DOCTORAL THESIS

UNDERSTANDING CONSUMERS' TRANSITION TOWARD A VEGAN DIET

AN APPLICATION OF THE TRANSTHEORETICAL ADOPTION PRECAUTION MODEL (TAPM) TO HEALTHY, ETHICAL, AND SUSTAINABLE (HES) DIETARY BEHAVIORS

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Madrid
November 2023

I wish to convey my heartfelt dedication within the pages of this thesis to my husband, Mahyar, whose support and encouragement have served as the cornerstone of my doctoral journey.

Moreover, I extend this dedication to my parents and brother; their unceasing wellspring of inspiration has played a pivotal role in my academic pursuits.

Lastly, to my cherished little girl on the way, whose presence has already filled my world with boundless love, I present this thesis as a testament to the bright future I aspire to for you.

To treasure life,
Not only our own,
But the lives of others,
Of future generations,
And
All sentient beings,
Who deserve to live,
As we do.

Gelareh Salehi

Acknowledgment

My journey at Comillas Pontifical University has been an incredible experience filled with growth, learning, and unforgettable encounters. I am immensely grateful and deeply appreciative of the individuals who have played pivotal roles in shaping my academic and personal development. I would like to acknowledge Dr. Manuel Morales Contreras, whose introduction to Comillas during our online meeting while living in Tehran opened my eyes to the opportunities that await me at this prestigious institution.

The inspiration to start this Ph.D. journey can be traced back to a pivotal moment, one year prior, during my master's degree. It was in the "contemporary consumer behavior" course guided by Dr. Estela Díaz that my perspective underwent a profound transformation, and a previously dormant passion was ignited within me to dedicate the rest of my life to research. This moment of inspiration became the driving force behind my decision to pursue further studies in the CETIS program, a decision for which my gratitude knows no bounds. Estela, you have been a beacon of light in my life, instilling in me the belief that a research career can effect positive change in the world. Your mentorship, dedication, and unwavering support have left an indelible mark on my academic and personal growth.

In the context of unwavering passion for research, I had the privilege of working with Dr. Raquel Redondo, the charismatic woman who introduced me to the fundamentals of statistics and became my co-supervisor for quantitative analysis in my Ph.D. Raquel, your expertise, patience, and guidance have been invaluable, and I consider myself fortunate to have had the opportunity to work with you as my supervisor during my Ph.D.

Estela and Raquel, your unwavering support and guidance have made my journey smoother and more fulfilling. Despite the challenges I faced, including leaving my home country, embarking on a new life in Spain, navigating the trials of the pandemic, and subsequently moving to France, I believe that it is through these challenges that we discover our true strength and resilience, making life more thrilling and worthwhile.

I also want to thank Dr. Carmen Valor, Dr. Amparo Merino, and Dr. Jeffrey Soar, who have provided valuable insights and guidance regarding the academic career path.

Throughout my doctoral journey, I had the privilege of interacting with and learning from numerous outstanding researchers who have been a constant source of inspiration. I would like

to express my heartfelt gratitude to Alexandra Isfahani-Hammond, Dr. Fàtima Canseco-López, Dr. Christopher Bryant, and Dr. Ben De Groeve for their invaluable contributions and guidance.

I had the privilege of sharing this journey with remarkable classmates during my Ph.D., including Dr. Alejandro Rodríguez Gallego, Dr. Christina Domínguez Soto, Esperanza Hernández Cuadra, Asier Barbero Inchaurbe, Wenxi Ziwenxi, and Monica Vasquez del Solar. To each of them, I express my deepest gratitude for the motivation and inspiration they provided during the most challenging days. Our shared experiences, discussions, and camaraderie have enriched my academic journey in ways I could never have imagined.

Being a humble member of these organizations and having the privilege of being connected to them has played a pivotal role in my research journey, greatly enriching my experience. I want to express my sincere appreciation for the collaborative and transformative contributions of The Vegan Society, UK; PETA (People for the Ethical Treatment of Animals), France; AFDN (Association Française des Diététiciens Nutritionnistes); IAMPN (International Association on Public and non-profit marketing), and RECAP (Research to End Consumption of Animal Products). I extend my gratitude to these associations, whose support has been instrumental in facilitating the outreach of my research.

I am deeply grateful to my husband and family for their constant presence and unwavering support throughout this journey. None of this would have been possible without him. I would also like to thank my parents for their sacrifices after immigrating to provide my brother and me with the educational opportunities we dreamed of.

In closing, I want to express my heartfelt appreciation to all the individuals who have touched my life throughout this journey, whether mentioned here or not. Each interaction, conversation, and support has contributed to my growth, and I am truly humbled by the collective impact you have had on my life.

Thank you.

A note regarding formatting style

Certain aspects of the overall document formatting in this thesis require clarification. To ensure uniformity in the presentation of chapters, the formatting of the publications included in this thesis may deviate from their original published format in specific ways, as seen in Chapter 1 and Chapter 2. A similar variation in format applies to the manuscripts currently undergoing peer review, as discussed in Chapter 3. Nevertheless, it is imperative to emphasize that despite these variations, the core content and structure of the publications have remained unaltered. To enhance the document's overall coherence, readability, and accessibility, an adjustment has been made to the numbering of tables and figures. These changes ensure that chapters are aligned with the thesis rather than specific to individual publications.

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3Ms:	Mapping, Modeling, and Measuring
6W1H:	WHEN, WHERE, WHO, WHAT, WHY, WHICH and HOW
A:	Attitudes
AHR:	Animal-Human relationship
AN:	Animals
B:	Behavior
C:	Cultured meat consumption
CL:	Cultural & Social
CN	Contemplation
Cnf:	Confidence
CR:	Correlational or non-experimental
D:	*Diet*
D:	Identity
DE:	Disengagement
DoF	Degrees of Freedom
DIQ:	Dietary Identity Questionnaire
DoF:	Degrees of Freedom
E:	Emotions
EN:	Environment
EX:	Experimental
EXC:	Choice Experiment
F:	*Food*
F:	Information
FAO:	Food and Agriculture Organization of the United Nations
FC	Food Consumption
FN:	Financial & economic
FT:	Faith
GHGs:	Greenhouse Gases
HES:	Healthy, Ethical and Sustainable
HL:	Health
HS	Hesitation
I:	Intentions
JS:	Justice & world hunger
K:	Knowledge

M[1]: Motivations

M: Meat consumption

M-CR: Mixed method study including correlational section.

MOOC: Massive Open Online Course

MT: Maintenance

N: Networks

NCDs: Non-Communicable Diseases

NGO: Non-Governmental Organization

O: Norms

P: *Philosophy of life*

P: Product Attributes

PAPM: Precaution Adoption Process Model

PBDs: Plant-Based Diets

PC: Precontemplation

PCA: Principal Component Analysis

PL: Political

PMT: Protection Motivation Theory

PR Preparation

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analysis

RJ: Rejection

RL: Relapse

S: Self-efficacy or Perceived Behavioral Control

SD: Standard Deviation

SDGs: Sustainable Development Goals

SDO: Social Dominance Orientation

SI: Self-identified

SN: Sensory factors

T: Personality

TAPM: Transtheoretical Adoption Precaution Model

TCB: Transformative Consumer Behavior

TM: Transtheoretical Model

Tmp: Temptation

TPB: Theory of Planned Behavior

[1] The "M" has been consistently interpreted as "Motivations" in Chapter 1 discussing various determinants of adhering to a vegan diet. Additionally, it serves as an abbreviation for the research streams within the VEG framework, specifically denoting the Meat consumption stream. To maintain consistency with the published version, no alterations have been made to this representation.

TRA: Theory of Reasoned Action

UMVI: Unified Model of Vegetarian Identity

UN: United Nations

V: Values

VEG: Vegan-s-ism and Vegetarian-s-ism (or vice-versa)

Vgn: Veganism

Vgt: Vegetarianism

WHO: World Health Organization

Abstract

The global food system is currently facing major challenges that highlight the urgent need for a transition in eating habits towards Healthy, Ethical, and Sustainable practices (HES). One of the solutions proposed to address these challenges is adopting a vegan diet. This thesis aims to facilitate and better understand the shift toward this type of behavior by mapping, modeling, and measuring the transition to a vegan diet. The first part of the thesis involves a systematic literature review, which aims to cover the "when," "where," "who," "what," "why," "which," and "how" of vegan and vegetarian research. This comprehensive mapping effort identifies the current state of knowledge and pinpoints the critical determinants that influence the decision to adopt a vegan diet. By systematically categorizing existing research, this study lays the groundwork for understanding the multifaceted process of dietary transition. Building on the insights gained from the literature review, the second part of the project introduces and analyzes a novel theoretical framework: Transtheoretical Adoption Precaution Model (TAPM). This mixed-method approach delves into how individuals transition toward HES dietary behaviors, highlighting the model's unique consideration of "avoidance stages." Such stages are crucial for understanding not only the motivations behind adopting veganism but also the reasons why individuals may abandon it. This model provides a nuanced understanding of the behavior change process, offering a foundation for future interventions. The final part of the thesis employs a quantitative empirical approach to assess the impact of key determinants (motivators, barriers, and self-efficacy) on the behavior change process using the TAPM model. This study reveals that the influence of these determinants varies significantly across different stages of the individual's transition. Highlighting the importance of moving beyond a simple vegan versus non-vegan dichotomy, this research underscores the need for tailored strategies to facilitate more effective dietary and behavioral transitions. Together, these three studies offer a comprehensive view of the journey towards adopting a vegan diet, contributing valuable insights for future research and practical applications aimed at promoting HES dietary behaviors.

Keywords: Veganism, Vegan diet, Transtheoretical Adoption Precaution Model (TAPM), Consumer behavior

Resumen

El sistema alimentario mundial se enfrenta actualmente a grandes retos que ponen de manifiesto la urgente necesidad de una transición en los hábitos alimentarios hacia prácticas saludables, éticas y sostenibles (HES). Una de las soluciones propuestas para hacer frente a estos retos es la adopción de una dieta vegana. Esta tesis pretende facilitar y comprender mejor el cambio hacia este tipo de comportamiento mediante la cartografía, modelización y medición de la transición hacia una dieta vegana. La primera parte de la tesis consiste en una revisión sistemática de la literatura, que pretende cubrir el "cuándo", "dónde", "quién", "qué", "por qué", "cuál" y "cómo" de la investigación vegana y vegetariana. Este esfuerzo de mapeo exhaustivo identifica el estado actual del conocimiento y señala los determinantes críticos que influyen en la decisión de adoptar una dieta vegana. Al categorizar sistemáticamente la investigación existente, este estudio sienta las bases para comprender el polifacético proceso de la transición dietética. A partir de los conocimientos obtenidos en la revisión bibliográfica, la segunda parte del proyecto introduce y analiza un novedoso marco teórico: Modelo Transteórico de Precaución de Adopción (TAPM). Este enfoque de métodos mixtos profundiza en cómo se produce la transición de los individuos hacia conductas alimentarias HES, destacando la consideración única del modelo de las "etapas de evitación". Estas etapas son cruciales para comprender no sólo las motivaciones que llevan a adoptar el veganismo, sino también las razones por las que los individuos pueden abandonarlo. Este modelo proporciona una comprensión matizada del proceso de cambio de comportamiento, ofreciendo una base para futuras intervenciones. La parte final de la tesis emplea un enfoque empírico cuantitativo para evaluar el impacto de los determinantes clave (motivadores, barreras y autoeficacia) en el proceso de cambio de comportamiento utilizando el modelo TAPM. Este estudio revela que la influencia de estos determinantes varía significativamente en las distintas etapas de la transición del individuo. Subrayando la importancia de ir más allá de una simple dicotomía vegano versus no vegano, esta investigación subraya la necesidad de estrategias a medida para facilitar transiciones dietéticas y conductuales más eficaces. En conjunto, estos tres estudios ofrecen una visión completa del viaje hacia la adopción de una dieta vegana, aportando valiosas ideas para futuras investigaciones y aplicaciones prácticas destinadas a promover comportamientos dietéticos HES.

Palabras clave: Veganismo, Dieta vegana, Transtheoretical Adoption Precaution Model (TAPM), Comportamiento del consumidor

INTRODUCTION

In this introduction, we embark on a detailed examination of the research problem that forms the cornerstone of this thesis, which is the negative consequences of the current food system. Our primary aim is to not only highlight the significance of the issue at hand but also to propose a viable solution that could significantly mitigate the impact: the transition to a vegan diet. The urgency and relevance of addressing this problem are underscored by its implications for the field, prompting us to seek innovative and effective strategies for expanding the number of consumers that embrace a vegan diet.

Then, to navigate through this academic endeavor, we establish the main objective of our research. Accompanying the main objective are carefully formulated research questions. These questions are pivotal in structuring our inquiry, allowing us to dissect the problem methodically and explore its various dimensions in depth. Finally, in this introduction, we present our approach to answering these research questions and moving towards achieving our specific objectives. This will be our roadmap, detailing the steps we will take to delve deeper into the problem, gather evidence and draw conclusions that will make a significant contribution to the body of knowledge in our field.

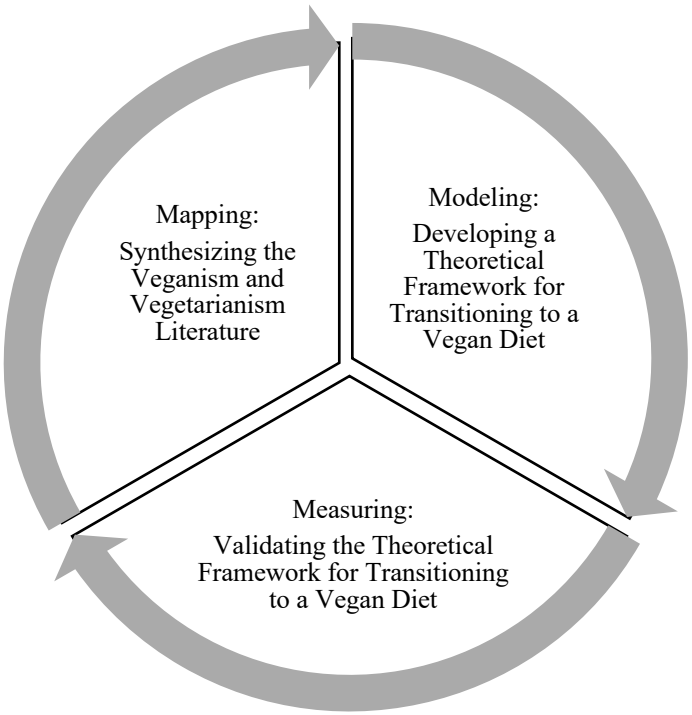

Figure 1. Mapping, Modeling, and Measuring (3Ms) the transition to a vegan diet

I. Research problem: negative consequences of the current food system

One of the major problems of the current food system is the excess production and consumption of meat and other animal-derived food products (Arnaudova et al., 2022; Bryant et al., 2021; Tachie et al., 2023). Recent decades have witnessed a notable escalation in meat consumption, transcending geographical boundaries and impacting developed and developing regions (Almeida et al., 2023; Fabbrizzi et al., 2016; