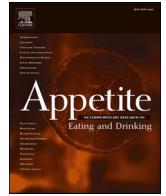




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The food choices of US university students during COVID-19

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ABSTRACT

COVID-19 triggered widespread disruption in the lives of university students across the United States. We conducted 9 online focus groups with 30 students from a large public university to understand the impact of COVID-19 on the food choices of those displaced from their typical residences due to the pandemic. To the authors' knowledge, this is the first qualitative research to examine the changes in food choice for US university students due to COVID-19 and offer insight into why these changes occurred. Students in this study reported significant, and often negative, changes in food choices during the pandemic compared to when on campus. Many students described changes in the foods they ate, the amount consumed, and increased snacking behaviors. We found food availability and household roles to be powerful factors influencing food choices. Most students had returned to family homes with many students taking a passive role in activities that shape food choices. Parents usually purchased groceries and prepared meals with students eating foods made available to them. Increased free time contributed to boredom and snacking for some students, while for a few students with increased skills and/or agency, additional free time was used to plan and prepare meals. About a third of the students attributed eating different foods at home to food availability issues related to the pandemic such as groceries being out of stock, purchasing non-perishable foods, or the inability to get to a store. This information may be helpful to researchers and health promotion professionals interested in the effects of COVID-19 on student nutrition and related food behaviors, including those interested in the relationship between context and food choice.

1. Introduction

The 2020 outbreak of COVID-19 (novel coronavirus) triggered widespread disruption in the lives of tertiary students across the United States of America (US). Beginning in March, university and college campuses closed (Baker, 2020), forcing the 14 million enrolled students (United States Census Bureau, 2019) to adjust their day-to-day living and eating routines. First-year students are often mandated to participate in dining plans, and on-campus food venues serve a substantial proportion of students even if they live off campus (Tseng et al., 2016). During the pandemic, institutions previously serving as many as 40,000 meals daily (LaFave, 2008, p. 81) closed their doors with little notice and for an uncertain duration, bringing the \$18 billion per year on-campus food industry (Lewis, 2019) to a halt.

Closure of campus food venues coincided with the introduction of stay-at-home restrictions and dramatic rapid declines in employment,

with 22% of the workforce losing jobs in the first three months of the pandemic (Cajner, 2020, p. 50). A growing sense of financial pressure permeated the country, adding stress to students and the families to which they may have sought refuge. Concurrently, students faced increasing uncertainty about admissions, tuition, and student loans (DePietro, 2020), while navigating potential government relief opportunities (Congressional Research Service, 2020), the stress of transitioning to online learning, and disruption to peer support.

Changes in available resources, the food environment, and social and psychological conditions are well documented influences on food choice (Cohen, 2012; Köster & Mojet, 2015; Oliver, 1999; Shepherd & Raats, 2006). To date, global research investigating the effects of COVID-19 on food choice has focused on cross-sectional studies of the general adult population. These studies have described food purchases, changes in perceived nutritional quality, and several, more recent studies, have examined food choice in relation to key health indicators such as weight

Abbreviations: in the manuscript are: COVID-19, 2019 novel coronavirus; US, United States of America; UMD, University of Maryland.

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status (Poelman et al., 2021) and the effect of stress (Ammar et al., 2021; Marty, de Lauzon-Guillain, Labesse, & Nicklaus, 2021). The few qualitative studies have focused on specific clinical issues such as disordered eating (Brown et al., 2021). Few studies have targeted the US university student population and most of these studies have focused on food insecurity (Soria, 2020).

University students are an important population to understand as experiences during times of life transition are shown to have an enduring impact on health trajectories (Halfon & Hochstein, 2002). While the transition to the university food environment is associated with weight gain (Vadeboncoeur, Townsend, & Foster, 2015; Vella-Zarb & Elgar, 2009) and generally poor dietary choices (American College Health, 2019; US Department of Health and Human Services and US Department of Agriculture, 2015), the effect of transition between places of residence during university is less understood. This study is, to the authors' knowledge, the first qualitative research to investigate the changes in food choices of US university students who were displaced from their typical residences due to the pandemic, noting differences in consumption between food environments and suggesting why these changes occurred.

