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Consumer behavior in confinement times: Food choice and cooking attitudes in Spain

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ABSTRACT

The present study provides an overview of the food related behavior of the Spanish population during the confinement period due to the Covid-19 sanitary emergency. A national survey was responded by 600 volunteers, who answered questions related to food consumption, home-food and cooking related habits (F&C), and the Spanish version of the Dutch Eating Behavior Questionnaire. In general, most consumers could be considered "External eaters"; F&C questionnaire allowed segmenting the population in "low-cooking engagement", "health -concerned" and "health-disregarded" groups. These consumers' segments reported different behavior, highlighting, for example, the increase of snacks and ultra-processed food consumption of the health-disregarded group.

Introduction

On December 2019, an acute respiratory disease caused by SARS-CoV-2 virus (COVID-19) started to spread all over the globe, reaching a pandemic category, and being declared as "emergency of public health" by the World Health Organization (WHO) on January 2020 (Guo et al., 2020; WHO, 2020). Different countries were sequentially affected by the pandemic situation, with a consequent confinement of the population during different periods. The Spanish population was recommended to stay at home from March 14th, with restrictions for going out just for medical emergencies, making groceries, and working (if working from home was not possible). Different public media reported how spending over 6 weeks of lockdown significantly affected consumers' purchasing habits, highlighting a reported increase of some product categories such as flour (+147%) and snacks/nuts (+15%) if compared with the same week of the previous year (MAPA, 2020). Also, a report from the World Economic Forum (2020) suggested that, during the same weeks of confinement, snacks would be less consumed and groceries spending would increase in Spain. Although all these trends could be identified studying market indexes, determining consumers self-reported behavior related with food is important to determine if the purchase attitudes were related with a storing attitude, or with a current increment in the consumption of specific food categories.

It is being reported that different consumer types can be identified depending on their eating style, being "Emotional eaters" those whose eating behavior changes depending on their emotional state, "External eaters" those whose eating behavior varies depending on external cues (food intrinsic and extrinsic properties, context, etc.), and "Restraint eaters" those whose eating behavior depends on their physical stage (e.g.: weight) (van Strien et al., 1986; Cebolla et al., 2014). Because of the stress/discomfort situation caused due to the confinement, some consumers could have behaved differently than usual, emphasizing their behavior related with emotional or restrictive attitudes. Also, the Spanish population is well known because of a specific "eating-out" model (Díaz-Mendez and García-Espejo, 2017), in which leisure and social life, together with the work-linked-meals, represent an important part of a food engaged culture that might have been importantly impacted due to the confinement situation. The aim of the present research was to determine consumers' perception of their own food choices and habits during the confinement period, identifying potential inadvisable food related habits. This information could be useful for developing tools and strategies adapted to encourage healthy habits during different distress situations which may have an impact in specific consumer niches.

Methodology

With the aim of determining consumers' behavior during the confinement time in Spain, an online national survey, covering the whole territory, was conducted with different questions related to:

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Table 1
Concepts related with F&C habits during included in the survey.

Code	Statement
Q1.	I do sports more than usual
Q2.	I am more cautious thinking on the shopping list (I plan more carefully)
Q3.	I spend more time cooking
Q4.	Although I live with others, I cook just for myself
Q5.	I cook with my family/partner/roommate
Q6.	I share what I cook/eat in social networks
Q7.	I do not collaborate in the task of cooking
Q8.	I mainly cook traditional meals
Q9.	I mainly cook new/innovative meals
Q10.	I choose my foods depending on the healthy they are
Q11.	I choose my foods depending on the enjoyable they are for me
Q12.	I think that my way of eating has not changed at all
Q13.	Breakfast/lunch/dinner is one of the most important moments of the day
Q14.	Lunch time is more duty than pleasure for me
Q15.	I have realized that I feel less hungry than before
Q16.	I have realized that I feel hungrier than before
Q17.	I use more "food delivery" services than before
Q18.	I have increased the consumption of nutritional supplements (vitamins, minerals, etc.)
Q19.	Lately my mood is lower than usual, and this affects the way I eat
Q20.	I use internet for making groceries
Q21.	I go to the supermarket frequently
Q22.	I go to the supermarket once in a week or less
Q23.	I shop at neighborhood stores, avoiding supermarkets
Q24.	The meal moment is more important for me than before
Q25.	I eat more often than before (more times per day)
Q26.	In general, I think that I eat more than before (quantity)
Q27.	I snack more between meals
Q28.	My consumption of healthy products (vegetables, fruits, etc.) has increased.
Q29.	My consumption of ultra-processed products has increased (industrial baked goods, ready-to-eat-meals, etc.)
Q30.	I have increased the consumption in snacks (nuts, chips, candies, etc.)
Q31.	I have increased spending on food
Q32.	I have found that I like to cook, and it can be a hobby
Q33.	I cook every day
Q34.	I consume more stimulant drinks (coffee, tea, energy drinks, etc.)
Q35.	I usually eat watching computer, television, tablet, etc.
Q36.	I have bought ingredients/products that I have never tried before
Q37.	I'm reading/watching/following more recipes/chefs than before
Q38.	I consume more alcohol daily (wine, beer, etc.)
Q39.	I have recovered recipes from my family
Q40.	I spend more time in the kitchen, but mainly in confectionery

