Determinants of Healthy and Sustainable Food Choices in Parents with a Higher and Lower Socioeconomic status: A Qualitative Study

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Abstract

Establishing healthy and sustainable dietary habits in childhood is necessary for the prevention of obesity and chronic diseases, as well as for the growing pressure on our ecosystems. Considering that parents are the most important actors in affecting dietary behaviors of their children, and that there is a social gradient for obesity, this study aims to investigate differences in determinants of both healthy and sustainable food choices among parents with a higher and lower socioeconomic status (SES). Fifteen focus groups and four individual interviews (n=78) with parents of children aged 6 to 12 were conducted in Belgium. A semi-structured interview guide based on a socioecological model was used. The interviews were recorded, transcribed and thematic content analysis was performed using NVivo 1.0. Findings indicate some differences in determinants of healthy and sustainable food choices among higher and lower SES parents. Generally, higher SES parents reported more barriers for sustainable than for healthy food choices. They showed more positive attitudes towards healthy than sustainable food choices, and reported low knowledge and self-efficacy to make sustainable food choices, while a lack of time was a barrier to cook both healthy and sustainable meals. Lower SES parents, like higher SES parents, showed more positive attitudes towards healthy food choices.

They reported high prices and a lack of inspiration and skills as barriers for both food choices, while also being influenced by their cultural backgrounds. For both SES types of parents, children had a strong influence on their healthy and sustainable food choices. The findings suggest socioeconomic differences in determinants of healthy and sustainable food choices. Hence, these differences should be taken into account when developing intervention strategies to improve food choices in parents.

Keywords: food selection, SES, obesity, health promotion, family, focus groups

1.1 Introduction

In current society, dietary patterns form a threat to both human health and climate (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016; Tilman & Clark, 2014). A global shift in diets to a higher intake of processed foods, hydrogenated fats and sugars, and a higher intake of animal-source foods (Popkin, 2006), has led worldwide to 39% of adults and 18% of children aged 5-19 being overweight, and 13% of adults and 7% of children being obese (World Health Organization, 2020). Obesity is associated with non-communicable diseases, depression and reduced quality of life (Alimoradi et al., 2020; Chu et al., 2018). Moreover, current production and consumption patterns form a threat to our planet (Willett, 2019). Agriculture and food production are strong drivers for environmental degradation by releasing more than 25% of all greenhouse gases, polluting fresh and marine waters and using more than one-third of all cultivatable land (Whitmee et al., 2015). Hence, there lies great potential in improving health and reducing environmental impacts by improving dietary habits. This study's focus lies on the consumption side of the global food system, namely looking at people's food choices, rather than the production, distribution and processing of foods. The EAT-Lancet Commission describes a universal reference diet that provides the basis for a healthy and environmentally sustainable eating pattern (a "win-win diet"). It mainly consists of plant-based foods and to a lesser extent of dairy, poultry and fish (Willett, 2019), since replacing animal-based foods by plant-based foods has the strongest positive impact on environmental footprints (Aleksandrowicz et al., 2016; Nelson, Hamm, Hu, Abrams, & Griffin, 2016), and is associated with reduced overall mortality (Song et al., 2016).

To make an impactful change, it is important to include children since food preferences and eating habits established in childhood often persist in adulthood (Moore, Wilkie, & Desrochers, 2016; Nicklaus, Boggio, Chabanet, & Issanchou, 2004; Nu, MacLeod, & Barthelemy, 1996). Parents are key actors in the development of children's eating habits (Golan & Crow, 2004; Perez-Cueto, 2019; Russell, Worsley, & Liem, 2014). Three food parenting practices have been found to have a strong

influence on child food consumption (i.e. food availability, role modeling, and family meal routines). Parental food choices have an impact on these practices (Vaughn et al., 2016; Yee, Lwin, & Ho, 2017). Furthermore, evidence shows that families with lower socioeconomic status (SES) have less optimal diets than their higher SES counterparts (Giskes, Avendaňo, Brug, & Kunst, 2010; Zarnowiecki, Ball, Parletta, & Dollman, 2014). There is a social gradient for childhood obesity, and socioeconomic inequalities in overweight and obesity even continue to widen in high-income countries (Chung et al., 2016). Hence the importance of studying determinants of healthy and sustainable food choices in parents with a different socioeconomic status.

To our knowledge, extant research already investigated determinants of general food choices in the average population, but rarely distinguished between lower and higher SES families, nor specifically considered determinants of healthy and sustainable food choices. This research aims to help fill these gaps for the Belgian context. A first distinction found in literature, is that parents differ from the general adult consumer in the sense that they, apart from other factors like price and convenience, also consider the desires and needs of children (Raskind et al., 2017; Russell et al., 2014). Key determinants for general parental food choices were found to be product-related, that is, explained by attributes of the product itself (i.e. healthiness, sensory appeal, convenience and natural content) (Oellingrath, Hersleth, & Svendsen, 2013; Roos, Lehto, & Ray, 2012), whereas other environmental determinants (i.e. determinants on an interpersonal, organizational, community or societal level), specifically price and advertising, were found to be the least important (Oellingrath et al., 2013; Russell et al., 2014). Second, SES differences in determinants of healthy and sustainable food choices are expected. One study looked at preferences of foods of lower and higher SES families and found that lower SES families prefer low-cost, and familiar, predictable foods that are easily accessible, whereas these were no priorities for higher SES families (Baumann, Szabo, & Johnston, 2019). Third, even though consumers generally hold positive attitudes towards sustainable diets and organic foods (García-González, Achón, Krug, Varela-Moreiras, & Alonso-Aperte, 2020; Hansmann, Baur, & Binder, 2020; Kushwah, Dhir, Sagar, & Gupta, 2019; Lea & Worsley, 2005), several barriers still withhold a shift to consuming less meat (Hoek, Pearson, James, Lawrence, & Friel, 2017; Macdiarmid, Douglas, & Campbell, 2016; Tobler, Visschers, & Siegrist, 2011) and eating more sustainable foods such as higher prices, limited availability, limited information, and a lack of trust in labeling and certification systems (Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009; Kushwah et al., 2019; Lea & Worsley, 2005). Prior to designing interventions, it is imperative to understand whether determinants of a sustainable diet are different from those of a healthy diet, and to what extent these determinants differ between lower and higher SES parents. Herein, a qualitative approach provides the opportunity to explore these parental determinants in more depth.

1.2 Methods

1.2.1 Study design

Fifteen focus group interviews and four individual interviews using a semi-structured interview guide have been conducted in Belgium from March 2020 to May 2021 to explore a range of determinants of healthy and sustainable food choices. Focus groups stimulate an interactive discussion and allow for a deeper comprehension of how families of varying SES make food choices (Kitzinger, 1994). Also, individual interviews were carried out because of the difficulty to recruit a group of people during restrictive Covid-19 measures.

1.2.2 Participants and recruitment

To be eligible for participation, parents had to have at least one child aged six to twelve years and have sufficient knowledge of the Dutch or English language. By twelve years old, children become adolescents and gain more behavioral autonomy and decision-making power regarding dietary choices (Fitzgerald, Heary, Nixon, & Kelly, 2010). Higher SES parents were selected via purposive and convenience sampling, using social media to reach more participants. For lower SES parents, purposive sampling was used to recruit participants. Social organizations such as social restaurants and community health centers were contacted and visited for active recruitment by handing out flyers. Lower SES parents were also recruited through a contact person from within the social organization, who worked with the lower SES target group. This way also two parents with a younger child (<6) were accidentally included in two focus groups, and included in the analysis.

