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Where we work determines what we eat: A qualitative exploration of the multi-dimensional influences on meat consumption when home and office working during the Covid 19 lockdown in London, UK

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ABSTRACT

Food choices, including the decision to consume meat, are complex and determined by many inter-related influences. This study examined the choice of working professionals to consume meat in the context of forced changes in working conditions during lockdowns in London during the Covid 19 outbreak in 2020–21. Guided by an adapted Ecological Framework depicting influences on food choice in this context, semi-structured interviews were conducted with 33 employees of a financial services consultancy who normally work from offices in central London but were homeworking at the time of research. Food choices associated with all meals (but especially lunches) when working in each setting were explored. Four key themes emerged from the research. Firstly, when office-working the influence of colleagues (social environment factor) on the choice to consume meat was variable and individual-level factors, particularly personality traits, impacted the extent of social influence. Secondly, limited availability of non-meat options and preferences for buying meat-based meals outside the home (physical environment factor), contributed to more meat consumption when office-working. Thirdly, alignment of food choices between household members (social environment factor), largely for convenience reasons, resulted in a greater likelihood of non-meat meals being eaten when homeworking. Finally, not having to commute (physical environment factor) meant participants had more time available, resulting in changes to routines and priorities (individual-level factors), with some reduced meat consumption. Overall, research findings contribute to building understanding of how both home and office-working influence the choice to consume meat. Findings may be used to inform strategies to reduce meat consumption, which will in turn play a role in supporting global climate change targets and reducing harm to the natural environment associated with food choices.

1. Introduction

The food choices of individuals are complex, determined by multiple influences across different contexts and settings (Horgan et al., 2019; Macdiarmid et al., 2016; Story et al., 2008). Many food choices are not logical, reasoned actions, but subconscious, automatic, rapid decisions heavily influenced by context (Stubbs et al., 2018). A review of influences on food choice concluded that 'food choice is the result of a number of factors, including biology, culture, individual identity and social images' (Franchi, 2012, p. 26). The focus for this research was the choice to consume meat in the context of forced changes in working conditions during lockdowns in London during the Covid 19 outbreak in 2020–21.

Meat consumption has long been associated with impact on the natural environment with its production significantly contributing to greenhouse gas (GHG) emissions, deforestation through land-use change, and water use through irrigation (Biermann & Rau, 2020). Opting for vegetarian and vegan meals provides opportunity for individuals to reduce their environmental impact, especially with respect to reducing GHG emissions (Farchi et al., 2017; Hallström et al., 2015). Macdiarmid et al. (2016) found that the choice to consume meat specifically is driven by multiple influences, including pleasure, status,

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habit, social pressures, and social norms. Similarly, Horgan et al. (2019) found that both physical (for example eating at home or out-of-home) and social influences play an important role in determining likelihood to consume meat and the amount of meat eaten.

In the UK, abstaining from meat consumption is gaining popularity (Jones, 2020), and the current Secretary of State for Business, Energy, and Industrial Strategy, recently endorsed veganism as a major route to cut individual-level GHG emissions (Murphy, 2021). Vegetarian and vegan food sales are increasing, with 2019 said to be "The Year of the Vegan" (Trent Grassian, 2020, p. 1). In 2021, a record number of 500, 000 people (a quarter of whom were UK-based) signed up to Veganuary, whereby people eat only plant-based foods for a month, which was double the number for 2019 (Carrington, 2021). However, this may not tell the full story, as according to research from Savills (2020), consumption of animal protein in the UK increased from 56 kg per capita in 2009 to 61 kg in 2019. Building understanding of influences on the choice to consume meat could support action to encourage more sustainable food choices.

For the UK population, the physical and social influences they were normally exposed to changed overnight on March 24, 2020, when a lockdown was enforced as a result of the Covid 19 pandemic. The Prime Minister, Boris Johnson, announced that people may leave the house to travel to and from work, but only where this was 'absolutely necessary and cannot be done from home' (BBC News, 2020). This resulted in an immediate shift to homeworking not previously seen. In 2019, 32% of office-workers in London sometimes worked from home, with 5.5% mainly working from home (Pratt, 2020). However, during the pandemic, 90% of London's office-workers were homeworking (Financial Times, 2020).

Before the pandemic, Clohessy et al. (2019) described the office as 'a unique microenvironment where people spend most of their time and consume most of their calories' (p.1778). They further reported that the office setting affects employees' eating behaviours, including food choice. If emergency measures introduced for the pandemic result in more regular homeworking, the home setting may be more influential in individuals' choice to consume meat going forward.

The aim of this study was to build an understanding of the influences on individuals' choice to consume meat, and how these differ in the home, versus office setting, taking advantage of changes to working arrangements in London during the Covid pandemic. The research question addressed was: *How do influences on meat consumption differ between home and office working?*

Pursuit of this line of research is intended to be relevant to businesses, policymakers, and Non-Governmental Organisations (NGOs) aiming to encourage more sustainable diets by pointing to ways to achieve reductions in meat consumption. In turn this will play a role in supporting global climate change targets and reducing harm to the natural environment associated with food choices. The first step in this research was to understand influences on food choices (Section 2) before determining data collection methods, in this instance utilising interviews (Section 3). Results and discussion of the interview findings are provided in Section 4 with conclusions drawn from the research in Section 5 and reflections on limitations and further research opportunities in Section 6.

2. Conceptualising influences on food choices

While multiple frameworks and models have been developed to explain motivations behind food choices, they have historically considered specific influences, for example convenience, lifestyle, or values (De Boer et al., 2007; Grunert, 2006). It has been noted that fewer frameworks address the multiple settings in which people live and function and the associated influences (Ball et al., 2006). The Ecological Framework from Story et al. (2008) provides a lens through which these multiple settings can be viewed and has been applied by others, such as Lorenz and Langen (2018) who reviewed existing research related to influences on individuals' food choices out-of-home. The Ecological Framework incorporates four broad levels of influence (individual-level factors, the social environment, the physical environment, and macro-level factors), which all interact to shape food choice. Using it to structure findings from 110 papers, Lorenz and Langen (2018) found that studies considering more than one dimension of the Ecological Framework demonstrate that food choice is simultaneously determined by multiple influences. Similarly, Horgan et al. (2019), who studied meat consumption within different social, temporal, and physical settings in the UK reported that both physical factors (for example eating in a restaurant or café) and social factors (for example eating with family or alone) play an important role in shaping individuals' likelihood to consume meat and the amount eaten. They noted the importance of considering a wide variety of influences when seeking to understand meat consumption and reduction.

As the Ecological Framework spans multiple influences on food choice, it lends itself to comparing the home and office setting, central to this research. The original Ecological Framework (Fig. 1) provided a starting point to explore influences and consider their relative importance when home and office working. Approaching the literature review with this specific focus resulted in a modified framework for the purposes of this research (Fig. 2).

