

Perceptions and determinants of adopting sustainable eating behaviours among university students in Canada: a qualitative study using focus group discussions

Sadaf Mollaei, Leia M. Minaker, Jennifer K. Lynes and
Goretty M. Dias

Faculty of Environment, University of Waterloo, Waterloo, Canada

Abstract

Purpose – University students are a unique population with great potential to adopt eating habits that promote positive human and planetary health outcomes. The purpose of this study is to illustrate the current perceptions of sustainable eating behaviours among the students and to examine the determinants of sustainable eating behaviours.

Design/methodology/approach – Data were collected from December 2020 to May 2021 through focus group discussions among university students in Ontario, facilitated through synchronous online sessions. There were 21 student participants during the course of five focus group sessions (4–5 participants per session) from various departments within the university. The discussions were transcribed and analyzed for main themes and concepts using open coding; deductive coding based on the framework by Deliens *et al.* as well as the literature; and inductive coding for emerging themes.

Findings – The students had different perceptions about what constituted sustainable eating behaviours, some of which were not based on fact. A variety of individual, environmental (macro, micro and social) and university characteristics were mentioned as factors influencing sustainable food choices, with “food literacy” and “campus food” being the top two factors.

Originality/value – This study presents a novel and holistic overview of how sustainable eating behaviours and sustainable foods are perceived among university students and identifies the perceived determinants of adopting sustainable eating behaviours. This study helps with identifying opportunities to promote sustainable eating behaviours among university students and the design/implementation of informed interventions and policies aimed at improving eating behaviours.

Keywords Sustainable food, Sustainable eating behaviours, University students, Focus groups

Paper type Research paper



© Sadaf Mollaei, Leia M. Minaker, Jennifer K. Lynes and Goretty M. Dias. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

The authors want to acknowledge the Social Sciences and Humanities Research Council (SSHRC), grant number 435-0544-2017 for funding this research. The authors also want to thank Laura Blanco Murcia for her help in the analysis of the focus groups.

Grant information: SSHRC Council Grant number 435-0544-2017 Name of program Social Sciences and Humanities Research Council Insight Grant Name of project Peak population and future Canadian food requirements: implications for human nutrition and earth's carrying capacity

1. Introduction

Promoting healthy and sustainable eating behaviours is a valuable and impactful strategy for both human and planetary health (Willett *et al.*, 2019). Current eating habits are associated with negative environmental impacts, such as climate change and water scarcity (Campbell *et al.*, 2017; Garnett *et al.*, 2015; Willett *et al.*, 2019). Given the importance of food and eating habits on human (Ridgway *et al.*, 2019) and planetary (Willett *et al.*, 2019) health, dietary interventions are required to promote healthy and sustainable eating habits (Campbell-Arvai *et al.*, 2014). However, interventions should be designed and implemented based on their target population, considering specific eating behaviour characteristics.

Young adults are in a critical stage of their lives in terms of developing long-lasting eating habits (Arnett, 2000), particularly university students who are going through a transition and are often known to have poor and unhealthy dietary habits (Alghamdi *et al.*, 2018; Deforche *et al.*, 2015; Michels *et al.*, 2019; Niemeier *et al.*, 2006; Sharma *et al.*, 2018). The transition to university often disrupts young adults' regular eating patterns, resulting in less healthy diets (Maillet and Grouzet, 2021). The absence of adequate cooking skills and facilities and the presence of tempting and unhealthy food options are barriers to healthy diets among university students in particular (Maillet and Grouzet, 2021). Furthermore, postsecondary institutions offer a distinct opportunity to implement and test interventions aimed at improving dietary behaviours due to their unique food environment and population (Evans *et al.*, 2015; Hansen, 2017).

A variety of factors influencing eating behaviours of university students have been identified. Deliens *et al.* present these factors in a framework used to categorize factors into five groups including individual factors, such as time availability and state of mind; the social environment, such as parental control; the physical environment, such as appeal of food and prices; the macro environment, such as media and social norms; and university characteristics, such as residency (Deliens *et al.*, 2014). Other important factors include food literacy (Malan *et al.*, 2020) and specific habits, such as snacking (Marquis *et al.*, 2019). Nevertheless, money, healthfulness and taste are considered the major factors influencing eating behaviours among university students (Roy *et al.*, 2019).

Sustainability has been linked to a variety of eating habits, including consuming: local and organic food; more fruits and vegetables; fewer meat products; more plant-based products; fewer processed and packaged products; more products that have small ecological footprints, as well as reducing food waste (Austgulen, 2014; Carlsson-Kanyama and González, 2009; FAO, 2019; Health Canada, 2019; Lobb and Mazzocchi, 2007; Pieniak *et al.*, 2010; Redman and Redman, 2014; Schösler *et al.*, 2012). Determinants of sustainable eating habits include sensory characteristics, traditions, meal patterns, peer pressure and personal values (Nasir and Karakaya, 2014; Perrea *et al.*, 2014). Cheah *et al.*'s research framework identifies perceived benefits and barriers to reducing meat consumption as an example of a sustainable eating behaviour (Cheah *et al.*, 2020). For example, barriers to eating a vegetarian diet include unpleasant taste (Lea and Worsley, 2003) and lack of knowledge regarding food (Salonen and Helne, 2012). Although sustainable eating may include a variety of eating habits, definitions of sustainable eating behaviours among the target population are important for designing interventions, particularly among young adults, among whom sustainable eating is becoming more mainstream (Kamenidou *et al.*, 2019).

Most dietary interventions targeting young adults in postsecondary institutions focus on nutrition rather than environmental sustainability (Deliens *et al.*, 2016; Lee *et al.*, 2021). Among sustainability-related interventions, most focus on waste management/prevention strategies rather than dietary choices (Grech *et al.*, 2020). Therefore, there is a lack of

research on sustainable dietary interventions among this population, which is an important gap given that interventions should be tailored to specific groups (Cheah *et al.*, 2020).

A Canada-wide survey of young adults found that more than half of the respondents had specific criteria (such as environmental perceptions, personal and behavioural factors) for their food choices (Mollaei *et al.*, 2022). Therefore, this research intends to take a closer look at Canadian university students, who are also classified as young adults, to further examine their eating behaviours through open-ended questions. Furthermore, studies on factors influencing eating behaviours (including dietary intervention research) among university students lack a holistic and systematic approach that encompasses both human health and environmental sustainability (Lee *et al.*, 2021). To address this gap, we conducted focus groups to gain insights into eating behaviours of Canadian university students to examine their attitudes towards adopting sustainable eating behaviours. Students studying at Canadian institutions come from diverse cultural backgrounds. Hence, insights gained from this sample population could contribute to future studies in a different geographic setting. Interventions promoting health or environmental sustainability require a level of knowledge about the target population's motivations that align with their eating goals to increase intervention effectiveness (Bauer and Reisch, 2019). Therefore, the goal of the current research is to illustrate the current perceptions of sustainable eating behaviours among the students and to examine the determinants of sustainable eating behaviours. Furthermore, this research took place during the COVID-19 pandemic, which drastically impacted eating habits (Huber *et al.*, 2021). Therefore, results from this research can provide insights regarding the impacts of this change on the sustainability aspects of eating behaviours. The first objective of this study is to gain a better understanding of what sustainable food and eating behaviours mean to the students. Therefore, the first question this research aims to answer is:

RQ1. What is the perceived meaning of sustainable food and sustainable eating among university students?

Then, to connect current perceptions to sustainable eating behaviours, it is important to understand the determinants of sustainable eating habits. Therefore, the second research question of this study is:

RQ2. What are the determinants of sustainable eating behaviours among university students?

2. Methodology

For this study, a qualitative method was used where data were collected through focus group discussions among university students which is a method to collect experiential information (Morse, 1994). Focus groups have been established as being an effective tool to collect qualitative data in social sciences and are recognized for generating useful information (Onwuegbuzie *et al.*, 2009). Particularly, online focus groups have characteristics that provide a more comfortable environment leading individuals to share more and reveal more of their thoughts and ideas, which is an advantage for online focus groups (Stancanelli, 2010; Stewart and Williams, 2005; Wettergren *et al.*, 2016). This study took place at the University of Waterloo, a large and diverse university in Ontario, Canada. Participants were selected from undergraduate students in different programmes studying at three colleges to ensure diversity of opinion. College students are a sample with a variety of ethnic and knowledge backgrounds. The aim was to recruit four to six students for each session (Stancanelli, 2010; Woodyatt *et al.*,

2016), and the participants included students at each college who accepted email invitations to participate in the study. The “call for participation” email was sent by the college administration on behalf of the researchers to all first-year students. Students who responded to the email invitation were contacted to set up a time for the online focus group session. The study received ethics approval from the University of Waterloo (ORE 42454). The focus groups were held from December 2020 through May 2021 (during the COVID-19 pandemic).

All focus groups were conducted online using Microsoft (Microsoft Teams) (MS) Teams. Participants had the option to use a pseudonym and not use their real names. Participants were asked to keep their camera off during the sessions to increase anonymity. The link to the meeting was sent to the participants approximately one week prior to the session, and a reminder email was sent one day before. The participants were sent an information and consent form prior to the session, and at the beginning of each session, the purpose of the study was explained. A brief overview of the MS Teams platform and information about the focus group process was presented at the beginning of each session. Every participant had the option to leave the focus group at any point during the session. At the end of each session, the students were asked to fill out a survey gathering demographic information while ensuring anonymity by not collecting any personal information that could be linked back to the participant. A \$10 gift card was sent to all participants after the session, regardless of whether they stayed for the whole session or not. Each focus group lasted between 60 and 90 min and was facilitated by the lead author, who audio-recorded the session, asked the questions and took notes during the sessions. The number of focus groups was dependent on the point of saturation, as it is often not possible to pre-determine the number of sample size in a qualitative study (Morgan *et al.*, 1998). One additional focus group was also held to confirm no new information was discussed, and saturation was reached.

2.1 Focus group design questions

A semi-structured interview guide (Appendix 1) was developed based on the instructions by Harrell and Bradley (2009) and Seale *et al.* (2003) to answer the proposed research questions of this study. Using the literature, and after rounds of discussion with experts on the topic, the questions were developed and tested in one pilot session with five individuals. Participants for the pilot session were selected randomly from the students who responded to the call for participation email. Since there were no changes after the pilot session, data collected during that session were also included in the analysis, as this is a valid approach to using pilot data (Morgan *et al.*, 1998). The questions consisted of one introductory question (icebreaker) to start the conversation and one transitional question more related to the topic of the study to guide group discussions towards the goal of the study. There were five key questions, and the majority of the time was spent on these questions. The key questions were regarding: the participants’ eating habits before and after COVID-19 pandemic; their understanding of un/sustainable food and eating behaviours; differences between their eating habits at home and at the university; their food choices when they have a meal plan; and the impact social influencers, such as their peers or parents, have on their food choices. The moderator followed the question guide during each session while asking follow-up questions where needed. The follow-up questions enabled the students to share their ideas and elaborate on them.

At the end of the focus groups, the participants were asked to fill out a short survey gathering their demographic information. The survey was also anonymous, online (the link was provided at the end of the session) and conducted through Qualtrics. There were seven questions related to age, gender, employment, education, programme of study, living

arrangement and citizenship/immigration status. This information was used to better understand the sample and was not used for further analysis.

2.2 Data analysis

Data obtained from the survey were analyzed by Microsoft excel to calculate descriptive statistics on participant characteristics. Data obtained from the audio recordings were transcribed verbatim using otter.ai (otter.ai, 2022) and then cleaned and checked for precision. To identify main themes and concepts related to each research question, there were three steps: open coding was used for each focus group; deductive coding based on the questions and the literature; and inductive coding for emerging themes. In deductive coding, codes are derived first and data are fitted to the codes, whereas in inductive coding, codes are constructed based on information from the focus groups (McBey *et al.*, 2019). The framework by Deliens *et al.* (2014) (Appendix 2) was used as a guide for deductive coding. Data (quotes) from each focus group were examined and coded using the factors identified by Deliens *et al.* (deductive) or a coded as new factor (inductive) where applicable. Inductive coding, guided by the literature, particularly the conceptual model by Malan *et al.* (2020) and the framework by Cheah *et al.* (2020), was done for reoccurring instances of a theme (factor). A code book (Appendix 3) was developed (Fereday and Muir-Cochrane, 2006; Seale *et al.*, 2003) and the codes were systematically grouped together also based on the five main categories presented by Deliens *et al.* (2014) as follows: individual factors, the social environment, the physical environment, the macro environment and university characteristics. Before developing the codebook, one randomly selected focus group was independently checked for coding consistency by the lead author and a research assistant (RA) to ensure reliability. All codes from the selected focus group were compared, and discrepancies/disagreements were discussed until consensus was reached. Then, codes were finalized, and the codebook was devised to make sure all themes and concepts were captured (Bradley *et al.*, 2007). All focus groups were then coded thematically using Microsoft Excel based on the codebook. For each identified factor, supporting quote(s) and the number of unique times the theme was mentioned by the participants (m) are presented in the results section, and includes the number of times the factor was mentioned in a different context. This means that the same person could mention the same factor more than once, and therefore, “m” could be greater than the number of participants ($n = 21$).

3. Results

The results are presented according to the study’s research questions. The demographic characteristics of the participants are presented in the first section; the second section discusses the attributes of sustainable food and the perceptions of sustainable eating behaviours among university students, and the third section discusses the determinants of students’ sustainable eating behaviours.

3.1 Participant characteristics

In this study, five focus groups were conducted, consisting of 4–5 participants in each session. The estimated point of saturation was observed and established in the fourth and confirmed in the fifth session. The sample ($n = 21$) consisted of one male, 19 females and 1 non-binary participant (Table 1).

All the participants were undergraduate students between the age of 16 and 23. They were mostly living with their families (42.9%) or in one of the campus residences (33.33%). As for their employment status, they were mostly unemployed (33.33%) or working part-time either on campus or off campus (28.6%, 23.8%, respectively). The participants were

Category	Count (N = 21)	%	Sustainable eating behaviours
<i>Gender</i>			
Female	19	90.4	
Male	1	4.8	
Queer	1	4.8	
Prefer not to say	0	0	
<i>Age</i>			
18–20	18	85.7	
21–23	3	14.3	
<i>Employment</i>			
I work full-time, on campus	1	4.8	
I work full-time, off campus	2	9.5	
I work full-time, both on campus and off campus	0	0	
I work part-time, on campus	6	28.6	
I work part-time, off campus	5	23.8	
I work part-time, both on campus and off campus	0	0	
I am not employed	7	33.3	
<i>Living arrangements</i>			
UWaterloo residences	7	33.3	
Living with roommates	4	19	
Living alone	1	4.8	
Living with family	9	42.9	
<i>Citizenship/immigration status</i>			
I am a Canadian citizen, Domestic student	19	90.4	
I am a permanent resident, Domestic student	1	4.8	
I am in Canada with a study permit, International student	1	4.8	
Total	21	100	

Table 1.
Characteristics of focus group participants

Source: Author’s own creation/work

also mostly Canadian citizens (90.4%). There were eight students in the Faculty of Environment (38%), six students in the Faculty of Health (28%), three in the Faculty of Engineering (14%), three in the Faculty of Arts (14%) and one student in the Faculty of Science (4%).

3.2 Perception of sustainable food and eating behaviours

Participants had different interpretations of sustainable food and sustainable eating behaviours, but overall, the participants seemed to have a basic understanding of the term. Two participants mentioned that because they were students in the Faculty of Environment, they were very familiar with the term due to the topics covered in their studies and information from their professors. In contrast, two of the participants mentioned that they have never thought about or heard the term “sustainable food”. Nevertheless, participants associated sustainable food with a variety of concepts that have been categorized into 11 themes, discussed below. The identified themes are both related to the characteristics of food and food production (sustainable food); environmental impact, local and organic, animal-based vs plant-based, healthy and nutritious, ethically produced, production and agriculture, as well as behaviours related to food consumption (sustainable eating

behaviours), balance and mindfulness, financial aspects, temporal aspects and food waste. A summary of results is provided in [Figure 1](#).