A total of 78 parents participated in the study. Nine focus groups and one interview were held among higher SES, and five focus groups and three interviews among lower SES parents (Table 1). Our planned data collection had to be revised due to the Covid-19 outbreak and the following lockdown. We decided to first move forward with higher SES parents, by holding the focus groups and interview online via Zoom. When Covid-19 rules became a little less strict, four focus groups and one interview with lower SES groups were held in a real life setting, while the two interviews in a later stage (i.e. stricter Covid-19 rules again) were held online via WhatsApp. Despite recruiting around six participants per focus group session, no-show rates were noticeably high, explaining for the smaller numbers of participants in the lower SES groups.

1.2.3 Data collection

Data collection was conducted by the first author (MV) and five research assistants. The whole data collection process was monitored and coordinated by the first author. The research assistants received a training and a written guide on how to conduct focus groups. Every focus group was carried out by a moderator who guided the conversation and an assistant who made notes. The focus groups and interviews lasted at maximum one hour and were audiotaped. Participants signed an informed consent prior to participation, and filled out a demographic survey (Additional File 1). A semi-structured interview guide (Additional File 2) was developed based on a socioecological model (Bronfenbrenner, 1992), considering five layers of influence that affect a person's choices or behaviors, starting from the individual level at the core, to the micro environmental level (interpersonal), meso level (organizational), exo level (community) and macro level (public policy/society) (Bronfenbrenner, 1992). Following an introduction and warm-up exercise, focus groups started with the question: *"What does healthy food mean to you?".* After discussing this and providing insight into the definition, the focus groups continued with another open-ended question: "*Imagine that you have to go shopping for your family this week. What could influence you to buy the healthy or unhealthy choice?".* When participants could not generate any more ideas, additional questions were asked probing for individual or environmental determinants.

First, questions about healthy food choices were asked, followed by the same questions for sustainable food choices. We investigated determinants of both food choices separately to find out if parents reported differences and if and how an intervention could work to influence these choices in a positive way. To determine the criteria for both healthy and sustainable diets, we followed the Flemish guidelines of the "food pyramid" (Gezond Leven, 2017). Main recommendations for both healthy and sustainable diets are to eat plant-based foods as a basis and reduce consumption of animal-based foods. For a sustainable diet, also seasonal and local products are recommended while an additional recommendation for healthy diets is to limit the consumption of products with high sugar, salt, and fat content.

Working together with research assistants made it possible to achieve researcher triangulation. Five research assistants conducted the first 11 focus groups and one interview (eight with higher SES and three with lower SES parents) and analyzed them, a task that was repeated by the first author (MV). Moreover, the first author read each transcript and gave feedback on the interview process, making it possible to adjust the interview guide along the way. One extra focus group and one interview with higher SES parents was conducted by the first author, confirming that data saturation was reached. The last two focus groups among lower SES parents were conducted and individually analyzed by the first and last author (WVL). Moreover, two extra one-on-one interviews were conducted online, reaching data saturation in the lower SES group.

166 *1.2.4 Data analysis*

167 The focus group discussions and interviews were transcribed and analyzed using NVivo 1.0. An
168 iterative process, alternating data collection, data analysis and reflection occurred. Both deductive
169 and inductive reasoning helped generating codes and analyzing data (Braun & Clarke, 2006). A
170 socioecological model (Bronfenbrenner, 1992) was used to code the data (deduction) in combination
171 with an inductive reflection (generation of themes). A priori codes were categorized according to the
172 socioecological model: individual (i.e. attitude, habit, knowledge, skills) interpersonal (i.e. partner,
173 children, others), organizational (i.e. grocery stores, work environment), community (i.e. accessibility,
174 culture), society (i.e. media). New themes that did not fit these existing codes (e.g. busy lives as a
175 barrier, personal preferences for food products) were clustered in a new code, also categorizing it
176 according to the socioecological model. The coding trees of the research assistants and the last
177 author (WVL) were compared and through discussion with the last author (WVL), the current coding
178 tree originated.

179 Demographic analysis was performed using SPSS Statistics 26. Demographics were compared
180 between lower and higher SES parents by conducting a Pearson's chi-square test and Fisher exact
181 test with $p<.05$ significance. Parents were categorized in lower or higher SES based on the
182 recruitment place (social media vs social organizations). Group assignment was verified by calculating
183 a SES score for each participant, based on income, educational degree, and profession (Reynders,
184 Nicaise, & Van Damme, 2005). A participant was classified as lower SES if the index score was below
185 3. All 78 parents, except for two were categorized in the right group; One parent participated in a
186 focus group of lower SES but the index score indicated higher SES, and the same happened for a
187 parent of lower SES who was recruited for an interview. As a result, this interview was analyzed as
188 higher SES. For details about the category and the formula see Table 2.

189

190 **1.3 Results**

191 The results will be presented according to the five levels of the socioecological model (i.e. individual,
192 interpersonal, organizational, community, society). A lot of data was gathered, and in order to
193 present the results as concise as possible, only the most important (i.e. as indicated by parents
194 themselves) and most elaborately discussed determinants will be described in text. For a complete
195 overview of all determinants, see Tables 3 and 4.

196 *1.3.1 Demographics*

Of all participants (n=78), 90% were female and 10% were male. The mean age in the higher SES group was 40.5 ± 4.8 years, and in the lower SES groups 37.9 ± 10.3 years. The higher SES participants were almost exclusively of Belgian origin (93%), while only 33.3% of the lower SES participants were of Belgian origin. In the higher SES group only 7.1% did not have a partner, whereas in the lower SES group 38% of the participants was single or divorced. Participant groups differed significantly on various demographic aspects. Table 5 provides a complete overview of demographic data for both higher and lower SES participants.

1.3.2 Healthy food choices: higher SES parents

On an individual level, all parents with a higher SES found healthy food consumption important **(attitude)**, since it has a positive effect on their own and their children's health, and because it is important to set a good example (i.e. being a role model) for their children. However, a **lack of time** due to busy lives (i.e. combining challenging work hours with children) is a barrier for many parents to cook healthy foods, so their food choices are often driven by how easily meals can be prepared. To overcome the time barrier, some parents try to be creative with easy meals that are still healthy (e.g. steaming frozen vegetables). Also**,** many parents prepared grocery shopping using a shopping list for a week (i.e. **preparation and planning**), which helped to make healthy choices and to avoid buying unhealthy foods impulsively. Though, a few parents preferred shopping intuitively.

> *"We make a planning for four to five days and this makes it much easier when you go shopping. And yeah, when you know that on a particular day there are hobbies, when euh, time is limited, we put spaghetti on the menu, which (the sauce) we can simply take out of the freezer."[F, 35]*

Several parents stated having **the skills** to experiment with ingredients to, for example, make healthy food tasty for children. However, not all parents felt confident in the kitchen or even liked to cook, which was experienced as a barrier to always put a healthy meal on the table.

> *"The difficult dishes in the winter such as sprouts, I try to present them in a different way. Euh, a classic potato, sprouts and meat dish, is not warmly welcomed, so I turn it into a single-pan dish, for example." [F, 44]*

When looking at an interpersonal level, parents highlighted the influence of **children's preferences** on what they buy and cook: parents were influenced by pester behavior of their children to buy unhealthy food and adapt their meals to what the children like, sometimes even resulting in cooking a different meal for themselves and the children.

