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1 **Contrasts and ambivalences in French parents' experiences regarding changes in eating**
2 **and cooking behaviours during the COVID-19 lockdown.**

3

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5

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11 **ABSTRACT**

12 Using open-ended questions, this study explored parents' experiences regarding changes in
13 their family's food-related behaviours during the first COVID-19 lockdown in France
14 (March-May 2020). Parents (N=498, 72% mothers) of children aged 3-12 years described
15 which food-related changes they (1) perceived as positive during the lockdown, (2) perceived
16 as negative, and (3) would like to maintain after the lockdown. A thematic analysis revealed
17 that parents appreciated the choice of more local, fresh foods, the time to prepare food (home-
18 made dishes, new recipes) and cooking and eating together with the family. In contrast, some
19 parents highlighted a burden imposed by the increased food preparation at home. They also
20 described a higher intake of unhealthy, palatable food (or the temptation to do so), and weight
21 concerns. Parents would like to maintain their choice of local, fresh foods, and to continue
22 spending more time together around food but doubt the feasibility after the lockdown. The
23 results revealed many inter- and intra-individual contrasts in parents' answers. An ambivalent
24 attitude toward food pleasure was demonstrated: the sensory/commensal pleasure of eating
25 versus the concerns about an increased intake of pleasurable food. Additionally, gender
26 differences were observed: mothers perceived the preparation of additional meals, for
27 example, more often as a burden than fathers. This study revealed intimate perceptions of the
28 impact of the lockdown on eating habits in families. They give insight into possible
29 facilitators and barriers (e.g., time) for the adoption of recommended eating and cooking
30 behaviours in families, beyond the pandemic.

31

32 **Keywords:** COVID-19, qualitative research, families, eating behaviors, **gender differences,**
33 emotions

34

35 **1 Introduction**

36 In 2020, the highly contagious coronavirus SARS-CoV-2, also known as COVID-19, has
37 induced a pandemic. Many countries took measures to avoid the spread of this virus among
38 their inhabitants and to avoid a collapse of hospitals. In France, a first lockdown was imposed
39 from March until May 2020, with a profound impact on people's habits. Schools, non-food
40 stores and leisure centres were closed, working from home was enforced except for those with
41 essential jobs (e.g., in hospitals, food shops), and leaving your home was only allowed for a
42 limited number of predetermined reasons (e.g., grocery shopping, medical visits, etc.).

43 Since both adults and children were enforced to take most of their meals at home during
44 the lockdown, this study wanted to explore how this impacted families' eating, feeding,
45 cooking and food shopping behaviours. The study setup was twofold: there was a quantitative
46 part aiming to map the changes in families' food-related habits (see Philippe, Chabanet,
47 Issanchou, Monnery-Patris, 2021), and a qualitative part aiming to explore how parents
48 experienced these changes. The current article focusses on this second, qualitative part of the
49 study.

50 Eating behaviours consist mainly of habits, *i.e.*, automatic associations between specific
51 context cues and responses, which are hard to change (Wood & Runger, 2016). Changes in
52 the environment, such as induced by the COVID-19 pandemic, could cause changes in
53 people's habits as they have to engage in a new non-automatic process of decision making
54 (Verplanken & Wood, 2006). Qualitative data could provide insight into the drivers and
55 barriers for certain changes and into the perceived impact of these changes on families, even
56 beyond the scope of COVID-19. They could help us to gain insight into the factors that could
57 be useful to consider when promoting healthy eating and feeding behaviours in families. A
58 recent systematic review (Wolstenholme, Kelly, Hennessy, Heary, 2020) highlighted the
59 added-value of a qualitative approach for targeting families' experiences, perceptions and
60 emotions regarding children's eating behaviours.

61 Moreover, it is well described in the literature how emotional factors and the family
62 mealtime atmosphere can impact parents' and children's eating behaviours. For example,
63 experiencing stress or negative emotions can make people overeat and reach for "comfort
64 foods", rich in sugar and calories (Evers, Dingemans, Junghans, & Boevé, 2018; Michels et
65 al., 2012; Rodríguez-Martín & Meule, 2015). Hughes and Shewchuk (2012) have observed a
66 negative relationship between positive parent emotions and problems in feeding children fruit
67 and vegetables. Berge et al. (2014) have shown that positive food-related family dynamics at
68 family meals were associated with a reduced risk of childhood overweight. It is therefore
69 interesting to study how parents experienced the COVID-19 lockdown in France and how this
70 was related to changes in their families' eating behaviours.

71 Therefore, the present qualitative study aimed to explore which food-related changes
72 parents perceived as positive during the lockdown (1), which changes they perceived as
73 negative (2), and which changes they would like to maintain after the lockdown (3), by using
74 open-ended questions. To our knowledge, no data have been published yet on parents'
75 personal experiences and emotions related to changes in their families' eating and feeding

76 habits during the lockdown. They could make a valuable contribution to the COVID-19
77 literature on changes in the food domain that is currently dominated by quantitative studies.

78 In addition, at the start of the pandemic, some studies (e.g. Alon, Doepke, Olmstead-
79 Rumsey, Tertilt, 2020 (USA); Andrew et al., 2020 (England); Carlson, Petts, & Pepin, 2020
80 (USA)) and media coverage (e.g., Ascher, 2020 (England)) discussing the impact of the
81 COVID-19 measures, drew the attention to gender inequalities and divisions within families.
82 They pointed out that women took up more childcare and household work than men during
83 the pandemic, and showed a profound impact on women's work-life balance. **The COVID-19
84 pandemic also had a major impact on the work life of many adults and possibly also their
85 financial situation (ILO, 2021).** Therefore, the secondary goal of the present study was to
86 compare the experiences of **parents** regarding food-related changes during the lockdown
87 **based on their sex (mothers vs. fathers), their work status during the lockdown (working
88 outside the house vs. working from home vs. at home, not working), and their perceived
89 financial situation (comfortable vs. difficult).**

90 **2 Method**

91 **2.1 Study design**

92 As mentioned previously, this study is part of a mixed-method research project, including a
93 quantitative and qualitative part. An online survey with closed-ended questions (quantitative
94 part) and open-ended questions (qualitative part) was used to obtain data. The quantitative
95 part of the survey aimed to describe possible changes in French families' eating behaviours
96 and feeding practices during the COVID-19 lockdown compared to the period before the
97 lockdown. The results of this part are described in a different publication (Philippe et al.,
98 2021).

