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The dairy paradox

a qualitative analysis of the use of coping strategies for dairy consumption of Dutch consumers

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Research report

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a qualitative analysis of the use of coping strategies for dairy consumption of Dutch consumers[1]

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Abstract

Dairy is the second largest emitter in animal agriculture and requires the killing of animals. Most people wish to avoid harming animals but also consume meat. Consumers subconsciously use coping strategies to reduce cognitive dissonance from this meat paradox. But is there also a dairy paradox? For this pilot study, we used focus groups to investigate cognitive dissonance and coping strategies for dairy consumption compared to meat. We found that dairy is framed much more positively than meat. However, the types of dairy-related coping strategies strongly overlap with meat. We conclude that dairy-related cognitive dissonance occurs, identify the dairy paradox and three dairy-specific coping strategies: dairy is indirect, overwhelming, and neglectable.

1 Introduction

The food and agriculture sector is responsible for 26% of total global greenhouse gas (GHG) emissions (FAO, 2017). Almost 18% out of these 26% are caused by animal agriculture systems (FAO, 2010). At the same time, the global population is projected to grow to almost 10 billion by 2050 causing food demand to increase drastically. There is an ongoing debate within academics as to what extent animal-sourced food (ASF) needs to be reduced to not exceed planetary boundaries. Especially Western diets strongly rely on ASF although animal agriculture is very inefficient (Boer & Aiking, 2011). To combat this inefficiency, many authors suggest a transition from animal protein to alternative proteins can contribute to a more sustainable food system (Aiking & de Boer, 2020; Godfray et al., 2010; Helms, 2006). For this, the so-called "protein transition" has been introduced. The protein transition implies a reduction of ASF to decrease the alarmingly high emissions of the sector and the expected increase in demand (FAO, 2017). Contrarily, it has been argued that a moderate use of livestock can reduce land use since animals can convert biomass inedible to humans, like grass and waste products, into food. At the same time, it is acknowledged that livestock leads to more methane emissions leading to a higher climate impact than plant-based foods in terms of emissions (Van Zanten et al., 2020).

These harmful environmental effects do not just pertain to meat alone, but also dairy. Reducing meat as a dominant source of protein and a strategy to make diets more sustainable has already entered the societal discourse. However, the dairy sector alone is responsible for 4% of the total anthropogenic GHG emissions (FAO, 2010). Global meat consumption has almost tripled while the consumption of dairy has doubled since the 1970s (FAO, 2017). Some dairy products such as cheese (2.79kg CO2e /100g) emit even higher CO2 equivalents (e) than pork (2.4kg CO2e/100g) or chicken (1.82kg CO2e/100g) (Poore & Nemecek, 2018). North America and Europe have the highest dairy consumption (FAO, 2017) compared to the rest of the world. Yet, there are more publications questioning meat consumption compared to dairy. Dairy seems to lack attention while both animal-sourced foods share similar issues related to animal welfare, negative human health effects, risk of pandemics, a variety of emissions (CO2e, methane, nitrogen, etc.), land use, water use, and water pollution (FAO, 2017).

However, societal discourse and academic literature seem to be mostly focused on meat and do not problematize dairy in the same way. That animals are killed for meat seems to be common knowledge. For dairy and eggs, many people assume that this is not the case, since only the animal product is consumed and not the animal itself. Yet, if you drink milk or eat an egg, you share the responsibility for killing animals (de Boer, 2022). For both dairy and eggs, animals need to be bred. Cows do not give milk unless they have a calve. This means a 50% chance for a male calve being born every time. Male calves biologically cannot produce milk which means they will be slaughtered straight away or transported to a meat producer to be killed within a year. Most calves are separated from their mothers shortly after birth which raises several welfare concerns (Meagher et al., 2019; Thompson, 2022). In the egg industry male chicks also do not lay eggs which means slaughter at one day old for them (Gremmen et al., 2018). Generally, there are animal welfare concerns about the living conditions and further suffering of the animal's life in captivity. Most livestock held for meat, dairy and eggs frequently face welfare issues due to their, often cramped, living conditions and interventions, such as dehorning (Arnhold, 2021). A recent study suggests that animal welfare in dairy production systems may be worse for animal welfare than in common beef farms (Mandel et al., 2022).

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With this pilot study, we want to explore how consumers view these harmful sides of dairy compared to meat and deal with tensions arising from that. The Netherlands is globally known as a dairy nation – for both its consumption and production of dairy (Kwakman, 2021). This makes a Dutch sample especially interesting. A recent study on the attitude of Dutch people towards the protein transition (n=8500) found that most people in the Netherlands are omnivores, closely followed by flexitarians, 7% consider themselves vegetarian and 1.4% vegan (ProVeg Nederland, 2022). At the same time, almost 75% of respondents agree with the statement that *the use of animal products has to decline in the Netherlands*. The motivations why participants want a decline differ: 86% of respondents are willing to reduce their consumption of animal products because they intend to reduce animal suffering; 81% for food security; 80% to avoid pandemics and 79% to avoid climate change; 79% for human health (ProVeg Nederland, 2022). The relatively low number of vegetarians and vegans in the Netherlands indicates a big gap between attitude and action: Dutch consumers see a need for change in animal agriculture and do not agree with the current system based on intensive animal husbandry. Their diets, however, do not reflect this.

With rising awareness of the issues related to foods from animal agriculture comes discomfort because people are challenged to question their behavior. Most people wish to avoid harming animals but also consume meat (Gradidge et al., 2020). Consumers subconsciously use coping strategies to reduce cognitive dissonance arising from this meat paradox. For meat-related cognitive dissonance scholars introduced an extensive list of coping strategies (Nijland, 2016) and mechanisms to prevent or reduce (Rothgerber and Rosenfeld, 2021) this uncomfortable feeling. Coping strategies provide tools to ease a triggered tension in one's mind – a tension occurring when one's actions are not reflected by one's beliefs (Nijland, 2016). These coping strategies have not yet been explored for dairy. In this pilot research, we want to gain more knowledge on potential cognitive dissonance and coping strategies for dairy consumption. We conducted this explorative research with a small Dutch consumer sample (n=18) comparing meat- to dairy-related coping strategies. We aim to explore how far a similar paradox exists for dairy (c) as it has been shown to exist for meat. We will answer this by comparing the (a) framing and (b) coping strategies for meat and dairy. To contribute to this knowledge gap about dairy, this research aims to answer the following three questions:

(a) How do Dutch consumers frame meat vs. dairy?
(b) Which coping strategies are used for dairy compared to meat?
(c) Is there a dairy paradox?

2 Conceptual framework

This chapter contains a summary of frameworks used to conceptualize coping strategies for meat consumption. We elaborate on the meat paradox, cognitive dissonance and meat-related coping strategies, and mechanisms to reduce cognitive dissonance.

2.1 The meat paradox

"Many people wish to avoid harming animals, yet most people also consume meat" (Gradidge et al., 2020, p.1). For meat consumption, this paradox has been named the meat paradox. Examining this paradox helps to understand the underlying mechanisms that make people act in a way that is different from what they believe. The meat paradox is a form of cognitive dissonance (Khara et al., 2021).

2.2 Cognitive dissonance

Ample research has shown that the human brain does not like to be exposed to internal tensions. Discomfort can occur when there is a gap between what we believe is right and our actions (Loughnan et al., 2014). Ethical protein consumption often is promoted by depicting the injustices within the livestock sector and highlighting its negative aspects (e.g., animal welfare, emissions, human health, or pandemics). This can result in psychological tension within consumers, called cognitive dissonance, which can cause feelings of uncertainty, discomfort, or even anxiety. To deal with this feeling consumers often (subconsciously) use coping strategies to prevent or reduce this uncomfortable feeling. Consumers thereby justify their behavior instead of changing it through the use of these coping strategies.

2.3 Coping strategies

Coping strategies (CS) are pieces of framing that are brought forward "to feel good - or less bad - about contradicting aspects of a certain decision" (Nijland, 2016, p.177). They mostly occur on a subconscious level. Coping strategies are not inherently negative; rather, they help to make the human experience less difficult. On the other hand, when used extensively they subconsciously help to avoid difficult decisions, ultimately preventing change. By expanding the knowledge of dairy-related coping strategies one can talk about them and start to question them. All coping strategies are listed and defined in detail in the appendices of this article with several dairy-related example quotes from this research. We based this on two different frameworks: Nijland (2016) differentiates between 10 different coping strategies for eating meat based on previous research and her own findings (Table 1): four CS work to reduce dissonance (Festinger, 1964); four CS to oppress dissonant cognitions (Serpell, 1996); and two CS to accept dissonance:

CS to reduce dissonance	CS to oppress dissonance	CS to accept dissonance
Adding consonants to behavior	*Misinterpreting*	
Eliminating dissonance	*Shifting responsibility*	*Admitting dissonance*
Amplifying consonants	*Detachment*	*Embracing dissonance*
Trivializing dissonance	*Concealment*	

Table 1: Meat-related coping strategies (Own visualization based on Nijland (2016))

Rothgerber and Rosenfeld (2021) differentiate between two different groups of mechanisms to deal with meat-related cognitive dissonance (MRCD): mechanisms to prevent and mechanisms reduce to meat-related cognitive dissonance (Table 2).