At the community level, the **stores and product assortments** had an influence on purchases of healthy and unhealthy products. Some parents preferred stores with wider healthy product assortments, including healthy ready-to-eat meals, whereas others preferred stores offering fewer unhealthy products so to not being seduced to buy them.

> *"For example, supermarket X offers many different sorts of pizza dough, such as cauliflower pizza dough, which is healthier than a normal dough. In supermarket Y, on the other hand, this is not available. If they would offer it there as well, I would always buy it." [F, 34]*

1.3.3 Healthy food choices: lower SES parents

On an individual level, we found that most lower SES parents found healthy food important **(attitude)**, for the wellbeing of their children and for themselves. However, some participants were dependent of food pantries and found the health value of the products less important than daily survival. All parents with a lower SES mentioned certain **routines and habits**, and in that way they always buy the same healthy and unhealthy products.

> *"In the long run, you don't have to make a shopping list any more. You come in, you know what you need, you pick up something extra, but yes. Man is a creature of habit. [F, 39]*

Moreover, most parents do not **prepare** their grocery shopping by making a weekly menu/shopping list. For some the lack of planning has a structural reason. Because they do not own a car and cannot carry many products at the same time, they frequent grocery stores more often. Although some parents indicated being creative and looking for inspiration through recipes (**skills**), for others a lack of inspiration was indicated to be a barrier which triggered parents into buying fast food such as a pizza.

Looking at interpersonal influences, **children** were important. Most parents take their children into account when shopping, because they want to be sure the children will indeed eat the food and the food does not end up it in the bin. Some parents even cook different meals for their children that they certainly like (e.g. pizza or spaghetti), whereas others prepare a healthy meal for the whole family even though their children refuse to eat it. Also, some parents are influenced by pester behavior of their children to buy unhealthy food.

> *"The children want to eat fries, they like it. And yeah, then you do it." [F, 48]*

Furthermore, on an organizational level the choice of **stores** plays a role in what parents bring home. Most shop in discount supermarkets and some depend on food banks or buy at local ethnocultural shops (e.g. African grocery store). Moreover, on a community level, **the culture** of parents had an

influence on which foods they buy. Most lower SES parents are of different origin and indicated cooking typical dishes from their country.

Lastly, most lower SES parents indicated that **price** is the most important determinant of their food choices. They stated to look at price first, before looking at other factors such as the healthiness of the product. Only a few parents said not to take the product's price into consideration and to buy whatever they need.

> *"I would check the price. If there is a difference of 5 or 10 cents from the unhealthy, I would choose the healthiest one, but if the difference is a little bit bigger, so one costs one euro and the other three euro, I would choose the cheapest one." [F, 26]*

1.3.4 Sustainable food choices: higher SES parents

Important determinants were mainly found on an individual level. Most higher SES parents indicated sustainable food choices to be less important than healthy food choices, but they had conflicting **attitudes** about it. Parents who were interested in the topic, mentioned different reasons for buying sustainable foods, among others because sustainable options are perceived healthier. Some parents tend to buy local and seasonal vegetables, but still think that taste, health and variety are more important attributes for their food choices. Moreover, some of the participants who find sustainability important, feel that it is impossible to make every choice sustainable, and do not always feel capable to identify the sustainable option **(self-efficacy)**. One cause of this is the lack of **knowledge** about what sustainability entails and unclarity about products' origins and production methods.

> *"I have the impression that I have to put too much effort in it. And that bothers me." [F, 41]*
> *"I do think it is important, but we do not have the opportunity, I think, to fully follow that sustainable lifestyle." [F, 40]*

For parents who indicated not to consider sustainability, barriers are the higher price, a lack of variety, and children's and one's own preferences. Many participants found sustainable foods too expensive (**price**) (except for seasonal vegetables and fruits). Nevertheless, a few others said not to be influenced by price, and indicated to deliberately choose sustainable options. Several parents also found that **preferences and taste** prevail over sustainability. Even though several parents already try to eat less meat, others find it too tasty to miss out on. Similar to healthy food choices, **a lack of time** is a problem for many parents; buying locally in different stores instead of buying everything all at once in one supermarket implies a time cost.

"When there are two trays of strawberries, and one comes from Africa, the other from Belgium, then I will take the one from Belgium. (…) But if I feel like eating a pineapple, then I will also buy a pineapple" (previously discussed as less sustainable). [F, 47]

1.3.5 Sustainable food choices: lower SES parents

Most lower SES parents do not find sustainable food choices important **(attitudes)**. But this was dependent of the type of food products. Some participants did have positive attitudes towards organic, local and seasonal products (where the latter is often linked with a lower price). Regarding reducing meat consumption, it seemed that parents from Belgian origin had more negative attitudes towards it, compared to parents from a different origin. Also, there was no consensus on the importance of eating meat for one's health: some parents believe that eating less meat is good for your health, others however stated that red meat is necessary due to crucial micronutrients. Furthermore, many parents did not know how to define sustainable food (**knowledge**). Some parents also indicated lacking the **cooking skills** and inspiration to try something new. One parent explicitly stated needing advice and inspiration on how to cook vegetarian dishes.

"If I want to eat less meat, what are the recipes that I can eat, things that I can eat that make me forget about the meat?" [F, 34]

On the interpersonal level, **children** generally had a positive influence on buying sustainable foods. Most participants indicated that their children did not like eating too much meat, and one participant even indicated that his/her child wanted to eat organic fruits and vegetables. Also, **culture** on a community level is important. Most parents of different origin indicated not eating meat every day because they are not used to it in their culture.

Again, as is the case for healthy foods, **price** is one of the main priorities for lower SES parents during grocery shopping. Some parents buy seasonal products because they are less expensive, but buying organic products is not always possible even though some parents would like to.

"Here I would like to switch to bio food but I can't. No, I can't afford them. The price is a little bit high." [F, 26]

1.3.6 Overview of determinants

Figure 1 gives an overview of the most important determinants for healthy and sustainable food choices per SES group, whereas Tables 3 and 4 give a complete overview of all mentioned determinants on the socioecological level.

