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A scale to evaluate customer attitudes towards food risks in restaurants

Uma escala para avaliar as atitudes do cliente com relação aos riscos de alimentos em restaurantes

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ABSTRACT

Qualitative methods for exploratory social research allow a deep understanding of individuals' knowledge, perceptions, values, and preferences. In this study, we aimed to develop a scale to measure customer attitudes toward food risks. In-depth interviews were conducted with customers from two different restaurants located in Sao Paulo, Brazil, to raise social representation constructs by means of the collective subject discourse technique to compose the scale items. A 5-point Likert scale was used to assess the degree of the respondent's agreement/disagreement with each item (n = 24). The instrument developed was tested (n = 61) to evaluate validity and reliability; it yielded satisfactory internal consistency (α = 0.78, 17 items). The study offers a theoretical and methodological insight into scale development, and identifies customers' social representations in buffet-style restaurants related to hygiene, risk management, food-hazards, responsibility, and trust in food systems. The proposed methodology is suitable to apply to further marketing research and effective risk management and communication regarding foodservices issues.

KEYWORDS: Food Safety; Foodservice; Risk Perception; Consumer Research

RESUMO

Métodos qualitativos em pesquisa social permitem uma compreensão mais aprofundada dos conhecimentos, percepções, valores, preferências dos indivíduos. Este estudo teve como objetivo o desenvolvimento de uma escala para avaliar as atitudes dos clientes em relação à segurança de alimentos. Entrevistas em profundidade foram realizadas com clientes de dois restaurantes em São Paulo, Brasil, para levantar construtos de representação social por meio da técnica do Discurso do Sujeito Coletivo para compor os itens da escala. Uma escala de Likert 5-pontos foi utilizada para avaliar o grau de concordância/discordância dos respondentes com cada item (n = 24). O instrumento desenvolvido foi testado (n = 61) para avaliar a validade e confiabilidade, e apresentou consistência interna satisfatória (α = 0,78, 17 itens). O estudo contribuiu com uma visão teórica e metodológica no desenvolvimento da escala, e identificou as representações sociais dos clientes nos restaurantes tipo *buffet* relacionados à higiene, gestão de riscos, perigos alimentares, responsabilidade e confiança nos sistemas alimentares. A metodologia proposta foi adequada para incentivar pesquisa de marketing e eficiência na gestão e comunicação de risco sobre questões em serviços de alimentação.

PALAVRAS-CHAVE: Segurança de Alimentos; Serviços de Alimentação; Percepção de Risco; Estudo de Consumidor

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INTRODUCTION

Customer attitudes towards foodservices, particularly with views on safety issues, is a topic that has been extensively explored in the literature using different theoretical frameworks[1,2,3,4,5]. Attitudes can be defined as a longstanding organization of motivational, emotional, perceptual, and cognitive processes which determines the individual's predisposition to act consistently favorable or unfavorable to a particular object[6]. Understanding customer attitudes towards food safety and related issues is essential for the development of adequate and effective risk management communication, marketing, and educational strategies focused on food services[2,7,8,9].

The majority of food risk research is supported by a psychometric approach[10], which employs scales based on taxonomy of risks and hazards to understand and predict attitudes toward specific food-related hazards and risks[11,12,13]. However, studies have pointed out the qualitative methods as a prominent approach, especially as a way to define a theoretical framework for further analysis on issues related to trust and confidence in food systems[10,12,14,15,16,17,18,19,20] and consumers perceptions in restaurants[4,21]. Thus, a qualitative approach has been considered an actual trend in customer research in the area of food-related hazards, and it is leading the way to the development of new theories and methodologies which shed light on customers' knowledge, beliefs, values, feelings, and preferences regarding behaviors, and social group's symbolic construction of meanings[6,15,22]. As a result, qualitative approaches provide a deeper understanding of customer attitudes and views on food safety, which is essential for effective risk management communication and educational programs focusing on food services[10,14].