A range of individual-level factors (such as lifestyle, preferences, gender) influence the choice to consume meat (Rosenfeld & Tomiyama, 2020; Tobler et al., 2011). Environmental concerns, health considerations and animal welfare issues are examples of individual-level factors associated with decisions to eat less meat (Duckett et al., 2020). These can change over time and place but are unlikely to change in isolation (Kemper, 2020). In the context of home and office-working it is expected that individual-level factors will influence the choice to consume meat together with social and physical environment influences (Cheah et al., 2020; Macdiarmid et al., 2016; Trent Grassian, 2020). For example, peoples' awareness of, and importance they place on, animal welfare issues may change as a result of who they spend time with (the social environment).

Differences in the social environment between home and office-working will influence the choice to consume meat (Cruwys et al., 2015; Higgs, 2015). At home, individuals may eat meals with household members who influence food choices, whereas in the office, colleagues may be influential, for example by proposing certain food outlets. As such, when homeworking, meat consumption may either increase or decrease depending on who has primary responsibility for purchasing and preparing food (Macdiarmid et al., 2016). Meat consumption may be higher when eating with other people, particularly as part of a social occasion (Macdiarmid et al., 2016). Social influence on meat consumption has been found to be stronger with family members or friends than colleagues, dependent on their dietary preferences (Horgan et al., 2019).

Differences in the physical environment between home and office-working are expected to influence the choice to consume meat. Firstly, eating in restaurants when office-working may result in a higher likelihood of selecting meat (Horgan et al., 2019; Lachat et al., 2012). Secondly, when preparing food at home, the actual or perceived ability to prepare vegetarian meals and the amount of preparation time available may play a role (Ducrot et al., 2015; Lea & Worsley, 2001). Lastly, food availability, price and messaging are important influences (Hartmann & Siegrist, 2020; Trent Grassian, 2020) and this may be particularly relevant for office workers if there are limited food outlets nearby, or if time is a constraint.

Within London the macro-level factors identified in Fig. 1 (for example societal and cultural norms and values, food marketing and media) were not expected to differ between home and office-working, as participants both lived and worked in London. However indirect impacts were expected due to differences in the physical environment (people may be exposed to, and influenced by, different food marketing campaigns for example during their commute to the office) or the social

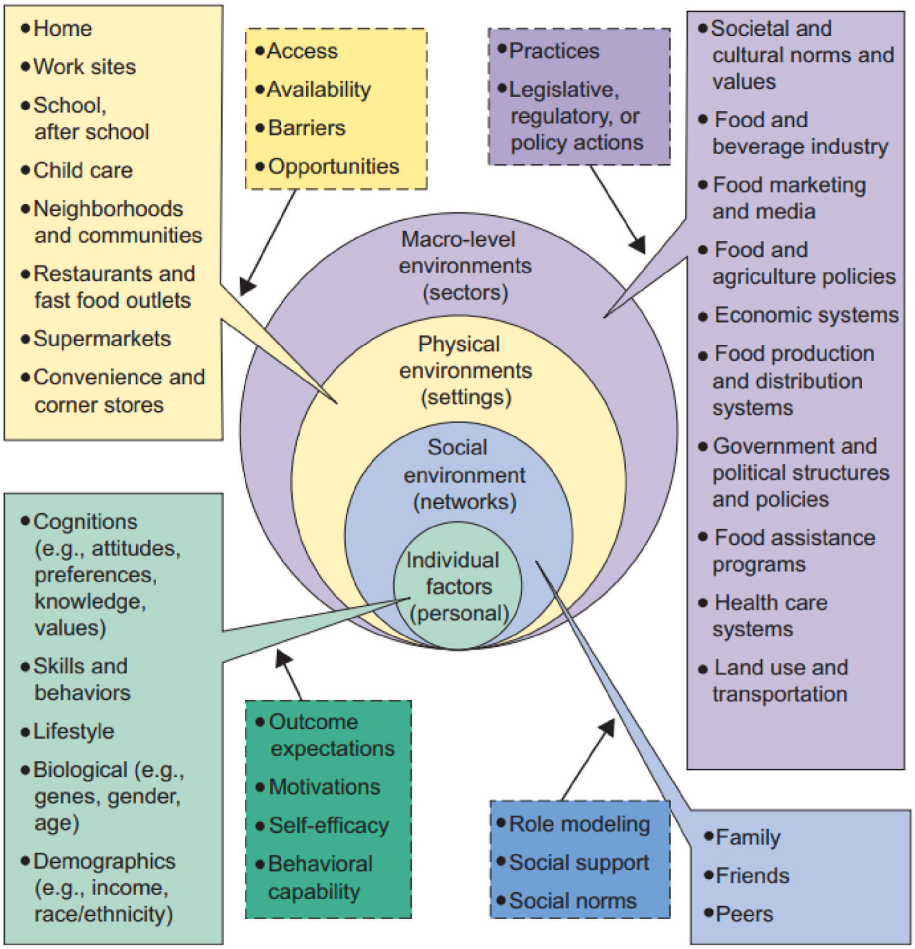

Fig. 1. The Ecological Framework depicting influences on food choice (Story et al., 2008, p. 273).

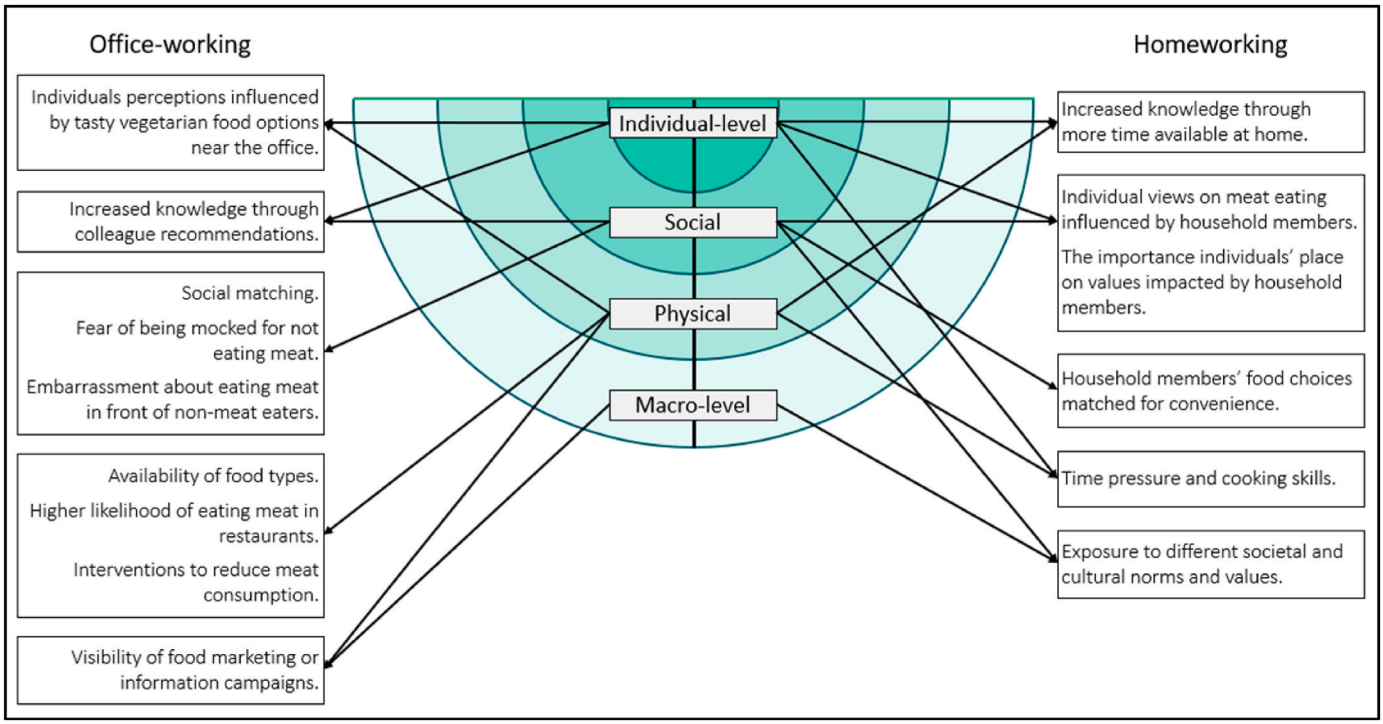

Fig. 2. Modified version of the Ecological Framework, summarising possible influences on the choice to consume meat when office and homeworking.

environment (people may be exposed to, and influenced by, different societal and cultural norms and values based on who they spend time with).

Based on the Ecological Framework levels of influence explored, it was expected that the influence of homeworking on the choice to consume meat would largely result from differences in the social and physical environment, and these may also impact individual-level factors, and to a smaller extent macro-level factors, which would in turn be influential. For example, the physical environment may increase individuals' knowledge, or social interactions may impact the importance individuals place on specific values. The modified version of the Ecological Framework (Fig. 2) summarises possible influences on the choice to consume meat when office and homeworking, depicting the interrelated nature of individual-level factors, the social environment, the physical environment, and macro-level factors. This provides the foundation for data collection using interviews.

3. Methods

While similar recent studies on dietary choices during Covid 19 lockdowns are quantitative in nature (Pfeifer et al., 2021; Sulejmani et al., 2021), a qualitative research design was selected in this case, as it enabled exploration of the ways in which home versus office-working influences the choice to consume meat and development of an understanding of the topic's nuances (Williams, 2007). In their systematic meta-analysis of factors influencing individual meat-eating behaviour, Stoll-Kleemann and Schmidt (2017) found that qualitative studies help to clarify complex behaviour patterns 'due to the importance of both individual and cultural/social factors in influencing meat consumption' (p. 1263). Examples of similar qualitative studies include those related to motivations, beliefs and attitudes of vegetarians and vegans (Twine, 2018), attitudes towards, and willingness to reduce, meat consumption (Macdiarmid et al., 2016) and factors influencing meat consumption (Tucker, 2018).

Semi-structured interviews were conducted with 33 employees of a financial services consultancy in London who were homeworking at the time of research (2020–21). The interview guide utilised (Table 1) promoted reflection on the influences on food choice during the working week (Monday to Friday), and how these differed between home and office working. All meals were considered, with particular focus on lunchtime meals, which are eaten during the working day. The semi-structured approach served to keep focus, while enabling flexibility in the order of topics, dependent on participants' responses (Wilson, 2016). In addition to the interview guide, a script of prompts was followed to expand on the interview questions and support subsequent discussions. This qualitative research design enabled an understanding of topic nuance; interviews being effective when aiming to understand or explore 'finely shaded human issues' (Beck & Manuel, 2008, cited in; Wilson, 2016, p. 47).

Table 1
Interview guide, forming the basis for semi-structured interview questions.

Lunch choices at home
- Tell me about what you eat for lunch while you're working from home.
- What do you think influences what you eat for lunch when you're working from home?
- How do the dietary habits or preferences of those you live with influence what you eat for lunch?
- Do you think your lunchtime choices have changed at all in the time that you've been homeworking?
Lunch choices in the office
- Think back to a day when you were working from the office, what sort of thing did you eat?
- How does your lunchtime meal at home versus in the office compare?
- What were the influences on your lunchtime choices when you worked from the office?
- How did other people influence your lunchtime choices when you worked from the office?
Breakfast food choices
- How (if at all) have your breakfast choices changed between home versus office-working?
- What do you think the reason for this is?
Dinner food choices
- How (if at all) have your dinner choices changed between home versus office-working?
- What do you think the reason for this is?

The target population for the study were those working for one financial services consultancy company located in central London. The organisation was selected as it is based in London and the researcher is an employee, so the population's characteristics were well-known and well-suited to the study. When office-working, employees were based in different client offices in London, located in the City of London or Canary Wharf. There are plentiful food outlets in these locations to cater for office-workers, therefore the physical proximity of available food options was not expected to significantly influence food choice. This is important, because if availability of food options was a constraint, it could limit the ability to explore other influences.

Around 250 employees worked for the organisation at the time of the research, therefore it is recognised that this is a narrow population, however the context and experiences of participants were similar, and the sample and target population were closely linked (Robinson, 2014). All employees had been office-working fulltime prior to March 2020, and homeworking fulltime since March 2020, so they had experienced both home and office-working. Having above-average incomes (according to Statista (2022) the median annual salary for full time London-based employees was £39,716 in 2021), price was not expected to be a dominant influence on food choice. The target population was homogenous with regards to these factors, however there was heterogeneity in the gender, dietary preferences, and household arrangement (who people live with) of individuals, enabling identification of and comparison between sub-groups for analysis. This balance of homogeneity and heterogeneity was deemed appropriate based on the research question and available resources (Robinson, 2014).

Having previously established that who people eat with has a powerful effect on food choice, household arrangement was used to identify subgroups, and rather than including new participants until data saturation or use a sample size calculator, the final sample size of 33 was determined when a minimum quota for each household arrangement was met. The sample is large when considering the recommended sample size of 15–30 qualitative interviews from Marshall et al. (2013). However, for some research a larger sample is preferable, particularly where participants are plentiful and where subgroups are identifiable, and it is likely that subgroups have varied perceptions (Guest et al., 2006), as was the case for this research. Using non-probability quota sampling to set a minimum number of participants from different household arrangements ensured each subgroup was well represented, but enabled flexibility in the final sample composition, making recruitment of participants more straightforward (Robinson, 2014). Recruitment of participants was conducted by email, and of 35 individuals contacted, 33 agreed to participate. The quota size and final number of participants across household types is shown in Table 2. Of these, four participants were represented in multiple subgroups as they experienced different household arrangements while homeworking (hence a total of 37 participants are recorded in Table 2).