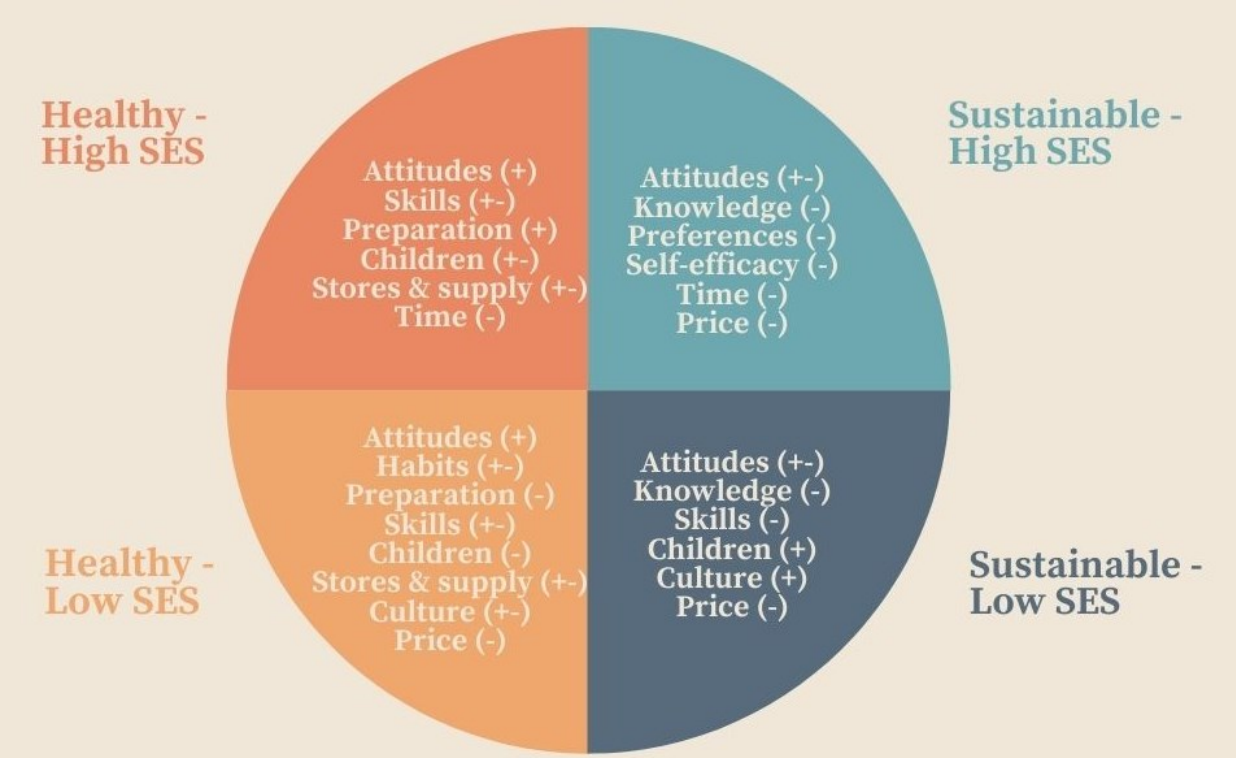

Figure 1. *Overview of most important determinants for healthy and sustainable food choices in each category. Symbols (-), (+), (+-) clarify if mentioned determinants were positive or negative (e.g. attitudes), low or high (e.g. knowledge), favorable or unfavorable (e.g. preferences).*

1.4 Discussion

This study gained insight into the determinants of healthy and sustainable food choices of Belgian parents of higher and lower socioeconomic status. We found differences for higher and lower SES parents, with higher SES parents reporting more barriers for sustainable than for healthy food choices, and a lack of time as main barrier for both choices. Lower SES parents on the other hand mainly reported high prices and a lack of inspiration and skills as barriers for healthy and sustainable food choices. Moreover, as expected, we found that children had a strong influence on both higher and lower SES parents, as both types of parents followed their children's preferences and behaviors when grocery shopping, in this sense differing from the general consumer (Raskind et al., 2017; Russell et al., 2014).

Generally, all parents considered healthy food choices to be more important than sustainable ones. Even parents who found sustainability important said they would always prioritize healthiness over sustainability. In another Belgian study, Van Loo, Hoefkens & Verbeke (2017) found similar results amongst general consumers: although healthy and sustainable diets were not perceived as conflicting, health was still considered more important when making food choices. An explanation

could be a lack of knowledge of environmental sustainability, which is linked with less environmental concern (Sánchez-Bravo et al., 2020). In our study, both parent groups reported low knowledge about sustainable foods, but higher SES parents explicitly mentioned this as a barrier, whereas lower SES parents did not. Also, higher SES parents seemed to be more interested in making sustainable food choices than lower SES parents. Indeed, Sanchéz-Bravo et al. (2020) found that consumers with a lower education have the lowest knowledge on and concern for food sustainability. However, a few lower SES parents were interested in organic and biological foods, but could not afford it. This is in line with Baumann's study (Baumann et al., 2019) who found that Canadian lower SES families expressed a desire for organic and fresh products, but found them out of reach.

For lower SES parents price was a central determinant in making healthy and sustainable food choices; it is often the first thing they look at when choosing a product. The fear of wasting food (and money) was also strongly influenced by children's desires and preferences because they could possibly refuse to eat the purchased food. Daniel (2016) confirmed this by demonstrating that lower income parents may prefer to buy more unhealthy foods which their children will definitely like in order to avoid food waste. Contrary to previous research which found that a healthy, sustainable diet is more expensive than a conventional diet (Barosh, Friel, Engelhardt, & Chan, 2014; Drewnowski & Darmon, 2005; Rao, Afshin, Singh, & Mozaffarian, 2013), recent evidence shows that it is less expensive and can be afforded by different income levels (Goulding, Lindberg, & Russell, 2020; Lee, Kane, Herron, Matsuyama, & Lewis, 2020; Reynolds, Horgan, Whybrow, & Macdiarmid, 2019). However, it seems that low-income consumers take into account more than just actual, monetary expenditures when judging food costs, but also perceive other costs such as food waste and unsatiating foods (Daniel, 2020). Indeed, most lower SES parents in our study indicated finding healthy and sustainable foods expensive, and indicated buying what they or their children preferred in order to be satiated and not having to waste foods.

Whereas price was the main barrier for lower SES parents in both food choices, higher SES parents reported a lack of time as main barrier, e.g. due to work commitments, to choose healthily and sustainably. In many OECD countries, both parents of a family have a full-time job (i.e. between 30 and 39 working hours per week in Belgium) (OECD, 2017). In our study most lower SES participants and their partners were unemployed, which could explain that they did not mention the time barrier specifically. Linked with these time constraints, most higher SES parents found a good preparation and planning of their meals very important. In contrast and as also confirmed by literature (Duffett & Foster, 2017), lower SES parents did not frequently mention making a grocery list, which could make them more susceptible to impulse purchases than higher SES parents (Bellini, Cardinali, & Grandi, 2016). Moreover, for lower SES parents culture was a central determinant, influencing their food

purchases on a healthy and sustainable level by preparing meals from their home country and shopping at local, ethnocultural stores. Parents of Belgian origin more often emphasized wanting to eat meat every day, whereas those of a different origin stated only preparing meat once or twice a week. One possible explanation could be that history and traditions of a country play an important role (Leroy & Praet, 2015), as well as the religion of parents (e.g. a higher Muslim population in a country is negatively associated with meat demand) (Milford, Le Mouël, Bodirsky, & Rolinski, 2019).

Furthermore, both higher and lower SES parents emphasized the importance of creativity and skills for healthy and sustainable food choices. While some higher SES parents saw their creativity as a strength, other higher and lower SES parents indicated needing help to get inspiration and cook a healthy and sustainable meal, especially vegetarian meals. Evidence shows the importance of cooking skills to cook healthy meals in the general population of varying SES, which is positively correlated with healthier food choices (Chen & Antonelli, 2020; Hartmann, Dohle, & Siegrist, 2013; Wrieden et al., 2007). Moreover, for both parent groups, children were an important influence. Besides wanting to be a good role model, they also mentioned pester power in children's food requests, which is found to be moderately associated with unhealthier diets and weight outcomes (Huang et al., 2016). However, children also seemed to have a positive influence on sustainable food choices by not wanting to eat meat every day and emphasizing the importance of sustainability which has been learned at school. Lastly, higher SES parents argued that grocery store assortments should widen healthy assortments and narrow down on unhealthy alternatives, and they should include more sustainable products in their offering. Supermarkets could provide an answer to this request, by altering availability and visibility of products. A recent systematic review found that exposure to fewer options of unhealthy foods and drinks, resulted in fewer selection of these products (Hollands et al., 2019), and that visibility enhancements have a small positive effect on healthy eating (Cadario, R. & Chandon, 2019).