99 The qualitative part of the survey aimed to explore parents' experiences regarding changes in
100 their family's eating and feeding behaviours and is the object of the current publication. Three
101 open-ended questions were used to obtain data for this qualitative part. For the first question,
102 parents were asked to describe changes related to their own or their child's/ family's eating
103 that they perceived as positive during the period of the lockdown, compared to the period
104 before the lockdown. For the second question, they were asked to describe changes they
105 perceived as negative. For the third question, they were asked to describe which changes they
106 would like to maintain after the lockdown.

107 **2.2 Recruitment and ethics**

108 Parents were recruited online via an agency disposing of a large panel of French respondents.
109 They were eligible to participate if they had at least one child aged 3-12 years living with
110 them during the lockdown. This age range was chosen because these children are still highly
111 dependent on their caregivers for food intake. The online survey was anonymous and parents
112 were asked to tick a box indicating that they understood and accepted the study information
113 and data protection policy. Participation was possible from the 30th of April until the 10th of
114 May 2020 (the end of the first strict lockdown in France) and a compensation, a voucher of
115 six euros, was offered after survey completion. An ethical approval (n°20-686) was obtained
116 for this study from the Institutional Review Board (IRB00003888, IORG0003254,
117 FWA00005831) of the French Institute of Medical Research and Health, and a study
118 registration was done by the data protection service involved (CNRS).

119 **2.3 Data analysis**

120 The responses of the parents were analysed inductively with the use of the qualitative data
121 analysis software NVivo in the original language of the survey (French). A thematic analysis
122 was conducted following the steps proposed by Braun and Clarke (2006): (1) familiarization
123 with the data, (2) initial coding generation with a data-led approach, (3) searching for themes
124 based on initial coding, (4) theme definition and labelling. Steps 1-3 were performed
125 manually and independently by two authors on the first 250 answers (50%) of each of the
126 three questions. After comparison and obtaining consensus on the generated themes and initial
127 coding, the first author coded all answers in NVivo, and the coding was checked by the other
128 authors. A separate analysis was performed for each question. All three authors were involved
129 in step 4.

130 As the sample size was quite large, some steps proposed by Feng and Behar-Horenstein
131 (2019) were followed in parallel to those of Braun and Clarke (2006) in order to optimize the
132 analyses by using different NVivo utilities. A word frequency analysis was performed for
133 each of the three open-ended questions, using a frequency query with words with stemmed
134 variants (e.g., “cuisine”, “cuisiner”, “cuisinons”, “cuisiné”), in order to identify patterns more
135 easily (Jackson & Trochim, 2002) and to limit bias regarding overweighing (Onwuegbuzie, &
136 Leech, 2007). However, as this approach also has the reputation to decontextualize words, this
137 analysis was only performed as a check for the search of themes. After text coding all
138 responses, matrix coding was performed for each question to allow comparison between
139 **different groups of parents. Three comparisons were performed; one based on parents' sex**

140 (mothers (n=357) vs. fathers (n=141)), one based on parents' work status (working outside the
141 house (n=103) vs. working from home (n=175) vs. at home, not working (n=175)), and one
142 based on parents' perceived financial situation (comfortable (n=239) vs. difficult (n=254)).
143 For this last comparison, the group of parents with a more comfortable situation included
144 those parents who indicated "It's OK" or "At ease" when asked about their financial situation.
145 The group with a difficult situation included those parents who indicated "Should be careful",
146 "You get by but only just" or "You can't make ends meet without going into debt". Parents
147 who indicated "I do not want to answer" (n=5) were not included in the comparison. For the
148 comparison based on work status, we also did not include parents who indicated that they had
149 another work status (n=45), since this group was so diverse. The matrixes show the number of
150 coded responses and verbatims for each theme and subtheme for each group separately. Chi-
151 squared tests were performed to identify significant differences. The verbatims presented in
152 this article were translated from French to English by an English linguist who lives in France
153 and knows the French food culture. The original French verbatims with their translation are
154 presented in Appendix 1.

155 **3 Results**

156 A total of 498 parents (72% mothers) with at least one child aged 3-12 years answered the
157 open-ended questions. All departments in France were represented except Corsica and the
158 oversea territories, with most parents living in Île-de France (18.7%), Auvergne-Rhône-Alpes
159 (13.7%), Grand Est (10.6%) and Hauts-de-France (10.4%). Details about all other parental
160 characteristics are presented in Table 1.

161 For each of the three open-ended questions, several themes and subthemes emerged from the
162 thematic analysis. Overall, themes and subthemes were similar for the three different open-
163 ended questions, meaning that parents described both positive and negative experiences
164 regarding these themes. Table 2 presents the different themes and subthemes for each of the
165 questions and the number and percentage of parents who described content that was coded
166 into these (sub)themes.

Table 1.
Parents' characteristics.

Characteristic	Parents (N = 498)
Sex (female/male) [%]	71.7 / 28.3
Age [%]	
25-34 years	30.5
35-49 years	67.9
50-64 years	1.6
BMI [%]	
Underweight (< 18.5 kg/m ²)	3.4
Normal weight (18.5-25 kg/m ²)	51.6
Overweight (25-30 kg/m ²)	29.7
Obesity (≥ 30 kg/m ²)	15.3
Relationship status (couple/ single parent) [%]	89.2 / 10.8
Number of children in household, mean (SD)	2.1 (0.9)
Level of education [%]	
Low (secondary studies degree or lower)	33.5
Middle (higher technology degree or first cycle of higher education)	26.7
High (university degree)	39.8
Type of housing [%]	
Apartment without a balcony or a terrace	6.8
Apartment with a balcony or terrace	20.7
House without a garden	1.0
House with a garden	71.5
Work status before the lockdown [%]	
Working (part-time or full-time)	85.1
Unemployed, job seeker	4.8
Other (e.g., student, parental leave, parent at home)	11.0
Work status during the lockdown [%]	
Working outside the house (part-time or full-time)	20.7
Working from home (part-time or full-time)	35.1
At home, not working	35.1
Other (e.g., student)	9.0
Perception of financial situation [%]	
You can't make ends meet without going into debt	3.2
You get by but only just	12.9
Should be careful	34.9
It's OK	36.3
At ease	11.6
I do not want to answer	1.0

Note. Table retrieved from Philippe et al., 2021.

170
171

Table 2. Number and percentage of parents (total N = 498) describing content belonging to themes and subthemes for each of the three open-ended questions.