Table 2
Quota size and final number of participants for different household types.

Household arrangement	Minimum quota size	Number of participants
Living alone	5	5
Living with housemates	5	6
Living with parents or in-laws	5	6
Living with partner	5	15
Living with partner and children	5	5

Table 3
Participants' dietary preferences.

Dietary preference	Number of participants
Omnivore	26
Pescatarian	3
Mostly vegetarian	3
Vegetarian	1

The large number of participants living with a partner can be attributed to the average age (mid-twenties to mid-thirties) of the overall target population. Gender was evenly divided with 16 males and 17 females, as literature indicated that this plays a role in food choice. Dietary preferences were also considered (Table 3), following definitions from Eveleigh et al. (2020), with participants included who described themselves as omnivores (mixed diet including meat), vegetarian (excluding meat and fish) and pescatarian (a subclass of vegetarians who consume fish, but not meat), as literature indicated that people may be influenced to make food choices that go against dietary preferences (Rosenfeld & Tomiyama, 2019). No participants described themselves as vegan (excluding all animal-derived products). Culture and religion, although known to be influencing factors in vegetarianism (Fox & Ward, 2008), were not considered in the sampling strategy of participants, as they were expected to be fairly static individual-level factors that would not change between home and office-working.

As recommended by Arksey and Knight (1999), two pilot interviews were conducted with a subsample of the population to assess whether questions were clear and understandable. Recruitment of participants, interviewing and data analysis was conducted in accordance with the ethics approval obtained for the research. Interviews were all conducted virtually using Microsoft Teams or by telephone and lasted up to 45 min. They were recorded and subsequently transcribed using Otter.ai, then manually checked and edited to ensure each transcript was an accurate verbatim account.

Interview responses were sorted according to: (1) Homeworking food choice, influences, and implications on the choice to consume meat; and (2) Office-working food choice, influences, and implications on the choice to consume meat. Thematic analysis was then conducted by reviewing and compiling data into codes and then themes as described by Clarke and Braun (2017). Themes were refined, with their relevance to the research question and prevalence considered, and then analysed with the adapted Ecological Framework in mind. In particular, careful consideration was given to how each potential theme related to individual-level factors, the social environment, the physical environment, and macro-level factors.

4. Results and discussion

The interviews resulted in wide-ranging conversations regarding food choices overall. Here, only results directly related to the choice to consume meat are discussed, focusing on influences on food choice when office-working and homeworking respectively. Following review of response frequencies regarding particular food choices, the results were aligned to four themes associated with individual-level factors, the social environment, and the physical environment from the Ecological Framework (i.e., no macro-level themes were identified).

4.1. Influences on food choice when office working

Participants cited a range of influences on lunchtime food choices and their choice to consume meat when office-working which largely align to the social and physical environment factors in the Ecological Framework. While breakfast and dinner were discussed in interviews, questions focused on whether these food choices had changed, in what way, and why, in the move from office to homeworking. To avoid repetition, these meals are discussed in Section 4.2.

It was first ascertained whether participants would normally have bought food from outlets or taken in packed lunches when office working. No participants went home for lunch, therefore except in circumstances where they took packed lunches into the office and ate the same meal when homeworking, lunch choices differed between the two scenarios of home and office working. Over half (19, 58%) said they never had packed lunches and 14 (42%) said they regularly, or sometimes had them. No participants had packed lunches on a daily basis, so all bought lunch from food outlets when office-working at least once a week.

When purchasing food, influences on the food outlet selected were first discussed, followed by the specific meal, considering the choice to select meals with or without meat. Participants were based in different client offices and 13 (39%) had a canteen in the office. Of these, 6 normally purchased lunch from the canteen. This was for reasons such as the food being appealing and good value for money. When leaving the office to buy food, a range of outlets were cited, for example "Pret a Manger", "Leon", "Waitrose" or "Tesco". For around half (18, 55%), different outlets were selected throughout the week and a range of influences on the outlet chosen were cited. Time available for lunch was an influence for 14 (42%), meaning that "what's close to the office" (Participant 19) or "how long the queue is" (Participant 18) determined the food outlet chosen. The type of food on offer was also an influence, with individual-level factors such as preferences being important, for example some participants said they were more likely to choose cold meals in summer and hot meals in the winter.

Some participants (9, 27%) cited frequenting fewer than four different outlets when office-working, with individual-level factors playing a role in this, including habit, convenience, and a strong preference for certain food types, such as sandwiches. For example, Participant 14 said:

> "It's just habit-based, like when I'm in the office, I think I just use my time of walking to get something just to think about things. So, I don't want to think about what I'm having for lunch."

The social environment, and preferences of other people were also important, as when office-working, 26 (79%) saw lunch as a social occasion and were more likely to eat lunch with others than alone. Around half (15, 45%) said this would influence the food outlet selected. Participants influenced others as well as being influenced themselves, dependent on who had stronger individual-level preferences.

A range of influences on the food chosen from the outlet were cited by participants, including individual-level influences such as what they were in the mood for, or health considerations. For some (8, 24%), having a larger meat dish was a treat to end the week, or when they had been out for alcoholic drinks the previous night. Others (2, 6%) talked of meat options being heavier, with one participant avoiding meat at lunchtime due to it making them feel sluggish. Participants also cited a dislike of vegetarian options driving them to choose meat, or counter to this, concern about meat quality driving them to choose a vegetarian meal. A lack of vegetarian options was found to influence the choice to consume meat for lunchtime meals when combined with individual likes and dislikes.

Some (10, 30%) said lunchtime food choice was sub-conscious, based on what looked nice, was available at the food outlet, or how they were feeling that day. Some (11, 33%) discussed price as an influence and participants had differing views. Some thought meat was better value, while others thought vegetarian options were. Others (5, 15%) considered what else they were eating that day or had eaten throughout the week, for example Participant 03 said: "If I was going out for dinner then I'd have an idea what I was going to have, and if it was a meat dish then I'd usually have a non-meat lunch and vice versa."

To summarise, when office-working, participants cited a range of influences on their choice of food outlet and the meal they selected from the outlet for lunch, including whether they would select meals with or without meat. Influences differed according to personal preferences;

however, two themes were identified which align to the social and physical environment from the Ecological Framework respectively. These are the influence of colleagues, and the influence of vegetarian options.

4.1.1. The influence of colleagues

Theme 1. When office-working, social influence on food choice, and the choice to consume meat, was variable, but appeared to be related to individual-level personality traits.