This study is guided by social cognitive theory, a commonly applied theoretical framework in understanding food choice and behavior change (Muturi et al., 2016), and its construct of reciprocal determinism which posits that a person can be both an agent for change and a responder to change in the environment (Glanz, 2001). Through this lens, we identify the physical and social environments of a sample of university students during COVID-19, their food choices, and offer insight into why these choices may have occurred.

This study provides timely insights into an evolving situation by sharing information learned from the first wave of what health officials warn could be multiple waves of pandemic activity. This information may be helpful to researchers and health promotion professionals interested in the effects of COVID-19 on student nutrition and food behaviors, including those interested in the relationship of context and food choice.

2. Methods

2.1. Population

We recruited 30 full-time university students enrolled at a large public university near Washington D.C. during March and April 2020. The University of Maryland (UMD) serves 30,000 undergraduate students and 11,000 graduate students. All resident students are required to purchase one of four options of on-campus dining plans (University of Maryland, 2020a,b), all of which include seven-day unlimited, anytime dining in the university dining halls. These plans differ in the number of included guest passes and the additional dining dollars allocated to purchasing foods at a discounted rate at six campus convenience shops, 15 cafes, and food courts. Non-resident students can access a five-day unlimited dining hall plan if desired, a connector plan which provides a set number of meals per week at the dining hall, or no plan. Dining plan options are shown in Table 1.

Study participants met the following eligibility criteria:

- 1) 18–24 years of age, inclusive
- 2) full-time student status enrolled at UMD, College Park campus
- 3) participating in the resident dining plan and eating lunch at the South Campus Dining Hall at least two times each week during the study semester (or have done so previously)
- 4) not faculty or staff
- 5) able to speak and understand spoken and written English
- 6) not currently participating in a formal weight management program
- 7) not diagnosed with an illness/condition that affects food choice

Participants were recruited via email to faculty and student interest

Table 1

Dining plans available at the University of Maryland (University of Maryland, 2020a,b).

Availability	Plan name	Campus dining hall access	Dining dollars (per semester)	Guest passes (per semester)	Spring 2020 ^a price per semester
All students	Base	Seven-day Access	–	2	\$2380
All students	Base Plus	Seven-day Access	200	4	\$2560
All students	Preferred	Seven-Day Access	300	6	\$2644
All students	Premium	Seven-day access	400	8	\$2720
Non-resident students	Five-day	Five-day access	–	–	\$1899
Non-resident students	Connector	Choice of (a) 50, (b) 100, or (c) 150 meals for Connector	–	–	(a) \$500, (b) \$950, or (c) \$1350
Non-resident students	Combo	70 meals	250	–	\$895

^a Students were refunded Spring 2020 plans due to COVID19 disruptions.

groups. Most participants contacted the research team in response to group chats posted to social media by interested students. Participants received a \$20 Amazon e-Voucher for participating in the focus group. Students provided informed consent via Qualtrics.

2.2. Focus groups

This research is part of a larger study on food choice at university dining halls begun prior to the outbreak of COVID-19 in the US. Adjusting to the real-time implications of the pandemic on participants, we revised the remainder of the research to include an examination of whether COVID-19 had an impact on university students and their food choices and why any change may have occurred.

We selected focus groups as the methodology for this research to obtain rich, in-depth information on the experiences, behaviors, and attitudes of participants regarding their food choices (Liamputtong, 2011). We conducted 9 online focus groups of 75 min each, from 7 to April 22, 2020. Small groups of two to four students participated in each Zoom session to group together, as much as possible, students in the same year of study. This approach was intended to encourage interaction in the online format and minimize any potential for social power dynamics between students (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). The sessions were audio recorded and transcribed verbatim by a transcription service. Participants also completed a short online survey via Qualtrics prior to participating in the sessions. The survey captured select demographic and behavioral data about food choices.