Theme and subtheme	Positive experiences		Negative experiences		Aspects to maintain	
	N	%	N	%	N	%
Nothing/ No change	53	10.6	129	25.9	98	19.7
Time	110	22.1	11	2.2	45	9.0
Food choice						
Sustainable foods	58	11.6	4	0.8	75	15.1
Healthy/ fresh foods	106	21.3	17	3.4	97	19.5
Unhealthy/ palatable foods	23	4.6	111	22.3	11	2.2
Quality foods and meals	18	3.6	1	0.2	11	2.2
Meat and fish	5	1.0	3	0.6	5	1.0
Alcohol	0	0.0	7	1.4	0	0.0
Bread	14	2.8	4	0.8	5	1.0
Nutrition, diversity, balance	33	6.6	19	3.8	24	4.8
Foods easy to store for longer	0	0.0	2	0.4	2	0.4
Food preparation						
Sociability (cook together)	116	23.3	1	0.2	73	14.7
Home-made dishes	103	20.7	18	3.6	87	17.5
Elaborated dishes	16	3.2	3	0.6	5	1.0
Recipes	55	11.0	31	6.2	30	6.0
Quickly prepared dishes	0	0.0	5	1.0	0	0.0
Unspecified ^a	46	9.2	0	0.0	46	9.2
Commensality (eat together, sharing)	52	10.4	3	0.6	38	7.6
Emotions/ meal atmosphere	28	5.6	30	6.0	0	0.0
Education, transmission	22	4.4	0	0.0	4	0.8
Control intake child	4	0.8	0	0.0	0	0.0
Food acceptance/ rejection child	13	2.6	1	0.2	5	1.0
Frequency/ quantity						
Frequency meals	6	1.2	64	12.9	6	1.2
Quantity consumed	8	1.6	41	8.2	5	1.0
Desire, temptation to eat/ appetite	1	0.2	48	9.6	13	2.6
Food pleasure	32	6.4	7	1.4	11	2.2
Health	17	3.4	4	0.8	16	3.2
Weight, calories, lack of sport	5	1.0	36	7.2	0	0.0
Meal planning	10	2.0	0	0.0	10	2.0
Meal timing	1	0.2	16	3.2	7	1.4
Meal location	0	0.0	1	0.2	3	0.6
Food shopping	13	2.6	37	7.4	10	2.0
Finances, prices	3	0.6	35	7.0	4	0.8
Food waste	4	0.8	0	0.0	5	1.0
Decorations	1	0.2	0	0.0	1	0.2
Cleaning/ Tidying	2	0.4	2	0.4	0	0.0
Easter	0	0.0	5	1.0	0	0.0

^aAspects of food preparation which were unspecified (e.g., "I cook more").

Note: all the (sub)themes evoked by more than 20 parents (4% of our sample) are in bold.

172 **3.1 Positive food-related experiences during the lockdown**

173 Fifty-three parents reported either no change in their family's eating behaviours or no positive
 174 changes. The other parents (almost 90%) described a multitude of changes they perceived as
 175 positive during the lockdown. The most frequently mentioned themes were related to time,
 176 food choice, food preparation, sociability and commensality, food pleasure, emotions/ meal
 177 atmosphere, and education/ transmission.

178 *Food choice and food preparation*

179 Parents expressed their appreciation for their choices of more fresh, seasonal, and local foods.
180 This was often related to an increased choice of fruits and vegetables. Some parents also
181 mentioned that the lockdown gave them the opportunity to pay more attention to the
182 nutritional value of foods and meals, and stimulated them to provide a diversity of foods and
183 balanced meals.

184 *“Much more fresh seasonal fruit and vegetables.”*

185 *“I have more time on my hands to prepare more balanced dishes.”*

186 Different aspects related to food preparation were perceived as positive during the
187 lockdown. Parents described increases in home-made dishes and meals (e.g., desserts, mid-
188 afternoon snacks “goûters”, main meals) and in the preparation of elaborated dishes that are
189 time-consuming. Some parents also expressed the joy of trying new recipes, stimulating
190 variety in their meals or trying out new flavours. The sources of these new recipes were not
191 always revealed, but if revealed, television programs were a popular source of inspiration.

192 *“I cook a few more new recipes to vary everyone’s enjoyment.”*

193 *“We prepare more elaborate recipes thanks to a TV program on M6 (a tv-
194 channel in France).”*

195 *Sociability and commensality*

196 Cooking and eating together with the family was appreciated to a high extent. Not only were
197 there more occasions to do so, but if it took place, there was also more time to eat at a calm
198 pace. This also had consequences for the meal atmosphere at home and on children’s eating
199 behaviours. Some parents described that children had more interest in and accepted certain
200 foods more easily when they had helped to prepare them.

201 *“We eat all our meals together and have more time to prepare and enjoy them.”*

202 *“The meal is eaten in a calm atmosphere, less tense. The children eat more
203 easily healthier foods than they used to.”*

204 Cooking with the child was not only a pleasurable activity: for some parents, it was also
205 the occasion to educate their children about food, to pass on certain cooking skills and values
206 around food, and to make them taste new flavours.

207 *“Through preparing food as a family, I teach my child how to cook, how to
208 bake. I explain to him that vegetables are good for his health that he will be big
209 and strong by eating them.”*

210 *"I take time to try out new recipes. My two children participate more willingly*
211 *to help me, they are proud of doing so, eat more easily when they have*
212 *participated. If the recipe doesn't work out, they are also more motivated to try*
213 *again. We all take time together; it allows me to try and pass on a bit of know-*
214 *how and share family anecdotes during the conversation."*

215 *Food pleasure*

216 The joy of preparing and eating pleasurable food was very present in parents' answers.
217 Parents tried their best to prepare food the family loves, enjoyed the process of planning and
218 preparing these meals, and to taste them together.

219 *"Food has become more pleasurable, so it's positive."*

220 *"I take more time to cook and please my family, I buy more locally and choose*
221 *things that we fancy."*

222 *"I prepare a lot more home-made food and I try to vary the recipes and to*
223 *please my family. I cook a lot more pastries with my son, who loves doing that.*
224 *And my husband is really happy."*

225 *Time*

226 The notion of time was present in a majority of parents' answers. Time was cited as a factor
227 that gave families the opportunity to plan meals and moments together, to prepare meals that
228 are normally time-consuming, and to spend time together around food.

229 *"Time has stopped a little and we live at a slower pace, we want to treat*
230 *ourselves and pay more attention to our food than before. We prepare a lot*
231 *more home-made food. We find more time to cook, even if we continue to work*
232 *at the office, because we go out less."*

233 *"Having fewer time constraints (no school, no telecommuting) we have time to*
234 *cook as a family and choose exactly what we want to eat, so automatically it is*
235 *healthier and more varied."*

236 **3.2 Negative food-related experiences during the lockdown**

237 Even though a high number of parents (n=129) reported either no change during the lockdown
238 or no negative change, the majority of parents (74%) described a diversity of aspects they
239 perceived as unpleasant or negative.