Mechanisms to prevent MRCD	Mechanisms to reduce MRCD		
	Indirect strategies	Direct strategies	
		Animal-based reduction	Meat-based reduction
Avoidance *Willful Ignorance* *Dissociation*	*Perceived behavioral change* *Self-definition as humane meat-eater* *Do-gooder derogation* *Third-party blame* *Moral outrage*	*Denying animal mind* *Dichotomization*	*Meat is natural* *Meat is normal* *Meat is nice* *Meat is necessary*

Table 2: Coping strategies for MRCD
(Own visualization based on Rothgerber & Rosenfeld (2021))

2.4 The four Ns of justification

A common strategy to reduce cognitive dissonance for meat is emphasizing that meat is natural, necessary, normal and nice. Joy (2010) describes three Ns of justification for meat consumption. This has been extended with a fourth Ns in later research (Rothgerber, 2013). The four Ns also appear as meat-based reduction of dissonance strategies in the Table 2 based on Rothgerber and Rosenfeld (2021) and are used as coping strategies by consumers to "diffuse any guilt they might otherwise experience as a consequence of consuming animal products" (Piazza et al., 2015, p.115). The original three Ns describe eating meat as *natural*, *normal*, and *necessary*. The N that has been added later describes meat eating as *nice*:

Category	Definition
Natural	Appeals to biology, biological hierarchy, natural selection, human evolution, or the naturalness of eating meat.
Necessary	Appeals to the necessity of meat for survival, strength, development, health, animal population control, or economic stability.
Normal	Appeals to dominant societal norms, normative behavior, historical human behavior, or socially constructed food pyramids.
Nice	Appeals to the tastiness of meat, or that it is fulfilling or satisfying.

Table 3: The Ns of justification for meat consumption
(Own visualization based on Piazza et al. (2015))

Since these mechanisms for justifying meat consumption in society and the underlying coping strategies have been elaboratively described in the past (Nijland, 2016; Rothgerber & Rosenfeld, 2021) the question arises, why other ASF such as dairy and eggs, have not been explored. This pilot research firstly explores dairy-related coping strategies since dairy is the second largest emitter in animal agriculture (FAO, 2010).

3 Methodology

The study is of a qualitative nature, to explore the way Dutch consumers frame dairy compared to meat and which coping strategies they use compared to meat, an interpretive approach is used. We were interested in investigating consumers' perceptions and meaning-making through their language use and initial reactions to dairy-related triggers. We used focus groups to collect qualitative data on participants' framing of dairy and the use of coping strategies. Focus groups provide a social setting that gives valuable insights into the interaction of the participants with each other on a topic (O.Nyumba et al., 2018). Coping strategies also are likely to arise when people confront each other with different values or beliefs. The group sessions are therefore more suited for the data collection of this study compared to 1:1 interviews.

3.1 Data collection

Before the focus group discussion sessions, the participants were asked to fill in a short questionnaire on their gender, age, study program, and diet (omnivore, flexitarian, vegetarian, vegan, or other). Then the main source of data gathering was three separate guided focus group discussions. We invited six participants at a time to attend one of three, 90-minute focus group discussions in person on the WUR campus. The allow followed the same procedure of the same moderation guide. The questions used for the moderation guide for the focus group discussions were based on previous meat-related research (Nijland, 2016). The guide was organized in three main parts: (1) general questions on food (systems); (2) animal protein and dairy-specific questions; and (3) a thought experiment on dairy, dairy cartons, and invitro dairy. The elaborate focus group guide is attached in Appendix D. This is a summary of the main questions and visual stimulus used (Figure 1):

- What is your breakfast most days?
- What do you think of current food systems & what would you like to change?
- Which animal products do you eat in daily life?
- And which would you eat in special cases?
- What do you associate with eating dairy?
- What do you associate with the production of dairy?
- Where did you get your knowledge from?
- Would you like to see things differently in the production of dairy?
- Which topics influence your choice to eat (not) eat dairy mostly?
- Does your attitude towards meat differ from dairy? (3rd focus group only)
- If you were to set up a dairy farm, which steps would you need for a glass of milk?
- What are your thoughts on these different dairy packages? (Figure 1)

Figure 1: Focus group material (various dairy packages)

The discussions were held in June 2022 in Wageningen, the Netherlands. The first two sessions were moderated by an external, experienced moderator. The third session was run by the author, after observing and learning from the process in the first two sessions. The focus group sessions were audio-recorded and transcribed. During this period of data collection, the Dutch government passed a law that requires a substantive reduction in nitrogen to tackle the nitrogen crisis in the Netherlands. This requires a reduction of almost 70% in areas close to nature reserves. For some farms, this will mean a radical change, either towards organic farming, moving to another area, or fully giving up livestock. As a sign of rebellion, Dutch flags are hung upside down all over the country. Following this, many farmers started protesting on the streets. At the end of June this, amongst other actions, led to the blocking of an entire highway with tractors close to Wageningen (Tagesschau, 2022). These political events have potentially influenced the data collection and have been mentioned by participants in the sessions.

3.2 Participants

We aimed to explore the way consumers frame dairy and which coping strategies they use compared to meat. For this it was important to include participants with a variety of diets, reaching from omnivores to vegans. Furthermore, we chose to purposefully conduct this pilot study in the Netherlands and with students from Wageningen University and Research (WUR). Skovdal & Cornish (2015) recommended conducting focus groups of at least n=18 participants as a representative sample size. Specific psychological factors are of high importance, which means a comfortable setting where participants are most likely to speak freely and openly (Skovdal & Cornish, 2015). We chose groups of 6 participants per session ensuring enough space to speak for everyone. For the group dynamic, the shared university background is a positive condition. The choice for WUR students was also based on the strong sustainability focus of the university and a variety of study programs related to agriculture. Students at WUR can therefore be seen as part of a green "bubble" within Dutch society. We expect a higher chance for the occurrence of cognitive dissonance within WUR than in other Dutch universities because of the high sustainability focus and agricultural faculties. WUR students are therefore constantly exposed to different academic positions on ASF, especially since there is high variation within the sustainability discourse within WUR (Van Dinther, 2020). This makes the sample especially interesting to explore and highlight the variation within the different academic fields connected to sustainability. In 2021, WUR won the prize for the most sustainable university for the fifth year in a row (GreenMetric, 2022). This provides both limitations and chances to this sample: on the one hand, this sample does not reflect Dutch society or all Dutch students. However, students at WUR are more likely to be more familiar with the sustainability transition, meaning that the outcomes of this study can contribute to a better understanding of future developments in the rest of society; supposing a further development of sustainability awareness across the Netherlands.

3.3 Data analysis

The data was analyzed using a thematic content analysis (TA) approach (Braun & Clarke, 2006). This suggests six main phases: from familiarizing with the data, to generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Braun and Clarke (2021) emphasize the importance of open-mindedness throughout this process, the theoretical framework can be kept in mind, but should not dominate the analysis and allow room for new findings. This approach was used to generate data-derived dominant themes for dairy. TA has the researcher's reflexivity in its center and the analysis is therefore affected by context and worldview of the one conducting this analysis. The subjectivity of the researcher is thereby used productively, enhancing a more in-depth interpretation and analysis of the data.

Using a codebook is the opposite of what Braun & Clarke describe as TA. Therefore, we started the analysis with an interpretative approach using only open coding to find general trends in the data (chapter 4.1; Appendix A). We explored the framing of dairy vs. meat and dairy-related coping strategies. Later, we used a codebook with meat-related coping strategies to compare them to what we found for dairy.

The date was analyzed by two coders who shared their findings with each other to check for intercoder reliability. Further, the reflexivity in this TA was approached through keeping a research journal, intercoder sessions, transparency of dietary preferences among the researchers involved, as well as peer and supervisor discussions throughout the process and separately on preliminary findings.

3.4 Ethics

Prior to the execution of this research, ethical approval has been requested and received from the Wageningen University and Research Social Sciences Ethics Committee. Additionally, participants were informed about the research and asked for their informed consent. The participants were not informed of the specifics of the study beforehand to ensure unprepared responses on the research topic. As an introduction to the focus group discussions, participants were informed by the researcher on the procedure of the session and were given the space to ask questions. The data is treated confidentially. While no direct risks are foreseen, the content of the data is considered sensitive and should therefore be treated as such. The authors declare no conflict of interest.

4 Research findings

The findings of this research are structured in three main categories. We start with an overview of the participants in the sample and general trends on topics and opinions that were repeatedly mentioned by the participants. Second, the findings on how dairy is framed compared to meat are presented. We elaborate on the findings on dairy- compared to meat-related coping strategies and cognitive dissonance separately in chapter 5.