Legend. Concepts were back-translated to English for the present manuscript.

a) food categories consumption frequency, based on the questionnaire reported by Goni Mateos et al.(2016),
b) increment/detriment of consumption of foods belonging to some of the different categories, compared with a non-confinement moment,
c) food and cooking habits (F&C), including some social interactions related with the eating moments (Table 1), using a 7-points scale in which "1 = completely disagree", "4 = neither agree, nor disagree", and "7 = completely agree",
d) listing of up to 5 new acquired habits that the respondents thought they will maintain in long term

It is important to remark that the question related with food and cooking habits (c) was designed after an ideation session conducted with chefs, nutritionists, and food scientist, who listed, discussed, and filtered all the statements. Then, a second group of food related professionals revised the list of concepts, ensuring that different attitudes and behaviors could be identified.

In addition, to determine if consumers could be segmented depending on their "eating styles", the validated Spanish version of the Dutch Eating Behavior Questionnaire (DEBQ) was also included in the national survey (Cebolla et al., 2014). This questionnaire, which includes a 5 points scale from "never" to "very often", was developed to improve understanding of obese eating patterns (van Strien et al., 1986). Later on, it was used to determine the different eating styles of general population (Wardle, 1987; Cebolla et al., 2014). For classifying the eating style of the person, the scores of the items of the DEBQ belonging to the different categories are averaged, and the person is classified depending on the mean values.

Respondents were instructed to answer considering their behavior during the current month of confinement. The survey was conducted during the last week of April 2020 (6th confinement week). A total of 600 consumers completed the survey (50,1% women; aged from 18 to 68 years old, mean = 42.58, SD = 12.25).

Consumers' response to the DEBQ, as well as the response to the food and cooking attitudes question (F&C), were analyzed conducting a Hierarchical Cluster Analysis (HCA), using Euclidean distance and Ward's criterion of aggregation. Three-way ANOVA was conducted to determine differences in the responses, using "gender", "eating style", and "eating and cooking habits" as factors. Post-hoc test was conducted using Tukey's HSD. Statistical analyses were performed using version XLSTAT 2009.6.03 (Addinsoft, USA) (Addinsoft, 2019).

Results and discussion

Results of the food categories consumption questions showed that most consumers (> 50%) reported a similar consumption of these categories than before the confinement period (except for fruits, fish, and sweets categories), but also suggested that an important % of consumers perceived having been eating in a different manner: over 30% of consumers reported an increase/decrease of all food categories (Fig. 1). Over 33% of respondents reported a detriment in fish consumption, and over 50% of respondents reported an increment in sweets consumption, which might be indicating a detriment in healthy eating habits. Fig. 1 shows the % of the reported increment/detriment for all the studied categories, but it is important to mention that consumers' perception of their own food consumption might be distorted because of a complete modification on the regular "eating out" cultural model (Díaz-Mendez and García-Espejo, 2017).

Most respondents were categorized as "External eaters" (67%) after analyzing the responses of the DEBQ as recommended by van Strien et al. (1986) and Wardle (1987). "Restraint" and "Emotional eaters" represented a 23% and 10% of the sample population respectively. The mean scores which characterized the whole sample population were: 3.21 ± 0.39 for "External", 2.70 ± 0.33 for "Restraint", 2.58 ± 0.33 for "Emotional eaters". Díaz-Mendez and García-Espejo (2017) reported that the Spanish consumers prioritized social relationships rather than individualism at mealtimes, and that food was an important element and excuse for social interactions. Therefore, it was expected that most consumers belonged to the "External eaters" category, in which the eating response is mainly related to the food properties, including the extrinsic and contextual ones, and not to the emotional of physical stage of the person (van Strien et al., 1986). Although consumers could be generally considered External eaters, a HCA was conducted to further identify different attitudes of the population, and relate them with the F&C habits during the confinement period. Three different clusters were identified: C1 (*self-control*, n = 302), with higher scores in statements related with restraint attitudes (e.g.: "do you deliberately eat foods that are slimming?"); C2 (*sensitive*, n = 117), with higher scores in statements related with emotional attitudes (e.g.: "do you have a desire to eat when you are depressed"); and C3 (*non-emotional*, n = 181), with significantly lower scores in statements related with emotional attitudes. These clusters were used as factor in the 3-way ANOVA conducted to determine differences among F&C habits during the confinement period. Significant differences ($p < 0.05$) were detected among clusters: *self-control* cluster was characterized by choosing foods mainly because of their health properties. These respondents reported: feeling less hunger, less snacking, and avoiding ultra-processed foods, but increasing the consumption of nutritional supplements. *Sensitive* respondents were characterized by: giving great importance to the pleasant character of the foods they chose, feeling hungriest than in the