240 *Choice of palatable foods*

241 In contrast to the choice of more fresh, local products (e.g., fruits and vegetables), which
242 parents perceived as positive, parents also described an increased choice of palatable, energy-
243 dense foods and foods high in sugar. Some of these foods and dishes were bought (e.g.,
244 candy, chocolate, ice cream), others were prepared at home (e.g., home-made cakes).

245 *"Home-made food is maybe much more fatty or calorific."*

246 *"More frequent treat yourself buys (ice cream, cakes...)."*

247 *"Tendency to make a lot of cakes and therefore snack more generously."*

248 *Quantity of (unhealthy) foods*

249 In addition to an increased choice for palatable foods, many parents described an increased
250 consumption or even an « overconsumption » of these foods during the lockdown. Both an
251 increase in frequency of eating was described as increased portion sizes.

252 *"We certainly snack more between meals."*

253 *"All the same, we do eat more than before."*

254 Some parents did not describe an actual increase of intake, but described a struggle with
255 the temptation to eat and with sensations of hunger. From their answers, it is unclear whether
256 they have also given in to the described temptations or not.

257 *"We are more tempted to snack."*

258 Sometimes, parents mentioned reasons (or excuses) for their changed eating behaviours.
259 Emotions, such as stress, anxiety, and tiredness were frequently mentioned: there was a need
260 for food to cope with the emotional challenges that arose during the lockdown. Some parents
261 also explained that simply taking more time to eat stimulated eating bigger quantities, or that
262 more time at home and boredom induced more snacking or stimulated the preparation of more
263 energy-dense, sugary food.

264 *"Personally, stress made me snack more (feeling hungry) and so I put on
265 weight."*

266 *"More junk food to compensate for stress."*

267 *"More calorific meals, more need to prepare things that make you feel good."*

268 *"We eat more fatty, comforting food to make the lockdown seem less harsh for
269 the children."*

270 *"My daughter is bored so she wants to snack between meals from time to time."*

271 *"More time at the table at lunchtime, bigger meals so a little weight gain...."*

272 *"Being at home all day so we tend to snack more and eat sweets, biscuits..."*

273 *"Well, who says more time says more baking, so more sweet things."*

274 Even though most parents described an increased intake or appetite, some parents also
275 described a lack of appetite and weight loss which they attributed to the stress and emotions
276 accompanying the lockdown.

277 *"Me on the other hand, I don't eat much and normally I am really epicurean. I*
278 *lost 7 kilos in 2 months, I am in good health but stress always causes me to lose*
279 *my appetite, in fact I am afraid for my loved ones, I am also angry that I am*
280 *going through this and that my 4 year old son is going through it too, I am a bit*
281 *depressed and as a result I don't eat enough, I am a rather nervous person so*
282 *my stomach has knotted up and I eat little or very little."*

283 *Weight concerns*

284 The increased intake of foods and a lack of activity during the lockdown were associated with
285 weight gains in certain families, or with concerns about possible weight gains. Some parents
286 reported this weight gain or related concerns explicitly:

287 *"Feel hungrier, significant weight gain because of stress."*

288 *"I bake a lot more, which makes everyone happy, but everyone is putting on*
289 *weight."*

290 Others referred to it in a more indirect way; for example, by describing a lack of physical
291 activity during the lockdown and by comparing calorie intake during versus before the
292 lockdown. Some parents also described a combination of these factors.

293 *"We tend to eat as much as we did before the lockdown, which is a problem*
294 *because we have less physical activity."*

295 *"Meals have more calories than before and we don't exercise."*

296 As cited previously, there were also some parents who lost appetite during the lockdown
297 and reported weight loss.

298 *Practical inconveniences*

299 Beside negative emotions linked to increased intake and possible weight gains, parents also
300 described a number of practical inconveniences. Taking more meals at home meant preparing
301 more meals and this was perceived as a burden by some parents. Especially the time invested

302 in meal preparation and the lack of inspiration to vary meals everyday was challenging and
303 provoked negative emotions and stress.

304 *"We have to cook every day and at every meal without exception. You need to*
305 *find ideas to vary your meals and adapt the amount of shopping you do because*
306 *you have to buy more than usual. Shopping is also more expensive. More meals*
307 *to prepare, which means we have to make the same dishes over and over again*
308 *because we run out of ideas."*

309 According to parents, the lockdown was also accompanied by a changed offer in food
310 stores and higher costs. They also had to put more effort in planning their food shopping as it
311 was recommended to limit trips outside the house. Different reasons were provided for an
312 increase in food costs: some families described increased costs due to increased food
313 purchases during the lockdown, others described that a changed offer in food stores forced
314 them to buy more expensive food brands. Some families also decided or were forced to do
315 their food purchases in different food stores with different prices (e.g., stores closer to home).

316 *"It is more difficult to find certain products."*

317 *"More shopping to do and with an increased food budget. More difficult to do*
318 *the shopping because I know I'm not going to go back straight away... so you*
319 *mustn't forget anything."*

320 *"No possibility to go to my usual producers so as to reduce travel."*

321 **3.3 Aspects to maintain after the lockdown**

322 Ninety-eight parents reported no changes or no wish to maintain changes that occurred during
323 the lockdown. In parallel to the positive experiences, the remaining parents (80%) reported
324 the wish to maintain their choice of more fresh, seasonal, and local foods, to maintain the
325 preparation of home-made, elaborated meals and to take more time to cook and eat together
326 with the family.

327 *"I want to continue using seasonal fruit and vegetables. The pleasure of eating*
328 *them and getting my family to eat more thanks to all the on-line recipes you can*
329 *find."*

330 *"Continue to support local producers and allow time to go to the market with*
331 *my children so that they can discover even more things and be even more eager*
332 *about food."*

333 Parents expressed a wish to maintain certain changes after the lockdown, but some also
334 questioned the feasibility. They were not sure if they would be able to do so when they return
335 to their habits from before the lockdown, often due to an anticipated lack of time. This was
336 not always indicated literally by parents, but could often be deduced from the use of the
337 conditional tense of the verbs. Some parents already suggested some solutions to overcome
338 these challenges; they, for example, want to try to invest more effort in meal planning and to
339 prepare bigger quantities of home-made dishes and freeze them for later.

340 *"We would like to maintain the quality of our meals however to prepare this*
341 *takes up time..."*

342 *"Prepare all the meals as a family but with work commitments it's a bit*
343 *complicated."*

344 *"Eat more vegetables, shop less regularly but in larger quantities and*
345 *organized for the week."*

346 **3.4 The ambivalent relation with food pleasure**

347 The answers also revealed an ambivalent relation with food pleasure among some parents.
348 When answering the question about positive food-related experiences during the lockdown,
349 many parents mentioned different aspects of food pleasure. Some parents referred to pleasure
350 related to the types of food: e.g., the joy of eating "pleasurable food" or preparing foods that
351 bring joy to the family, while other parents referred to the social aspects of food pleasure: the
352 joy of preparing foods together, eating together, sharing moments around food.