4.1 Participant overview

All participants (n=18) are between 20-28 years old and have lived in the Netherlands for more than 10 years. They are enrolled in a variety of study programs at Wageningen University ranging from life sciences (e.g., animal sciences, plant sciences, food technology) to various social sciences. Most of the participants identify as flexitarian (n=8), followed by vegetarian (n=6). Only two participants described themselves as omnivores, one indicated almost vegan in the comments of the survey, and one as strictly vegan. Compared to a nationwide study this sample contains significantly more vegetarians and vegans. In the Netherlands, only 7% identify as vegetarian – of which 1.4% as vegan (ProVeg Nederland, 2022). This difference aligns with what was expected in a sample of Dutch Wageningen students who tend to be more involved in topics around sustainability transitions and agriculture. Two of the participants grew up on a farm, one of them on a dairy farm. Further, the sample was slightly female-dominated; 11 participants identified as female, and the other seven as male.

The study from ProVeg (2022) across the Netherlands found that among females there are twice as many vegans and vegetarians compared to males. Because of the small sample size gender will not be considered further in the analysis and gender-neutral pronouns they/them are used. Furthermore, all quotes are labeled with the participant number (P1-18), Diet abbreviation (Abbr. O-VV); Focus group number (F1-3), and line in the transcript:

#	Gender	Age	Diet	Abbr.	Study Program
P1	Female	24	Flexitarian	F	Social & Environmental Sciences
P2	Female	20	Flexitarian	F	Animal Sciences
P3	Female	24	Flexitarian	F	Social Sciences
P4	Male	25	Flexitarian	F	Biobased Sciences
P5	Female	21	Flexitarian	F	Social Sciences
P6	Female	21	Vegetarian	V	Economy and Policy
P7	Male	23	Omnivore	O	Molecular Life Sciences
P8	Female	21	Vegetarian	V	International Development
P9	Male	26	Vegetarian	V	Plant Sciences
P10	Male	22	Almost vegan	V+	AgroTechnology
P11	Female	23	Vegan	VV	Social Sciences
P12	Male	24	Flexitarian	F	Food Technology
P13	Male	25	Omnivore	O	Geo-information Science
P14	Female	24	Vegetarian	V	Social & Environmental Sciences
P15	Female	24	Flexitarian	F	Food Technology
P16	Female	24	Vegetarian	V	Environmental Sciences
P17	Female	27	Vegetarian	V	Social Sciences
P18	Male	28	Flexitarian	F	Geo-information Science

Table 4: Participant overview

4.1.1 Different motivations regarding food choices

Most participants repeatedly mentioned price as the most important factor influencing their food choices. This can be related to the sample of students living mostly on a budget. Participants also mention convenience, meaning foods that they are used to or that are easy to prepare. The aspect of health and taste also has a strong influence on their food choices. When it comes to animal-sourced foods a reduction is mostly related to emissions, not necessarily to animal welfare. Preventing food waste also seems to be valued higher than animal welfare.

I always want (…) the cheapest option. (P5, F; F1-190)

Price is one of the most important things to me, price and health basically. And taste of course. And only after that I consider sustainability (P15, F; F3-350f)

I find it difficult if the product (…) is already bought and prepared, is on the table – I don't get the feeling if I would decline it, and it will go to waste, that I – that that will have a better impact. (P10, V+; F2-170f)

4.1.2 High awareness around meat and related issues

The dietary preferences vary across the sample. Eight of the eighteen participants indicated flexitarian as their dietary preference which is very similar to the national average of 46% flexitarians (ProVeg Nederland, 2022). Although the term flexitarian was not further specified in the questionnaire, the term refers to consciously reducing ASF in one's diet. In the focus groups, the flexitarians mostly referred to reducing meat. Less participants mentioned dairy as a conscious part of their reduction intentions. Even the omnivores in the sample are conscious of issues related to meat but do not see a change in their personal diet as a force for change.

I consider climate impact as very important, so therefore I like to choose a plant-based option if that's possible. (P6, V; F1-164)

Recent studies in Wageningen showed that we can easily feed all humans with a plant-based diet. That – that is already possible now… (P11, VV; F2-292)

I am actively thinking about the topic (here: meat), also worry about it, but I don't get the feeling that I will make a difference by myself, so yes, I value my taste above my feeling of guilt. (P7, O; F2-155)

4.1.3 Trend in feeling overwhelmed by choices or doing good

The participants in all focus groups mentioned some form of overwhelming feelings when it comes to making the right decisions in the supermarket. This is mostly related to all the different factors that can be considered: sustainability, water use, animal welfare, health, and a lack of trust in information sources. The participants mention struggles on an individual but also systemic level, which makes it even harder to choose what seems right. One participant mentioned that our consumption choices go far beyond food and include e.g. fast fashion. Another question that came up quite often was whether one individual's choices will make a difference.

I am becoming more and more critical, and that is not useful. And also, really tiring. (P14, V; F2-338)

At some point you'll also stop believing anything and you just don't know what to do. I can go and collect information everywhere, but then you'll spend your whole life collecting information, and is this information even true? (P15, F; F2-339)

Considering everything that is wrong about the animal industry, sustainability, or dairy industry… there is also a lot wrong with the fashion industry (…). So, you can only pay attention to a limited number of things. (P4, F; F1-159)

I think about everything that is happening… but I feel a bit powerless and hopeless considering the whole system. (P12, F; F2-148)

4.1.4 Level of criticism on the current food systems varies

Amongst the participants, the level of criticism of current food systems varied. Some were very aware of problems, altering their diets accordingly. Some also shared this same awareness but did not see the power of changing their diet to change these problems. The emotions linked to issues in the food system also varied. Some were very outspoken about their frustrations, heavily criticizing the system, whereas others seemed to have come to terms with the current state or not sharing any emotion at all.

I think there is a structural problem with the way we think about it as a whole system, the way the economy thinks about it, and the way the economy lobbies about this politically. (P7, O; F2-98)

4.2 Framing of dairy vs. meat

As the second part of the analysis, we compared the way participants frame meat to how they frame dairy. In this sub-chapter, we first elaborate on both framings separately and then compare them to each other.

4.2.1 Framing of meat

Eight participants (sample total n=18) identify as vegetarian or vegan. They, therefore, avoid meat in their diets. All 18 participants considered their meat consumption and most participants adapt their diet to different extents. Eight participants in the sample identify as flexitarian. One omnivore highly values the addition of meat for taste in their food and only consumes vegetarian meals when eating with others who choose to be vegetarian. All participants share awareness of various problematic aspects of the meat industry. Most participants have made/are altering their diet by stopping/ minimizing their meat intake. Two participants do not consider their individual choice as impactful (enough) to reduce/stop consuming meat.

Arguments in favor of meat mentioned are about the convenience in preparation and habit alongside taste and culinary flavor development or the notion of "treat(ing) myself" (P12, F; F2-142) to a delicious piece of meat. One flexitarian justifies their occasional meat consumption because they "choose for vegetarian in many other moments" (P5, F; F1-102). One vegetarian in the sample does consume fish from time to time for health reasons in moments when their body really craves a "fatty fish" (P17, V; F3-143). The other seven vegetarians do not seem to make these exceptions when it comes to meat or fish.

When asked whether they think about where their food comes from, participants brought up different topics. In the first focus group, the participants immediately mentioned their personal reduction of meat consumption. The second focus group introduced the topic with criticism of highly processed food and the disconnection of the consumer from the source of their food, and the role of the communication and advertising of big food companies like Friesland Campina in this process. In the third group animal-sourced foods were not the first thing they mentioned, but a need to consume more local fruit and vegetables.

Participants most frequently expressed social settings as an argument to consume more animal-sourced foods that they otherwise try to avoid when cooking for themselves. The participants claim to choose different foods when eating alone compared to when others prepare food for them. Here, the argument for preventing food waste and a lower level of responsibility for what is already cooked/prepared is mentioned several times. The seven strict vegetarians/vegan, however, do not make this exception when it comes to meat, although some make an exception for dairy.

4.2.1 Framing of dairy

Throughout all focus groups, dairy was repeatedly reported in a more positive light than meat. In the sessions where participants were more outspoken about the problematic aspects of dairy, they mentioned the times when they used to consume it in large amounts and the healthy conception of dairy they were taught by their parents and dairy advertising when growing up. This health connection also dominates across the sample, associating sports, strength, and an important source of protein with (the consumption of) dairy products.

Participants of the first focus group mentioned a variety of dairy products (with a great love for cheese), health aspects, happy cows on meadows, and typical Dutch landscapes when asked about their associations with dairy. The participants in the second focus group showed a more critical stance, highlighting that dairy is such a crucial part of current production systems, an ideology that constructs milk as very important for one's health and former campaigns initiated by the Dutch government and dairy companies, for example, *Joris Driepinter* "the little milkman" (P8, V; F2-221; Figure 2) – a cartoon character from the 1960s drawn as a small boy promoting the consumption of three "pints" of milk per day for good health. In the third focus group, a famous Dutch gymnast *Epke Zonderland* (P18, F; F3-184; Figure 3) was mentioned in connection to dairy, farms, cows, and notions of Dutch identity and the importance of dairy for the Dutch nation. One participant stated that they do not "immediately have a negative word" (P18, F; F3-188) when thinking about dairy.