A few limitations should be considered when interpreting the findings. First, our study was conducted during the Covid-19 pandemic, which made it more difficult to recruit participants of lower SES and explains the discrepancy in the number of higher and lower SES participants. However, data saturation was reached in both parent groups since no new insights or themes emerged in the last focus group and interviews. Second, the order in which the questions were asked (i.e. first healthy food choices, then sustainable) could have an influence on the results. Participants could have become less interested in the second part and have given more socially desirable answers. However, it was important not to mix health and sustainability to make a clear distinction in determinants of both aspects. Third, due to snowball recruiting and the use of social media, it could be that higher SES parents had an intrinsic interest in the subject of healthy and sustainable food

choices, whereas lower SES parents mostly were part of a fixed talking group of a social organization and, thus did not always actively consider participating in the study. However, also the lower SES parents did explicitly approve to contribute to the study and stated they enjoyed the conversation. Lastly, we found that higher and lower SES parents significantly differed in origin and civil status, making it possible to ascribe differences in findings to these characteristics instead of to participants' SES. Strengths of the study include the explorative research design which gathered a lot of data and detailed insights in the topic. Also, diverse views from participants of varying SES were presented. This is the first qualitative study that examines a range of individual and environmental determinants of healthy and sustainable food choices of lower and higher SES parents.

1.5 Implications and conclusions

The findings suggest that there are socioeconomic differences in determinants of healthy and sustainable food choices that should be taken into account when developing intervention strategies to improve food choice behavior in parents. Higher SES parents report more barriers for sustainable than for healthy food choices, like the higher prices, a lack of knowledge, low self-efficacy and mixed attitudes. When developing an intervention strategy, it is important to choose behavior change methods that can positively influence these determinants. Lower SES parents need help to overcome the price barrier, and a lack of inspiration and skills as barriers for both food choices, while also being influenced by their cultural backgrounds. They also report shopping out of habit and being less well-prepared for grocery shopping (in contrast with higher SES parents who reported higher levels of planning), which might make these parents more susceptible to unhealthy triggers in their food environments. Hence, the use of food nudges and improving the availability, accessibility and affordability of healthy foods in the supermarket might especially help lower SES parents. Also a cooking skills program might be helpful to tackle the barrier of a lack of inspiration and skills (Wrieden et al., 2007). Moreover, the results call for measures from the government and food industry to help the most vulnerable people in our society, making healthy and sustainable foods more affordable. It is clear that parents differ from the general consumer by having children as a strong determinant for their food choices. Hence it is recommended to include or target children when developing an intervention strategy to change parents' food choices. Even though our study found some differences in determinants for healthy and sustainable food choices, the sustainability aspect mainly focused on reducing meat consumption which is also one aspect of a healthy diet. A recommendation for future interventions might be to focus on healthy and sustainable food choices together, since recent evidence shows an inextricable link and a compatibility between the two (Tilman & Clark, 2014; Van Loo et al., 2017; Willett, 2019). Our findings pave the way for future

studies to develop and evaluate an intervention strategy that improves parents' food choices and thus family's diets in a healthy and sustainable way.

Additional file 1: Demographic Survey (docx 27kb)

Additional file 2: Interview guide (docx 27kb)

Additional files

Abbreviations

SES: Socioeconomic status; F: Female

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Ghent University Hospital (BC-07091).

Consent for publication

Not applicable.

Availability of data and materials

The datasets analyzed during the current study are not publicly available due to privacy reasons, but are available from the corresponding author on reasonable request.

Competing interests

The authors declare no conflict of interest.

Funding

This research is supported and funded by the Special Research Fund (BOF) of Ghent University (reference number BOF Starting Grant: BOF.STG.2019.0075.01)

Author's contributions

Conceptualization: MV, WVL, BD, AVK, NM, MP, MG; Methodology: MV, WVL, BD, AVK, NM, MG, MP; Writing—original draft: MV; Writing—review & editing: MV, WVL, BD, AVK, NM, MP, MG. All authors have read and agreed to the published version of the manuscript.

Acknowledgements

The authors would like to thank the research assistants who contributed by recruiting participants and conducting and analyzing focus groups, as well as transcribing the discussions. Furthermore we would like to thank all participants who took part in this study.

References

Aertsens, J., Verbeke, W., Mondelaers, K., & Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: a review. *British Food Journal*, *111*(10), 1140–1167. https://doi.org/10.1108/00070700910992961

Aleksandrowicz, L., Green, R., Joy, E. J. M., Smith, P., & Haines, A. (2016, November 1). The impacts of dietary change on greenhouse gas emissions, land use, water use, and health: A systematic review. *PLoS ONE*, Vol. 11. https://doi.org/10.1371/journal.pone.0165797

Alimoradi, Z., Golboni, F., Griffiths, M. D., Broström, A., Lin, C. Y., & Pakpour, A. H. (2020). Weight-related stigma and psychological distress: A systematic review and meta-analysis. *Clinical Nutrition*, *39*(7), 2001–2013. https://doi.org/10.1016/j.clnu.2019.10.016

Barosh, L., Friel, S., Engelhardt, K., & Chan, L. (2014). The cost of a healthy and sustainable diet - Who can afford it? *Australian and New Zealand Journal of Public Health*, *38*(1), 7–12. https://doi.org/10.1111/1753-6405.12158

Baumann, S., Szabo, M., & Johnston, J. (2019). Understanding the food preferences of people of low socioeconomic status. *Journal of Consumer Culture*, *19*(3), 316–339. https://doi.org/10.1177/1469540517717780

Bellini, S., Cardinali, M. G., & Grandi, B. (2016). Does Shopping Preparation influence Consumer Buying Decisions? *International Business Research*, *9*(10), 201. https://doi.org/10.5539/ibr.v9n10p201

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Bronfenbrenner, U. (1992). Ecological systems theory. In *Six theories of child development: Revised formulations and current issues* (pp. 187–249). Jessica Kingsley Publishers.

Cadario, R. & Chandon, P. (2019). Which Healthy Eating Nudges Work Best? A Meta-Analysis of Field Experiments. *Marketing Science*, *39*(3), 465–486. https://doi.org/https://doi.org/10.1287/mksc.2018.1128

Chen, P.-J., & Antonelli, M. (2020). Conceptual Models of Food Choice: Influential Factors Related to Foods, Individual Differences, and Society. *Foods*, *9*(12), 1898. https://doi.org/10.3390/foods9121898

Chu, D. T., Minh Nguyet, N. T., Dinh, T. C., Thai Lien, N. V., Nguyen, K. H., Nhu Ngoc, V. T., … Pham, V. H. (2018, November 1). An update on physical health and economic consequences of overweight and obesity. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, Vol.