Generally, preferences of other people played some role, particularly for those (26, 79%) who saw lunch as a social occasion and purchased it with colleagues. Around half (16, 48%) said the preferences of others would influence the food outlet selected, for example Participant 12 said: "Depending on if I was having lunch with someone, or meeting someone for lunch, just deciding on a place that suited both of us," and Participant 17 said:

> "Sometimes the people you work with, so you're going out for lunch, and they had a particular plan that they wanted to have something for the day, that would obviously influence where I'd go."

Where participants had specific dietary requirements or preferences, (i.e., an individual-level factor), they would ensure there were suitable meal choices available and were more likely to choose the outlet based on their own preferences. This meant that these participants influenced others, for example a vegetarian (Participant 10) said: "If there's quite a meat-heavy place, then I kind of try and suggest something slightly more neutral."

When buying food, social influence was weaker on food choice itself than on the food outlet selected. Many (24, 73%) would not be influenced, for example Participant 31 said: "I would never just be swept along when someone goes to Birley's for like a roast beef sandwich. If I didn't want that, I wouldn't go for that." Social matching of the food choice itself, described by Robinson et al. (2011) and Cruwys et al. (2015), did not come through strongly and meat did not appear to have the social status described by Cheah et al. (2020). This may have been because participants already had good relationships with their colleagues, therefore they did not feel the need to ingratiate themselves, as found by Robinson et al. (2011).

Where participants (9, 27%) aligned their food choices with others, they sometimes described themselves as easily influenced, which is an individual-level factor, and this appeared to be a more general personality trait, rather relating to food choice only. Similarly, Robinson et al. (2011) reported that differences in personality moderate social matching. For 3 (9%) participants this matching resulted in them being more likely to select meat options or larger portions of meat than they would when on their own. Participant 26 said:

> "I think because I used to work with two guys as well, they would always want the bigger, hot, meat dishes […] If someone's got a strong preference to get something, I'd just go along with that."

Participant 04 described themselves as "somebody that's quite easily influenced", saying: "If we were going, for example, to Pret, and they were getting a Panini or a sandwich-based thing I would consider copying them and doing the same." Some (2, 6%) spoke of bringing in packed lunches to match their colleagues' behaviour. For example, Participant 19 said: "The project where I brought in my own food, it was a small project, and everyone else brought in their own food." This social matching aligns to literature related to the influence of social norms on eating behaviour (Cruwys et al., 2015; Higgs, 2015).

Of the 9 (27%) who said that colleagues would influence their food choice, most (6) were female. While Cruwys et al. (2015) state that there is inconclusive evidence on whether gender impacts social matching of food choice, these findings align to the premise that females are more interested in forming social bonds (Higgs, 2015; Robinson et al., 2011). Participants did not say they opted for meat options in the presence of colleagues for reasons outlined in literature, such as embarrassment (Lea & Worsley, 2003). Convenience was cited as one reason for aligning to the food choices of others, with Participant 04 saying: "I think I would just go along with it for convenience more than anything else." Temptation was another, Participant 20 said: "I am so influenced, like if anybody gets anything, I'm like 'oh that looks really good', 100% I'll try it."

While participants described sometimes being influenced, they would not be influenced outside of their dietary preferences. No vegetarians or pescatarians would eat meat due to social influence in the office, and no meat-eaters avoided meat in front of meat-free colleagues, which contradicts Horgan et al. (2019). Similarly, meat-eaters did not feel the need to defend themselves, contradicting Piazza et al. (2015), although 7 (27%) omnivores said they would be open to trying a non-meat meal if it was recommended.

Most omnivores (22, 85%) did not indicate that they were sensitive to the dietary preferences of others. Where this was the case, it was largely when other people did not eat meat for religious reasons, for example Participant 33 said: "Obviously, Muslims don't eat pork, so I would ask them if I was getting something, check they didn't mind." Participant 20 said they avoided meat in front of their vegetarian friend, which may translate to the office environment:

> "My best friend is [vegetarian] and whenever we go out for dinner, I always get veggie. Not that she would care, but there's just something inside of me, which is like, you don't agree with this, or you've chosen not to, so I feel like a bit rude eating meat in front of you. I think that if someone on the project was strongly veggie, I would be more inclined to eat a veggie meal with them."

This aligns to Horgan et al. (2019) who reported that meat-eaters 'may be influenced by their companions towards vegetarian alternatives when ordering food in the presence of others selecting a meat-free option' (p.6).

In summary, when office-working and purchasing food from outlets, although the preference of others was a consideration, participants rarely matched others' food choices. Where they did, it appeared to be related to individual-level personality traits and was for reasons of convenience rather than those outlined by literature. In general, participants would not be influenced by colleagues to select food that went against their dietary preferences, which is contrary to much academic literature.

4.1.2. The influence of vegetarian options

Theme 2. When office-working, the physical environment limited the availability and desirability of vegetarian options, with individual-level preferences playing a role.

For 12 (36%), the availability or desirability of vegetarian options outside the home influenced them towards eating meat when office-working. Availability of vegetarian options was cited by some (4, 12%) as a reason for eating meat. This was the case for Participant 12, who described themself as mostly vegetarian, saying:

> "It sounds funny to say constrained by choice being in London with the food options, but because I had certain go-to places, the choice was limited, so sometimes I would get something with meat."

The same applied for Participant 04 who said: "I think if people try and think of the most convenient place, a lot of the time, they don't always have the widest range of vegetarian or vegan options." Other studies have noted availability of non-meat options as being a barrier to reducing meat consumption (Hartmann & Siegrist, 2020; Lea & Worsley, 2001; Trent Grassian, 2020). Contrary to this, Participant 15 said they would normally select vegetarian options as "the quality of the meat you get in the office cafeteria is not great", and price played an unexpectedly dominant role for Participant 18, who said: "The vegetarian options are probably cheaper than the meat-based alternative, so I think that was

the main driver really, the price."

Others (4, 12%) did not find vegetarian options appealing which is an individual-level factor and aligns with Rosenfeld and Tomiyama (2020), who discuss perceptions of vegetarian food not being flavoursome. Participants described non-meat options as bland, or said that they often contained ingredients they disliked, resulting in them selecting meat, for example Participant 30 said:

> "Vegetarian food when you buy them from outside … I don't know why but I don't like them, I don't like what options there are that are entirely vegetarian. When you buy something that's got some chicken in it or something it seems more appealing and more interesting."

Similarly, Participant 33 said:

> "I think I'm just less of a fan of the veg-only options eating out. I find them a little bit more bland, and I think that's just because I've grown up with the taste of a lot of spice so my veg meals will be a lot more spicy, and obviously a lot more flavoursome to my taste buds, so I'm a lot more selective."