Figure 2: Joris Driepinter

Figure 3: Epke Zonderland (Friesland Campina)

All three focus groups mentioned the biggest Dutch dairy company "Friesland Campina" as one of their first associations with dairy. This could be connected to the company's research facilities being located on the Campus of WUR.

The question *What do you associate with the production of dairy?* Triggered a more critical view of the dairy industry in all three focus groups: The first focus group was mostly mentioning the practicalities that go into the processing of milk and criticizing the amount of money that is behind this industry. Participants in the second focus group referred primarily to ethically questionable aspects of cow-calve separation, that half of the calves being born are male, who therefore cannot be used as dairy cows and are therefore a "byproduct of dairy" (P17, V; F3-218).

They also mention the instrumentalization of the cow, intensive farming methods, and inefficient resource use. The first focus groups only touched upon knowledge regarding the calves' role in dairy when specifically asked about it by the moderator. In the third focus group, the role of the calve immediately came up when asked about the production process. This was contrasted

by a neutral or "pretty romantic image" (P18, F; F3-215) shared by other participants. One person describes their mental image of a dairy farm as a positive place with happy animals and "with music" (P15, F; F3-216) added as an afterthought. Another participant claims that the cow would experience more suffering if the farmers would stop milking it from one day to another. A vegetarian suggests stopping to impregnate the cows as a possible solution while highlighting the role of the male calves as a byproduct. Furthermore, the participants often link the term dairy to liquid dairy products like plain milk, (drink)yogurt, or quark. Cheese seemed to come in as a later association:

I honestly have to say that I have never been such a fan of milk. Growing up I always thought it was disgusting. (…) I like a bowl of yogurt from time to time, but not that often. (…) You can make me happier with other things than milk.

When asked about cheese

Cheese yes, that for sure. (P7, O; F2-251)

Dairy products stand out as a crucial part of most of the participants' diets. There is only one vegan in the sample who fully avoids the consumption of dairy and four participants who try to reduce their dairy consumption. Seven participants mention problematic aspects of dairy (consumption). However, the participants who show critical reflection on animal production systems, still make (small) exceptions for consuming it, for example in social settings or for personal enjoyment, like tasty foods including cheese or cakes made with butter:

I am again very hypocritical, when I say the livestock sector needs to be halved, but I also just ranted about how much I love cheese. And I will for sure eat it today. So, I definitely feel this tension: It is actually not allowed, but I will eat dairy again anyways. (P5, F; F1-170)

Participants also mentioned that they specifically see a big difference between meat and dairy products, framing meat as generally negative, implying suffering and "kill(ing)" (P15, F; F3-280), while dairy was framed more positively and "romantic(ally)" (P18, F; F3-216).

Lastly, it was noticeable that the discussion in light of dairy consumption and production often shifted towards egg and especially meat consumption by the participants themselves. This could highlight a redirection of the problematic aspects of dairy towards other (more impactful) problems relativizing an occurring feeling of discomfort about dairy.

4.2.3 Framing of meat and dairy compared

The participants have different perceptions of dairy in terms of climate impact, health, and animal welfare compared to meat. Taste and price play a crucial role. Meat carries a negative image, but the participants who consume it mention a variety of arguments on why they can allow themselves a piece of it. Of the 18 participants who mention problematic aspects, two-thirds do consume meat. To reduce the cognitive dissonance resulting from the 'meat paradox', all participants use different coping strategies. The amount of ASF in the participants' diets differs across the sample. This can imply different strategies throughout the sample to deal with this feeling of discomfort.

Dairy continues to carry a more positive image. Only one participant is strict about not consuming it at all. Seven participants (including one vegan) have a critical stance towards dairy and actively try to reduce their consumption of it. Among these participants, exceptions are made. The reasons for these exceptions vary. Some are out of necessity when e.g., no other food is available or when trying to prevent food waste. Others are regarding certain taste cravings connected to dairy products:

I love cheese so much. (P5, F; F1-102)

Twelve of the participants consume dairy regularly with most of their diets consuming dairy as a staple food item in their everyday breakfast. However, about half the participants in the sample show tendencies that highlight an increasing dairy skepticism. All in all, 17 participants in the sample do consume dairy.

5 Dairy-related coping strategies

This chapter presents the findings on which coping strategies are used by the participants connected to their dairy consumption. First, we elaborate on the coping strategies we also found for dairy to prevent or reduce cognitive dissonance that have also been identified for meat consumption (Joy, 2010; Nijland, 2016; Piazza et al., 2015; Rothgerber & Rosenfeld, 2021). Second, we elaborate on three coping strategies found that were specifically used for dairy. We also add a firth N to the Ns of justification (Joy, 2010; Piazza et al., 2015). Lastly, we comment on the extent of occurrence of dairy-related cognitive dissonance.

5.1 Strong overlap with meat-related coping strategies

Compared to existing coping strategies to reduce meat-related dissonance a strong overlap was found for dairy. All coping strategies described below have previously been described for meat consumption. We found dairy-related examples for all coping strategies described by Nijland (2016). For the mechanisms to prevent and reduce cognitive dissonance described by Rothgerber & Rosenfeld (2021) we found examples for dairy for almost all. *Denying animal mind* (that is, to claim that farm animals do not think, feel, and suffer the same way as humans do*)* was the only mechanism for which there was no example in this sample. One of the coping strategies to reduce dissonance (Nijland, 2016) is called *eliminating dissonance* (that is, bringing forward cognitions that decrease or eliminate the negativity of the decision):

We do this already for thousands of years, I mean they (cows) are domesticated for our consumption. (P17, F; F3-237)

Other coping strategies aim to oppress dissonance. One of them is called *detachment* (that is, creating emotional distance between oneself and the possibly negatively affected party):

The comparison with dog milk seems unfair to me. (P17, V; F3-235); *No, I don't even like the taste of cow's milk. Quark I do like a lot, but milk? (*P13, O; F3-488).

Similarly, a coping strategy called *concealment* hides or represses the negative side of a decision:
I value my taste above my feeling of guilt. (P7, O; F2-155)
Nijland (2016) introduces a third set of coping strategies that accept dissonance. The first one is called *admitting dissonance*. One participant shares a conversation they had at a train station with an animal rights activist:

I told the guy: I just really like the taste of certain (animal sourced) products. And he was like: "Yes, but what is more important; That you like the taste of something or that the animal has a good life?" – And well, he really had a good point there. It is tricky. (P13, O; F3-498)

The second one is *embracing dissonance*. One participant states:

I don't really feel any tension. If I think I buy oat milk now I think well done. If I don't do it, I think okay. I just leave it at that. It doesn't seem hypocritical to me, valuing the one choice over the other. (P1, F; F1-174)

Rothgerber & Rosenfeld (2021) describe mechanisms to prevent and reduce meat-related cognitive dissonance (MRCD). We found examples for both for dairy-related cognitive dissonance (DRCD). One of the mechanisms to prevent DRCD is called *dissociation*:

It is a product of the animal not the animal itself… that makes a very, very big difference to me. (P15, F; F3-280)

Self-definition as humane dairy-eater is an indirect strategy to reduce DRCD implying that the dairy one eats does not hurt the animal it comes from or is involved:

I have less issues with it, because for dairy it seems easier to me get it organic or even biodynamic, and it is easier to get local dairy. (P17, V; F3-260)

There are also direct strategies like the four Ns of justification: dairy is *natural, normal, necessary*, and *nice*. We describe this in more detail in the next chapter. While in these samples most participants consume dairy, several already lowered their dairy consumption and one participant does not consume dairy at all. They, therefore, use the most direct mechanism to handle cognitive dissonance which is behavioral change:

I don't eat any animal sourced foods. (P11, VV; F2-139)

Reason number one is animal welfare, because I just don't think we can treat animals in this way. Number two is sustainability, because if we want to continue living on this planet for a few more years, we need to radically change our food system. (P11, VV; F2-536)

We chose to only mention a few examples that demonstrate the overlap between meat- and dairy-related coping strategies. An elaborate list of all coping strategies and examples from the qualitative data can be found in Appendix B and C of this article.

5.2 Dairy-specific coping strategies

In addition to the overlapping coping strategies for meat and dairy we also identified several dairy-specific coping strategies: Dairy is (1) *indirect*, (2) *overwhelming*, and (3) *neglectable.*

5.2.1 Dairy is indirect

The indirect aspect of dairy (products) was mentioned by the participants in a variety of different ways: Dairy was framed as an indirect animal product, with an emphasis on life rather than death for the animal:

With meat, animals are slaughtered – killed. And everything that happens to them. With dairy this is not the case. The animals can still have a good life. (P15, F; F3-280).