12, pp. 1095–1100. https://doi.org/10.1016/j.dsx.2018.05.004

Chung, A., Backholer, K., Wong, E., Palermo, C., Keating, C., & Peeters, A. (2016). Trends in child and adolescent obesity prevalence in economically advanced countries according to socioeconomic position: a systematic review. *Obesity Reviews*, *17*(3), 276–295. https://doi.org/10.1111/obr.12360

Daniel, C. (2016). Economic constraints on taste formation and the true cost of healthy eating. *Social Science and Medicine*, *148*, 34–41. https://doi.org/10.1016/j.socscimed.2015.11.025

Daniel, C. (2020). Is healthy eating too expensive ?: How low-income parents evaluate the cost of food. *Social Science & Medicine*, *248*(March 2019), 112823. https://doi.org/10.1016/j.socscimed.2020.112823

Drewnowski, A., & Darmon, N. (2005). Food Choices and Diet Costs: an Economic Analysis. *The Journal of Nutrition*, *135*(4), 900–904. https://doi.org/10.1093/jn/135.4.900

Duffett, R. G., & Foster, C. (2017). Shopping list development and use of advertisements' pre-store food-buying practices within different socio-economic status areas in South Africa. *British Food Journal*, *119*(12), 2880–2902. https://doi.org/10.1108/BFJ-11-2016-0556

Fitzgerald, A., Heary, C., Nixon, E., & Kelly, C. (2010). Factors influencing the food choices of Irish children and adolescents: a qualitative investigation. *Health Promotion International*, *25*(3), 289–298. https://doi.org/10.1093/HEAPRO/DAQ021

García-González, Á., Achón, M., Krug, A. C., Varela-Moreiras, G., & Alonso-Aperte, E. (2020). Food sustainability knowledge and attitudes in the Spanish adult population: A cross-sectional study. *Nutrients*, *12*(10), 1–21. https://doi.org/10.3390/nu12103154

Gezond Leven, V. I. (2017). Voedingsdriehoek | Gezond Leven. Retrieved April 5, 2021, from https://www.gezondleven.be/themas/voeding/voedingsdriehoek

Giskes, K., Avendaňo, M., Brug, J., & Kunst, A. E. (2010). A systematic review of studies on socioeconomic inequalities in dietary intakes associated with weight gain and overweight/obesity conducted among European adults. *Obesity Reviews*, Vol. 11, pp. 413–429. https://doi.org/10.1111/j.1467-789X.2009.00658.x

Golan, M., & Crow, S. (2004). Targeting parents exclusively in the treatment of childhood obesity: Long-term results. *Obesity Research*, *12*(2), 357–361. https://doi.org/10.1038/oby.2004.45

Goulding, T., Lindberg, R., & Russell, C. G. (2020). The affordability of a healthy and sustainable diet:

526 An Australian case study. *Nutrition Journal*, *19*(1). https://doi.org/10.1186/s12937-020-00606-z

527 Hansmann, R., Baur, I., & Binder, C. R. (2020). Increasing organic food consumption: An integrating
528 model of drivers and barriers. *Journal of Cleaner Production*, *275*.
529 https://doi.org/10.1016/j.jclepro.2020.123058

530 Hartmann, C., Dohle, S., & Siegrist, M. (2013). Importance of cooking skills for balanced food choices.
531 *Appetite*, *65*, 125–131. https://doi.org/10.1016/j.appet.2013.01.016

532 Hoek, A. C., Pearson, D., James, S. W., Lawrence, M. A., & Friel, S. (2017). Shrinking the food-print: A
533 qualitative study into consumer perceptions, experiences and attitudes towards healthy and
534 environmentally friendly food behaviours. *Appetite*, *108*, 117–131.
535 https://doi.org/10.1016/j.appet.2016.09.030

536 Hollands, G. J., Carter, P., Anwer, S., King, S. E., Jebb, S. A., Ogilvie, D., … Marteau, T. M. (2019).
537 Altering the availability or proximity of food, alcohol, and tobacco products to change their
538 selection and consumption. *Cochrane Database of Systematic Reviews*.
539 https://doi.org/10.1002/14651858.cd012573.pub2

540 Huang, C. Y., Reisch, L. A., Gwozdz, W., Molnár, D., Konstabel, K., Michels, N., … Lissner, L. (2016).
541 Pester power and its consequences: Do European children's food purchasing requests relate to
542 diet and weight outcomes? *Public Health Nutrition*, *19*(13), 2393–2403.
543 https://doi.org/10.1017/S136898001600135X

544 Kitzinger, J. (1994). The methodology of Focus Groups: the importance of interaction between
545 research participants. *Sociology of Health and Illness*, *16*(1), 103–121.
546 https://doi.org/10.1111/1467-9566.ep11347023

547 Kushwah, S., Dhir, A., Sagar, M., & Gupta, B. (2019, December 1). Determinants of organic food
548 consumption. A systematic literature review on motives and barriers. *Appetite*, Vol. 143.
549 https://doi.org/10.1016/j.appet.2019.104402

550 Lea, E., & Worsley, T. (2005). Australians' organic food beliefs, demographics and values. *British Food*
551 *Journal*, *107*(10–11), 855–869. https://doi.org/10.1108/00070700510629797

552 Lee, A. J., Kane, S., Herron, L. M., Matsuyama, M., & Lewis, M. (2020). A tale of two cities: The cost,
553 price-differential and affordability of current and healthy diets in Sydney and Canberra,
554 Australia. *International Journal of Behavioral Nutrition and Physical Activity*, *17*(1).
555 https://doi.org/10.1186/s12966-020-00981-0

556 Leroy, F., & Praet, I. (2015). Meat traditions. The co-evolution of humans and meat. *Appetite*, *90*,

200–211. https://doi.org/10.1016/j.appet.2015.03.014

Macdiarmid, J. I., Douglas, F., & Campbell, J. (2016). Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet. *Appetite*, *96*, 487–493. https://doi.org/10.1016/j.appet.2015.10.011

Milford, A. B., Le Mouël, C., Bodirsky, B. L., & Rolinski, S. (2019). Drivers of meat consumption. *Appetite*, *141*, 104313. https://doi.org/10.1016/j.appet.2019.06.005

Moore, O., Wilkie, E., & Desrochers, W. (2016). All in the Family? Parental Roles in the Epidemic of Childhood Obesity. *Journal of Consumer Research*, *43*(5), 824–859. https://doi.org/10.1093/jcr/ucw059

Nelson, M. E., Hamm, M. W., Hu, F. B., Abrams, S. A., & Griffin, T. S. (2016). Alignment of healthy dietary patterns and environmental sustainability: A systematic review. *Advances in Nutrition*, *7*(6), 1005–1025. https://doi.org/10.3945/an.116.012567

Nicklaus, S., Boggio, V., Chabanet, C., & Issanchou, S. (2004). A prospective study of food preferences in childhood. *Food Quality and Preference*, *15*(7-8 SPEC.ISS.), 805–818. https://doi.org/10.1016/j.foodqual.2004.02.010

Nu, C. T., MacLeod, P., & Barthelemy, J. (1996). Effects of age and gender on adolescents' food habits and preferences. *Food Quality and Preference*, *7*, 251–262. https://doi.org/10.1016/S0950-3293(96)00023-7

OECD. (2017). How do partners in couple families share paid work? Retrieved May 12, 2021, from https://www.oecd.org/gender/data/how-do-partners-in-couple-families-share-paid-work.htm

Oellingrath, I. M., Hersleth, M., & Svendsen, M. V. (2013). Association between parental motives for food choice and eating patterns of 12-to 13-year-old Norwegian children. *Public Health Nutrition*, *16*(11), 2023–2031. https://doi.org/10.1017/S1368980012004430

Perez-Cueto, F. J. A. (2019). An umbrella review of systematic reviews on food choice and nutrition published between 2017 and-2019. *Nutrients*, *11*(10). https://doi.org/10.3390/nu11102398

Rao, M., Afshin, A., Singh, G., & Mozaffarian, D. (2013). Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. *BMJ Open*, *3*(12), 4277. https://doi.org/10.1136/bmjopen-2013-004277

Raskind, I. G., Woodruff, R. C., Ballard, D., Cherry, S. T., Daniel, S., Haardorfer, R., & Kegler, M. C. (2017). Decision-making processes shaping the home food environments of young adult women

with and without children. *Appetite*, *113*, 124–133. https://doi.org/10.1016/j.appet.2017.02.027