According to social representation theory, the way that an individual thinks and behaves is inseparable from his/her social group. In this sense, the concept of social representation emerges, and it can be understood as the way through which knowledge is socially developed and shared with practical purposes, building a common reality for a social group. The logic shared by individuals is the reality of the social group itself[22] and therefore, attitudes towards food safety risks can be expressed in social representations through the interpretation of the facts (e.g., scientific, social, etc.) and the construction of reality by the individuals according to their context. Since attitude is a central concept in social psychology[23], it is closely related to the social representations approach, whose theoretical roots emerge from the same field. Van Kleef et al.[12] discussed the use of various qualitative techniques in individual or group approaches in food research. Besides in-depth investigations into customer perceptions about brands, products, technologies, and concepts, the authors developed a conceptual framework of key-attributes and ideas involved in the selection and purchase of products and services to compare data from four European countries. In Brazil, Behrens[19] and Deliza[24] utilized focus groups and verified that the acceptability of novel food processing technologies depend on adequately informed and tangible benefits (e.g., price reduction, increased shelf life, and sensory quality improvement), particularly regarding the safety of these new technologies[24]. In another study, Behrens et al[25]. also used focus groups to investigate customer perceptions of food safety and observed that Brazilian customers choose foods based on trust in retailers, general perception of the environment, and convenience[25]. Lee et al[3]. used focus groups and online survey with customers to identify different levels of risk perception, lack of knowledge about food safety, and attitudes towards ethnic restaurants in California and Florida, USA. In line with this perspective, complementary use of qualitative and quantitative approaches can provide comprehension and data triangulation to improve the overall quality of scientific evidence relating to customer research on food safety[15].

In this study, personal interviews were initially used to elicit underpinning constructs determining customer attitudes toward food safety risks in restaurants. Further, the content of the interviews was analyzed according to the collective subject discourse (CSD) technique, based on the social representations theory[22] as a way of giving voice to customers. Finally, an attitude scale was built and validated yielding an instrument to measure individuals' attitudes toward risks in restaurants.

METHOD

Qualitative phase

Interviews

Customers (N = 66) from two different restaurants were recruited to participate in the first phase of the study. Thirty customers were interviewed from Restaurant 1 (R1), an institutional restaurant that serves meals to employees of a communications company; thirty-six individuals were interviewed from Restaurant 2 (R2), a social restaurant directed to the low-income public supported by a government program on food security in Sao Paulo[26]. This design provides broader context-rich information about the social and cultural background of different populations.

Before starting, participants were informed about the objectives of the research and were advised that the personal interviews would be audio-taped. They were also encouraged to voice their opinions and thoughts spontaneously. Finally, they signed a term consenting to the use of the records as stated in the research protocol approved by the Ethics Research Committee of the Faculty of Public Health at the University of Sao Paulo (protocol no. 1808).

In-depth interviews were conducted by the lead investigator using a semi-structured guide with three open-ended questions focused on food safety in restaurants: 1) What does food safety mean to you? 2) What do you know about food-borne diseases? 3) Given the food quality and safety concerns of the food supply chain, from the field to the table, (i.e., primary production, processing, transport, storage, distribution, and preparation for consumption), what is your involvement in the food safety chain as a customer at this restaurant? Additional techniques, such as

iteration and probing, were utilized to clarify and explore details (e.g.., "tell me more," "what else," and nodding behavior). Questions 1 and 2 aim at the cognitive dimension of food safety, while question 3 focuses on related behaviors.

CSD analysis

The audio tapes were verbatim transcribed and the content analysis was performed according to the CSD method[22] as outlined below:

1. Identification of the key expressions (KE): selection of excerpts from speeches that bracket the essence thereof, i.e., debugging all that is irrelevant, not essential, and secondary information;

2. Identification of central ideas (CI) or categories: name or linguistic expressions that briefly and accurately describe the meaning of key expressions and that make up the individual's discourse;

3. Identification of anchors (A): manifestation of a linguistic theory, belief, value, feelings, etc. It is a general statement that qualifies a specific context, expressing a latent idea.

The KE were grouped according to the analytical similarity with a certain CI. The strongest CI constructs were those most often detected in individual speeches. On the other hand, if a CI appeared in different groups, it demonstrated the breadth or the degree of diffusion in the researched field[22]. The strength and breadth of a CI give a quali-quantitative character to the CSD. The Qualiquantisoft® software (IPDSC 2013) helped in all stages of the analysis, from the selection of KE to the final CSD.