353 In contrast, when answering the question about negative experiences and referring to food
354 pleasure, the focus was predominantly on the types of food consumed: "pleasurable foods"
355 and often preceded by an indication of quantity: e.g., "more", "much more", "too many"
356 pleasurable food.

357 In some parents, the ambivalent relation with food pleasure was visible within a single
358 verbatim, and was usually expressed as an answer to the question concerning negative
359 experiences (-). Here, parents directly contrasted positive and negative sides of increased food
360 pleasure during the lockdown.

361 (-): *"I'm baking a lot more, which makes everyone happy, but everyone is*
362 *putting on weight."*

363 (-): *"We indulge ourselves more, so we have a dessert after every lunch in*
364 *addition to the fruit! Often, it's an ice-cream that we eat outdoors in the sun, so*
365 *of course it's more sugar, but at the same time it's good for morale!"*

366 (-): *"At the weekend we treat ourselves and have an aperitif at lunchtime, so*
367 *soda and crisps twice a week."*

368 For other parents, the ambivalent relation was only uncovered when looking at the answers
369 to the different questions on an intra-individual level. These parents reported positive and
370 negative sides of food pleasure as a response to different questions ((+): positive experiences,
371 (-): negative experiences, (M): changes to maintain).

372 (+): *"More convivial meals, pleasure of cooking with the children and all of this*
373 *will create great memories." (-): "Weight gain, too much comfort food."*

374 (+): *"More time, more pleasure, more diversity, new recipes (especially from*
375 *Cyril Lignac's tv programme (a French tv-cook))." (-): "We are getting fatter."*

376 (+): *"I take more time to cook and please my family, I buy more locally and*
377 *things that tempt us." (-): "We eat more however than before."*

378 (+): *"I have cooked more home-made mid-afternoon snacks, before I only*
379 *bought them." (-): "We have eaten a lot fatter, a lot more pleasure foods, us*
380 *adults have taken to mid-afternoon snacking too." (M): "Making more home-*
381 *made mid-afternoon snacks."*

382 In this last verbatim, the mother appreciated preparing home-made mid-afternoon snacks
383 ("goûter") and she would like to continue doing so, but she also thought it was a negative
384 habit to take a mid-afternoon snack as an adult. This shows that she was well aware of French
385 health recommendations that discourage snacking in adults, but not the mid-afternoon snack
386 in children. She knew that her snacking behaviour during the lockdown (which she seems to
387 appreciate) was not perfectly in line with the recommendations.

388 There are also answers in which parents classify the consumption of certain types of food
389 as "negative", in line with social norms and health recommendations, but at the same time
390 present excuses or reasons to exonerate their behaviour. They state for example that the
391 increased intake was "reasonable" or that overall, they have "a varied diet". Easter was also a
392 popular argument, as this is a period in France when it is socially acceptable to eat chocolate
393 and sweets. Some parents even seemed to present eating chocolate during Easter as a cultural
394 necessity.

395 *"No negative change in our eating habits, or maybe the desire to eat a little bit*
396 *more than before the lockdown but still reasonably."*

397 *"Due to eating home-made cakes, I don't know the sugar and fat content, but my*
398 *daughter has a varied diet..."*

399 *"A few more sweets but it was Easter-time."*

400 *"We probably eat a bit richer, especially in terms of pastries. And maybe some*
401 *more sweet snacks. But hey, you have to eat the Easter chocolates."*

402 **3.5 Differences between groups of parents**

403 **3.5.1 Fathers versus mothers**

404 The results of the matrix coding, allowing comparison between fathers' and mothers'
405 responses, revealed differences for each of the three questions (Table 3).

406 Regarding positive experiences, proportionally more mothers reported appreciating aspects
407 related to food preparation during the lockdown: they enjoyed having more time to prepare
408 home-made meals and to try out new recipes.

409 Regarding negative experiences, proportionally more fathers reported either no changes
410 during the lockdown or no changes that were perceived as negative. Compared to fathers,
411 mothers mentioned more often that they perceived aspects related to food preparation
412 negatively during the lockdown: for them, it was more often a burden to prepare an increased
413 number of home-made meals and to come up with new recipes and vary the meals, especially
414 for those mothers who were still working during the lockdown.

415 *"Working in a hospital, a bit too worn out to cook."*

416 *"I spend a lot of time in the kitchen!!"*

417 Furthermore, it were also dominantly mothers who struggled with an increased desire to
418 eat, the temptation to eat, and with sensations of hunger during the lockdown or who reported
419 this temptation for their child or the family in general.

420 *"Having the urge to eat all the time."*

421 *"He tends to snack a bit more because he's at home."*

422 Regarding changes to maintain after the lockdown, proportionally more fathers than
423 mothers reported that they would like to maintain the increased choice of sustainable foods
424 (local, seasonal) and of qualitative foods and meals. Compared to fathers, more mothers

425 reported that they would like to maintain the positive social aspects (eating together, cooking
426 together) and having more time for cooking and for trying new recipes.

Table 3. Percentages of mothers (M) and percentages of fathers (F) describing content belonging to themes and subthemes for each of the three open-ended questions. Percentages of mothers are calculated in proportion to total number of mothers (N=357), and percentages of fathers are calculated in proportion to total number of fathers (N=141).