Another participant shared their knowledge on the role of male calves in dairy production while at the same time disconnecting this part of the dairy industry from the animal product itself. This highlights an idea of indirect suffering of animals in the dairy industry:

(Male calves from the dairy industry) just get bought for fattening them or for calves' meat. Calves' meat – super sad. But we were talking about dairy… (P17, V; F3-224)

Dissociation was already identified as a mechanism to prevent meat-related cognitive dissonance by Rothgerber & Rosenfeld (2021). For dairy, the dissociation mechanism has occurred several times. The code *dairy is indirect* reflects this hidden animal connotation even stronger. One could speak of a double dissociation. Pretending that there is no animal involved during meat consumption could be the first degree of dissociation by disconnecting the animal flesh from the animal. Since dairy is considered an animal product, dissociating the animal *product* from the animal could be seen as a second degree of dissociation.

Dairy as an indirect or invisible product was already mentioned in the previous chapter related to the framing of dairy as participants often only linked it to liquids like milk, yogurt and not directly to cheese, fruity yogurts, or other products made from milk.

Lastly, the indirectness of dairy was reflected as a product that is deeply embedded in our food system. Milk powders and other versions of dairy, such as butter, play an established role in many processed food or baked goods. Dairy is often contained within other foods making it less visible compared to an actual piece of meat.

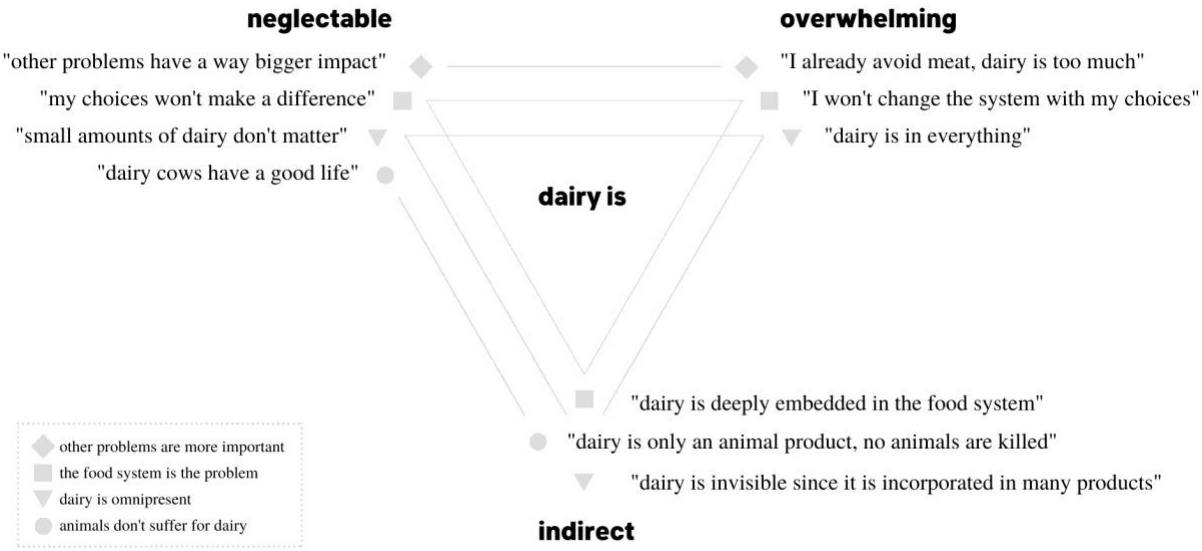

Figure 4: The interconnectedness of dairy-specific coping strategies

5.2.2 Dairy is overwhelming

The code *overwhelming* was one of the most reoccurring codes throughout the data set (26 quotations). Participants repeatedly shared their emotions and frustrations related to issues in current food systems additionally to dairy related problems:

There is so much information about everything coming your way. You can only absorb a limited amount. (…). (Dairy) is only one of the factors, but you only have a limited attention span. (P4, F; F1.-159)

Some things are already difficult enough – like writing a thesis. So, I allow myself to have dessert, with milk. (P1, F; F1-176)

This was often paired with connotations of feeling powerless as an individual changing the whole food system. At the same time, participants seemed to feel stuck when it comes to changing their diets and consuming less dairy. Since dairy is so deeply embedded in current food systems, it seems non-avoidable.

I tried to eat vegan for a while and then you realize that in potato chips one of the very last ingredients is milk powder. (…) That's super annoying. (P6, V; F1-118)

5.2.3 Dairy is neglectable

The coping strategy for *dairy is neglectable* requires some context since it can be approached on three different levels: on a system, product, and individual level. First, dairy seemed to be small/ unimportant enough to be neglected in a systemic way compared to other big issues:

Talking about Dairy
It is a lot. I mean, how? I just saw it in front of me: You have to do it all? You'll have to change everything in the Netherlands, and there still must change a lot before… and we will probably not live anymore then. (P12, F; F2-114)

Second, dairy seemed not to be significant or important enough to be worth considering on a product level. Many food items contain small amounts of dairy, which in the bigger scheme of things seem to be not significant enough to the consumer and can therefore be seen as neglectable. At the same time dairy is contained in so many processed foods, mostly in the form of milk powder, making it hard to avoid for consumers. Participants repeatedly shared their frustrations on this.

Dairy is almost in every product: cookies, in chips, like what? Milk powder… (P1, F; F1-118)

Third, by reflecting on the fact that only one of the participants fully avoids dairy in their diet while seven others also avoid meat, dairy can also be seen as neglectable because participants already avoid/ reduce meat in their diets. The impact of avoiding meat might already be considered high (enough). This could be used as a coping strategy; classifying dairy as neglectable reduces its importance compared to meat.

The coping strategies for *dairy* is *indirect*, *overwhelming*, and *neglectable* all address similar aspects related to understanding the complexity with regard to the consumers' perceptions of dairy and its role in current food systems. It was noticeable that these coping strategies are strongly interconnected. We visualized the connecting factors in figure 4.

As for the Ns of justification, four Ns have currently been identified for meat. We found dairy-related examples for all four Ns and see a need for adding a new N for dairy. Table 5 includes dairy-related examples for the existing four Ns applied for dairy – dairy is *natural*, *normal*, *necessary*, and *nice*. The fifth N – dairy is *neglectable* has been added, based on the findings described in this chapter.

Category	Definition	Examples
Natural	Appeals to biology, biological hierarchy, natural selection, human evolution, or the naturalness of eating dairy.	But what else are cows for? (…) Because you strongly get the feeling that the animal (cow) has a function. (…) I don't think that we will every fully stop it (dairy). We have just started using these animals after all.
Necessary	Appeals to the necessity of dairy for survival, strength, development, health, animal population control, or economic stability.	I associate (dairy) always with sports (..) and I also still keep thinking about the idea that dairy makes you strong.; Protein; Calcium; Good for the body
Normal	Appeals to dominant societal norms, normative behavior, historical human behavior, or socially constructed food pyramids.	(Dairy is) pretty Dutch also, I think that we are a real dairy country.; But we do this already for thousands of years, I mean they (cows) are domesticated for our consumption.
Nice	Appeals to the tastiness of dairy, or that it is fulfilling or satisfying.	I love cheese so much, yogurt, and other dairy products.; I also just like the taste of a grilled cheese sandwich in the morning.
Neglectable	**System level**: Small enough or unimportant enough to be neglected Too many other problems are already important to consider (fashion, meat etc.) Too embedded in the food system	Some things are already difficult enough – like writing a thesis. So, I allow myself to have dessert, with milk.; There is so much information about everything coming your way. You can only absorb a limited amount. (…). (Dairy) is only one of the factors, but you only have a limited attention span.
	Product level: Not significant or important enough to be worth considering Dairy is in everything (e.g., small amounts of milk powder)	I tried to eat vegan for a while and then you realize that in chips one of the very last ingredients is milk powder. (…) That's super annoying.; Dairy is almost in every product: cookies, in chips, like what? Milk powder…

Table 5: The five Ns of justification for dairy consumption (built on Joy, 2010; Piazza et al. 2015; Rothgeber & Rosenfeld, 2022)

5.3 Dairy-related cognitive dissonance

Describing the occurrence of cognitive dissonance is challenging because in most cases it is a deeply subconscious psychological phenomenon and therefore does not directly reflect in speech. Coping strategies are defined as justifications that are used to deal with cognitive dissonance. In the theoretical framework, we elaborated on the different categories including different coping strategies: mechanisms preventing and reducing cognitive dissonance (Rothgerber & Rosenfeld, 2021); and coping strategies to reduce, oppress or embrace dissonance (Nijland, 2016). We found examples of dairy for all these categories. By identifying these coping strategies amongst the participants, we can confirm the occurrence of dairy-related cognitive dissonance (DRCD).

The mechanisms to *prevent* cognitive dissonance work differently from the rest of the coping strategies because they do not require the individual to experience cognitive dissonance (yet) by for example avoiding engaging with the topic. Several participants repeatedly requested more information about dairy to be able to form an opinion on the topic. This demand seems to increase since documentaries addressing this knowledge gap on dairy are being made very recently (Arnold, 2021; Taylor, 2021). The participants may have not engaged with the topic or chosen to avoid learning about the dairy industry before. After one of the sessions, a participant concludes:

I find it an interesting realization that I have such a different view towards meat compared to dairy, while they are both animal-sourced foods. And that I… well, I am just curious why I do this. So that's what I mostly think. (P3, F; F1-337)

This reflects that the way dairy is seen compared to meat is (still) different. This participant starts to challenge this thought by questioning their own perception of both animal-sourced foods. Identifying as flexitarian, they might therefore already deal with their meat-related cognitive dissonance they are experiencing. They partly make use of the most direct strategy of behavioral change by eliminating meat (to some extent) from their diet. The occurrence of cognitive dissonance for dairy only seems to be starting for these participants.