Attitudinal scale development

Considering that attitude is a multifaceted construct, items were raised to compose the scale. They were selected from the analytical categories identified in the content analysis of the qualitative phase. As a requirement, an item should input a single idea, avoiding ambiguous statements[27]. Twenty-four items were selected for the attitude scale; they were phrased in 12 positive and 12 negative statements randomly positioned on the scale in order to prevent from possible logic bias in the individual's responses.

A five-point Likert scale (1 = strongly disagree; 3 = neither agree nor disagree, 5 = strongly agree) was used to assess the degree of the respondent's agreement/disagreement with each item[28]. Although this type of scale is essentially ordinal, numbering of the categories permitted transition to a metric measure enabling the use of parametric statistical data analysis[29,30].

Pre-test and validation

Respondents were randomly sampled according to a statistical sampling plan based on the number of customers the restaurant serves each day so that the samples could be representative of each setting. A sample of 61 subjects were surveyed (30 from R1 and 31 from R2) in order to assess the scale's validity (measuring the degree to which the set of items accurately represents the concept of interest) and reliability (evaluating if the instrument is measuring something in a reproducible and consistent way)[27,30].

Item discrimination was assessed by correlating data from each item to the summated score of all items on the scale. Positive Pearson's correlation equal to or exceeding 0.2 and with a significance level $p < 0.05$ was used as criteria for selecting items with adequate discrimination, as is recommended for social research[27]. The internal consistency was assessed using the Cronbach's alpha coefficient (α) to evaluate the homogeneity of the set of the scale items. According to Hair et al.[30], scales with exploratory perspectives in social research must exhibit a minimum Cronbach's α of 0.6, while Byrne et al.[23] recommend at least an α of 0.7 in attitude scales in this area. The software Statistical Package for the Social Sciences (SPSS) version 16.0 for Windows was used for the statistical analysis.

RESULTS

Study population

Table 1 presents the characteristics of the study samples both in the qualitative and the quantitative phases.

During the qualitative study phase, half of the participants were female, while most of the participants in the quantitative phase were male. During the quantitative phase, 76.6% of interviewees from R1 (the institutional restaurant) had a college or university degree and 86.7% belonged to the most affluent socioeconomic classes in Brazil (A and B). On the other hand, approximately 14% (qualitative phase) and 10% (quantitative phase) of the respondents from R2 (the social restaurant) held a higher educational degree; moreover, 66.7% (qualitative phase) and 61.3% (pre-test phase) belonged to the

Table 1. Socioeconomic profile of the interviewees in the scale development phases

Socioeconomic characteristics (%)	Qualitative		Quantitative	
	R1 (n = 30)	R2 (n = 36)	R1 (n = 30)	R2 (n = 31)
Education*				
Primary to high school	26.7	86.1	43.3	90.3
College or university	73.3	13.9	56.7	9.7
Gender				
Female	50.0	50.0	42.2	44.4
Male	50.0	50.0	57.8	55.6
Socioeconomic class**				
A	23.3	0.0	40.0	6.5
B	53.3	33.3	46.7	32.3
C	23.3	52.8	10.0	35.5
D	0.0	13.9	3.3	22.6
E	0.0	0.0	0.0	3.2

*Education backgrounds differ significantly ($p < 0.05$) in each restaurant according to the chi-square test. **According to Brazilian Socioeconomic Classification Criterion (31): A = high SES; E = low SES. The socioeconomic status of customers differ significantly ($p<0.05$) according to the Chi-square test.
Source: The table was created by the authors.

middle or low socioeconomic classes (C, D, and E) according to the Brazilian Socioeconomic Classification Criterion (31). Thus, the socioeconomic status of respondents in the two settings differed significantly ($p < 0.05$).

Qualitative phase

Analytical categories and CSD

Table 2 illustrates that the interviewees, in general, showed an understanding of food safety that involves hygiene, cleaning, and other safety aspects, such as responsibility and control of food authorities and other professionals.

