nuggets), age (50 % 18–34 years, 50 % 35–65 years), and sex (50 % men, 50 % women). In the low-income condition, the participants had a socioeconomic level of medium–low and low income (Brazilian references for E and F class, corresponding to a monthly family income of 148€ or less). In the high-income condition, the participants had a socioeconomic level of medium–high and high income (Brazilian references for B and A class, corresponding to a monthly family income of 1710€ to 3600€ for class B, and a minimum income of 3601€ for class A). The income categories were defined by using the economic classification of Brazil consumer research agencies (ABEP, 2024).

3.1.1. Procedures and respondents

The questionnaire was administered in both conditions by using dsm-firmenich proprietary software called Iris (Firmenich SA, 2023) on an iPad. For the low-income condition, the questions were answered with the support of the interviewer, and for the high-income condition,

the participants responded directly on an iPad. The questionnaire consisted of eight questions of liking (overall appearance, aroma, overall, and aftertaste with a nine-point scale), emotions (23 emotions from the ScentMove methodology; Ferdenzi et al., 2013), and product perception (CATA list of flavour and texture perception). For both conditions, the questionnaire was written in Portuguese.

3.1.2. Data analysis

The liking scales were analysed in the same way as was done in Study 1 and using the same software: a two-tailed *t*-test between each of the samples versus the market benchmark (McDonald's) and a CA for CATA questions followed by an adjusted RV.

3.2. Results

The results are structured similarly to those shown in Study 1: liking scores, and then the emotions evoked by products. In Table 2, four key liking variables are represented with the mean and top-box percentage scores. In both conditions, discrimination was observed across products. For example, in the overall liking variable, the most liked products for the low-income conditions were Tekitos (7,8) and McDonald's (7,5), the liking scores of the other three products (Aurora, Copacol, and Sadia) being significantly lower. The same trend was found for the top-box percentages, with higher scores for Tekitos and McDonald's and the lowest score for Copacol (10 %). A similar trend across the data was found in the other liking variables.

In the high-income condition, the data also showed discrimination across samples, but with differences compared with the low-income condition. For example, for the overall liking variable, the highest score was found for Tekitos (8,1), which was significantly higher than that for McDonald's (unlike the low-income condition, in which both Tekitos and McDonald's shared a higher score). A second level of discrimination was found for Aurora, and a lower level of liking in mean scores, as well as top-box percentages, for Copacol and Sadia.

The differences across conditions (low vs. high income) can be better seen in the third section of Table 2 (overall liking). There were no significant differences in liking across conditions for the products Sadia and McDonald's, meaning that low- and high-income participants like them in similarly. On the other hand, there were significant differences across the evaluations of the products Aurora, Copacol, and Tekitos. Liking of the three products was rated significantly higher in the high-income condition.

In addition to the liking scores (Table 2), an emotional evaluation

was performed by using the ScentMove methodology. Fig. 2 shows the results of the CA in the low-income (A) and high-income (B) conditions. In both conditions, Factor 1 explains 78–79 % of the variance and goes from mouth-watering and desire on the left to unpleasantly surprised and irritated on the right. Factor 2 explains 14 % (low-income condition) and 10 % (high-income condition) of the variance. The emotions go from relaxed at the bottom to revitalized at the top. The position of the products is similar across both maps. For example, the products Tekitos and McDonald's are closer, whereas Copacol is at the far right of Factor 2.

To better understand the relationship across CA between conditions (low vs. high income), an RV coefficient was calculated. The RV coefficient across matrices was 0.718 ($p < 0.0001$), indicating a significant positive correlation between the emotions evoked across conditions. Similarly, the RV coefficient of the product matrices was 0.817 ($p = 0.025$), indicating a significant positive correlation between conditions. In other words, both maps show a similar relationship between products and the emotions evoked.

3.3. Conclusions

In both conditions (low income vs. high income), discrimination was observed across products. The difference was in the type of products that were more versus least liked. In the low-income condition, higher liking was found for Tekitos and McDonald's versus only Tekitos in the high-income condition. The least liked products were also different across conditions. These results are simple and clear: for chicken nuggets, the same product liking is not observed if we test high- versus low-income participants. The reason underlying that difference might be familiarity with the products. In addition, the only demographic variable that was different across conditions was income level, with the remaining demographic variables being the same (age, gender, and users of nuggets).