The semi-structured focus groups included open-ended questions asking about how, if at all, COVID-19 was impacting food choices, as well as comparisons between the current food choices and usual choices when at the university dining hall.

2.3. Data analysis

The transcripts were imported into NVivo 12 for coding and analysis using a reflexive thematic analysis approach (Braun & Clarke, 2006). The research team read and discussed the transcripts to gain an initial understanding of the content. PP then inductively coded each transcript. The codes were reviewed and refined to combine any duplicative concepts. Concepts that provided a significant contribution to understanding the research topic, and which appeared across multiple focus groups,

were identified as candidate themes. Next, themes and supporting data were reviewed and analyzed from the perspective of reciprocal determinism theory. Themes were organized into themes and subthemes with SL, JD, and KC reviewing and refining the organization to better articulate relationships between concepts and the theory. Illustrative quotes were selected to represent the data. Quotes appear as provided by the participant.

3. Results

Sociodemographic information for the 30 participants is provided in Table 2. The median age of participants was 19.3y (SD 1.29). All participants classified themselves as single, never married, and living with others. Most participants were living on campus prior to closure (28), female (24), employed in some capacity (22), and enrolled in university dining plans (26). Many were White (19) and about half of the participants were first-year students (16). Using self-reported height and

Table 2
Sociodemographic characteristics of focus group participants.

	Total, n (%)
Age	
18	10 (33.1)
19	9 (30)
20	6 (20)
21	3 (10)
22	1 (3.33)
23	1 (3.33)
Sex	
Male	8 (26.67)
Female	22 (73.33)
Racer	
White	18 (60)
Black or African American ^a	7 (23.33)
Asian	3 (10)
Multiracial	2 (6.67)
Year of Study	
First	16 (53.33)
Second	6 (20)
Third	6 (20)
Fourth	2 (6.67)
BMI, mean (SD) rowhead	23.25 (SD 4.13)
Perceived health status rowhead	5
Excellent	11
Very good	11
Good	3
Fair	0
Poor	
Dining plan status	
Dining plan	26 (86.67)
-Basic plans	9 (30)
-Preferred and premium plans including dining dollars	15 (50)
-Plan not specified	1 (3.33)
-Connector plans (limited number of meals per semester)	1 (3.33)
Not on dining plan	4 (13.33)
Usual residence	
On campus resident	28 (93.33)
Off campus resident	2 (6.67)
Current residence	
Currently home	27 (90)
Apartment off campus	2 (6.67)
Overseas residence	1 (3.33)
Home state	
Local (Maryland)	25 (83.33)
Out of state (North Carolina, New Jersey, New York)	5 (16.67)
Employment status ^b	
Occasional or seasonal employment	12 (40)
Part-time	9 (30)
Full-time	1 (3.33)
No employment	8 (6.67)
Relationship status	
Never married	30 (100)

^a US Census categories for race.

^b Student self-report employment status as of the focus group date.

weight data (US Centers for Disease Control and Prevention, 2020), the mean calculated BMI was 23.25 (SD 4.13) with 24/29 classified as healthy weight (normal), 3 as overweight, 2 as obese, and 1 participant did not provide weight data. Approximately half (16/30) described their health status as excellent or very good. Of the 30 participants, 27 students had returned to family homes, 1 remained in a local apartment with the same roommate, 1 rented a local apartment with a friend, and 1 had travelled overseas.

3.1. Food choices

Students reported that their food choices had changed significantly during COVID-19 compared to dining at the university. Many students described choices associated with poorer nutrient and increased caloric content.

3.2. Preferences

Slightly more students across focus groups preferred the food consumed off campus during the pandemic to the foods chosen at the university dining hall. Numerous reasons were stated for this preference including higher quality foods, a break from boredom with university dining options and, particularly for those involved in cooking, access to the types of foods they enjoy. Some students, particularly non-White students, spoke of reconnecting with ethnic foods and foods from childhood.