These participants were not opposed to eating non-meat meals but preferred homemade vegetarian food. Some had ties to countries known for their flavoursome cuisines, with a higher proportion of vegetarians than the UK population, for example Italy and India (World Atlas, 2019). Participant 20, who did not have ties to other cultures had a different view and would be more inclined to eat vegetarian meals out-of-home, saying: "There tend to be more interesting options for non-meat-based meals than I would probably make myself or could make myself."

Finally, some (8, 24%) said they would be inclined to opt for meat options when eating out at restaurants, which they did more when office working. This aligns to studies which found a higher likelihood of eating meat in restaurants (Horgan et al., 2019; Lachat et al., 2012). For Participant 25, this was driven by price: "If I was paying for a more expensive meal out I would in my head think oh I may as well pay for the meat option." Although participants did not eat lunch in restaurants regularly when office-working, the combination of homeworking and UK lockdowns meant it was more likely when office-working, resulting in a higher probability of eating meat. This is described by Participant 22: "I'm almost exclusively eating meals at home, there's less meat as a result, just because when you go out for a meal, my inclination was always to get meat options."

In summary, when office-working and purchasing food from outlets, the availability and desirability of vegetarian options influenced the choice to consume meat for lunch. Although this was largely a result of the physical environment when office-working, individual-level preferences played a role and it generally meant participants were more likely to select meat for lunch when office-working. Participants also spoke of being more inclined to select meat from restaurants. As they were more likely to eat lunch at restaurants when office-working, this contributed to a higher likelihood of eating meat.

4.2. *Influences on food choice when homeworking*

This section discusses lunchtime food choices, and the influences on these, when homeworking. Changes to breakfast and dinner choices in the move from office to homeworking are also discussed here, again focusing on the choice to consume meat. Participants cited a range of influences on food choices and their choice to consume meat when homeworking, which align to individual-level factors and the social and physical environment from the Ecological Framework.

Only one participant said their lunchtime food choices at home remained the same as when office-working, which was because they lived and worked in the same area and continued to use an app-based service, "MealPal", when homeworking. Overall, 22 (67%) participants said they were eating less meat for lunch at home than in the office, with 4 (12%) no longer eating any meat. In terms of food eaten, lunch choices varied on a day-to-day basis for 27 (82%) participants. They cited a range of meal types, for example food that could be prepared quickly such as salad or soup (19, 57%), leftovers (19, 57%), or a cooked meal (5, 15%). For 7 (21%), lunch was less structured at home which sometimes led to eating snacks or cereal for lunch, rather than a typical lunchtime meal, but only when lunch was eaten alone. For example, Participant 13 said:

> "If I've had a bigger breakfast, I might only … and I wouldn't do this if I was in the office which is interesting. I might only have a snack for lunch, like a protein bar."

Nearly all (31, 94%) prepared lunch at home, and many influences were similar to when office-working but appeared amplified at home. For example, individual-level influences of time and convenience were stronger. For 19 (58%), time available was the biggest influence on lunchtime food choice. Food needed to be quick and easy to prepare due to work commitments, illustrated by Participant 03, who said: "It wouldn't ever be anything too onerous or time consuming. That's the main thing at lunchtime." This had a direct impact on the decision to have a meat-free lunch for 6 (18%) participants, with Participant 24 saying:

> "I just want something quick, filling, that I can prepare, eat really quickly, and then get back to whatever's going on at work. Whereas obviously most meat takes time to cook, so if I was going to do it, I'd rather do it on a weekend instead."

Likewise, Participant 27 said: "I guess I kind of imagine having meat as a proper meal that you can sit down and enjoy. Whereas I tend to just have things that you can grab and go." Some (3, 9%) stated that they were happy to spend time cooking at lunchtime and they saw it as a way of getting a break. However, Participant 15 had a different view, saying: "If I'm gonna take half an hour out at lunchtime, it will be to walk the dog. So, I won't give myself half an hour to cook something."

As with office-working, seasonality was an influence, for example Participant 32 said: "It just depends really on the weather as well, so salad today, probably not soup." Some participants (6, 18%) cited eating less at home as they weren't moving as much. Participant 16 said: "We're moving less so I think we need to be trying to have lighter lunches, smaller lunches," while Participant 32 said: "I think also working from home, if I'm not getting out as much as well, I think there's a slightly different amount of food needed." One participant had experienced the opposite. They were exercising more at home and felt they needed more food, specifically protein, for lunch. Similarly, 2 (6%) male participants said they needed a lot of food to feel full, which meant eating larger meals at home as they were more able to influence meal size.

Participants were asked what they would normally eat for breakfast, and whether this had changed between home and office-working, specifically the choice to consume meat. Most (27, 82%) did not eat meat for breakfast in either environment, however for some (5, 15%) breakfast occasionally contained meat when office working. This was generally an infrequent treat, and a consequence of meat such as bacon or sausage being readily available in food outlets (a physical environment influence). Only one participant would occasionally eat meat for breakfast when homeworking, as having more time available meant they had switched from a protein bar to something more substantial, giving the example of a ham and cheese croissant.

The social environment, and influence of other people, had a more direct impact on food choice, including the choice to consume meat for lunch and dinner when homeworking. The dietary preferences of household members played a role and influenced 8 (24%) participants away from their natural food choices. Furthermore, when eating lunch with others, 4 (12%) felt responsible for and accountable to household members, resulting in healthier meals. This was illustrated by Participant 12 who said: "I feel an element of responsibility to ensure that if we're eating together, I want her to have something healthy, and then it

makes sense for me to have the same."

When homeworking, having more time available meant more cooking from scratch for dinner, and more consideration of a balanced, healthy diet, resulting in reduced meat consumption. This second theme is aligned to individual-level factors from the Ecological Framework, however the physical environment, specifically not having to commute, played an important role.

To summarise, when homeworking participants cited a range of influences on food choices, including the choice to consume meat. Two themes were identified which align to individual-level factors and the social and physical environment from the Ecological Framework. These are the influence of household members, and the influence of having more time available.

4.2.1. The influence of household members

Theme 3. When homeworking, social influence resulted in food choices of others being matched, sometimes reducing meat consumption, with individual-level preferences playing a role.

The influence of household members on food choice was strong when homeworking, with 8 (24%) influenced by, or influencing, others away from their natural food choice, which sometimes resulted in reduced meat consumption. Dietary preferences of household members, an individual-level factor, played a key role and those that were not influenced already had similar preferences to household members. Words such as 'pragmatic', 'practicalities', 'convenience', 'availability' and 'easier' were used by participants when discussing alignment of food choices to other household members.

Participant 17 said their partner had a less meat-heavy diet than they did, which had resulted in long term dietary changes, saying:

> "I wouldn't class myself as a vegetarian or vegan at all, but I have started to eat a lot more meals in that space recently. […] It probably has been led by [my partner], but I think it's definitely now a joint thing, because I've definitely enjoyed it a lot".

