FEDERAL UNIVERSITY OF RIO GRANDE DO SUL

BUSINESS SCHOOL

POSTGRADUATE PROGRAMME IN MANAGEMENT

LEVEL PHD

DOCTORAL DISSERTATION

CYNTHIA MIKAELA CHEMELLO FAVIERO LOPES

NUDGING THE CONSUMPTION OF ALTERNATIVE PROTEINS IN THE CONTEXT OF CIRCULAR ECONOMY - A QUALITATIVE ASSESSMENT

Porto Alegre

2022

CYNTHIA MIKAELA CHEMELLO FAVIERO LOPES

NUDGING THE CONSUMPTION OF ALTERNATIVE PROTEINS IN THE CONTEXT OF CIRCULAR ECONOMY - A QUALITATIVE ASSESSMENT

PhD dissertation presented to the Postgraduate Program in Management of the Federal University of Rio Grande do Sul, as a partial requirement to obtain the PhD title in Business Administration.
Supervisor: Marcia Dutra de Barcellos

Tese de Doutorado apresentada ao Programa de Pós-Graduação em Administração da Universidade Federal do Rio Grande do Sul como requisito parcial à obtenção do títul de Doutora em Administração.
Orientadora: Profa. Dra. Marcia Dutra de Barcellos

Porto Alegre
2022

Cynthia Mikaela Chemello Faviero Lopes

NUDGING THE CONSUMPTION OF ALTERNATIVE PROTEINS IN THE CONTEXT OF CIRCULAR ECONOMY - A QUALITATIVE ASSESSMENT

APPROVED ON_____

EXAMINATION BOARD

_____

Prof. Phd. Marcia Dutra de Barcellos – Advisor

Business Graduate Program – UFRGS (Brazil)

_____

Prof. Phd. Daniela Callegaro de Menezes

Business Graduate Program – UFRGS (Brazil)

_____

Prof. Phd. Marlon Dalmoro

Business Graduate Program – Univates (Brazil)

_____

Prof. Phd. Luciana Vieira

Business Graduate Program – FGV (Brazil)

ACKNOWLEDGES

First and foremost, I thank God for giving me strength, determination, and clarity on my path. I'm so grateful for all the blessings and for every accomplishment.

To my mother, Valeria Faviero, who is my family, for always being my strength when I was weak, for always being so demanding and hard on me: now I know you always wanted the best for me and was afraid that I didn't get there (here!) otherwise. You always encouraged me to want more challenges and to give my best in every single thing I would put my hands on, putting love in everything I'd do (today I can understand and thank you for this). Thank you for teaching me to dream, for having been so strong in building my solid values and education. Absolutely NOTHING of this would be possible, nor would have any sense without you, Mom. You are my everything. I love you too much.

To my grandmother (*in memoriam*), that always will be my inspiration. I only wish that someday, wherever you are, you can feel about me the same way I feel about you: total and absolute pride. I will always, always love you. Not a day goes by without my heart missing you, wishing to hear your voice one more time, but I know that wherever you are you feel my love.

To my love, Jonas Venturini, thank you for all the encouragement and support through all this journey. Thank you for believing in me and holding my hand through difficult times. May we always have achievements together, helping and loving each other, being able to enjoy the ride, not only wishing to arrive. I love you very much!

To my boss and friend, Guto Rocha, that even when I had no clue of how I would be able to finish this research, never once had doubted that I would get to the end. Thank you for always having friendly advice on whatever subject I needed and for the many opportunities you gave me. To my dear colleague and friend Anderson Tomaszewski for being so kind in the moments I needed the most, for the patience and constant availability to help.

I thank all my friends for their patience with my absences, for understanding my moment and for always being with me when I need it most. Thank you for making my leisure time so funny and memorable. I can say that I am surrounded by special

and true people, I am very lucky to have you all by my side. I also thank my beloved pets, Frida, Fritz, Fendi and Dodô, who are my endless source of love and comfort.

To my dear Professor Marcia Barcellos, I can't even begin to thank you! Without you, I wouldn't even have finished my master's. Thank you for always believing in me and for making this whole journey as light as it could possibly be. It was an honour working with you these past years. Thank you for your understanding, for the many times you understood my personal challenges and helped me get through them with patience and conversations that have enriched not only my work, but me as a person. I can't translate into words how much I'm thankful to you!

I would like to thank David McBeya for sharing with us the scripts that he and his colleagues have used to develop a research that has very much inspired us in the development of this dissertation. David, thank you very much for your trust. Hope we can somehow collaborate with one another in other opportunities!

Finally, I thank the members of the board, who were very important in this journey, and are great professors and researchers. I thank UFRGS and PPGA for the opportunity granted and for the great academic formation that I received. I also thank Valeria and Amanda, scientific initiation research fellows from CNPQ of which this thesis is a part, for their support at different times and for their willingness to contribute to this research.

In these pages, there is a little of what each of you taught me, the dedication and the care you gave me. Thank you!

"Through working hard, old chap, I hope to make something good one day. I haven’t got it yet, but I’m hunting it and fighting for it. I want something serious, something fresh — something with soul in it! Onward, onward."

- Vincent Van Gogh (letter 298)

ABSTRACT

The agrifood system and the production and consumption models are evaluated as one of the most polluting and harmful to the environment and that needs to have its patterns revisited. Thus, smarter production and manufacturing strategies, which are "refuse, rethink and reduce", from the Circular Economy models, are being applied to the food system. There is an ongoing discussion in society on how we can make food consumption more sustainable - and one of the ways to achieve that is to reduce meat consumption and to replace it with alternative protein (AP) sources. When it comes to the replacement of meat by alternative proteins, which is one of the many options for a more sustainable diet, consumers can already choose among a great amount, such as pulses, algae, insects, plant-based meat alternatives, and cultured meat. These are generally considered to be healthier and more environmentally friendly than traditional animal-derived proteins. Despite that, previous studies showed that consumer acceptance is still very low, both for plant-based, cultured meat or insect-based protein. In order to explore and better understand this phenomenon, this PhD dissertation had as a main goal **to understand the role of framing of information and social norms as nudges to encourage the consumption of alternative proteins in the context of a circular economy, as well as the attributes that may influence on such consumption in different lifecourse moments.** The understanding of which interventions could contribute to increasing such acceptance can enrich the field. This research had a qualitative approach, being the exploratory type. The data were collected through 5 focal groups and participatory observations, and analysed through content analysis. As evidence resulting from this study, the following points are highlighted: (1) nudges are important to promote AP products, mainly breaking the existing automaticity in the consumption of meat, which is seen as something natural, which consumers comment not to reflect on to perform; (2) it is necessary to adjust the communication of AP products, seeking not to communicate as products that reproduce the attributes of meat, but as alternative forms of protein ingestion; (3) despite the many barriers encountered regarding the consumption of APs, there are also drivers that can be further explored by the industry, such as the current price of animal, and taste x price of APs. These aspects are gates to open space for APs; (4) among the existing APs, lab meat generated greater interest and fewer barriers to be faced.

Key words: Alternative proteins; Consumption of alternative proteins; Nudges;

Lifecourse; Food Related Lifestyle.

RESUMO

O sistema agroalimentar e os modelos de produção e consumo são considerados como um dos mais poluentes e nocivos ao meio ambiente e que precisa ter seus padrões revisitados. Assim, estratégias de produção e consumo mais inteligentes, que são “recusar, repensar e reduzir”, a partir dos modelos da Economia Circular, estão sendo aplicadas ao sistema alimentar. Há uma discussão em curso na sociedade sobre como podemos tornar o consumo alimentar mais sustentável – e uma das formas de conseguir isso é reduzir o consumo de carne e substituí-la por fontes alternativas de proteína (AP). Quando se trata da substituição da carne por proteínas alternativas, que é uma das muitas opções para uma alimentação mais sustentável, o consumidor já pode escolher entre uma grande quantidade, como leguminosas, algas, insetos, alternativas à base de plantas e carnes cultivadas em laboratório. Estes são geralmente considerados mais saudáveis e ecológicos do que as proteínas tradicionais derivadas de animais. Apesar disso, estudos anteriores mostraram que a aceitação do consumidor ainda é muito baixa, tanto para carnes vegetais, carnes cultivadas ou proteínas à base de insetos. De forma a explorar e compreender melhor este fenómeno, esta tese de doutoramento teve como principal objetivo **compreender o papel do enquadramento da informação e das normas sociais como estímulos para incentivar o consumo de proteínas alternativas no contexto de uma economia circular, bem como a atributos que podem influenciar esse consumo em diferentes momentos da vida.** A compreensão de quais intervenções poderiam contribuir para aumentar essa aceitação pode enriquecer o campo. Esta pesquisa teve uma abordagem qualitativa, sendo do tipo exploratória. Os dados foram coletados por meio de 5 grupos focais e observações participantes, e analisados por meio da análise de conteúdo. Como evidência resultante deste estudo, destacam-se os seguintes pontos: (1) os nudges são importantes para promover os produtos AP, principalmente quebrando a automaticidade existente no consumo de carne, que é visto como algo natural, que os consumidores comentam não refletir sobre executar; (2) é necessário adequar a comunicação dos produtos AP, buscando não comunicar os produtos que reproduzem os atributos da carne, mas as formas alternativas de ingestão proteica; (3) apesar das muitas barreiras encontradas em relação ao consumo de APs, também existem direcionadores que podem ser mais explorados pela indústria, como o preço atual do animal e sabor x preço das APs. Esses aspectos são portas para abrir espaço para APs; (4) entre os APs existentes, a carne de laboratório gerou maior interesse e menos barreiras a serem enfrentadas.

Palavras-chave: Proteínas alternativas; Consumo de proteínas alternativas;

Nudges; Lifecourse; Lifestyle relacionado a comida.

LIST OF FIGURES

Figure 1 - Food patterns changes in the last 50 years……. 14

Figure 2 - Heineken's Instagram post and retreat, respectively……. 17

Figure 3 - The 9R framework hierarchy……. 27

Figure 4 - Theoretical framework of research……. 55

Figure 5 - Theoretical framework of research and research propositions…… 56

Figure 6 - Theoretical framework of research X Focus Groups Designed…… 63

Figure 7 - Research design……... 65

Figure 8 - Cloud word about "plant based meat": word association exercise, results from all focal groups……... 68

Figure 9 - Cloud word about "plant based meat": image association exercise, results from all focal groups…… 69

Figure 10 - Cloud word about "lab meat": word association exercise, results from all focal groups…… 70

Figure 11 - Cloud word about "lab meat": image association exercise, results from all focal groups …… 71

LIST OF TABLES

Table 1 - CE Definitions……. 24

Table 2 - Promises of AP and their main argument……. 30

Table 3 - Main drivers and barriers of consumption of CE solutions……. 34

Table 4 - Overview of main findings for drivers and interventions of AP products…….. 35

Table 5 - Summary of drivers and barriers to use meat substitutes more frequently…….. 38

Table 6 - Types of segments generated by Food Related Lifestyle approach……. 42

Table 7 - Cognitive Systems…….. 47

Table 8 - Main nudge tools……. 50

Table 9 - Propositions of this dissertation……. 55

Table 10 - Information on each focus group……. 62

Table 11 - Summarised findings of Single Adults group……. 83

Table 12 - Summarised findings of DINKs group……. 87

Table 13 - Summarised findings of New Parents group……. 91

Table 14 - Summarised findings of Retirees group……. 94

Table 15 - Summarised findings of Amateur Athletes group……... 98

Table 16 - Main drivers and barriers X Identified group…….. 107

Table 17 - Summary of drivers and barriers……. 108

Table 18 - Focal groups X food related lifestyle and meat attachment……. 111

Table 19 - Contributions and differences of literature and field findings……. 116

Table 20 - Propositions and results…….. 119

SUMMARY

1	**Introduction……**	**12**
2	**Goals……**	**22**
3	**Theoretical Background…….**	**23**
3.1	**Circular Economy and Food Circular Economy Systems…….**	**23**
3.1.1	***Alternative Protein Products*……..**	**28**
3.2	**Consumption of Alternative Proteins in the Context of Circular Economy……...**	**33**
3.2.1	***Attributes that may Influence on Consumption*…….**	**39**
3.3	**Choice Architecture: Nudge Theory……**	**44**
3.3.1	***Nudge Tools: Social Norms and Framing of Information*……**	**49**
4	**Methodological Procedures……...**	**57**
4.1	**Data Collection Technique……...**	**58**
4.2	**Study Unit……**	**61**
4.3	**Data Analysis Technique……..**	**63**
4.4	**Research Design……**	**65**
5	**Results and Discussion……**	**67**
5.1	**Attributes that may influence APs consumption: the role of health issues, environmental concerns, and animal welfare……**	**72**
5.1.1	***Health issues*……...**	**72**
5.1.2	***Environmental concerns*……..**	**75**
5.1.3	***Animal welfare*……...**	**77**
5.2	**Lifecourse patterns and food related lifestyle: is there a connection?……**	**79**
5.2.1	***Single Adults*……..**	**80**
5.2.2	***DINKs*……...**	**83**
5.2.3	***New Parents*……...**	**87**

5.2.4 ***Retirees*** **…… 92**

5.2.5 ***Amateur Athletes*** **…….. 95**

5.3 The role of nudges…… 100

5.3.1 ***Framing of information*** **……... 100**

5.3.2 ***Social norms*** **…….. 103**

6 Final Considerations…… 106

6.1 Research goals answered…… 106

6.2 Theoretical contributions……. 115

6.3 Managemental contributions…….. 120

6.4 Study limitations……. 121

6.5 Future studies indication…… 122

References…….. 123

1 Introduction

Environmental problems, such as biodiversity loss, water crisis, air and soil pollution, resource depletion, and excessive land use are increasingly harming earth's life-support systems (Geissdoerfer *et al*., 2017; Meadows *et al.,* 2004). There's been a growing concern about resource overconsumption, environmental degradation, and social inequity, aspects that are being viewed as some of the many problems that result from resource consumption (Murray, Skene & Haynes, 2015; Sauvé, Bernard & Sloan, 2016). For that reason, there's a growing pressure for a transition toward a more sustainable society, economy and sociotechnical system (Adams *et al*., 2016; Markard *et al*., 2012; Meadows *et al*., 2004; Seiffert & Loch, 2005; WBCSD, 2010), a system that contributes to the attainment of sustainable development - development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCDE, 1987).

Among the various production activities that have been evaluated as the most polluting, one of the most harmful to the environment and that needs to have their production and consumption models revisited, is the agrifood system. According to Osei-Owusu, Towa & Thomsen (2022, p.01) “the global food system accounts for 17–30% of anthropogenic greenhouse gas emissions (Crippa et al., 2021), 70% of freshwater use (Mekonnen & Hoekstra, 2014) and 38% of the earth's ice-free land area (Foley *et al*., 2005)”. Specifically, livestock dominates these human-induced emissions from the food system, being responsible for more than half (56–58%) of the mentioned global greenhouses gas emissions (Van Zanten, Van Ittersum & De Boer, 2019; Gerber et al., 2013; Osei-Owusu, Towa & Thomsen, 2022).

The classic approach of the Linear Economy (LE), with the principles of “take-use-dispose”, was successful until acknowledgement that the resources are limited, and now it needs to be replaced by a different approach (Ellen MacArthur Foundation, 2013; Ghisellini, Cialani & Ulgiati, 2016; Gregson *et al*., 2015; Kumar *et al*., 2019). It is necessary for a system that contributes to the attainment of sustainable development - development that meets the needs of the present without

compromising the ability of future generations to meet their own needs (WCDE, 1987).

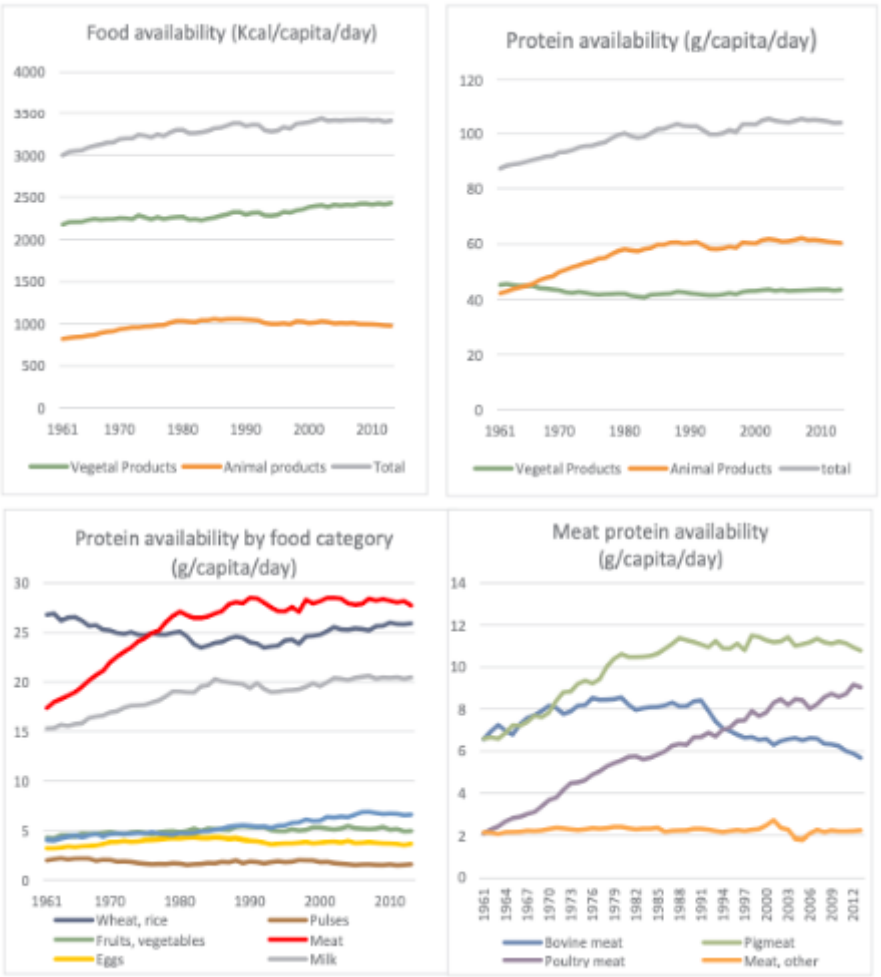
Many scholars point the Circular Economy (CE) model as an alternative that has the potential to pave the way for eliminating environmental waste in manufacturing and regaining used materials into the material flow by encouraging the use of renewable energy sources and new manufacturing methods to achieve sustainability (Ciani, Gambardella & Pociovalisteanu, 2016; Kumar *et al.*, 2019; Yuan, Bi, & Moriguichi, 2006). For that reason, some authors discuss the CE as being the path to an effective sustainable development (Geissdoerfer *et al*., 2017; Prieto-Sandoval *et al.*, 2018).

We are specially interested in the "smarter product use and manufacture" strategies, which are "refuse, rethink and reduce", and this is where we place the circular economy into the food system. Circular economy regarding the food system "implies reducing the amount of waste generated in the food system, re-use of food, utilisation of by-products and food waste, nutrient recycling, and changes in diet toward more diverse and more efficient food patterns" (Jurgilevich et al., 2016, p.02).

It's important to notice that the consumption of animal meat has significantly increased in the last 50 years, but in the 1960's the majority of the protein availability in the European Union (EU) came from plant-based products (26 g/capita/day), while meat represented 17 g/capita/day. Interestingly, protein from animal products has sharply increased and nowadays represents 58% of protein availability (Bonnet, Bouamra-Mechemache, Réquillart & Treich, 2020). Figure 1, presented below, further demonstrates such changes in the food patterns.

Figure 1

Food patterns changes in the last 50 years



Source: Bonnet, Bouamra-Mechemache, Réquillart & Treich, 2020, p. 101847

Scholars and specialists keep emphasizing over the years that the current global food system is not only broken but unsustainable (Harwatt, 2019; Rosenzweig et al., 2020), based on such numbers as the global production of meat and dairy, which is expected to increase by 73% and 58%, respectively, in 2050 compared to 2011 (McLeod, 2011; Tilman and Clark, 2014). Also, it is known that the rise in demand for animal-sourced foods is another challenge of meeting global climate and environmental targets (Crippa et al., 2021; Herrero et al., 2015; IPCC, 2019). Additionally, Calrsson, Kataria and Lampi (2022) affirm that "meat production and consumption cause several negative external effects on the environment and long-run negative impacts (internalities) on human health".

Extensive research has shown over and over that there is an urgent need for science-based monitoring, controlling, and mitigating the environmental impacts of the global food systems for effective climate change mitigation, natural resource and biodiversity conservation (Galli et al., 2015; Smith et al., 2013). There is an ongoing discussion in society on how we can make food consumption more sustainable - and one of the ways to achieve that is, according to the literature, to reduce meat consumption (Carlsson, Kataria & Lampi, 2022) and to replace it with alternative protein (AP) sources (Onwezen, Bouwman, Reinders, Dagevos, 2020).

The latest Circularity Gap Report (2021) shows that the impact of eating a primarily plant-based diet could slash global emissions by 1.32 billion tonnes of carbon dioxide equivalents, among several other statistics that evidences it. It's getting clearer that the current animal agriculture doesn't play a role in sustainable living (CGR, 2021).

When it comes to the replacement of meat by alternative proteins, which is one of the many options for a more sustainable diet, consumers can already choose among a great amount, such as pulses, algae, insects, plant-based meat alternatives, and cultured meat. These are generally considered to be healthier and more environmentally friendly than traditional animal-derived proteins (Aiking, 2011).

It's known that consumers have a major role in the transition towards more sustainable systems, and even more major when it comes to the field of alternative proteins. The literature points out that the shift towards sustainable systems depends on consumer's acceptance and participation. However, their willingness to participate in this change in the agrifood system, especially when it comes to discussions such as protein sources, it's an even bigger gap (Onwezen *et al.*, 2020). This requires more knowledge about attitudes and beliefs of consumers.

However, are consumers worried about this? Better yet, do they have knowledge about the environmental impact of their food decisions - especially in the Brazilian context? According to McBey *et al.* (2019) it has been suggested that there's already initiatives from countries (e.g. Scotland, England) to inform consumers about the importance of a dietary change, but there's also research suggesting that such change is unlikely to be brought through the use of information

campaigns alone. That is because "they do not present their message in a way which is easily relatable to people's lived experience" (McBey *et al.,* 2019).

So, how can we better communicate with consumers, in a more effective way? This also requires more knowledge about attitudes and beliefs of consumers (McBey *et al.*, 2019). What factors influence their food choices? Could the provision of information on the environmental impact of meat consumption potentially make them more likely to consume AP products, when associated with which factors?

Before we continue, it is important to further contextualise that this research was developed in Brazil, a country where agribusiness represents 27% of the GDP, with livestock being the second in the ranking of Brazilian agricultural production (CNA, 2020). Additionally, 48% of Brazilian exports in 2020 were agribusiness products. There is also a strong contribution from agribusiness to the performance of the Brazilian economy. Also, Brazil is the second largest producer of meat in the world, being the largest exporter.

Differently from Scotland and England, here in Brazil we don't see many campaigns encouraging the reduction of meat consumption nor do we have the provision of information on this subject in a programmatic way by the government. On the contrary. For example, we have currently the advertising campaign “Agro is tech, agro is pop, agro is everything” of Rede Globo de Televisão (which has been the open TV market leader since the 1970s, with 98.4% coverage of the national territory and 123 affiliated stations) as propaganda on agribusiness in Brazil. This specific campaign had its beginning in jun of 2016, and is still being veiculated nowadays.

Recently, Heineken became the target of criticism after the publication of an advertisement on social networks where in the post, the brand showed support for World Meat Free Day and invited consumers to eat more greens. “On this World Meat Free Day, how about eating and drinking greener? Beer made with water, malt, hops and nothing else. It’s the perfect option for today’s follow-up” (our translation).

The repercussions were so huge and so negative, that Heineken had to retreat, publishing a post on Instagram in which it said it respected all choices. “For the avoidance of doubt, besides water, malt and hops, do you know our secret ingredient? Respect for all tastes" (our translation). Despite that, the damage couldn't

be repaired so fast. The negative response from consumers has become one of the most talked about topics on the internet in Brazil.

"Heineken shows total disrespect and disregard for Brazilian livestock, which is a source of pride for being the first commercial livestock in the world". "We should propose 'Barbecue without Heineken' ". These were some of the comments that resulted from that campaign.

Figure 2

Heineken's Instagram post and retreat, respectively

Source: (2020)

It is known that Brazil is a country of continental proportions and that there are significant regional differences. In the case of the research that was developed and presented here, it is important to bring certain regional aspects to the discussion. First, this research has been developed in the very south of Brazil, in the state of Rio Grande do Sul. This region has a particular culture which is very much associated with meat consumption, and their main dish is 'churrasco' (barbecue). People that are born in this region are called "Gaúchos", and that is almost a "subculture" in the Brazilian context. “Of all the regional cultures in Brazil, I have the impression that the gaucho is the one with the greatest identity of principles, a general normality within the good, an awareness of culture, a psychological equality that makes it strongly united”. This is a phrase by Mário de Andrade, a brazilian anthropologist from São

Paulo. Regarding meat consumption, according to IBGE (2020), the consumption in Rio Grande do Sul is 10 kg over the national average: the consumption is 35.7 kilos in the South, while the national average is 25.4 kilos.

Such contextualization may clarify to the reader the complexity of the situation in Brazil, when it comes to the discussion of alternative protein products, and sustainable food consumption. That context being given, we shall ask again: are consumers worried about this? Better yet, do they have knowledge about the environmental impact of their food decisions - especially in the Brazilian context? If they did, would it influence their consumption decisions?

Additionally, as McBey *et al.* (2019, p. 01) proposed, "there are numerous ways of moving beyond simply informing consumers of the benefits of eating a diet with less meat and more plant-based foods". So, we further question: what factors influence consumers' food choices? Do aspects related to their 'moment of life' interfere in this decision? What are the consumption drivers that could make these consumers more willing to change? Do environmental and animal welfare issues really interfere with the consumption of food products? Are there interventions that can be applied to support this process, helping people reflect on their decision and opt for more sustainable alternatives? To answer these questions, in this dissertation we were interested in understanding the attributes that may influence consumers in changing their food patterns towards a more sustainable one and also appropriate intervention strategies, such as nudges.

To nudge means to carefully guide people’s behavior in a desirable direction without restricting their choices. It's about arranging the choice situation in a way that makes the desirable outcome the easiest or the most attractive option. Mont, Lehner and Heiskanen (2014, p.07) defined that "a relatively new way to influence behavior in a sustainable direction without changing values of people is nudging. Nudging can be used to help people make choices that are better for the environment or their health".

To actually understand the depth of what the nudge proposition is, it is important to have in mind how complex the consumers' decision making process is. Also, we should take under consideration that the rational process of the decision making is limited. Simon (1959) was one of the first scholars to enlight that. Some

aspects that can contribute to such limited rationality are the speed of mental processes and information that one has access to at the time of the decision, personal values and motivation. Combining this with limited rationality, other scholars point out that individuals make choices inconsistent with standard models. Individuals have several non-rational processes that contribute and, sometimes, even determine the decision making process.

Psychological biases (Tversky & Kahneman, 1979; Vecchio & Cavallo, 2019) are an important part of the non-rational process, and were first developed to facilitate the decision-making process daily, but end up guiding to bad decisions. Choice experiments have been carried out and showed that statistically better choices are left aside due to choice heuristics induction, which have the aim to facilitate the decision making process, but generally lead us to biases and blunders (Thaler & Sustein, 2008; Tversky & Kahneman, 1979).

This is where the nudge approach enters. In recent years, many stakeholders have hopefully embraced the nudge approach based on behavioral economic principles that alter choice environments to improve selections (Cohen, Lynch & Robertson, 2016; Sousa Lourenco, Ciriolo, Almeida & Troussard, 2016; Sunstein, 2016; Vecchio and Cavallo, 2019). Knowledge about nudging opens up the possibility to suggest new types of policy tools and measures that can contribute to sustainable consumption (Jung & Mellers, 2016; Mont, Lehner & Heiskanen, 2014; Sustein, 2016; Thaler & Sustein, 2008).

When we started this research, we aimed to develop an experimental study to test the effectiveness of nudges on the consumption of alternative protein products. We started with a literature review to analyse whether nudging interventions were being used in studies of consumption of alternative proteins, and what were the results that were being obtained - and where we could further contribute. However, we only found 5 studies that addressed the subject.

The study of McBey, Watts and Johnstone (2019) developed a qualitative study on Scottish consumers aiming to further understand approaches that could be used to go beyond simply informing the public of the issues of the current high levels of meat consumption in that context, considering three approaches: nudging, the formulation of new meat-alternative products, and targeting people in a specific

stages of the lifecourse. This study was very important for the development of the current research, and further information was provided during the methodological prodecures explanation.

Zhou et al. (2019) also developed a quasi-experimental study to test the nudging strategy 'dish of the day' in promoting plant-based dishes among older consumers in Denmark, France, Italy and the United Kingdom. As a result, they couldn't confirm that the nudging strategy was effective, because it did not influence older people's plant-based dish choice, and no statistically significant difference in dish choice was found between the control group and intervention group in the four countries tested.

A more recent study was Perez-Cueto's (2021), that performed an experiment to evaluate the effectiveness of presenting a menu with the dish-of-the-day X a menu with free choice to facilitate consumer choice towards a fully plant-based meal. As results, the nudge strategy was successful in achieving 85% of the choice, when comparing to the control group

Also, Attwood, Chesworth and Parkin (2020) worked with experiments to test the menu-based nudge strategies to encourage a shift from animal meat towards more environmentally friendly plant-based food when dining out. The interventions used showed no main effect of the intervention in the two randomised studies performed, but the authors understood that these results may have been influenced because dish choices were purely hypothetical, and point that further research is needed.

In addition to that, the last study we found was from Hartmann and Siegrist (2017), and their work summarised studies about consumers willingness to switch to alternative proteins, and pointed out that there was **only one** experimental study that examined how meat consumption could be reduced through a nudging intervention. Thus, deepening our search on the subject, we understood that our contribution would be much more enriching to the field if we further explored with qualitative instruments the consumer attitudes towards alternative protein products.