“I am very fortunate. My stepmother, she’s a European from Slovakia. She has a lot of culinary experience from her family, and from all of her time that she’s been in the States so (I prefer) her cooking, definitely. If I were to ever compare it to UMD, and that dining experience, I’d probably be kicked out of my house.” (male, 19y, first-year student, base plan).

The students who preferred the foods at university commented on the lack of conveniently available prepared or cooked foods at home, a lack of variety in the foods available, and a lack of healthy food options compared to the university dining environment.

“I think that I might like the food at school more. I think I need it for options, just because my family eats a lot of meat at home, so I have to fricking fend for myself here. And, yeah at school, they have more than meat.” (female, 19y, first-year student, dining plan but type not specified).

3.3. Food availability

Many students across focus groups said they were eating different foods to those chosen at the university. Of these students, most said they were eating what was available to them from grocery shopping. For those at home with family, groceries were usually purchased by parents and meals were cooked by a family member, reflecting a lack of autonomy over student food choices.

“I think it impacts my food choices because I’m not the one really going grocery shopping or choosing what options are available for me to eat right now. And I also eat with my family so usually one of my parents will make dinner and I’ll just eat whatever they choose.” (female, 21y, third-year student, no dining plan)

About a third of the students attributed eating different foods at home compared to university due to food availability issues related to the pandemic such as groceries being out of stock, families purchasing more non-perishable foods, or the inability to get to a store. These students perceived a limited availability of fresh foods resulting in increased consumption of non-perishable foods.

“My options are more limited, so I don’t have as much fresh food. So, I’ll be eating a lot of canned soups and stuff like that.” (female, 18y, first-year student, premium dining plan).

The few students who did their own grocery shopping also noticed the restrictions on available foods. A student who had moved into an off-campus apartment, and does not enjoy cooking meals from scratch ingredients, noticed limited availability of pre-prepared foods at the grocery store.

“I feel like grocery stores aren’t able to keep up with demand. I went to Shoppers in College Park, and now they didn’t have as many of the Morning Star Farms products they usually have. I like the chicken. I get it because I don’t want to make something, but they were out of stock for that.” (female, 19y, first-year student, dining plan but type not specified).

Some of the students who did their own grocery shopping indicated using alternative strategies to try to source the foods they wanted, suggesting that they had the skills and motivation to do so even amidst the pandemic.

“I did order some food from like when you order groceries online. I did that first, but because a lot of things are out of stock now, I have started to just go to the store and get as much as I can.” (female, 18y, first-year student, base dining plan).

3.4. Perceived healthiness of available food

Most students who commented on the perceived nutritional value of their diets felt the restrictions on available groceries during the pandemic negatively impacted their food choices. They associated increased intake of non-perishable foods with foods being less healthy.

“On campus, I made it a goal of mine to put something nutritious in each meal I have. Whether it be like fruits and vegetables or something, just have a sizeable portion of that, to kind of balance out what I’m doing for the day. That was nice. And just being at home, I’m not necessarily doing that as much. I think it’s because of what’s going on with this whole pandemic ... we have more foods that are not sustainable, non-perishable foods at home ... So, I’m not really eating the necessarily nutritious stuff.” (female, 18y, first-year student, base plus dining plan).

Comparing the available foods at home to food at the university dining halls, many students noted the lack of perceived healthy options purchased by family members, particularly salad and vegetable items.

“I tend to eat much more healthily at school, which I know is not popular opinion sometimes, but I think just having all the availability and the options of the fresh stuff ready whenever you want the convenience of it, is much easier.” (female, 20y, third-year student, five-day access dining plan).

Convenience was a significant factor associated with healthy eating at the university.