In 4 (12%) cases, household members were vegan or vegetarian, or had set vegetarian days, which meant less meat was consumed for lunchtime meals when homeworking. For example, Participant 01 said: "My mom is vegetarian. I typically do eat more vegetarian food because there's more available at home," and Participant 22 said:

> "Once I started working from home it was kind of just eating what's at home or what the rest of my family was eating, so I just got into the habit of eating vegetarian as a result."

For 2 (6%), the influence of household members when homeworking was so strong that they had changed their own dietary preferences, either just at home or more generally. For Participant 09, eating vegan food during the extended homeworking period meant they had become accustomed to this and consequently moved from describing themself as an omnivore to 'mostly vegetarian'. They said:

> "For the past couple of months, I've been completely vegetarian. Probably inspired by my boyfriend who's doing Veganuary, and the practicalities involved in us cooking different meals for each other."

Living with a vegan partner meant that Participant 15's entire household had turned vegan. They were happy to make the switch, saying:

> "I don't find it more difficult. I don't find it more challenging in any way. I think I'm happy to do it because I think it has a positive environmental impact and it's not a burden."

Some (3, 9%) had stronger dietary preferences than other household members, resulting in them influencing others toward or away from meat-eating. Participant 33 said their wife had commented that she had "never eaten as much meat-based food during the week", and Participant 05, who was pescatarian, said that at home their partner, usually an omnivore had "become pescatarian just through living with me, just to be pragmatic". For these participants, their own level of meat consumption had not changed when homeworking. The case of a female eating more meat due to their partner's preference for meat-eating aligns with Macdiarmid et al. (2016).

The level of influence was strongest when household members were family or partners. Although living with housemates or friends did result in the occasional diversion from natural preferences, these were one-offs and did not result in long term changes to dietary preferences. This is illustrated by Participant 23, who described themselves as pescatarian but had eaten chicken with their housemate, saying:

> "When [he] cooks and says I'll plate you one up, I have had like a bit of chicken, but I ate it because it was there so I guess he's influenced me, but it's not something that I would introduce into my default diet."

This aligns with the finding of Rosenfeld and Tomiyama (2019) that vegetarians may eat meat when meals are prepared by others. Similarly, Participant 14 was normally pescatarian and had started eating chicken while they and their omnivore partner had been homeworking. This was not a direct result of homeworking, but the UK lockdown in force at the time, and their partner being unable to eat meat-based meals at restaurants as they normally would. They said: "It's easier just to prepare one meal than two meals. And if we were to just choose within the pescatarian set, it wouldn't have enough variety for [my partner]." Following the logic from Barr and Chapman (2002) that the food choices of vegetarians form a continuum, the same may apply to these pescatarian participants.

In summary, social influence was stronger at home with family members or friends than in the office with colleagues, which aligns to existing literature. At home, dietary preferences of household members, an individual-level factor, had a strong influence where they differed to participants and in general, food choices of non-meat-eaters were matched by meat-eaters, mostly for reasons of convenience, which resulted in less meat consumption overall. Few participants consumed more meat when homeworking and eating with family members compared to eating with colleagues, which is contrary to the prediction based on literature that meat consumption would be higher when eating with family members than colleagues.

4.2.2. The influence of having more time available

Theme 4. When homeworking, having more time available in the evening as a result of not commuting resulted in changes to individual-level priorities, and reduced meat consumption.

While participants said that when homeworking lunchtime food needed to be quick and easy to prepare due to work commitments, the opposite held true for evening meals. Around half of participants (16, 48%) said they now had more variety; they were planning and cooking from scratch more, which meant they were conscious of what they chose to eat and aimed for a balanced, healthy diet. Being at home meant they could plan more, for example Participant 09 said: "I have an easier awareness of what's in my kitchen so I can plan what I'm going to have for dinner." For some participants (5, 15%), having more time available resulted in more considered food choices, with less meat consumption for dinner. For example, one participant had more takeaways when office-working, as they did not always want to cook after a long day in the office. When office-working, participants often purchased food for dinner on the commute home in smaller, more frequent purchases, with food selected that was quick to prepare. This aligns to Cheah et al.'s

(2020) finding of everyday food choices being time-pressed and dominated by practicality.

Research has also shown that fatigue can lead to choosing quick and easy cooking solutions (Ducrot et al., 2015). Although having a healthy diet was an important consideration for most participants (28, 85%), when office-working time was a constraint on weekday evenings. As a result of the physical environment, no participants were commuting, and 13 (39%) said they were spending more time cooking in the evening when homeworking. Participant 19 said: "You just have far more time to fill your evenings and therefore, like the food prep, I find that it's kind of like a meditation almost, it's actually quite relaxing," while Participant 29 said:

> "Let's say I'm working until 7pm, I've still got an awful lot more time after work finishes, and energy to cook. I'm actually interested in cooking. Whereas if you leave the office at 7pm and take 90 minutes to get home I really can't be bothered to cook when I get back."

Participants (9, 27%) talked of having more structure around household meal planning, as the majority of meals were prepared and consumed at home. For Participant 07, this resulted in more creative meals: "We're probably putting in a bit more effort and creating more complete meals than just trying to find like, meat, veg and carbs." Planning involved discussion with household members and resulted in some (7, 21%) participants being more conscious of how often they consumed meat, cutting out types of meat such as beef, and aiming for a certain number of vegetarian days each week. For example, Participant 02 said: "I have tried to eat slightly healthier meals for dinner as opposed to simply the quick and easy option. I certainly have tried to eat less meat," and Participant 08 said: "So, we're actually only allowing ourselves to have two meat days, and then we try to have two fish days and a vegetarian day Monday to Friday." This is consistent with Duckett et al. (2020), who found that self-imposed restrictions on meat consumption range from choosing a meat-free day of the week or month to a more general pattern of occasional meat-eating. Participant 24 said they and their partner had made the conscious decision to buy less beef since homeworking:

> "We don't buy beef at all anymore. We've replaced it with either white fish, pork, turkey, or chicken, and actually, we've seen the huge increase in veggie options, so veggie burgers, veggie sausages, all the rest of it. We basically fill our freezer with that now."

This increase in cooking and decrease in red meat consumption aligns to findings from Pfeifer et al. (2021) who evaluated changes to food choices and cooking habits during the Covid 19 lockdown in Croatia.

Some participants (8, 24%), believed this change in mindset and associated increased knowledge meant lifestyle changes would remain if they returned to the office. Participant 17 said:

> "I definitely think dinner, in terms of the variety that we do and the different things that we've started to bring into our diets and the things we cook would definitely stay. Because again, now we know that stuff is available and actually, you can prepare it just as easily. I think we would definitely keep that. Lunches … again, I think my eyes have been opened to alternatives to meat."