The second set of results involved the emotions evoked. In both income conditions, the emotions evoked were essentially the same when the CA map was compared with the RV coefficients. The underlying reason explaining this similarity is culture: within the same culture, the emotions evoked by products tend to be similar (Jaeger et al., 2022; Scollon et al., 2004).

Table 2

Liking of four key variables across products in the two conditions: high vs. low income.

	Low-income condition (N = 120)					High-income condition (N = 120)				
	Aurora	Copacol	Sadia	Tekitos	McDonald's	Aurora	Copacol	Sadia	Tekitos	McDonald's
Appearance liking (9 points)										
Mean rating	6.8 ^{xx}	5.8 ^{xxx}	6.8 ^{xx}	8 ⁺⁺⁺	7.3	7.4	6.5 ^{xxx}	6.9 ^{xx}	8.2 ⁺⁺⁺	7.4
Top-box %	16 %	8 % ^{xxx}	18 %	38 % ⁺⁺⁺	22 %	18 %	16 % ^x	18 %	41 % ⁺⁺⁺	25 %
Aroma liking (9 points)										
Mean rating	6.5 ^{xxx}	6.6 ^{xxx}	6.4 ^{xxx}	7.5	7.3	7.2 [°]	6.9 ^{xxx}	6.5 ^{xxx}	7.9 ⁺⁺	7.5
Top-box %	12 % ^{xxx}	14 % ^{xx}	13 % ^{xx}	24 %	25 %	15 % ^{xx}	20 %	13 % ^{xxx}	38 % ⁺	27 %
Overall liking (9 points)										
Mean rating	6.7 ^{xxx}	6 ^{xxx}	6.5 ^{xxx}	7.8 [°]	7.5	7.2 ^{xx}	6.6 ^{xxx}	6.6 ^{xxx}	8.1 ⁺⁺⁺	7.6
Top-box %	15 % ^x	10 % ^{xxx}	15 % ^x	26 %	24 %	14 % ^{xx}	21 %	15 % ^{xx}	36 % [°]	28 %
Aftertaste liking (9 points)										
Mean rating	6.6 ^{xxx}	6.3 ^{xxx}	6.3 ^{xxx}	7.5	7.7	6.7 ^{xxx}	6.5 ^{xxx}	6.4 ^{xxx}	7.9	7.7
Top-box %	16 % ^{xxx}	12 % ^{xxx}	13 % ^{xxx}	28 %	34 %	13 % ^{xxx}	20 % ^{xxx}	19 % ^{xxx}	39 %	43 %

The commercial names of products are shown to provide more information to the reader, but the products were evaluated as blind samples.

Significance levels: superior/inferior +++/xxx 99%, ++/xx 95%, +/x 90%, °/° 80%, versus benchmark (Rin South). Top-box % refers to the proportion of persons who selected the highest score in the scale.

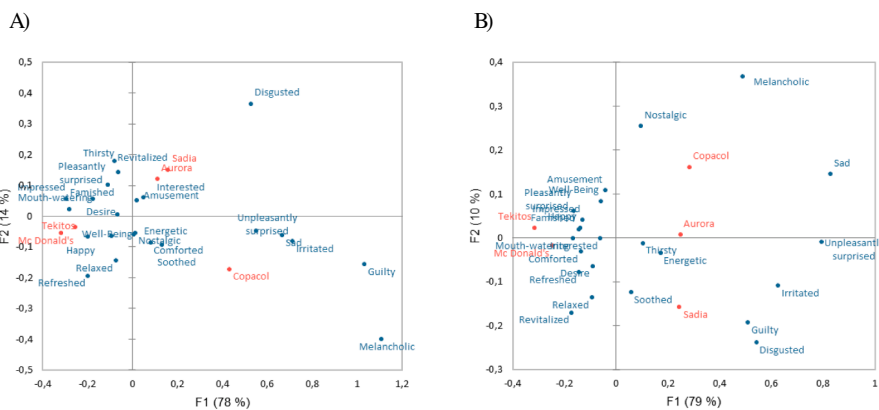


Fig. 2. CA of the (A) low-income condition and the (B) high-income condition. F1 = Factor 1; F2 = Factor 2.

4. Study 3: Uses and attitudes questionnaire in two different conditions (Community V. Vs. online)

The objective of this study was to identify differences and commonalities between online and face-to-face studies when targeting low-income participants for a uses and attitudes type of study (U&A). U&A is a common name used in consumer research for quantitative studies that are based on questionnaires designed to understand the type of products consumed, purchasing habits, consumption barriers, motivations, and way of using a specific product (Gomez-Corona et al., 2016; Tarrega et al., 2018).