Previous studies showed that consumer acceptance is still very low, both for plant-based, cultured meat or insect-based protein (Onwezen et al., 2020, La Barbera et al., 2019; Graça et al., 2019; Neff et al., 2018; Marinova & Bogueva,

2019), so understanding which interventions could contribute to increasing such acceptance will enrich the field, highlighting the relevance of this research. Thus, this study aimed to answer the following question: **what is the role of nudges, lifecourse and information provisioning to encourage sustainable food choices regarding the consumption of alternative protein products?**

As mentioned before, by developing such a study, we intend to generate insights so that strategies can be developed in order for the consumer to better accept alternative proteins and consider these products into their diet. We aimed to provide several important contributions, such as further studying the consumer in the CE context, which has been pointed by authors as an important gap; developing a deeper understanding of the potential that nudge theory in qualitative studies; and providing to the sector strategies that could be used in order to engage the consumers towards sustainable food choices towards APs. Also, it's important to mention that this doctoral dissertation is part of a research project intitulated as "Identity, conflicts, and the transition to sustainable food systems"[1], a CNPQ[2] project, in which the author participates as one of the researchers.

This dissertation was structured as follows. In the next section, the goals of the research were exposed. After, the theoretical background (section 3) were presented. Next, the methodological procedures that guided the research were explained (section 4), followed by presentation of the results and discussion (section 5) and final considerations (section 6).

[1] Universal CNPq/MCTI/FNDCT Nº 18/2021 Processo 409713/2021-0

[2] CNPQ (Conselho Nacional de Desenvolvimento Científico e Tecnológico): National Council for Scientific and Technological Development is an entity linked to the Ministry of Science, Technology and Innovation to encourage research in Brazil

2 Goals

The following goals are proposed to answer the main research question.

2.1 Main Goal

To understand the role of framing of information and social norms as nudges to encourage the consumption of alternative proteins in the context of a circular economy, as well as the attributes that may influence on such consumption in different lifecourse moments.

2.2 Specific Goals

a. To understand the drivers and barriers of the consumption of AP products;
b. To explore whether health issues, environmental concerns, and animal welfare dimensions of meat consumption influence on intention to change food patterns;
c. To identify lifecourse patterns on consumers' purchase intentions regarding alternative protein products and to explore whether food related lifestyle can be associated to such;
d. To consider whether nudges such as framing of information and social norms can encourage the consumption of alternative proteins.

3 Theoretical Background

To support the goals of this research, the theoretical background was divided into three sections. First (section 3.1), we further explored circular economy concepts, its appliance to the food sector and present the subject of alternative proteins in such context; then we discussed consumption in Circular Economy, with special interest in alternative proteins, and its drivers and barriers. Still on this section (3.2), we brought light into the matters that may influence consumption, such as lifestyle, lifecourse, environmental and health aspects. Finally, we presented the theoretical lens chosen to develop this study, the Nudge Theory and the choice architecture structure (section 3.3). During the theoretical discussions, the research propositions were presented.

3.1 Circular Economy and Food Circular Economy Systems

The Linear Economy (LE) model (take, make, dispose) began during the industrial revolution, in the 17th century, with the exploitative scientific and technological innovations which didn't considered the limits of the environmental and the long-term damage they were causing (Geissdoerfer *et al*., 2017; Prieto-Sandoval *et al*., 2018). Societal issues such as high unemployment, poor working conditions, social vulnerability, inter and intragenerational equity, and widening inequalities (Banerjee & Duflo, 2011; Prahalad, 2004), are some of the consequences of this model.

Many scholars and practitioners (Kirchherr *et al*., 2017) have been defending that Circular Economy (CE) is an alternative that has the potential to pave the way for eliminating environmental waste in manufacturing and regaining used materials into the material flow by encouraging the use of renewable energy sources and new

manufacturing methods to achieve sustainability (Ciani, Gambardella & Pociovalisteanu, 2016; Kumar *et al.*, 2019; Yuan, Bi & Moriguichi, 2006).

In fact, such popularity among scholars and practitioners is because CE has been viewed as an actual solution, something that can be operationalized to the much-discussed concept of sustainable development (Ghisellini *et al.,* 2016; Kirchherr *et al.,* 2017; Murray *et al.,* 2015). According to Kirchherr *et al.* (2017, p.221) in the last few years "more than 100 articles were published on the topic in 2016, compared to only about 30 articles in 2014 [...] and many consultancy reports have been published on the topic recently (with consultancies attempting to signal expertise on trending topics to clients via such reports".

In this way, many studies have been trying to better understand CE. Definitions have been referring to circular business models (Bocken *et al*., 2014; Lewandowski, 2016), to the reduce, reuse and recycle (3Rs) taxonomy, and to value creation throughout the supply chain (Schenkel *et al*., 2015). Recently, a significant number of studies have focused on explaining the CE as a paradigm, due to its relationship with sustainable development (Geissdoerfer *et al.*, 2017) and the large number of concepts that define it. Some concepts are shown in Table 1, presented below.

Table 1

CE Definitions

Definitions to the CE	**Reference**
CE is a mode of economic development based on ecological circulation of natural materials, requires compliance with ecological laws and sound utilization of natural resources to achieve economic development.	Zhijun, F., and Nailing, Y. (2007)
CE represents a new economic growth model that operates in the way of resource extraction, production, consumption and regenerated resources.	Ness, D. (2008)
CE is a mode of economic development that aims to protect the environment and prevent pollution, thereby facilitating sustainable economic development.	Ma et al. (2014)
CE concept aims for circular flows of resources in the economy as opposed to the currently dominant linear flows from extraction through use to landfill disposal.	Giurco, et al. (2014)
CE advocates that economy system should be constructed on base of material and energy flow and changes linear throughput flow to round put flow of matter and energy.	Hu et al. (2011)
CE advocates that economic systems can and should operate according to the materials and energy cycling principles that sustain natural systems,	Zhu, Geng, and Lai (2011).

CE is an important way to protect the environment and resources, and to achieve sustainable development; it can transform a traditional linear growing economy, which depends on resource consumption into an economy, which relies on the development of ecological resources circulation.	Wang et al. (2014)
In a CE the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value.	European Commission, (2015)
The CE represents an attempt to conceptualise the integration of economic activity and environmental wellbeing in a sustainable way.	Murray, Skene, and Haynes (2015)
CE is defined as an economic paradigm where resources are kept in use as long as possible, with maximum value extracted from them.	Nasir et al. (2017)
CE aims to decouple prosperity from resource consumption, i.e., how can we consume goods and services and yet not depend on extraction of virgin resources and thus ensure closed loops that will prevent the eventual disposal of consumed goods in landfill sites.	Sauvé, Bernard, and Sloan (2016)
CE is designed to eliminate waste through cycles of assembly, use, disassembly and re-use, with virtually no leakages from the system in terms of disposal or even recycling, and replaces the habitual notion of a consumer, who owns things and destroys value, with that of a user.	Spring and Araujo (2017)
CE is an economic strategy that suggests innovative ways to transform the current predominantly linear system of consumption into a circular one, while achieving economic sustainability with much needed material savings.	Stahel (2016)
The central theme of the CE concept is the valuation of materials within a closed- looped system with the aim to allow for natural resource use while reducing pollution or avoiding resource constraints and sustaining economic growth.	Winans, Kendall, and Deng (2017)
CE is one where the resources coming into the economy are not allowed to become waste or lose their value. Instead, this economy would recover those resources and keep them in productive use for as long as possible.	Benton, Hazell, and Hill (2015).
CE is an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.	Kirchherr, Reike, and Hekkert (2017)
CE is a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. Second, we define sustainability as the balanced integration of economic performance, social inclusiveness, and environmental resilience, to the benefit of current and future generations.	Geissdoerfer et al. (2017, p. 766)
Mean the realization of a closed loop of materials flow in the whole economic system.” (...) “implying a closed-loop of materials, energy and waste flows.	Geng (2008, p. 232)
The central idea is to close material loops, reduce inputs, and reuse or recycle products and waste to achieve a higher quality of life through increased resource efficiency.	Peters et al. (2007, p. 5943)

Source: adapted from Vikas (2019), Kirchherr *et al.* (2017) and Prieto-Sandoval *et al.* (2018)

Based on these many concepts, **we propose our own view of the Circular Economy concept:** Circular Economy is a mode of integration of economic activity and environmental wellbeing in a sustainable way, because it is a new production and consumption model based on interconnection by reducing, reusing, and more important, **rethinking** consumption patterns.

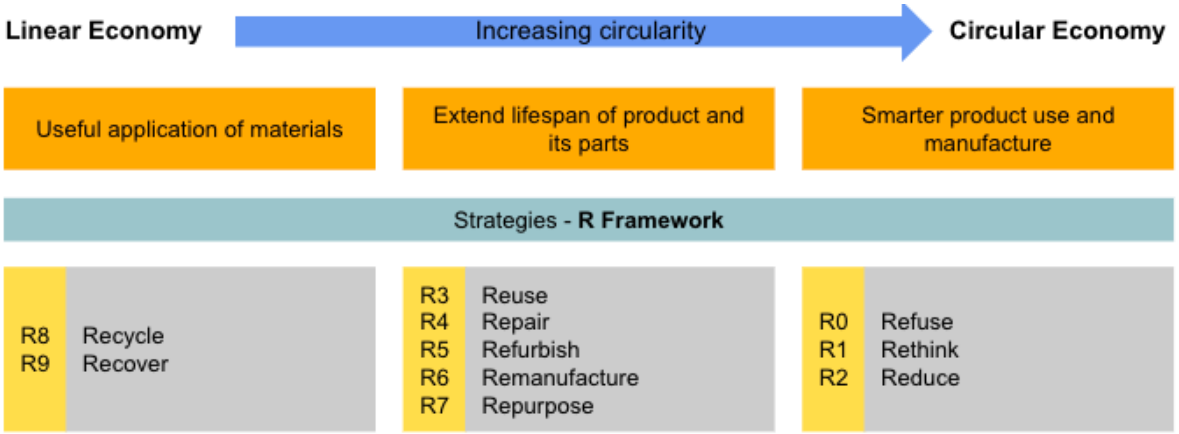
CE has been seen as a solution in moving towards a sustainable food system, and some policies are discussed for food production, consumption, and waste management (Jurgilevich et al., 2016). Thus, CE can (and should) be applied into the food system from the agriculture and agro-industrial production to the post-consumption, because food production is one of the main causes of biodiversity loss worldwide, due to the overexploitation of certain species (Amundson et al., 2015). "Food must become one of the main sectors to apply a new economic model" (Fassio & Tecco, 2019, p. 03).

Researchers (Fassio & Tecco, 2019, Jurgilevich et al., 2016) have been underlining the difficulty to deepen and verify the application of the principles of the circular economy to food, though. Inspite, the contribution of CE to the achievement of integrated sustainability objectives - and, for that, the food sector can be used in its full potential to represent a transversal vector of sustainability for the achievement of the Sustainable Development Goals, the Agenda 2030.

CE has some principles that support it, which are composed in the R framework – that has been viewed as the ‘how-to’ of CE and, because of that, as a core principle of it (King *et al*., 2006; Ghisellini et al., 2016; Kirchherr et al., 2017). Scholars have been proponing various R frameworks, such as the 3R – Reduce, Reuse, Recycle (King et al., 2006; Ghisellini et al.; PRC, 2008), the 4R – Reduce, Reuse, Recycle, Recover (European Commission, 2008), the 6Rs – Reuse, Recycle, Redesign, Remanufacture, Reduce, Recover (Winans, Kendall & Deng, 2017) or the 9Rs – Refuse, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover (van Buren et al., 2016; Potting et al., 2017). Figure 3 represents a framework proposal that demonstrates a certain hierarchy among the Rs according to their appearance in the literature.

Figure 3

The 9R framework hierarchy



Source: developed by the authors (2022), based on Kirchherr et al. (2017).

We are specially interested in the "smarter product use and manufacture" strategies, which are "refuse, rethink and reduce", and this is where we place the circular economy into the food system. Circular economy regarding the food system "implies reducing the amount of waste generated in the food system, re-use of food, utilisation of by-products and food waste, nutrient recycling, and changes in diet toward more diverse and more efficient food patterns" (Jurgilevich et al., 2016, p.02).

In such a context, when we look at the food system, especially at meat production, we see one of the most harmful sectors. Through the lens of the CE, "**reducing** meat consumption increases the efficiency of material flows within the food system by reducing the amount of energy, land and water used per calorie of food produced" (Giudice, Caferra & Morone, 2020, p. 11).

One alternative that has been encouraged is intake of more alternative protein sources to reduce or even replace meat consumption (Friel, Barosh, & Lawrence, 2014; Garnett, Mathewson, Angelides, & Borthwick, 2015). Some authors (Onwezen, Bouwman, Reinders & Dagevos, 2021) point out that to address today's and tomorrow's health and environmental challenges, a transition towards lower meat consumption levels and increased consumption of plant-based foods and other sources of protein is key. This subject is further discussed in the next section.

3.1.1 Alternative proteins

According to Sexton, Garnett and Lorimer (2019), Alternative Proteins (AP) is a term that has been recently adopted within the sector and in related writings to refer to plant-based proteins, edible insects, and ‘cellular agriculture’ (cultured meat, milk and other animal products, created either through culturing stem cells outside - in vitro - animal bodies, or through the genetic modification and fermentation of yeast cells).

The "Alternative Protein Movement", as some authors are calling, represents ‘animal-free’ alternatives, and such products have been attracting attention all over the world, as multibillion-dollar investments are being done in companies that are showing what the future of food will look like (Sexton, Garnett & Lorimer, 2019, p.3). Despite being placed as the future of food, the sector or APs is still in its infancy. The acceptance of the alternative proteins is still relatively low, especially when compared to the animal meat (Onwezen, Bouwman, Reinders & Dagevos, 2020).

"Acceptance of insects is lowest, followed by acceptance of cultured meat. Pulses and plant-based alternative proteins have the highest acceptance level" (Onwezen et al., 2020, p.03). Thus, researchers highlight that even though western consumers are actively searching for ways to limit their animal-based protein, they are still not consuming APs (Gravely & Fraser, 2018, Hartmann & Siegrist, 2017).

For that reason, the low level of acceptance, "many of these APs have been consumed more as narratives than as tangible, eat-able foodstuffs" (Sexton, Garnett & Lorimer, 2019, p.3). For instance, "there are currently no cellular agriculture products on the market, and while a number of plant-based and insect AP companies have launched products they have until very recently remained within a small number of countries and specialist retailers" (Sexton, Garnett & Lorimer, 2019, p.3). This is an argument that has relevance and other authors highlight that "the abundance of meat in supermarkets makes it hard if not impossible for sustainable alternatives to compete with" (de Bakker & Dagevos, 2012, p. 890).

It is expected to have difficulty to have a large road on such a subject, as Hoek, Luning, Weijzen, Engels, Kok and Graaf (2012, p. 662) mentioned,

"developing new food products that are attractive to consumers is a challenge. (...) Even more complex when these new foods are meant as a substitute for products that are highly appreciated, like meat". Additionally, meat substitutes are, in general, much more expensive than meat products (Apaiah, 2006).

Hoek *et al.* (2012, p. 663) brought to discussion some arguments that helps us understand the reasons to which AP products acceptance is still growing slow:

> Firstly, **these types of products are relatively new**. Soy products, such as tofu & tempeh, appeared on the Western market in the 1960s, while other meat substitutes (e.g. Tivall and Quorn) were introduced less than 25 years ago (Davies & Lightowler, 1998; McIlveen et al., 1999; Sadler, 2004). Even new sources of protein have been applied, such as mycoprotein for the product Quorn (Peregrin, 2002). Secondly, a **large difference in the perceived product quality of meat and meat substitutes** is likely to play an important role. Both experience quality attributes such as **convenience, freshness, and sensory characteristics, and credence quality attributes** (e.g. healthiness) are important for consumer's buying behavior of meat. **Meat is especially appreciated for its sensory properties**, its unique taste and texture (Grunert, Bredahl, & Brunsø, 2004; Issanchou, 1996). A few studies investigated consumers' evaluation of both meat and meat substitutes and found that **meat substitutes stayed behind in overall evaluation and in particular the sensory appreciation, but also on other attributes such as price and luxury** (Aiking et al., 2006; McIlveen et al., 1999; Van der Lans, 2001; Van Trijp, 1991). However, **meat substitutes did score higher on animal and environmental friendliness attributes compared to meat** (Hoek et al., 2012, p.663).

The AP market has been raising some flags to try to break these boundaries. The work of Sexton, Garnett and Lorimer (2019) analysed the main narratives and promises employed by leading AP stakeholders and found 5 main promises for this products: 'Healthier bodies', 'Feeding the world', 'Good for animals and the environment', 'Control for sale' and 'Tastes like animal'.

Such promises, for the above mentioned authors, are important not only because they highlight a series of problems of the current livestock production, but also because they present APs as a possible solution, which is important to generate consumer interest and raise venture capital (Brown, 2003). Table 2 summarises the central arguments of each promise.

Table 2

Promises of AP and their main argument

Promise	Main argument
Healthier bodies	This message is commonly communicated through reference to a range of negative health impacts associated with conventional livestock products. Causal links were frequently made between animal foods and 'chronic disease', 'health hazards' and 'nasty substances'. APs stakeholders have been highlighting their products as 'cleaner', 'safer', 'disease-free' and in one case '100% natural' in comparison with their conventional animal meat products, and the presence of favourable nutrients is also a key feature in the AP health messaging. Claims of being 'nutrient-rich', 'nutritious' and 'nutritionally balanced' are a common feature. Recurring themes included reassurances that the products were not only 'high-protein' but also offered a 'complete protein source' in that they contained 'all the essential amino acids' found in animal-sourced foods.
Feeding the world	A narrative of feeding the world has been a consistent feature of the AP promissory landscape: these products are framed as meeting the challenge of an increasing global population with a growing demand for animal foods. Two numbers often feature in these framings: '9 billion' (the projected number of people expected to inhabit the planet) and '2050' (the year by which this total will be reached). Often in these Malthusian narratives the current system for producing protein – namely livestock farming – is framed as 'broken', 'inefficient' and 'out-of-date'. APs are thus the technological fix that will avert a nutritionally poor and pleasure-deprived future.
Good for animals and the environment	General statements of APs being 'earth-friendly', 'eco-friendly', 'sustainable' and creating a 'smaller footprint' are common. Images of pastoral scenes, oceans and an iceberg accompanied statistics and statements concerning the 'environmental devastation' of conventional livestock and the benefits of the various AP approaches. The planetary harms most frequently referenced were climate change, greenhouse gas emissions and the overuse of water and land. There's also the use of numerical abstractions to depict the inefficiency of livestock in converting environmental resources into calorie/protein output have clear echoes in the (neo)Malthusian narratives of the 20th century. The goodness promised by AP approaches to livestock animals typically centred on releasing them from the production process, a consequence which was presented as creating a 'kinder' food system by removing the need for slaughtering and rearing animals in intensive systems.
Control for sale	A key part of this messaging has been to offer the modern consumer the relocation of production into the spaces of technoscience is seen as safeguarding against the uncleanliness and risks associated with processes that are seemingly 'closer' to nature. In the cases of the rise of industrial bread and pasteurised cheese, it was home-baking and small-scale artisanal production that were constructed as the risky spaces and practices to which industrial processes offered a safer alternative. This promise appeared more in the APs such as cultured meat, where the productive process is defined as 'safe, sterile, controlled conditions' because it occurs in the laboratories. The promise of increased control afforded by the technoscience methods of APs thus represented a range of different types of goodness: purity in terms of food safety and ethical values; improved healthiness and nutritional content on account of building the products from the bottom up; expanded culinary possibilities for both the home baker and the commercial ingredients industry; and consistency in product quality, safety and performance that is contrasted with the unreliability of current agricultural systems reliant on 'risky' animal bodies.

Tastes like animal	The promise of offering the same taste, appearance and overall eating experience as conventional animal foods has consequently been a central characteristic of AP development. As has been shown with other animal-free products, such strategies work to shift perceptions of animal-free eating from ‘dull to desirable’. This promise puts emphasis on pleasure, framing APs in the context of ‘treating’ oneself and were thus positioned as a guilt-free guilty pleasure. Such framings call to mind recent trends elsewhere that have worked to rebrand plant-based eating as a more hedonistic, visceral experience.

Source: developed by the authors (2022), based on Sexton, Garnett and Lorimer, 2019.

Based on the presented promises, some propositions were made:

Proposition 1a: Consumers are understanding that AP products are healthier and more natural than animal meat.

Proposition 1b: Environmental issues and animal welfare (regarding the livestock system) are important subjects to consumers;

Proposition 1c: Consumers do see AP products as more ecofriendly than livestock products;

Proposition 1d: Consumers understand that the increased control afforded by the technoscience methods of AP production brings a range of different types of goodness;

Proposition 1e: Consumers are more willing to consume AP products that taste and have attributes similar to animal meat.

Through the different promises summarised before, APs have a comum idea of changing the way that animal-based foods are conceived and produced, and what can be delivered from animal-free alternatives, even though, in cases, maintaining some of the main characteristics of animal-based foods - as the sensory qualities, for example (Sexton, Garnett & Lorimer, 2019). The approach of APs has been "framed as a new and improved paradigm in protein production and consumption" (Sexton, Garnett & Lorimer, 2019, p.04). The same authors continued: "the promises of

kinder, healthier, fairer, tastier, safer and more sustainable approaches to conventional livestock products thus collectively work to make the ultimate promise of a better food system for all, and in turn a better food future for all" (p. 59).

Despite such promises, it is important to consider that not all alternative protein products are being developed as "direct replacements for meat in the sense of providing a like-for-like imitation of different cuts and products, such as chicken strips or beef burgers. Some (...) are not framed as meat but rather as ‘protein’ " (Sexton, Garnett & Lorimer, 2019, p. 54). Some researchers highlight that 'protein' has been seen as a desirable selling point, and the communication of protein as it has been pointed out by the AP sector, reflects these recent trends (Sexton, 2018).

Stephens (2010) pointed out APs as 'undefined ontological objects', idea that Sexton (2018, p. 595) complemented with the thought that AP edibility formation has been "an exercise in 'ontological politics' whereby notions of what constitutes 'normal' animal foods and production methods have been materialised within AP supply chains and their final market-ready forms, as well as their associated narratives". The mentioned narratives are based in the storytelling that "protein as a strategy for dissolving the more obvious ontological boundaries between animal and non-animal foods" (Sexton, Garnett & Lorimer, 2019, p. 54).

Despite all that, numerous studies that compare the acceptance of alternative proteins to the animal meat, and in such alternative proteins are evaluated significantly less positively (Onwezen et al., 2019; Slade, 2018). As this dissertation focused on the consumer side and these perceptions and attitudes are still a literature gap, in the next section we explored consumption in the context of circular economy, giving special attention to consumption of alternative protein products. As argued, consumers have a major role, and the shift towards a more sustainable food system depends on their participation and acceptance (Borello et al., 2017; Ghisellini et al., 2016; Moreau et al., 2017). There's already been mapped in the litterature the drivers and barriers of consumption of both CE and AP, and fundamentally that is what we explored next.

3.2 Consumption of Alternative Proteins in the Context of Circular Economy

The major literature on the circular economy seems to focus on the production side, and very little attention has been given to the consumption. According to Camacho-Otero *et al.* (2018), 10% of the research in the context of CE addresses consumption, despite having started in the mid-1990s, it has been on the rise ever since. Many scholars have been highlighting that consumers have a key role in the context of CE (Camacho-Otero *et al.,* 2018; Jaca *et al.*, 2018), though.

That is because consumers can have an active role for environmental change, adopting social practices to consume in different ways and, thus, contributing to the achievement of a sustainable system (Jaca *et al*., 2018). Consumer and user acceptance, therefore, have been highlighted as a significant factor hindering the diffusion of CE business models and their products, since their lack of interest and awareness on the subject have been seen as main impediments regarding a transition towards CE (Kirchherr *et al.,* 2017).

Camacho-Otero *et al.,* (2018) reviewed the literature on CE and consumption, and identified drivers and barriers of consumption, that they summarised in seven areas: personal characteristics, product and service offering, knowledge and understanding, experience and social aspects, risks and uncertainty, benefits, and other psychological factors (Camacho-Otero *et al.,* 2018). The main aspects found on each one of the factors of influence (drivers and barriers) highlighted were crossed with the main theoretical approaches and presented on Table 3.

Table 3

Main drivers and barriers of consumption of CE solutions

Drivers and Barriers	Main Aspects	Main theoretical approach	Authors
PERSONAL CHARACTERISTICS	Materialism Need for uniqueness Desire for change Involvement Control Status Community	Utilitarian approaches (Theory of Planned Behavior and related theories, economic theories and other psychological theories)	Armstrong et al., 2016; Baxter and Childs, 2017; Kohr and Hazen, 2017; Lee and Kim, 2018; Möhlmann, 2015; SLawson et al., 2016.
PRODUCT AND SERVICE OFFERING	Product quality Product-need fit Product longevity Technology that supports value deliverability Design Brand	Utilitarian approaches (Theory of Planned Behavior and related theories, economic theories and other psychological theories)	Abbey, Meloy and Guide, 2015; Agrawal, 2015; Borin, Lindsey-Mullikin and Krishnan, 2013; Edbring, Lehner and Mont, 2016; Schrader, 1999.
KNOWLEDGE AND UNDERSTANDING	Understanding of the offering Sufficient knowledge Information about services	TPB and related theories	Edbring, Lehner and Mont, 2016; Guo *et al.,* 2016; Harms and Linton, 2016.
EXPERIENCE AND SOCIAL ASPECTS	User experience Impact on everyday life; Enjoyment; Facility to use; Convenience;Privacy Interaction	TPB and related theories	Decrop *et al*., 2018; Guttentag *et al*., 2018; Johnson, Mun and Chae, 2016; Joo, 2017; Van Weelden, Mugge and Bakker, 2016.
RISKS AND UNCERTAINTY	Trust Other risks Disgust Newness	TPB and related theories	Abbey, Meloy and Guide, 2015; Barnes and Mattson, 2017; Lutz *et al.*, 2017
BENEFITS	Economic Environmental Social	Economic Theories	Tussyadiah, 2016; Van Weelden, Mugge and Bakker, 2016; Yang *et al.,* 2017.
OTHER PSYCHOLOGICAL FACTORS	Attitudes Norms Perceived behavioral control Habits Values	TPB and related theories Design Theories	Armstrong et al., 2015; Decrop, del Chiappa, Mallargé and Zidda, 2018; Matsumoto, Chinen and Endo,2017; Jiménez-Parra, Rubio and Vicente-Molina, 2014; Johnson, Mun and Chae, 2016; Khor and Hazen, 2017.

Source: developed by the authors based on Camacho-Otero *et al.* (2018)

Regarding the consumption of alternative proteins, Onwezen, Bouwan and Dagevos (2020) developed a systematic review which explored 91 articles, focusing on summarising the main drivers of the consumption of Alternative Protein products such as pulses, algae, insects, plant-based alternative proteins, and cultured meat. The findings, in general, were that the main drivers and barriers were: motives of taste and health, familiarity, attitudes, food neophobia, disgust, and social norms. The authors developed a table bringing the main drivers and barriers, psychological factors, external attributes and interventions, and we bring next such table with some adjustments and focusing on the three main AP types that this research focuses on: plant-based meat alternatives, cultured meat and insects.

Table 4

Overview of main findings for drivers and interventions of AP products

Types of AP	**Drivers and barriers (Product-related attributes)**	**Psychological factors**	**External attributes**	**Main interventions**
Cultured meat	**Product-related attributes** **Drivers to accept**: Health; Taste; Green eating behavior; Perceived appeal and goodness of clean meat; Food security and safety. **Barriers to accept:** Selectiveness/fussiness in food choice. **Familiarity**: Of participants familiar with cultured meat, 64% were willing to try it, whereas 40% of participants unfamiliar with cultured meat would be willing to try it (Mancini & Antonioli, 2019).	**Attitudes** towards the environment and agriculture. **Food neophobia, disgust, and affectd**: Food neophobia, disgust and disgust sensitivity.	**Truste**: Concerned about risk governance, control, and need for regulation and proper labelling and associations with political conservatism and distrust in science.	**Naturalness** of food additives; “same meat” framing; describing cultured meat in a non-technical way that focuses on the final product increases acceptance of cultured meat. '**High-tech**’ framing led to the least positive attitudes; message of ''clean meat is natural’; production of cultured meat and its benefits; information about cultured meat (tasty and nutritious as a conventional burger). **Information** affects explicit (and not implicit) attitudes, especially for unfamiliar respondents.
Plant-based meat alterna-	**Drivers to accept:** moral and ethical motives; perceived appeal; perceptions of	Attitudes and beliefs towards meat substitutes and	None found	Plant-based meat alternatives have less shelf space compared to traditional meat, and

tives	environmental impact, and health consciousness, internalised motivation, enjoyment of eating and cooking. **Barriers to accept:** type of mince, fat content, country of origin, price, concerned about the additives, artificiality, and insufficient essential vitamins and micronutrients, and taste of meat. **Familiarity** and previous experience.	food neophobia. Food neophobia, disgust and affected: food neophobia, disgust.		less promotions. Consumers found it slightly more satisfying as well as easier to shop for animal-based compared to plant-based protein sources.
Insects	**Drivers to accept**: health; taste; environment; appearance; safety; convenience; price; naturalness; not immoral, but nutritious; quality. **Barriers to accept**: risk/danger regarding insects; lack of availability and incompatibility with local food culture; unnaturalness. **Familiarity** (i.e., need for familiarity and past experience with eating insects increases consumption and tastiness of insects.	**Attitudes**: and negative beliefs. Also within the theory of planned behavior attitudes , subjective norms and perceived behavioral control have a significant impact on acceptance. **Food neophobia, disgust and affected**: food neophobia and disgust; affective attitudes towards eating insects; affective variables like emotions ambivalence; affected willingness to eat specific	**Truste**: Public health institutions suggested to play a role in promoting consumption of insects. **Social environment**: eating insects perceived to be not supported by family and/or friends. High social acceptance and the more participants thought other participants ate mealworm-containing products, or perceived eating insects as a socially acceptable activity, the more likely they were to try insect foods themselves. Perceptions of a conspiracy	**Product attributes** • Price interventions showed that high prices were associated with increases in expected quality. • Health and environmental claims increase acceptance of insects. • Information on benefits nutrition, societal benefits. • Familiarity with products increases willingness to try. Familiarity with products can be increased by producing products such that they fit with known products, prior information or tasting. • Willingness to eat insects decreases when insects are visible in the products; hidden ingredients of insects are revealed; for unprocessed compared to processed insects; for insects as food compared to insects as feed; for common versus uncommon products; or when

		insects. **Curiosity** sensation seeking.	theory (regarding a social movement toward growing insect consumption). **Cultural appropriate-ness**: Insects were perceived as inappropriate in culture. Insects that were marketed more in one's own culture were preferred more.	descriptions in a menu setting were very explicit (instead of vague). **Social environment** • Participants exposed to positive peer ratings of a nutrition bar expected it to be of higher quality than did participants exposed to negative peer ratings.