6 Discussion and conclusion

In this final chapter, we critically reflect on the main findings of this pilot study. We elaborate on the limitations, future research directions, and the final conclusions on the research questions.

Dairy-specific coping strategies

We found lots of overlap in the differentiation of the three dairy-specific coping strategies identified for dairy is indirect, overwhelming, and neglectable (figure 4). At first, this might weaken the differentiation into three separate dairy-related coping strategies. However, the interconnected aspect of this can also be seen as a reflection of the embeddedness of dairy in current food systems. This also constitutes one of the main challenges to reducing dairy in current production systems and consumer choices.

The overwhelming aspect of reducing dairy in one's diet can be overwhelming on many more levels: livelihoods of farmers, contrasting information, too many things to consider, or own life priorities. For the scope of this research, we could only make a start by investigating the underlying aspects of this coping strategy. It does however provide fruitful ground for further research. This coping strategy for *dairy is overwhelming* could be compared to Lamb et al. (2020) who describe surrender as one of the discourses of climate delay for example *change is impossible* or *doomism*. Dairy, similar to wicked problems like the climate crisis, might be too overwhelming to reduce resulting in the surrender of consumers when confronted with this problem.

The coping strategy dairy is neglectable could also be seen as a surrender as well as a more subtle version of *willful ignorance* (Rothgerber & Rosenfeld, 2021): ignoring a seemingly smaller issue at hand and categorizing it as small or unimportant enough to be neglected. It does not make it less important to consider. Neglect, however, implies a notion of awareness amongst the consumers and a willingness to deal with the issue while at the same time the consumers' hands seem to be tied for acting (parallels with embracing, admitting dissonance (Nijland, 2016)). Building on the coping strategy *dairy is neglectable*, further research can help to feed this awareness into potential communication strategies for the protein transition.

In addition to dairy, there are other animal-sourced foods in current food systems which are more indirect, neglectable, or overwhelming compared to meat could. They too can be explored further building on these (for now) identified dairy-specific coping strategies: The finding of this research could be a base to further explore cognitive dissonance and coping strategies for ASF like eggs, lard, gelatin, or honey.

Cognitive dissonance and strategic ignorance

From the beginning, an investigation into the occurrence of dairy-related cognitive dissonance and coping strategies were at the core of this research. Simultaneously, there was a chance that participants would not experience any cognitive dissonance with dairy. Without cognitive dissonance, there are also fewer coping strategies needed because individuals are not experiencing any or very little tension. In meat-related literature, Onwezen & van der Weele (2016) differentiate between two types of strategically ignorant people: (1) those who don't care and therefore ignore the issue; (2) those who do care but strategically choose to ignore the issue: willful blindness (detachment or concealment (Nijland, 2016)). For meat consumption, all participants in the sample seemed to care about meat so they connect to type 2, made use of other coping strategies, or changed their behavior. Based on our findings, we have examples for types 1 and 2 of strategic ignorance for dairy consumption. This connects to the results on dairy and meat framing where dairy was framed more positively and less problematic compared to meat. This also clearly differentiates dairy from meat in the way consumers construct the ethical impermissibility of consuming dairy and meat.

6.1 Limitations

As Braun et al. (2020) put it "there's no one way of making sense of data. Think about where you sit in relation to your data, and how you interpret and make sense of them" (p.435). The author and primary researcher of this paper identifies as vegan, which very likely has had an influence on the way the data was interpreted. Similarly, this would have been the case for any researcher with any other dietary preference. Veganism is challenging the dominant ideology called carnism: the underlying belief system or ideology that has conditioned humans to eat certain animals and animal products (Joy, 2010). Concludingly, both carnism and veganism are an ideology that can influence interpretation. It is not about arguing which ideology is better but being transparent about the subjectivity and belief system of the analyst. Personal background, dietary identity, and choices (in this case as a vegan) are both, a strong motivation as well as a bias for this research. Being aware of this bias, helped to critically reflect on this position, whilst it also allowed to highlight aspects of the topic that have not been addressed prior. Skovdal & colleagues (2015) describe reflexivity as particularly important for researcher biases highlighting two aspects: First, being alert to potential biases and adjusting if necessary, and second, creating critical awareness of the researcher's engagement and its limits. As any, especially qualitative, research can never be fully objective, being aware of our personal investment, transparency and honesty have high priority. Then, subjectivity combined with reflection and reflexivity becomes a strength for feeding the interpretation rather than hindering it.

Lastly, it is important to mention that the analysis of any data set can never be finished but you can decide to stop because data saturation is reached to answer the research question. The data generated during this pilot study can be further analyzed and the results of this study provide insights into the potential for further research.

6.2 Future research directions

- After conducting this pilot study on dairy-related coping strategies, we suggest further exploring this topic with a different, potentially international, and bigger sample. This can contribute to investigating the underlying aspects of the found complexity of dairy compared to meat.
- The coping strategy *dairy is indirect* has been identified for dairy. This raises the question: which other animal-sourced foods are indirect? What about eggs, lard, or gelatin?
- As already mentioned, further research on *dairy is neglectable* can help to provide more context for developing communication strategies contributing to the protein transition building on the awareness that neglect implies.
- As previously mentioned, for *dairy is overwhelming* we recommend investigating the parallels to the discourses of climate delay and other paralyzing mechanisms for change.
- The data suggest that there are three different time phases where dairy-related coping strategies can be used (i) before cognitive dissonance (CD) occurs, (ii) while CD is occurring, or (iii) after CD occurred. For dairy is indirect, overwhelming, and neglectable further research could help identify when those coping strategies occur over time. This could be at one or more time phases.

6.3 Conclusion

In the way Dutch consumers frame dairy compared to meat we found lots of differences. Dairy is framed much more positively compared to meat. While all participants have considered reducing their meat consumption this is not the case for dairy. Based on the frame analysis we can conclude that meat-related cognitive dissonance occurs across the whole sample since all participants know of the problematic aspects of meat. Dairy-related cognitive dissonance is not experienced by all 18 participants. However, there is a strong overlap in the types of coping strategies Dutch consumers use for dairy compared to meat. We found examples for almost all meat-related coping strategies equally for dairy. Additionally, we identified three dairy-specific coping strategies: dairy is *indirect, overwhelming* & *neglectable.*

By identifying dairy-related coping strategies we confirm the occurrence of dairy-related cognitive dissonance, although it varies across the sample. This provides the basis for the introduction of the dairy paradox to academic literature: many people wish to avoid harming animals, yet most people also consume dairy.

We identify the dairy paradox for the first time in this pilot study. By naming a concept, we can start to talk about it, reflect and start to question it. Melanie Joy (2010) says the same about firstly introducing carnism to academic literature. As mentioned before, carnism is the mainstream, dominant ideology contrasting veganism. For dairy, the dairy paradox, dairy-related cognitive dissonance, and coping strategies can help to understand parts of the underlying mechanisms of dairy consumption. In our comparatively 'enlightened' sample in sustainability transitions we also observe a shift of the dairy image towards more negative. Although dairy is not on the same level as meat, problematizing dairy seems to slowly enter societal discourse. With this, we can build on improving the communication and facilitation of dairy in the protein transition. With this study, we can acknowledge the tensions experienced by consumers and their internalized dairy paradox.

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Appendix A

Table A includes the most relevant dairy-related themes identified. The number indicates the frequency of quotations related to this theme. The grey themes that are generally about food systems and not dairy specific. The theme price (also in grey) was also very dominant in this sample. However, since the participants in the sample were students who tend to be on a tight budget, we decided to not consider money as a strong indication.