3.2.1 Attributes of sustainable food. Environmental impact (m = 18) – “Environmental impact” was the theme that was most commonly associated with sustainable food. The participants mentioned whether the food is “good” for the environment, had lower carbon emissions and impact on climate change, packaging and resource use (i.e. water consumption) as deciding factors for them to consider the food sustainable:

I also think about the relation to the environment. So, thinking about your carbon footprint, what are the things that you’re eating? And what impact does it have.

To identify food items with low environmental impact, participants discussed taking company reputation (e.g. certain big companies had a reputation of harming the environment) into consideration.

Local and organic (m = 12) – Many of the students (12 out of 21) perceived buying groceries from local markets was seen as more sustainable and buying produce from local markets is a better choice compared to buying from larger grocery stores:

Also, a local diet. So, eating foods that come from your local area, maybe like a local market, just choosing the foods that are grown around you rather than having to transport them from further locations.

For many of the participants sustainable, organic and local had similar meanings when it came to food choices:

Sustainable food is like the organic, true food, food from local markets.

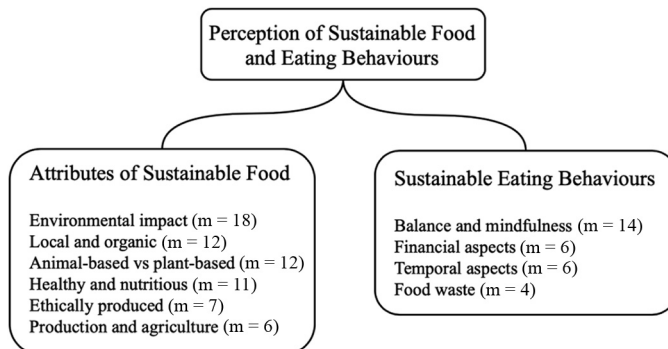
One participant mentioned sustainability was going beyond the individual level to a more societal level and supporting the community, local farmers and businesses. Participants also mentioned using labels, particularly organic, as indicators of sustainability. However, there was a disagreement among the participants on whether labels should be trusted or not.

Animal-based vs plant-based (m = 12) – Another theme identified during the discussions was the difference between eating “animal-based vs plant-based” products. The participants associated plant-based products with sustainability and lower environmental impact:

I find that eating less animal products or meat, is more sustainable.

[to be sustainable] We should reduce. If you ate it [animal products] less, I would call it sustainable.

Figure 1. Identified themes related to the perception of sustainable food and eating behaviours among university students. The number of mentions (m) of each determined is provided in brackets



Source: Author’s own creation/work

Some participants mentioned they were trying to eat less meat and dairy or had completely switched to products such as non-dairy milk to eat more sustainably.

Healthy and nutritious (m = 11) – The participants also discussed the importance of eating healthy and nutritious food to have a sustainable diet and sustainable food could be translated into healthy food:

I guess just the mix between eating predominantly healthy. . . making sure that you are getting all the nutrition that you need.

Although “health and nutrition” were referred to as an important aspect of sustainable food, some participants mentioned sustainability goes beyond just health:

[Sustainability in food] it’s about a lot besides just eating healthy.

Furthermore, most participants mentioned they did not consider frozen or canned fruits and vegetables healthy enough:

I would consider the fresh, non-frozen version of the food to be healthier, because I guess it hasn’t been processed, than frozen food.

Ethically produced (m = 7) – The “ethics” behind food production was also discussed in the conversations. Most of the discussion was regarding cruelty towards animals and how they were raised. The participants also mentioned equality and working conditions of the people involved in the process of food production. One participant noted that although they have thought about ethical considerations of food production, they prioritized environmental impact over ethics and another participant mentioned that ultimately ethics were not a deciding factor in what they choose to eat:

I’ve definitely thought about the ethical considerations behind eating animal products; specifically, a lot of unsustainable food production does harm a lot of animals. But I wouldn’t say that it’s a deciding factor in what I choose to eat.

Production and agriculture (m = 6) – Circumstances related to food production and agriculture were another theme identified as a factor related to how the participants perceived sustainable food:

I do think that sustainable food has to do with how it is grown and how it is raised if you’re talking about livestock agriculture.

Furthermore, the use of pesticides and genetically modified organisms (GMOs) were perceived as unsustainable agricultural practices. The participants also mentioned certain products, such as palm oil and soy, as examples of products that required extensive resources, and their production harmed the environment. One participant mentioned sustainable food was when the natural system had the ability to reproduce the food within a self-sustaining system without much human intervention and without environmental degradation:

Sustainable food, I just think of the ability of natural systems to keep producing that food.

3.2.2 Sustainable eating behaviours. Balance and mindfulness (m = 14) – A major identified theme related to sustainable eating behaviours was “balance and mindfulness”. Many of the participants perceived sustainable eating behaviours as being related to eating a “balanced” diet and being “mindful” of what and when you eat. This could be eating a balanced meal, in terms of the amount that is eaten, consuming all food groups (such as fruits, vegetables, grains and others) or having an overall balanced diet, which they saw as a diet where they

had multiple meals per day, snacks and enough water. They also mentioned mindfulness and listening to your body when choosing what food to eat:

When I think about sustainable eating habits, I think about eating mindfully. Just doing what you can with the given circumstances, and then making more mindful choices.

Some mentioned intuitive eating (rather than having a meal because it is the time to have a meal such as lunch) and being mindful of your mental health given the circumstances (i.e. being a university student during a global pandemic) were characteristics of sustainable eating behaviours:

[sustainability is] making it so each meal we have the amount of food we need the balance we need. It's important to watch what you're eating. So, it's not just about eating consistently. And you also have to make sure you're getting everything from all the food groups, like make sure you're eating your fruits and vegetables and dairy, things like that.

Financial aspects (m = 6) – The participants discussed that sustainable eating behaviours have to be financially feasible. They mentioned since they were university students, they had budget constraints and healthy food (which was associated with sustainable food, as mentioned in Section 3.2.1) tended to be more expensive. Hence, it was often a challenge for them to eat sustainably due to the financial burden. One participant said:

I think about sustainable eating, as a university student, a big part of it is the financial aspect.

Temporal aspects (m = 6) – Students discussed being able to maintain a habit for a long period of time without any constraints (such as financial constraints) as a characteristic of sustainable eating behaviour, which could also be related to the actual meaning of the word sustainable.

[...]it's about what you can kind of continue to do over a long period of time.

Food waste (m = 4) – Another aspect of sustainable eating behaviour mentioned by the students was reducing “food waste”. When asked about what food-related behaviour they think was sustainable, one participant said:

When I think about sustainable eating, it is also looking at the waste aspect, like how much waste you're producing in terms of food waste. [To] make sure that I'm not being wasteful.

They pointed out that university students were likely to forget about the food they had or did not have access to the required facilities (such as a fridge or a stove), which, in turn, would result in food waste. Therefore, being aware of their food waste and striving to reduce it contributed to eating sustainably.

3.3 Determinants of sustainable eating behaviours

The framework by Deliens *et al.* is used to structure the results section below related to participants' perceptions about determinants of sustainable eating behaviours. The five categories from the framework are: individual factors, social environment, physical environment, macro environment and university characteristics. A summary of results is provided in [Figure 2](#).

3.3.1 Individual factors. Food literacy (dietary knowledge and cooking skills) (m = 49) – Many of the participants (18 out of 21) suggested that their cooking skills and knowledge about the ingredients, such as nutritional value or health benefits (referred to as food literacy in general), were among the main factors influencing their food choices. Lack of cooking skills was mentioned as a barrier to eating healthy and sustainable food, even if they had

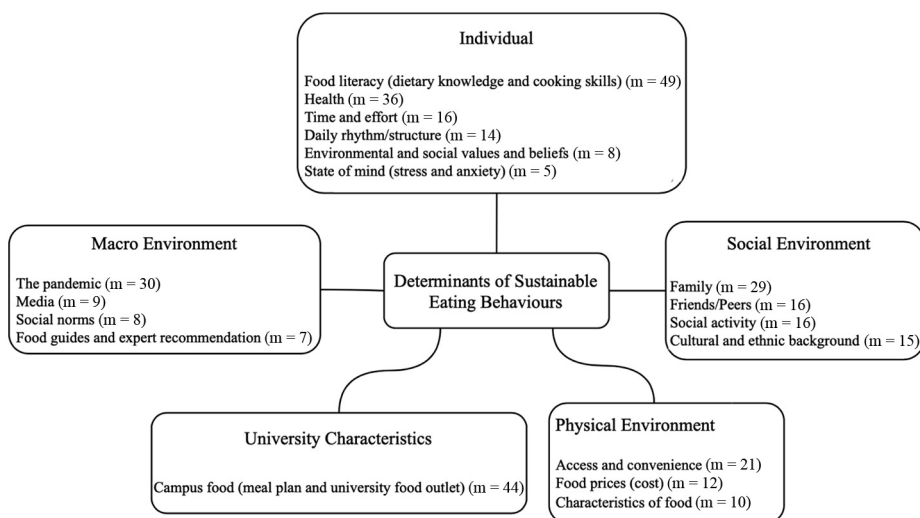


Figure 2. Determinants of sustainable eating behaviours among participants. The number of mentions (m) of each determined is provided in brackets

Source: Author's own creation/work

access to cooking facilities and a kitchen. They also mentioned using the same ingredients almost all the time since they did not know many recipes or how to use new ingredients, which showed a lack of food literacy:

I don't think I have sufficient cooking skills to make healthy meals for myself.

However, participants who believed they had adequate cooking skills demonstrated higher motivation to eat healthy and sustainably. Whether they cooked for themselves or had a partner, friend or family member who cooked or just being involved in the process of cooking, motivated them to prepare healthy dishes with higher nutritional value:

I feel like I've actually been eating healthier ever since I've been able to cook.

Furthermore, the effort they put into their cooking helped them value their food and hindered them from ordering takeout or eating prepackaged food such as frozen pizza. For some participants, they had to learn some basic cooking skills when moving away from their family, which resulted in healthier food choices once they learned how to cook.

Health (m = 36) – Physical and mental health was one of the major determinants of healthy and sustainable eating discussed by the students. To stay healthy, the participants mentioned trying to choose healthier food options such as fruits, vegetables and salads while avoiding fried food or takeout. They also discussed including all food groups in their meals as an approach to healthy eating:

[On a meal plan] I'm choosing what I want to try to eat healthy stuff. Make sure I have at least one vegetable with each of my meals.

For some participants, focusing on the health aspects of their food was due to their workout plans or health concerns (such as avoiding gluten or sugar). In addition to physical health, maintain their mental health was also discussed as a motivator to eat healthy.

Time and effort (m = 16) – The participants mentioned during school, they did not have enough time to plan for or prepare meals that were healthy and sustainable or go grocery

shopping often. Therefore, they sometimes ended up having only one meal on the day. They also mentioned preparing and cooking a meal required a lot of effort, and they would rather spend their time and energy on other activities, such as studying:

When I'm busier, I feel like I have a lot less time to prep and eat healthy, and to take care of myself.

Daily rhythm/structure (m = 14) – Not having a unique daily schedule or structure was also identified by the participants as an influencing factor. For some participants being at home with their family resulted in having a better schedule as they had specific mealtimes with their family and would not skip a meal (their family would remind them to eat), and food was available to them any time of day when they were at home:

Although I do eat breakfast, lunch and dinner, it really depends on the day. I wouldn't say that it's the same time that I eat those meals every day, because of school.

Others mentioned they had a better structure on campus as they could decide what and when to eat and schedule their meals around their work and study times. Participants also mentioned the impact of online classes on their schedule and, in turn, their eating habits due to the pandemic. For some, online classes meant more time to prepare food and, therefore, having healthier meals, snacks and more regular eating habits. For others, the stress of online classes and lack of a schedule resulted in skipping meals, particularly breakfast and eating more unhealthy food such as takeout. As noted by the participant, particularly for first-year students, time management, in terms of whether to study or to eat, was an issue.

Environmental and social values and beliefs (m = 8) – Environmental consciousness and knowing you were making more ethical choices impacted their choice of healthy and sustainable food. By choosing more plant-based options, reducing waste and supporting local businesses, especially during the pandemic, participants felt they are making more sustainable decisions regarding their food and the positive impact from these choices motivated them to continue. Participants mentioned they might not be able to fully change their diet, but they could and were willing to make some modification. One participant said:

I gave myself two days in the week that I do so to be more conscious of the meat that I was consuming.

State of mind (stress and anxiety) (m = 5) – Stress and anxiety due to exams, homework, courses or life, in general, were also mentioned as factors impacting eating behaviours. For some participants, it resulted in eating less, and for others, it meant stress eating, which were both considered unhealthy and unsustainable. The stress would also inhibit them from planning for food or putting in the effort to try to eat healthy:

As stressful university students, it can be hard to put that much time and effort into making sure you can go and seek healthy food.

3.3.2 Social environment. Family (m = 29) – Another major factor influencing eating behaviours and eating decisions discussed by the participants was their family. Parents, partners and siblings were the main influencers identified within their family. Parental control can have a significant role in food decisions. For many of the participants, growing up, their parents had the most impact on their eating behaviours. Their parents did most of the grocery shopping and cooking, and the students did not have much say. Therefore, they would have to eat what was prepared, which was sometimes not the healthiest option in their opinion. Furthermore, if their family were mostly carnivores or tended to eat a lot of

meat, it was difficult to be a vegetarian or vegan (which were perceived to be healthier and more sustainable diets). One participant said:

I never believed that I could ever go vegetarian. I'm in a house full of carnivores and my boyfriend loves to hunt and all that fun stuff.

However, if they had a family member that was vegan or vegetarian, it motivated them to try those diets or make moderate changes in their diets.

They also mentioned even when they were on campus, and their parents checked to make sure they were having decent meals and enough healthy food (i.e. fruits and vegetables). Therefore, their family eating habits were still an important influence on their eating and many of their choices aligned with what their parents taught them:

Even on campus, my parents definitely influenced me as well with the calls asking me what I was eating, and encouraging me to try something new.

Friends/Peers (m = 16) – After family, friends were also identified as eating behaviour influencers. When living on campus, participants mentioned many of their food decisions were impacted by their friend group. If they had friends who ate healthfully, they tended to eat healthier, and if their friends were more into takeout and unhealthy options, their food choices would also be similar:

What I eat really depends on who I was hanging out with at the time. It really depended on my friends.

Friends also made suggestions about trying new food, as well as keeping each other in check:

Beyond just the healthy versus unhealthy, I think, friends do a good job of exposing you to new types of food that you wouldn't have necessarily tried beforehand.

Therefore, they could make sure they were eating healthfully and consuming all necessary nutrients, similar to how parents' check-in is mentioned in the "family" section. Students' house/roommates also influenced their eating habits by acting as a reminder to eat and not skip meals or sharing food.

Social activity (m = 16) – For the majority of participants, eating was more enjoyable with others and as a social activity. Eating in a social setting, rather than alone, was also a reminder to be mindful of their eating habits. Therefore, they discussed they might skip a meal or eat just to fuel themselves (without paying attention to what they are actually eating) if they had to eat alone.

At home, I would usually eat just with my family. When I was cooking, it was usually either with friends or family, because it was just a kind of a social activity.