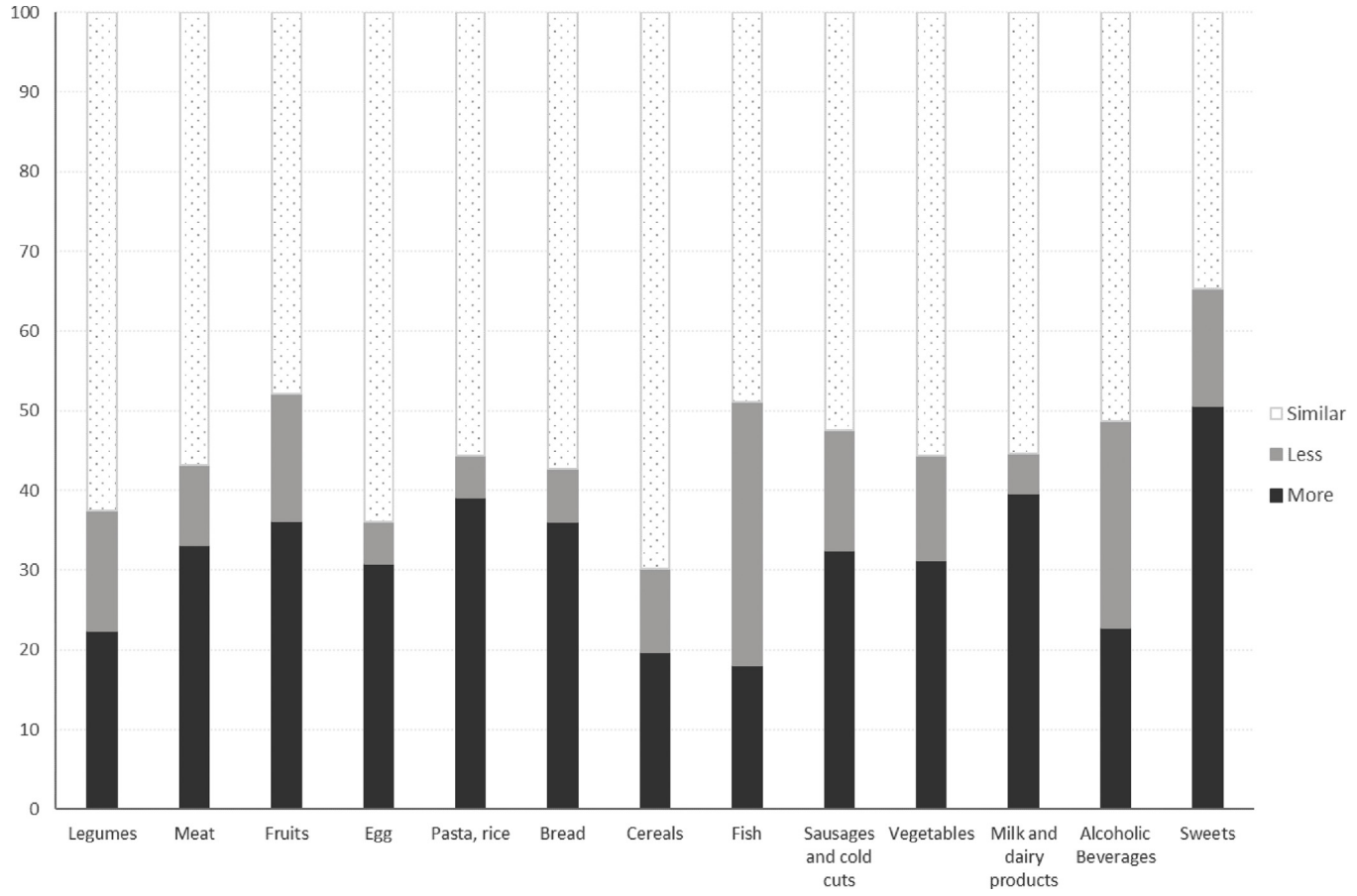

Fig. 1. Reported increase/decrease consumption of different food categories.