Source: developed by the authors based on Onwezen, Bouwan and Dagevos (2020)

Some of the drivers and barriers found in consumption of circular economy context match the APs analysis. Also, AP researchers have recognised that two common barriers to the uptake of animal-free alternatives, particularly amongst meat eaters, are: food neophobia and disgus, negative perceptions of their sensory properties (Sexton, Lorimer & Garnett, 2020, Onwezen, Bouwan & Dagevos, 2020). The main drivers are in general related to interest in health, weight control and the natural content of foods, concern for animal welfare and environmental issues (Hoek *et al*., 2011).

Hoek *et al.* developed a research in 2011 which gives us an important contribution, by segmenting the consumers that were already consuming AP products, dividing them into two groups: non-user to light/medium-user and light/medium-user to heavy-user. The authors explained (2011, p.626) the model

> There are two approaches from different fields that can be used to obtain more insight on how to increase the usage frequency of certain products: usage segmentation and the Stages of Change model. Usage segmentation uses behavioral variables as a means to construct market segments. Consumers are divided in segments according to their level of use or user status, such as heavy-users, medium-users, light-users and non-users. The practical implication of this model is that these processes of change can guide intervention programs or communication strategies that are stage-matched, which means they are specifically designed to match the cognitive/behavioral state of individuals in a certain stage of change.

Thus, Hoek *et al.* (2011) developed a framework underlying drivers and barriers in consumer acceptance of meat substitutes, respecting the segmentation defended above. Also, it's important to highlight that it was assumed the existance of a temporal pattern, where heavy-users changed from non users, to light users, to medium users over time. Table 5 presents the framework.

Table 5

Summary of drivers and barriers to use meat substitutes more frequently.

			Non-user to light/medium-user	**Light/medium-user to heavy-user**
Drivers	Person-related	Food choice motives	High interest in health, ecological welfare and weight control	Particularly high interest in ecological welfare
	Product-related	Attitudes and beliefs	More positive about meat substitutes than meat, e.g. for health and sensory aspects	Much more positive about meat substitutes than meat, e.g. for sensory and ecological welfare aspects
Barriers	Person-related	Food neophobia Food choice motives	Food neophobic. High interest in sensory appeal, price and familiarity	None
	Product-related	Attitudes and beliefs	Much more positive about meat than meat substitutes, e.g. for health, sensory, luxury aspects, satiety, 'power' image, and price	More positive about meat than meat substitutes, e.g. for convenience and social influence

Source: Hoek *et al.* (2011).

Based on these findings, some propositions were made:

Proposition 2a: The drivers of health, natural content, weight control and ecological welfare (includes animal welfare and environmental issues) are important to initiate consumption of AP products.

Proposition 2b: It is necessary to address food neophobia in order to increase consumption of AP products, especially to non and light users.

The scholars that have been studying consumption in the context of CE highlighted some literature gaps, as more insights of consumers' profile and consumers characteristics that can affect their acceptance and adoption of circular solutions (Atlason, Giacalone & Parajuly, 2017; Edbring, Lehner & Mont, 2016; Paundra, Rook, van Dalen & Ketter , 2017). For that reason, the next subsection aims to address the main attributes that may influence the consumption of alternative protein products.

3.2.1 Attributes that may influence on consumption

Due to the complexity of the subject, we tried to further investigate some attributes that appeared during the literature review. In short, lifecourse and lifestyle aspects, environmental and animal issues, health worries, disgust and food neophobia are the main factors that we understood that deepening our knowledge would be important to the present research. These attributes were also highlighted by Onwezen, Bouwman, Reinders and Dagevos (2021).

Starting through the understanding of **lifecourse**. The concept is a sociological approach that crosses the culturally-defined stages of life such as childhood, adolescence, adulthood, retirement and others, and the historical context in which people live such stages.

> It is derived from analysis of the interaction between individual biographies and their socio-cultural contexts, and affected by historical and demographic trends. Thus, unlike the concept of 'lifestage', which has been an important analytical tool in anthropology, the modern sociological construction of 'lifecourse' is fluid, labile and essentially interactive between people and their environments (Backett & Davison, 1995, p. 630).

A fundamental understanding when using the lifecourse lens is to focus on the relationship between lifecourses, the social environments, and experiences of lifecourse 'passengers' (Koistinen, Teerikangas, Mikkilä & Linnanen, 2020). Thus,

people who are at a similar stage in life and experience the same historical events, even without physical, intellectual proximity or even knowledge of each other's existence, have a cultural approximation and can be expected to have certain beliefs in common, especially in the years of their constitution as individuals (McBey *et al*., 2019).

So, it is possible to get personal data from individuals through their lifecourses and to even create "life event maps that represent meaningful life events. (...) All the while, there is a need to distinguish between freewill, agentic influence on one's own life course and the life course shaped by institutional, or environmental, influences" (Koistinen et al., 2020, p. 210). Based on this understanding, propositions can be made, and will be presented during the text.

Proposition 3a: People in the same lifecourse will have similar willingness to consume AP products.

There's important transitions that people may face during their life experience, and these may change or become stable over time in everyday consumption, such as becoming a parent or retiring, for example (Verplanken & Roy, 2016). That occurs because such transitions might provide "periods in individuals' lives when changes in consumption practice might more easily take hold. Recent psychological work focuses on the disruption of everyday routines which often accompanies a lifecourse transition" (Burningham & Venn, 2020, p. 104). It is expected that such drastic changes in everyday life, in these transition moments, may disrupt habits and provide cues for new behavior adoption, even because people tend to get more receptive to information on these moments (Verplanken & Roy, 2016).

> These particular life events represent moments of disruption to people's routines, which in turn can serve as 'windows of opportunity' in which to deliver interventions when people may be more able or willing to do things differently. Moments such as moving house, changing jobs, becoming pregnant or retiring from work all represent transitions when people's daily routines are disrupted, and need to be reconsidered before new routines emerge. There is increasing evidence that habit change interventions delivered at these 'Moments of Change' can be more effective than if delivered at another time (Darnton et al., 201, p. 6).

Proposition 3b: People living lifecourse transitions are more encouraged to change

food consumption patterns towards more sustainable food choices regarding the consumption of alternative proteins.

It is also important to consider the **lifestyle** matter. "Lifestyle denotes an interrelated pattern of conduct for the individual, an expression of belonging to a particular group, and some suggestion of structured life chances" (Backett & Davison, 1995, p. 630). It has been a popular base for segmentation in consumer marketing, and in the 1990's Klaus Grunert, Karen Brunsø, Lone Bredahl and Anne Bech proposed an instrument to apply lifestyle to food, called **Food Related Lifestyle** (FRL). We are not particularly interested in the FRL instrument (scale) in this research, but furthermore in the main concept in which it is attached: the relevance that food exercises on people's lifestyles.

Brunsø and colleagues (2021) explained: the FRL approach adopts an understanding of "the role that food has in the lives of people. Everyday observation suggests that the role of food in life differs between people. Everybody needs to eat, but not everybody is equally interested in food" (Brunsø et al., 2021, p. 104192). The authors continued: "for some, food is just a necessity, with other aspects of life holding greater importance. For others, food is enormously important, and they spend considerable resources (time and money) on buying food, preparing meals, eating at home and dining out" (Brunsø et al., 2021, p. 104192).

The concept is based in two main dimensions: food involvement and reasons for the involvement levels. For example, some people express creativity through food; others search for stability and safety; while there are the ones that aim to achieve self-fulfilment. Imbricated in this discussion, there is also a difference regarding the willingness to try new food products (Brunsø et al., 2021) The FRL concept, thus, analyses several dimensions such as: "the motives linked to food purchases (which can be viewed as domain-specific adaptations of general life values), the type of food quality people seek, how they shop, how they cook and how they organise their meals" (Brunsø et al., 2021, p. 104192). Using these dimensions as inputs, the FRL analysis produced five generic types of segments, which are further explained in Table 6, presented next.

Table 6

Types of segments generated by Food Related Lifestyle approach

Food Related Lifestyle	Characteristics
Adventurous	Demand for quality, having fun in the kitchen, enjoying new products and meals, and being motivated by the social and self-enhancing aspects of food.
Conservative	Denouncing innovation in food products and meals, a conservative approach to cooking, and a demand for quality products.
Uninvolved	Not caring much about anything regarding food and a high incidence of snacking and convenience food.
Careless	Much like the uninvolved, but with an interest in new products and snacks
Rational	Interest in health and product information.

Source: developed by the authors based on Brunsø et al. (2021)

Proposition 3c: Consumers with different food related lifestyles have different willingness to consume AP products.

Other important factors that may influence consumers' willingness to accept alternative protein products is regarding **environmental and animal issues.** It is known that despite all the research on the impact of meat production for the environment, consumers still claim that they are unaware of such data (Hartmann & Siegrist, 2017). Even though research has shown and proved that there exists differences in environmental impacts across different food categories (Dai et al., 2020), most consumers tend to underestimate food-related environmental impact, which results in the fact that environmental sustainability is not among the criteria of their meal choices (Dai et al., 2020, Hartmann and Siegrist, 2017).

One great barrier that policy-makers face to influence consumers to adopt environmentally friendly diets is that some people do not make a connection between the environment and food, and even when they do, they are more likely to be concerned about packaging and transport than the effect of eating different types of food (Bacon & Krpan, 2018).

Several studies have been showing that despite public's awareness of the connection between food and environmental issues is still very low, other approaches

seams to call people's attention with more success: people are very much interested in climate-friendly food consumption (Dai et al., 2020), and consumers prioritise changes such as sourcing local, organic or seasonal food, recycling more, or reducing food waste, when seeking for more sustainable food choices, instead of reducing their meat intake (Collier et. al, 2021).

The willingness to change the consumption of meat to alternative protein options has low acceptance not only because meat is culturally accepted but also because it is still important for social status: it is universally viewed as a symbol of affluence and success (Smil, 2002).

Health aspects are also important to take into account. Meat products, especially red meat, have been identified as risk factors for certain diseases (Harguess, Crespo & Hong, 2020).

> While the focus on protein by the latest APs may have disturbed the ontological categories of animal foods, it has done very little to disrupt the associations between this nutrient and notions of physical and cultural power. This is evident in the frequent descriptions of APs as 'fuel' and as products that can specifically help gym-goers and 'adventurers' 'power' through their activities. The emphasis on protein as a source of power thus appeals to the contemporary ideals of muscular and so-called 'shredded' aesthetics that have become aspirational body-types across genders. They have become attached to particular dietary trends such as clean eating (Sexton, Garnett & Lorimer, 2019, p.10)

It is also important to further understand some aspects that may work as barriers for the consumption of AP products. **Food neophobia** is one of the factors that were more cited in the barriers reviewed in 3.2 chapter. A novel food generally doesn't have much history of consumption in a certain culture, or is produced by a method that represents innovation in some way. Therefore, food neophobia is an answer to novel products. It's a reluctance to eat/avoid novel food (Moons Barbarossa & De Pelsmacker, 2018).

Neophobia, or the unwillingness to try new or unfamiliar foods, is, as mentioned above, one of the main barriers for innovative and novel food products. Aversion, danger and **disgust** are the main motives for such rejection. Consuming unfamiliar products such as seaweed may lead to repulsion or what has been termed the "yuck factor" (Birch, Skallerud & Paul, 2018).

Despite all these aspects, some authors highlight that further understanding behavior remains as a gap in the literature. Camacho-Otero *et al.* (2018, p.16)

commented that “further investigating the intention–behavior gap in the context of circular solutions by focusing on data collection on observed rather than reported behavior”.As well, studying the phenomenon under other perspectives than the rational decision making process is also a path to be underlined. Ghisellini *et al.* (2016) found that the existing literature on CE considers consumers to be passive and rational recipients and who will follow labels and other production-side signals when making decisions. Still, it's been proved that individuals have several non-rational processes that contribute and, sometimes, even determinate the decision making process.

Studying consumer and shaping consumer’s attitudes seems to be critical to the CE development (Hazen, Mollenkopf & Wang, 2017). Recently, scholars have been pointing out that it is necessary to nudge consumers with incentives to have behavioral changes towards the CE (Cohen, Lynch, & Robertson, 2016; Sousa Lourenco, Ciriolo, Almeida, & Troussard, 2016; Sunstein, 2016; Vecchio & Cavallo, 2019). Nudge Theory and main interventions are further detailed in the next section.

3.3 Choice architecture: Nudge Theory

Behavioral economics is a strand of economy that searches for understanding mostly consumers behavior, and consists in a precise and fruitful alternative to traditional economic theories, which are based on optimization. Behavioral economics is especially useful when decisions are complex and optimality is difficult to achieve. It is based on utilitarianism and gets together two important areas in order to better understand behavior: psychology and economics (Camerer, 2014).

In 1979, Amos Tversky and Daniel Kahneman published one of the first papers about heuristics and choice biases, creating the Prospect Theory. Their work was focused on the process of decision making, and argued that individuals take decisions much based on heuristics of judgement, enlightening that individuals are not totally rational in their decision-making. They explain triggers such as **representativity, availability and anchorage**. Thaler and Sustein (2008)

denominate such heuristics and bias as rules of thumb, and discuss also framing effects, optimism and overconfidence, gains and losses and the status quo bias.

The trigger **representativity** can be understood as the similarity heuristic. The idea is that when asked to judge how likely it is that A belongs to category B, people answer by asking themselves how similar A is to their image or stereotype of B (trying to understand how "representative" A is of B). It means that we search for characteristics and data to help us to do relations and associations, but the error consists in not considering that the complexity of things cannot be resumed in some characteristics. The **availability** heuristic helps to explain much risk-related behavior, including both public and private decisions to take precautions. The bias in this case is related to evaluate the risk taking as parameter your early experiences, instead of real probability. With **anchorage**, you start from an information you know and adjust in the direction you think is appropriate. The bias occurs because the adjustments are typically insufficient (Thaler & Sustein, 2008; Tversky & Kahneman, 1979).

Other aspect that Tversky and Kahneman (1979) saliented as important to explore the psychology of intuitive beliefs and choices is the framing effect and the risk aspect, which brings that the way facts are presented also interfere our choices. The **framing effect** is related to the context and the way that situations are presented. It happens when people have a situation that requires a decision making, but may be influenced by the way the situation is presented to them. To illustrate such bias, Thaler and Sustein (2008) provided an example: if a person is sick and needs to decide whether or not to get operated, his or her decision making can be influenced by the way the doctor presents the odds of success. If the doctor says that, out of one hundred patients that have had the operation 90% are well and alive, people are likely to accept to do the surgery. However, if the doctor says that, out of one hundred patients who have had the operation 10% haven't had success, people are more likely to don't have the operation. The information is the same, but people react different due to the framing effect.

Thaler and Sustein (2008) explain the heuristics of **optimism and overconfidence**, which is basically an unrealistic optimism. It happens when people overestimate their personal immunity from harm and, as a consequence, they may fail to take sensible preventive steps. As well, there is the **gains and losses**

heuristics. People tend to have aversion to lose. Studies demonstrated that, “when they have to give something up, they are hurt more than they are pleased if they acquire the very same thing. (...) Loss aversion helps produce inertia, meaning a strong desire to stick with your current holdings” (Thaler and Stein, 2008, p.34). Which leads us to the **status quo bias** (Samuelson & Zeckhauser, 1988), that is mainly the idea of inertia.

Thaler and Sustein (2008) argue that one of the causes of **status quo bias** is a lack of attention, since people tend to adopt what they call a “yeah, whatever” heuristic. For example, when watching television, people are more likely to stay in the channel in which they started the evening than to switch it, even though the actual switching channel costs are literally one thumb press. “But when one show ends and the next one comes on, a surprisingly high number of viewers (implicitly) say, “yeah, whatever” and keep watching” (Thaler & Sustein, 2008, p.35).

Along the evolution of behavioral economics, theories that search for better explanations for the argument that heuristics and cognitive failures have a great influence on the decision making process. The understatement that the human brain functions through two different systems was considered one great advance on the behavioral economics field, and has allowed others to discover systematic biases in the way we think (Thaler & Sustein, 2008; Satanovich & West, 2000; Shepard, 1990). Actually, the heuristics and biases pointed out by Tversky and Kahnemann (1979) have been understanded by psychologists as emerging from the interplay between these two systems (Thaler & Sustein, 2008).

“The two systems correspond to two kinds of thinking of the human cognition, one that is intuitive and automatic (known as Automatic System or System 1), and another that is reflective and rational (known as Reflective System or System 2)” (Thaler & Sustein, 2008, p.30).

Table 7

Cognitive Systems

Automatic System / System 1	Reflective System / System 2
Uncontrolled	Controlled
Effortless	Effortful
Associative	Deductive
Fast	Slow
Unconscious	Self-aware
Skilled	Rule-following

Source: adapted from Thaler and Sustein (2008)

Thaler and Sustein (2008) further explain the two systems with different examples that help to elucidate: for writing this essay, we are using our Reflective System. But in moments in which we are doing other activities and the (rare) times while we are not thinking at all about the essay and ideas pop up in our minds – that is the Automatic System in action.

The heuristics mentioned above are triggers to automate some decisions so that the brain does not get overwhelmed. It is a way for System 1 to assume functions based on shortcuts, without needing deep knowledge in various subjects, to assist System 2 in decision making. However, since System 1 is not deductive, analytical, but automatic, this functionalism results in many cases in pretty bad decisions—decisions they would not have made if they had paid full attention and possessed complete information, unlimited cognitive abilities, and complete self-control (Thaler & Sustein, 2008).

Research has been carried out showing that statistically better choices are left aside due to choice heuristics induction, which have the aim to facilitate the decision making process, but end up, sometimes, leading us to biases and blunders (Thaler & Sustein, 2008; Tversky & Kahneman, 1979). Studies such as these have been growing and gaining space in the litterature. That because, historically, many efforts have been made in the field of understanding the rational side of the decision making process, which have fuelled information-based policies that, although successful in creating awareness, cannot, *per se,* actually influence individuals' behavioral

changes (Capacci, *et al.,* 2012; Liu, Wisdom, Roberto, Liu & Ubel, 2014; McGill *et al.*, 2015; Traill, Mazzocchi, Niedźwiedzka, Shankar & Wills, 2013).

Thus, there's a growing interest on alternative approaches based on behavioral principles that alter choice environments by organizing the context in which people make decisions in order to improve selections (Cohen, Lynch & Robertson, 2016; Sousa Lourenco, Ciriolo, Almeida & Troussard, 2016; Sunstein, 2016; Vecchio & Cavallo, 2019). That is what has been called **choice architecture.** These interventions are also supported by consumers across many countries (Reisch & Sunstein, 2016; Reisch, Sunstein, & Gwozdz, 2017), as most individuals want to lead towards better choices. From the behavioral economics perspective, every situation represents some kind of choice architecture, even if it is not explicitly designed for a particular effect (Kahneman, 2013).

An important concept is brought by Thaler and Sustein (2008) for conceiving choice architecture: the **libertarian paternalism**. The libertarian aspect aims to assure that people should be free to do what they like. The paternalistic aspect lies in the notion of trying to influence choices in a way that will make choosers better off through nudges.

A **nudge** is any aspect of the choice architecture that aims to change people's behavior in a "predictable way, without forbidding any options or significantly changing their incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting the fruit at eye level counts as a nudge. Banning junk food does not" (Thaler & Sustein, 2008, p.06).

Thus, nudges refer to "purposeful changes in the choice architecture that influence peoples' behavior by making changes in the environment that guide and enable individuals to make choices", however without trying to "change one's value system or increase information provision; instead they focus on enabling behaviors and private decisions that are beneficial for society and usually in the individual's long-term interests, as well" (Lehner *et al.,* 2015). Nudges are made possible because of cognitive biases in individual and social decision-making. In line with that, nudges work because they correct for biases and errors in human behavior, which occur when the situation does not support the use of cognitive effort (Thaler & Sustein, 2008).

Some scholars, that are already working with Nudges, report that there is still a lack of evidence to estimate the magnitude of effect of nudge interventions (Marteau, Hollands & Kelly, 2015), since the analysis of the effectiveness of the results of nudging initiatives is not always easy (Arno & Thomas, 2016). Thaler and Sunstein (2008) suggest that nudges are appropriate when choices have delayed effects, when they are complex or infrequent and thus learning is not possible, when feedback is not available, or when the relation between choice and outcome is ambiguous.

According to Ölander and Thøgersen (2014, p.04) “most environmentally relevant choice situations share several of these characteristics. (...). Hence, there seems to be good reason to consider nudges as a means to promote pro-environmental behavior”. Consumption in the context of the circular economy, especially the consumption of alternative proteins, can be considered a form of sustainable consumption, and, therefore, a pro-environmental behavior (Kirchherr *et al*., 2017). Camacho-Otero *et al.* (2018, p.04) also agree that nudging can help promote such pro-environmental behavior, since they argue that "researchers have been investigating what makes consumption sustainable, and also offered insights about elements that can drive change, such as nudging".

3.3.1 Nudge tools: social norms and framing of information

It is important to understand that there are kinds of nudges and, when one is designing a research through it, describing which tools are being used is needed. The expression shouldn’t be used as a ‘catch-all term’, otherwise it is not clear what type of interventions fall under this definition (Vecchio & Cavallo, 2019). Thus, nudging can be considered, as a role, methods of changing individuals’ behavior by modifying the cues in the physical and/or social context (Marchiori, Adriaanse & De Ridder, 2017), through nudge tools (Lehner *et al*., 2015). Hence, nudges are used as policy tools and initiatives to promote better decision making processes.

Nudges can influence policy design through three potential pathways: by improving the efficacy of the classical tools (for example, when making consumer information more salient, relevant, and accessible); by offering new policy tools that are less intrusive and more flexible than bans and taxes; and by the "test-learn-adapt" approach, using experiments, running pilot tests, and improving policies with an empirical and iterative process (Halpern 2015; Shafir 2013; Sousa Lourenço et al. 2016; Bauer and Reisch, 2019).

Sunstein (2014) listed the ten most important nudges for policy-making. The following Table 8 summarises the tools.

Table 8

Main nudge tools

Nudge tools	Description
Default rules	Turning the default option the better choice
Simplification and framing of information	Information made straightforward and carelull phrasing
Increases in ease and convenience	Making "the right choice" easy and convenient
Social norms	Social argument to change individual behavior
Reminders	"People tend to have a great deal on their minds, and when they do not engage in certain conduct, the reason might be some combination of inertia, procrastination, competing, obligations, and simple forgetfulness. A reminder can have a significant impact" (Sustain, 2014, p.7)
Disclosure	Dissemination of simple and attractive information, using big numbers
Warnings, graphic, or otherwise	If serious risks are involved, the best nudge might be a private or public warning. Large fonts, bold letters, and bright colors can be effective in triggering people's attention. A central point is that attention is a scarce resource, and warnings are attentive to that fact
Pre-commitment strategies	Programs that help people in engaging in the commitments made
Eliciting implementation intentions	People are more likely to engage in activity if someone elicits their implementation intentions
Informing people of the nature and consequences of their own past choices	If people obtain information about their own past decisions and the consequences, their behavior can shift.
Changes to the physical environment	Facilitating or dificultating people's access to something

Source: based on Thaler and Sustein (2008), Sustein (2014) and Szaszi *et al.* (2018)

The two first (and more relevant) nudges are further presented next. We'll start with the **simplification and framing of information.** The simplification and framing of information is much based on the bias of framing effect. Since not only the accessibility of information matters but also how this information is presented, framing is important. Is the conscious phrasing of information in a way that activates certain values and attitudes of individuals (Lehrer *et al*., 2015). Also, making information direct and straight is relevant.

Research has shown that consumers' decision architecture can be modified when information is provided (Dai et al., 2020, Münscher et al., 2016, Schubert, 2017), and, for that reason, information provision is widely used as a policy tool to promote sustainable consumption (Lehner, Monr & Heiskanen, 2016). Studies in behavioral economics "has demonstrated that our preferences are rarely stable but vary between and within decision contexts, often because of how information is presented to us" (Vigors, 2018, p.10).

The simplification and framing of information nudge is based on the idea that not only the accessibility of information matters, but mostly how such information is presented. The simplification means to put the information in a way more straightforward, fitting the information processing capabilities and decision-making processes of the individual. The framing of the information is the conscious phrasing in a way that matches certain values and attitudes of individuals (Lehner, Monr & Heiskanen, 2016).

Such information can be passed through eco-labels, for example. These are considered a key instrument that provide consumers with product information and informaiton about being environmentally friendly options (Dai et al., 2020). Also, consumers' decisions tend to get affected by such labels due to their general desire to maintain an attractive self-image (Schubert, 2017).

The use of **social norms** is a nudge that works with the social argument to change individual behavior. Since humans are social beings, they tend to follow what others are doing. Goldstein *et al.* (2008) found that in hotels the most efficient message to avoid guests from switching the towels daily was that the majority of guests reuse their towels, rather than information focused on environmental protection. Nolan et al. (2008) brought that the inclusion of happy or sad faces on

household energy bills was useful to demonstrate social approval or disapproval of the amount consumed, and was useful to influence the reduction of the energy consumption.

The use of social norms is one of the most frequent interventions triggering behavioral change. Despite that, this nudge is not commonly used to influence food consumption, but frequently applied to change a behavior (Reisch *et al.*, 2021). Even so, the behavioral mechanisms are the unconscious 'follow-the-crowd' effect, the desire to avoid social disapproval, and the search for decisions of others when facing complex choices or uncertainty. That is because people take the behavior of others as an indication of what is most effective, or they may expect reciprocity in exchange for their own conformity (Farrow, Grolleau & Ibanez, 2017, Vigors, 2018).

Social norms refer to the implicit or explicit rules and expectations of a group, that automatically guide much of individual behavior. The social acceptance of some things rather than others influence the way people behave in a context - especially in a decision context (Vigors, 2018, Dolan et al., 2010, Farrow, Grolleau & Ibanez, 2017). People want to fit in, to be accepted, approved. For those reasons, it's been demonstrated that people tend to look at social behaviors and to see other's actions, searching for what is more effective and what choices to make (Vigors, 2018), and "numerous studies, in a variety of contexts, have demonstrated that explicitly telling people what most others do in a given situation or what others approve of or expect in a given situation, can support behavior change" (Vigors, 2018, p. 11). In spite of that, people tend to underestimate the influence of norms on their own behavior (Cialdini, 2007, Farrow, Grolleau & Ibanez, 2017).

Deepening the understanding of social norms, one distinction that can be made is the difference of descriptive and injunctive norms: **descriptive** norms refer to what most people do, while **injunctive** norms describe what most people approve of doing. Another distinction that can be made in the injunctive norms is **personal** and **non-personal** injunctive norms: what one approves of doing (simply as a personal norm) and what one believes others approve of doing (usually referred to as an injunctive), respectively (Farrow, Grolleau & Ibanez, 2017).

Another categorization that we can highlight is the **prescriptive** and **proscriptive** aspect: the first consists in descriptions of what others do or approve of

doing; the last are prohibitive in nature, focusing attention on what others do not do (descriptive), or do not approve of doing (injunctive) (Farrow, Grolleau & Ibanez, 2017). Research has been showing that the **proscriptive injunctive norms** attract more cognitive attention (Cialdini et al., 2006, Farrow, Grolleau & Ibanez, 2017). Vigors (2018, p.12) explains that the messages that "highlight the behavior or expectations of most people are found to be more effective than messages that tell people the impact of their behavior" (persuasive messages). Also, the author explains that "the inclusion of persuasive information about a product's carbon footprint, for example, has had little success in increasing sustainable consumption", whereas when the message goes in the direction of what others do not approve doing, the nudges are more effective.

Another side of the effectiveness of social norms is brought by Vigors (2018), though: "even though a desirable social norm does exist, it does not appear to spill-over and positively influence consumer behavior. As such, making this desirable norm more salient in a consumer context may help close the attitude–behavior gap". Research on social norms applied to eating context shows that "norms are followed as a means of affiliating with others and gaining acceptance: people adjust their eating behavior to manage their public image and create a certain impression on others" (Higgs, 2015, p.02).

> Perhaps the lesson from social norms is rather than emphasising what citizens don't know or what they are not doing, it is better to describe the positive things that they or others value. For example, a simple message stating '50% of people who buy free range eggs also buy higher welfare chicken', may be more effective than saying not enough people are buying higher welfare products or using persuasive messages. In sum, framing pro-animal welfare behaviors as something 'others' do and value is a simple, yet powerful tool to potentially reduce the consumer attitude–behavior gap. In designing such social norm interventions, it is critically important to emphasise desirable rather than undesirable norms and to choose contexts where the desired behavior is uncomplex and easy to perform. Notably, behavior change initiatives which take account of social norms spread rapidly because people take their cues from the behavior of others (Vigers, 2018, p. 13).

Researchers point out that social norms have been showing potential to be a highly relevant factor for all alternative proteins, being utilised to increase acceptance levels. That occurs because, some authors hypothesise, consumers use many data and different sources of information to form opinions about food, including alternative

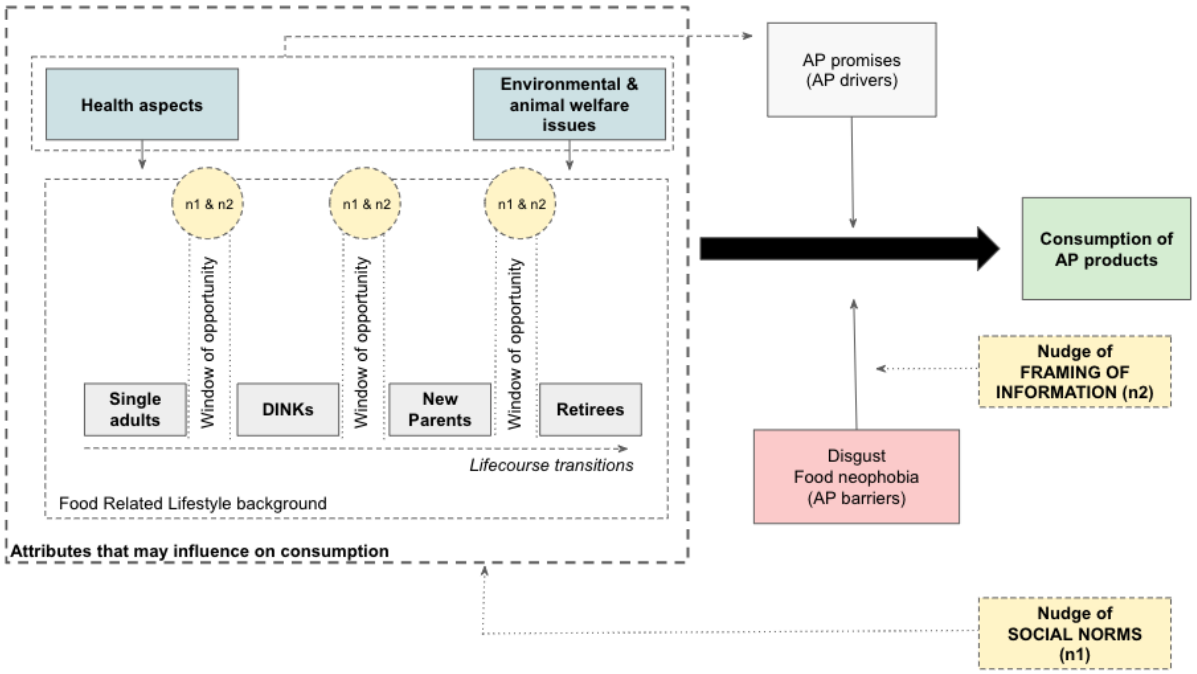
proteins, and the social context is one of those sources (Onwezen, Bouwman, Reinders & Dagevos, 2021).