Cultural and ethnic background (m = 15) – Ethnic and cultural food consumed at home and by their families was also a factor influencing eating habits.

Growing up, I only ever really ate Chinese food because my parents, my mom only really knew how to cook Chinese food and wasn't too open to foods from other cultures.

Some participants mentioned their cultural food is well balanced and had an item from every food group which was considered healthy. For others, their cultural food had no meat or very little meat, which was considered a sustainable diet:

Most of our [ethnic] food is pretty balanced. In one dish, there's always a vegetable there's always meat, and you get a lot of the stuff in the food groups already.

Some of the participants mentioned leaning towards more cultural food when on campus, and others mentioned eating other types of food to either try new food or due to their diets:

I changed a lot of my diet in the recent months, [...] because I came from a cultural background, recently I started to eat less of cultural foods.

3.3.3 Physical environment. Access and convenience (m = 21) – Access to cooking facilities such as a kitchen or a fridge was mentioned as a determinant of sustainable and healthy eating by the participants. Not being able to stock up on food, not having the required ingredients and not having the equipment to cook were all reasons that made it difficult for the students to eat how they would prefer:

I don't have the opportunity to go to a fridge full of food, [...] it's also harder just because I can't stock up.

Another aspect of lack of access mentioned in the conversations was not being able to go grocery shopping and transportation restrictions. Some students mentioned they did not have a car or a bus pass; therefore, they would have to limit their trips to the store, and this would result in missing some ingredients at certain points of the week. This would also mean they would have to buy non-perishable food with longer shelf life, such as packaged and frozen food (if they had a fridge) and opt-out of purchasing fresh fruits and vegetables (which they saw as healthier options).

Convenience was also mentioned as a contributing factor, and when healthy and sustainable food options were the convenient choice, the participants mentioned being more motivated to choose those options. Depending on the living situation of the students, healthy eating choices could be a convenient choice or a challenge. For some participants, living on campus meant easier and faster access to food, or if they were on a meal plan, the food was already prepared. Therefore, they could choose what they would like to eat:

The residence I was at was buffet style [...]. It just felt easier to [choose healthy food] and more convenient.

Others mentioned they might forget to eat, skip a meal or just snack when they were on campus. Whereas living at home and having healthy food options or a kitchen at their disposal helped them make better food choices.

Food prices (Cost) (m = 12) – The higher cost of healthy and sustainable food was another factor mentioned by the participants as a determinant of their food choices. In general, they talked about how students did not usually have a bountiful budget and may not be able to afford healthy and organic (which they perceived as sustainable) food. They also had to be mindful of how much they pay for each meal which would result in eating the same meals. With regard to cost being a barrier, one participant mentioned:

So as someone who liked trying new food, I didn't explore that much just because of how much money I have, and I can't go over.

Some participants mentioned they collected coupons or tried to do their shopping on certain days to get discounts. However, making the “financially smart decision”, as mentioned by the participants, was not always easy, particularly given the price increase during the pandemic. Many of the participants mentioned that although they would prefer eating healthy and sustainable food and purchasing eco-friendly products, they were not willing to spend more money, especially since the product was the same. However, one participant mentioned that they understood sustainable food was more expensive; however, it was a good investment for their health and the environment.

Characteristics of food (m = 10) – The participants discussed how specific characteristics of food, particularly healthy food, could impact their choice. This could be regarding characteristics such as taste or durability. They mentioned sometimes healthy food (i.e. vegetables) did not taste good or was not properly cleaned when served in their meal plans. Therefore, they preferred eating another type of food:

This [taste and not being cleaned properly] deters you from eating the vegetables, and you just want something that tastes good.

They also mentioned fruits and vegetables had a shorter shelf-life and were more perishable compared to other food such as cereals or pasta.

3.3.4 Macro environment. The pandemic (m = 30) – One of the main influencers of eating behaviours discussed in the focus groups was the COVID-19 pandemic and the challenges related to it. For most of the participants, at the beginning of the pandemic, they experienced major changes in their eating habits due to the uncertainty of the situation and all the changes:

At the beginning of the pandemic, however, I felt like my eating habits were worse because there was no structure to the day.

Some challenges related to the beginning of the pandemic were lack of motivation, boredom and uncertainty. As a result of these challenges, participants discussed baking more, trying new recipes, gaining weight and being less active:

In the beginning of the pandemic, when lockdown started, I gained so much weight just because I was baking a lot.

However, many participants mentioned reaching stability and a balance after a while. As for their eating behaviours, it meant they either went back to their pre-pandemic eating habits or developed new habits. For some participants, the pandemic had a positive influence on their eating habits, such as learning to cook and eating more home-made dishes, having all their meals (not skipping meals) since all their courses and work were online, starting to support local restaurants and businesses, eating out less since most restaurants were closed at the beginning and overall developing healthier eating habits:

Compared to the start of the pandemic to now I've definitely improved my eating habits for sure.

Media (m = 9) – The internet and social media were also identified as influencers of sustainable eating behaviours. However, they had different types of impacts. For vegan and vegetarian participants or participants that were planning to reduce meat consumption, media was seen as a good resource for finding new recipes, watching documentaries about food production and overall, a good source of information. As for social media, the participants discussed that it might have negative impacts, such as promoting diet culture or displaying unrealistic versions of healthy and sustainable eating:

Also, I think social media influences us a lot. Because we are always looking that some people make some diet and eat vegetables in this way to get this body.

Some participants mentioned they were often skeptical of information provided on social media and tended to do their own research to fact-check.

Social norms (m = 8) – For many participants, their eating habits were also impacted by the social norms in their community. They mentioned what they chose to eat often depended on the circumstances and the social group they were dining with. For example, when dining in the dining halls and most people were having a healthy food, they would also be more intrigued to make healthier food choices:

I feel like when I went to meals in residence, I would see other people get healthy foods, and that would kind of pressure me to be like I probably felt needed a salad or something on this plate.

For some, it would be due to their insecurities and more related to peer pressure, and for others, it was a reminder to eat healthy and more of a positive impact.

Food guides and expert recommendation (m = 7) – The participants also discussed referring to food guides, nutritionists and other experts regarding food recommendations. Many of the participants discussed Canada’s Food Guide as a reference for their eating:

Right now, my eating habits are mostly influenced by the recommendations in the food guide, kind of vaguely at the back of my head.

Therefore, they would try to have at least one item from each food group and keep the serving size in line with the food guide recommendations. They also mentioned they would rather do their own research about their food choices and listen to recommendations from doctors and nutritionists:

For myself the most reliable people that I go off of, are doctors or nutritionists or registered dieticians, because they’re the people that have done their research about food and nutrition and what we actually need to eat.

3.3.5 University characteristics. Campus food (Meal plan and university food outlet) (m = 44) – Campus food characteristics, particularly meal plans and available food outlets, were the most frequently mentioned factor impacting healthy and sustainable eating. Almost all the participants had been on a type of meal plan at some point in their time as university students. Depending on the type of meal plan, they mentioned the *portions* were either too small or too large for them. Particularly in cases where they had to swipe for each meal (and pay for each meal separately from their overall meal plan balance), if the portions were too small, they would have to stay hungry and keep their swipe for the next meal. Another aspect was lack of *variety*. The participants mentioned although there was an obvious effort to provide healthier food options, such as fruits and vegetables for each meal, there were the same options almost every day. Furthermore, due to financial reasons or not liking alternate food items with which they were presented, some students mentioned eating the same meal every day for a long period of time. For vegan and vegetarian participants, it was particularly challenging to have a balanced diet. Whereas at home they had the option of preparing a balanced and healthy dish for each meal, living in residence constrained their options for balanced meals. A few participants also discussed that the food might be balanced and include every food group; however, it did not match the cultural food (discussed more in Section 3.3.4, cultural and ethnic background); they were used to eating and had more of a “North American diet” style. Another topic discussed regarding the meal plans and food outlets was the *time restrictions* in the residence’s cafeteria:

Being at university and being on a meal plan has led me to eat fewer portions because they have those structured mealtimes.

Due to the pandemic, the cafeterias in the college residences had constrained mealtimes. Therefore, students on a meal plan had a set block of time for breakfast, lunch and dinner, and if they missed those time blocks, they would have to purchase food from elsewhere. However, before the pandemic these cafeterias served food all day, so the students could match their eating times to their own schedule. Finally, some participants mentioned being on a meal plan or eating at the cafeteria gave them the feeling that they were dining at a restaurant. Therefore, they would indulge more and lean towards unhealthy options. Several

students noted that the ice cream and soda vending machines made it very convenient for them to indulge in unhealthy food:

When you go to the cafeteria, it almost feels like you're going to a restaurant every day. when you go out to a restaurant, you obviously don't make the healthiest choices.

4. Discussion

The aim of this study was to present the current perceived attributes of sustainable food and sustainable eating behaviours and to understand the determinants of sustainable eating behaviours among Canadian university students. This knowledge is important for informing interventions aimed at promoting sustainable eating behaviours that can moderate the transition to sustainable eating habits (Bauer and Reisch, 2019). There were three key findings for this study. Firstly, university students had a wide range of perceptions of the attributes of sustainable food and the aspects of sustainable eating behaviours. Secondly, in addition to the factors previously presented in the framework by Deliens *et al.*, this study identified additional determinants of sustainable eating behaviours, specifically “environmental and social values and beliefs” (categorised under individual factors), “campus food” (categorised under university characteristics) and “the pandemic” and “food guides and expert recommendation” (categorized under macro environment). Among all factors affecting eating behaviours, the top two themes mentioned by the participants were food literacy and campus food (meal plan and university food outlet). Thirdly, identified personal and environmental factors can motivate or act as a barrier for sustainable and healthy behaviours of university students. Each of these key findings is discussed in the context of existing literature below.

4.1 Perceptions of sustainable food and eating behaviours

This research showed that the three main perceived characteristics of sustainable food were environmental impact, the food being organic/local and animal-based vs plant-based. In the literature, university students mostly related sustainable food to environmental consideration and contribution to community and to having less meat (Cheah *et al.*, 2020; Massaglia *et al.*, 2022). Contribution to community also came up as an implied theme in the current research, as the participants mentioned one of the reasons why local food was more sustainable is due to its positive impact on the local economy and community. The current study shows that overall, there is limited understanding of what is sustainable food because some of the perceived characteristics are not necessarily aspects of sustainable food. For example, results from the current research and the literature (Pradhan *et al.*, 2015; Stein and Santini, 2022) suggest that local food is perceived to be sustainable, which is not necessarily the case.

The top theme of the characteristics of sustainable eating behaviours was “balance and mindfulness”. This theme was mentioned substantially more than the other characteristics, and this is a novel finding within the literature. Particularly, in the literature, reducing food waste is one of the main instances of sustainable eating behaviours (Monroe *et al.*, 2015; Pinto *et al.*, 2018), which was the least mentioned characteristic in the current study. The current research goes beyond the previously discussed aspects of sustainable eating behaviours, such as only focusing on food waste reduction and provides a holistic and more comprehensive list of themes related to sustainable eating behaviours.

These existing misinterpretations regarding sustainable food and eating behaviours among university students presents an opportunity to increase their knowledge and reinforce existing sustainable eating behaviours through interventions such as educational

programmes or messaging (Cheah *et al.*, 2020) or through courses related to food and sustainability (Jay *et al.*, 2019).

4.2 Determinants of sustainable eating behaviours

Participants mentioned a variety of personal and environmental factors (social, physical and university) as determinants of sustainable eating behaviours. For individual factors, this research found that food literacy (referred to as dietary knowledge in the framework by Deliens *et al.*), followed by health, were the greatest individual factors affecting students' eating behaviours, and were mentioned two to three times more often than the other determinants (i.e. time and effort, daily rhythm/structure, values/beliefs and state of mind). In the current research, food literacy was the most frequently mentioned factor by the participants (as an individual factor and among all other categories), which has also been identified as an important factor shaping eating habits of university students (Malan *et al.*, 2020). Furthermore, given that this study was focused on sustainable eating behaviours, environmental and social values were the main values and beliefs mentioned by participants, similar to results from the study by Lund *et al.* (2021), which found personal beliefs and values, particularly concerns regarding animal welfare and ethics impact dietary choices (Lund *et al.*, 2021).

Within the students' social environment, family, particularly parents, were the most important determinants of sustainable eating behaviours, followed by friends/peers, as students spend most of their time with their friends/peers when they are on campus. This has been highlighted in others studies, where it was found that parents impact diet trajectory patterns of young adults (Appannah *et al.*, 2021), and friends have major influences on food choices due to time spent together and the need to be accepted by the social group (Malan *et al.*, 2020; Mensah and Oyeboode, 2022). Furthermore, eating was considered a social activity for many of the participants, which influenced their food choices based on their social group. Mensah and Oyeboode (2022) also found that social gatherings and relations served as a guide for what and where young people eat. Eating habits were also impacted by culture and ethnicity. Particularly, if their cultural food was perceived to be sustainable (for example, less or no meat), they would likely follow the same diet.

Characteristics of the physical environment that determined participants' sustainable eating behaviours included access and convenience, food prices (cost) and characteristics of food (referred to as "appeal of food" by Deliens *et al.*). Their main two concerns regarding access were: having a kitchen and cooking facilities (i.e. fridge and stove); and access to means of transportation (personal vehicle or public transportation). These factors were also concerns mentioned in other [cooking facilities in Mensah and Oyeboode (2022), transportation in Bivoltsis *et al.* (2020) and Shannon and Christian (2017)]. Food cost was also a critical factor in whether participants purchased healthy and sustainable food items as they had budget constraints. Cost is widely known to be one of the major determinants of food choices (Glanz *et al.*, 2005), and this is particularly true concerning healthy, organic or local food, which is perceived to have higher prices (Collier *et al.*, 2021). The current research also found that food characteristics, including taste, cleanliness and perishability, were all factors that mostly deterred the students from having the healthy and sustainable food option. Collier *et al.* (2021) also mention that sensory experience, including taste (for example, when substituting meat), is one of the main factors impacting food choices.

In the macro environment, the participants mentioned the pandemic as a major influencer where lockdowns, food outlets closures and changes in schedules all impacted eating behaviours, which was expected (Ammar *et al.*, 2020; Huber *et al.*, 2021). However, certain changes, such as baking more, were temporary, while others resulted in a permanent

behaviour change. Particularly for students, results from the current study suggest that positive changes occurring due to the pandemic, such as eating healthier or preparing homemade dishes, can be sustained over time and become a regular habit.

Media, social norms and expert recommendations were also mentioned as determinants of sustainable and healthy eating behaviours from the macro environment. However, these factors had far less mentions (one-third) compared to the pandemic. Canada's Food Guide was mentioned as an important reference for dietary guidelines. The provincial curriculum for primary and secondary schools requires that students are taught Canada's Food Guide, so this is a positive intervention that seems to carry into adulthood. Therefore, promoting food guides and recommendations by experts such as dietitians can provide an opportunity to help increase food literacy and, in turn, improve eating behaviours among university students.

In terms of university characteristics, campus food was the main factor influencing participants' food choices and the second most commonly mentioned factor among all categories of determinants. Particularly, meal plans and university food outlets were the major themes mentioned by the participants in this category. This is consistent with findings from recent studies where university food and food environment characteristics were identified as important factors for enabling healthy and sustainable eating behaviours (Lee *et al.*, 2019; Mensah and Oyeboode, 2022). Marquis *et al.* also concluded that action to increase food variety and convenient meals is required in the residence halls in university campuses (Marquis *et al.*, 2019). Therefore, meal plans and university food environments in general can provide an opportunity for the students to improve their eating habits by offering easy access and sufficient variety of sustainable foods and healthy food options.