Reynders, T., Nicaise, I., & Van Damme, J. (2005). De constructie van een SES-variabele voor het SiBO-onderzoek. *LOA-Rapport*, *31*(31), 1–47. Retrieved from http://www.informatieportaalssl.be/SiBO-Databank/_Hoofdtabellen/LOA-RAPPORT31_ConstructieSES.pdf

Reynolds, C. J., Horgan, G. W., Whybrow, S., & Macdiarmid, J. I. (2019). Healthy and sustainable diets that meet greenhouse gas emission reduction targets and are affordable for different income groups in the UK. *Public Health Nutrition*, *22*(8), 1503–1517. https://doi.org/10.1017/S1368980018003774

Roos, E., Lehto, R., & Ray, C. (2012). Parental family food choice motives and children's food intake. *Food Quality and Preference*, *24*(1), 85–91. https://doi.org/10.1016/j.foodqual.2011.09.006

Russell, C. G., Worsley, A., & Liem, D. G. (2014). Parents' food choice motives and their associations with children's food preferences. *Public Health Nutrition*, *18*(6), 1018–1027. https://doi.org/10.1017/S1368980014001128

Sánchez-Bravo, P., Chambers, E., Noguera-Artiaga, L., López-Lluch, D., Chambers, E., Carbonell-Barrachina, Á. A., & Sendra, E. (2020). Consumers' Attitude towards the Sustainability of Different Food Categories. *Foods*, *9*(11), 1608. https://doi.org/10.3390/foods9111608

Song, M., Fung, T., Hu, F., Willett, W., Longo, V., Chan, A., & Giovannucci, E. (2016). Association of Animal and Plant Protein Intake With All-Cause and Cause-Specific Mortality. *JAMA Internal Medicine*, *176*(10), 1453–1463. https://doi.org/10.1001/JAMAINTERNMED.2016.4182

Tilman, D., & Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature*, *515*(7528), 518–522. https://doi.org/10.1038/nature13959

Tobler, C., Visschers, V. H. M., & Siegrist, M. (2011). Eating green. Consumers' willingness to adopt ecological food consumption behaviors. *Appetite*, *57*(3), 674–682. https://doi.org/10.1016/j.appet.2011.08.010

Van Loo, E. J., Hoefkens, C., & Verbeke, W. (2017). Healthy, sustainable and plant-based eating: Perceived (mis)match and involvement-based consumer segments as targets for future policy. *Food Policy*, *69*, 46–57. https://doi.org/10.1016/j.foodpol.2017.03.001

Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., … Power, T. G. (2016). Fundamental constructs in food parenting practices: a content map to guide future

research. *Nutrition Reviews*, *74*(2), 98–117. https://doi.org/10.1093/nutrit/nuv061

Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., De Souza Dias, B. F., … Yach, D. (2015, November 14). Safeguarding human health in the Anthropocene epoch: Report of the Rockefeller Foundation-Lancet Commission on planetary health. *The Lancet*, Vol. 386, pp. 1973–2028. https://doi.org/10.1016/S0140-6736(15)60901-1

Willett. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet.*, *393*(10170), 447–492. https://doi.org/https://doi.org/10.1016/S0140-6736(18)31788-4

World Health Organization. (2020). Obesity and overweight. Retrieved May 26, 2021, from https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Wrieden, W. L., Anderson, A. S., Longbottom, P. J., Valentine, K., Stead, M., Caraher, M., … Dowler, E. (2007). The impact of a community-based food skills intervention on cooking confidence, food preparation methods and dietary choices - An exploratory trial. *Public Health Nutrition*, *10*(2), 203–211. https://doi.org/10.1017/S1368980007246658

Yee, A. Z. H., Lwin, M. O., & Ho, S. S. (2017). The influence of parental practices on child promotive and preventive food consumption behaviors: a systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, *14*(47), 1–14. https://doi.org/10.1186/s12966-017-0501-3

Zarnowiecki, D., Ball, K., Parletta, N., & Dollman, J. (2014). Describing socioeconomic gradients in children's diets - does the socioeconomic indicator used matter? *International Journal of Behavioral Nutrition and Physical Activity*, *11*(44), 1–12. https://doi.org/10.1186/1479-5868-11-44

Tables

Table 1

	Date	SES: High / Low	Number of participants	Online / Offline
1	1 March 2020	High	7	Offline
2	14 March 2020	Low	5	Offline
3	30 March 2020	High	6	Online
4	7 April 2020	High	7	Online
5	8 April 2020	High	5	Online
6	14 April 2020	High	8	Online
7	15 April 2020	High	6	Online
8	16 April 2020	High	4	Online
9	4 May 2020	High	6	Online
10	22 June 2020	High	6	Online
11	13 August 2020	Low	1	Offline
12	20 August 2020	Low	3	Online
13	28 September 2020	Low	3	Offline
14	2 October 2020	Low	2	Offline
15	12 October 2020	Low	6	Offline
16	20 May 2021	Low	1	Online
17	25 May 2021	Low	1	Online
18	8 May 2021	High	1	Online

Table 1. Overview of focus groups and interviews

Table 2

Variables	Category score
Highest degree parents	1. No education / primary education 2. Lower secondary education 3. Higher secondary education 4. Higher education 5. University
Profession parents	1. Never had a profession/ no profession 2. Uneducated blue collar employee 3. Educated blue collar employee 4. Farmer / self-employed small business 5. White collar employee / teaching assignment lower and secondary education 6. White collar employee management / teaching assignment higher education and university 7. Board member /liberal profession / self-employed medium sized business
Netto monthly family income	1. <1000 euro 2. 1000-2000 euro 3. 2000-3000 euro 4. 3000-4000 euro 5. 4000-5000 euro 6. >5000 euro
Formula to calculate index score in SPSS: Mean(mean(categoryscore_degreeparent1+2)+mean(categoryscore_professionparent1+2)+nettomonthlyincome).	

Table 2. Category score (Reynders, Nicaise & Van Damme, 2005)

Table 3

	Higher SES parents	***Explanation - direction***	***Lower SES parents***	***Explanation - direction***
Individual Determinants				
	Attitudes	*Positive attitudes*	**Attitudes**	*Positive attitudes*
	Self-efficacy	*A few parents had low feelings of self-efficacy*	/	/
	Habits	*Positive and negative shopping habits*	**Habits**	*Positive and negative shopping habits*
	Knowledge	*Mostly high knowledge*	Knowledge	*Sufficient knowledge*
	Skills	*High and low cooking skills (& inspiration)*	**Skills**	*High and low cooking skills (& inspiration)*
	Preparation & planning	*High levels of planning grocery shopping*	**Preparation & planning**	*Low levels of planning grocery shopping*
	Personal preferences	*Mostly unhealthy preferences*	Personal preferences	*Mostly unhealthy preferences*
Interpersonal determinants				
	Children	*Positive and negative influence*	**Children**	*Negative influence*
	Partner	*Mostly negative influence*	Partner	*Mostly negative influence*
	Others	*Positive influence from colleagues, friends, etc.*	Others	*Mostly no influence, one colleague*
	Home environment	*Positive influence of having a kitchen garden*	/	/
Organizational determinants				
	School	*Positive influence*	School	*Positive influence*
Community determinants				
	Stores & supply	*Positive and negative influence*	**Stores & supply**	*Mostly discount shops, food banks and local ethnic stores*
	Accessibility	*Negative influence of fast-food shops close by*	Accessibility	*Importance of shops close by*
	Culture	*Mixed influence of different ethnic origin*	**Culture**	*Cooking typical dishes from country of origin*
Society & public policy determinants				

	Media	*Positive influence - famous cooks*	Media	*Positive influence social media to get inspired*
	Advertising	*Negative influence*	/	/
Barriers				
	Price	*No consensus on expensiveness of healthy foods*	**Price**	*Strong influence of price (i.e. buying cheap products)*
	Time	*Negative influence – lack of time*	Time	*Almost no influence*

Table 3. Determinants of healthy food choices among higher and lower SES parents
Note. Determinants in bold are the ones that were most important and/or most mentioned by the parents.