Based on the theoretical revisions here exposed and in our research goals, we developed a framework, aiming to facilitate to the readers what we've been discussing and to organise the main ideas. We understood that many factors may influence consumers' willingness to purchase AP products, aspects such as lifestyle, lifecourse, health issues, environmental and animal welfare worries. On the other hand, disgust and food neophobia are shown by the literature as the main barriers for APs consumption.

At the same time, we already have AP products advertising strongly communicating promises (healthier bodies, feeding the world, good for animals and the environment - food kindness, control for sale, tasting the same as animal meat). In this context, nudges as social norms and framing of information may have an important role: social norms influencing the aspects of consumption and framing of information in the food neophobia and disgust (here understanding that information providing can be relevant to change such patterns).

Figure 4

Theoretical framework of research



Source: developed by the authors (2022).

Before we finish the theoretical background review and enter the methodological procedures explanation, we summarise next, in Table 9, the propositions assumed during the theoretical discussion here presented.

Table 9

Propositions of this dissertation

Proposition 1a: Consumers are understanding that AP products are healthier and more natural than animal meat
Proposition 1b: Environmental issues of livestock system are worrying consumers;
Proposition 1c: Consumers do see AP products as more ecofriendly than livestock products;
Proposition 1d: Consumers understand that the increased control afforded by the technoscience methods of AP production brings a range of different types of goodness;
Proposition 1e: Consumers are more willing to consume AP products that taste and have attributes similar to animal meat.
Proposition 2a: The drivers of health, natural content, weight control and ecological welfare (includes animal welfare and environmental issues) are important to initiate consumption of AP products.
Proposition 2b: It is necessary to address food neophobia in order to increase consumption of AP products, especially to non and light users.

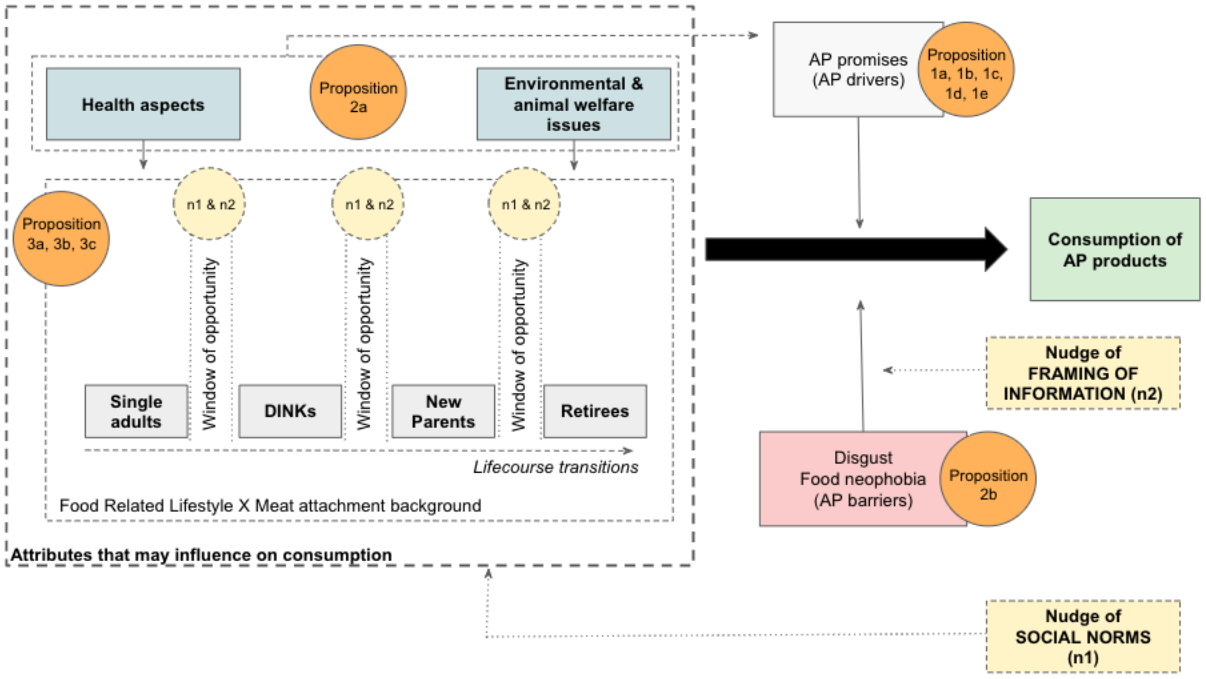
Proposition 3a: People in the same lifecourse will have similar willingness to consume AP products.
Proposition 3b: People living lifecourse transitions are more encouraged to change food consumption patterns towards more sustainable food choices regarding the consumption of alternative proteins.
Proposition 3c: Consumers with different food related lifestyles have different willingness to consume AP products.

Source: developed by the authors (2022)

Aiming to cross and relate the framework and out propositions, Figure 5, presented next, summarises the ideas.

Figure 5

Theoretical framework of research and research propositions



Source: developed by the authors (2022)

4 Methodological Procedures

The choice of the methodological procedures is crucial for the construction of knowledge about a given subject, since each method provides a study perspective. Thus, the decision about the research method to be applied depends on what the research aims to achieve, and is influenced by the paradigmatic stance adopted by the researcher (Gephart, 1999).

This research started with a literature review on the subject, to develop research background and identify research gaps. Then, a specific review was performed to analyse whether nudging interventions were being used in studies of consumption of alternative proteins. We searched through Web of Science, Science Direct, Scopus, Springer and EBSCO, looking for terms as (nudg* OR "nudg* theory") AND consum* AND ("cultured meat*" OR "in vitro meat*" OR "synthetic meat*" OR "insect* meat" OR “plant-based meat*” OR "new protein*" OR "sust* protein") in all document, aiming to increase our results. As inclusion criteria, we worked with peer-reviewed papers, final articles, in english, and in the area of marketing, management, and related fields.

In this search, we only found 5 studies that addressed the subject - not enough studies to perform a systematic review or use other strategies to analyse the selected papers.This search drove us a new path, though: the development of a qualitative study working with nudges. Even though we knew that a qualitative design would be challenging to work with, when we were aiming to use nudge theory, the systematic review we initiated confirmed, by the very few studies we found, that it would be enriching to the field. It seemed like the right moment to offer that deep dive into the subject through a qualitative designed study.

In qualitative studies it is known that the researcher's concern is not the numerical representation of the researched group, but the deepening of the understanding of a social group, an organisation, an institution, a trajectory (Goldenberg, 2007). Qualitative research “can be characterised as the attempt at a detailed understanding of the meanings and situational characteristics presented by

the interviewees rather than the production of quantitative measures of characteristics or behaviors" (Richardson, 2008, p. 90).

Qualitative research is applied to this study, as it allows the researcher to understand the subjectivity inherent in the interviewees' discourse. Corroborating this reasoning, Priest (2011, p. 123) states that for qualitative research to be effective, the researcher must "recognise the uniqueness of the scenario, people or material under study, keep good records, including detailed notes".

Thus, the personal and open contact with the interviewees can provide an analysis of the individuals in greater detail. It is known that alternative proteins are a new and, in a way, controversial subject, in the sense that it is not yet 100% accepted in society (it is more common from a vegetarian or vegan consumption perspective, but still not so much from a consumption reduction perspective of meat). Therefore, it is understood that a qualitative assessment can bring a very large wealth of insights and contributions to the sector and the market. Thus, clearly an exploratory research is coherent with the context, given that it is applied when a detailed study of the nature, sources and consequences of the topic is sought to be further understood (Richardson, 2008).

4.1 Data Collection Technique

In order to develop the empirical level, the collection of primary data takes place with the structuring of focus groups. Regarding the use of the focus group technique, Cooper and Schindler (2003) seek to explain that the most common application of this type of research is in studies on consumption, and its main objective is a new product or product concept - which meets the reality of alternative protein products. Hair Jr, Babin, Money and Samouel (2005, p.166) define focus groups as "relatively informal discussions that have [...] respondents who generally have something in common. [...] This common ground is usually very present in the discussion".

Cooper and Schindler (2003, p.133) complement the discussion by defining

focus groups as being “a panel of people led by a moderator [...] that uses the principles of group dynamics to focus or guide the group in exchanging ideas. , feelings and experiences on a specific topic”. There's also been highlighted the importance of the moderator being properly able to lead the research, leading the discussion in order to capture all the information relevant to the study and prevent some individuals from dominating the session, enabling the participation and contribution of all members of the group (Cooper & Schindler, 2003).

This approach has the "bonus" of making it easier for participants to take their actions in a broader context, joining the researcher in comparing and contrasting their responses. Therefore, focus group discussions can cause elements to emerge that otherwise, other than group interaction, would remain hidden and difficult to penetrate (Barbour, 2009).

Additionally to the discussion in the focus groups, we added two activities to each group: the word association and the image association. We started the groups meetings with the explanation of the research and of what we would be doing in the reunion, and the first task that they had was to listen to the words the researchers were saying and then to write the first three words that immediately occured in their minds (e. g. food, protein, meal, animal welfare, gastronomy, meat, cultured meat, etc).The second dynamic was the image association, where, instead of saying the words, we showed some pictures - and asked the participants the same: to write the three words that occurred in their minds as they saw the pictures.

Both dynamics helped the researchers to have an understanding of the processes that the participants go through when evaluating food, and how these can be affected by their social environment and by the discussion of the focus groups that would take place next. Some authors defend that word association techniques are a quick and effective method to find new concepts, regarding the one being researched (Roininen, Arvola, & Lähteenmäki, 2006).

The techniques of both word and image association were used in this dissertation to further discover perceptions around innovative food products (such as cultured meat and plant based hamburger) and sustainable food, and to access less conscious thoughts or concepts that could be accessed (Roininen et al., 2006).

Additionally, it's important to highlight that one of the 5 studies we found in the

systematic review we initiated very much inspired us. It was "Nudging, formulating new products, and the lifecourse: A qualitative assessment of the viability of three methods for reducing Scottish meat consumption for health, ethical, and environmental reasons" developed by David McBey, 2009, David Watts and Alexandra Johnstone and published recently (2019) in Appetite. This specific study gave us an interesting and audacious path to follow, as it worked with eleven focal groups.

We've contacted the authors, aiming to develop our research based on what they've done in Scotland, but adjusting the instrument to our research goals and to our south brazilian's context. The authors shared with us the scripts they've used, and we adapted to our research goals and context of research.The script we used to conduct the focal groups, as well as the word and image association exercise are presented in the appendix.

It's important to highlight what we explored as alternative proteins in this study: we focused on both cultured meat and plant based meat, but we didn't enter the subject of insect based proteins, in the data collection of this research. We understood that people were not ready for this discussion in Brazil, especially in the southern state, and didn't have enough knowledge on the subject, so it would help us advance in the research of the field. We rather focused on alternative proteins in general, cultured laboratory meat and plant based alternatives, as mentioned before.

Also, we worked with participant observation. The participant, or direct, observations were made during the focal groups, simultaneously with the activities performed (such as word and image association) and also during the discussions in the focal groups. The literature on this technique of data collection is controversial about the role of the researcher and the different conceptions of observation (Flick, 2009). It consists in the observation of situations and behaviors in which the researcher is interested (Jaccoud & Mayer, 2008). This approach emphasises knowledge of practices, since interviews, for example, only give the researcher access to what is being reported, and the observations allow the researcher to know the practices themselves (Flick, 2009).

This technique is very commonly used in qualitative research, and "combines both document analysis, interviewing of respondents and informants, participation

and direct observation and introspection" (Denzin, 1989, p.157-158). It is characterised mainly by the fact that the researcher delves into the field, observing it from the perspective of a member and whose participation must exert influence in the field under analysis. Also, the importance of the use of charts and structured observation schemes with the greatest possible detail is important to obtain consistent information about the field (Flick, 2009). The structured datasheets for the realisation of the observations are available in the appendices of this work.

4.2 Study Unity

A total of 27 people were interviewed, divided into 5 focus groups, each ranging from 5 to 6 members. Cooper and Schindler (2003, p.133) expose that “normally the group panel is composed of 4 to 10 respondents”, to which Vergara (2010, p.102) complements, justifying that “groups with less than 4 participants, make it becomes harder to maintain an active discussion. On the other hand, it is not easy to manage the discussion in groups of more than 10 people, especially when the participants have a high degree of involvement with the topic”.

Participants were recruited through the snowballing technique, aiming to address the lifecourse approach. For that reason we designed the following groups: single adults (g1), DINKs (g2), new parents (g3) and retirees (g4). We also wanted to address the healthy aspects (g5), and for that reason we created one more group, which we called the "amateur athletes". These people were recruited because of having high attachment with some physical activity.

Group 1 was hypothesised to be more disconnected and uninvolved with the subject; Group 2 was expected to be more adventurous and opened to trying alternative protein products; Groups 3 and 4 were expected to be more opened to more sustainable lifestyles and new food options, because of being in what literature addresses as "windows of opportunity"; Finally, Group 5 was expected to be already consumers. The environmental and animal welfare issue was not addressed in a specific group, because we expected this matter to appear in all 5 groups.

Furthermore, we understood that this segmentation would not bring new insights in this stage of the research, since we expected this group to be highly evolved already with meat alternatives.

The focus groups took place in a commercial room at an easily accessible address in the city of Porto Alegre, capital of the state Rio Grande do Sul (the southern state in Brazil), previously organised, in order to provide the necessary infrastructure for carrying out the research.

All focus groups were conducted during the month of May 2022. Each focal group reunion lasted between 1 and 2 hours. We recorded the meetings, and additional notes were taken after the interview in order to capture first impressions and thoughts of the interviewing researcher. All group reunions were conducted in the native language of the interviewees (brazilian portuguese). Table 10 presented below presents information on each focus group.

Table 10

Information on each focus group.

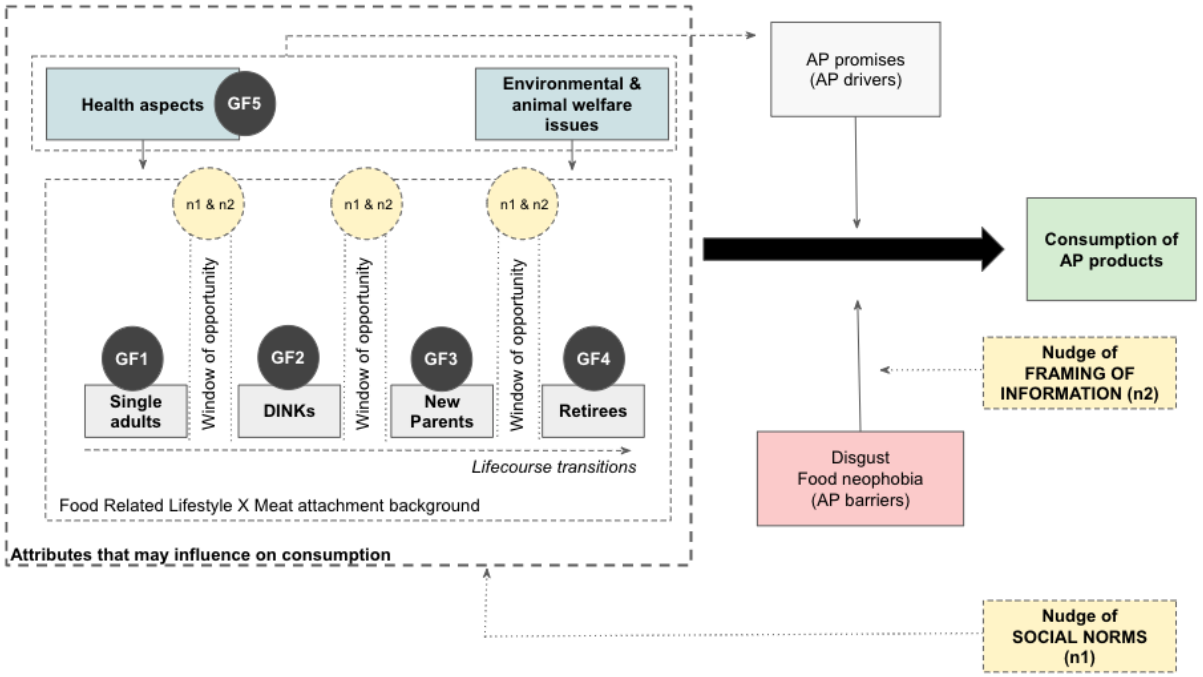
Focus Group Number	Focus Group Type	Number of Participants	Age Range of Participants	Gender of Participants
GF1	Single Adults	6	27 to 30	4 female, 2 male
GF2	DINKs	6	33 to 47 years old	3 female, 3 male
GF3	New Parents	5	37 to 51 years old	3 female, 2 male
GF4	Retirees	5	60 to 73 years old	5 male
GF5	Amateur athletes	5	29 to 56 years old	2 female, 3 male

Source: developed by the author (2022)

Aiming to clarify the reasons for our research design in terms of study unity, Figure 6 presented below, summarises the idea.

Figure 6

Theoretical framework of research X Focus Groups Designed



Source: developed by the author (2022)

4.3 Data Analysis Technique

Once the data was obtained, audio recordings were transcribed, we employed content analysis technique, whereby it is possible to focus on latent content and can better consider the subtleties of argument structure and narratives that are not easily captured. This analysis technique aims to search for the meaning of textual materials, whether they are the result of primary or secondary data, generating as a final product a consistent analysis in the theoretical interpretation of what is latent in the primary data collected (Appolinário, 2006).

To better organise the content, Bardin (2004, p.89) suggests subdividing the analysis into pre-analysis, coding and categorization. Below, we will detail these three stages of content analysis, according to the aforementioned author.

Pre-analysis is an organisation phase, and, according to Bardin (2004, p.89) it aims to “systematise initial ideas in order to lead to a precise scheme for the

development of successive operations, in an analysis plan". Therefore, it can be inferred that the pre-analysis aims to organise the information collected, enabling the choice of documents based on the research objectives, which, however, can only have their scope properly measured from the identification of the availability of documents (Franco , 2008).

Thus, a greater knowledge of the material is assumed. "The indicators will be built on the basis of the hypotheses, or, it may even be that the hypotheses will be built on the basis of the identification of certain indicators" (Franco, 2008, p.52). The formulation of hypotheses (provisional statements about what is being studied) means trying to particularise, or raise questions, formulate assumptions, from an empirical and theoretical framework. It is important that these presuppositions are made, which remain in abeyance until they are submitted to the proof of secure data, as this consists of explaining and specifying, and, therefore, mastering the dimensions and directions that the analysis can take (Bardin, 2004) .

The second stage is the exploration of the material, which consists of its **codification**, which corresponds to a systematic transformation of the data, in which they are aggregated and enumerated, which allows them to produce a representation of the content, serving as indices. Franco (2008, p. 58) explains that, regardless of the subject under study, "it becomes more important for data analysis the more frequently it is mentioned". Through thematic categorization, according to Bardin (2004, p. 99), "the text can be divided into constituent ideas, statements and prepositions that carry isolated meanings. [...] Doing a thematic analysis consists of discovering the nuclei that make up the communication and whose appearance can mean something for the chosen analytical object". Then, from a set of themes, it is possible to use different types of enumerations. In this study, the intensity measure will be used, which evaluates at three levels (corresponding to semantic variations) the appearance of an element.

The third stage of the content analysis process is **categorization**, which consists of treating the results obtained and interpreting them. It is, according to Bardin (2004, p.111) "an operation of classification of constitutive elements of a set, by differentiation, and then by regrouping according to previously defined criteria" generating an analogy, that is, a crossing between the data obtained. Categorization

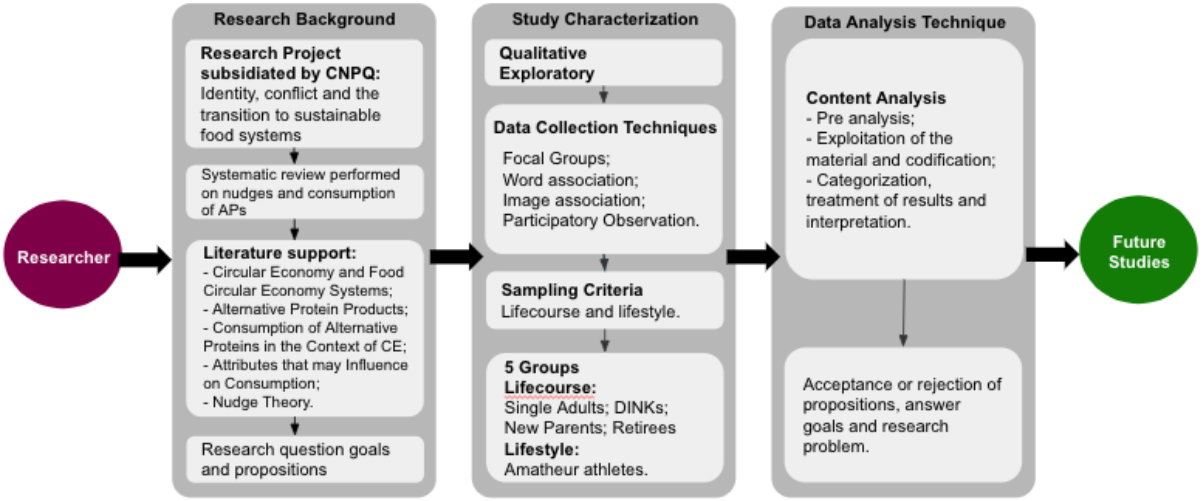
presupposes an investigation of what each of the established categories has in common with the others, and what allows the grouping is precisely the common part of the information. Thus, “the initial, fragmented and extremely analytical categories became indicators of broader categories that, when formulated, also began to incorporate theoretical assumptions” (Franco, 2008, p.62). The categories can be defined a priori – those that have as a starting point the theoretical framework and compose the objectives of the study and the a posteriori categories that derive from the data analysis (Bauer; Gaskel, 2002).

4.4 Research Design

The research design can be understood as a representation of the logical sequence that guided the development of research, which should consider the research question and objectives and study models to be applied, as well as the available resources (Yin, 2001). The design of the research is understood as a systematisation of the steps taken by the researcher to obtain the correct responses to the research objectives traced. Figure 7 systematised the process.

Figure 7

Research design



Source: developed by the authors (2022)

As shown in Figure x, this research was initiated as part of the project "Identity, conflict and the transition to sustainable food systems", subsidised by CNPQ. Also, we started a systematic review, following all the criteria to search papers on nudges and consumption of alternative proteins through the databases. As there weren't enough studies to perform such analysis, we dived into the existing literature. Then, the research question was delimited to the study context, defining the goals and propositions of the study.

Afterwards, the characterization of the research methodology was defined. We decided to approach the research question in a qualitative way through an exploratory study. It also defined the units of analysis that would be studied and how the data would be collected. Strategies were established with a view to bringing multiple sources of evidence, but having the semi-structured script as guidance, and, in a complementary manner, word and image association exercise and non-participant observation.

Thus, data was analysed generating the results, using as basis the definitions of Bardin (2011). With this summary of the methodological procedures, we followed to the next chapter, where secondary data, presented in the theoretical framework, and primary data, collected by the author, will be crossed. From the crossing of these data, inferences can be made from the results obtained in this research and final considerations.

5 Results and Discussion

In this chapter, the data obtained through the focal groups are presented, discussed and analysed, with the purpose of answering the main and specific goals of research. We start by bringing some initial information and highlights.

We started the data collection with two exercises: word association and image association. First, we provided the interviewees in each group a list with 10 words, that we, as researchers, read and gave a time to the interviewees to write down the first three words that came to mind, by hearing the mentioned words. Immediately after the word association exercise, we did the same dynamic but instead of telling the words, we showed pictures.

Thus, both dynamics were a few minutes apart, and some words mentioned and images showed matched (e.g. plant based meat (we first said the words, later we showed the picture), lab cultured meat, among others). We could notice in all 5 groups a huge difference in such cases. For example, in the word association exercise, when hearing the words "plant based meat" participants were more optimistic, bringing expressions as "possibility", "future", "innovation", "evolution", "healthy". Some worries also appeared like the product being "tasteless", "weird", "caution" or "doubt". Figure 8 illustrates the thoughts.

Figure 8

Cloud word about "plant based meat": word association exercise, results from all focal groups

Source: developed by the authors (2022)

In the image association exercise, the answers were a bit different, though. The interviewees didn't keep such optimism when they saw the image, despite being clearly curious about the product in question. Another common aspect was considering the product as innovative and, for that reason, probably expensive. Differently than we would expect, the product wasn't seen as healthier, but rather as an industrialised, fat product.

Figure 9

Cloud word about "plant based meat": image association exercise, results from all focal groups

Source: developed by the authors (2022)

When asked, in the word association exercise to write down the three main words when hearing "lab meat", the interviewees were even more optimistic than before, and words such as "technology", "future", "interesting", "innovation". The worries about the product also emerged, translated by words such as "weird", "fake" and "artificial". Figure 10 illustrates the thoughts.

Figure 10

Cloud word about "lab meat": word association exercise, results from all focal groups

Source: developed by the authors (2022)

In the image association exercise, the answers were even more different than before, and the participants demonstrated more positivity than in the word exercise. The lab meat was very much associated with "barbecue", "natural", "attractive", "interesting" and "sustainable". The curiosity was a common point, and the worries also appeared but with much less strength. Figure 11, below, summarises.

Figure 11

Cloud word about "lab meat": image association exercise, results from all focal groups

Source: developed by the authors (2022)

Next, we followed to the analysis itself, and the chapter respects the following structure: first, we explored the factors of consumption such as health issues, environmental concerns, and animal welfare, aiming to understand if they influenciate in some level of meat consumption and the intention of the consumers to change food patterns (section 5.1). Next, we brought together lifecourse patterns and the association of them with their meat attachment level and food related lifestyle, with the intention of understanding whether the lifecourse and lifestyle have some connection and whether we can get some insights of these factors to further incentivize consumers' purchase intentions regarding alternative protein products.

The perceptions of alternative proteins by the different groups studied, highlighting the drivers and barriers found and main perceptions were also brought here (section 5.2). Finally, we addressed the results that we found regarding the utilisation of nudges such as framing of information and social norms to encourage the consumption of alternative proteins (section 5.3).

5.1 Attributes that may influence on APs consumption: the role of health issues, environmental concerns, and animal welfare

Respondents from the 5 focus groups were almost unanimous in their views on the attributes that can influence the consumption of APs, and, for this reason, we did not separate the perceptions on these points by Group. In general, the results were quite surprising in relation to the propositions that had been made initially. We further analyse each aspect next: first, the vision of the interviewees on health issues, then the environmental concerns and animal welfare matter.

5.1.1 Health issues

Interviewees didn't see alternative proteins as healthier at all. The promises of APs as a conductor for "healthier bodies" wasn't what the consumers understood from the options that they knew. Interviewee 2 (Single Adults group, 2022) commented on such matter: "in my opinion, we would not need to have meat substitutes. Something similar to meat, with the same taste, to satisfy me...because it really isn't a necessity. If I need to, I eat eggs for protein".

The reflection about the meat eating matter happened many times during the different focal groups, but not emphasising alternative protein products as an option. Still from Single Adults Group, Interviewee 3 commented: "hey, we eat so much meat and for health we don't need that much meat, and that was one of the first things that

made me rethink how healthy it is to eat that much meat at every meal?". In this way, the consumers seem to understand the messages of negative health impacts associated with conventional livestock products (Sexton, Garnett & Lorimer, 2019).

> I don't care about the animal issue, I'm a little oblivious, I do most of the issues because of the distance I impose on it, but the issue of health and especially the taste, the difference between a food that doesn't have all this issue is impressive. of industry pressure. It seems that everything is done to make a profit, and you know that things will not have all the quality, because the animals that are made for slaughter are already treated to avoid getting diseases. There's this whole issue of the feed they eat, none of this is natural, although the meat is natural, the ox or cow that is loose in the pasture is natural, now the cattle that are made for slaughter, everything thought from the beginning to slaughter, nothing on this path is natural. He will eat soy feed, which is transgenic, he will receive medication, so he will not have the same quality, he will not taste the same as an animal that would not go through the same process. My grandmother always said that there is nothing like a home-raised chicken, a free-range chicken. This makes a difference in my taste, this issue of quality affects a lot (Interviewee 02, Group Single Adults, 2022).

Causal **links are frequently made between animal foods and 'chronic disease'**, 'health hazards' and nasty substances" (Sexton, Garnett and Lorimer, 2019), but not in the sense of Alternative Protein products being a healthier option that they would substitute meat products. "These animals receive a lot of hormones to grow faster, especially chickens. That's why we keep seeing cancer growing, in women and men" (Interviewee 25, Amateur Athletes group, 2022).

Respondent 23 (Amateur Athletes group, 2022) added: "When I'm buying chicken I sometimes think "man, there certainly are a lot of hormones in this chicken". Also, interviewee 19 (Retirees group) commented: "my family had aviaries, and for years and years I couldn't eat chicken meat, I would almost throw up. I started eating chicken not long ago, I could still feel the smell, it smells like skin mixed with pity".

> A chicken for slaughter, raised in confinement, if he spends 45 days he dies of a heart attack. That's why slaughterhouses and farms have a time, because that little water that drips to them is a hormone, in addition to injecting hormone. That's why he swells up and after that time he's going to die anyway, he explodes. This native chicken, that eats corn, that nibbles, lasts much longer, it lasts a quiet year, but you see that the meat is firmer. We just started to notice that. You look at a farm egg, it's white, it barely had time to mature, and the other one, which we call redneck, comes from a much more natural animal diet (Interviewee 09, DINKs group, 2022).