4.3 Barriers/motivators

In line with previous research by Sogari *et al.* (2018), the current study also recognized that factors influencing sustainable eating behaviours can act as a barrier or a motivator depending on the circumstances. For example, pre-paid meal plans could act as a constraint for the students due to the limitations in variety and offering times (barrier). However, it could also be a convenient way of accessing food without the additional cost or effort, which can motivate healthy and sustainable eating (motivator). Another example would be living arrangements. Results from the current research showed that for some participants, their living arrangements (living alone and away from their family), a factor also identified by Sexton-Dhamu *et al.* (2021), was a chance to learn new cooking skills (motivator), while for others resulted in an increased consumption of unhealthy and fast-food options (barrier). This could be due to lack of knowledge and skills to cook healthy foods [closely related to food literacy, also identified by Malan *et al.* (2020)], easy access to unhealthy food [due to environmental characteristics also identified by Munt *et al.* (2017)], and personal emotions such as stress. The current research also indicated that the impact of social influencers is not necessarily positive and depends on the circumstances. Peers and parents can have both negative or positive impact on eating behaviours (Maillet and Grouzet, 2021).

Factors identified in the current research extend beyond general or solely health-related behaviours and include sustainable eating (i.e. environmental and social considerations), providing a more comprehensive overview of existing opportunities for eating habit improvements. This could guide food-related interventions and policies by providing a better understating of how to eliminate barriers and emphasize on motivators.

4.4 Strengths, limitations and future direction

In terms of strengths, this study was conducted with the participation of students from various colleges and various faculties. Therefore, it covered different points of view,

backgrounds and levels of knowledge regarding the discussed topics. Furthermore, to provide a comprehensive overview, this study did not focus on one specific eating behaviour related to sustainable eating. The focus groups guided the participants to discuss their perception of sustainable eating and what they believe would motivate or demotivate them to eat sustainably.

In terms of limitations, although the goal of the study was to have a representative gender distribution, there were more female students in the sample compared to other genders. The reason behind this could be due to the fact that females are more likely to participate in online research and surveys (Smith, 2008). This biased sample could, in turn, impact the results and skew towards representing a more female-focused point of view. However, women are more likely to be food purchasers/providers in families, so this sample could be useful in understanding food choices. Additionally, all students were from Canadian colleges and in the city of Waterloo, Ontario, and the results may not be generalizable to other higher education institutions in other provinces or countries. Furthermore, this study was done during the COVID-19 pandemic; hence, results might have been affected by circumstances surrounding the pandemic. For example, students' living arrangements, class schedules and social events were different than during regular times. Other inherent limitations of focus groups, such as group thinking, might have also impacted the results.

In future research, these focus groups could be conducted for a larger and more representative sample in terms of gender or samples that account for student ethnicity as they may have different eating behaviours. Moreover, further surveys could be conducted based on the current exploratory research to reach a wider audience. Furthermore, current results can be used to design interventions aimed at promoting sustainable eating behaviours, which can then be tested at a university setting. A number of universities, such as the University of British Columbia and University of Cambridge, have implemented different initiatives or programmes to promote sustainable eating behaviours (Buchheister *et al.*, 2020; Jay *et al.*, 2019; University of Cambridge, 2019). Results from the current research help with the design and implementation of such programmes in the Canadian context.

5. Conclusion

This study presents a novel and holistic overview of how sustainable eating behaviours and sustainable foods are perceived among university students and identifies the perceived determinants of adopting sustainable eating behaviours. This study contributes to academic knowledge by identifying major factors ("food literacy" and "campus food") and novel factors (including "environmental and social values and beliefs") impacting sustainable eating behaviours among university students. Furthermore, this study identifies a gap in knowledge and lack of understanding regarding the perceptions about what constitutes sustainable eating behaviours and foods. The methodological approach of this study (focus group structure, outline and code book) can also be used for future research in higher education institutions.

As for practical implications, this study demonstrated that given the importance of campus food environments, higher education institutions (such as universities) have the opportunity to shift students' eating habits towards a more sustainable eating trajectory. This goal can be achieved through on-campus interventions that enhance food literacy, knowledge about sustainable food and interventions aimed at improving food outlets, such as increased variety, quality and affordability.

References

- Alghamdi, E.S., Farrash, M.S., Bakarman, M.A. and Mukhtar, A.M. (2018), "Dietary habits of university students living at home or at university dorm: a cross-sectional study in Saudi Arabia", *Global Journal of Health Science*, Vol. 10 No. 10, p. 50.
- Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., Bouaziz, B., *et al.* (2020), "Effects of COVID-19 home confinement on eating behaviour and physical activity: results of the", *Nutrients*, Vol. 12 No. 6, p. 13.
- Appannah, G., Murray, K., Trapp, G., Dymock, M., Oddy, W.H. and Ambrosini, G.L. (2021), "Dietary pattern trajectories across adolescence and early adulthood and their associations with childhood and parental factors", *The American Journal of Clinical Nutrition*, Vol. 113 No. 1, pp. 36-46.
- Arnett, J.J. (2000), "Emerging adulthood: a theory of development from the late teens through the twenties", *American Psychologist*, Vol. 55 No. 5, pp. 469-480.
- Austgulen, M.H. (2014), "Environmentally sustainable meat consumption: an analysis of the Norwegian public debate", *Journal of Consumer Policy*, Vol. 37 No. 1, pp. 45-66.
- Bauer, J.M. and Reisch, L.A. (2019), "Behavioural insights and (Un)healthy dietary choices: a review of current evidence", *Journal of Consumer Policy*, Vol. 42 No. 1, pp. 3-45.
- Bivoltsis, A., Trapp, G., Knuiaman, M., Hooper, P. and Ambrosini, G.L. (2020), "The influence of the local food environment on diet following residential relocation: longitudinal results from RESIDential environments (RESIDE)", *Public Health Nutrition*, Vol. 23 No. 12, pp. 2132-2144.
- Bradley, E.H., Curry, L.A. and Devers, K.J. (2007), "Qualitative data analysis for health services research: developing taxonomy, themes, and theory", *Health Services Research*, Vol. 42 No. 4, pp. 1758-1772.
- Buchheister, N., Ip, K., Koralewicz, A., Bal, J. and Stefankowski, A. (2020), "Transitioning towards a Climate-Friendly food system at UBC".
- Campbell, B.M., Beare, D.J., Bennett, E.M., Hall-Spencer, J.M., Ingram, J.S.I., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J.A. and Shindell, D. (2017), "Agriculture production as a major driver of the earth system exceeding planetary boundaries", *Ecology and Society*, Vol. 22 No. 4, doi: [10.5751/ES-09595-220408](https://doi.org/10.5751/ES-09595-220408).
- Campbell-Arvai, V., Arvai, J. and Kalof, L. (2014), "Motivating sustainable food choices: the role of nudges, value orientation, and information provision", *Environment and Behavior*, Vol. 46 No. 4, pp. 453-475.
- Carlsson-Kanyama, A. and González, A.D. (2009), "Potential contributions of food consumption patterns to climate change", *American Journal of Clinical Nutrition*, Vol. 89 No. 5, pp. 1704-1709.
- Cheah, I., Sadat Shimul, A., Liang, J. and Phau, I. (2020), "Drivers and barriers toward reducing meat consumption", *Appetite*, Vol. 149, p. 104636.
- Collier, E.S., Oberrauter, L.M., Normann, A., Norman, C., Svensson, M., Niimi, J. and Bergman, P. (2021), "Identifying barriers to decreasing meat consumption and increasing acceptance of meat substitutes among Swedish consumers", *Appetite*, Vol. 167, p. 105643.
- Deforche, B., Van Dyck, D., Deliëns, T. and De Bourdeaudhuij, I. (2015), "Changes in weight, physical activity, sedentary behaviour and dietary intake during the transition to higher education: a prospective study", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 12 No. 1, pp. 1-10.
- Deliëns, T., Deforche, B., De Bourdeaudhuij, I. and Clarys, P. (2014), "Determinants of eating behaviour in university students: a qualitative study using focus group discussions", *BMC Public Health*, Vol. 14 No. 1, p. 53.
- Deliëns, T., Van Crombruggen, R., Verbruggen, S., De Bourdeaudhuij, I., Deforche, B. and Clarys, P. (2016), "Dietary interventions among university students: a systematic review", *Appetite*, Vol. 105, pp. 14-26.

- Evans, J., Jones, R., Karvonen, A., Millard, L. and Wendler, J. (2015), "Living labs and co-production: University campuses as platforms for sustainability science", *Current Opinion in Environmental Sustainability*, Vol. 16, pp. 1-6.
- FAO (2019), "Dietary guidelines and sustainability", available at: www.fao.org/nutrition/education/food-dietary-guidelines/background/sustainable-dietary-guidelines/en/ (accessed 1 December 2019).
- Fereday, J. and Muir-Cochrane, E. (2006), "Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development", *International Journal of Qualitative Methods*, Vol. 5 No. 1, pp. 80-92.
- Garnett, T., Mathewson, S., Philip, A. and Fiona, B. (2015), "Policies and actions to shift eating patterns: what works? A review of the evidence of the effectiveness of interventions aimed at shifting diets in more sustainable and healthy directions", *Food Climate Research Network*, p. 85.
- Glanz, K., Sallis, J.F., Saelens, B.E. and Frank, L.D. (2005), "Healthy nutrition environments: Concepts and measures", *American Journal of Health Promotion*, Vol. 19 No. 5, pp. 330-333.
- Grech, A., Howse, E. and Boylan, S. (2020), "A scoping review of policies promoting and supporting sustainable food systems in the university setting", *Nutrition Journal*, Vol. 19 No. 1, pp. 1-13.
- Hansen, S.S. (2017), "The campus as a living laboratory: Macalester college case study", *World Sustainability Series*, pp. 223-239.
- Harrell, M.C. and Bradley, M.A. (2009), "Data collection methods semi-structured interviews and focus groups, distribution", available at: www.rand.org/content/dam/rand/pubs/technical_reports/2009/RAND_TR718.pdf
- Health Canada (2019), "Canada's food guide", available at: <https://food-guide.canada.ca/en/> (accessed 8 February 2021).
- Huber, B.C., Steffen, J., Schlichtiger, J. and Brunner, S. (2021), "Altered nutrition behavior during covid-19 pandemic lockdown in young adults", *European Journal of Nutrition*, Vol. 60 No. 5, pp. 2593-2602.
- Jay, J.A., D'Auria, R., Nordby, J.C., Rice, D.A., Cleveland, D.A., Friscia, A., Kissinger, S., *et al.* (2019), "Reduction of the carbon footprint of college freshman diets after a food-based environmental science course", *Climatic Change*, Vol. 154 Nos 3/4, pp. 547-564.
- Kamenidou, I.C., Mamalis, S.A., Pavlidis, S. and Bara, E.Z.G. (2019), "Segmenting the generation Z cohort university students based on sustainable food consumption behavior: a preliminary study", *Sustainability (Switzerland)*, Vol. 11 No. 3, pp. 34-37.
- Lea, E. and Worsley, A. (2003), "Benefits and barriers to the consumption of a vegetarian diet in Australia", *Public Health Nutrition*, Vol. 6 No. 5, pp. 505-511.
- Lee, K.M., Dias, G.M., Boluk, K., Scott, S., Chang, Y.-S., Williams, T.E. and Kirkpatrick, S.I. (2021), "Toward a healthy and environmentally sustainable campus food environment: a scoping review of postsecondary food interventions", *Advances in Nutrition*, Vol. 12 No. 5, pp. 1-27.
- Lee, K.M., Marcinow, M.L., Minaker, L.M. and Kirkpatrick, S.I. (2019), "The healthfulness of eateries at the University of Waterloo: a comparison across 2 time points", *Canadian Journal of Dietetic Practice and Research*, Vol. 81 No. 2, pp. 72-79.
- Lobb, A.E. and Mazzocchi, M. (2007), "Domestically produced food: consumer perceptions of origin, safety and the issue of trust", *Food Economics - Acta Agriculturae Scandinavica, Section C*, Vol. 4 No. 1, pp. 3-12.
- Lund, T.B., Denver, S., Nordström, J., Christensen, T. and Sandøe, P. (2021), "Moral convictions and meat consumption — a comparative", *Animals*, Vol. 11 No. 2, pp. 1-19.
- McBey, D., Watts, D. and Johnstone, A.M. (2019), "Nudging, formulating new products, and the lifecycle: a qualitative assessment of the viability of three methods for reducing Scottish meat consumption for health, ethical, and environmental reasons", *Appetite*, Vol. 142, doi: [10.1016/j.appet.2019.104349](https://doi.org/10.1016/j.appet.2019.104349).

- Maillet, M.A. and Grouzet, F.M.E. (2021), "Understanding changes in eating behavior during the transition to university from a self-determination theory perspective: a systematic review", *Journal of American College Health*, pp. 1-18.
- Malan, H., Watson, T.D., Slusser, W., Glik, D., Rowat, A.C. and Prelip, M. (2020), "Challenges, opportunities, and motivators for developing and applying food literacy in a university setting: a qualitative study", *Journal of the Academy of Nutrition and Dietetics*, Vol. 120 No. 1, pp. 33-44.
- Marquis, M., Talbot, A., Sabourin, A. and Riopel, C. (2019), "Exploring the environmental, personal and behavioural factors as determinants for university students' food behaviour", *International Journal of Consumer Studies*, Vol. 43 No. 1, pp. 113-122.
- Massaglia, S., Peano, C., Merlino, V.M., Gregis, A., Ghisalberti, C. and Sottile, F. (2022), "Food sustainability perception at universities: education and demographic features effects", *The International Journal of Management Education*, Vol. 20 No. 2, p. 100653.
- Mensah, D.O. and Oyebode, O. (2022), "'We think about the quantity more': factors influencing emerging adults' food outlet choice in a university food environment, a qualitative enquiry", *Nutrition Journal*, Vol. 21 No. 1, pp. 1-13.
- Michels, N., Man, T., Vinck, B. and Verbeyst, L. (2019), "Dietary changes and its psychosocial moderators during the university examination period", *European Journal of Nutrition*, p. 123456789, doi: [10.1007/s00394-019-01906-9](https://doi.org/10.1007/s00394-019-01906-9).
- Mollaie, S., Minaker, L.M., Robinson, D.T., Lynes, J.K. and Dias, G.M. (2022), "Including sustainability factors in the derivation of eater profiles of young adults in Canada", *British Food Journal*, doi: [10.1108/BFJ-06-2022-0476](https://doi.org/10.1108/BFJ-06-2022-0476).
- Monroe, J.T., Lofgren, I.E., Sartini, B.L. and Greene, G.W. (2015), "The green eating project: Web-based intervention to promote environmentally conscious eating behaviours in US university students", *Public Health Nutrition*, Vol. 18 No. 13, pp. 2368-2378.
- Morgan, D.L., Krueger, R.A. and Scannell, A.U. (1998), *Planning Focus Groups*, Sage.
- Morse, J.M. (1994), *Critical Issues in Qualitative Research Methods*, Sage, Thousand Oaks, CA.
- Munt, A.E., Partridge, S.R. and Allman-Farinelli, M. (2017), "The barriers and enablers of healthy eating among young adults: a missing piece of the obesity puzzle: a scoping review", *Obesity Reviews*, Vol. 18 No. 1, pp. 1-17.
- Nasir, V.A. and Karakaya, F. (2014), "Consumer segments in organic foods market", *Journal of Consumer Marketing*, Vol. 31 No. 4, pp. 263-277.
- Niemeier, H.M., Raynor, H.A., Lloyd-Richardson, E.E., Rogers, M.L. and Wing, R.R. (2006), "Fast food consumption and breakfast skipping: predictors of weight gain from adolescence to adulthood in a nationally representative sample", *Journal of Adolescent Health*, Vol. 39 No. 6, pp. 842-849.
- Onwuegbuzie, A.J., Dickinson, W.B., Leech, N.L. and Zoran, A.G. (2009), "A qualitative framework for collecting and analyzing data in focus group research", *International Journal of Qualitative Methods*, Vol. 8 No. 3, pp. 1-21.
- otter.ai (2022), available at: <https://otter.ai>
- Perrea, T., Grunert, K.G., Krystallis, A., Zhou, Y., Huang, G. and Hue, Y. (2014), "Testing and validation of a hierarchical values-attitudes model in the context of green food in China", *Asia Pacific Journal of Marketing and Logistics*, Vol. 26 No. 2, pp. 296-314.
- Pieniak, Z., Aertsens, J. and Verbeke, W. (2010), "Subjective and objective knowledge as determinants of organic vegetables consumption", *Food Quality and Preference*, Vol. 21 No. 6, pp. 581-588.
- Pinto, R.S., Pinto, R.M., dos, S., Melo, F.F.S., Campos, S.S. and Cordovil, C. D S. (2018), "A simple awareness campaign to promote food waste reduction in a university canteen", *Waste Management*, Vol. 76 No. 2018, pp. 28-38.
- Pradhan, P., Fischer, G., Van Velthuisen, H., Reusser, D.E. and Kropp, J.P. (2015), "Closing yield gaps: How sustainable can we be?", *Plos One*, Vol. 10 No. 6, pp. 1-18.