“Because fruit and things at the diner are already cut up and just out there with the bowl ready for you to get, I think I definitely eat healthier at school. Also, choosing what I want and when I want it, there’s so many options, it’s like buffet style, so you can just put a little bit of everything, if you wanted, whereas when you’re eating at home, your parents make what they make and you eat it or you make whatever you find in the pantry.” (female, 19y, second-year student, connector dining plan).

3.5. Food routines

When asked how COVID-19 impacted food choices, students readily described daily food routines including household roles in food preparation activities, and changes in frequency and number of meals and snacks consumed.

3.5.1. Cooking

Many students reported that they did not cook meals at home during COVID-19. Less than half of the students said they cooked at least some of the meals for their household during the pandemic. These students generally preferred their cooking to the food at the university dining hall.

“I’m more satisfied just because it’s my home food, and I can cook it, and it’s just what I’m used to, but obviously it’s not like school, where it’s a buffet. Just because there’s a lot of options at school doesn’t mean that would make me happier.” (male, 19y, first-year student, preferred dining plan).

Some of these students related their cooking efforts to the influence of family members who modeled such behaviors.

“I guess it’s better because my mom cooks a lot and as a result, I also cook a lot.” (female, 18y, first-year student, base plus dining plan).

Few students said they were the primary cooks in the household; however, these students preferred eating at home over dining at the university, enjoyed the control over the foods they ate, and described the foods as healthier meals. These students were generally participating in reduced dining plans or no dining plan at the university, suggesting they possessed cooking experience prior to the pandemic.

“I’m probably the main one who cooks in my family, so I’m really able to do exactly what I want and I often times cook a lot for the family, so it’s definitely much more personalized to what I like and fresher and more healthier options.” (female, 21y, third-year student, no dining plan).

Time was a contributing factor to enjoying the experience of cooking. Some students found themselves eating meals they did not usually eat (such as breakfast) because they had time to cook, while for others additional time in the day was used to plan and prepare meals.

“I’ve been doing almost all the cooking and it’s kind of nice when you can actually think through a meal plan and you have all the time to do it. [In the non-COVID-19 environment] A lot more take-out happens than it should. I generally cook for myself anyway a good amount, but just not as much as I like due to time.” (female, 22y, fourth-year student, basic dining plan).

Several male students said they were learning to cook due to an increase in free time. These students found this a positive experience, even though it was sometimes challenging.

“I’ve been trying to cook for myself and for my parents, which is fun. Even though the grocery store is really stressful now, I can actually pick out what I want, and I’ve been looking up recipes online. I’ve been trying to be creative with it, which has been pretty nice, and it takes a while, which is annoying, but that’s also gratifying to make your own food and then eat it, and you’re like, “I did this. I learned about this cooking process.” (male, 23y, fourth-year student, premium dining plan).

No female students described learning to cook during the pandemic. Females expressed a range of attitudes and behaviors associated with cooking. Those who cooked most of the meals in the household

expressed mainly positive associations. Others who cooked some of the household meals viewed cooking as a task and appeared to lack the motivation to cook.

“... at home if I have to cook something, I really think about whether I want to eat it or not.” (female, 18y, first-year student, preferred dining plan).

Students who were not on a meal plan at the university, found themselves cooking less frequently than usual as parents stepped in to do the work.

“I think I cooked way more at school than I do at home because I don't have anyone cooking dinner for me or anything.” (female, 21y, third-year student, no dining plan).

Several female students noted the extra effort involved in preparing food and instead said they opted for more snacks or junk food when hungry or bored.

“The meals there (at the university dining hall) are already cooked. So oftentimes I'm eating snacks (at home) just because I don't want to make myself a meal.” (female, 20y, second-year student, preferred dining plan).

3.5.2. Snacking

Many students described increased snacking. Some found themselves eating less food overall and reducing the number of daily meals while adding more of what they termed “junk food” and snacks into the daily diet due to boredom.