Another aspect that emerged from the groups was **the tension that the animal that is slaughtered feels when entering the slaughterhouse, and how it potentially affects people's lives.** "Nowadays the slaughterhouses are very careful,

it is even supervised that the animal cannot suffer, but when the animal arrives at the slaughterhouses, he feels the climate... he feels spiritually that he is going to die, he knows, and already in that tension" (Interviewee 21, Retirees group, 2022)". Respondent 2, from group Single Adults commented this matter in the same sense: "even the person's mood can change, in the way that the animal was killed and this causes even psychological problems

From Group DINKs, Interviewee 10 also complements:

> There's this whole health issue, they say that meat is a super villain, etc... but there's a line of doctors that we follow more, my husband and I, that way we are carnivores and we need that and the Meat is important in building muscle mass. it's important and it's good for us, and I don't see myself not consuming animal protein during my life (Interviewee 10, 2022).

Also, one important issue was brought by interviewee 17, from Group New Parents: "And my fear of this thing is that we're going to eat more other types of food and such, we're going too much towards artificial food too, too much processed. AP meat is meat that has been flavoured. How much chemical are you going to inject?".

The health matter seems to be stronger when thinking about not consuming meat: "I think I care more about my health first than the health of the animal, but I think the two things actually go together, but first of all, I consider it more important that I eat the meat for the my health than the animal issue" (Interviewee 12, Group DINKs, 2022).

Interviewee 15, from the Group New Parents, commented agreeing:

> For me, it is much more important to think about the health of the product than the sustainability of the product. I don't even know if it's more sustainable or not. Let's say that plant-based hamburgers are more sustainable than meat hamburgers, but how many things do they put in there, nitrite, nitrate, sulfite..."preservatives". So, it's much better for you to eat beef, or else you don't eat beef, but you eat eggplant, broccoli, than you go for the plant-based one because it's sustainable. Maybe it's much worse for health, maybe sustainable is not healthy, and I prefer the healthy line. If we follow this basis, we'll "save the cow and kill the people" (Interviewee 15, New Parents group, 2022).

Another aspect brought by the interviewees was that it is **expensive to find meals that are healthy** - even meat is each time more expensive.

Interviewee 26 from the group Amateur Athletes, disagreed and commented on such matter:

> "I do not agree with the idea that it is expensive to be healthy. I put it in my head that what is healthy is what we get from the land, what we harvest. What do you think of that healthy idea in the green packaging, which is

> gluten-free, lactose-free, but contains zillions of things that aren't healthy? That is indeed expensive, but buying potatoes, beans, carrots, real and healthy foods is actually cheap" (Interviewee 26, Amateur Athletes group, 2022).

Despite the health issue being considered as one main driver for adoption of alternative protein products, weight control and the natural content of foods, concern for animal welfare and environmental issues (Hoek et al., 2011), it was not an attribute that was observed as relevant by the groups as reasons to change food patterns towards AP products. We can say that the worries about health have some variation between the groups, but in neither one of them Alternative Protein products has been seen as healthier, ore more natural or as an option in such a sense.

For that reason, the ***proposition 1a*** *"consumers are understanding that AP products are healthier and more natural than animal meat"* was **refused**, because all 5 focal groups interviewed were almost unanimous in bringing that alternative protein products are not, in their point of view, healthier options, but industrialised instead. **Proposition 1d** "consumers understand that the increased control afforded by the technoscience methods of AP production brings a range of different types of goodness" was also **refused**, because the technoscience methods of production of APs makes it seem less natural and, therefore, not healthy.

5.1.2 Environmental concerns

The environmental aspect cannot be viewed as an issue, to the respondents, especially when reflecting about their food choices associated with this matter. "It doesn't affect my life enough for me to worry about it. It won't affect my generation, not directly, neither my children's nor my grandchildren's. This will take a long time. Therefore, I would not change my habits because of that" (Interviewee 01, Group Single Adults, 2022).

There is enough knowledge to the respondents on such matter, but not enough strong to result in a behavioral change. "In the world it is the activity that consumes the most water per kg, I don't know how much but it's an absurd amount of

water for each kg, and there's also the issue of pasture and such, is not sustainable" (Interviewee 24, Amateur Athletes group, 2022). "I would hardly change my habits because of that, because meat is one of my favourite foods. iI doesn't touch me enough, or is relevant enough to me" (Interviewee 04, Group Single Adults, 2022).

Also, we saw a contrary movement to this discourse of how meat consumption is unsustainable, and it was common in many of the groups - even though not unanimous among the respondents of each group in which this issue emerged. The following sentences shows this point: "this issue of environmental impact for me is a lie. This argument is being used because politicians want to change a matrix, food, energy, or even customs. This is some policy of someone with power trying to establish this system" (Interviewee 20, Retirees group, 2022).

> Just by having the cattle in the pasture restores the soil, makes the land cycle. Cattle production is also important. And another point, what are you going to do with these cattle if you don't eat? Because he's going to die anyway. Even politically, you need to have a productive field, you have to have x heads, you know (Interviewee 16, New Parents group, 2022).

Respondent 8, from group DINKs, were even more energetic in bringing his vision to the debate:

> I find it quite controversial to say that cow fart generates a greenhouse effect. Let's go a little further into science, there are many more pollution factors than raising livestock. I think it's just a lack of knowledge. The professional producer protects the environment a lot, seeks to maintain the native field and pasture closer to the ecosystem. "the fart of the cow that is destroying the ozone layer is a crime", man if you eat eggs and you eat beans it is the same impact. the car you use is even worse. If you think about the chain of everything you consume, the chemical process that is done for you to have that synthetic coat, it's all a bomb for the environment. So I think it's a great hypocrisy and a lack of technical knowledge, because if the professional rural producer doesn't preserve the environment, he doesn't have a business (Interviewee 8, DINKs group, 2022).

Despite these comments, it was very common in the groups to bet on the next generations to solve the problem: "I think this kind of attitude will be more present in the next generations to seek a certain responsibility, a balance" (Interviewee 10, DINKs group, 2022). In the New Parents group it also emerged: "it's a process that will happen naturally and culturally with the new generations. Many come from a family that has these ideas, they already grow up in vegetarian families, for example. I saw a lot of the interns that we had at the company" (Interviewee 15, New Parents group, 2022).

In all the cases, the alternative protein matter wasn't sawn as an alternative that is more sustainable, or environmentally friendly. "About the greenhouse effect: the industrialization of these foods as a trend, is also to increase industrialisation, which will also produce gas and elements foreign to nature" (Interviewee 19, Retirees group, 2022).

Thus, we can assume that ***proposition 1b*** *"environmental issues of livestock system are worrying consumers"* can be refused, because this didn't appear as an actual worry on the consumers. ***Proposition 1c*** "consumers do see AP products as more ecofriendly than livestock products" can be **refused** as well.

5.1.3 Animal welfare

Concerning the animal welfare, all 27 interviewees from the different focal groups were almost unanimous, bringing that they **dissociate the animal aspects with the meat products itself**. That has already been pointed out as one of the greatest barriers to influence consumers to adopt environmentally and animal friendly diets: people do not make a connection between the environment and food (Bacon & Krpan, 2018). "You see the cow, the chicken, the pig, and you don't see the "before and after", we don't make a connection" (Interviewee 7, Group DINKs, 2022).

"You know that at home we always ate meat but there was a time when my oldest son started like this: is that cow? I said it was BEEF, it's not an animal... He kept asking: "but this is chicken", and I replied: no, it's chicken MEAT (Interviewee 14, Group New Parents, 2022).

Other point that was confirmed in the study was that despite public's awareness, **the connection between food and environmental issues is still very low** (Dai et al., 2020), and we can affirm that even more: the animal issue has been seen as normal, as regular, almost as something that has to occur in order to have a "balance" in the environment. "I respect it, but now it is dead so it has to be eaten, otherwise it will spoil" (Respondent 21, Retirees group, 2022).

Interviewees 3 and 16 also reinforce such a point, and their lines are shown below.

> Alternative proteins don't make much sense to me, you replace meat with these products. I know how terrible the meat industry is, but for me it's a natural thing, I grew up watching my grandfather slaughter a cow, I know the animal suffers, but the animal was created for this, and then for me this argument doesn't catch (Interviewee 3, Single Adults group, 2022)

> I don't take into account that animal cruelty part. I see it as an industry, I don't get that sentimental side. I think animals have to be slaughtered because they pollute, so I think for me there is “a balance” (Interviewee 16, New Parents group, 2022).

Respondents also mentioned that there's an **ambivalence** that they live through, a paradox, because they care for animal welfare, but not so much that they would change their food patterns: "For me it's the question of cruelty, so it's always been what weighed me down and it still does. I'm totally ambivalent because I know meat tastes good, I walk past a steakhouse and think, wow, it smells good"(Interviewee 23, Amateur Athletes group, 2022).

Another aspect that came up was that people actually **don't want information** on such matters. Otherwise, they try to keep a distance from data that brings meat consumption and animal welfare as an issue. "I buy meat at the supermarket, and I can't think too much, I don't want to think about where the meat comes from. The meat comes from the supermarket, it's on the tray" (Interviewee 17, Group New Parents, 2022). Interviewee 10, from Group DINKs, makes the matter even clearer: "If I think about it and watch videos, look up the subject, maybe I'll become a person who doesn't eat meat. That's why I don't try to find it, because I feel it, and it hurts me a lot" (Interviewee 10, Group DINKs, 2022). "Meat has to be packaged there and I cannot think about what happened, it's not good even to talk about it a lot because I'll end up not eating meat, and I like meat" (Interviewee 20, Retirees group, 2022).

The search for an understanding that the process of slaughtering animals has changed in recent years was highly punctuated among the groups, almost as a collective way of **seeking collective approval to continue eating animal meat**. "The egg, I love to buy the egg from the happy chickens. My mother always says that this is a lie, but I say I need to believe that the chicken were happy “free bred", because I have been to an aviary and it's horrible" (Interviewee 2, Single Adults group, 2022). Below, we present some fragments that reinforce this point.

> I also know that, as sad as it is, this industry has changed a lot, so for example, the way the animal dies is not the same way the animal died in the past, in the past the animal died based on a club, based on suffering. You take the pig and leave the animal there bleeding, I know it's suffering. Today the animal still dies, but based on a shock that is almost instantaneous, despite not being standard (Interviewee 6, Group Single Adults, 2022)

> We prefer to believe that everything is done with a lot of common sense and ethics. It hurts to think that they will hurt the animal, so we understand and want to believe that this is it! (Researchers try to dig deeper, asking: But you don't seek to find out if this is the case in practice or more information, do you?). All participants agree: "No" (Interviewee 08, Group DINKs, 2022).

Given all the points argued on this section, we can assume that ***proposition 2a*** *"the drivers of health, natural content, weight control and ecological welfare (includes animal welfare and environmental issues) are important to initiate consumption of AP products"* can be **refused**, because not only such matters are not important to consumers, but they actually don't want to receive these kinds of information. The ones that are more open to the subject, are more willing to stop eating meat at all than to search for AP products to replace meat consumption.

5.2 Lifecourse patterns and food related lifestyle: is there a connection?

As already explained in the Methodological Procedures chapter, we proposed 5 focal groups based on the concept of lifecourse. For that reason, we organised 4 groups that represented the culturally-defined stages of life: Single Adults, DINKs, New Parents and Retirees. We also added one group lifestyle related, the Amateur Athletes, aiming to understand if it would bring difference among the lifecourse ones, and whether the lifestyle would, in this case, soprepose itself to the lifecourse stage.

As a result, we confirmed that there is a main connection among the lifecourse patterns and the lifestyle that they pursued, especially the food related lifestyle, as authors, such as McBey et al. (2019), argue: people who are at a similar stage in life and experience the same historical events, even without physical, intellectual proximity or even knowledge of each other's existence, have a cultural approximation

and can be expected to have certain beliefs in common, especially in the years of their constitution as individuals.

5.2.1 Single Adults

The Single Adults group was expected to be less food involved. We expected people with ages between 27 and 30 to be more career focused and less attached to food experiences. Such expectation was confirmed. "Today I finished the meeting at 12:20 pm and there was a meeting at 1 pm, so I had 40 minutes, and there was no time to cook anything… I mean, maybe there was, maybe you can cook something in 40 minutes, but I don't like it and I don't like washing the dishes" (Interviewee 05, Group Single Adults, 2022). Interviewee 1 brings another perspective, but convergent: "I thought more about what I consumed when I had more time to think about what I was going to buy. Now I don't have time to cook, and sometimes I even forget the food in the fridge when I do it, because I run out".

We investigated their childhood memories in the food matters, and discovered that even though most of them were raised with natural food, people in this lifecourse stage don't maintain such habits. Interviewee 03 exemplifies: "My father always ate a lot of healthy food, and we always had a vegetable garden at home. But I like fast food better, if you put in a plate of rice and beans, and ask me to choose between that plate and a McDonald's, I'll always choose Mcdonalds". Interviewee 02 corroborates: "even when ordering through iFood, it is hard to order healthy food, because when you open Ifood there are hamburgers, pastel…How are you going to order healthy food if there's McDonald's or pizza right next to it?".

For these reasons, we associated the lifecourse group Single Adults to the **Uninvolved food related lifestyle**, due to the fact that the Single Adults group showed to not be caring much about anything regarding food, eating whatever is disposable and having a high incidence of snacking and convenience food (Brunsø et al., 2021). Interviewee 04 commented on such matter:

> Living alone, I don't feel like cooking at all. Too much dirt, too much grease. For you to have an idea, everything is left. Bread has to be frozen. I travel a

> lot, I bought today and next week I will travel to São Paulo. Even food that you order through the app is left over sometimes, it's even complicated to cook for one person (Interviewee 04, Group Single Adults, 2022).

When aiming to understand the meat attachment, we found that to be higher on the male respondents. The four women that composed the group related that "it's not a problem for me not to eat meat. Actually when I cook, which is on weekends when I'm at home, we hardly buy meat" (Interviewee 3). The two male participants also agreed between them both: "Almost all of my meals have meat, I consider ham as meat, barbecue, animal derivatives" (Interviewee 2, Group Single Adults, 2022). "As a last resort, like, if I went to the supermarket and forgot to buy meat, because I thought I had it at home and I arrived and I didn't have it, so I'll make pasta with a sauce. But if I look at home and there's still ham, for example, I'm going to eat ham. It has got to have some meat" (Interviewee 4, Group Single Adults, 2022).

Aiming to correlate both lifecourse and food related lifestyle, as well as the meat attachment aspect, we tried to understand the respondents views on the drivers and barriers of alternative proteins, and in this group, the barriers were majore. Among the barriers, the **taste, health aspects, price, lack of purpose were observed.** Among the drivers, we found only the **social aspect**.

Regarding the barriers, the **taste** was pointed out as the first negative point: "I tried one plant-based burger, and I'm sorry, I didn't find it nothing like meat - as it promises. I would eat it if it tasted good, as simple as that" (Interviewee 01, Group Single Adults, 2022).

The **health aspect** was also pointed as one major barrier: "as they want to say it tastes the same as animal meat, they end up having to add a lot of additives, and sodium, etc... to try to emulate taste" (Interviewee 03, Group Single Adults, 2022). Respondent 05 agrees and complements: "For me it's very artificial to think of meat created in a lab, these things that try to simulate meat. If I'm going to eat soy, I eat soy, I don't need to eat soy that looks like meat, flavoured, seasoned" (Interviewee 05, Group Single Adults, 2022). The subject was also complemented by respondent 06:

> Soy meatballs, for example, are high in sodium. For starters, I don't think I would even need to make a meatball out of something else, if you want to eat meat, eat the meatball, if you don't want to eat, eat other things! Why is there this need to have "plant-based meat"? But anyway, they do that, and then you're deceiving yourself, because you want to eat something healthy,

> but this plant-based meatball has a lot of fat, gets even stuck on your finger (Interviewee 06, GroupSingle Adults, 2022).

The **price** was highlighted also as a negative matter: "From what I've heard the price is compatible with meat, it's expensive, not even financially worth it" (Interviewee 04, Group Single Adults, 2022).

The **lack of purpose** in finding a replacement for animal meat was also brought to light by the respondents. "If I wouldn't eat meat anymore, I think I would avoid eating meat at all, without trying to substitute animal to plant-based meat" (Interviewee 01, Group Single Adults, 2022). "It's unnecessary to make something look like something that's not just for you to think and kind of fool yourself, saying 'I'm eating something likemeat'" (Interviewee 04, Group Single Adults, 2022). The respondent 03 was even more direct "if I'd stop eating meat, I wouldn't want to eat something that looks like a dead animal. If I stopped eating meat I wouldn't want to eat a lab-grown steak just to remember the taste of meat, for example" (Interviewee 03, Group Single Adults, 2022).

As **drivers**, in the Single Adults group, we could only verify one aspect: the **social** one. Interviewee 05 commented that both for people that can't eat meat for health issues or that choose not to, "if you don't eat meat and you're in the middle of friends that are eating hamburgers, for example, you have the option of eating too. Like, you're not going to pick up and eat a carrot! I'll also get my hamburger here, socialise" (Interviewee 05, Group Single Adults, 2022).

As general comments, the respondent 01 highlighted that, in Brazil, it's still a brand new subject, and we don't have yet many options that already exists abroad, like the cultured meat, that the interviewees showed more interest "obviously we didn't eat all the options, those created in the lab they seem to be closer to meat, and healthier". Also, respondent 06 commented: "I think the industry is wrong, that instead of replicating meat, they want to sell this idea of equals, they could use another approach, talking not about meat, but about a new protein. Because then they will never catch the public that consumes meat".

To facilitate the understanding of the main points, table 11, presented next, summarises the findings.

Table 11

Summarised findings of Single Adults group.

Food related lifestyle	Uninvolved
Meat Attachment	High (Male) Low (Female)
Barriers of AP consumption	**Taste**: doesn't taste good; **Health aspects:** industrialised food makes it unhealthy; **Price**: high prices; **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat.
Drivers of AP consumption	**Social aspects:** inclusion of people that can't or don't want to eat meat in social moments.
Final Remarks	- Positioning such products as a protein source might be better than confronting with meat; - Lab meat has more acceptance, appears to be healthier.

Source: developed by the authors (2022).

5.2.2 DINKs

DINKs were considered in this research as couples that have recently gotten married, and still don't have children. We didn't want to explore other aspects here but this one. We assumed that this group of people would be very much open to new experiences and food products. We were right about such openness. DINKs demonstrated to be curious about different foods, and, for that reason, we considered this group as having an Adventurous food related lifestyle.

They mentioned that they travel a lot, they go out to have dinner a lot, and mostly see meal time as an opportunity to have social convivation. "I like to go out for pizza, have a beer, eat a hamburger, I love it, but I also really like having a balanced diet. I consider food, today, almost as an opportunity to socialise, it's more like a pretext for social meetings" (Interviewee 11, DINKs group, 2022). Also, the worry about keeping a balanced diet emerged: "I think a lot about the things I eat, I don't stop eating what I like, I don't stop eating fast food on the weekends, but as we get

older even physiological issues influences on the search for balance, I need to eat well that make the intestine working" (Interviewee 08, DINKs group, 2022).

> I like to cook on Saturday and Sunday. During the week, we eat separately, close to work in a restaurant, or we order when we work from home, nobody cooks. But when I go to the kitchen to prepare something, it's that moment: it has a plan, I like to open a beer and drink while I cook. Then, we sit at the table and it's our moment: let's enjoy it now (Interviewee 10, DINKs group, 2022).

Also, the respondents commented that after marriage, they gained weight, and with that started worrying about eating in a more healthy way: "I gained a lot of weight after the wedding. For health reasons, during the week I try not to drink soda, try to eat more salad. But every day, it weighs on me, how difficult it is to be able to maintain a healthy eating behavior" (Interviewee 07, DINKs group, 2022).

Respondents commented that they like to eat different foods, trying new things, especially when they travel. Respondent 9 comments on that matter: "When we travel, we like to have different experiences and for sure food has a major importance, to try the typical restaurants, so the gastronomy is involved in the tourism".

Regarding meat attachment, we considered that this group has medium range. They do consume meat almost every day, but it isn't a problem not to consume, and even commented that sometimes they do so much more for convenience or for habit, than for the meat itself. "I love pasta, but it has to have some protein…because it has to have protein! It's like my brain understands that it has a protein, I don't even think about it when I choose". Also, commented that the culture of the south of Brazil is very much based on meat, and how much they were raised to eat meat: "I don't even think about it, it's part of my diet, it's natural. It's something that we were encouraged to like, very cultural from our region here in the South. it's a created habit" (Interviewee 8, DINKs group, 2022).

> The standard, for example, is to have a barbecue on Sunday, it's sacred. If you don't do it, it seems like it's not Sunday (agreements). No matter how conscious I am, I will continue to eat meat, but I can eat less. Instead of eating a steak of 200 grams I can reduce it to 50 grams. But it's difficult because it's a very rooted thing (Interviewee 10, DINKs group, 2022).

They commented on the habit of eating other foods as well, and searching for protein in other products: "I eat a lot of salad, a lot of vegetables, and we usually eat

chicken because of the ease of preparation. I usually eat meat every day. Sometimes I try not to eat meat, I don't think I need to eat meat, I can make an egg, eat a lentil and other things".

When asked what they considered as alternatives to meat, the DINKs respondents were capable of mentioning other products that weren't meat based (different from what happened in most groups, that would always mention other meat based products). The following conversation took place: "pasta" (Interviewee 7). "eggs" (Interviewee 12), "pasta and eggs" (Interviewee 9), "pasta, always" (Interviewee 10), "I like grains a lot too, chickpeas, beans, lentils but not just the standard cooked format, lentil salad, chickpea salad I like it is something that satiates a lot, you can eliminate the meat because then it already has protein" (Interviewee 8), "I think it is more culturally related to us, he said protein, I associate it with meat, but I learned the concept of protein as an adult in my city, in the countryside, the concept of protein did not exist, it was just meat" (Interviewee 11).

Aiming to correlate both lifecourse and food-related lifestyle, as well as the meat attachment aspect, we tried to understand the respondents' views on the drivers and barriers of alternative protein consumption. Among the barriers, we only found the **health** and **environmental** aspect**,** while among the drivers, we found **price and taste**.

Regarding the **health aspect**, the respondents have a vision of AP products as being a very much industrialised product, and, therefore, not healthy. "I worry about where the food comes from. If I look at the ingredients of AP products I'm sure I'll find a lot of preservatives, flavourings, glutamate-something, which are things that we naturally avoid" (Interviewee 10, DINKs group, 2022). Comment to which Respondent 10 complemented "What is the quality of this vegetable being used in plant-based meat? How much pesticide there is in these vegetables. Surely they don't use organic vegetables, look at the price of organic products, it's impossible".

> Stop and think: how many processes have to be done for the plant to look just like eating hamburgers. Red is even easy, just use beetroot, but the change is made to look like a meat that we eat. I even understand, because that way, looking at a red meat reminds you of the flavor and makes you want to eat it. Even thinking about it, going back to the fishing hunting season, when the guy had to satisfy his hunger, hunt, kill and consume to store energy to have strength and so on, man, this is still very much ingrained in us.. Finally, my point is that I understand that they want to refer to meat, because you look at the food because it has a red aspect, meat

> aspect, maybe it attracts attention and makes you want to eat… (Interviewee 11, DINKs group, 2022).

Even, surprisingly, the **environmental aspect** was brought up as a barrier: "How much process do you have to do to make a plant look like meat? It's violent. If you're thinking about environmental issues, how many processes were carried out on top of a certain product, how many things were placed there to get to that point?" (Interviewee 12, DINK group, 2022).

Regarding the drivers of **price and taste**, the respondents mentioned that they don't have any problem in trying and eating alternative proteins, as long as they taste good and as long as it is not an expensive product. "If it's pleasant I'll eat it, not to replace meat, but to have an alternative, but if it's pleasant I won't" (Interviewee 8, DINKs group, 2022). The following conversation took place: "For me it's flavour, attractiveness of the product. If it is tasty, I'll consume" (Interviewee 9), "Man, I think price and taste" (Interviewee 12), "Taste, flavour" (Interviewee 10) - (everyone agrees). "I think it's even like the pâté, the sausage… you know that's what's left of the animal, but it's protein and it's delicious, so I eat it" (Interviewee 8).

As general remarks, we can comment that in this group we found a paradox between the drivers and barriers: as drivers, the taste was very important to the respondents, and if the product is tasty, they don't stop eating for not being so healthy (e.g., sausages). But, as they see AP products as industrialised and, therefore, not healthy, it came out to be a barrier to their consumption.

An important aspect that emerged was the importance of the certifications on the products. It doesn't actually matter what the certificate is related to, they associate the green color in the certificant tags as a sign of a healthy, natural product. Respondent 09 commented: "Many brands have a green tag, certificate, and only the green color already generates a better impression, predictability. I like to buy from these brands that have a good reputation of well-known slaughterhouses". Respondent 12 added:

> There are some brands that are starting to raise chickens without antibiotics and free, I think that's good not only for the animal but better for human health. The green color of the brand gives me a better impression, because this company is taking care of investing in the well-being of the animals and in a healthier and more quality food for people (Interviewee 12, DINKs group, 2022).

The precedence, traceability of the meat came out to be an important issue as well: "I only buy meat with origin, with provenance. you don't know or a guy who comes with a little truck selling meat, you go to a supermarket, get certified meat, people pay taxes for these guys to inspect".

To facilitate the understanding of the main points, table 12, presented next, summarises the findings.

Table 12
Summarised findings of DINKs group.

Food related lifestyle	Adventurous
Meat Attachment	Medium
Barriers of AP consumption	**Health aspect:**industrialised food makes it unhealthy; **Environmental aspect:** the industrialisation processes that AP products might go through must have a great impact on harming the environment.
Drivers of AP consumption	**Price and taste:** if it tastes good and isn't expensive, the respondents are willing to add AP products in their diets - but not as substitutes for animal meat, but rather as a protein source.
Final Remarks	- There's a paradox between the drives and barriers; - Certificates and tags in products, especially green ones, matter; - Certificates give an impression of traceability.

Source: developed by the authors (2022).

5.2.3 New Parents

When we designed the focal groups, we expected the New Parents group to be one with lowest meat attachment and expected people to be more food involved. We thought that, since this group was more involved with their children, they would be more worried with alternative proteins and with animal meat issues regarding health choices. These assumptions were wrong.

New Parents group came out to have a Careless food related lifestyle, which refers to people that don't care much about anything regarding food, have a high incidence of snacking and convenience food, but have more interest in new products and snacks (Brunsø et al., 2021). Interviewee 16 comments on such matter:

> Due to schedules, I end up eating at the restaurant on my lunch break, and during our evening hours, we arrive late, we don't have much time. The only one who benefits from home-cooked food is our daughter, whose nanny does her planning. The nanny says: 'there's X fish, there's X chicken, you have to buy fruit'. From my daughter, the baba who takes care of everything until dinner at night. And that's what the baby is: it's protein, meat (or chicken or fish, which she loves) and every day it's pasta, and fruit the baba keeps giving her all day, it's apples, bananas, watermelon and oranges. But as for me and my wife, we don't have any plans, then it's fast food, iFood is basically what we eat at night (Interviewee 16, New Parents group, 2022).

This group also was unanimous in highlighting the importance of planning the meals, they reported how they organise their meals at home or who does it for them, or for their kids. "I'd rather eat home made food every day than order. We have an employee who makes lunch and dinner, so it's just a matter of heating the food" (Interviewee 14, New Parents group, 2022). Respondent 17 added: "planning is very important., I have a list on the internet with everything you buy at the supermarket, and my employee makes an 'X' on what I need to buy, because my time at the supermarket is restricted".

There were only one outlier among the group that commented that during the pandemic of Covid-19 started going to fairs with his little daughter and made this a pleasant moment for them both. "It became a leisurely moment in the pandemic, and then we kept that. Despite that, we order a lot of food, we try to order something healthy. But discovering new foods is something we really enjoy, try different flavours" (Interviewee 14, New Parents group, 2022).

Regarding **meat attachment**, this group can be considered the most attached of all groups interviewed. Animal meat, especially bovine meat, was reported to be consumed every single day and in every meal. "I don't eat meat occasionally when I'm going to eat a pizza, or when we make pasta that has cheese and something else. A risotto, pasta, with cheese, vegetables and stuff… but it's usually hard to go a day without meat (everybody agrees)" (Interviewee 16, New Parents group, 2022).

When asked: "when you think 'meat', what kind of meat do you think?", the following discussion happened: "Red meat" (Interviewee 15). "Red meat" (Interviewee 16). "Whenever I think: 'there's no meat' it's red meat" (Interviewee 13). (all agreement) "I think about chicken, fish and meat" (Interviewee 14). "Yeah, I think about red meat, and everything like that, pieces, ground, hamburgers, meatballs...

When I was little and I sat at the table and I didn't have meat yet, it was like there was no food at all" (Interviewee 17).

Due to the meat attachment extremely high, when lead to thinking about such consumption, respondents commented that reflect most about the amount of carbohydrates that they consumed than about the amount of animal meat. "The only thing that we think about at home is the issue of carbohydrates, now the issue of protein is red meat, it is red meat in the veins" (Interviewee 16, New Parents group, 2022). Respondent 14 brings other thoughts: "I already tried not to eat animal meat for a period when I took an environment course. I didn't eat meat for a week, but it started to irritate me, I needed meat".

Also, when wanting to substitute meat, the interviewees see as an opportunity not actually eating other sorts of food, but different animal sources instead. Pork and seafood were mentioned as options. Respondent 14 commented: "The pork is even healthier than red meat, and even economically it's better. I included more in the diet, because beef is very expensive, so we started to eat more pork". Respondent 15 complemented: "We make more seafood on the weekend. But red meat wins". And, finally, Respondent 16 added: "for us it's 100% red meat, because it's very rare to eat other things".

Searching to correlate both lifecourse and food related lifestyle, as well as the meat attachment aspect, we tried to understand the respondents' views on the drivers and barriers of alternative proteins for this group. As barriers, we found the **cultural attachment** and the **prejudice for the promise of alternative "meat" and lack of purpose.** We couldn't find drivers among the New Parents group, which had the highest meat attachment of all the 5 groups conducted. For this group, thinking about replacing animal meat with alternative proteins is unthinkable.