Theme and subtheme	Positive experiences		Negative experiences		Aspects to maintain				
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)			
Nothing/ No change	10.80	10.50	21.65	***	37.06	19.94	19.58		
Time	22.22	22.38	2.85		0.70	9.40	8.39		
Food choice									
Sustainable foods	11.39	12.59	0.57		1.40	13.39	* 19.58		
Healthy/ fresh foods	21.37	21.68	3.42		3.50	18.23	23.08		
Unhealthy/ palatable foods	4.84	4.20	23.36		20.28	2.28	2.10		
Quality foods and meals	2.84	5.59	0		0.70	1.42	* 4.20		
Meat and fish	0.57	2.10	0.28		1.40	0.57	2.10		
Alcohol	0	0	0.57		2.10	0	0		
Bread	3.10	2.10	0.85		0.70	0.85	1.40		
Nutrition, diversity, balance	6.26	7.69	3.70		4.20	4.56	5.60		
Foods easy to store for longer	0	0	0.28		0.70	0.28	0.70		
Food preparation									
Sociability (cook together)	24.50	21.00	0.28		0	16.52	* 10.49		
Homemade dishes	23.08	*	15.38		4.48	**	0.70	17.95	16.78
Elaborated dishes	3.11		3.50		0.85		0	0.85	1.40
Recipes	13.68	**	5.59		7.69	**	2.80	7.12	3.50
Quickly prepared dishes	0		0		1.42		0	0	0
Unspecified ^a	9.11		9.79		4.56	*	1.40	11.40	* 4.20
Commensality (eat together, sharing)	11.11	9.09	0.28		0	9.40	**	3.50	
Emotions/ meal atmosphere	5.70	5.59	6.55		4.20	2.56		2.80	
Education, transmission	5.13	2.80	0		0	0.85		0.70	
Control intake child	0.85	0.70	0		0	0		0	
Food acceptance/ rejection child	3.10	1.40	0		0.70	1.14		0.70	
Frequency/ quantity									
Frequency meals	0.85	2.10	13.11		12.59	1.14		1.40	
Quantity consumed	1.13	2.80	8.83		7.70	0.85		1.40	
Desire, temptation to eat/ appetite	0	0	12.82	***	2.10	0		0	
Food pleasure	5.98	7.69	1.14		2.10	2.28		2.10	
Health	3.42	3.50	0.85		0.70	3.13		3.50	
Weight, calories, lack of sport	1.13	0.70	6.84		8.39	0		0	
Meal planning	1.99	2.10	0		0	0		0	
Meal timing	0.28	0	3.99		1.40	1.14		2.10	
Meal location	0	0	0		0.70	0.85		0	
Food shopping	2.28	3.50	7.98		6.30	1.99		2.10	
Finances, prices	0.28	1.40	7.41		6.30	0.28		2.10	
Food waste	1.13	0	0		0	0.85		1.40	
Decorations	0.28	0	0		0	0.28		0	
Cleaning/ Tidying	0.28	0.70	0.28		0.70	0		0	
Easter	0	0	1.14		0.70	0		0	

^aAspects of food preparation which were unspecified (e.g., "I cook more").

Note. Percentages that present gender differences are in bold; significance levels of Chi-squared tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

427 3.5.2 Parents with a different work status

428 Regarding positive experiences, proportionally fewer parents who were at home without
 429 work reported appreciating an increased choice of sustainable foods compared to parents who
 430 worked outside the house and parents who worked from home (6%, 13% and 16%,

431 respectively, $p < 0.05$; see Appendix 2 - Table A). Fewer of these parents who were at home
432 without work also described appreciating the consumption of unhealthy/ palatable foods
433 compared to parents who worked from home (2% and 7%, respectively, $p < 0.1$).
434 Proportionally more parents who worked at home reported appreciating baking own bread
435 than parents who worked outside the house and parents who were at home without work (6%,
436 1% and 1%, respectively, $p < 0.05$).

437 Regarding negative experiences, proportionally more parents working outside the house
438 reported either no changes during the lockdown or no changes that were perceived as negative
439 compared to those parents at home with or without work (35%, 26% and 22%, respectively, p
440 < 0.1).

441 Regarding changes to maintain after the lockdown, proportionally more parents who were
442 at home without work reported that they would like to continue eating together with the
443 family compared to parents who were working outside the house and working from home
444 (12%, 6% and 5%, respectively, $p < 0.05$).

445 3.5.3 *Parents with a comfortable versus difficult perceived financial situation*

446 Regarding positive experiences, proportionally fewer parents with a difficult perceived
447 financial situation discussed increased healthiness during the lockdown compared to parents
448 with a comfortable financial situation (2% and 5%, respectively, $p < 0.1$; see Appendix 2 -
449 Table B).

450 Regarding negative experiences, proportionally more parents with a comfortable financial
451 situation reported either no changes during the lockdown or no changes that were perceived as
452 negative compared to parents with a difficult situation (30% and 22%, respectively, $p < 0.05$).
453 Furthermore, proportionally more parents with a difficult situation described negative
454 experiences with regard to nutrition/diversity/balance (1% and 6%, respectively, $p < 0.05$), the
455 quantity of foods consumed (11% and 6%, respectively, $p < 0.1$), the preparation of meals
456 (5% and 2%, respectively, $p < 0.1$), and finances/prices (9% and 5%, respectively, $p < 0.1$).

457 Regarding changes to maintain after the lockdown, proportionally more parents with a
458 comfortable financial situation reported that they would like to maintain the positive meal
459 atmosphere (4% and 1%, respectively, $p < 0.05$).

460

461 **4 Discussion**

462 The results of this qualitative study provided intimate insight into parents' positive and
463 negative experiences regarding changes in their family's eating and feeding habits during the
464 first COVID-19 lockdown in France. Parents also expressed which changes they would like to
465 maintain after the lockdown.

466 Generally, the thematic analyses revealed changes in eating and feeding habits that are in
467 agreement to those reported in recent quantitative studies and surveys in France and in
468 Europe: for example, an increase in the preparation of home-made food and comfort food,
469 more time spent cooking with children, and an increased choice of sustainable foods (local,
470 seasonal) (e.g., Di Renzo et al., 2020; EIT Food, 2020; L'Observatoire E. Leclerc des
471 nouvelles consommations, 2020; Marty, de Lauzon, Labesse & Nicklaus, 2021; Santé
472 Publique France, 2020). In agreement with other reports (e.g., EIT Food, 2020; Loopstra,
473 2020; Santé Publique France, 2020; Zerbini et al., 2020), some parents in the current study
474 also reported difficulties to purchase certain foods in food stores and higher prices.

475 In addition, the qualitative analyses did not only reveal which food-related changes
476 occurred in families during the lockdown, but also which changes parents perceived as
477 positive or negative and what they would like to maintain. Overall, the results showed that the
478 positive experiences were multifactorial: parent expressed their appreciation for different food
479 choices, increased time for food preparation and social food-related activities (cooking and
480 eating together, sharing). For the negative experiences, the focus was predominantly on the
481 choice for unhealthy, palatable food and on quantitative aspects: food portions, frequency of
482 eating or food shopping outings, prices, weight, etc. What parents liked to maintain was,
483 logically, in line with their positive experiences; the most common themes were food choice,
484 food preparation and spending time together.

485 When taking a transversal look at parents' answers to the different questions, they reveal
486 many contrasts (on inter-individual level) and ambivalences (on intra-individual level).