Regarding the actors involved "from field to the table," customers identified government agencies — especially the food surveillance authority — and nutritionists as playing a major role in food safety issues. Also, the interviewees showed low confidence in the food system, as well as considerable concern regarding agricultural production and the use of pesticides.

Table 3 shows the behavioral dimensions related to customers' attitudes towards food safety.

The results illustrate that the respondents were attentive and proactive with regards to communicating events and problems to restaurant staff and management (Table 3).

Item analysis

The attitude scale items were determined based on the CSD (22). The strongest ideas were those most often detected in individual speeches and represented by more than one analytical category: the concern about risks in agriculture production (i.e., the use of pesticides and other chemical hazards); the presence of a nutritionist at the restaurant as an indicator of quality and safety of meals; esthetic and sensory characteristics to assess food safety; and the customer's joint responsibility regarding food safety in restaurants. These ideas were prevalent in the attitude construct specification.

Table 2. Analytical categories and CSD regarding the cognitive dimension of food safety.

Question 1. What does food safety mean to you?	
Analytical categories[1]	**CSD[2]**
Hygiene	"It is clean food that is properly prepared to ensure safety and hygiene. For me, hygiene is a basic quality of food safety. …The restaurant itself should be clean and tidy. This is a priority."
Safety	"Safe food does not harm people and is not a health risk."
Risks in agriculture	"The issue of fertilizer worries me because I guess it is commonly used in agriculture…there should be greater supervision regarding the amount of fertilizer used to grow vegetables and fruits."
Biological hazards	"Free from bacteria"
Chemical hazards	"Free from pesticides. Nowadays, 99% of food is produced with pesticides."
Organic production	"It is naturally grown food, which is free from pesticides, such as organic farming."
Freshness	"Fresh food which is not expired."
Risky foods	"There is a particular concern with meats."
Control	"The food must be within the quality standards established by a health surveillance authority or other relevant food authorities. Food that customers receive which has been inspected and checked."
Responsibility	"The restaurant should be responsible for food safety. Basically, they [the staff] should examine the way food is handled, ensure cleanliness, and follow the procedures related to food preparation, maintenance, and temperature, as well as how it will be served."
Nutritionist	"This restaurant has a nutritionist in charge, which implies better quality."
Sensory quality	"Tasty and appealing: I look at the food to see whether it is suitable for consumption. Sometimes the appearance is enough to know whether it is safe or not."
Health and nutrition	There is nothing better than healthy and safe food. For me [safe food] is food that is healthy, colorful and nutritious, such as fruits and vegetables. It is also food that is not very high in fat, is low in salt, and is good for your health.
Question 2. What do you know about foodborne diseases?	
Analytical categories[1]	**CSD[2]**
Microbiological contaminants	"I know that you can fall ill with contaminated foods. Contagious diseases are transmitted by microorganisms. Depending on the food, it may contain fungus, bacteria, viruses, etc. However, I do not know specific names. I have basic knowledge about this issue."
Sources	"This is an issue regarding pork. I forgot the name of the disease, but I know that it can be transmitted by undercooked meat. It is bad for the mind."
Symptoms	"It can cause stomach pain, headaches, stomachaches, vomiting, diarrhea, and dysentery. It is an infection which can lead to death. I've met people who almost died of something like that."
Control	"…The employees have to wear caps, gloves, and masks."
Distrust in the food system	"We do not know where the food comes from or how the food is made. …You eat and maybe you will soon feel sick. There is no guarantee, even if they say they oversee the whole process…if you do not eat out, and instead you plant and grow your own food, then you'll be fine! Otherwise, you cannot escape the risks."

[1]CI; [2]Excerpts from the CSD.
Source: The table was created by the authors.

Table 3. Analytical categories and CSD regarding food safety related behaviors.