4.1. Material and methods

The study consisted in a U&A study, divided into two conditions with 120 participants in the Community V. condition and 124 in the online condition. In both conditions, the targeted participants were low income (Brazilian references for E [low] and F [middle-low] class, corresponding to a monthly family income of up to 322€ and 643€, respectively; ABEP, 2024). For the online condition, an online consumer research platform was used (Toluna), and for the face-to-face condition, the approach of Community V. was followed (interviews in a local NGO and face-to-face interviews conducted by a member of the same community). Both studies were performed in Sao Paulo, Brazil, in the Portuguese language, and participants consisted of persons who met the criteria for consumption (regular chicken nuggets consumers), age (50 % 18–34 years, 50 % 35–65 years), and sex (50 % men, 50 % women).

4.1.1. Procedures and respondents

The questionnaire administered was the same in both conditions. In the online condition, it was self-administered on a smartphone, tablet, or desktop computer. For the face-to-face condition (Community V.), the questionnaire was administered by using a dsm-firmenich proprietary software called Iris (Firmenich SA, 2023). The questionnaire consisted in 10 questions of uses and attitudes towards chicken and plant-based nuggets (frequency of consumption and type of plant-based products, motivation towards consumption, good vs. bad characteristics of nuggets, diet characteristics, and attitudes towards supermarket shopping). The complete questionnaire can be found in the supplementary material.

4.1.2. Data analysis

For the single and CATA questions, a summary of the frequencies was calculated and significant differences across conditions (online vs. Community V.) were calculated with a chi-square test, as shown in Table 3. We performed a multiple correspondence analysis (MCA) for the CATA question, followed by a hierarchical clustering analysis for the individuals (participants), using Ward’s algorithm with a truncation point based in the inertia of the groups. The significance of the

Table 3

Uses of plant-based products: shopping, chicken nugget preference, and reason for consumption across conditions (Community V. vs. online). A chi-square value was calculated by using equivalent columns (e.g., Total N Community V. vs. Total N online) to compare the frequencies between conditions. Bold numbers indicate significance at $p < 0.05$ or less.

	Community Voices			Online		
	Total	Men	Women	Total	Men	Women
	N = 120	N = 51	N = 69	N = 124	N = 55	N = 69
Which are the plant-based products that you have bought in the past? [CATA]						
Plant-based milk	16	16	10 (–)	69	25	44 (+)
	(–)			(+)		
Plant-based nuggets	25	8	17	35	13	22
Plant-based hamburgers	35	17	18	45	17	28
	(–)			(+)		
Plant-based sausages	13	8	5	15	4	11
Plant-based ham	7	3	4	24	10	14
Plant-based cheese	16	11	5 (–)	48	21	27 (+)
	(–)			(+)		
I do not buy plant-based products	50	18	32 (+)	30	18	12 (–)
Do you prefer chicken nuggets that are...? [Single choice]						
From chicken	96	41	55 (+)	57	29	28 (–)
	(+)	(+)		(–)	(–)	
Plant-based	2*	0*	2*	22	7*	15
A mix of both	22	10	12 (–)	45	19	26 (+)
	(–)			(+)		
What are the main reasons that make you decide on the type of nuggets that you buy for you and your family? [CATA]						
The price	42	25	17	48	25	23
It’s the brand I like	45	23	22	33	15	18
It’s easy to find	21	13	8	32	15	17
It’s easy to cook	36	18	18	48	22	26
The taste my family likes	63	26	37 (+)	45	19	26 (–)
	(+)			(–)		
Contains the better nutritional profile	23	11	12	49	22	27
	(–)	(–)		(+)	(+)	
They are being promoted	29	14	15	28	10	18
Easy to combine with other ingredients	39	20	19	34	14	20
Last longer in the fridge	17	12	5	27	12	15

characterization of the clusters was tested with chi-square analysis. Finally, an adjusted RV coefficient was calculated across the two different matrices of the MCA.