Table 4

	Higher SES parents	***Explanation - direction***	***Lower SES parents***	***Explanation - direction***
Individual Determinants				
	Attitudes	*Mixed attitudes*	**Attitudes**	*Mixed attitudes*
	Self-efficacy	*Low feelings of self-efficacy*	/	/
	Habits	*Positive and negative shopping habits*	Habits	*Positive and negative shopping habits*
	Knowledge	*Mostly low knowledge*	**Knowledge**	*Low knowledge*
	Skills	*High and low cooking skills (& inspiration)*	**Skills**	*Mostly a lack of inspiration and cooking skills*
	Personal preferences	*Unsustainable preferences*	Personal preferences	*Unsustainable preferences*
Interpersonal determinants				
	Children	*Positive and negative influence*	**Children**	*Mostly positive influence*
	Partner	*Positive and negative influence*	Partner	*Negative influence*
	Others	*Positive (ideas from focus group)*	Others	*Positive (ideas from focus group)*
	Home environment	*Positive influence of having a kitchen garden*	/	/
Community determinants				
	Stores & supply	*Positive and negative influence, some shop at local farms and bio stores*	Stores & supply	*Mostly discount shops, food banks and local stores of origin*
	Accessibility	*Negative influence – sustainable products not easily accessible*	/	/
	Social norm	*Negative influence - stigma on trying to live sustainable*	/	/
	/	/	**Culture**	*Positive influence (i.e. less meat). Cooking typical dishes from country of origin*
Society & public policy determinants				

	Media	*Positive influence – documentaries and cooks*	/	/
Barriers				
	Price	*For some parents a negative influence of higher price*	**Price**	*Price was main determinant of food choices (i.e. buying cheap products)*
	Time	*Negative influence – lack of time*	Time	*Almost no influence – some mentioned liking fast dishes*

Table 4. Determinants of sustainable food choices among higher and lower SES parents.
Note. Determinants in bold are the ones that were most important and/or most mentioned by the parents

Table 5

	Higher SES n (%)	Lower SES n (%)	Pearson Chi² Chi² (p-value)	Fisher exact test (p-value)
Number of participants	57 (100)	21 (100)		
Gender				
Female	51 (89.5)	19 (90.5)		(0.632)
Male	6 (10.5)	2 (9.5)		
Age (years)				
<40y	28 (49.1)	15 (71.4)		(0.066)
>40y	29 (50.9)	6 (28.6)		
Family net monthly income (euro)	55 (96.4)	21 (100)		
< 1000	0 (0.0)	4 (19)		
1000-2000	2 (3.6)	14 (66.7)		
2000-3000	3 (5.5)	2 (9.5)	56.56 (0.001)	
3000-4000	15 (27.3)	1 (4.8)		
4000-5000	20 (36.4)	0 (0.0)		
> 5000	15 (27.3)	0 (0.0)		
Civil status	57 (100)	21 (100)		
Married	41 (71.9)	9 (42.9)		
Single	1 (1.8)	4 (19)	12.46 (0.006)	
Living together, not married	12 (21.1)	4 (19)		
Divorced	3 (5.3)	4 (19)		
Origin	**Participant** / **Partner**	**Participant** / **Partner**	**Participant** / **Partner**	
	57 (100) / 57 (100)	21 (100) / 21 (100)		
Participants with no partner	4 (7)	8 (38.1)		
Belgium	53 (93) / 49 (86)	7 (33.3) / 5 (23.8)	30.99 (0.001) / 30.30 (0.001)	
EU Country	1 (1.8) / 1 (1.8)	2 (9.5) / 0 (0.0)		
Not EU Country	3 (5.3) / 3 (5.3)	12 (57.1) / 8 (38.1)		
Language at home	**57 (100)**	**21 (100)**		
Dutch	54 (94.7)	8 (38.1)		(0.001)
Other	3 (5.3)	13 (61.9)		
Degree	**Participant** / **Partner**	**Participant** / **Partner**	**Participant** / **Partner**	
	57 (100) / 57 (100)	20 (95) / 20 (95)		

Participants with no partner	4 (7)		11 (55)			
No education	0 (0.0)	1 (1.8)	3 (15.0)	1 (5.0)		
Primary education	0 (0.0)	0 (0.0)	3 (15.0)	4 (20.0)	39.40 (0.001)	36.90 (0.001)
Secondary education	6 (10.6)	9 (15.9)	8 (40.0)	3 (15.0)		
Higher education	33 (57.9)	23 (42.1)	2 (10.0)	1 (5.0)		
University	18 (21.6)	19 (33.3)	4 (20.0)	0 (0.0)		
Profession	**Participant**	**Partner**	**Participant**	**Partner**	**Participant**	**Partner**
	56 (98)	55 (96)	21 (100)	21 (100)		
Never had a profession/no profession	2 (3.6)	0 (0.0)	15 (71.4)	4 (19.0)		
Uneducated blue collar employee	0 (0.0)	3 (5.5)	3 (14.3)	4 (19.0)		
Educated blue collar employee	0 (0.0)	4 (7.3)	1 (4.8)	1 (4.8)		
Farmer / self-employed small business	5 (8.9)	5 (9.1)	0 (0.0)	1 (4.8)		
White collar employee / teaching assignment in lower and secondary education	23 (41.1)	13 (23.7)	2 (9.6)	1 (7.7)	63.01 (0.001)	40.48 (0.001)
White collar employee management / teaching assignment higher education and university	20 (35.8)	19 (34.6)	0 (0.0)	1 (4.8)		
Board member / liberal profession / self-employed medium sized business	2 (3.6)	7 (12.8)	0 (0.0)	0 (0.0)		
Other income	4 (7.1)	0 (0.0)	0 (0.0)	1 (4.8)		
Responsibility in purchasing food	57 (100)		21 (100)			
Participant	41 (71.9)		13 (61.9)		2.27 (0.321)	
Partner of participant	8 (14.0)		2 (9.5)			
Both participant and partner	8 (14.0)		6 (28.6)			
Responsibility in preparing food	56 (98)		20 (95)			
Participant	35 (62.5)		16 (80.0)		2.18 (0.336)	
Partner of participant	8 (14.3)		2 (10.0)			
Both participant and partner	13 (23.2)		2 (10.0)			
Amount of food purchases a week	56 (98)		20 (95)			

< 1/week	1 (1.8)	0 (0.0)	3.27 (0.352)	
1/week	18 (32.1)	3 (15.0)		
2/week	20 (35.7)	11 (55.0)		
> 2/week	17 (30.4)	6 (30.0)		
Type of store for food purchases				
Local store	16 (28.6)	3 (15)		(0.367)
Supermarket	54 (96.4)	20 (100)		(0.100)
Online	8 (14.3)	0 (0.0)		(0.102)
Meal box	6 (10.7)	0 (0.0)		(0.331)
Organic store	10 (17.9)	0 (0.0)		(0.055)

Table 5. Demographics