- Redman, E. and Redman, A. (2014), "Transforming sustainable food and waste behaviors by realigning domains of knowledge in our education system", *Journal of Cleaner Production*, Vol. 64, pp. 147-157.
- Ridgway, E., Baker, P., Woods, J. and Lawrence, M. (2019), "Historical developments and paradigm shifts in public health nutrition science, guidance and policy actions: a narrative review", *Nutrients*, Vol. 11 No. 3, doi: [10.3390/nu11030531](https://doi.org/10.3390/nu11030531).
- Roy, R., Soo, D., Conroy, D., Wall, C.R. and Swinburn, B. (2019), "Exploring university food environment and on-campus food purchasing behaviors, preferences, and opinions", *Journal of Nutrition Education and Behavior*, Vol. 51 No. 7, pp. 865-875.
- Salonen, A.O. and Helne, T.T. (2012), "Vegetarian diets: a way towards a sustainable society", *Journal of Sustainable Development*, Vol. 5 No. 6, pp. 10-24.
- Schösler, H., Boer, J.D. and Boersema, J.J. (2012), "Can we cut out the meat of the dish? Constructing consumer-oriented pathways towards meat substitution", *Appetite*, Vol. 58 No. 1, pp. 39-47.
- Seale, C., Gobo, G., Gubrium, J.F. and Silverman, D. (2003), *Qualitative Research Practice*, Sage.
- Sexton-Dhamu, M.J., Livingstone, K.M., Pendergast, F.J., Worsley, A. and McNaughton, S.A. (2021), "Individual, social-environmental and physical-environmental correlates of diet quality in young adults aged 18-30 years", *Appetite*, Vol. 162, p. 105175.
- Shannon, J. and Christian, W.J. (2017), "What is the relationship between food shopping and daily mobility? A relational approach to analysis of food access", *GeoJournal*, Vol. 82 No. 4, pp. 769-785.
- Sharma, M., Stephens, P.M., Nahar, V.K., Catalano, H.P., Lingam, V.C. and Ford, M.A. (2018), "Using a multitheory model to predict initiation and sustenance of fruit and vegetable consumption among college students", *Journal of Osteopathic Medicine*, Vol. 118 No. 8, pp. 507-517.
- Smith, G. (2008), *Does Gender Influence Online Survey Participation?: a Record-Linkage Analysis of University Faculty Online Survey Response Behavior*, San José State University.
- Sogari, G., Velez-Argumedo, C., Gómez, M.I. and Mora, C. (2018), "College students and eating habits: a study using an ecological model for healthy behavior", *Nutrients*, Vol. 10 No. 12, pp. 1-16.
- Stancanelli, J. (2010), "Conducting an on-line focus group", *The Qualitative Report*, Vol. 15 No. 3, pp. 761-765.
- Stein, A.J. and Santini, F. (2022), "The sustainability of 'local' food: a review for policy-makers", *Review of Agricultural, Food and Environmental Studies*, Vol. 103 No. 1, pp. 77-89.
- Stewart, K. and Williams, M. (2005), "Researching online populations: the use of online focus groups for social research", *Qualitative Research*, Vol. 5 No. 4, pp. 395-416.
- University of Cambridge (2019), "Removing beef and lamb from menu dramatically reduces food-related carbon emissions at Cambridge university", available at: www.cam.ac.uk/news/removing-beef-and-lamb-from-menu-dramatically-reduces-food-related-carbon-emissions-at-cambridge (accessed 21 March 2022).
- Wettergren, L., Eriksson, L.E., Nilsson, J., Jervaeus, A. and Lampic, C. (2016), "Online focus group discussions are a valid and feasible mode when investigating sensitive topics among young persons with a cancer experience", *JMIR Research Protocols*, Vol. 5 No. 2, p. e86.
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L.J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J.A., Vries, W.D., Sibanda, L.M., Afshin, A., Chaudhary, A., Herrero, M., Agustina, R., Branca, F., Lartey, A., Fan, S., Crona, B., Fox, E., Bignet, V., Troell, M., Lindahl, T., Singh, S., Cornell, S.E., Reddy, K.S., Narain, S., Nishtar, S. and Murray, C.J.L. (2019), "Food in the Anthropocene: the EAT-lancet commission on healthy diets from sustainable food systems", *The Lancet*, Vol. 393 No. 10170, pp. 447-492.
- Woodyatt, C.R., Finneran, C.A. and Stephenson, R. (2016), "In-Person versus online focus group discussions: a comparative analysis of data quality", *Qualitative Health Research*, Vol. 26 No. 6, pp. 741-749.

Opening (and warm up)	<p>After welcoming the participants, an introduction of the topic will be provided: <i>The purpose of the study is to find out more about students' food choices, the reasoning behind those choices, and the changes in eating behaviours due to the COVID-19 pandemic. This study is being undertaken as part of my (Sadaf Mollaei) PhD research</i></p> <p>Then we will go through general information regarding the topic: <i>This focus group will be confidential, so what you share in this session will be used anonymously. This session will be audio-recorded for the purpose of recording accurate notes</i></p> <p><i>You have the option of not using your real names, and you can keep your Camera off. If you wish to speak, you can use the "hand raise" feature. The focus group will take between 60–90 min. Data from this focus group will be analyzed, and anonymous quotations might be used in the reporting of the data, with the consent of the participant. Even if the names of participants are revealed during the actual focus groups, the data from the session will be anonymized and not associated with their names</i></p> <p><i>Also, you are asked to complete a very brief survey at the end of this session collecting demographic data. I will provide you with the link. No personal information, such as your names, will be collected</i></p>
Introduction (and ice breaker) Transition	<p>As part of participant introductions, we will go around the (virtual) room and ask the participants to list two things they are missing from being on campus</p> <p>Thinking of "sustainable eating behaviours in university students", what comes to your mind?</p>
Main questions	<ol style="list-style-type: none"> (1) What different eating behaviours do you have between eating at home and eating at the university? (2) What are the meanings of the word "sustainable" and "unsustainable" food for you? (3) Has the COVID-19 pandemic changed your eating habits? If so, how have your eating habits changed? (4) When you have a prepaid meal plan (or in a buffet style restaurant when you do not have to pay for each item), how do you choose what to eat? (5) Who influences your eating? How can parents, peers or professors positively/negatively influence your eating behavior?
Projective techniques (showing images)	<p>In this step, the students will be shown examples of possible signs (aimed at nudging them towards choosing more sustainable food options)</p> <p>The images are provided in the projective techniques (showing images) section</p> <p>The goal is to see how they feel and what they think about the options, to choose the most effective ones for the actual implementation of the interventions</p>
Survey Ending	<p>Provide the survey link and ask them to complete it</p> <p>Are there any other opinions related to the topic?</p> <p>Is there anything else you would like to share?</p> <p>Final remarks</p>

Table A1.
Focus group guide
source: Author's own
creation/work

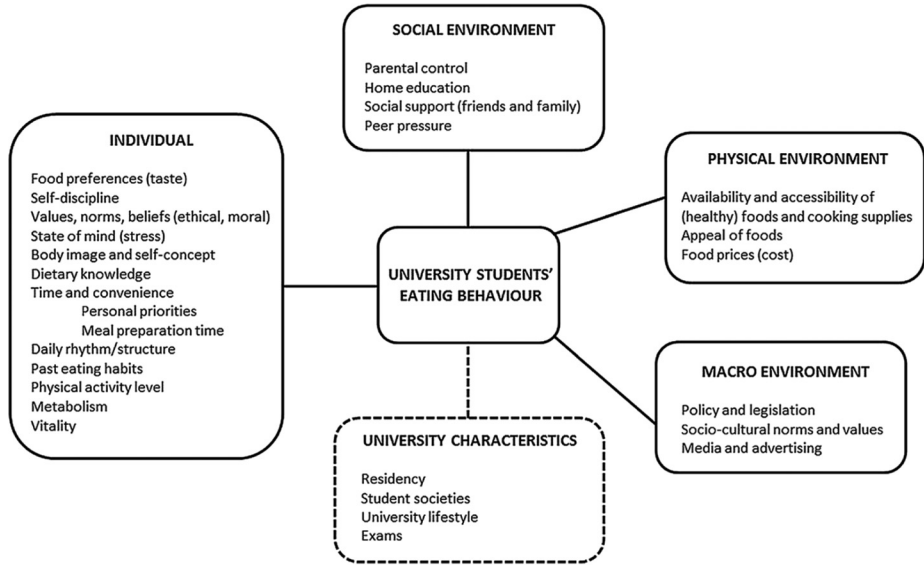


Figure A1.
Factors influencing
eating behaviours of
university students
by Deliens *et al.* 2014

Source: Deliens *et al.* (2014)

Category	Theme	Quote
Attributes of sustainable food	Animal based vs plant based	It's not really about labels again, it's about just trying to get less meat or dairy products or animal products on your plate
Attributes of sustainable food	Animal based vs plant based	I also try to make it sustainable. So say I'm at Starbucks, and they put milk in my drink. I'll never just throw it out, because it's already there. So when it comes to dairy and animal products that aren't meat, I'll just kind of eat it anyway
Attributes of sustainable food	Animal based vs plant based	eating plant based, or a lot of meat, different options like that
Attributes of sustainable food	Animal based vs plant based	plant-based foods or fruits and vegetables. I think that it would be more sustainable than if we have animals
Attributes of sustainable food	Animal based vs plant based	when I think of a sustainable eating habit, I immediately think of either like a pescatarian or vegetarian or a plant based diet
Attributes of sustainable food	Animal based vs plant based	I found that once I was on campus, I did start eating a lot less meat, because I separated those two days. I felt like I was eating more sustainably
Attributes of sustainable food	Animal based vs plant based	I find that eating less animal products, or meat is more sustainable
Attributes of sustainable food	Animal based vs plant based	eating things that are plant based. I'm just sick of meat and I would lean more towards the vegetable side and tofu
Attributes of sustainable food	Animal based vs plant based	[to be sustainable] We should reduce. If you ate it [animal products] less, I would call it sustainable
Attributes of sustainable food	Animal based vs plant based	I've switched to non-dairy products from dairy products
Attributes of sustainable food	Animal based vs plant based	would also say, the vegan piece that I have been influenced by various sources, over a number of years on environmental or ethical and personal decisions
Attributes of sustainable food	Animal based vs plant based	I am currently a vegetarian. So I would not be choosing the beef one, even if it was labeled as ethical meat or sustainably grown meat, I still would not eat that
Attributes of sustainable food	Environmental impact	it's about trying to do things that are sustainable for the environment
Attributes of sustainable food	Environmental impact	I also think about the relation to the environment. So thinking about your carbon footprint, what are the things that you're eating? And what impact does it have
Attributes of sustainable food	Environmental impact	the first thing that came to mind was the environment
Attributes of sustainable food	Environmental impact	whether or not that food is eco friendly or well sourced is kind of another part of it
Attributes of sustainable food	Environmental impact	I think about the environment
Attributes of sustainable food	Environmental impact	I think that is much more sustainable for the environment
Attributes of sustainable food	Environmental impact	the first thing that comes to mind is food that is good for the environment
Attributes of sustainable food	Environmental impact	but then also on a global level with climate change

(continued)

Table A2. Code book

Category	Theme	Quote
Attributes of sustainable food	Environmental impact	but based on how animals are raised, they do contribute to carbon emissions which leads to greenhouse gases and doesn't necessarily prevent global warming
Attributes of sustainable food	Environmental impact	I look at the ingredients, for example. So for example, with almonds, that uses like a lot of water and usually there is controversy around how sustainable that is. So as an example, just maybe choosing an item that doesn't have that ingredient in it
Attributes of sustainable food	Environmental impact	a diet that can be produced for the world, for a stainable future
Attributes of sustainable food	Environmental impact	[I prioritize] their environmental impact over the ethics behind it
Attributes of sustainable food	Environmental impact	[how it is] packaged is we are going environmentally
Attributes of sustainable food	Environmental impact	but also packaging as well
Attributes of sustainable food	Environmental impact	we can maintain an environment by using it and unsustainable are the ones that when we take it, we're depleting the environment and natural resources
Attributes of sustainable food	Environmental impact	because different foods have different land requirements or water requirements
Attributes of sustainable food	Environmental impact	I know that a lot of food does take a lot to produce it just like milk needs a lot of water
Attributes of sustainable food	Environmental impact	probably not health is really because of excessive resources they use
Attributes of sustainable food	Ethically produced	lot of unsustainable food production does harm a lot of animals
Attributes of sustainable food	Ethically produced	and cruel ways that they tend to get them
Attributes of sustainable food	Ethically produced	I definitely think about [ethics behind their food], like chicken farming. And that's terrible. They're all stuck in a cage, and they all are in their own feces
Attributes of sustainable food	Ethically produced	when I eat meat and same with cows and beef. How inhumane they're treated
Attributes of sustainable food	Ethically produced	I've definitely thought about the ethical considerations behind eating animal products specifically, but I wouldn't say that it's a deciding factor in what I choose to eat
Attributes of sustainable food	Ethically produced	a system that we can continue to use, that gives us food, that works for everybody. So not just us people here in the Western world, but also people in developing countries
Attributes of sustainable food	Ethically produced	people still do work in extreme conditions just to get those foods
Attributes of sustainable food	Healthy and nutritious	I guess just the mix between eating predominantly healthy, making sure that you are getting all the nutrition that you need
Attributes of sustainable food	Healthy and nutritious	those combined into just a better form of eating, whether it's healthier
Attributes of sustainable food	Healthy and nutritious	it's a lot about just besides just eating healthy
Attributes of sustainable food	Healthy and nutritious	So I would have to say that a lot of the unsustainable foods are the foods that actually cause reactions for me internally

(continued)

Table A2.