non-confinement situation, and considering the meal time as the most important moment of the day. These respondents reported a change of their mood during the quarantine time, and their eating behavior being affected by this lower mood: eating more often and snacking more between meals. Finally, the *non-emotional* cluster was characterized by the lowest scores in the mood-related sentences. In general, the statements which received higher punctuations related with F&C habits during the confinement period were: "I cook every day", "Breakfast/lunch/dinner is one of the most important moments of the day", "I choose my foods depending on the enjoyable they are for me", and "I spend more time cooking". Gender differences were significant just for 10 of the F&C items, highlighting that some men reported different attitudes related to cooking: "a potential hobby", *vs* "I do not collaborate in the task of cooking", but being more involved in the groceries task than usual.

Responses of the F&C habits question allowed identifying 3 different consumers' clusters (Fig. 2) (n_a = 172; n_b = 264; n_c = 164). Statements related with cooking engagement (e.g.: Q3, Q9, Q32; codes of the statements in Table 1) received significantly higher punctuations for respondents of clusters "a" and "c", and were less valued by those belonging to cluster "b", who scored the statements such as "I do not collaborate in the task of cooking" and "Lunch time is more duty than pleasure for me" with significantly higher values than the other clusters. Cluster "b" could be considered a *low-cooking-engagement* group. Clusters "a" and "c" were characterized by having higher food and cooking involvement, but a remarkable different attitude regarding health habits: cluster "a" highlighted by choosing foods because of the healthy they were (Q10, Q28), going to neighborhood stores just once per week (Q22, Q23), and avoiding unhealthy attitudes such as ultra-processed foods consumption. On the contrary, cluster "c" was characterized by having unhealthier attitudes, maybe due to the lower emotional mood of respondents belonging to this cluster, who reported that the way they ate was affected by this low mood (Q19). Consumers of cluster "c" scored significantly higher statements related to: snacking, increasing ultra-processed foods consumption, eating more and with a higher frequency, and feeling hungrier than usual. Dallman (2010) described that eating highly palatable foods appeared to decrease stress levels. Cluster "c", characterized by reporting a "lower mood that usual", probably chose comfort and palatable foods (e.g.: snacks, ultra-processed foods) to reduce the level of a disquiet emotional state. Because of the different health-related attitudes, cluster "a" was considered a *health concerned* group, and cluster "c" the most emotional but *health-disregarded* group. Different authors (e.g.: Torres and Nowson, 2007) have discussed the effect of different stressors over consumers' eating behavior. Two main food-related behaviors were identified under stress situations, undereating and overeating attitudes which could be linked to the clusters identified in the present study.

Table 2 shows some of the different habits that respondents considered would maintain after the confinement situation. Over 20% of respondents reported an intention to keep on sporting and cooking, and over 15% to keep different "healthy" eating habits, but without mentioning which kind of habit. Some of the more frequently mentioned food related habits to maintain were: baking, eating more fruits and vegetables, and planning groceries/meals. These "intention list" could be considered an opportunity niche to change future habits, and public health strategies could be designed considering these consumer attitudes. It is important to promote the healthier initiatives among population, e.g.: developing educational programs, for assisting population in discomfort/confinement situations.