Regarding the matter of **cultural attachment**, the respondents certainly were very much attached to meat, and put this as being a cultural aspect. "The point is that it's not so simple to break this whole animal chain today, so it's really complicated like that, and there's a whole livestock culture that is very strong and dominates the country" (Interviewee 14, New Parents group, 2022). Respondent 16 was tougher, but complemented:

> For me meat is meat. Don't come to me with vegan barbecue. These plant-based meat things for me are the stuff of that annoying vegan who

> bothered the family and knows there's no way out and now he's going to have to eat that stuff of his, he can't turn carnivore back. Then he's finding a way to say that it's a wonderful vegan barbecue, with the texture, smell and taste of meat (Interviewee 16, New Parents group, 2022).

In the New Parents group, the prejudice for the promise of alternative "meat" was a very strong barrier. It's important to highlight the prejudice for the **promise of alternative "meat" and the lack of purpose,** two barriers that, for this group, are together. They not only don't like the idea of naming other proteins as "meat", but also don't see purpose in substituting animal meat with other types of proteins. In their view, if they want to replace animal meat, or eat other foods that don't contain animal meat, they will eat other types of food, and that's enough. These thoughts are shown in Interviewee 17's comment: "I'm prejudiced about these things. I can eat something else, like vegetables and other things, but I wouldn't eat plant-based hamburgers. There's no reason to! If that's the case, I won't eat hamburgers that day, I'll eat pasta with broccoli, or other things that I also find delicious". Interviewee 13 added: "they have to try to convince us for the right reasons and not saying that it tastes the same as meat, but it's not meat, because this isn't true! They should say: 'this here is better than meat, for these reasons: it has more protein, it's tasty , it has no chemical origin' ". Interviewee 16 also complements:

> I'm very strict on this point, for me a brigadeiro that is not made from condensed milk, you can call it what you want, but for me it's not a brigadeiro, I'm very radical with these things. meat that doesn't come from meat can call it something else, let's call it something else. I don't even like things like "barbecue flavoured peanuts"! these things I don't eat (Interviewee 16, New Parents group, 2022).

As general comments, we can say that, within the established discussions, when they think of technologies applied to food, they relate to a Malthusian theory that there will not be food for all people on the planet, and that, therefore, technology can support us in this sense. They don't even consider, however, that the technology could be at the service of replacing animal meat, especially beef - which, for this group, is extremely important. "I think there in the future there would be technologies that would be able to supply this food to the whole world, working in an ecological way, in a sustainable way, in the correct way, for the preservation of the planet" (Interviewee 13, New Parents Group, 2022).

Also in this group, the lab meat, or cultured meat, also got the attention of the respondents as an interesting alternative. "I had read about it but hadn't stopped to think about it, the lab meat, synthesised from cloned cells. I find it interesting, because cell number one was real. So it is possible that the taste will replicate itself. I found it very interesting" (Interviewee 13, New Parents group, 2022). Respondent 15 complemented the thoughts: "If you take a cell and create meat from there…just as in transplants, organs are already being created, a heart made from a pig cell... I found it very interesting, more than the plant burger, despite being super synthetic". Finally, respondent 16, added: "if there are different cuts (entrecot, etc), and animal meat costs 50 and lab meat costs 30, I would eat lab meat 80% of the time and at the barbecue I will eat the animal one".

To facilitate the understanding of the main points, table 13, presented next, summarises the findings.

Table 13
Summarised findings of New Parents group

Food related lifestyle	Careless
Meat Attachment	High (extremely high)
Barriers of AP consumption	**Cultural attachment and prejudice for the promise of alternative meat**: respondents were very much attached to meat, and put this as being a cultural aspect. Also, demonstrated prejudice for the positioning of AP as meat-like products. **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat.
Drivers of AP consumption	None found
Final Remarks	Lab meat, or cultured meat, also got the attention of the respondents as an interesting alternative

Source: developed by the authors (2022).

5.2.4 Retirees

Our expectations regarding the Retirees group was that this would be less open to try alternative proteins than the other four groups. We expected to even have some difficulty addressing the subject with these people, because of the cultural matter. We expected them to be very much meat attached, and, therefore, closed to other options. These assumptions were partially wrong, as we further explained next. Despite Retirees being more conservative, they were not closed to the subject discussion.

Thus, Retirees were considered as having a Conservative food related lifestyle: people that have a conservative approach to cooking, and demand for quality products (Brunsø et al., 2021). Interviewee 20 commented on what they considered in meals, and reinforces the conservative profile: "my biggest concern these days is food, I don't exercise but food is important to me. At home it's always pasta, rice, beans, potatoes, vegetables and salads, and meat. beef, pork, fish and chicken". Meals have a major relevance for the respondents. Interviewee 18 commented: "all meals were always eaten with the family, so the memory of eating lunch and dinner always triggers these memories. It has a “fundamental” importance, not only of the food itself but the meeting". Respondent 22 added: "the importance of being together and supportive at meal time is very special. Our meetings are much more cheerful when we are having a meal. It's not just about the conversation. These moments are of relaxation".

Regarding meat attachment, the respondents, even though having a high attachment, are much more food involved, in general, than meat involved. Actually the attachment, for this group, is much stronger with barbecue than with meat itself: "To me, meat is barbecue, for sure... it doesn't matter if it's pork or beef or what it is". (Interviewee 19, Retirees group, 2022). They also brought that the meal moments are very important and special to them, even the preparation stage: "I like to prepare lunch because there is a whole ritual in the matter of making your own food, especially when you are with the family, or at the barbecue. We were raised with a barbecue mentality, I was raised roasting meat, with the table plentiful".

Aiming to correlate both lifecourse and food-related lifestyle, as well as the meat attachment aspect, we tried to understand the respondents' views on the

drivers and barriers of alternative proteins. We found many barriers, but also some drivers. As barriers, we can mention the **cultural aspect, conservativeness,** and the vision of APs as a **fad.** As drivers, only emerged the **price of animal meat.**

When we comment about **cultural aspect** as a barrier, we can say that eating meat is something so natural for these people, that it doesn't make any sense for them to not do it. "In our age group, the environmental issue and caring for animal welfare aren't things that caught us. We are already passing by! These generations that are coming after us, they already have another mentality", mentioned Interviewee 19, complemented by Interviewee 22 "perhaps the next generations will have it easier than us... we already have an indoctrination".

Regarding the **conservativeness**, the interviewees showed that the main attachment is not the meat itself but the whole process that involves meal time, as mentioned above. This became a barrier when talking directly about replacing animal meat with other alternatives. "I don't, these alternative protein products are flavoured but don't have the full context of animal meat" (Interviewee 19, Retirees group, 2022).

The vision of Alternative Protein products as a fad was mentioned on many occasions during the focal groups, but was highlighted by Interviewee 21, who mentioned that other food products were also pointed out as villains during the years, and their replacement was also aimed: "When I was a kid, there was also a comment about coffee being unhealthy and there was a movement engage consumers to replace coffee with barley... it never worked, even though barley was half the price of coffee. They tried to convince people that barley could taste as good as coffee. So with AP products maybe the same thing happens".

The **drives** were limited to the **price of animal meat** matter: "They want to change the food matrix, and I'm not saying that I won't eat these new products. If it's healthy, tastes good and is cheaper than meat, why not, but the problem is that it is not cheaper than meat these days, it's a fad" (Interviewee 18, Retirees group, 2022). "I think a driver for me, to accept AP products, would be the price. If it were cheaper, with the same taste and the same nutritional qualities, nutrition is equivalent or better, I would eat it", complemented respondent 20.

As general remarks, we can point that interviewees were sceptical about alternative proteins and, despite not believing that these products might constitute a

trend, and just a fad, they didn't show resistance in trying APs: "I'm willing to try it, out of curiosity. I ate a vegan burger once and I liked it - but I don't know if I would replace it" mentioned Respondent 19, followed by the comment of Respondent 22: "I also agree I would try it without any problem. I'm going to buy these hamburgers at the supermarket after I finish the hamburgers that I have in my freezer".

Respondents also risked some predictions about the future of animal meat X alternative proteins. Interviewee 19 reinforced the price of animal meat as an aspect that may lead to new food products: "prices are getting more and more abusive. The moment we don't have enough money to maintain the meat habit, other options will start to come in more easily and children will start embracing these products, it will be natural for them. This is a matter of the future". In this same sense of thought, respondent 22 brought the cultured meat as a product in which he believes in: "I believe in this lab meat, that it will impose itself. But only on the day when it gets much cheaper than animal meat. Even then, if animal meat is lacking. Otherwise it may even be consumed at a certain social level, that can't afford animal meat".

To facilitate the understanding of the main points, table 14, presented next, summarises the findings.

Table 14
Summarised findings of Retirees group

Food related lifestyle	Conservative
Meat Attachment	High
Barriers of AP consumption	**Cultural aspect: mentality much meat centred.** **Conservativeness:** attachment is not the meat itself but the whole process that involves meal time, the context of animal meat preparation. **The vision of APs as a fad:** there were already other initiatives to try to change the food framework, but it's a fad, soon will be replaced by other discussions.
Drivers of AP consumption	**Price of animal meat:** the price is so high and keeps increasing so much, it opens space to the discussion of other kinds of protein and foods.
Final Remarks	- Sceptical about alternative proteins and, despite not believing that these products might constitute a trend, and just a fad, they didn't show resistance in trying APs; - Of all the AP products, lab meat seems more interesting to them, and they believe that this product has a chance of better acceptance.

Source: developed by the authors (2022).

5.2.5 Amateur Athletes

The Amateur Athletes group was expected to be highly food involved. In this group, there wasn't an age criteria to select the respondents, only the lifestyle mattered. We considered amateur athletes as people that have sports as an important point in their lives: marathon runners, bike runners, gym focused. People that, regardless of their ages, have sports as a priority. We expected this group to be more attached to food experiences, and our expectation was confirmed.

"Sport forces us to take care of what we eat. You may even slip one day but you know that it will turn against you. That's life, right… you have to find pleasure in what you think is not pleasure, like taking care of your nurshment" (Interviewee 24, Group Amateur Athletes, 2022). "I've been thinking a lot more about my food as a source of nutrition to give me what I need to do what I like" (Interviewee 27, Group Amateur Athletes, 2022). For these reasons, we associated Amateur Athletes Group as having a **Rational food related lifestyle**.

In this group, food experiences are associated with the sport: they follow a specific diet that can be associated with the exercise they practicate, but that has a negative side as well. "I'm on a diet, but the goal is to maintain the weight, a weight that gives me energy to exercise because there were times when I didn't eat and when fasting, for example, everything went wrong" (Interviewee 27, Group Amateur Athletes, 2022). Respondent 25 brought immediately the other side of this discipline: "every time I get off the diet, it's a way of giving me a prize. I associate this with this release to eat what I like. It's a dangerous behavior, because over time you end up associating diet with a limitation issue that keeps you away from pleasure".

When aiming to understand the **meat attachment, we found that to be low** on all respondents, despite their gender. Respondent 23 comments on that: "I like meat, but at the same time eating meat weighs me down (in my stomach and in my pocket)", and was complemented by Respondent 26: "I use eggs a lot to replace

meat, in addition to whey protein. I take whey protein powder, or I eat that Wickbold bread that has more protein, is enriched and has 11g of protein per slice".

Searching to correlate both lifecourse and food related lifestyle, as well as the meat attachment aspect, we tried to understand the respondents views on the drivers and barriers of alternative proteins, and this was the group more opened to alternative protein products, but we also found many barriers, mainly **price, lack of purpose and lack of information.** Among the drivers, we found the **social aspect** and **the price of animal meat**.

Regarding the barriers, the **price** of alternative protein products was mentioned as a major barrier. "It's such an expensive price that it doesn't become an alternative" (Respondent 26, Amateir Athletes group, 2022). Interviewee 24 complemented:

> It doesn't even cross my mind to buy this, it's so expensive. By the way, I'd even like to try it, but for me it's so expensive that it doesn't make sense, because putting a plant should be cheaper than raising an animal. The vegetable meat issue, in my mind, is a vegetable thing, and they're not even using organic vegetables! usually use plant-based things. The price ends up not generating an alternative because it is so much more expensive... It seems that everything that is healthy ends up becoming more expensive (Interviewee 24, Amateur Athletes Group, 2022).

Still in the matter of price, respondents were almost unanimous in saying that if it weren't the price, they would consume more plant based products. Respondent 27 commented that he has already seen such products, as plant-based meat,in the supermarket, but because of the price, he would rather buy something that he knew he would like. "If it were cheaper, I sure as hell would, I would probably stop eating the meats I eat" (Interviewee 25, Amateur Athletes Group, 2022).

Another barrier found was the **lack of purpose** of replacing meat by other products. "I think there's so much food that I don't need to eat a vegetable that imitates meat, I don't need to be imitating and smelling the meat... put beetroot to imitate the blood, for example... why can't we just take it off and explore other foods?".

The **lack of information** was also pointed out as a great barrier. "I'm searching for a nutritionist to adapt my diet, showing me the amount of grains or something that I could replace meat with, chickpeas I know have a lot of protein, but I don't know if they have all the proteins that the person needs" He continues: "I

wanted to know the equivalence to substituting" (Interviewee 23, Amateur Athletes Group, 2022). Respondent 26 complements and further explains:

> For me, the daily meal is very much a matter of nutrients, so if there was an option in the supermarket that I knew that has an equal amount of protein with what I need, and it wasn't so expensive, I would eat it well and replace the meat. I don't even say that I would stop eating meat, but I would leave it restricted, eventually on a weekend. But the point is that information is lacking (Interviewee 26, Amateur Athletes Group, 2022).

Still regarding the lack of information, the respondents also brought up the matter of don't knowing how to prepare such foods: "I also wouldn't know how to make the side dishes…. I don't know how to prepare it".

As drivers, the **social aspect** also appeared as an important contribution of these products. "If you consider a guy who likes meat, he won't like this type of product, but if you're going to eat it and you're with someone who doesn't eat or doesn't like meat, it's even a way to add people who don't want to eat meat" (Interviewee 26, Amateur Athletes Group, 2022).

Another aspect that we considered as a driver was the current **prices of animal meat**. This matter sets the mindset of people more open to alternatives, and they are actively searching for replacements of animal meat. All the interviewees in the Amateur Athletes group commented that they search for replacement of meat, for meat alternatives. "It is unsustainable (financially) to eat only meat" (Interviewee 23, Amateur Athletes Group, 2022). Respondent 25 also commented: "I try to lessen the impact by eating less red meat, because I know that rearing red meat is not only the most expensive but also the most problematic".

As general comments, the respondent 24 brought up an important reflection regarding alternative protein products that seek to smell, taste and look like meat are actually strengthening the meat attachment: "you are only supplying a longing that meat gives you, strengthening that root that we have to eat meat since we were little. thing that will resemble meat, and he doesn't even want to remember ". Interviewee 26 further comments on a relevant matter, exploring that the habit of eating meat is something "recent":

> We spent a large part of our existence, as humanity, if you look at the past times of civilization, meat was not a dish that was available to everyone. We have a predisposition to readapt again to a world without meat, it happens that in recent times there has been this boom of meat in a very accelerated way (Interviewee 26, Amateur Athletes Group, 2022).

Another comment was that there's a lack of restaurants that serve alternative protein products, and that if we had more it would help not only the dissemination of the information but also it would be important so we could know ways of cooking such products, how to combine with side dishes, for example. Finally, the interviewees showed especial interest in cultured meat: "lab meat would be an excellent option! as far as I know it is more common in Israel as most of the population there is vegan" (Interviewee 25, Amateur Athletes Group, 2022).

To facilitate the understanding of the main points, table 15, presented next, summarises the findings.

Table 15
Summarised findings of Amateur Athletes group

Food related lifestyle	Rational
Meat Attachment	Low
Barriers of AP consumption	**Price:** high prices. **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat. **Lack of information:** people don't have information on what to eat and how much to eat when aiming to replace meat with alternative food.
Drivers of AP consumption	**Social aspect:** inclusion of people that can't or don't want to eat meat in social moments. **Price of animal meat:** the price is so high and keeps increasing so much, it opens space to the discussion of other kinds of protein and foods.
Final Remarks	- Alternative protein products that seek to smell, taste and look like meat are actually strengthening the meat attachment: - Restaurants that serve alternative protein products would help in the dissemination of the information and in showing how these products can be prepared; - Demonstrated much interest in lab meat.

Source: developed by the authors (2022).

Due to everything that was explored in this section, we could also respond to some of the propositions made. ***Proposition 1e***, "consumers are more willing to consume AP products that taste and have attributes similar to animal meat" was **refused**, because the general thoughts on this matter were quite the opposite. Searching for similarities between alternative proteins and animal meat was seen as

unnecessary, and also as a factor that increases the respondents' view that alternative proteins are industrialised and unhealthy products.

We also **refused *proposition 2b***, "*It is necessary to address food neophobia in order to increase consumption of AP products, especially to non and light users",* once we understood that food neophobia was not the major barrier that alternative proteins have to face, in the current state of the market and among the consumers in the context of this research. There are other barriers that have to be addressed primarily, such as the understanding of the APs as unhealthy.

Regarding ***proposition 3a*** *"people in the same lifecourse will have similar willingness to consume AP products"* we could completely **accept** it. It was possible to have an agreement among the lifecourse groups, as well as in the lifestyle group we designed. People do have similar willingness, and more than that, they have similar thoughts and beliefs regarding the idea of APs. Despite that, ***proposition 3b*** *"people living lifecourse transitions are more encouraged to change food consumption patterns towards more sustainable food choices regarding the consumption of alternative proteins"* **could not be supported**. We didn't find the participants to be more open to face food transitions that could enlighten APs as an alternative.

Finally, regarding ***proposition 3c*** "*consumers with different food related lifestyles have different willingness to consume AP products",* was **accepted**. We concluded that, even though the acceptance of APs remains low, there are some groups that are more open and encouraged to consume food alternatives to animal meat - and some are even searching for options to increase in their diet. It's important to salient, though, that in spite of that, the current alternative proteins that are disposable in the market were not even considered as options to the consumers, either because they are considered highly industrialised and unhealthy, and expensive.

5.3 The role of nudges

It is known that statistically better choices are left aside due to choice heuristics induction, which have the aim to facilitate the decision making process, but end up, sometimes, leading us to biases and blunders (Thaler & Sustein, 2008). There's a growing interest in alternative approaches based on behavioral principles that alter choice environments by organising the context in which people make decisions in order to improve selections, what has been called as choice architecture. These interventions, ***nudges***, are also supported by consumers across many countries (Reisch & Sunstein, 2016; Reisch, Sunstein, & Gwozdz, 2017).

In this research, which has a qualitative aspect, we didn't have the intention of testing nudges, but rather we aimed to further understand whether a few interventions verbally imposed, during the discussion of the focal groups, would change what the respondents were bringing to the discussion. To further explore the findings, we first comment on the framing of information, and then the social norms, the two nudges used in the field.

5.3.1 Framing of information

The simplification and framing of information is much based on the bias of framing effect, because not only the accessibility of information matters but also how this information is presented, the conscious phrasing of information in a way that activates certain values and attitudes of individuals (Lehrer *et al*., 2015). In the research, the last questions that we made to the focal groups were actually bringing information in a framed way, aiming to see how the groups would react. So, we told the groups information framing APs as healthier and as if the people that were trying such products were very much willing to add these products to their diets. We told the groups that there was a growing interest in the alternative protein subject and that currently 90% of the consumers in different regions of Brazil that have tasted alternative protein products were gradually switching from animal meat to plant-based meat alternatives, or at least adding such products on their diet.

There were different reactions among the groups. The Single Adults group wasn't influenced at all by the information, and seeked to further understand what they had heard. "For me it's more hype than consumption habit. Farm of the Future is raising a lot of money and generating hype. If you look at their annual revenue, you'll see that they make a loss. If it had grown that much in volume, they wouldn't be at a loss" (Interviewee 3, Single Adults group, 2022). Respondent 6 added: "I also think it's kind of generational too. These are trends, habits related to a lifestyle of the new generations. It's a fad to worry about that", even though that was complemented by Respondent 1: "in this line of thinking that is a trend among the new generations, I think it could be people who are in the phase of going against their parents".

Another aspect that was brought in this discussion was the influencers that are being involved in this process. Respondent 2 commented:

> Let's take 'Future Farm[3]' in which Anitta has a stake. She has 55k followers, she's the most followed person in Brazil. We have 250M inhabitants. So, we are talking about 20 to 30% of the population following her. Many Brazilians follow her, she will influence many people to change their habits, especially this younger generation that you were talking about. I don't know if it influences me to change my habit, but it has a level of influence (Single Adults group, 2022).

DINKs and New Parents groups kept sceptical, and the nudge didn't actually produce any effects that were detected in the conversation: "Making a parallel, if you take the increase in sushi consumption, it doesn't mean that people aren't eating other types of meat. Like me, I've increased my sushi consumption a lot compared to when I was a kid, but I didn't stop eating other meats" (Interviewee 8, DINKs group, 2022). New parents had the same reaction: "I can't say I'm shocked, because really these new generations everything is new and what's new is cooler most of the time" (Interviewee 15, New Parents group, 2022). Respondent 17 commented: "I'm actually worried when I hear these things, I think it's a fad".

The Retirees group showed more interest in the subject. Respondent 17 commented: "What we take from this study is that it gives us the opportunity to experiment and see that they are certainly flavoured in a way that perfectly imitates the original meat. I'm now curious to try these products".

[3] Future Farm: brazilian company that produces plant-based meat.

The Amateur Athletes group also kept sceptical. "I think that here in Brazil this is more limited, there must be countries where this applies, but here in Brazil I find it difficult. But if you can contribute to the reduction of red meat at any level, I think it's great. And meat in general" (Interviewee 25, Amateur Athletes group, 2022.

The interesting aspect was that when directly after the information provisioning, we almost couldn't observe differences in the respondents speech. Despite that, the last question was "After what we talked about today, would you be willing to try these alternative proteins?" and the answers can be considered as more positive than were during the focal groups - but not incoherent which was argued during the sections.

In the Single Adults group, some respondents commented that they would be more willing to try AP products: "I would try it, but I haven't had the opportunity yet. Sometimes I even think about buying at the supermarket, just to test... but I don't know if I'd buy them without knowing the taste, especially because it's expensive" (Interviewee 4, Single Adults group, 2022). Respondent 2 added: "I would even try it, but I don't see the need to have to replace animal meat with something that is similar to meat. If that's the case, I prefer not to eat meat and similar things".

DINKs group kept sceptical until the end, and commented that, as new products emerge, the market really tends to modify, but didn't make comments that we can evaluate as more positive. "I think it's kind of natural that new markets grow, there's always new consumer behaviors, people wanting to eat organically and maybe thinking that are being healthier with this plant-based, without thinking about where it came from and how it was made" (Interviewee 10, DINKs group)

New Parents group, that wasn't much "convinced" about alternative proteins as an option, but the last comments were positive regarding lab meat. For example, the comment "if there are different cuts (entrecot, etc), and animal meat costs 50 and lab meat costs 30, I will eat lab meat 80% of the time and at the barbecue I will eat the animal one" (Interviewee 16, New Parents group, 2022) was made after the information provisioning in a framed way.

The Retirees group also made a few comments that also were more positive regarding APs. Respondent 19's comment illustrates such matter: "maybe these AP products are the evolution of meat, because you know that the greenhouse effect is

very much a result of the gases emitted by cattle, which accumulate in the atmosphere due to the amount of cattle that you have to have to feed this whole bunch of people".

The Amateur Athletes, despite being more open during the interview, had as last comment the following: "I think the issue of culture is very strong, especially here, but I would replace it, I just think it's too expensive".

With this, we understand that the framing of information can't, by itself, change behavior or change people's opinions regarding some matter, but can influence. Together with other nudges and mainly with a work of further communicating and clarifying some aspects of Alternative Protein products, we can understand that the nudge framing of information can be effective .

5.3.2 Social norms

As already mentioned, the use of **social norms** has been proved as a very strong argument to change individual behavior, because people tend to follow what others are doing (Reisch *et al.*, 2021). We intended to check the social norms effect through the observation of the respondents in each group, mainly after we provided the framed information about alternative protein products.

Research has been pointing out the potential of social norms to increase willingness to consume alternative proteins (Onwezen, Bouwman, Reinders & Dagevos, 2021), but we cannot say this about what we observed in the focus groups performed. As the acceptance of APs was low among the groups, the opposite opinion always prevailed, the reasons **not to** eat APs.

The barriers mentioned by one or two respondents tended to gain force as the general opinion, especially in the groups that had one person with more energy or more conviction regarding the subject, even though the mediator searched to keep the groups homogeneous in terms of manifestations. That actually goes in the direction of what literature brings as the strong aspect of social norms, since consumers use many data and different sources of information to form opinions

about food, including alternative proteins, and the social context is one of those sources (Onwezen, Bouwman, Reinders & Dagevos, 2021).

Regarding the first group, Single Adults, we could observe the mechanism "follow-the-crowd", that, as Farrow, Grolleau and Ibanez (2017) explain, results from the desire to avoid social disapproval. As we mentioned before, we provided the groups with alternative protein products with other finger foods during the discussions. The participants of this group were not as open to trying new foods, and some of the interviewees affirmed that they wouldn't try the AP products that we served, but ended up eating because the two of the participants wanted to try them. So, each one of them was pushed and ended up trying the product.

DINKs group proved themselves as really having an adventurous food related lifestyle because in the moment that they arrived and saw AP products, that, even they didn't know what it was, had a different aspect than the other known finger foods, all of the interviewees, with no exception, went directly to the AP products to try it.

For both New Parents and Retirees groups, the interesting findings that we had were that social norms actuated in the contrary manear of what we expected. As we mentioned above, the acceptance of APs was very low among the groups, so, as the opposite opinion always prevailed, the reasons **not to** eat APs were stronger. Thus, as people want to fit in, to be accepted, approved (Vigors, 2018), in the context that ended up occuring in the groups, the social behaviors that became the accepted one was to go against AP products, confirming what literature points: that the proscriptive injunctive norm (the one that focuses what others do not approve of doing) attracts more cognitive attention (Cialdini et al., 2006, Farrow, Grolleau & Ibanez, 2017).

Having addressed all the points that were proposed to be discussed in this research, the chapter of presentation, discussion and analysis of results ends. Finally, the final considerations about the main findings of this dissertation were made and the general and specific objectives that guide the development of this research were answered in the next chapter.

6 Final Considerations

Aiming to further explore the results and the achievements of this research,

we separated the final considerations into sections: first, we answer the research goals (specifics and main); than we brought the theoretical contributions of the research; later we brought the managemental contributions; next, we presented the study limitations; and finally, we brought suggestions for future studies.

6.1 Research goals answered

This study aimed to understand the role of framing of information and social norms as nudges to encourage the consumption of alternative proteins in the context of a circular economy, as well as the attributes that may influence on such consumption in different lifecourse moments. Specifically, to understand which drivers and barriers of the consumption of AP products are stronger; to explore whether health issues, environmental concerns, and animal welfare dimensions of meat consumption influence on intention to change food patterns; to identify lifecourse patterns on consumers' purchase intentions regarding alternative protein products and to explore whether food related lifestyle can be associated to such; to consider whether nudges such as framing of information and social norms can encourage the consumption of alternative proteins.

Regarding the first specific goal, to understand which drivers and barriers of the consumption of AP products are stronger, we've had different findings than what the literature points out. Even though we already imagined that they would find many barriers to the consumption of APs, we didn't think that APs would be sawn as unhealthy or environmentally harmful. Also, the "lack of purpose" surprised us, as well as the "prejudice" for a food product that tries to emulate animal meat.

As for the drivers, we found only three aspects: the current price of animal meat, that is increasing so much that opens space for other products; price and taste aspects, that is, if APs were tasty and considerably less expensive than meat (with the point of attention not to communicate as a product that wants to replace, imitate meat, but rather as a source of protein); and the social aspects that APs provide for

those who don't want to eat meat or can't because of health issues. APs were viewed as a manear of inclusion in social moments. Table 16 sumarises the notions.

Table 16
Main drivers and barriers X Identified group

Identified Group	Drivers	Barriers
Single Adults	**Social aspects:** inclusion of people that can't or don't want to eat meat in social moments.	**Taste**: doesn't taste good; **Health aspects:** industrialised food makes it unhealthy; **Price**: high prices; **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat.
DINKs	**Price and taste:** if it tastes good and isn't expensive, the respondents are willing to add AP products in their diets - but not as substitutes for animal meat, but rather as a protein source.	**Health aspect:** industrialised food makes it unhealthy; **Environmental aspect:** the industrialisation processes that AP products might go through must have a great impact on harming the environment.
New Parents	Not found.	**Cultural attachment and prejudice for the promise of alternative meat**: respondents were very much attached to meat, and put this as being a cultural aspect. Also, demonstrated prejudice for the positioning of AP as meat-like products. **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat.
Retirees	**Price of animal meat:** the price is so high and keeps increasing so much, it opens space to the discussion of other kinds of protein and foods.	**Cultural aspect:** mentality much meat centred. **Conservativeness:** attachment is not the meat itself but the whole process that involves meal time, the context of animal meat preparation. **The vision of APs as a fad:** there were already other initiatives to try to change the food framework, but it's a fad, soon will be replaced by other discussions.
Amateur Athletes	**Social aspect:** inclusion of people that can't or don't want to eat meat in social moments. **Price of animal meat:** the price is so high and keeps increasing so much, it opens space to the discussion of other kinds of protein and foods.	**Price:** high prices. **Lack of purpose:** There's no need to substitute meat for something meat-like. If you don't want to eat meat, there are numerous other foods you can eat. **Lack of information:** people don't have information on what to eat and how much

		to eat when aiming to replace meat with alternative food.

Source: developed by the authors (2022).

Also, we found different barriers in the different groups, but the drivers were more common among the groups. Table 17, presented next, summarises the findings.

Table 17
Summary of drivers and barriers

Drivers	**Barriers**
Social aspects	Taste
Price of animal meat	Price
Price and taste	Lack of purpose
	Health Issues
	Cultural aspects
	Prejudice for the promise of alternative "meat"
	Lack of information
	Conservativeness
	The vision of APs as a fad
	Environmental aspect

Source: developed by the authors (2022).

Regarding the second specific goal, to explore whether health issues, environmental concerns, and animal welfare dimensions of meat consumption influence the intention to change food patterns, we found that health issues and animal welfare are aspects that can influence consumers' intentions to change food patterns, but not towards AP products. About health issues, it can be said that this is perhaps one of the main points that consumers are concerned about. Associations between meat and chronic diseases were made in the groups, and this was unanimous among the respondents.