“I think the biggest thing is that I'm snacking a lot more. I'm not really sitting down or eating three meals a day. I'm eating one big meal and then just snacking through the day. Really because I'm bored, not because I'm hungry.” (female, 20y, second-year student, preferred dining plan).

Some students found themselves eating more junk food, such as ice cream and cookies, because parents encouraged eating these foods.

“I also have been eating more sweets, which probably hasn't been great. But I feel like my parents are forcing it up my throat ... This is the first time we've had all the family members in the house since my brother left college, which it's been a while. So, I think the whole family in one house, it's motivating them.” (male, 20y, second-year student, preferred dining plan).

While many students noted increased consumption of convenient snack foods in the home environment, only one student voiced a conscious effort to change her food behaviors to avoid the routine snacking brought on by boredom.

“I'm a big bored eater so I've been getting bored being stuck at home a lot. I feel at first it was really bad, the first week trying to get adjusted, because in my dorm room I wouldn't have snacks. So, even if I was bored, I couldn't do my bored eating thing because I would have to walk to the dining hall to get food and I never wanted to do that. And so here it's a lot more convenient to just get up and get a snack. So, the first week it was really bad, but I kind of was, wait, I need to get a grip. I need to get back into a routine ... So it was weird at first, but I'm getting acclimated to being here and kind of keeping myself restricted to not snacking.” (female, 20y, second-year student, preferred dining plan).

3.6. Amount of food and meal frequency

Students voiced no concerns regarding food insecurity, only food switching. While most students reported high caloric intake due to increased snacking, some noted that they were consuming more food at mealtimes because parents encouraged eating larger portions. No students mentioned resisting parental guidance over food choices.

“As to say, are my portion sizes decreasing? Absolutely not. It's ..., “You haven't eaten enough food, are you sure you don't want anymore? You haven't had two plates ... I'm not putting ... these are leftovers, this is the food you've got to eat.” (male, 19y, first-year student, base dining plan).

Along with the different foods available, some students also felt negatively impacted by the timing of their meals due to eating with family members.

“I miss the choices of what I want to eat and when I wanted to eat, because my parents like to eat at 6:30 p.m., and personally, I get hungry again by 9:00 p.m. because they ate so early, so ... I definitely did not have the same diet as I would if I were at school.” (female, 19y, second-year student, base plus dining plan).

A small number of students said they ate less food due to being less active both physically and mentally.

“I think because I'm not really going as many places or walking as much. I don't think I'm eating as much now. I'm not as hungry, because I'm sitting a lot more in one place.” (female, 21y, third-year student, no dining plan).

4. Discussion

University students in this study reported significant, and often negative, changes in food choices during the pandemic compared to when previously on campus. We found food availability and household roles to be powerful drivers of food choices. This finding is consistent with broader literature on the impact of food availability during the pandemic and extends research into food roles to university students navigating the challenges of disruption to residences due to COVID-19.

4.1. Food availability

Previous research has established that foods selected during grocery shopping are the basis of available foods in a home (Raskind et al., 2017). Similarly, students in this study reported that food choices while displaced from campus were significantly shaped by grocery shopping choices, resulting from a change in the purchaser of available foods (typically from university to parent) and supply chain issues related to the pandemic. In this study, participants reported their household purchased increased quantities of long-shelf-life foods and less perishable foods, consistent with reports from multiple countries early in the early phases of the pandemic (Bakalis et al., 2020; C&R Research, 2020; Food and Agriculture Organization of the United Nations, 2020). Although some US surveys have shown these purchasing behaviors were associated with increases in very low food security during COVID-19 (Adams, Caccavale, Smith, & Bean, 2020), food security was not an issue reported by these students. As other studies have found this to be a significant issue (Sharma SV, 2020; Soria, 2020), this sample of university students may represent a more privileged economic group. Additionally, purchasing decisions may have been impacted by early national guidance encouraging stocks of non-perishable foods as part of a strategy to minimize contact at stores⁽²³⁾ or shortages in some supplies experienced at the onset of stay-at-home restrictions.