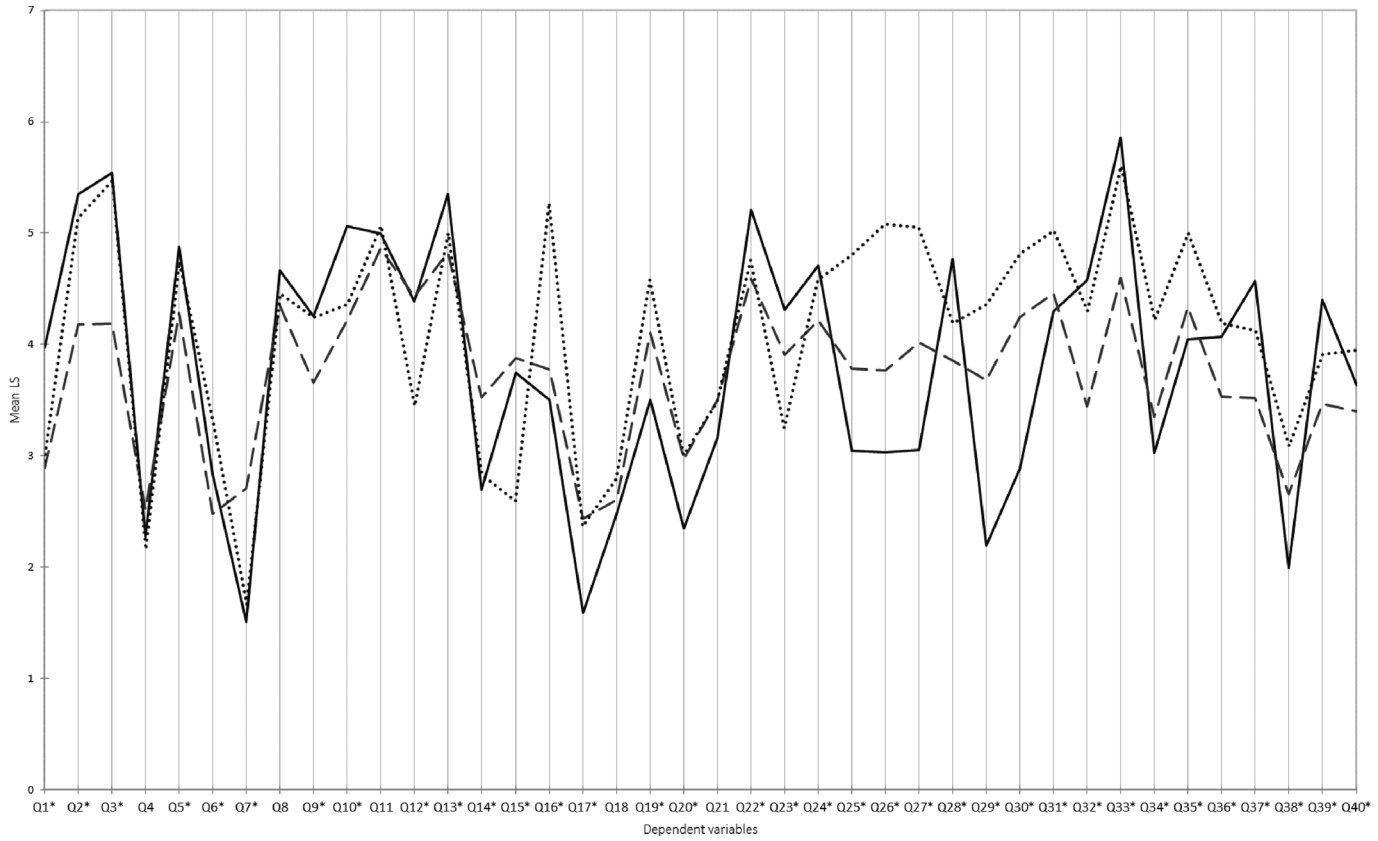

Fig. 2. Mean of the scores for the different statements/items of the F&C question by F&C cluster. Legend. Codes of the different items in Table 1. Each one of the items with (*) was scored significantly different by the 3 respondents' clusters ($p < 0.05$).

Table 2
Some of the acquired habits that respondents reported would keep after confinement.

Concept	Respondents %
Sport	23.0
Cooking	22.8
Healthy habits	15.8
None	12.8
Reading	9.3
Baking	8.5
Fruit/vegetables consumption	8.5
Planning groceries/meals	7.7

Conclusions

Results of the present study showed how different food attitudes were present in Spanish homes during the confinement period, some of them related with low emotional states and maybe the less-healthy food habits, and others focusing on trying to maintain healthier habits. These results should be considered an example of Spanish consumer behavior in discomfort situations, useful for developing personalized strategies/services for the different clusters, encouraging the healthiest and most cook-engaging attitudes among population. It would be interesting conducting similar studies in different cultures, identifying different attitudes and learning from other countries' best practices. Further research could be conducted to validate the F&C questionnaire, and to better understand the effect that stress/comfort situations exert in other cultures' eating behavior.

Credit author statement

Laura Vázquez-Araújo, on behalf of the authors of the manuscript entitled "Consumer behavior in confinement times: food choice and cooking attitudes in Spain" certifies that all the authors have participated sufficiently in the presented research, including participation in the concept, design, analysis, writing, or revision of the manuscript.

Authorship contributions

Elena Romeo: Investigation, Methodology.
María Mora: Investigation, Data Curation, Formal Analysis.
Laura Vázquez-Araújo: Conceptualization, Project Administration, Writing - Original Draft Preparation, Review and editing.

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.

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