Table A: Dairy-related themes sorted by frequency in the data set

Theme	#	Example
Positive dairy image	40	Reinforcing: "Dairy still sounds pretty romantic to me." (P18; F3-216)
		Criticizing: "(Fristi) is a good example because it contains 0% fruit and its water mixed with milk powder. While most people think: 'oh a natural product, healthy sugars, vitamin D. You need to eat animal sourced foods to get these nutrients.'" (P9; F2-49).
Overall reduction/ Change in consumption	35	"There is a need for change on the big scale. That's really tricky." (P10; F2-66)**.**
Dairy is problematic	33	"Calves get immediately removed from their mothers. That's pretty tough." (P16; F3-225).
Dairy is tasty	32	"I love cheese so much, yogurt, and other dairy products." (P5; F1-102); "I also just like the taste of a grilled cheese sandwich in the morning." (P12; F2-531).
Dairy is normal	28	"(Dairy is) pretty Dutch also, I think that we are a real dairy country." (P14; F3-189) "But we do this already for thousands of years, I mean they (cows) are domesticated for our consumption." (P17; F3-237)
The whole food system is problematic	27	
Overwhelming	26	"There is so much information about everything coming your way. You can only absorb a limited amount. (…). (Dairy) is only one of the factors, but you only have a limited attention span" (P4; F1.-159). "Some things are already difficult enough – like writing a thesis. So, I allow myself to have dessert, with milk" (P1; F1-176).
Price	25	→ students
Dairy is necessary	23	"I associate (dairy) with always with sports (..) and I also still keep thinking about the idea that dairy makes you strong." (P5; F1-122); "Protein" (P5; F1-114); "Calcium" (P1; F1-121); "Good for the body." (P4; F1-112)
Dairy image becomes more problematic	22	"I find it an interesting realization that I have such a different view towards meat compared to dairy, while they are both animal sourced foods. And that I… well, I am just curious why I do this. So that's what I mostly think" (P3, Flexitarian; F1-337) "It is a gradual shift for me, because first I started to think about meat. And I thought that is too much suffering, so I totally stopped consuming it (…) Now I start thinking about dairy (…) but that's way harder to fully avoid." (P6; F1-303)
Animal agriculture is inefficient	21	
Media twists the dairy image (+/–)	20	(+) "I don't feel (…) tricked, if I buy a package of milk" (P1; F1-258)
		(–) "This is really a marketing thing of milk. That we therefore see it as way more positive." (P2; F1-162) "Greenwashing labels" (P6; F1-289)
Reduced dairy consumption	19	"I buy less and less dairy, probably because I do find sustainability more important than taste." (P14; F2-356) "No, I don't even like the taste of cow's milk. Quark I do like a lot, but milk? No. Now I buy almond milk." (P13; F3-488)
Powerless	19	"I don't see my own contribution as significant enough to stop it." (P7; F2-530) "The irrelevance of one person making a difference. And I also just like the taste of a grilled cheese sandwich in the morning." (P12; F2-531)
Vegan for animal welfare	18	"Reason number one is animal welfare, because I think that we can't treat animals like this" (P11; vegan, F2-539)
Dairy is deeply embedded in food production	18	"I tried to eat vegan for a while and then you realize that in chips one of the very last ingredients is milk powder. (…) That's super annoying." (P6; F1-118)
Dairy is tradition	11	"(Dairy is) pretty Dutch also, I think that we are a real dairy country." (P14; F3-189) "But we do this already for thousands of years, I mean they (cows) are domesticated for our consumption." (P17; F3-237)
Dairy is indirect	8	"It is a product of the animal not the animal itself… that makes a very, very big difference to me" (P15; F3-280).
Dairy is only an animal product	5	"It is a product of the animal not the animal itself… that makes a very, very big difference to me" (P15; F3-280).

Appendix B

The following table summarizes all coping strategies described for meat consumption in by Nijland (2016) in Table B. Here, these frameworks were applied for dairy:

Table B: Dairy-related coping strategies

	Coping strategy (CS)	*Definition*	*Dairy related example*
CS to reduce dissonance	**Adding consonants to behavior**	Selectively applying cognitions to represent the decision as a positive one	"Dairy makes you strong." (P1; F1-122) "(Dairy is) pretty Dutch also, I think that we are a real dairy country." (P14; F3-189)
	Eliminating dissonance	Bringing forward cognitions that decrease or eliminate the negativity of the decision	"With meat, animals are slaughtered – killed. And everything that happens to them. With dairy this is not the case. The animals can still have a good life." (P15; F3-280)
	Amplifying consonants	Making the drives and cognitions that support the made decision seem important	"Well for me it works like this: I am starting to work out more lately and if I talk to people about it, everyone says 'you need to eat a lot of quark – for protein! That's what makes you strong!' So that influences me, so yeah, I mean, if it's only about the taste it doesn't make much difference." (P13; F3-491)
	Trivializing dissonance	Making the drives and cognitions that oppose the decision seem unimportant	"With meat, animals are slaughtered – killed. And everything that happens to them. With dairy this is not the case. The animals can still have a good life." (P15; F3-280)
CS to oppress dissonance	**Misinterpreting**	Depicting or imagining the situation in a way that deviates from reality	"An ideal image of a green meadow, blue sky." (P1; F1-112) "With meat, animals are slaughtered – killed. And everything that happens to them. With dairy this is not the case. The animals can still have a good life." (P15; F3-280)
	Shifting responsibility	Revoking personal agency and blaming others for the situation	"I don't eat meat if someone else prepares it for me, but if someone cooks with cheese than I don't have a problem with it." (P14; F3-142) "I really enjoy it when my housemates buy things with cheese… yesterday we had pasta with gorgonzola, and I think that's super tasty!" (P16; F3-362)
	Detachment	Creating an emotional distance between the self and subjects that are possibly negatively affected by a decision (includes denial of mind and linguistic objectification	"The comparison with dog milk seems unfair to me" (P17; F3-235) "(Male calves from the dairy industry) just get bought for fattening them or for calves' meat. Calves' meat – super sad. But we were talking about dairy…" (P17; F3-224) "No, I don't even like the taste of cow's milk. Quark I do like a lot, but milk?" (P13; F3-488)
	Concealment	Hiding or repressing the (negative sides of a) situation to avoid confrontation all in all	"I value my taste above my feeling of guilt." (P7; F2-155)
CS to accept dissonance	**Admitting dissonance**	Acknowledging that there is discomfort, instead of trying to hide it	"I am again very hypocritical, when I say the livestock sector needs to be halved, but I also just ranted about how much I love cheese. And I will for sure eat it today. So, I definitely feel this tension: I know I shouldn't, but I will eat dairy again anyways." (P5; F1-170) "Well, I was standing on Utrecht central station once and I told the guy: I just really like the taste of certain (animal sourced) products. And he was like: "Yes, but what is more important; That you like the taste of something or that the animal has a good life?" – And well, he really had a good point there. It is tricky." (P13; F3-498)
	Embracing dissonance	Feeling good by virtue of the non-oppression of any cognitions or drives	"I don't really feel any tension. If I think I buy oat milk now I think well done. If I don't do it, I think okay. I just leave it at that. It doesn't seem hypocritical to me, valuing the one choice over the other." (P1; F1-174)

Appendix C

The following table summarizes all mechanisms to reduce meat-related cognitive dissonance described by Rothgerber & Rosenfeld (2021). Again, these frameworks were applied for dairy.

Table C: Mechanisms to reduce Dairy-related cognitive dissonance (DRCD)

			Coping strategy (CS)	*Definition*	*Dairy related example*
Mechanisms to prevent DRCD			**Avoidance**	To avoid enduring it by refraining from acknowledging animal welfare, environmental, or health concerns with dairy consumption	"I still have a pretty good image about dairy. I don't associate any negative things with it. So, I just buy it if I want to buy it or if I feel like it." (P15; F3-344) "Dairy still sounds pretty romantic to me." (P18; F3-216)
			Willful ignorance	To prevent individuals from experiencing aversive arousal from DRCD	"I value my taste above my feeling of guilt." (P7; F2-155) "(Male calves from the dairy industry) just get bought for fattening them or for calves' meat. Calves' meat – super sad. But we were talking about dairy…" (P17; F3-224)
			Dissociation	To pretend that no animal is involved during dairy consumption. This disconnect is accomplished by dissociating the animal from the food product.	"It is a product of the animal not the animal itself… that makes a very, very big difference to me." (P15; F3-280)
Mechanisms to reduce DRCD	Indirect strategies		**Perceived behavioral change**	To convince oneself and others that one does not consume a large amount of dairy, thus minimizing the perceived moral troubles of one's eating behavior	"No, I don't even like the taste of cow's milk. Quark I do like a lot, but milk? No. Now I buy almond milk." (P13; F3-488)
			Self-definition as humane dairy-eater	To proclaim that even if one eats dairy that comes from animals, the dairy that one eats does not harm animals because it is humanely produced	"I have less issues with it, because for dairy it seems easier to me get it organic or even biodynamic, and it is easier to get local dairy." (P17; F3-260)
			Do-gooder derogation	Through upward social comparison, individuals can feel threatened by those they perceive as taking moral positions that they themselves are unwilling to adopt by symbolically rejecting the moral permissibility of eating animal products, vegans seemingly qualify as "moral rebels"	"But this is of course a PETA strategy…" (P17; F3-239) "They had, … these really nasty movies showing. (P13; F3-503) – "But is it the really good image? Often it is really twisted." (P15; F3-504)
			Third-party blame	To obscure personal responsibility for the mistreatment of farmed animals by placing third-party blame on other entities in the food system.	"This is really a marketing thing of milk. That we therefore see it as way more positive." (P2; F1-162) "Dairy is almost in every product: cookies, in chips, like what? Milk powder…" (P1; F1-118)
			Moral outrage	At third-party transgressors in the food system or even at others who mistreat animals outside the food context. Such moral outrage is partially motivated by an effort to assuage personal guilt and to cast dispersions on others.	"About what you say about (vegan) cheese, also time to shame the whole industry of cheese. The fact that it is just water, coconut oil, modified starch, binding ingredients and some carotin or something… That it is just a piece of oil tied together with starches (…) I think it ridiculous that they keep selling this!" (P12; F2-438)
	Direct strategies	Animal-based reduction	**Denying animal mind**	To claim that farm animals do not think, feel, and suffer the same way as humans do	–
			Dichotomization	To classify animals into those we love and those we eat (from) explains myriad inconsistencies in the way animals are treated	"The comparison with dog milk seems unfair to me" (P17; F3-235)