Category	Theme	Quote
Attributes of sustainable food	Healthy and nutritious	I think just sustainable for me is considering how I feel internally and if I'm like this actually is filling me and I've read the nutritional value and I'm actually fine
Attributes of sustainable food	Healthy and nutritious	sustainable is more healthier food that the environment can create for u
Attributes of sustainable food	Healthy and nutritious	I guess not only the environment for our bodies and ourselves
Attributes of sustainable food	Healthy and nutritious	I'm eating more unfortunately, whether that is healthy or unhealthy, I will probably see anything and grab it just because I can
Attributes of sustainable food	Healthy and nutritious	we have to take into account all these things and just not think about our economy. Think about also our health try and eat healthier
Attributes of sustainable food	Healthy and nutritious	eating more and eating more portions of healthy food
Attributes of sustainable food	Local and organic	eating things that are. . . local
Attributes of sustainable food	Local and organic	I think I just think of locally sourced
Attributes of sustainable food	Local and organic	also, a local diet. So eating foods that come from your local area, maybe like a local market, just choosing the foods that are grown around you rather than having to transport them from further locations
Attributes of sustainable food	Local and organic	sustainability, sometimes it's so hard to do in terms of food because you know, you want to buy locally, or you want to know where your food is coming from
Attributes of sustainable food	Local and organic	one of the main ways that people can do that is going to local farmers markets. And rather than just buying from the produce section of a grocery store
Attributes of sustainable food	Local and organic	it's a local, as much as you can, like bulk food would be more sustainable
Attributes of sustainable food	Local and organic	sustainable food is like the organic, true food, food from local markets
Attributes of sustainable food	Local and organic	sustainable food to eat organic food, like fruits, vegetables, from local markets
Attributes of sustainable food	Local and organic	I also agree about choosing local foods
Attributes of sustainable food	Local and organic	if you're talking about it on a more economic or environmental level it's just about trying to shop locally, or trying to support just businesses in the area,
Attributes of sustainable food	Local and organic	so just getting food from sources that are good for the environment, good for the people who are making it such as supporting farmers or small businesses
Attributes of sustainable food	Local and organic	I don't think about sustainable just on an individual level, but also on a societal level, how you're helping local farmers or local businesses
Attributes of sustainable food	Production and agriculture	I do think that sustainable food has to do with how it is grown and how it is raised if you're talking about livestock agriculture

(continued)

Category	Theme	Quote
Attributes of sustainable food	Production and agriculture	I just think back to farming and foods with products and pesticides and stuff
Attributes of sustainable food	Production and agriculture	other aspect of it would be like palm oil and soy. I know some foods are not harvested properly
Attributes of sustainable food	Production and agriculture	the actual ingredients of various products, the process of those products being created
Attributes of sustainable food	Production and agriculture	the amount of GMOs, and the way it was produced
Attributes of sustainable food	Production and agriculture	sustainable food, I just think of the ability of natural systems to keep producing that food
Sustainable eating behaviours	Balance and mindfulness	balanced diet
Sustainable eating behaviours	Balance and mindfulness	I think unsustainable is not getting that balance
Sustainable eating behaviours	Balance and mindfulness	sustainability is just the balance of it
Sustainable eating behaviours	Balance and mindfulness	[sustainability is] making it so each meal we have the amount of food we need the balance we need
Sustainable eating behaviours	Balance and mindfulness	and a lot more balanced
Sustainable eating behaviours	Balance and mindfulness	it's important to keep your mental health good
Sustainable eating behaviours	Balance and mindfulness	when I think about sustainable eating habits, I think about eating mindfully
Sustainable eating behaviours	Balance and mindfulness	considering what you're consuming, if you're over or under consuming and I think sometimes that can be hard for university students
Sustainable eating behaviours	Balance and mindfulness	I think, just doing what you can with the given circumstances, and then making more mindful choices
Sustainable eating behaviours	Balance and mindfulness	just being a little more mindful in that sense, which I know has become a little bit harder with the pandemic and people are scared to go out and do things
Sustainable eating behaviours	Balance and mindfulness	listening to your body. listening to if your body's telling you, you're hungry to go off of that
Sustainable eating behaviours	Balance and mindfulness	I think intuitive eating is what I would think of, rather than what you should be doing
Sustainable eating behaviours	Balance and mindfulness	it's important to watch what you're eating. So it's not just about eating consistently. And you also have to make sure you're getting everything from all the food groups, like make sure you're eating your fruits and vegetables and dairy, things like that
Sustainable eating behaviours	Balance and mindfulness	someone who is more so mindful of what they're putting into their body based on their own health
Sustainable eating behaviours	Financial aspects	more financially sustainable
Sustainable eating behaviours	Financial aspects	it doesn't become overwhelming both to yourself or financially
Sustainable eating behaviours	Financial aspects	I think about sustainable eating, as a university student, a big part of it is the financial aspect

Table A2.

(continued)

Category	Theme	Quote
Sustainable eating behaviours	Financial aspects	comes with compromises of maybe I'm buying things that are less environmentally sustainable. So there's some pros and cons, depending on if you're willing to spend more money to buy something more eco friendly
Sustainable eating behaviours	Financial aspects	healthy options are more expensive. So I think for students, it's really hard to have that fine balance of, are they eating stuff that is good for the environment, or is that within their budget as a student
Sustainable eating behaviours	Financial aspects	I can understand that it is more expensive. But I think that is a good investment for our health
Sustainable eating behaviours	Food waste	A big thing I think about is food waste
Sustainable eating behaviours	Food waste	I feel like at the end of each week quite a few university students end up throwing out certain things that they didn't get to use, or forgot about. So I feel like that's a huge part of unsustainable food practices
Sustainable eating behaviours	Food waste	when I think about sustainable eating is also looking at the waste aspect, like how much waste you're producing in terms of food waste, make sure that I'm not being wasteful
Sustainable eating behaviours	Food waste	I tend to think a lot about the food waste
Sustainable eating behaviours	Temporal aspects	the long term [you're more drawn towards the sustainable one]
Sustainable eating behaviours	Temporal aspects	sustainable, just so that you can continue over a period of time without either breaking the bank or still being healthy at the same time,
Sustainable eating behaviours	Temporal aspects	for an individual, it's about what you can kind of continue to do over a long period of time,
Sustainable eating behaviours	Temporal aspects	this will work for me through a long term perspective
Sustainable eating behaviours	Temporal aspects	I try to think of foods that can sustain themselves without much human intervention
Sustainable eating behaviours	Temporal aspects	it should be a long term thing, changes in your diet that you can actually make and withhold for a long time
University	Campus food	I'm on residents, I'm kind of restrained to the specific mealtimes of the residents
University	Campus food	there are scheduled blocks for breakfast, lunch and dinner, which is like pretty restrictive as well
University	Campus food	we have cafeteria times. And like, if you don't go during the cafe time, you don't get that food
University	Campus food	being at university and being on a meal plan has led me to eat fewer portions because they have those structured meal times
University	Campus food	when I went outside on campus, I made more of an effort to find healthier options
University	Campus food	I was living in residence. And I don't know sometimes they were huge challenges for me when it came to eating in residence, just trying to find time to meet up with friends and making sure I'm still eating healthy

(continued)

Table A2.

Category	Theme	Quote
University	Campus food	So I feel like having a meal plan where everything is kind of separated, like, here's a plate of vegetables or whatever. If they're not mixed in a certain way, I don't want to eat it
University	Campus food	I think having a meal plan, in that kitchen, it didn't really help
University	Campus food	when you go to the cafeteria, it almost feels like you're going to a restaurant every day. when you go out to a restaurant, you obviously don't make the healthiest choices
University	Campus food	they're also bigger portions that give you a lot of food generally at mealtimes
University	Campus food	it's kind of sometimes we have big portions and sometimes where we'll have really small meals, or they'll give us really tiny portions
University	Campus food	another time where it could be three plates worth of food that they could give us
University	Campus food	and we'd have really big portions because we're all working since I've come to Res, I find that the portions they give you for food are actually really small
University	Campus food	sometimes the portions are just really small and I have to save my swipes up for the next meal coming up
University	Campus food	[in terms of portion] I feel like breakfast is okay. It's moderate. When it comes down to dinner, they give you a smaller portions I find
University	Campus food	I'm not back at home. But one thing that I do find is it's always the same few meals. When you're buying groceries, it's easier to buy the same thing in bulk and then just make that over and over again
University	Campus food	with the types of food that I'm eating, typically a lot of it tends to repeat, I am eating the same stuff over and over, instead of trying new things or making different things
University	Campus food	I was eating a lot of the same meal every day until I got tired of it and then I'd pick a new meal and then I'd eat that every day until I got tired of it
University	Campus food	At school, most times, I will choose pretty much the same meal every day
University	Campus food	I did like the buffet style and how you kind of knew what was coming every week. And there were some things that were different,
University	Campus food	they made an effort to try and make it with more variety and with the different food groups
University	Campus food	but it's never a guarantee that at every buffet style serving, all the food groups are available
University	Campus food	we don't get that much fruit
University	Campus food	[cooking at home] allowed me to have much more of a variety of food
University	Campus food	[as a vegetarian] I have the same number of options. Generally there will be one main meal option that has meat and then one without meat
University	Campus food	it's not like a ton of options for either of us, but it's equal

Table A2.

(continued)

Category	Theme	Quote
University	Campus food	the kind of have only had apples for a while, which were good, but that's kind of the only fruit there is
University	Campus food	normally the same options of hash browns, sausage, eggs, and bacon or waffles [for breakfast]
University	Campus food	A lot of food is repetitive
University	Campus food	You can't always eat super healthy if their main meals are pizza or something like that. So it's kind of just about working with what they have and also trying to balance it out with what you're eating as well
University	Campus food	sometimes they don't serve vegetables for breakfast. So I guess I don't always get the opportunity to have a completely balanced meal
University	Campus food	I would say being vegetarian or vegan, sometimes the meals weren't always balanced, but I tried to compensate with hummus for protein or different things
University	Campus food	but if they don't offer those options, I know that my next meal, I can always fall back on that and so it doesn't stress me out, it doesn't really have an impact on how I feel because I know that I can always do that in my future meals
University	Campus food	it's I'm never really the kind to indulge too much in food and spending. So for me coming to Waterloo and all of a sudden having this meal plan, you know, tapping your money and kind of not even looking at the price of what you're paying anymore
University	Campus food	the meal plan was a buffet style. And I found that I typically ate a lot more than I was used to at home
University	Campus food	eating home cooked meals is more sustainable today because you get to choose the food you eat
University	Campus food	on campus. . .there's a cafeteria. . .I am lucky enough to have access to a kitchen as well
University	Campus food	this partly reflects in my residence experience because I was like, Oh my goodness, so much vegetarian food exists, and I never knew this
University	Campus food	When I was at school, I was living off campus. So I would always be responsible for my own meals, and typically eat around the same time
University	Campus food	when I lived on campus, I found that I ate a lot more, just because everything was more convenient
University	Campus food	at home, usually, I eat all three meals because my parents want me to, and they usually do the cooking
University	Campus food	When I'm on campus, I cook my own food
University	Campus food	I'm able to choose when I want to eat because I'm at home right now
Macro environment	Food guides and expert recommendation	for myself the most reliable people that I go off of, are doctors or nutritionists or registered dieticians, because they're the people that have done their research about food and nutrition and what we actually need to eat
Macro environment	Food guides and expert recommendation	I don't usually go to people that haven't done their research about recommendations on what I should eat personally

(continued)

Category	Theme	Quote
Macro environment	Food guides and expert recommendation	I still look at actual governmental information and doctors
Macro environment	Food guides and expert recommendation	I say that how I plan what I'm going to put on my plate is just by following Canada's health guidelines that shows filling my plate half with vegetables, a quarter with starches and carbohydrates and a quarter with protein
Macro environment	Food guides and expert recommendation	I just try to follow similar to half a plate for veggies and I just try to follow the standard as similar as possible
Macro environment	Food guides and expert recommendation	it's pretty rooted in me for the standard Canada's Food Guide type information so that's kind of in the back of my head mostly if we're talking about the way to balance meals
Macro environment	Food guides and expert recommendation	right now my eating habits are mostly influenced by the recommendations in the food guide, kind of vaguely at the back of my head
Macro environment	Media	then once I moved out on my own is kind of when I started to venture out on my own in my eating decisions. So I definitely watch a lot of food documentaries
Macro environment	Media	I think that with the internet and books and reading, I've learned the value of true nutrition and that you have to fuel your body with good stuff
Macro environment	Media	I resonate with some influence of diet culture
Macro environment	Media	recipes such as vegan recipes, stuff like that. For vegan recipes, I look up those. I think definitely the access to the internet, I use Pinterest a lot for getting different recipes that I wouldn't get just from my family background or my personal life experience
Macro environment	Media	I don't listen to social media, social media influencers, or people that are just maybe saying false information
Macro environment	Media	Also, I think social media influences us a lot. Because we are always looking that some people make some diet and eat vegetables in this way to get this body
Macro environment	Media	I usually look at social media influencers. And it makes me a little bit insecure, like, oh how did they get that body or whatever. So I kind of copy if they have a YouTube video or something
Macro environment	Media	I do my fact based research after watching, social media influencers
Macro environment	Media	feel like it kind of got me away from my cultural background a little bit from watching these social media influencers who are telling you to just eat broccoli
Macro environment	Social norm and peer effect	I feel like when I went to meals in residence, I would see other people get healthy foods, and that would kind of pressure me to be like I probably felt needed a salad or something on this plate
Macro environment	Social norm and peer effect	I would say that depending on my circumstances, I feel a lot of my eating habits change
Macro environment	Social norm and peer effect	my older sister is getting into more healthy eating, watching what she's eating, trying to do healthy substitutes. That kind of influences me. Kind of like peer pressure, like she is eating healthy

Table A2.

(continued)

Category	Theme	Quote
Macro environment	Social norm and peer effect	when I'm around certain people, I definitely noticed that my eating habits change
Macro environment	Social norm and peer effect	when you eat out with them for the first time or when you go out with them and you don't know them very well. You kind of get insecure about your eating, especially if you're hyper aware of your body as well. So you might feel the need to kind of eat something you wouldn't necessarily eat before
Macro environment	Social norm and peer effect	So peer pressure. I'm like, okay want to eat a salad. Versus when I'm at home, I kind of just eat whatever is given to me or leftovers, anything that's available
Macro environment	Social norm and peer effect	with my friends, I'm a little bit more self-conscious about what I'm eating. Because I know that some of my friends are really healthy
Macro environment	Social norm and peer effect	I guess when I went to university... my friends... would influence me a lot to eat healthy
Macro environment	The pandemic	after the pandemic hit, I wasn't getting the ingredients I really wanted
Macro environment	The pandemic	once we had the time to kind of sit down and plan our meals out and get through COVID
Macro environment	The pandemic	once COVID hit, I felt everything kind of just lost that structure
Macro environment	The pandemic	I'm definitely eating out less because nothing is open now I find when I wake up, because there's no rush to get to campus, I have the time to make sure I have a decent breakfast,
Macro environment	The pandemic	COVID had a bigger impact on my eating habits before I moved into residence
Macro environment	The pandemic	to consider the Covid-19 pandemic, just because I feel a little bit more obligated to eat in a more local stance
Macro environment	The pandemic	for me, personally, I don't think the COVID affected my eating habits as much compared to other people, I guess
Macro environment	The pandemic	but now that it's the pandemic, and pretty much all my lectures are asynchronous. I can get up and eat whenever I want
Macro environment	The pandemic	since the pandemic has started, my eating habits have become more regular
Macro environment	The pandemic	I think the pandemic kind of opened up, a time for me to plan and to learn all those kind of skills
Macro environment	The pandemic	I did become vegan during the pandemic, but I was vegetarian eight years before
Macro environment	The pandemic	since the pandemic started last March, I moved back home, and I'm with my family. So we typically take turns cooking meals on different days, which really has a variety of when we eat
Macro environment	The pandemic	at the beginning of the pandemic, however, I felt like my eating habits were worse because there was no structure to the day
Macro environment	The pandemic	at the beginning of the pandemic... I worked with my friend... we're going to work out we're gonna eat super healthy so that I was really motivated back then