Little published research has examined the relationship between use of food-related skills and perceived healthiness of foods consumed in the US during the pandemic. However, participants in this study who described more skills and, particularly, agency in the household than other students reported increased access to fresh, healthy foods during COVID-19. This suggests that in some households, grocery shopping and cooking skills may have mitigated the health implications of reductions in the supply chain.

4.2. Household roles

When students resided with family during COVID-19, parents performed leadership roles, such as purchasing and preparing foods for household consumption. Most students adopted passive roles, particularly by not participating in grocery shopping, and less than half of the students were involved in any meal preparation, even though they were aware that these activities shaped their food choices. Whereas, students living outside of the family home, either alone or with others, assumed responsibility for grocery shopping and cooking meals, suggesting greater autonomy outside of the family dynamic. For all students in this study, once roles were established, the behaviors of each household member generated a shared routine, typical of the process for development of routines (Gillespie & Johnson-Askew, 2009) and, therefore, similar food choices continued over time. The roles students adopted either facilitated healthy food choices by involving students in the selection, preparation, and consumption of foods, or hindered healthy food choices by restricting the availability of healthy, convenient options and promoting increased snacking and consumption of large quantities of foods. These findings suggest it is important to identify which roles are adopted amongst household residents, why particular roles are adopted, and to understand the consequences of those roles on food choices.

We found little research explores the roles of young adults in the parental household and the impact of these roles on food choices. The preponderance of related literature examines the relationships between parents and child or young adolescent populations (Pedersen, Grønhoj, & Bech-Larsen, 2012; Vaughn, Tabak, Bryant, & Ward, 2013; Videon & Manning, 2001; Yee, Lwin, & Ho, 2017), with the concentration of research into adults and families mainly studying a phenomena called boomerang adult children (Copp, Giordano, Longmore, & Manning, 2017; Guzzo, 2016; Newman, 2013; Tosi & Grundy, 2018) rather than young adults who are transitioning to independence through the university system. The findings of our study extend this work of exploring contexts and roles to university students returning to the parental home during studies and specifically, during a pandemic.

There are several possible explanations for the students' adoption of these roles during COVID-19. Some students may have returned to prior roles held in the family household consistent with social cognitive theory of repeating learned behaviors and concepts that routines reflect the thoughts, behaviors, and tastes that individuals internalize and enact as a result of the social structures in which they have lived (Jastran, Bisogni, Sobal, Blake, & Devine, 2009). Returning to prior roles may reflect conformance to the social influence of others enacting their typical roles in the home, as conformance has previously been found to promote harmony amongst a group (Cascio, Scholz, & Falk, 2015). During the pandemic, harmony may be particularly prized as household members experience a range of stressors. For young people, social support has been found to be more important than even coping for overall wellbeing (Zeidner, Matthews, & Shemesh, 2015).

Similarly, it may have been comforting for students to return to prior roles to be parented during a time of boredom or stress, repeating previous dynamics between members of the household. While these students reported boredom more frequently than stress, stress appears to be a significant issue of the pandemic for young adults, with 18–29 year-olds consistently reporting the highest rates of anxiety and depression symptoms in the population (CDC National Center for Health Statistics,

2020). In this study, boredom and stress may have contributed to the roles of both parents and students in the form of mutual comforting as parents encouraged consumption of large quantities of foods and unhealthy snacks with students generally conforming. We found many studies investigating the effects of the pandemic on the mental health of university students around the world (Di Renzo et al., 2020; Dratva et al., 2020; Husky, Kovess-Masfety, & Swendsen, 2020; Patsali et al., 2020), but we were unable to locate studies exploring the connection between such factors and household roles during the pandemic.