		Dairy-based reduction	**Dairy is natural**	Focus on human relationships with animals and depicts the relationship - whether it be through religious or evolutionary forces - as one characterized by human dominance and animal subordination	"But where else are cows for? (…) Because you strongly get the feeling that the animal (cow) has a function. (…) I don't think that we will every fully stop it (dairy). We have just started using these animals after all…" (P2; F1-312)
			Dairy is normal	Works on social support and social norms, which can act as consonant cognitions against dissonance and help placate guilt by social reassurance	"(Dairy is) pretty Dutch also, I think that we are a real dairy country." (P14; F3-189) "But we do this already for thousands of years, I mean they (cows) are domesticated for our consumption." (P17; F3-237)
			Dairy is nice	Emphasizes gustation and that dairy is simply too delicious to avoid	"I love cheese so much, yogurt, and other dairy products." (P5; F1-102) "I also just like the taste of a grilled cheese sandwich in the morning." (P12; F2-531) → total of 32(!) quotes on 'dairy is tasty' across the data set
			Dairy is necessary	Dairy is nutritionally essential for optimal well-being, thus abdicating the individual from responsibility for harming animals	"I associate (dairy) with always with sports (..) and I also still keep thinking about the idea that dairy makes you strong." (P5; F1-122) "Protein" (P5; F1-114); "Calcium" (P1; F1-121) "Good for the body." (P4; F1-112)

Appendix D

Focus Group Discussion Guide – June 2022 (90min)

Moderators beginnen de sessie en introduceren zichzelf
(Focus group 1 & 2: Cor van der Weelen & Sarah Kunze; Focus group 3: Sarah Kunze)
Vooraf, welkom & dank jullie allemaal voor het komen!

Short introduction about the project (10min)
Goedemiddag! Wij zijn een groep onderzoekers van WUR die geïnteresseerd zijn in jouw visie op huidige voedselsystemen & dierlijke eiwitten. We hebben je hier uitgenodigd omdat we je mening willen horen over het voedsel dat je eet en waar het vandaan komt. De focus van dit project ligt op Nederlandse WUR-studenten in de leeftijd van ongeveer 18 tot 26 jaar. Deze sessie wordt op drie verschillende momenten georganiseerd met studenten met verschillende studieachtergronden uit heel WUR. Even als reminder: de sessie wordt opgenomen, de reden waarom we dit doen is omdat we de sessie gemakkelijk kunnen transcriberen en de inzichten kunnen gebruiken die we uit deze discussie krijgen, maar de gegevens zullen volledig geanonimiseerd worden.

Regels:
- De sessie is open en interactief.
- Ieders mening is belangrijk, dus aarzel niet om je mening, vragen, twijfels en eerste gedachten te geven.
- We zijn vooral geïnteresseerd in jullie interactie met elkaar, dus voel je vrij om je gedachten op elk moment te delen.
- Er is geen goed of fout antwoord en we luisteren zonder oordeel.
- Het is oké om niet te praten over een bepaald onderwerp waar je je niet prettig bij voelt.
- Help de privacy van anderen te beschermen door geen details buiten de groep te bespreken.
- De sessie wordt georganiseerd in 3 rondes en zal 1,5 uur duren. (evt. uitloop?)
- Het doel is niet om een consensus te bereiken, maar om een discussie te voeren.

→ start recording

<u>First round of discussion</u>: getting to know each other (10-15 min)
In deze eerste ronde willen we een meer open sfeer creëren waar iedereen aan het woord kan komen en van gedachten uit kan wisselen over de onderwerpen waar we vragen over stellen.

1. Inleiding
Doel: De achtergrond en het leven van deelnemers beter leren kennen, zodat ze elkaar kennen en goed met elkaar kunnen omgaan
Achtergrond
- Naam
- Wat ontbijt je de meeste dagen?

Gevoel voor plaats en gemeenschap
- Hoe lang woon je in Wageningen?
- Welke factoren hebben ervoor gezorgd dat je voor Wageningen University hebt gekozen?

2. Algemene perceptie van voedselproducten/productie
Doel: De connectie van de persoon met voedselproducten en voedselproductie achterhalen.
Heb je er ooit over nagedacht waar je eten vandaan komt?
Als je iets zou kunnen veranderen wat zou dat zijn?

<u>Second round of discussion</u>: what do you think about animal protein (30min)
3. Eetgewoonten, eetcultuur
Welke dierlijke producten eet je in het dagelijks leven?
<u>Is er een verschil tussen wat je voor geschoteld krijgt & wat je zelf koopt?</u>
En welke dierlijke producten zou jij in bijzondere gevallen eten, zelf kopen/ bestellen? (Bijvoorbeeld uit beleefdheid, nieuwsgierigheid of noodzaak (je sterft van de honger))

4. Oorsprong, belangrijke items en organiseren
Wat zijn jouw associaties met het eten van zuivel? (Vrije associatie van gedachten en gevoelens)

5. Kennis van houden en doden, ideaal
Wat associeer je met de productie van zuivel? (Vrije associatie van gedachten en gevoelens)
Waar heb je je kennis vandaan?
Hoe komt het dat je kennis beperkt is? Vind je dat je meer zou moeten weten? Wil je meer weten?)
Zou je het anders willen veranderen in de zuivelindustrie, zo ja, wat en hoe?
(Hoe zou jouw ideaalbeeld eruitzien? En vind je dat een realistisch ideaal?)

6. Verbinden, verborgenheid onder ogen zien, ambivalentie
Hoe voelt dat/wat denk je (en hoe ga je daarmee om)?
Zijn er dingen waar je liever niet aan denkt?

7. Onderwerpen, consument/burger, kantelpunt(en)
Welke onderwerpen beïnvloeden je keuze (wel of geen zuivel eten (beide!)) het meest? En hoe?
Eerst vrije associatie, dan - 'sommige mensen vinden ... belangrijk, anderen niet, waar ben je?'

- eigen gezondheid
- milieu-impact (regenwouden, CO2/fijnstofafvoer, water, landschap)
- dierenwelzijn (gezondheid/welzijn, productiesysteem, houden/doden)
- prijs
- levensonderhoud boer, vergunning om te produceren
- wereldvoedselvoorziening
- smaak, genieten, luxe, het gevoel dat zuivel eten geeft
- gemak, beperkende factoren (fysiek, gevoel van keuzevrijheid)
- gewoonte
- sociale context/ druk vanuit je omgeving, cultuur, religie
- natuurlijkheid
- noodzaak, aan-/afwezigheid van alternatieven, vertrouwen in alternatieven
- diersoorten (intelligentie, verwantschap, relationele/emotionele waarde)
- bewustzijn, trigger (er werd net iets op gewezen, bijvoorbeeld video gezien of in werkelijkheid gezien)

Kun je situaties bedenken die je huidige eetpatroon zouden veranderen?
Wat zijn voor jou de doorslaggevende punten; het (de) kantelpunt(en)? (Wat zijn de overwegingen, wat sluit aan op wat?)
Wat houd je (mogelijk) tegen om te veranderen?

<u>Third round of discussion</u>: **further associations** (20-25min)

a. <u>Gedachtenexperiment</u>: (afhankelijk van de uitkomsten bij vraag 5)
   Als je een melkboer*in was, welke stappen zou je dan moeten nemen om een glas melk te krijgen?
b. Advertentiestimulans: check Jumbo; Wat vind je van dit pakket?
c. Wat vind jij van kweekmelk?

Na een hele tijd gepraat te hebben over dierlijke eiwitten: welke gedachten/ gevoelens/ ideeën komen er bij je op?
Tot slot, is er uit de hele sessie nog iets anders waar je een gedachte of opmerking over wil delen?

Wrap up. (5-10min)
Dit is het einde, iedereen bedankt voor het meedoen. De gegevens die we in deze sessie hebben verzameld, worden gebruikt om kennis te vergroten voor toekomstig beleid van ons toekomstige voedsel systeem.
We hebben een klein cadeautje voor iedereen die heeft meegedaan, je ontvangt het binnen een paar dagen in je post. Nogmaals bedankt en een fijne avond.
Ten slotte, nadat we de opname hebben stopgezet: je bent van harte welkom om nog wat langer over het onderwerp te blijven praten. Het kan triggerend zijn, dus we willen je de ruimte geven om vragen te stellen etc.
Afhankelijk van wat je op de toestemming hebt ingevuld, word je geïnformeerd over de uitkomsten van dit onderzoek en/of gecontacteerd voor eventuele vervolgvragen.