*(continued)***Table A2.**

Category	Theme	Quote
Macro environment	The pandemic	in the beginning of the pandemic, when lockdown started, I gained so much weight just because I was trying out different baking
Macro environment	The pandemic	during like the first wave of the pandemic. I was the same, trying all these little recipes for baking and cookies and things like that, which definitely didn't help my case
Macro environment	The pandemic	after the first wave, and the first lockdown, I think things kind of went back to normal
Macro environment	The pandemic	when lockdown first started, I baked a lot, I cooked a lot, I tried a lot of different new things
Macro environment	The pandemic	at the start of the pandemic, the baking was a lot
Macro environment	The pandemic	compared to the start of the pandemic to now I've definitely improved my eating habits for sure
Macro environment	The pandemic	at the beginning of the pandemic, especially my family started cooking more
Macro environment	The pandemic	before the pandemic, my family would have a home cooked meal every single night
Macro environment	The pandemic	before the pandemic, I was cooking a lot
Macro environment	The pandemic	feel like if it weren't for COVID 19, I would be eating with people more often. Because right now, in my residents, there's a rule that only one person can sit at each table. And I feel like that discourages most people from like eating at the cafe
Macro environment	The pandemic	I haven't eaten with friends or people other than my family since the pandemic started
Macro environment	The pandemic	with the situation of the COVID. I know that we don't go out to get fast food or that kind of food
Macro environment	The pandemic	I think I order a little bit more considering the pandemic, just because I feel like the little milestones are something huge to celebrate
Macro environment	The pandemic	[during the pandemic] I've cut out dairy for the most part, switching milk entirely focused more on baking and more healthy things, more healthy meals
Macro environment	The pandemic	in the pandemic, I don't find that I'm going out as often So I feel like eating is just a pastime. Sometimes I'm just snacking
Physical environment	Access and convenience	also find that because of convenience. If I'm at home and I want a snack
Physical environment	Access and convenience	I'm just kind of being more mindful of when I eat, and obviously my kitchen is right at my hands. So if I am hungry, I can just grab something
Physical environment	Access and convenience	but sometimes that's [knowing where your food comes from] not always possible
Physical environment	Access and convenience	I live in an apartment on campus. So I do have access to a kitchen. I'm able to do home cooked meals
Physical environment	Access and convenience	while I was in Res, I had a suite style, so I did have a kitchen
Physical environment	Access and convenience	I don't have the opportunity to go to a fridge full of food. . .it's also harder just because I can't stock up
Physical environment	Access and convenience	so I think that I did eat unhealthy on campus, because of restrictions with transportation

Table A2.

(continued)

Category	Theme	Quote
Physical environment	Access and convenience	I didn't have a bus pass, and I didn't have a car. So I would literally eat the less I could, so that I could have enough food at the end of the week
Physical environment	Access and convenience	it doesn't help that there was an entire wall dedicated to drinks and an ice cream machine on the side and the vending machines
Physical environment	Access and convenience	whenever I'm at home, I am eating more than when I'm on campus, I guess, I don't know, maybe school makes me forget about eating, and I'll often miss meals or just forget to eat for a long period of time
Physical environment	Access and convenience	at home, you can't really be entirely mindful of the food because at least in my case, it's not me making the food all the time. So you kind of just have to please the crowd and eat what's there
Physical environment	Access and convenience	I wasn't cutting out meat completely, because I knew that was unrealistic, especially on campus, when you can just eat what you can get
Physical environment	Access and convenience	now I've also moved away from family. And I thought that would make a difference, but it really hasn't, I still don't really snack as much anymore
Physical environment	Access and convenience	would always kind of be running out the door and not being the most prepared in terms of food, there'd be a lot of times where I'd go to campus and be really hungry, so that I either buy something on campus, or then just starved to get home and then eat a big meal
Physical environment	Access and convenience	I after I come home from work, I'm kind of tired. And then even though I'm not necessarily that hungry, just because I'm tired. I just want to eat something. And grab a bite
Physical environment	Access and convenience	So I felt my eating habits then were a little less sustainable. Just because it was kind of sporadic, and because I hadn't lived on my own, I didn't really know how to go about it
Physical environment	Access and convenience	I think that healthy food is harder to keep around you can have a box of crackers or a box of cookies in your drawer for a month
Physical environment	Access and convenience	I definitely think more about food that will last longer in my fridge, fresh food goes bad pretty quickly
Physical environment	Access and convenience	I definitely do keep some canned vegetables in the fridge or things like that. When maybe I would go more regularly for getting fruit or something like that if I wasn't trying to keep my groceries down
Physical environment	Access and convenience	the residence I was at was buffet style . . . It just felt easier to and more convenient
Physical environment	Access and convenience	there is not ever a shortage of food in my house or things I can eat if I need to
Physical environment	Characteristics of food	I would consider the fresh, non-frozen version of the food to be healthier because I guess it hasn't been processed than frozen food
Physical environment	Characteristics of food	You have the choice to opt out of the deep fried stuff, but then you don't have that much of a selection to fully fill you up

*(continued)***Table A2.**

Category	Theme	Quote
Physical environment	Characteristics of food	this deters you from eating the vegetables, and you just want something that tastes good
Physical environment	Characteristics of food	I think it's just basically the food that makes me feel good and kind of sustains me throughout the day, gives me the energy I need to get through daily life, get through my daily tasks and kind of keep me going
Physical environment	Characteristics of food	I also eat with them and the food that they make is more fulfilling for me
Physical environment	Characteristics of food	So then I choose whatever I think is going to be the most fulfilling
Physical environment	Characteristics of food	I think I would definitely want to take consideration like the calories
Physical environment	Characteristics of food	I think for me honestly just comes down to what the food is, it is taste
Physical environment	Characteristics of food	taste is also a big decision maker for me when there is a variety of food
Physical environment	Characteristics of food	What looks good, it's really based on visual stuff
Physical environment	Food prices	I was always really nervous. If I were to go to residence and I'm afraid that I would spend too much on one meals and I would just be super mindful that every meal
Physical environment	Food prices	I think that's a part of it just having a less bountiful budget as a student
Physical environment	Food prices	if I had a meal plan, that was my money that was coming out of my account, I would be a little more methodical about it saying, Is this something that I really want
Physical environment	Food prices	think it's kind of hard to decide, picking between foods when the other one is cheaper. And the other one isn't, I know that most organic foods are more expensive
Physical environment	Food prices	in terms of looking at prices at the shop it goes up and down. So I try to shop at a certain day or I always look at coupons especially being a university student trying to save money, it's not always the most financially smart option
Physical environment	Food prices	You can go out and purchase stuff. It's just it's not a part of the meal plan. So you have to pay extra
Physical environment	Food prices	I would rather not pay [for fruits] when I'm already on a meal plan
Physical environment	Food prices	I never ordered takeout in first year, maybe once. . .think that was more of a financial thin
Physical environment	Food prices	[for my meal plan] money wise, just because I still had so much money left over. I feel like I was almost careless with it
Physical environment	Food prices	There's definitely the incentive to eat more since it's prepaid
Physical environment	Food prices	So as someone who liked trying new food, I didn't explore that much just because of how much money I have, and I can't go over
Social environment	Cultural and ethnic background	I don't like about getting a meal plan is that I know, they cook like pretty balanced stuff, but a lot of this stuff that they cook are more like, I don't know how to say this in a better way. But well, for me, I'm Filipino and I want to stick to cultural foods

Table A2.

(continued)

Category	Theme	Quote
Social environment	Cultural and ethnic background	In my house, I'm more likely to eat kind of more traditional, cultural foods from my background, though, it's not always that because just my mom's always been kind of an adventurous cook
Social environment	Cultural and ethnic background	a lot of my friends were just white. A lot of my friends at school, just a lot of the kids at school were white and me coming from a different background. I think there were some differences obviously, in terms of what I might be eating at home and what my friends might be eating at home, but I don't think it necessarily influenced me
Social environment	Cultural and ethnic background	I think I was just eating very culturally different food
Social environment	Cultural and ethnic background	was eating more ethnic food at home, versus at university, you just kind of eat what you can get. And that's not usually what's culturally specific to you, which is fine
Social environment	Cultural and ethnic background	That changed a lot of my diet in the recent months. And in terms of other influences. because I came from a cultural background, recently I started to eat less of cultural foods
Social environment	Cultural and ethnic background	I would say growing up, I ate a lot of Indian food
Social environment	Cultural and ethnic background	growing up, I only ever really ate Chinese food because my parents, my mom only really knew how to cook Chinese food and wasn't too open to foods from other cultures
Social environment	Cultural and ethnic background	most of our food are pretty balanced. In one dish, there's always a vegetable there's always meat, and you get a lot of the stuff in the food groups already
Social environment	Cultural and ethnic background	I'm in a house surrounded by carnivores. So it makes it a little bit challenging to pursue those vegetarian options that I'd be more interested in
Social environment	Cultural and ethnic background	our parents are the biggest influence, because my mom is doing the home cooked meals
Social environment	Cultural and ethnic background	I think that my parents had a big impact on influencing me and my food choices based on the types of foods and the types of flavors that they expose me to when I was a kid and what I grew up being familiar with
Social environment	Cultural and ethnic background	My family has traditionally eaten little meat and fish. But once I moved to university, I decided that I'd only consume meat or fish twice a week
Social environment	Cultural and ethnic background	growing up learned kind of not to be a picky eater, I think with my parents they always they kind of just taught me and my sister as well just to be open to trying new foods and be able to eat everything
Social environment	Cultural and ethnic background	my mom would always cook ethnic home cooked meals with grains and vegetables and proteins
Social environment	Family	I never believed that I could ever go vegetarian. I'm in a house full of carnivores and my boyfriend loves to hunt and all that fun stuff. But once I realized I actually could do it and get creative with some of my recipes. I'm like, you know what, maybe I can stick to this
Social environment	Family	that can be hard for university students because it's the first time away from home and for a lot of people and you don't really have your parents to kind of guide you in that sense

(continued)

Table A2.

Category	Theme	Quote
Social environment	Family	because my parents always cooked meat and all that kind of stuff. And I don't really like meat, even though I'm not vegetarian, but I kind of don't like meat
Social environment	Family	If my mom's preparing something, I know that has probably a lot of oil in it and I am trying to stop eating those foods
Social environment	Family	when I was growing up, my family were huge steak people. We would have steak for dinner all the time
Social environment	Family	and I think that now I am eating differently than my family. I cut out carbs, I cut out dairy
Social environment	Family	it's later lunches, later dinners. And I think that's just more out of habit of my family. That's just kind of the schedule we've always had
Social environment	Family	now I'm at home with my family. And I would say that now I'm more back to a regular schedule. we all collectively eat at a certain time
Social environment	Family	think in terms of just the influences around me, I think obviously, my family is a pretty big influence in what I choose to eat and just how I eat as well
Social environment	Family	I guess for majority of my life, it was my parents because I was living with them for such a long time
Social environment	Family	my family definitely influences what I eat for my whole life growing up at home
Social environment	Family	I also currently live with my boyfriend. So he influences what I eat a lot, because we eat together all the time
Social environment	Family	my family would always be like, you got to eat this because you have to grow
Social environment	Family	I think yes, my parents also definitely influenced what I was eating. And surprisingly, they also influenced what I was eating on campus, because they would call me and ask What did you eat today
Social environment	Family	even on campus, my parents definitely influenced me as well with the calls asking me what I was eating, and encouraging me to try something new
Social environment	Family	I would say growing up, my parents had the biggest influence on what kind of food I eat
Social environment	Family	for who would influence my eating, it's really my parents
Social environment	Family	they [parents] would decide what restaurants we'd be going out to, or what style of food we'd be eating
Social environment	Family	I feel like I still follow. Relatively, they align with the same choices that my parents raised me with, the same food choices,
Social environment	Family	I think that the impact of what your parents have brought you up eating has had some enduring impact
Social environment	Family	I would just eat whenever I wanted, like late night, but when I'm at home like my family, they all sleep at eight. So I kind of get into the groove of that I'm not going to eat at night
Social environment	Family	the only period that I did live with my family was during that first initial lockdown, which was when I saw all those changes because, like we said previously, my family was cooking for me

Table A2.

(continued)

Category	Theme	Quote
Social environment	Family	usually eating my parents cooking, which is always good. And I think with my parents, they are always trying to make sure that I eating well
Social environment	Family	I find that, it definitely is a lot of home stuff. So while I live alone, I'm very close with my uncle, and their family. And my cousin definitely, when I'm with her, it's really easy to eat vegan. it's really easy to stay on track
Social environment	Family	My mom would make sure that I'm getting like iron and all the necessary stuff that I wouldn't normally get if I was left on my own
Social environment	Family	whereas when I'm at home, my parents cook my meals for me. And it's a more regular time
Social environment	Family	She's always saying that you have to take your breakfast, you have to take your dinner. And you have to take food, always healthy food
Social environment	Family	I'm sure they would love to have a steak, but I'm not making them steak. I'm making them baked vegetarian cheese pasta type of thing. So I think it might be in a way, I'm influencing them
Social environment	Family	we typically take turns cooking supper. So whatever is made, we typically eat it
Social environment	Friends	I mean I've never really felt that my friends have had much of an influence on me I think
Social environment	Friends	when I'm at school with my friends. And they go out to get food or anywhere, I'm more likely to slip up,
Social environment	Friends	I feel like because a lot my friends are guys, just because they would constantly like to go out
Social environment	Friends	my roommates, since we're all here all the time, we kind of see each other cooking
Social environment	Friends	just having your roommates around. And their behaviors kind of influencing yours. I think that's also something that's contributed to my more regular eating versus when it was on campus
Social environment	Friends	it's mostly my roommates. And my partner that influences my eating habits
Social environment	Friends	just being in university and in an apartment with roommates that's kind of helped shape my habits and trying to be more sustainable and healthy
Social environment	Friends	what I eat really depends on who I was hanging out with at the time. It really depended on my friends
Social environment	Friends	beyond just the healthy versus unhealthy, I think, friends do a good job of exposing you to new types of food that you wouldn't have necessarily tried beforehand
Social environment	Friends	I do eat more with like my housemates than I do when I'm with my family, for example. And we do some shared meals regularly
Social environment	Friends	I listen to my friends sometimes when they give me recommendations on dishes that I should or shouldn't try. But I usually take that with a grain of salt
Social environment	Friends	when I see my friends or my flatmates, eating healthier things, I'm like, maybe I should try that

*(continued)***Table A2.**

Category	Theme	Quote
Social environment	Friends	I think if my friends convinced me, I would definitely try it
Social environment	Friends	if they [friends] convinced me I probably would [eat a food without knowing it]
Social environment	Friends	if my friends said the meal was good
Social environment	Friends	I really hope that when my friends recommend something to me to eat that they have my best interests at heart. So then I would try it without knowing
Social environment	Social activity	You're also not eating with your family, you might be eating alone Or eating with a group, and it can be hard to be mindful in both settings
Social environment	Social activity	food doesn't seem as fun anymore if you can't like share it with people or go out and get something
Social environment	Social activity	I don't really like eating with other people. I think it kind of gives me anxiety when people watch me eat, I don't know. So I just tend to not eat with others
Social environment	Social activity	people that you're eating with have a big impact on choices that definitely influences me and in addition to that,
Social environment	Social activity	restrictive diet culture or I guess, not necessarily the food, but the social norms around that food have been part of my past
Social environment	Social activity	so at school, I live with roommates. So sometimes I with eat them. And it's kind of nice to have people around
Social environment	Social activity	at home, I would usually eat just with my family
Social environment	Social activity	at home, I live alone, so I don't kind of eat with family
Social environment	Social activity	I'm usually eating myself, There is a lot of having breakfast in our own room
Social environment	Social activity	then here, sometimes I eat alone, when I don't see any of my friends in the cafeteria space. But if I see my friends there, then I'll go eat with them
Social environment	Social activity	at residence usually we would have social eating times and due to the restrictions that had lessened there were times when we would have probably had meals together with other apartment friends
Social environment	Social activity	at home when I was cooking, it was usually either with friends or family. Because it was just a kind of a social activity
Social environment	Social activity	[on campus] while I'm still like interacting with people at mealtimes, it's definitely just, eat and then go back to studying and stuff. And the social part of that has definitely gone down for me
Social environment	Social activity	with the restrictions now. I have been eating in my room a lot more
Social environment	Social activity	And I would usually eat alone because I was making my own meals and then my family would eat separately
Social environment	Social activity	being on campus now, I always eat with my floor mates for every meal
Individual	Daily rhythm and structure	at university it's very limiting in that sense that there isn't a whole bunch of time to go, especially if you have classes and you don't really have that opportunity

(continued)

Table A2.