Question 3. Given the food quality and safety concerns of the food supply chain, from the field to the table, (i.e., primary production, processing, transport, storage, distribution, and preparation for consumption), what is your involvement in the food safety chain as a customer at this restaurant?	
Analytical categories[1]	**CSD[2]**
Assertiveness	"As a customer, my role is to pay attention to the food- it should look healthy; if it does not look healthy then I must complain."
Risk communication	"Whenever I see something that is not right, I try to talk to the nutritionist in charge to make sure that it will not cause problem to customers.
Visiting the kitchen	"It's a good idea to visit the kitchen and check out the cleanliness and how food is handled and prepared. I should check how the food is handled and if it is kept cooled, and also whether the restaurant is neat and clean. The kitchen must be open to visitors."
Good practices	"You must wash your hands so that you do not contaminate the food. I should not get too close to the garbage cans. I should avoid touching plates and silverware, and try to keep the place clean. I should prevent hair from falling in the food."
No involvement	"I do not have any involvement with safety. I come [here] and eat my meal and that's all. I'm just a customer."
Trust	"Most restaurants don't have a nutritionist. If you go to a restaurant, you don't know if the food is fresh or if it has been prepared on the same day; however, there is a nutritionist here."

[1]CI; [2]Excerpts from the CSD.
Source: The table was created by the authors.

Some ideas which emerged during the exploratory phase were not selected to construct a scale item because they did not represent the views of both groups. For example, customers interviewed from R2 expressed the idea that food security is related to food access, something which was not stated by respondents from R1. Furthermore, other ideas were strictly considered outside the scope of food safety, such as the problem of food wastage in buffet-style restaurants.

Although health and nutrition dimensions are not fundamentally food safety issues, they were included in the scale due to their significant strength and breadth as CI (Table 2); also, these ideas reflect, to some extent, the technical-scientific concept of food safety and quality[13].

The analytical categories from Tables 2 and 3 were used to compose the attitudinal items related to both the cognitive and behavioral dimensions of food safety. Altogether, 24 items initially composed the scale and after the pre-test, was pre-tested. Seven items were excluded because they showed unsatisfactory discrimination indices (Pearson's correlation coefficient < 0.20), according to Hair et al.'s recommendations[30]. The three positive excluded items (and respective discrimination indices) were: (1) Agrichemicals (such as pesticides and fertilizers) are responsible for lowering food safety (0.11); (2) the restaurant is responsible for food safety (0.09); and (3) customers are also responsible for food safety (0.08). Also, four negative items: (1) Foodborne diseases do not cause death (0.11); (2) the presence of a nutritionist at the restaurant does not affect the safety of food (0.01); (3) worrying about food safety at a restaurant is not the customer's role (0.12); and (4) since it is difficult to guarantee 100% food safety in the food supply chain (from the field to the table), I just do not think about this when I am eating out (0.20). The remaining analytical categories in the final scale (n = 17) were: hygiene, safety, biological hazards, chemical hazards, organic production, freshness, risky foods, control, sensory quality, health and nutrition, microbiological contaminants, sources, assertiveness, risk communication, visiting the kitchen, and good practices.

Table 4 presents the final scale containing 17 items.

The 17-item scale presented adequate and significant item-total correlation and Cronbach's alpha coefficient (0.78), suggesting satisfactory internal consistency[23,30]. For content validity, a panel of three food safety experts revised the remaining items and suggested some changes in the text to improve the respondents' understanding of the subject. After the revisions were made, the items were randomly distributed in the survey instrument.

DISCUSSION

The central ideas observed in the interviews reflect how the concept of food safety develops from the information conveyed by different sources, such as the media (e.g., TV, Internet, etc.), opinion makers, and word of mouth communication within a social space. In this sense, the social representations transform something that is initially unfamiliar into something familiar, for example, science facts, technology, laws, etc. Through a process involving classification, categorization, and reorganization, every stimuli presented to an individual are compared with previous reference values and preexisting, internalized theories widely accepted and shared by their social group[32,33,34]. Thus, social representations continue to resemble so-called "common sense" or practical knowledge.

The present study confirmed that Brazilian customers think in both specific and general ways regarding food safety; this is also supported by other international studies[10,12,35,36]. The most important conceptual figure of the theory of social representation is objectification, which explains how the comprehension of an object is structured. The individual selects and decontextualizes the object that will be represent, by selecting relevant information, as it is not possible to deal with the whole set of information transmitted. Once the cutouts have been made, the fragments are reunited in a scheme that becomes the core of the figurative representation, such as "thinking with images[33]." Therefore, the objectification is expressed in the central ideas of the discourses.