487 First, there were contrasting inter-individual opinions and experiences regarding the theme
488 "food preparation". For a majority of parents, it was a real joy to have more time during
489 lockdown for preparing home-made meals and for experimenting with new recipes, while
490 other parents perceived the additional time in the kitchen as a burden and reported a lack of
491 cooking inspiration. Here, it is good to keep in mind that in France, children have a four- or
492 five-component lunch at school: a starter (e.g., raw vegetables), a protein dish (e.g., meat,
493 fish, eggs), garnish (vegetables, pulses, potatoes, grain products), a dairy product, and a
494 dessert. Variety, a balanced diet, and adaptation to children's nutritional needs are key

495 concepts for these lunches (GEM-RCN, 2015). For some adults, it is similar at their work
496 place. As this culinary script is strongly embedded in French culture, it is possible that parents
497 experienced pressure to provide a similar script at home during the lockdown, when both
498 children and adults were at home. For some parents, it may have been challenging to match
499 the variety of recipes and nutritional balance at home, which was also expressed by some
500 parents in the current sample.

501 In addition, the comparison of mothers' and fathers' answers showed that it was almost
502 exclusively mothers reporting a perceived burden of the additional meals to prepare during the
503 lockdown. Before the lockdown, women were, on average, already more involved in
504 household and care activities such as food management, than men (Eurostat, 2019). There was
505 some hope that the lockdown would bring more gender equality in household duties, and
506 some studies did report an increase in men's participation in housework and childcare during
507 the lockdown (e.g., Farré, Fawaz, González, & Graves, 2020 (Spain); Mangiavacchi, Piccoli,
508 & Pieroni, 2020 (Italy); Yerkes et al., 2020 (Netherlands)). However, in several countries,
509 women shouldered most of the extra unpaid work at home during the lockdown and reduced
510 their working hours (e.g., Collins, Landivar, Ruppanner, & Scarborough, 2020 (USA); Craig
511 & Churchill, 2020 (Australia); Farré et al., 2020 (Spain)). The COVID-19 pandemic thus
512 appeared to have increased gender inequalities in (paid and) unpaid work, and this was even
513 the case in a country like Iceland which scores well on gender equality indexes (Hjálmsdóttir
514 & Bjarnadóttir, 2020). Mothers in the present study seem to confirm this imbalance in
515 cooking duties. Alternatively, it is also possible that mothers felt a higher pressure to provide
516 a variety of meals and meals of high nutritional standards than fathers, as women generally
517 focus on providing healthy food to the family while men focus more on food pleasure when
518 providing food (Dupuy, 2017).

519 Second, contrasts and ambivalences were observed regarding food pleasure. Many parents
520 highlighted positive aspects of food pleasure during the lockdown, with a focus on the sensory
521 dimension (pleasure from food sensory properties) and the interpersonal dimension of food
522 pleasure (pleasure from interactions with others while cooking or eating and sharing food)
523 (Marty, Chambaron, Nicklaus, Monnery-Patris, 2018). In contrast, many parents also
524 described a higher consumption of "pleasurable food" as negative during the lockdown. There
525 were parents who only reported one side of food pleasure (the positive or the negative side),
526 while other parents reported both sides: either when answering to the different questions, or
527 embedded in one single answer. This seems to indicate that some parents struggled to find a
528 balance between pleasure and "too much" pleasure during the lockdown, and this was related

529 almost exclusively to the choice of palatable food and the amount and frequency of
530 consumption. Even though food pleasure has a central role in the French eating culture
531 (Ducrot et al., 2018), parents seem to know (and have internalized) the guidelines of the
532 French National Nutrition Programme (PNNS, 2019) about healthy eating (e.g., avoid
533 snacking, limit foods high in sugar and fat, limit alcohol, etc.) and realize their (family's)
534 eating behaviour did not fully comply with these guidelines during the lockdown. Some
535 answers seemed to indicate that parents themselves did not perceive their experienced food
536 pleasure as negative *in se*, but that norms and recommendation prescribe that too much food
537 pleasure is or can be a negative thing. This could be cause for concern, because it could make
538 parents feel guilty about their food pleasure, while food pleasure is not necessarily a bad
539 thing. A recent systematic literature review (Bédard et al., 2020) concluded, for example, that
540 eating pleasure may be a levier for the promotion of healthy eating, and found especially
541 favourable associations between eating pleasure and dietary outcomes. The review identified
542 some strategies related to food pleasure as particularly promising: those that focus on sensory
543 experiences, cooking and/or sharing activities, mindful eating, and memories associated with
544 eating. In the same vein, a recent experimental study has shown that a pleasure-oriented
545 intervention can increase the link between food liking and perceived healthiness in mother-
546 child dyads, meaning that healthy foods were more appreciated after the intervention (Poquet
547 et al., 2020).

548 It is also remarkable that those parents who described an increased temptation and desire to
549 eat during the lockdown were almost exclusively mothers. Even though these mothers
550 described an increased temptation for both themselves, their child, or their family in general,
551 it seems to indicate that they struggled more with how to act upon food temptations or
552 sensations of hunger. Mothers acknowledged the temptation but did not necessarily want to
553 give in to it, they tried to control themselves, if possible. This might be due to gender
554 differences in perceptions of desirable body shapes and related norms. A comparative study
555 including 13 countries and 4 continents (Robineau & de Saint Pol, 2013) showed that the
556 mean difference in BMI between men and women was largest in France, and that slimness is
557 highly valued for French women (53%) but not for men (37%). The majority of French
558 respondents prefer a slim female (52%) and a larger-sized male (62%), showing that the ideals
559 related to body shape are very different for men and women.

560 Third, several parents described that their emotions during the lockdown had an impact on
561 their family's eating behaviour. In most cases, negative emotions (e.g., stress, boredom) were
562 linked to a higher food intake and parents explained that foods could serve as a way to keep

563 them busy or to comfort them in these difficult times. In contrast, some parents also described
564 that their emotions lowered their appetite and induced weight loss. These findings could be
565 interesting for health prevention during the ongoing pandemic. They seem to call for the need
566 of strategies and initiatives that could help people to cope with their emotions during the
567 lockdown, in order to avoid emotional under- and overeating which has been linked to
568 unfavourable weight and health outcomes in the long term (e.g., Frayn & Knäuper, 2018).
569 Governments could, for example, invest in accessible and affordable mental health care, and
570 introduce preventive mental health campaigns.