Another factor is that some focus groups have a very unruly diet, they eat a lot of fast food and take-out, so a counterpoint was "meat is the most natural, healthy thing I eat". Despite this, the health aspect is a concern for respondents and in this

sense there is an active search, more present in some groups than others, for replacements - but not in the sense of AP products because of the barriers that were mentioned. The consumers are not seeing AP products as healthier - on the contrary.

We can say with some confidence that environmental concerns don't actually have influence on the consumption of meat, and doesn't have enough weight by itself to influence the consumers intentions towards AP products. It is even a controversial point, some consumers are not convinced that the livestock chain has a connection with harming the environment.

There were some subtle differences between the focus groups interviewed. Concerns about the environmental impact of raising livestock were mentioned in some groups, especially those who are more willing to change their food consumption patterns, such as the Amateur Athletes, but not as factors that are actually strong enough to promote some kind of change in behavior. In more septic groups, such as Single Adults, the issue is considered something that is too far away for it to be an issue to consider now. The interviewees commented that they do not think that even their grandchildren will face problems arising from environmental impacts, so they consider it irrelevant to generate any kind of change in their behavior. The DINKs, New Parents and Retirees, mainly disagree that there is a problem related to livestock production and the environment.

Therefore, in general, we can say that environmental concerns are not an aspect that can interfere with willingness to change food patterns towards AP products. In fact, we discovered that AP products are even considered to cause damage to the environment as well, because they are industrialised products, and, therefore, also have an impact. This was one interesting finding that this research brought, because the literature indicates environmental concerns as a possible driver for APs, and, in our research, it can be considered as a barrier.

The animal welfare matter had a huge weight for consumers. They claim that they cannot think too much about it, they seek to totally unlink the product they buy, the meat, from the animal. They want to believe that "meat comes from the supermarket".

Some interviewees mentioned their experiences of seeing animals being slaughtered, and commented that they cannot eat the meat of that animal (for

example, if they saw a pig being slaughtered and were never able to eat pork again). These kinds of comments happened in different focal groups, from Single Adults to Retirees.

Others mention that they have visited aviaries at some time, and that they have difficulty in eating chicken. The issue of the way that the chickens are raised in the aviaries, based on hormones, was widely discussed. It was also mentioned the way animals are raised, in general, and how much the meat industry (whether beef, pork or chicken) uses resources to be more profitable, but compromising quality aspects that can influence on consumer's health.

In fact, animal welfare discussion had quite an impact on focus groups. Some respondents said that they are not affected by this aspect, that they understand that these are animals that "were created for this", but people's discomfort is perceptible when they think about the "process" of producing the meat, even in those who seek to normalise the process of breeding, slaughtering and meat consumption.

Despite this, as consumers actively seek to dissociate the meat product from the animal, this factor is usually not strong enough to lead to a change in behavior, as consumers manage not to think about it, they simply consume meat "on automatic". The cultural aspect is also very strong, especially in southern Brazil, where this research was carried out. As much as there is a concern with animal welfare, the culture ends up prevailing. Respondents commented that they were taught to like meat, to eat meat from an early age. It's something normal, common, that doesn't require thinking about, because it's very ingrained in everyday life. Animal welfare can be an important point to act in with nudges, in supermarkets, in the sense of breaking the "automaticity" of eating meat, and dissociating meat from the animal.

The following specific goal was to identify lifecourse patterns on consumers' purchase intentions regarding alternative protein products and to explore whether food related lifestyle can be associated with such matter. We could also answer this goal and correlate lifecourse and food related lifestyle. Also, we brought the meat attachment to this analysis, because we understood that this understanding would be relevant to further comprehend groups' behavior.

We could identify similarities among the groups in the manear they deal with food, how they appreciate food experiences, the importance that meat has in their

diets, what they consider as alternatives to animal meat, when they don't want to eat animal meat and other aspects. Table x, presented next, summarises our findings in such matters.

Table 18
Focal groups X food related lifestyle and meat attachment

Focal Group	Food Related Lifestyle	Meat attachment
Single Adults	Uninvolved	High (Male) Low (Female)
DINKs	Adventurous	Medium
New Parents	Careless	High
Retirees	Conservative	High
Amatheur Athleets	Rational	Low

Source: developed by the authors (2022).

We considered Single Adults as uninvolved because they are shown to not care much about anything regarding food, eating whatever is disposable and having a high incidence of snacking and convenience food, ordering food through food apps in practically every meal. Also, in this group we couldn't determine a common meat attachment, because male participants demonstrated a very high attachment, while female participants, despite communicating that meat was very important in their diet, didn't comment on the need to consume meat in every meal, as the male respondents did. This group brought important barriers to the consumption of AP products and only one aspect as a driver (the social acceptance one). AP products are definitely not an option to these participants, not even when they think about not eating meat.

The DINKs group was considered adventurous, because they demonstrated to be curious about different foods, they travel a lot and food experiences are part of the complete travel experience. They like to try new things, like to go out to dinner and see meal time as an opportunity to have social conviviality. They were considered as having a medium food attachment, because even though meat is important in their diets, they could think about options to replace meat that weren't animal related, and commented that don't eat meat in every meal - necessarily.

Despite that, APs weren't considered as an option to replace animal meat, due to the industrialisation process. Also, the environmental argument regarding the livestock process, was not only not strong enough, but also used as a barrier regarding APs, since the industrialisation was considered as harmful - or more harmful, by them. They are open to new products that are less expensive than animal meat, and tasty, though.

The New Parents group was the most surprising one. They were considered to have a careless food related lifestyle (people that don't care much about anything regarding food, have a high incidence of snacking and convenience food, but has more interest in new products and snacks) because they, as much as Single Adults, don't have practices that prioritise food on their day by day lives. This group showed the highest level of meat attachment of all the focal groups. It was not even possible to identify drivers of AP products among this group.

Regarding the Retirees group, we found them to be more conservative in what comes to meat consumption, but not closed to discussing the matter of alternative proteins. If eating meat, in the other groups, was considered something normal, that doesn't require much thinking, for the Retirees this was even stronger. For these reasons, we considered Retirees to have a conservative food related lifestyle. Despite Retirees being considered to have a high meat attachment, this group is much more food than meat involved. They value meal time, associate it with being with their family, and value the whole process of meal preparation.

The retirees kept sceptical about alternative proteins, they considered these products as a fad, but are not resistant in trying the products. For them, the current price of animal meat is a great incentive for alternative proteins to gain market - but not placing themselves as a way of replacing meat.

The last group, Amateur Athletes, was the one that kept more open to the subject. The respondents commented that sport practising forces them to take care of what they eat and their nourishment, many times not necessarily eating what they would like, but what is better for their body and performance instead. For these reasons, we placed this group as having a rational food related lifestyle. Also, their level of meat attachment was low, but they seek sources of protein. They consume whey protein, albumine, eggs and other sources, beyond the meat.

This group was very much open to new sources of protein, but they don't se a purpose in eating a product that aims to simulate animal meat. Also, they claim that they don't know how much of other food products they would have to eat to be equal, in protein amount, as eating animal meat. This information would be important for them to consume more AP products. The price of AP products is still a great barrier, though. As there are other sources of protein alternatives to animal meat, which the respondents already consume, the current price of AP products that are available for sale in the context where the research took place are very high, and therefore, lose their attractiveness for the respondents.

Finally, the last specific goal was to consider whether nudges such as framing of information and social norms can encourage the consumption of alternative proteins. The interviewees mentioned at different times how it is cultural, natural and an automatic process not to think when eating meat, but there are important aspects and strong reasons that, if they did, could lead them not to eat it, or to reduce their consumption - such as health and animal welfare. More than that, they ask themselves about how much they actually need to eat meat in their daily lives, how much it makes sense, how much they could look for protein in other foods. With this, we conclude that nudges can indeed be very important in breaking the automaticity of the habit, of the "cultural", of what we learn since children to eat meat, to like meat.

The right message doesn't seem to be placing alternative protein products as a product that has the same attributes as animal meat, though, but rather as a great source of protein, an enriched product, a tasty product. Many other arguments can be used to communicate these products, but the animal meat alternative doesn't seem to be one. It may be different to specific groups, such as vegetarians and vegans, but for people who don't necessarily have food restrictions like those, this is not a good advertising campaign.

The framing of information shown to be important, as much as the social norms, in the focal groups. In some more important, in some less important, but we could notice that nudges had influence in all the focal groups. If it is possible to open up the discussion space for AP products, not as a meat substitute, but as a source of protein that can be tasty, healthy, nutritious, and above all, providing the necessary information to people, AP products can have a greater market penetration. The

communication trigger, however, needs to be adjusted in relation to what is currently being practised. Still, framing of information nudge alone may not be effective, but combined with other forms of communication and with other nudges, it can play an important role in making people more open to trying and adding these products to their diets.

Regarding social norms, in the current context, it can be said that they work today a lot in the sense of keeping people eating meat, because the cultural aspect is very strong in terms of animal meat. Currently, those who do not consume meat in the south of Brazil are still an outlier. However, when targeted at APs, they can be effective, especially in encouraging people to try these products. Promoting experimentation can also be a way to make room for AP products.

Thus, we infer that it was possible to answer the main goal of this research: to understand the role of framing of information and social norms as nudges to encourage the consumption of alternative proteins in the context of a circular economy, as well as the attributes that may influence on such consumption in different lifecourse moments. Both nudges that were considered in this research have an important role to encourage the consumption of alternative protein products - but with the caveat that the right message of what AP products are is being sent. The manner that AP products are being communicated is important to trigger the interest of consumers in these products.

As for the attributes that may influence on consumers' behavior, we couldn't notice any difference about how the different lifecourse moments perceive them (health aspects, environmental concerns and animal welfare, especifically). Despite that, it was possible to notice differences among the different lifecourse groups, regarding their willingness to try AP products, and also different drivers and barriers for such consumption were found among the groups.

Also, regarding the circular economy context, we could understand that our concept of Circular Economy, as a mode of integration of economic activity and environmental wellbeing in a sustainable way, because it is a new production and consumption model based on interconnection by reducing, reusing, and more important, **rethinking** consumption patterns, makes sense. There is, as a fact, a rethinking in the current food patterns, even though animal meat eating was put forth

many times as something natural and that doesn't involve thinking on. either for health reasons, association of meat with chronic diseases, or for aspects related to the high and increasing price of animal meat, there is a space where this consumption can be rethought. Provisioning of information on new products might be important for paving this way.

6.2 Theoretical Contributions

As theoretical contributions, we can highlight the difference in the drivers and barriers that we found *versus* what the literature brings. We found many barriers among the different groups interviewed, and we can affirm that even though one of the limitations of our study was that there's an abundance of meat in the supermarkets (de Bakker & Dagevos, 2012) and limited sources of AP products available to consumption (Sexton, Garnett & Lorimer, 2019), food neophobia and disgust, the main barriers that the current literature brings to AP products, was not found in our research and we couldn't find support for them.

Regarding the barriers, literature brings selectiveness/fussiness in food choice; food neophobia, disgust and disgust sensitivity; fat content; country of origin; price; and concerns about the additives, artificiality, and insufficient essential vitamins and micronutrients (Onwezen, Bouwan & Dagevos, 2020, Sexton, Garnett & Lorimer, 2019). We could find some similarities among the barriers - especially regarding the concerns of additives and the price aspect, but the main barriers of disgust and food neophobia, that literature highlights, were not issues brought in the focal groups. We found taste, price, health issues, cultural aspects, conservativeness, vision of APs as a fad, and - even environmental aspects - as barriers, with prominence to the barriers lack of purpose (interviewees don't see the purpose of replacing meat) and prejudice for the promise of alternative meat.

Also, Sexton, Garnett and Lorimer (2019) brought the five main promises that AP stakeholders make for AP products: ‘Healthier bodies’, ‘Feeding the world’, ‘Good for animals and the environment’, ‘Control for sale’ and ‘Tastes like animal’. Neither of

these promises was considered as drivers of consumptions of APs, nor the consumers agree with these arguments.For this reason, the promises of "kinder, healthier, fairer, tastier, safer and more sustainable approaches to conventional livestock products" (Sexton, Garnett & Lorimer, 2019, p.59) had no support in this research, since the consumers don't see AP products in this way.

Thus, literature brings as drivers health; taste; green eating behavior; perceived appeal and goodness of clean meat; food security and safety; perceptions of environmental impact, and health consciousness; convenience; price; naturalness; not immoral, but nutritious; and quality (Onwezen, Bouwan & Dagevos, 2020) . None of these drivers found support in our research. We found social aspects, price of animal meat; and (potentially) price and taste - but these last ones are hypothetical.

Table 19
Contributions and differences of literature and field findings

Source	Drivers	Barriers
Brought by the literature	Health Taste Green eating behavior Perceived appeal and goodness of clean mea Food security and safety Perceptions of environmental impact, and health consciousness Convenience Price Naturalness Not immoral, but nutritious Quality	Selectiveness/fussiness in food choice Food neophobia, disgust and disgust sensitivity Fat content Country of origin Price Concerned about the additives, artificiality, and insufficient essential vitamins and micronutrients
Found in the research	Social aspects Price of animal meat Price and taste	Taste Price Lack of purpose Health Issues Cultural aspects Prejudice for the promise of alternative "meat" Lack of information Conservativeness The vision of APs as a fad Environmental aspect

Source: developed by the authors (2022).

Another contribution that we bring is that, contrary to what literature points as a "scale" of acceptance of alternative protein products, we found cultured meat, or lab meat, to have the highest level of interest among the interviewees. Onwezen et al. (2020) affirms that insects has the lowest acceptance, followed by cultured meat, and pulses and plant-based alternatives have the highest acceptance leve, but, as mentioned before, this wasn't confirmed in our research, and this acceptance was not something "isolated", of one specific group, or of one specific lifecourse, but in the general opinion of the respondents.

Regarding the attributes environmental concerns and animal welfare, that literature points out as "where meat substitutes score higher" than animal meat (Hoek et al., 2012), couldn't be confirmed, as already mentioned. Despite that, we could confirm the theoretical background (Dai et al., 2020, Hartmann and Siegrist, 2017) that claims that consumers tend to underestimate food-related environmental impact and keep distance from the animal issues and, with that, in fact, environmental sustainability is not among the criteria of their meal choices. People not only tend to draw a line between the environment and animal issues and food (Bacon & Krpan, 2018), but also - as we found - they ***want*** to keep this distance, in order to maintain their current food patterns .

Regarding the attributes of health, our findings go in the direction of AP products being associated as ***unhealthy***, due to the industrialisation process and chemical ingredients that are part of the industrial process, what goes in another direction of what literature brings, as AP products frequently being associated as 'fuel', 'powder' and trends for those who search for a clean eating (Sexton, Garnett & Lorimer, 2019). Not even the Amateur Athletes group, which literature also points as a more willing group (Sexton, Garnett & Lorimer, 2019) are seeing these products as a healthier option.

In what comes to nudges, we found evidences that both social norms and framing of information are important "ferramentas" that can be further explored and tested. Despite the what many experimental studies have been finding, or, better saying, haven't been able to concretly prove their effectiveness (Zhou et al., 2019, Attwood, Chesworth & Parkin, 2020), we claim that, togheter with other interventions and in a broader context, nudges can be effective to determinate behavior.

Regarding Circular Economy, as we mentioned before, we could "test" our proposition of the concept of CE, and **rethinking** is especially important when it comes to the application of the principles of the circular economy to food, but not only regarding "smarter product use and manufacture" (Kirchherr et al., 2017), as literature shows. Consumers are also searching for a better use of natural resources, of "normal" food, instead of searching for smarter manufacture, in what comes to food.

As a matter of fact, we can say that reducing the consumption of meat and making changes in diet towards more diverse and more efficient food patterns (Jurgilevich et al., 2016) is indeed a subject of interest for many consumers, in different lifecourse moments and with different lifestyles (relationed to food). Thus, if we wear the lens of the CE of "**reducing** meat consumption increases the efficiency of material flows within the food system by reducing the amount of energy, land and water used per calorie of food produced" (Giudice, Caferra & Morone, 2020, p. 11) focusing on the search for proteins in vegetables and grains, for example, it might be more coherent with what consumers are willing to live through, when it comes to circular food behaviors.

Also, it was possible to answer the propositions that were assumed along the research, and to check whether they were supported or not in the field. The answers were brought within the analysis, and we summarise them next, in Table 20.

Table 20
Propositions and results

Propositions	**Results**
Proposition 1a: Consumers are understanding that AP products are healthier and more natural than animal meat	**Refused:** consumers perceive AP products as industrialised and fake products.
Proposition 1b: Environmental issues of livestock system are worrying consumers;	**Refused:** consumers don't perceive environmental aspects as a strong issue - is considered even controversial.
Proposition 1c: Consumers do see AP products as more ecofriendly than livestock	**Refused:** as AP products are also industrialised, and, therefore, have an

products;	environmental impact.
Proposition 1d: Consumers understand that the increased control afforded by the technoscience methods of AP production brings a range of different types of goodness;	**Refused:** consumers see this as a barrier because they understand that industrialised products are unhealthy.
Proposition 1e: Consumers are more willing to consume AP products that taste and have attributes similar to animal meat.	**Refused:** consumers were reactive to AP products seeking to imitate animal meat.
Proposition 2a: The drivers of health, natural content, weight control and ecological welfare (includes animal welfare and environmental issues) are important to initiate consumption of AP products.	**Refused:** neither of these attributes were shown as potential drivers to initiate consumption of AP products.
Proposition 2b: It is necessary to address food neophobia in order to increase consumption of AP products, especially to non and light users.	**Refused:** food neophobia didn't appear as a barrier of consumption of AP in neither of the focal groups.
Proposition 3a: People in the same lifecourse will have similar willingness to consume AP products.	**Accepted:** people in the same lifecourse groups really have similar perceptions towards AP products.
Proposition 3b: People living lifecourse transitions are more encouraged to change food consumption patterns towards more sustainable food choices regarding the consumption of alternative proteins.	**Refused:** the focal groups that we designed aimed to catch the lifecourse transitions, but this wasn't a trigger to change food patterns. At most, some groups, such as New Parents, search for ways to organise their children's diet in a more balanced way.
Proposition 3c: Consumers with different food related lifestyles have different willingness to consume AP products.	**Accepted:** lifestyle, especially food related lifestyle, matters when understanding consumers' willingness to try AP products.

Source: developed by the authors (2022).

6.3 Managemental Contributions

As for the managemental contributions of this research, the practical implications, we can highlight that lab meat has an interesting potential among the different lifecourse groups as a product that can be better received - if the price is more competitive than the animal meat. This was another important finding that this

research brought, because literature points out that plant-based APs have more acceptance than lab meat. In this research, we found the opposite: lab meat aroused the curiosity and interest of the respondents, who stated that they would consume this type of protein without problems.

Also, the mannear that APs are conducting their communication and their market position, as a meat substitute, as products that aim to reproduce meat texture and flavour, may not be efficient for achieving a major public. This approach may even be effective for some specific segments, but for the general public, the public without dietary restrictions, and of different age groups, with different meat attachments, this communication ends up distancing consumers from the product.

An interesting way of positioning itself would be on the issue of protein, effectively explaining to the consumer that it is a "clean" protein source, enriched, healthy, with less fat and tasty. This aspect goes in the direction of what Sexton, Garnett and Lorimer (2019) mentioned, regarding not all AP products being promoted in a way of providing an imitation of animal meat, but rather as ‘protein' - and we found this approach to be more interesting and potentially better accepted.

It is also important to pay attention to the factor that can boost the consumption of APs today: the rising price of animal meat. With this, it is essential that AP products position themselves as a product rich in proteins, healthy and cheaper than animal meat.

The issue of providing information to the consumer is also important, both to demystify the consumption of these products and to help the consumer make substitutions. A point that emerged in the focus groups was: "how much of these products do I need to consume to be equivalent to x grams of chicken, for example?". Providing this type of information can facilitate consumer adherence to AP products. Also, demystify the production process of AP products, talking both about the environmental impact that such production generates, and explaining how food is processed and how much they value healthiness.

6.4 Study limitations

Having the main and specific research goals answered, we now point out the study limitations. First, we can highlight the difficulty to schedule the focal groups, and to invite people to participate. We took too much time to achieve and form the focal groups. Also, we had some lastminute dropouts which turned even more difficult to obtain data. As we were still in a pandemic moment (even though it was already lighter), people were still resistant to meet physically. We wanted to schedule more focal groups, switching conditions and people characteristics in order to check if it would influence the results, but due to the timing that we had to close the research, it was not possible.

Another limitation we faced was the incipience of the field, both theoretically and, mainly, in practice. In the context that we performed the research, few people are already familiarised with alternative protein products. Some had already seen the products (mostly plant-based alternatives), but for the majority it was a brand new subject. The region that we performed the research can be pointed out as another limitation, due to the characteristics of Rio Grande do Sul (southern state of Brazil) and its culture, which is very much attached to meat consumption.

Despite these limitations, we believe that important advances to the field were obtained through this research. We brought a different approach in the study of nudges, by performing qualitative research (which was appropriate to the field). We started this study aiming to develop an experimental design, but having concluded the investigation sure that we used the correct approach to the stage of the field. In addition, the results of this work allow us to obtain concrete managerial implications of the perception of consumers of alternative protein products. Results can be used to improve communications and to further understand how the subject can be approached and what are the main barriers and limitations that can be faced to sell the products.

6.5 Future studies indication

Finally, from the results obtained in this study, other questions emerge. Even for the study limitations, future research is needed to advance in the field. We point out the necessity of developing new and more focal groups, increasing the discussions - still using a qualitative design. We reinforce our understanding that gaining deepness is relevant to the field. The research can be also replied in other states of Brazil, due to its magnitude. It's important to understand that Brazil is a country where it is difficult to make assumptions that can be generalised, because it has 5 different regions, and many different cultures in each region.

Also, we strongly recommend that future studies develop quantitative research, which would enrich the field and bring further insights. Applying the new scale of food related lifestyle and developing a mix method or quantitative research would bring interesting new data.

Surely other research designs are very much welcome. Descriptive and causal designs can enrich the field, helping to advance in the knowledge of consumption of alternative protein products. We also hope that this subject gains strongness in next years, which would help the development of the field *per se.*

References

Abbey, J. D., Meloy, M. G., Guide Jr, V. D. R., & Atalay, S. (2015). Remanufactured products in closed loop supply chains for consumer goods. Production and Operations Management, 24(3), 488-503.

Adams, M. A., Bruening, M., Ohri-Vachaspati, P., Hurley, J. C. (2016). Location of school lunch salad bars and fruit and vegetable consumption in middle schools: A

cross-sectional plate waste study. Journal of the Academy of Nutrition and Dietetics, 116, pp.407-416.

Agrawal, G. (2015). Foreign direct investment and economic growth in BRICS economies: A panel data analysis. Journal of Economics, Business and Management, 3(4), 421-424.

Aiking, H. (2011). Future protein supply. Trends in Food Science & Technology, 22(2-3), 112-120.

Amundson, R., Berhe, A. A., Hopmans, J. W., Olson, C., Sztein, A. E., & Sparks, D. L. (2015). Soil and human security in the 21st century. Science, 348(6235), 1261071.

Apaiah, R. K. (2006). Designing food supply chains. A structured methodology. A case on novel protein foods. PhD Thesis. Wageningen University, The Netherlands.

Appolinário, F. (2006). Metodologia da Ciência: Filosofia e Prática de Pesquisa. São Paulo: Pioneira Thomson Learning.

architecture techniques. J. Behav. Decis. Making 29, 511–524. https://doi.org/

Armstrong, C.M., Niinimäki, K., Kujala, S., Karell, E., Lang, C. (2015). Sustainable product-service systems for clothing: Exploring consumer perceptions of consumption alternatives in Finland. Journal of Cleaner Production, 97, pp.30–39.

Armstrong, C.M., Niinimäki, K., Lang, C., Kujala, S. (2016). A Use-Oriented Clothing Economy? Preliminary Affirmation for Sustainable Clothing Consumption Alternatives. Sustainable Development, 24, pp.18–31.

Arno, A., & Thomas, S. (2016). The efficacy of nudge theory strategies in influencing adult dietary behaviour: a systematic review and meta-analysis. BMC public health, 16(1), 676.

Atlason, R., Giacalone, D., Parajuly, K. (2017). Product design in the circular economy: Users' perception of end-of-life scenarios for electrical and electronic appliances. Journal of Cleaner Production, 168, pp.1059-1069.

Attwood, S., Chesworth, S. J., & Parkin, B. L. (2020). Menu engineering to encourage sustainable food choices when dining out: An online trial of priced-based decoys. Appetite, 149, 104601.

Backett, K. C., & Davison, C. (1995). Lifecourse and lifestyle: the social and cultural location of health behaviours. Social science & medicine, 40(5), 629-638.

Bacon, L., & Krpan, D. (2018). (Not) Eating for the environment: The impact of restaurant menu design on vegetarian food choice. Appetite, 125, 190-200.

Banerjee, A., Duflo, E. (2011). Poor Economics: a Radical Rethinking of the Way to Fight Global Poverty.

Barbour, R. (2009). Grupos Focais. Porto Alegre: Artmed, 2009. 216 p.

Bardin, L. (2004). Análise de Conteúdo. Lisboa: Edições 70. 223 p.

Bauer, J. M., & Reisch, L. A. (2019). Behavioural insights and (un) healthy dietary choices: A review of current evidence. Journal of Consumer Policy, 42(1), 3-45.

Bauer, M., & Gaskel, G. (2002). Pesquisa qualitativa com imagem, texto e som. Rio de Janeiro: Editora Vozes.

Baxter, W., Aurisicchio, M., & Childs, P. (2017). Contaminated interaction: another barrier to circular material flows. Journal of Industrial Ecology, 21(3), 507-516.

Birch, D., Skallerud, K., & Paul, N. A. (2018). Who are the future seaweed consumers in a Western society? Insights from Australia. British Food Journal, 121(2), 603-615.

Bocken, N., Short, S., Rana, P., Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. Journal of Cleaner Production, 65, pp.42-56.

Bonnet, C., Bouamra-Mechemache, Z., Réquillart, V., & Treich, N. (2020). Regulating meat consumption to improve health, the environment and animal welfare. Food Policy, 97, 101847.

Borin, N., Lindsey‐Mullikin, J., & Krishnan, R. (2013). An analysis of consumer reactions to green strategies. Journal of Product & Brand Management.

Borrello, M., et al. (2017). Consumers' perspective on circular economy strategy for reducing food waste. Sustainability, 9(1), pp. 141.

Bouwman, E. P., Onwezen, M. C., Taufik, D., de Buisonjé, D., & Ronteltap, A. (2020). Brief self-efficacy interventions to increase healthy dietary behaviours: evidence from two randomized controlled trials. British Food Journal.

Brown, N (2003) Hope against hype: Accountability in biopasts, presents and futures. Science Studies 16(2): 3–21.

Brunsø, K., Birch, D., Memery, J., Temesi, Á., Lakner, Z., Lang, M., ... & Grunert, K. G. (2021). Core dimensions of food-related lifestyle: A new instrument for measuring food involvement, innovativeness and responsibility. Food Quality and Preference, 91, 104192.

Burningham, K., & Venn, S. (2020). Are lifecourse transitions opportunities for moving to more sustainable consumption?. Journal of Consumer Culture, 20(1), 102-121.

Camacho-Otero, J., Boks, C., & Pettersen, I. N. (2018). Consumption in the circular economy: A literature review. Sustainability, 10(8), 2758.

Camerer, C. (2014). Behavioral Economics. Special Issue. Journal Current Biology, 24(18), pp. 228-277.

Capacci, S., Mazzocchi, M., Shankar, B., Brambila Macias, J., Verbeke, W., Pérez-Cueto, F. J., ... & Saba, A. (2012). Policies to promote healthy eating in

Europe: a structured review of policies and their effectiveness. Nutrition reviews, 70(3), 188-200.

Carlsson, F., Kataria, M., & Lampi, E. (2022). How much does it take? Willingness to switch to meat substitutes. Ecological Economics, 193, 107329.

Cialdini, R.B., Demaine, L.J., Sagarin, B.J., Barrett, D.W., Rhoads, K., Winter, P.L., 2006. Managing social norms for persuasive impact. Soc. Influ. 1 (1), 3–15.

Ciani, A., Gambardella, A., Pociovalisteanu, D. M. (2016). Circular Economy and Sustainable Rural Development. Theory and Best Practice: A Challenge for Romania, Annals-Economy Series, 1, pp. 52-56.

Clay, N., Sexton, A. E., Garnett, T., & Lorimer, J. (2020). Palatable disruption: the politics of plant milk. Agriculture and Human Values, 37(4), 945-962.

Cohen, I. G., Lynch, H. F., Robertson, C. T. (2016). Nudging health: health law and behavioral economics. JHU Press.

Collier, E. S., Oberrauter, L. M., Normann, A., Norman, C., Svensson, M., Niimi, J., & Bergman, P. (2021). Identifying barriers to decreasing meat consumption and increasing acceptance of meat substitutes among Swedish consumers. Appetite, 167, 105643.

Cooper and Schindler (2003)

Dai, T., Yang, Y., Lee, R., Fleischer, A. S., & Wemhoff, A. P. (2020). Life cycle environmental impacts of food away from home and mitigation strategies—A review. Journal of environmental management, 265, 110471.

Darnton A, Verplanken B, White P, et al. (2011) Habits, routines and sustainable lifestyles. A summary report to the Department for Environment, Food and Rural Affairs. AD Research and Analysis for Defra, London.

De Bakker, E., & Dagevos, H. (2012). Reducing meat consumption in today's consumer society: questioning the citizen-consumer gap. Journal of Agricultural and Environmental Ethics, 25(6), 877-894.

Decrop, A., del Chiappa, G., Mallargé, J., Zidda, P. (2018). Couch surfing has made me a better person and the world a better place': The transformative power of collaborative tourism experiences. Journal of Travel Tourism Marketing, 35, pp.57–72.

Denzin, N. K. (1989). The Research Act: A Theoretical Introduction to Sociological Methods, Englewood Cliffs, NJ: Prentice-Hall, 1989.

Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2010). MINDSPACE: influencing behaviour for public policy.

Edbring, E. G., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: motivations and barriers. Journal of Cleaner Production, 123, 5-15.

Ellen Macarthur Foundation. (2013). Towards the Circular Economy: Economic and business rationale for an accelerated transition. Isle of Wight, UK.

European Commission – EC (2014). Towards a Circular Economy: a Zero Waste Programme for Europe, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. European Commission, Brussels.