Table 4. Reliability of the final scale to evaluate customers' attitude towards food risks in restaurants.

Items	Scores of agreement[1]		Item discrimination[2]
	Mean	Standard Deviation (SD)	
Positive			
1. Food, in general, can transmit diseases.	3.77	0.88	0.32*
2. Eggs and meat are of greater concern than vegetables, fruits, and dairy products.	3.45	1.05	0.26**
3. Everyone is likely, at some point, to fall ill from foodborne diseases.	3.89	0.88	0.25**
4. Organic food is safer than conventional food.	3.69	0.96	0.50*
5. When I enter a restaurant, I usually observe the food handlers' hygiene.	4.15	0.87	0.54*
6. I generally look for food that is safe when I am choosing what to eat.	3.57	0.90	0.51*
7. I prefer to eat at a restaurant where a nutritionist is responsible for the food production.	3.89	0.84	0.69*
8. While at a restaurant, I report food related issues to the nutritionist.	3.74	1.02	0.32*
9. If I visit the restaurant's kitchen, I will know whether the food is safe for consumption or not.	4.03	0.58	0.44*
Negative			
10. Safe food means food free from bacteria.	3.36	0.98	0.60*
11. Safe food means more nutritious food.	3.59	0.94	0.70*
12. Pork presents more of a health risk.	3.49	1.16	0.44*
13. Pesticides are the greatest food hazard in fruits and vegetables.	3.74	1.02	0.52*
14. Food handler's wearing a uniform and using hair protection and gloves indicates food safety.	3.57	0.90	0.45*
15. A clean and tidy restaurant indicates that the food is safe.	3.03	1.20	0.44*
16. A well-presented dish and its flavor suggests that it is safe for consumption.	3.69	0.92	0.51*
17. Sanitary surveillance ensures food safety at a restaurant.	3.90	0.85	0.31*
Cronbach's alpha coefficient		0.78	

*Significant at the 1% level; **Significant at the 5% level.
[1]Scores of agreement (five-point Likert scale: 1 = strongly disagree; 3 = neither agree nor disagree, 5 = strongly agree); [2]Pearson's correlation coefficient.
Source: The table was created by the authors.

Through the findings, it is clearly observed that the customer's concept of food safety involves aspects ranging from hygiene, especially the visual perception of cleanliness, to the responsibility and control of actors in the food system. Other studies have pointed out that customers rely on visible cues associated with food hygiene to judge the level of food safety in restaurants[5,36,37,38], and cleanliness is recognized as being an important indicator of safety[3]. Aesthetic and sensory attributes are means to assess restaurant's hygiene, and consequently, the expectation of the quality of the meal served therein[5,39,40].

Visits to the kitchen are another way of assessing the conditions through which food is handled and prepared in restaurants, and this seems to enable customers to exert some control over the quality of food in the establishments, as they detect and communicate perceived risks. Lee et al.[3] related that North-American customers consider kitchen cleanliness as the main indicator of safety in a restaurant, followed by the cleanliness of the restrooms and cooking temperatures. The participants did not express other types of involvement with safety in this scenario, such as washing hands before serving, avoiding talking while selecting food from the buffet, and other common hygiene practices. Furthermore, the interviewees reported that their involvement with safety issues was limited to looking for possible hazards and communicating problems to the nutritionist in the restaurant, as they believe nutritionists and health authorities play a major role in assuring and monitoring food safety.

The collective discourses (Tables 2 and 3) suggested a lack of connection between customers and the food systems in relation to shared responsibility for food safety. For Raspor[7], this may be considered a barrier to effective risk communication and global food chain safety. Some authors recommend enhancing the levels of customers' understanding, motivation (for safe practices), and trust in the food chain in order to build an effective food safety system[9,15,16,17].