4.2. Results

Although the interviewed participants in both conditions were low income and the same demographics (age, sex, residence in Sao Paulo), the results showed several differences in uses and attitudes. For example, Table 3 shows that consumption of plant-based products was significantly different across conditions. In the online condition, a higher number of participants (69) indicated having bought plant-based milk vs. 16 in the Community V. condition); there were also sex differences. In the online condition, more women consumed plant-based milk (44 participants) versus 10 in the Community V. condition. Similar differences were found in the consumption of other types of plant-based products: plant-based hamburgers (45 participants online, 35 Community V.) and plant-based cheese (48 participants online, 11 Community V.). In the online condition, the number of participants (total and split by sex type) preferring nuggets made from plant materials or a combination of chicken and plant-based ingredients was much higher compared to proportions reported during face-to-face interviews.

Lastly, the motivations towards consumption were similar, with seven of nine variables measured that were not significantly different in total counts and by sex split. For the Community V. condition, the motivation “The taste my family likes” was more important (63 participants, and higher proportion of women) compared with that in the online condition, where this motivation had lower relevance. The

motivation “Contains the better nutritional profile” was significantly higher in the online condition (49 vs. 23 in the Community V. condition). Overall, the results highlight important differences across attitudes and motivations towards the consumption of chicken nuggets across the online versus Community V. condition.

Fig. 3 shows the results of the MCA for the question, which are the best five characteristics of a chicken nugget? The results are also separated by online vs. Community V. condition.

For the Community V. condition, the MCA explains 25 % of the variance in the first two factors. The variables of the MCA were clustered by using the first five factors (51.5 %) in three clusters. Cluster 1 was the largest with 58 % of participants, grouping the variables affordable, enjoyable taste, and something everyone in my family likes. Cluster 3 was the second largest in terms of number of participants (31 %), grouping the variables improves my level of fitness and good source of protein. Cluster 2 was the smallest in terms of participants (12 %), grouping the variables trustworthy, healthy, and natural product, as well as nourishing and better for the environment.

For the online condition, the MCA explains a similar level of variance as that for the Community V. condition, with 28 % in the first two factors. The clusters were also calculated by using the first five factors of the MCA that accounted for 54.8 % of the variance. Cluster 3 had the highest number of participants at 54 %, grouping the variables enjoyable taste, nourishing, healthy, and natural product. Cluster 2 contained 27 % of the participants, grouping the variables convenient, affordable, trendy, and something everyone in my family likes. Cluster 1 had 19 % of the participants, grouping the variables indulgent, variety, improves my level of fitness, and better for the environment.