Farrow, K., Grolleau, G., & Ibanez, L. (2017). Social norms and pro-environmental behavior: A review of the evidence. Ecological Economics, 140, 1-13.

Fassio, F., & Tecco, N. (2019). Circular economy for food: A systemic interpretation of 40 case histories in the food system in their relationships with SDGs. Systems, 7(3), 43.

Flick, U. (2008). Introdução à pesquisa qualitativa-3. Artmed editora.

Franco, M. (2008). Análise de Conteúdo. Brasília: Liber Livro. 78 p.

Friel, S., Barosh, L. J., & Lawrence, M. (2014). Towards healthy and sustainable food consumption: An Australian case study. Public Health Nutrition, 17(5), 1156–1166. https://doi.org/10.1017/S1368980013001523.

Garajová, I., Balsano, R., Donati, V., Gnetti, L., Capula, M., Leonardi, F., ... & Giovannetti, E. (2022). Comente sobre “Implicações da invasão perineural na recorrência e sobrevivência da doença após pancreatectomia para adenocarcinoma ductal da cabeça do pâncreas por Crippa et al.”. Annals of Surgery , 276 (2), e136-e137.

Garnett, T., Mathewson, S., Angelides, P., & Borthwick, F. (2015). Policies and actions to shift eating patterns: What works? A review of the evidence of the effectiveness of inter- ventions aimed at shifting diets in more sustainable and healthy directions. London, UK: Chatham House.

Geissdoerfer, M. et al. (2017). The Circular Economy – A new sustainability paradigm? Journal of Cleaner Production, 143, pp. 757–768.

Geng, Y., Doberstein, B. (2008). Developing the circular economy in China: challenges and opportunities for achieving “leapfrog development”. International Journal of Sustainable Development & World Ecology,15, pp.231-239.

Gephart, R. (1999). Paradigms and Research Methods. Research Methods Forum,4, pp. 1-11

Ghisellini, P., Cialani, C., Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. Journal of Cleaner Production, 114, pp. 11–32.

Giudice, F., Caferra, R., & Morone, P. (2020). COVID-19, the food system and the circular economy: Challenges and opportunities. Sustainability, 12(19), 7939.

Giurco, D., Littleboy, A., Boyle, T., Fyfe, J., & White, S. (2014). Circular economy: questions for responsible minerals, additive manufacturing and recycling of metals. Resources, 3(2), 432-453.

Goldenberg, M. (2007). A arte de Pesquisar. Rio de Janeiro: Editora Record.

Goldstein, N. J.; Cialdini, R. B.; Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. Journal of Consumer Research, 35(3), pp.472-482.

Graça, J., Godinho, C. A., & Truninger, M. (2019). Reducing meat consumption and following plant-based diets: Current evidence and future directions to inform integrated transitions. Trends in Food Science & Technology, 91, 380-390.

Gravely, E., & Fraser, E. (2018). Transitions on the shopping floor: Investigating the role of Canadian supermarkets in alternative protein consumption. Appetite, 130, 146-156.

Gregson, N., Crang, M., Fuller, S., Holmes, H. (2015). Interrogating the circular economy: the moral economy of resource recovery in the EU. Economy and Society, 44, pp.218–243.

Hair Jr, J.; Babin, B.; Money, A.; Samouel, P. (2005). Fundamentos de Métodos de Pesquisa em Administração. Porto Alegre: Bookman. 471 p.

Halpern, D. (2015). Inside the nudge unit: How small changes can make a big difference. Random House.

Harguess, J. M., Crespo, N. C., & Hong, M. Y. (2020). Strategies to reduce meat consumption: A systematic literature review of experimental studies. Appetite, 144, 104478.

Harms, R., & Linton, J. D. (2016). Willingness to pay for eco‐certified refurbished products: The effects of environmental attitudes and knowledge. Journal of industrial ecology, 20(4), 893-904.

Hartmann, C., Siegrist, M., 2017. Consumer perception and behaviour regarding sustainable protein consumption: a systematic review. Trends Food Sci. Technol. 61, 11–25. https://doi.org/10.1016/j.tifs.2016.12.006.

Harwatt, H. (2019). Including animal to plant protein shifts in climate change mitigation policy: a proposed three-step strategy. Climate Policy, 19(5), 533-541.

Hazen, B. T., Mollenkopf, D. A., & Wang, Y. (2017). Remanufacturing for the circular economy: An examination of consumer switching behavior. Business Strategy and the Environment, 26(4), 451-464.

Herrero, M., Wirsenius, S., Henderson, B., Rigolot, C., Thornton, P., Havlík, P., ... & Gerber, P. J. (2015). Livestock and the environment: what have we learned in the past decade?. Annual Review of Environment and Resources, 40.

Higgs, S. (2015). Social norms and their influence on eating behaviours. Appetite, 86, 38-44.

Hoek, A. C., Luning, P. A., Weijzen, P., Engels, W., Kok, F. J., & De Graaf, C. (2011). Replacement of meat by meat substitutes. A survey on person-and product-related factors in consumer acceptance. Appetite, 56(3), 662-673.

Jaca, C., Prieto-Sandoval, V., Psomas, E., Ormazabal, M. (2018). What should consumer organizations do to drive environmental sustainability? Journal of Cleaner Production, pp.1-22.

Jaccoud, M., & Mayer, R. (2008). A observação direta e a pesquisa qualitativa. A pesquisa qualitativa: enfoques epistemológicos e metodológicos, 2, 254-94.

Jiménez-Parra, B., Rubio, S., Vicente-Molina, M.A. (2014). Key drivers in the behavior of potential consumers of remanufactured products: A study on laptops in Spain. Journal of Cleaner Production, 85, pp.488–496

Johnson, K., Mun, J., Chae, Y. (2016). Antecedents to internet use to collaboratively consume apparel. Journal of Fashion Marketing and Management, 20, pp.370–382.

Jung, J. Y., Mellers, B. A. (2016). American attitudes toward nudges. Judgment & Decision Making, 11.

Jurgilevich, A., Birge, T., Kentala-Lehtonen, J., Korhonen-Kurki, K., Pietikäinen, J., Saikku, L., & Schösler, H. (2016). Transition towards circular economy in the food system. Sustainability, 8(1), 69.

Kahneman, D., & Tversky, A. (1979). On the interpretation of intuitive probability: A reply to Jonathan Cohen.

Kahneman, D., & Tversky, A. (2013). Prospect Theory: An Analysis of Decision Under Risk. World Scientific Book Chapters, 99-127.

Khor, K., Hazen, B. (2017). Remanufactured products purchase intentions and behaviour: Evidence from Malaysia. International Journal Production Research, 55, pp.2149–2162.

King, A.M., et al., (2006). Reducing waste: repair, recondition, remanufacture or recycle? Sustainable Development, 14 (4), pp.257–267.

Kirchherr, J., Reike, D. and Hekkert, M. (2017) Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling, 127(4), pp. 221–232.

Koistinen, K., Teerikangas, S., Mikkilä, M., & Linnanen, L. (2020). Active sustainability actors: A life course approach. Sustainable Development, 28(1), 208-223.

Kumar, V., Sezersan, I., Garza-Reyes, J., Gonzalez, E. and AL-Shboul, M. (2019) Circular economy in the manufacturing sector: Benefits, opportunities and barriers. Management Decision, 57 (4). pp. 1067-1086.

Lee, E. J., Choi, H., Han, J., Kim, D. H., Ko, E., & Kim, K. H. (2020). How to “Nudge” your consumers toward sustainable fashion consumption: An fMRI investigation. Journal of Business Research

Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging–A promising tool for sustainable consumption behaviour?. Journal of Cleaner Production, 134, 166-177.

Lehrner, M., Mont, O., Heiskanen (2015). Nudging – a promising tool for sustainable consumption behavior? Journal of Cleaner Production, 134, pp.166-177.

Lewandowski, M. (2016). Designing the Business Models for Circular Economy — Towards the Conceptual Framework. Sustainability, 8, pp.1–28.

Li, J., Peters, P. J., Bai, M., Dai, J., Bos, E., Kirchhausen, T., ... & Hsu, V. W. (2007). An ACAP1-containing clathrin coat complex for endocytic recycling. The Journal of cell biology, 178(3), 453-464.

Liu, P. J., Wisdom, J., Roberto, C. A., Liu, L. J., & Ubel, P. A. (2014). Using behavioral economics to design more effective food policies to address obesity. Applied Economic Perspectives and Policy, 36, pp.6-24.

Marchiori, D. R., Adriaanse, M. A., & De Ridder, D. T. (2017). Unresolved questions in nudging research: Putting the psychology back in nudging. Social and Personality Psychology Compass, 11(1),

Marinova, D., & Bogueva, D. (2019). Planetary health and reduction in meat consumption. Sustainable Earth, 2(1), 1-12.

Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. Research Policy, 41(6), 955-967.

Marteau, T. M., Hollands, G. J., & Kelly, M. P. (2015). Changing population behavior and reducing health disparities: Exploring the potential of “choice architecture” interventions. Emerging behavioral and social science perspectives on population health. Bethesda, MD: National Institutes of Health/Agency For Healthcare Research and Quality, 2015, 105-126.

Matsumoto, M., Chinen, K., & Endo, H. (2018). Remanufactured auto parts market in Japan: Historical review and factors affecting green purchasing behavior. Journal of cleaner production, 172, 4494-4505.

McBey, D., Watts, D., & Johnstone, A. M. (2019). Nudging, formulating new products, and the lifecourse: A qualitative assessment of the viability of three methods for reducing Scottish meat consumption for health, ethical, and environmental reasons. Appetite, 142, 104349.

McGill, R. et al., (2015). Are interventions to promote healthy eating equally effective for all? Systematic review of socioeconomic inequalities in impact. BMC public health, 15, 457.

Mcleod, E., Chmura, G. L., Bouillon, S., Salm, R., Björk, M., Duarte, C. M., ... & Silliman, B. R. (2011). A blueprint for blue carbon: toward an improved understanding

of the role of vegetated coastal habitats in sequestering CO2. Frontiers in Ecology and the Environment, 9(10), 552-560.

Meadows, D.H., Randers, J., Meadows, D.L. (2004). The Limits to Growth. The 30-year

Mekonnen, M. M., & Hoekstra, A. Y. (2014). Water footprint benchmarks for crop production: A first global assessment. Ecological indicators, 46, 214-223.

Möhlmann, M. (2015). Collaborative consumption: determinants of satisfaction and the likelihood of using a sharing economy option again. Journal of Consumer Behaviour, 14(3), 193-207.

Mont, O., Lehner, M., Heiskanen, E. (2014). Nudging, a tool for sustainable behaviour? Swedish EPA, Stockholm, p. 85.

Moons, I., Barbarossa, C., & De Pelsmacker, P. (2018). The determinants of the adoption intention of eco-friendly functional food in different market segments. Ecological Economics, 151, 151-161.

Moreau, V., et al. (2017). Coming full circle: why social and institutional dimensions matter for the circular economy. Journal of Industrial Ecology, 21 (3). pp. 497–506.

Münscher, R., Vetter, M., Scheuerle, T., 2016. A review and taxonomy of choice

Murray, A., Skene, K., Haynes, K. (2015). The circular economy: an interdisciplinary exploration of the concept and application in a global context. Journal of Business Ethics, pp.1-12.

Nasir, M. H. A., Genovese, A., Acquaye, A. A., Koh, S. C. L., Yamoah, F. (2017), Comparing linear and circular supply chains: A case study from the construction industry, International Journal of Production Economics, 183, pp. 443-457.

Ness, D. (2008). Sustainable urban infrastructure in China: Towards a Factor 10 improvement in resource productivity through integrated infrastructure systems. The International Journal of Sustainable Development & World Ecology, 15(4), 288-301.

Newell, A., & Simon, H. A. (1959). The simulation of human thought (p. 1734). Rand Corporation.

Nolan, J.M.; Schultz, P.W.; Cialdini, R.B.; Goldstein, N.J.; Griskevicius, V. Normative Social Influence is Underdetected. Pers. Soc. Psychol. Bull. 2008, 34, 913–923.

Ölander, F., Thøgersen, J. (2014). Informing Versus Nudging in Environmental Policy. Journal Of Consumer Policy, 37, pp.341- 356.

Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021). A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat. Appetite, 159, 105058.

Onwezen, M. C., Van den Puttelaar, J., Verain, M. C. D., & Veldkamp, T. (2019). Consumer acceptance of insects as food and feed: The relevance of affective factors. Food Quality and Preference, 77(May), 51-63.

Osei-Owusu, AK, Towa, E., & Thomsen, M. (2022). Explorar os caminhos para a mitigação dos impactos ambientais do consumo de alimentos. Ciência do Ambiente Total , 806 , 150528.

Patz, J. A., Campbell-Lendrum, D., Holloway, T., & Foley, J. A. (2005). Impact of regional climate change on human health. Nature, 438(7066), 310-317.

Paundra, J., Rook, L., van Dalen, J., & Ketter, W. (2017). Preferences for car sharing services: Effects of instrumental attributes and psychological ownership. Journal of environmental psychology, 53, 121-130.

Perez-Cueto, F. J. (2021). Nudging plant-based meals through the menu. International Journal of Gastronomy and Food Science, 24, 100346.

Potting, J., Hekkert, M. P., Worrell, E., & Hanemaaijer, A. (2017). Circular economy: measuring innovation in the product chain. PBL Publishers.

Prahalad, C.K. (2004). The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits. Wharton School Publishing.

Priest, S. (2011). Pesquisa de mídia. Porto Alegre: Penso. 287 p.

Prieto-Sandoval, V., Jaca, C. and Ormazabal, M. (2018) Towards a consensus on the circular economy. Journal of Cleaner Production, pp. 1-27.

Reisch, L. A., & Sunstein, C. R. (2016). Do Europeans like nudges?. Judgment and Decision making, 11(4), 310-325.

Reisch, L. A., Sunstein, C. R., & Gwozdz, W. (2017). Better than a Whip?: European Attitudes Toward Health Nudges.

Reisch, L. A., Sunstein, C. R., Andor, M. A., Doebbe, F. C., Meier, J., & Haddaway, N. R. (2021). Mitigating climate change via food consumption and food waste: A systematic map of behavioral interventions. Journal of Cleaner Production, 279, 123717.

Richardson, R. (2008). Pesquisa Social – Métodos e Técnicas. São Paulo: Atlas, 2008. 334 p.

Roininen, K., Arvola, A., & Lähteenmäki, L. (2006). Exploring consumers' perceptions of local food with two different qualitative techniques: Laddering and word association. Food Quality and Preference, 17(1), 20–30.

Rosenzweig, C., Mbow, C., Barioni, L. G., Benton, T. G., Herrero, M., Krishnapillai, M., ... & Portugal-Pereira, J. (2020). Climate change responses benefit from a global food system approach. Nature Food, 1(2), 94-97.

Samuelson, W., Zeckhauser, J. R. (1988). Status quo bias in decision making. Journal of Risk and Uncertainty, 1, pp. 7-59, 1988.

Sauvé, S., Bernard, S., Sloan, P. (2016). Environmental sciences, sustainable development and circular economy: Alternative concepts for trans-disciplinary research. Environmental Development, 17, pp. 48-56.

Schenkel, M., Caniëls, M.C.J., Krikke, H., van der Laan, E. (2015). Understanding value creation in closed loop supply chains – Past findings and future directions. Journal of Manufactoring Systems

Schrader, U. (1999). Consumer acceptance of eco-efficient services. Greener Management International, (25).

Schubert, C., 2017. Green nudges: do they work? Are they ethical? Ecol. Econ. 132, 329–342. https://doi.org/10.1016/j.ecolecon.2016.11.009.

Seiffert, M., Loch, C., 2005. Systemic thinking in environmental management: support for sustainable development. Journal of Cleaner Production, 13 (12), pp.1197-1202.

Sexton, A. E. (2018). Eating for the post‐Anthropocene: Alternative proteins and the biopolitics of edibility. Transactions of the Institute of British Geographers, 43(4), 586-600.

Sexton, A. E., Garnett, T., & Lorimer, J. (2019). Framing the future of food: The contested promises of alternative proteins. Environment and Planning E: Nature and Space, 2(1), 47-72.

Shafir, E. (Ed.). (2013). The behavioral foundations of public policy. Princeton University Press.

Shepard, R. N. (1990). Mind sights: Original visual illusions, ambiguities, and other anomalies, with a commentary on the play of mind in perception and art. WH Freeman/Times Books/Henry Holt & Co.

Slade, P. (2018). If you build it, will they eat it? Consumer preferences for plant-based and cultured meat burgers. Appetite, 125, 428-437.

Smil, V. (2002). Eating meat: evolution, patterns, and consequences. Population and development review, 28(4), 599-639.

Smith, A., & Seyfang, G. (2013). Constructing grassroots innovations for sustainability. Global Environmental Change, 23(5), 827-829.

Sousa Lourenço, J., Ciriolo, E., Almeida, S. R., & Troussard, X. (2016). Behavioural insights applied to policy: European Report 2016. Brussels: European Union.

Spring, M., & Araujo, L. (2017). Product biographies in servitization and the circular economy. Industrial Marketing Management, 60, 126-137.

Stahel, W.R. (2016). Circular Economy. Nature, pp.6–9.

Stephens, N. (2010). In vitro meat: Zombies on the menu. Scripted, 7, 394.

Sunstein, C. (2016). The Council of Psychological Advisers. Annual review of psychology, 67, pp.713-737.

Sunstein, C. R. (2014). Why nudge?: The politics of libertarian paternalism. Yale University Press.

Szaszi, B., Palinkas, A., Palfi, B., Szollosi, A., & Aczel, B. (2018). A systematic scoping review of the choice architecture movement: Toward understanding when and why nudges work. Journal of Behavioral Decision Making, 31(3), 355-366.

Thaler, R, Sustein, C. (2008). Nudge: improving decisions about health, wealth, and happiness. Nova York: Penguin Books. 312 p.

Tilman, D., & Clark, M. (2014). Global diets link environmental sustainability and human health. Nature, 515(7528), 518-522.

Traill, W., Mazzocchi, M., Niedźwiedzka, B., Shankar, B., & Wills, J. (2013). The EATWELL project: Recommendations for healthy eating policy interventions across Europe. Nutrition Bulletin, 38, pp.352- 357.

Update. Routledge, London.

Van Buren, N., Demmers, M., van der Heidjen, R., Witlox, F. (2016). Towards a circular economy: the role of dutch logistics industries and governments. Sustainability, 647(8), pp.1-17.

Van Weelden, E., Mugge, R., & Bakker, C. (2016). Paving the way towards circular consumption: exploring consumer acceptance of refurbished mobile phones in the Dutch market. Journal of Cleaner Production, 113, 743-754.

Van Weelden, E., Mugge, R., & Bakker, C. (2016). Paving the way towards circular consumption: exploring consumer acceptance of refurbished mobile phones in the Dutch market. Journal of Cleaner Production, 113, 743-754.

Van Zanten, H. H., Van Ittersum, M. K., & De Boer, I. J. (2019). The role of farm animals in a circular food system. Global Food Security, 21, 18-22.

Vecchio, R., & Cavallo, C. (2019). Increasing healthy food choices through nudges: A systematic review. Food Quality and Preference , 78 , 103714.

Vergara, S. (2010). Métodos de Pesquisa em Administração. São Paulo: 4a

Verplanken, B., & Roy, D. (2016). Empowering interventions to promote sustainable lifestyles: Testing the habit discontinuity hypothesis in a field experiment. Journal of Environmental Psychology, 45, 127-134.

Vigors, B. (2018). Reducing the consumer attitude–behaviour gap in animal welfare: The potential role of ‘nudges’. Animals, 8(12), 232.

Vikas, N. (2019). Building bigger beta-barrels. eLife, 8

Wang, Y., Huscroft, J.R., Hazen, B.T., Zhang, M. (2018). Green information, green certification and consumer perceptions of remanufactured automobile parts. Resources, Conservation and Recycling, 128, pp.187–196.

WBCSD, V. (2010). 2050 The new agenda for business. World Business Council for Sustainable Development, Geneva.

WCED, World Comission on Enviromental and Development. (1987). Our common future. Oxford, 1987.

Winans, K., Kendall, A., Deng, H. (2017). The history and current applications of the circular economy concept., Renewable and Sustainable Energy Reviews, 68, pp. 825-833.

Yin, R. K. (2015). Estudo de Caso: Planejamento e métodos. Bookman editora.

Yuan, Z., Bi, J., Moriguichi, Y. (2006). The circular economy: a new development strategy in China. Journal of Industrial Ecology, 10 (1–2), pp. 4–8.

Zhijun, F., & Nailing, Y. (2007). Putting a circular economy into practice in China. Sustainability Science, 2(1), 95-101.

Zhu, Q., Geng, Y., & Lai, K. H. (2011). Environmental supply chain cooperation and its effect on the circular economy practice performance relationship among Chinese manufacturers. Journal of Industrial Ecology, 15(3), 405-419.

Appendix

Appendix A - Scripts for the conduction of focal groups, word association and image association

Introdução: Explique que lerei as boas-vindas e as instruções para que todos os grupos focais sigam o mesmo procedimento

Olá a todos, meu nome é Cynthia e estou aqui em nome da Universidade Federal do Rio Grande do Sul. Permitam-me começar agradecendo a todos por concordarem em participar deste estudo sobre proteínas alternativas. Este estudo faz parte de uma pesquisa mais ampla que está sendo desenvolvida com apoio financeiro do CNPQ e foi projetado para que suas opiniões sobre o assunto possam ser ouvidas – embora tenha certeza de que sua identidade não será compartilhada com ninguém fora da equipe de pesquisa. Faremos alguns exercícios e também teremos uma discussão em grupo. Espero que todos tenham muito a dizer – estou aqui para fazer as perguntas, moderar e manter as discussões nos trilhos. Espero dizer o mínimo possível para não interferir e deixar que vocês discutam as questões entre vocês. Estamos interessados no que todos vocês têm a dizer, não no que eu penso! Você pode discordar de todos os outros no grupo em certos assuntos, e se for esse o caso, por favor, fale! Não há coisas certas ou erradas para dizer hoje, toda opinião é válida e bem-vinda, e as discordâncias também são muito importantes para nós.

Estarei gravando a sessão com o celular, então, se todos puderem falar claramente, agradeceremos. Se você também puder evitar falar ao mesmo tempo, isso tornará difícil ouvir o que está sendo dito quando reproduzirmos o áudio.

Agora, vou contar mais a vocês sobre o assunto, e então podemos nos apresentar e continuar com o primeiro exercício.

Visão geral do assunto

Tem sido argumentado que os níveis atuais de consumo de carne no Ocidente são prejudiciais tanto para a nossa saúde quanto para o meio ambiente. Uma maneira de reduzir o consumo de carne é substituir a carne por outros alimentos ricos em proteínas, e muitas alternativas têm surgido, como produtos a base de plantas que procuram reproduzir o sabor e a textura da carne, carnes produzidas em laboratório (de forma que com algumas células de carne sejam "clonadas" as demais, e com um pequeno pedaço possam ser produzidos mais porções), além de outras formas de

proteína que podem ser produzidas e tratadas de modo a "reproduzir" sabor e textura da carne animal.

Estamos interessados hoje em suas atitudes e sentimentos em relação aos alimentos em geral, carnes e, estamos especialmente interessados em entender o que vocês pensam e sentem sobre os produtos que "reproduzem" a carne animal, mas utilizando proteínas alternativas.

***Apresentações*:** Convidar cada um a se apresentar.

Ok, agora que todos nos conhecemos, podemos continuar com o primeiro exercício. Este é um exercício de associação de palavras. Isso deve ser feito por conta própria. Há instruções no papel, mas para esclarecer há uma lista de palavras, e tudo o que queremos que você faça é escrever as primeiras 3 palavras que vêm à sua cabeça quando as ouve.

Exercício de associação de palavras

Este primeiro exercício envolve associação de palavras. Por exemplo, quando menciono futebol, você pode pensar nas palavras “Grêmio”, “gol”, “campeonato”, “rodada” ou “chato”.

Para cada uma das palavras listadas abaixo, liste as 3 primeiras palavras que vierem à sua cabeça. Não se preocupe se você não conseguir pensar em 3, simplesmente liste o máximo que puder.

Não há respostas certas ou erradas, estamos interessados nas palavras que vêm à sua mente

Tente concluir este exercício rapidamente e não gaste muito tempo se preocupando ou pensando nas respostas – queremos ouvir as primeiras coisas que vêm à sua cabeça. Depois de escrever cada resposta, pode ser útil repetir a palavra-estímulo em sua cabeça para que fique claro que é isso que você está pensando.

Agora escreva as 3 primeiras palavras que vêm à sua cabeça quando você ouve a palavra:

Comida:

Proteína:

Refeição:

Bem estar animal:

Gastronomia:

Carne:

Carne cultivada em laboratório:

Carne a base de plantas:

Carnes alternativas:

Comida saudável:

Agora gostaria que vocês prestassem atenção nas imagens que vou mostrar a vocês e assim que eu mostrar, escrevam as 3 primeiras palavras que surgem na mente de vocês.

Exercício de associação de imagens

As imagens serão passadas no telão e peço que façamos o exercício todos juntos, simultaneamente. Prestem atenção no telão, olhem bem para as imagens, e anotem ao lado de cada imagem, na folha que vocês tem em mãos, as 3 primeiras palavras que vem à mente de vocês.


future farm™
FUTURE BURGER™
PLANT-BASED PATTIES
2 BURGERS (4 OZ EACH)
NET WT. 8 OZ (227g)
[NON_GMO]
[NO_GLUTEN]
[NO_ANTIBIOTICS]
PLANT BASED
PERISHABLE:
KEEP REFRIGERATED OR FROZEN
PURCHASED FROZEN, SEE "USE BY"
PRINTED ON TRAY.
RETAILER: APPLY REFRIGERATED "USE BY" DATE.


CRUELTY FREE · SAFE · HEALTHY · ENVIRONMENTALLY FRIENDLY
LAB-GROWN
MEAT
BEEF
NET WT. 17 OZ (482g)


aurora
Hambúrguer de Carne Bovina
PESO LÍQUIDO
90g
CONSERVAÇÃO
-12ºC
OU MAIS FRIO
HAMBÚRGUER DE CARNE BOVINA


VIVA
CARNE CARBONO NEUTRO
Marfrig
ENTRECOTE
CARNE RESFRIADA DE BOVINO
SEM OSSO - FILÉ DE COSTELA (ENTRECOTE)


AVES CRIADAS LIVRES DE GAIOLAS
"Sistema de produção de ovos sem o uso de antibióticos terapêuticos e antibióticos como melhoradores de desempenho".
OVOS
TIPO MÉDIO
Brancos
Classe A
KÖRIN
CERTIFIED HUMANE
BEM-ESTAR ANIMAL
WQS
AVES CRIADAS LIVRES DE GAIOLAS


KÖRIN
PICANHA
ORGÂNICO
KÖRIN
ALCATRA
ORGÂNICO

Ok, agora eu gostaria apenas de passar pelas regras básicas para a discussão

Regras básicas e garantia de confidencialidade

- Há momentos em que posso cortá-los em uma conversa - por favor, não se sintam ofendidos! Como o tempo é limitado, quaisquer perguntas ou comentários fora do tópico devem ser deixados para depois da discussão
- Apenas uma pessoa pode falar de cada vez, portanto, evite falar por cima uns dos outros
- Eu gostaria de ouvir o que todos têm a dizer para que eu possa destacar as pessoas e perguntar se elas gostariam de comentar
- Por favor, respeite as opiniões de cada um. Não há resposta certa ou errada para as perguntas que vou fazer. Queremos ouvir o que cada um de vocês pensa e é bom ter opiniões diferentes. No entanto, sintam-se à vontade para desafiar uns aos outros se discordarem, mas mantenham-se amistosos e civilizados.
- Quaisquer dados de identificação pessoal que você nos forneça, como seu nome, serão anonimizados antes de qualquer publicação de dados. Mantemos todos os seus dados seguros e o acesso é limitado à equipe de pesquisa e para fins de auditoria.

Questões

Question	**Theoretical basis**
Como era sua relação com a comida na sua infância?	***Lifecourse***
Você reflete sobre a comida que você come? Segue alguma dieta?	***Food related lifestyle***
O que você considera como carne? Que carnes você come? Com qual frequência? Qual a importância da carne na sua dieta?	***Meat attachment***
Você gosta de cozinhar? Quem prepara geralmente os alimentos que você consome?	***Food related lifestyle***

O que você consideraria como alternativas à carne em uma refeição?	***Meat attachment***
As preocupações com o bem-estar animal afetam suas escolhas alimentares?	***Attributes that may influence on APs consumption***
Você considera as implicações ambientais dos alimentos que você come?	***Attributes that may influence on APs consumption***
Você reflete sobre essas informações na hora de fazer as escolhas alimentares?	***Attributes that may influence on APs consumption***
Você já consumiu carnes alternativas, à base de plantas?	***Consumption of APs***
O que o convenceria a comer menos carne e mais alternativas à base de plantas? Existem certos tipos de refeição que você estaria mais propenso a incorporar alternativas à base de plantas?	***Drivers of consumption of APs***
O que o impediria de comer menos carne e mais alternativas à base de plantas?	***Barriers of consumption of APs***
E se eu dissesse a vocês que, conforme dados da Euromonitor o faturamento do mercado plant-based foi de $82,8 milhões no ano de 2020, tendo crescido 70% desde 2015 em produção e consumo? Ainda, produtos com proteínas alternativas, como a carne de laboratório e carnes à base de plantas, são comprovadamente mais amigáveis ao meio ambiente, não geram impactos para os animais e são consideradas por 90% dos consumidores que experimentam como opções à carne animal. Ainda, tem-se informações de que as pessoas que começam a consumir estes produtos, dificilmente voltam a consumir produtos à base de carne animal. Produtos de carne alternativa à carne animal tem sido adquiridos por consumidores ao redor do mundo, e têm sido vistos como uma opção mais ética e saudável. O que vocês acham dessas informações?	***Nudge - framing effect***
Depois do que falamos hoje, estariam dispostos a experimentar essas proteínas alternativas?	***Nudge - framing effect***

Finalização

Ok, acho que é isso para nossas perguntas de hoje. Muito obrigado a todos pela presença, sua contribuição foi muito útil.

Preparamos uma recordação para vocês como forma de agradecimento e para incentivá-los no consumo de produtos à base de plantas.

Quem tiver ticket de estacionamento ou comprovante de Uber, podemos reembolsá-los pelo transporte.

Mais uma vez, obrigado a todos pela participação