Low confidence in the local food system was observed among the restaurant customers. Trust and general confidence in food systems are central concepts in risk perception research, assuming that the perception of a given hazard is based on the extent to which people believe the other actors in the food chain will act knowledgeably and responsibly to prevent or minimize hazardous situations[10,16,17], Considering that in urban settings multiples actors are involved in food safety (e.g., farmers, food industries, retailers, and authorities), the perceived trust in other actors is a relevant determinant in attitudes towards food safety from the perspective of shared responsibility[13,14].

Nonetheless, the association between trust and general confidence requires further investigation in different contexts and social groups with the aim to compare theoretical models cross-culturally[16]. To date, there are few published works in the literature regarding public risk perception in foodservices settings in Brazil[4,21], and none of these studies have investigated social constructs related to trust and confidence in food systems.

Besides the social representations related to the actors, practices, and objective microbial contaminations and diseases, chemical contaminants (e.g., pesticides) were also related to perceived food risks. Previous studies have shown that agrochemicals are closely associated with high risk perception of customers in developed countries[9,10,16,41]. Danelon and Salay[21] reported that Brazilian customers are concerned about residues of agricultural pesticides in raw vegetable salads in full-service restaurants. Other qualitative studies conducted in Brazil, indicated high perception of risk associated with foods of animal origin, especially pork, beef, and chicken[19,42].

The most important central ideas contained in the collective discourses could be used to develop an attitude scale regarding risks in restaurants. The current survey instrument included a wide range of ideas-such as hygiene, food hazards, risky foods, sensory quality attributes, control, and actors involved in food systems-covering several dimensions of how individuals interpret and behave towards food safety. In this way, it is important to differentiate this scale based on the "customers' voice," from other survey tools, which are commonly focused on the researchers' knowledge, for example scientific guidelines[13,23,38]. Lay-public interpret food-related hazards and risks in a different way from experts[13,14,20]. Therefore, this tool can be considered useful to evaluate the impact of educational programs focused on food safety performed in foodservices.

The main objective of this work was to develop a scale to measure consumer attitudes to food risks in food services. During the qualitative phase, care was taken in the sense of interviewing both male and female subjects in equal proportions as a way of ensuring that the central ideas in the collective discourses cover differences related to a possible gender effect, as was observed in a previous study[25]. When it comes to the scale testing and validation, the focus was on the items and their discrimination power and contribution to the scale so that possible effects of gender and education were not considered. Such effects are indeed relevant, although, from the authors' points of view, they should be addressed in broader and future studies comprising different consumer segments and consumption contexts, for example, full service restaurants, vending machines, and street food.

Another limitation refers to the influences of media reports on food crises[9], which could increase respondents' awareness of food risks. Accordingly, the attitude scale may have been influenced by scandals involving food production reported during the period of the study. Further, we considered a five-point Likert scale adequate to facilitate the understanding of the target audience, even taking into account that seven-points or nine-points Likert scales offer greater dispersion of values in each item, and increase the statistical power and reliability of the questionnaire. Multivariate data analysis such as principal components analysis, cluster, and discriminant analysis could be additionally adopted for dimension reduction and identification of underlying attitudinal patterns, especially when the scale is applied to different (and larger) customer segments.

CONCLUSION

This study offers a theoretical and methodological insight into customers' social representations in buffet restaurants related to hygiene, risk management, food-hazards, responsibility, and trust in food systems. Thus, methodologies to scale development should adopt qualitative approaches especially during the early stages when attitudinal items are determined in order to obtain a consistent understanding of customer's perceptions and attitudes towards food safety issues.

The proposed scale provides a useful and reliable survey instrument with good content validity that can be adopted to evaluate customers' attitude towards food risks under a shared responsibility perspective in buffet-style restaurants managed by nutritionists in urban areas. This study contributes to the literature by providing a methodology and an analytical approach that can be used for the development of several scales for various types of customer research and risk perception in restaurants settings. This qualitative approach can be applied to identify factors involved in processes, such as problem recognition, information search, exposure to new technologies and processing of purchase-related stimuli, problem solving, decision-making, and the effect of attitude and environmental influences on individual behavior. Accordingly, it can contribute to further marketing studies, educational actions, and the development of business strategies in foodservices.

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