Finally, for some students, parents may have fulfilled a similar role to that of the university dining hall in that others selected groceries and prepared the available foods. The transition from adolescence to adulthood is well documented as a period where individuals are increasing in independence and developing skills that impact health behaviors (Kattelmann et al., 2014). Institutionally, the university food environment cushions this transition period by providing convenient, on-demand, healthy food options. Our study found that without convenient access to these options during COVID-19, some students lacked the skills and agency necessary to make healthy food choices. Those students who responded to change with positive behaviors either had already developed those skills or cultivated them due to the removal of barriers, such as time, and the support of family in the home. As prior research has found (Gase, Glenn, & Kuo, 2016; Larson NI, 2006; Muturi et al., 2016), those students who demonstrated self-efficacy by purchasing groceries or cooking meals generally perceived foods to be of higher quality and nutritional content than students exhibiting lower self-efficacy and agency. This highlights the important role of universities in shaping behaviors related to food choice. It also invites the question, “are universities cushioning the transition to adulthood too much by providing convenient, easy food options and not enough skill building?”

Collectively, these findings suggest more research is needed to understand the impact and processes of transition between university and home food environments for young adults. While much work has been conducted to explore transitioning from home or high school to the university environment, there seems to be a gap in understanding transitioning back to the family home from the university. It may be more attention is needed to promote positive food-related roles for this age group consistent with a life course development perspective (Gillespie & Johnson-Askew, 2009; Halfon & Hochstein, 2002) and to build skills that can be leveraged when moving between food environments. This study is useful for researchers and practitioners interested in understanding how changes in the social and physical environments during COVID-19 translated into food choices for university students, and for those developing interventions to promote positive behaviors for the growing group of US university students (National Center for Education Statistics, 2019).

4.3. Strengths and limitations

This study offers important insights into an unprecedented and evolving situation and is, to our knowledge, the first qualitative insight into the food choices of US university students displaced during the restrictions of COVID-19. Our findings are consistent with broader research highlighting the importance of food availability on food choices and extends understanding of barriers and enablers of healthy food choice, such as the influence of roles to a new context (the pandemic), suggesting areas for future research.

This study reflects a small sample of students from one university in the US. Further research is needed to understand the scope and scale of the identified themes for the broader population. Our findings should be considered in view of the demographic representation of the student participants, particularly in terms of sex, race, and economic considerations. As most students were female, themes may underrepresent the male experience. Given that over half of the participants were White, the results may not reflect themes relevant to other racial groups,

particularly amongst males, where all but one student were White. While we found all overarching themes appeared across participants of different racial groups, weights, and perceived health status', we found an additional theme for non-White students who reported, and enjoyed, the increased availability of traditional foods in the home environment over the university dining halls. This student sample may also reflect a more privileged group of young adults as no students reported food insecurity, few of the students reported spending their own funds on groceries, most indicated some income from employment and had the support of the family residence.

5. Conclusion

The university students in this study experienced significant, and often negative, changes in food choices during the COVID-19 pandemic due to changes in food availability and food-related roles. These findings support broader research emphasizing the importance of access to healthy foods while also highlighting the under-researched area of household roles and their relationship to food choices for young adults. COVID-19 provides an opportunity to gain deeper insight into the key influences on food choice when moving between food environments and suggests that the two key contexts of family and university may offer opportunities to promote the skill building and agency necessary to facilitate positive roles and associated food choices across environments.

Author contributions

PP, SL, JD, and KC developed the protocol and materials for the focus groups. One primary investigator (PP) conducted each stage of the focus groups with three co-investigators (SL, JD, and KC) providing secondary review and analysis of transcripts, expert consultation, and review throughout. PP wrote the draft manuscript with feedback and expert review by SL, JD, and KC.

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Submission declaration and verification

No portion of this work has or is being concurrently published, reviewed, or posted on the Internet.

Ethics

This study was approved by the University of Queensland's Human Research Ethics Committee (HREC) with approval number 2019001984. Electronic consent was obtained from all participants.

Declaration of competing interest

All authors report no conflicts of interest.

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