No participants had decided to move to an entirely meat-free diet through these changes to priorities, and where anyone had moved to a meat-free diet it was due to social influence previously discussed. This indicates that some participants may be unwilling to give up meat entirely, as described by Tobler et al. (2011).

In summary, as a result of the physical environment, participants were not commuting and had more time available in the evenings. They were able to prepare more meals from scratch and consider the health and environmental implications of food choices. Some participants experienced an overall change in priorities and mindset, which meant less meat consumption, however it did not result in any participants moving to a completely meat-free diet. These changes to food choices started with evening meals and resulted in changes to overall preferences, which some participants believed would remain if they returned to office working.

5. Conclusion

This study aimed to build an understanding of how influences on individuals' choice to consume meat differ in the home versus office setting, based upon interviews with London workers during the Covid 19 pandemic. Thematic analysis of interview transcripts enabled the identification of four themes which largely align to individual-level factors, the social environment, and the physical environment from the Ecological Framework. However, the interconnectivity of different levels of influence is clear, demonstrating that food choice is simultaneously determined by multiple influences as indicated by existing literature. This is summarised in Fig. 3, which depicts the four themes and how they relate to office and homeworking. These have been aligned to primary (depicted by a solid line), and secondary (depicted by a dotted line), levels of influence from the Ecological Framework.

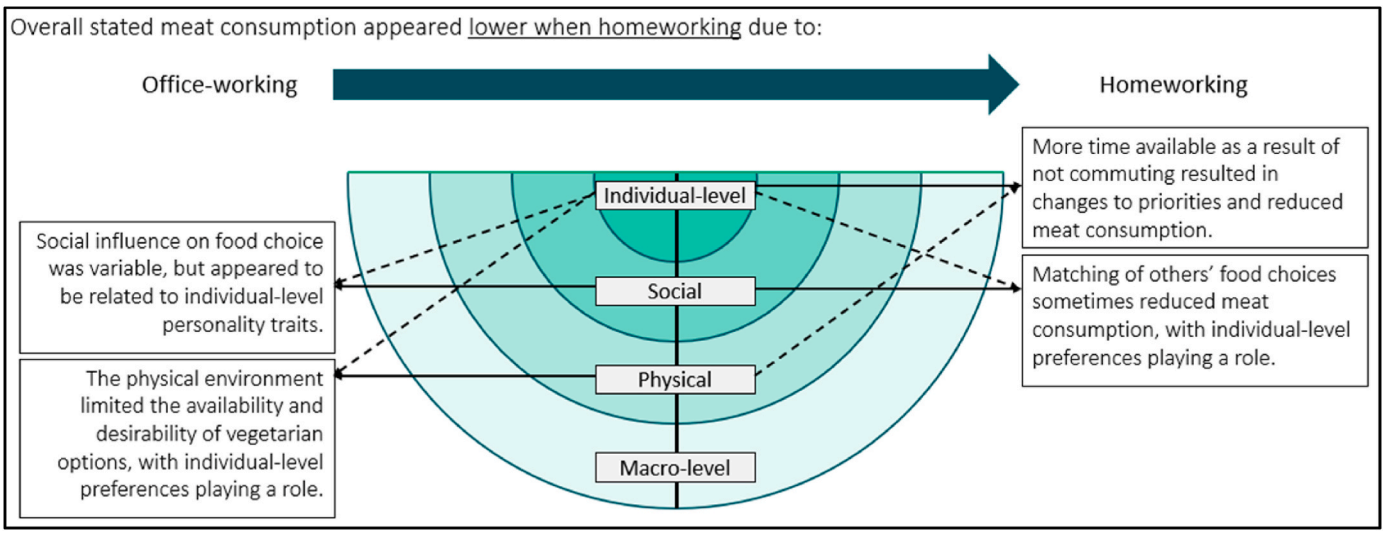

Fig. 3. Themes identified through interviews, aligned to the Ecological Framework levels of influence.

To summarise the research findings, firstly when office-working the influence of colleagues (the social environment) on the choice to consume meat was variable (Theme 1), with findings contradicting some literature. Individual-level factors, particularly personality traits, impacted the extent of social influence. Secondly, participants discussed limited non-meat options and preferring to buy meat-based meals outside the home (the physical environment) from a choice and taste perspective, which contributed to more meat consumption when office-working (Theme 2). Due to the central London location of offices and the range of food outlets in close proximity this was unexpected, however the influence of limited vegetarian options on the choice to consume meat aligns to literature. There was evidence of interconnectivity between this physical environment influence and individual-level factors, specifically taste preferences and upbringing.

When homeworking, firstly alignment of food choices between household members (the social environment) was evident, which was largely for convenience reasons and resulted in a greater likelihood of non-meat meals being eaten overall (Theme 3). Secondly, not having to commute (due to the physical environment) meant participants had more time available in the evening, resulting in changes to routines and priorities (which are individual-level factors), with some reduced meat consumption (Theme 4).

Returning to the research question and considering the research findings as a whole, the themes lead to the conclusion that stated meat consumption was lower when homeworking. As the research is qualitative and used non-probability sampling, it is not generalisable, and it does not provide definitive findings. Recommendations for further research are provided in Section 6.

Overall, research findings contribute to building understanding of how both home and office-working influence the choice to consume meat. This research could be used to inform strategies to reduce meat consumption, which will in turn play a role in supporting global climate change targets and reducing harm to the natural environment associated with food choices.

6. Limitations

This research used non-probability sampling and is tightly defined to a narrow population (participants worked for one organisation in London). Findings provide an understanding of the influence of homeworking on meat consumption in London, however they were not generalisable within the target population and it is not known whether they would apply to different populations, for example with different income levels, or more broadly, at an industry, or geographic level such as London or the UK. Further quantitative research to test the broader applicability and generalisability of each theme, as well as the overall conclusion of meat consumption being lower when homeworking, may be valuable. Additionally, as this research relied on participants' accounts of food choices, further research observing participants' behaviour directly may increase the reliability of findings. Finally, as office-working has now returned to some extent in London, longitudinal studies would be beneficial to determine whether changes to food choices experienced when homeworking remain, whether participants revert to previous office-working choices, or whether their choices evolve further.

Some demographic variables of participants (such as age, cultural background, religion) were not considered as part of the sampling strategy, however within some interviews they arose as possible influences on the choice to consume meat. Considering these variables in the sampling strategy would have enabled deeper analysis and further exploration of this in the context of home versus office-working may be warranted.

Although meat consumption appeared to be lower in the home setting, which indicates that homeworking may have environmental benefits over office-working, it should be acknowledged that when considering the environmental impact of homeworking, food choice is only one factor. Further research could consider meat consumption together with other factors such as car and energy use to determine the aggregate impact of homeworking.

Ethical statement

Ethics approval for the research was obtained from the Cambridge Institute of Sustainability Leadership. Participants gave informed consent before taking part.

Declarations of competing interest

None.

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