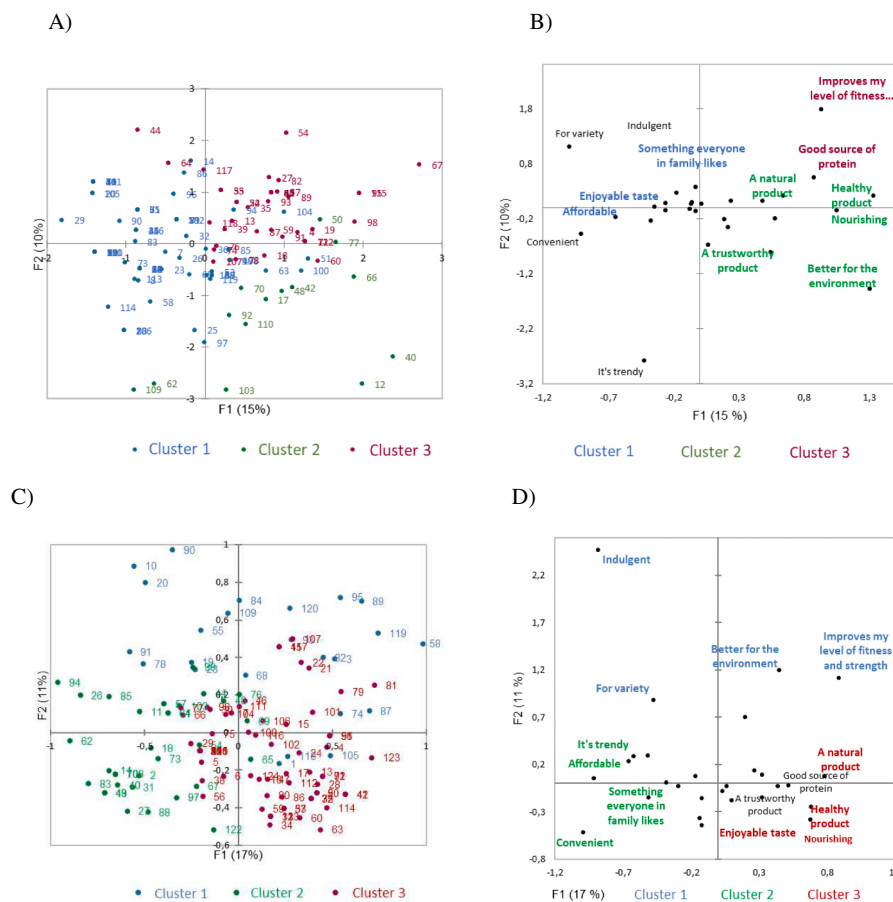


Fig. 3. Hierarchical clustering analysis of both conditions with panels A and C showing the first two dimensions of the individuals’ map and Panels B and D showing the variables. Variables in bold were significant in the categorization of the clusters after performing chi-square analysis. Panels A and B correspond to the Community V. condition and panels C and D to the online condition. F1 = Factor 1; F2 = Factor 2.

Table 4 shows the details of the clusters found in each condition. Some commonalities but also differences were observed. The largest cluster in the Community V. condition was Cluster 1 with 58 % of the participants (affordable for the family); a similar cluster can be found in the online condition, but at almost half the size (only 27 % belong to this cluster). The cluster healthy indulgence in the Community V. condition grouped 31 % of the participants, and some commonalities can be found in the online condition between Cluster 3 (tasty & healthy 54 %), and Cluster 1 (fitness & variety 19 %); however, the variables characterizing the clusters are not necessarily the same. These differences across clusters and the variables that characterize them seem to be structural in the MCA (Fig. 3 and Table 4). The RV coefficient calculated in the MCA matrices showed that there is no relationship across matrices (RV = 0.321; $p = 0.055$). These results reinforce the weak relationship in the clusters in which only part of the variables seem to be commonly grouped when the two conditions (online vs. Community V.) are compared.

4.3. Conclusions

The results show several differences in uses and attitudes. Overall, there was higher plant-based consumption in the online condition (specifically plant-based milk, hamburgers, and cheese). The motivations also differed significantly for “The taste my family likes” (higher in the Community V. condition) and “Contains better nutritional profile” (higher for the online condition). The clusters also differed: in the Community V. condition, “Affordable for the family” was the largest cluster at 58 %. On the other hand, for the online condition, the “Tasty & healthy” cluster was largest (54 %).

These differences highlight the impact of performing an online U&A study versus a face-to-face (Community V. condition) study. As the demographics of the participants are the same (income, sex, age, residence), and the methodology was the same (except for the type of interview online vs face-to-face) an “average” consumer researcher might think that the results are comparable, but in fact, they are not.

Table 4

Details of the clusters ordered by size (higher percentage of the participants in the first column). The variables characterizing a cluster were calculated as percentages and the p values of a chi-square test are displayed.

Community Voices condition		
Cluster 1 (58 %) Affordable for the family	Cluster 3 (31 %) Healthy indulgence	Cluster 2 (12 %) Nourish & natural
Something everyone in family likes (89 %; <0.0001)	Indulgent (89 %, 0.015)	Nourishing (50 %; 0.036)
Enjoyable taste (84 %; 0.085)	Good source of protein (83 %, <0.0001)	A trustworthy product (50 %; 0.261)
Affordable (53 %; 0.004)	A natural product (19 %, 0.076)	Better for the environment (43 %; <0.0001)
	Improves my level of fitness and strength (10 %, 0.008)	Healthy product (36 %; 0.070)
		A natural product (28 %; 0.053)
Online condition		
Cluster 3 (54 %) Tasty & healthy	Cluster 2 (27 %) Affordable for the family	Cluster 1 (19 %) Fitness & variety
Enjoyable taste (68 %; 0.072)	Affordable (82 %; <0.0001)	Improves my level of fitness and strength (58 %; <0.0001)
Healthy product (58 %; 0.032)	Something everyone in family likes (72 %; <0.0001)	Better for the environment (58 %; <0.0001)
Nourishing (52 %; 0.037)	Convenient (63 %; <0.0001)	For variety (50 %; <0.0001)
A natural product (41 %; <0.0001)	It's trendy (24 %; 0.001)	Indulgent (16 %; 0.001)

5. Discussion

In this article, we explored a set of different conditions (recruitment and interview environment, low and high income, online and face-to-face) by using the same technique for each study (HUT, CLT, or U&A). Our objective was to assess the impact of different approaches to the study of low-income populations in an effective and socially responsible way. To better explore the differences, we separate the discussion into three effects of the variables in the response of the participants.