571 Fourth, many parents wished to maintain positive changes in their family's behaviours,
572 such as buying more local, seasonal, fresh foods, preparing more home-made meals, cooking
573 with the family and taking more time to eat together. These intentions can only be
574 encouraged. Children's involvement in cooking activities has, for example, been found to
575 increase their food acceptance and intake of vegetables (Allirot, da Quinta, Chokupermal, &
576 Urdaneta, 2016; Cunningham-Sabo & Lohse, 2013; Jarpe-Ratner, Folkens, Sharma, Daro,
577 Edens, 2016), which was also expressed by some parents in this study. Children are also more
578 likely to eat and try foods when they see their parents eat and enjoy the same foods (Addessi,
579 Galloway, Visalberghi, & Birch, 2005). Moreover, more frequent family meals have been
580 associated with a decreased risk of obesity (Berge et al., 2015), and improved well-being
581 (Musick & Meier, 2012), even though this may also be due to different underlying factors.
582 Furthermore, frequent consumption of home prepared meals has been associated with better
583 dietary quality and with lower adiposity (e.g., Mills, Brown, Wrieden, White, Adams, 2017).

584 Parents' intentions stand, however, in contrast with an expressed doubt about the feasibility
585 of the maintenance of these new eating and cooking habits. Time and a difficult work-life
586 balance were mentioned as the most important barriers. Previous research has shown that
587 employment and longer working days are associated with less time spent at cooking at home,
588 especially among women (e.g., Adams & White, 2015; Etilé & Plessz, 2018; Sliwa, Must,
589 Peréa, Economos, 2015). Before the lockdown, working from home was not a common
590 practice in France (Aguilera, Lethiais, Rallet, Proulhac, 2016), it is therefore possible that the
591 ongoing pandemic and its predicted related long-lasting effects on work culture (Carillo,
592 Cachat-Rosset, Marsan, Saba, & Klarsfeld, 2020) could be a window of opportunity for
593 parents to use the time gain from a reduction in occupational commuting for cooking home-
594 made meals and cooking with the family on days they are working from home. **However,**
595 **more research is needed to explore this, as surprisingly few significant differences between**
596 **parents' reported experiences based on their work status were found in this study.**

597 Furthermore, the current study has not done a follow-up on the participants and was thus
598 unable to verify whether parents were able to fulfil their expressed intentions. As the
599 pandemic is still ongoing, it could be interesting to do a follow-up after the pandemic, to
600 examine possible long-lasting effects on families' eating and cooking habits.

601 Lastly, we also want to note that, just as for parents' work status, surprisingly few
602 significant differences in parental experiences were found based on their perceived financial
603 situation. Interestingly, however, the analysis did show that fewer parents with a comfortable
604 financial status reported negative changes during the lockdown, compared to those parents
605 with a difficult financial situation. This could reinforce the idea that these last people could be
606 more vulnerable for negative experiences during a pandemic.

607 *Strengths and limitations*

608 Some limitations must be noted for this study. First, as this study is part of a mixed-method
609 study, it is possible that parents were influenced by the content of closed-ended questions
610 preceding the three open-ended questions. These questions were for example about changes in
611 the preparation of home-made food during the lockdown, the time spent cooking with the
612 child, changes in parental motivations when buying food for the child *et cetera* (for a detailed
613 overview: see Philippe et al., 2021). However, even though some content of closed-ended
614 questions was also present in parents' answers to the open-ended questions, these last
615 questions also allowed for the emergence of new topics (e.g., the transmission of food-related
616 values and skills, the burden of cooking more meals, problems linked to grocery shopping). In
617 addition, the open-ended questions gave parents the opportunity to express their personal
618 experiences with food-related changes and to evaluate positive and negative aspects and
619 future goals. Second, even though this study had a diverse French sample, it was not entirely
620 representative. There was, for example, only a limited percentage of parents with a lower
621 level of education (33.5% in this sample compared to approximately 55% in the French
622 population (Insee, 2016)). Experiences and perceptions of parents with a higher level of
623 education might thus be overrepresented in the current study. This is important to keep in
624 mind, as level of education is linked to attitudes towards healthy eating and to compliance
625 with dietary guidelines (Lê et al., 2013).

626 This study also presents several strengths. A first strength is the large sample size (N=498)
627 which enabled the researchers to obtain insight into parents' positive and negative food-
628 related experiences during the first COVID-19 lockdown in France. The use of NVivo made it
629 possible to code the high number of answers to the open-ended questions without losing the

630 overview and to keep track of more or less dominant themes and subthemes. This study
631 showed that the use of open-ended questions could be an interesting method for obtaining
632 qualitative data from a high number of participants and for generating valuable results that
633 can complement those obtained with closed-ended questions. **In this study, the results
634 provided valuable insight into the drivers and barriers for changes in families' behaviours,
635 even beyond the scope of COVID-19. For example, parents' and children's emotions during
636 the lockdown and spending more time at home seemed to have strongly supported changes in
637 families' eating and cooking behaviours. These results are useful to consider when promoting
638 healthy eating behaviours in families.** Then, despite the fact that this study had an unbalanced
639 sample of mothers (N=357, 72%) and fathers (N=141, 28%) which is not preferable when
640 comparing groups, the quite high number of fathers could be considered as a second strength,
641 especially knowing that the inclusion of fathers in feeding research can be challenging (e.g.,
642 Jansen, Harris, Daniels, Thorpe, Rossi, 2018). Moreover, despite this unbalanced sample
643 significant differences were found using matrix coding and Chi-squared tests; they generated
644 insight into gender differences regarding perceptions, experiences and emotions. **These
645 results, and to a lesser extent those based on perceived financial situation and work status,
646 showed that experiences can differ during a situation such as a pandemic. Policy makers
647 should be aware of this and strive to support all groups in the population in the best possible
648 way.**

649 **5 Conclusion and perspectives**

650 This study revealed intimate perceptions of parents about changes in their families' eating,
651 cooking and food-shopping habits during the first COVID-19 lockdown in France. The results
652 uncovered positive and negative experiences, and many contrasts and ambivalences. Time
653 was identified by parents as a cornerstone for changes in eating and cooking behaviours, and
654 as a future barrier to maintain the positive changes. The COVID-19 situation and related
655 measures were unseen in France and probably amplified certain experiences, contrasts and
656 ambivalences which were already present, but to a lesser extent. The results of this study
657 might be of interest for further research studying possible facilitators and barriers for the
658 adoption of recommended eating, cooking and food shopping behaviours in families, beyond
659 the pandemic, and for intervention studies. Some interesting gender differences were also
660 uncovered in the current study, stressing the importance of studying perceptions and
661 behaviours of both men and women separately in future studies and to consider possible

662 differences in interventions. Here, it is however recommended to recruit balanced samples of
663 men and women, in order to study possible gender differences more precisely.

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666 review their study protocol in a very limited time span. They also thank the participants for
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668 **Authors Contributions**

669 KP, SM-P and SI conceptualized the study. KP and SMP conducted all analyses, SI was
670 involved in the final steps of the analyses. KP is first author and wrote a first version of the
671 manuscript, thereafter all authors contributed to editing the manuscript and they all approved
672 the final article.

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