Category	Theme	Quote
Individual	Daily rhythm and structure	I really think my eating habits change as my classes changed and as my schedule changes. so it's less of a schedule now for me eating than it was when I was on campus
Individual	Daily rhythm and structure	now I eat at less regular times, sometimes I might even skip meals completely, because I'm not that hungry
Individual	Daily rhythm and structure	So because we had scheduled times it was like if I don't eat enough now I'm gonna be starving by dinner. So I got to make sure this is a good meal
Individual	Daily rhythm and structure	although I do eat breakfast, lunch and dinner, it really depends on the day. I wouldn't say that it's the same time that I eat those meals every day, because of school
Individual	Daily rhythm and structure	I feel like if I go back to school now sticking to a diet would be really hard because I really like to eat especially, during class
Individual	Daily rhythm and structure	an in-person engineering schedule is supposed to be pretty hectic. So I would actually have to wake up early to attend lectures and. So I feel like with those time constraints imposed on my life, I would be more likely to eat breakfast but I think that it is also making bad changes in my mealtimes. I don't know, I don't have control
Individual	Daily rhythm and structure	that I can kind of plan around that, when maybe if I had classes, it would just take more work and same with going for groceries
Individual	Daily rhythm and structure	whereas when I'm not at university, I kind of schedule myself in a different way, depending on what other commitments I have during the day sometimes
Individual	Daily rhythm and structure	once I kind of got into more of a rhythm and structuring my days, that's kind of where I was able to develop better eating habits
Individual	Daily rhythm and structure	after the summer was over I had to go back to school I kind of returned back to my old eating habits and everything like that
Individual	Daily rhythm and structure	but as long as you aren't skipping meals to me, that looks like regular eating patterns
Individual	Daily rhythm and structure	but then once studying school again, everything's a bit back to normal, now that my meal times are more structured
Individual	Environmental values	I'm also vegan, so that also affects what I eat as well. So the thing about being at home is that my cousin is also vegan. So it is nice to eat at home sometimes, because then we kind of make the same meals
Individual	Environmental values	I think I would still choose the meat lasagna. But I guess if I was faced with it every single day, I wouldn't constantly choose it, I would then start to choose the sustainable one. But in moderation, or over time, once in a while it wouldn't be a bad thing to choose the other one
Individual	Environmental values	I would probably lean more towards the vegetarian side and then occasionally get the meat
Individual	Environmental values	I gave myself two days in the week that I do so to be more conscious of the meat that I was consuming

(continued)

Category	Theme	Quote
Individual	Environmental values	when I think of sustainable, I think there's something that you can do over a long period of time, obviously
Individual	Environmental values	if I have a full plate I feel bad that I have all this food and I don't want it to go to waste so then I'll force myself to eat the whole thing and that's obviously not a good feeling when you're full of all that new food and kind of dangerous for me
Individual	Environmental values	So I found that the University did a pretty good job of having the different garbage cans and, you know, making us aware of what goes where, I'd spend two minutes staring at the pictures, trying to figure out what waste goes where
Individual	Environmental values	I've been trying really hard to eat a lot of vegetarian meals which are better for the environment
Individual	Food literacy	absolutely not [feel like you have sufficient cooking skills]
Individual	Food literacy	when I'm home, I don't really do a whole lot of cooking
Individual	Food literacy	I think I also struggled just because I don't think my cooking skills were up to par
Individual	Food literacy	I don't think I have sufficient cooking skills to make healthy meals for myself
Individual	Food literacy	I don't know if I have the abilities to prepare my own meals
Individual	Food literacy	I think I will eat a lot of fast food. Because I don't know how to cook
Individual	Food literacy	especially being at school I don't really cook anymore
Individual	Food literacy	we're on our own to make our own meals
Individual	Food literacy	I was hungry but didn't want to make food
Individual	Food literacy	and I really didn't have the motivation to cook all the time
Individual	Food literacy	not me personally, but I do know, a lot of my peers are not super comfortable in the kitchen or don't have a ton of experience with cooking
Individual	Food literacy	I don't really know how to cook that well
Individual	Food literacy	cooking just takes practice and sometimes when I cook things, they taste terrible
Individual	Food literacy	I don't have the patience to do it. I always kind of mush stuff together when you're supposed to do it separately
Individual	Food literacy	I cannot cook I have tried
Individual	Food literacy	I agree fully cooking definitely does take practice
Individual	Food literacy	I know for a fact that I didn't really know how to cook over the summer
Individual	Food literacy	but for the most part, I would not know what to use, I can follow ingredient and recipes pretty well. But it's the fact that I don't know always how to use things in certain ways
Individual	Food literacy	I don't always cook for myself, my boyfriend cooks for me most of the time, which is good
Individual	Food literacy	I'm definitely cooking more because I have to
Individual	Food literacy	I never really used to be that involved with either, but now I'm doing a lot more vegetarian baking and a lot more healthy baking
Individual	Food literacy	I'll just make healthy options for myself and just cook my own meals
Individual	Food literacy	I've been cooking more for myself doing, going out and doing my grocery shopping. I don't know if that's necessarily related to the pandemic. I think that's more so related to just me being away from home

Table A2.

(continued)

Category	Theme	Quote
Individual	Food literacy	in a I way have become more involved in cooking, because if I'm cooking, you eat it
Individual	Food literacy	when I left campus, during the fall term, I had my own place outside of campus. So then I had to cook my own meals and everything like that
Individual	Food literacy	I feel like I have developed some cooking skills since moving out of residence in first year and living in apartment and I'm still there during the pandemic
Individual	Food literacy	I am fairly experienced with cooking
Individual	Food literacy	I usually prepare my own meals
Individual	Food literacy	I feel like I have fairly sufficient skills in cooking
Individual	Food literacy	because I'm sticking to a diet, it also helps that I have cooking skills
Individual	Food literacy	I also really enjoy home cooked meals because I like cooking
Individual	Food literacy	I don't have any synchronous classes. So I think it does help with me. I have expanded my cooking repertoire because it has flexibility to do things that take multiple stages, like making bread
Individual	Food literacy	[before the pandemic] we'd cook like twice a week or three times a week, but not very often because my parents worked, and me and my sister were in school
Individual	Food literacy	they'll still cook every once in a while
Individual	Food literacy	we cooked almost all of our own meals
Individual	Food literacy	I have an older sibling who was very good at cooking. So I was like, Why do something if I'm gonna mess it up and she isn't
Individual	Food literacy	eventually, I figured I should learn how to cook. So I learned the basics of pasta, and eggs
Individual	Food literacy	knowing how to cook would definitely change the way
Individual	Food literacy	I feel like I've actually been eating healthier ever since I've been able to cook
Individual	Food literacy	when I was at home, I was usually cooking most of my own meals
Individual	Food literacy	I would cook most of my meals throughout high school
Individual	Food literacy	I cook breakfast and lunch
Individual	Food literacy	I've been cooking a lot more than I've been used to, I feel like I've become very attuned to what I'm putting into my body but I know, generally what ingredients are probably better for you what aren't
Individual	Food literacy	I mean I could always try [to cook for myself]
Individual	Food literacy	I didn't always have ingredients to cook stuff that I usually would
Individual	Food literacy	I usually try to go for the options, where I can see them make it in front of me make what they're making, right in front of me
Individual	Food literacy	I look at the ingredients and there's some things in there that I like, then I would definitely try
Individual	Health	I wouldn't consider frozen food necessarily healthy or unhealthy
Individual	Health	I wouldn't choose it[frozen food] just because of the preservatives but I wouldn't necessarily say it's unhealthy food

(continued)

Table A2.

Category	Theme	Quote
Individual	Health	I would always make sure I go to the salad bar making sure I was getting my fruits and veggies, salads
Individual	Health	I lived in a traditional style residence, and it was just the allotted of money I had, and you tap and just whatever the price is, it goes off of that. But I think for me, typically, what I chose to eat, or just how I chose to eat things is I again, we had salad bar, and we had fruit and stuff and all that stuff around, that was always good options for me even though it may not be the most nutritious
Individual	Health	I prioritize the nutritional value of foods
Individual	Health	on the early parts of the pandemic, I was definitely eating healthier. So I had more time to sit down and meal plan and eat healthier and take time for that
Individual	Health	I definitely tried to make it as healthy as possible at the same time. But the healthy options were, we always had a salad bar
Individual	Health	there was always a salad bar and I in the mornings, they would have a variety of fruit and then for the rest of the day would be like different types of fresh salads
Individual	Health	I definitely eat more and healthier at home because I guess my mom is making the food and I'm not buying random stuff off the street
Individual	Health	I definitely would eat more unhealthy because I find that the options on campus weren't always something that you would have cooked for yourself at home
Individual	Health	I'm definitely eating more healthy at home than I was on campus
Individual	Health	I also noticed that living by myself, in Waterloo I'd be staying up really late, like 4am, and then getting up like at one and it was really unhealthy
Individual	Health	I think it's just more healthy now, because I'm not eating whatever
Individual	Health	but it was definitely something that I still did not find appealing to me or sufficient for what I wanted in terms of, health, the healthiness of the food, and also the variety
Individual	Health	but I think when it comes to eating healthy, it was difficult, because I noticed that when they did have vegetables, sometimes it wouldn't even be cleaned properly
Individual	Health	the food I take all made in home and are more healthy still thinking healthy, in my mind trying to stay fresh
Individual	Health	[on a meal plan] I'm choosing what I want to eat try to eat healthy stuff. Make sure I have at least one vegetable with each of my meals
Individual	Health	actually during lunch and dinner, they usually have, at least one vegetable and one grain, and one protein
Individual	Health	I know I try and take into consideration the health aspects
Individual	Health	I try to eat healthy but it doesn't always happen
Individual	Health	So that [not knowing how to cook] probably inhibits me from eating the healthiest
Individual	Health	just seeing other people eat healthy kind of just for me, says, Oh, that's what I should be doing

Table A2.

(continued)

Category	Theme	Quote
Individual	Health	it's just a reminder [to eat healthy] instead of, I don't think my friends would judge me for what I eat
Individual	Health	I think it's just based off of a reminder that I should be eating healthier
Individual	Health	overall making more healthier foods
Individual	Health	we started eating healthier
Individual	Health	the (cafe) food that I'm eating. I'm not as healthy anymore
Individual	Health	I would consider it to be okay, healthy. And then the other half of it is a lot of deep fried lot of fat and oil
Individual	Health	a lot of fried food
Individual	Health	there's not a lot of fruit provided. So I think that my fruit intake has gone down
Individual	Health	I've had to buy additional fruit from the grocery store to supplement my diet
Individual	Health	there's not a lot of fruit options a lot of its canned
Individual	Health	although I will say that I have been just trying to add more fruits and vegetables into my diet every day. And I think I've just been buying more fruits, buying more vegetables
Individual	Health	in terms of just eating healthier, unhealthy, I think, there's definitely factors I think sometimes, my family buys certain things from stores sometimes, processed food, the sugary drinks that are around
Individual	State of mind	But I'm also someone that tends to stress eat. And I found that was harder to do at home, because I'd have my parents kind of being like, didn't you just eat or something like that? versus at university
Individual	State of mind	I definitely had an opportunity to stress eat a lot more than I think I would normally at home and I feel like I was also more stressed at university than I had been at home as well
Individual	State of mind	as stressful university students, it can be hard to put that much time and effort into making sure you can go and seek healthy food
Individual	State of mind	But all this stress and these new things to do with online classes inhibit me to take my food on my scheduled time
Individual	State of mind	at the beginning, the stress of what was going on definitely affected how hungry I was. I do you think anxiety definitely, for me results in me eating less
Individual	The pandemic	with me having just fruits around, that's something I like to snack on during the day and more often these days than maybe before the pandemic just in terms of other changes
Individual	Time and effort	and then I just give up before even trying something like this is so much effort
Individual	Time and effort	I noticed that once school started, that it just kind of came to a stop, because online school was pretty demanding in ways that I did not expect it to be
Individual	Time and effort	when I'm busier, I feel like I have a lot less time to prep and eat healthy, and to take care of myself
Individual	Time and effort	I found that I definitely ate a lot less just because I didn't have enough time, so only eat one meal a day sometimes
Individual	Time and effort	having more time to prepare foods because I'm at home
Individual	Time and effort	my parents were also busy

(continued)

Table A2.

Category	Theme	Quote
Individual	Time and effort	I think the greatest factor for me is actually how busy I am in a day
Individual	Time and effort	on my more busy days, I tend to eat less
Individual	Time and effort	when I do have a bit of spare time, I like to get more food and then take my time eating it
Individual	Time and effort	I'm actually taking the time and making food which also makes me wait to eat rather than impulsively eat
Individual	Time and effort	don't have time to be at the grocery store every day
Individual	Time and effort	I think because the food was already cooked, it was there in front of me
Individual	Time and effort	we use these food kits, like good food and hellofresh. So we order that quite often. So we do get to pick our meals ahead of time. And it comes pre packaged, I guess so it's quick and easy to make
Individual	Time and effort	I tried to make it work, depending on what they have available at the buffet
Individual	Time and effort	I kind of get a mix of getting food from the cafeteria if I need to, if that's the more convenient option in the moments such as if I don't have a lot of time to do my own cooking
Individual	Time and effort	I feel like I have more time to plan and sit down and eat helping prepare meals

Table A2. Source: Author's own creation/work

About the authors

Dr Sadaf Mollaei holds a PhD in Sustainability Management from the University of Waterloo. Her research focuses on sustainable food and promoting sustainable behaviours, particularly eating behaviours, through interventions and sustainable marketing. Sadaf Mollaei is the corresponding author and can be contacted at: smollaei@uwaterloo.ca

Dr Leia M. Minaker is an Associate Professor in the School of Planning. She holds a PhD in Public Health, and her research focuses on health and health equity in cities, with a particular focus on food systems, urban planning and health. She conducts both qualitative and quantitative research at the intersection of public health and planning and is most interested in studying interventions to promote health and equity in cities.

Dr Jennifer K. Lynes is an Associate Professor in the School of Environment, Enterprise and Development and co-director of the Sustainability and Financial Management programme at the University of Waterloo, Canada. With a background in marketing and environmental studies, her research focuses on the intersection between sustainability, behaviour change and marketing – a term she has coined “marketing for sustainability”.

Dr Goretty M. Dias has 30 years of experience in multi-disciplinary research in Food Production Systems, including sustainability assessment and evaluation of environmental trade-offs associated with agricultural systems. Her current research focuses broadly on Nutritional Security and Sustainable Food Production and Consumption, Including Understanding the sustainability of eating patterns. She contributes to practical and policy discussions, providing her expertise for improving life cycle inventories for agriculture and including environmental aspects in dietary guidelines.

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com