5.1. Effect of the environment on the test for product liking

In Study 1 in which we compared Regular C. (recruitment and fieldwork with agency) with the Community V. approach, the liking results were significantly different. For Regular C., no discrimination in liking per product was observed, whereas the Community V. condition yielded a higher differentiation across products, which translated into significant differences in mean scores and top-box percentages. In other words, with the same stimuli and the same methodology, there is higher discrimination in the products evaluated when the participants are interviewed by a member of the community. These results reflect better quality of the data, in which “flat” data are avoided (no liking discrimination). To our knowledge, no previous studies have dealt with a similar problem when researchers studied low-income consumers.

The similarities in the response of a HUT without the interaction of an outsider in a face-to-face interview may explain the differences in discrimination of the products being evaluated. In other words, in the presence of someone from the community, the participants gave different liking scores compared to the regular condition. In a recent study with Korean consumers, the authors compared two different approaches: a traditional HUT versus what the authors called a no-contact home-use test (N-HUT), that is, a HUT with no face-to-face contact with researchers. In that study, the authors observed significant differences in the overall liking patterns of a set of coffee samples. Overall, the N-HUT yielded higher discrimination across the coffee samples than did the traditional HUT, in which no sample was found to be significantly different (Park et al., 2023). In other words, the interaction with an outsider yielded no discrimination across samples, similar to the case of our Study 1 in which a traditional “outsider” technique resulted in no differentiation across samples versus a higher discrimination in the Community V. condition. This outsider effect has long been studied in anthropology as a reflection of the boundaries that are established during the fieldwork experience in an ethnography. The so-called cultural insiders are persons from the community being studied that function as informants for the researcher (Cowley & Kelliher, 2023). This effect could have also influenced Study 3 (online vs. face-to-face in Community V.).

It seems that establishing rapport as an insider versus an outsider is as important in qualitative results, as it may be in quantitative methodologies such as HUT with low-income consumers, as well as in other studies in which there are large differences linked to culture such as those that take place in China (Cui, 2014), for Muslim families in certain African countries (Sherif, 2001), or for workers in Jamaica (Mullings, 1999). We hope this variable of cultural insiders can bring more discussion to the research agenda of quantitative researchers.

Regarding the place of the study, Sosa and Martínez (2008) investigated the appropriate scale and location for assessing food acceptability within a low-income population. They examined two locations (using HUT and CLT) and two scales (number and box scales). The CLT revealed that consumers exhibited greater discernment than did those participating in the HUT. If the objective is to discern sensory acceptability differences, the CLT proves more suitable for low-income populations.

5.2. Effect of income level on consumer liking and emotions evoked

In Study 2 (product testing with low- vs. high-income participants), there was discrimination across products. The difference was in the type of products that are more versus least liked. These results are simple and clear: for chicken nuggets, the same product liking is not observed if we test with high- versus low-income consumers. The reason underlying this difference might be in the familiarity of the products, meaning that the more familiar people are with a product, the higher the liking may be (Borgogno et al., 2015). This familiarity effect of products has proven not only to be linked to liking, but also to be positively correlated to appropriateness of use evaluations and product versatility (Giacalone & Jaeger, 2016). In this case in the screening questionnaire, consumers were asked about their brand usage. For low-income participants, 23 % of them were regular users of Tekitos and 9 % of McDonald's. On the other hand, among the high-income participants, 15 % were users of Tekitos and only 2 % of McDonald's, which explains this familiarization effect found for product liking. Notably, we can conclude that the results of the study are based on income level, as it was the only demographic variable that was different (age, sex, and frequency of nugget consumption were similar across conditions).

Familiarity across products is linked to income and access to different brands. For example, Sosa and Hough (2006) conducted a study to assess the impact of brand and price on the acceptability of alfajores among children from diverse household income backgrounds. The experiment involved testing both a low-cost and a high-cost brand. The preferences of low-income children remained unaffected by brand distinctions. For children with medium-income levels, an assimilation effect was observed; when evaluated blindly, the acceptability of both brands was comparable, but when the brand was revealed, the more expensive option received higher scores. These findings underscore the significance of socioeconomic factors in shaping sensory expectations. It is therefore important to specify the target population being studied (e. g., high vs. low income when studying liking; results from a specific population may not be generalized to another population, at least for liking data).

The second set of results from Study 2 was related to the emotions evoked. In both low- and high-income participants, the emotions evoked were essentially the same when we compared the CA map and the RV coefficients. The underlying reason that explains this similarity is the culture, meaning that within the same culture, the emotions evoked by products tend to be the same (Jaeger et al., 2022; Scollon et al., 2004). The publications dealing with emotions and culture are vast, and most authors agree that the emotions evoked are similar within a country, or, as Mesquita et al. (2017) may say, emotional experience is culturally constructed. Moreover, in a study comparing food choice and emotions in low- and middle-income populations in Argentina, Sosa et al. (2015) observed that there were similar emotions in both income levels for some, but not all, the foods tested. In our case, the emotions evoked were similar for nuggets, which are a common food product used by both high- and low-income Brazilian consumers.

5.3. Effect of the design of the test on the measurement of uses and attitudes

In Study 3, the results showed several differences in uses and attitudes. Overall, there was higher plant-based consumption in the online condition, and the motivations also differed. These differences highlight the impact of performing an online U&A study versus a face-to-face study (Community V. condition). To our knowledge, ours is the first study to administer the same questionnaire to groups with the same low-income demographics in order to compare online with face-to-face fieldwork (plus the Community V.). Hough and Sosa (2015) have mentioned that most scientists and research groups addressing food acceptability in consumer studies work in developed countries and, quite naturally, focus their efforts on the populations of these countries

that are mostly middle to high income. Our method is therefore an opportunity to do things in a different way and to focus on low-income populations. Our study suggests that is relevant to focus on low-income populations but by using the right fieldwork environment.

The prevailing intuition about income in research has been that lower income households have lower opportunity costs of time in terms of market wages and are hence willing to search more to find better deals (Byrne & Martin, 2021). Recent research in behavioural economics indicates that the consumption decisions of individuals with lower economic status do not align with the seemingly rational goal pursuits observed in wealthier counterparts (Chakravarti, 2006). In addition, these choices do not conform to a distinctive “culture of poverty” characterized by deviant values, misguided behaviours, and flawed decision-making. Instead, individuals experiencing poverty seem to demonstrate “basic weaknesses and biases similar to [others], except that in poverty, there are narrower margins for error, and the same behaviours can lead to worse outcomes” (Bertrand et al., 2006).

6. Conclusions

In the three studies conducted, we found differences and similarities across measurements; however, the differences were larger and probably with a larger impact in consumer research. When studying low-income populations, our recommendation is to partner with local NGOs (Community V. approach) to better recruit participants for a study, as well as to perform the fieldwork in an environment more suited to low-income participants (meaning recruiting persons from the same community, performing interviews by using the same language and expressions, and arranging an appropriate environment close to the community rather than in fancy consumer agency facilities).

In our study there are a set of limitations based on the methodological approaches followed. For example, we can only see the difference between fieldwork conditions (Community V. vs. Regular condition) in two cultures: India and Brazil. The same study performed in different cultures may give space to different results. When comparing high-income vs low-income participants (Study 2) we have not addressed the fact that a similar approach could be used for high income consumers, meaning having someone with similar socioeconomic status to perform the interviews for high-income participants. In our studies, we addressed the effect of the different approaches to study low-income consumers with a limited number of different products such as laundry and chicken nuggets. The results may be different when using as stimuli other type of products.

And finally, when studying low-income consumers, or any vulnerable populations, besides adhering to the standard ethics conditions for human research (Declaration of Helsinki), it is important to take into consideration the principles of the TCR agenda and to design consumer research for the greater common good. There are six defining qualities and commitments of TCR: improve well-being, encourage paradigm diversity, use rigorous theory and methods, highlight socio-cultural and situational contexts, partner with consumers and their caretakers, and disseminate valuable findings to relevant stakeholders. The Community V. approach aligns with all of these TCR commitments, especially in the quest to highlight the socio-cultural contexts (in low-income communities), partner with consumers and their caretakers (NGOs and people within the communities) and disseminate valuable findings (through the NGOs and scientific publications). Let's design sensory and consumer research for the greater/common good!

CRediT authorship contribution statement

Carlos Gómez-Corona: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Mette Schleiss:** Writing – review & editing, Writing – original draft, Visualization,

Validation, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Rafael Barroso:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Conceptualization. **Jeffrey Richard Schmoyer:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Conceptualization. **Jerome Jallat:** Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization. **Maureen Ravily:** Methodology, Investigation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.foodqual.2024.105339>.

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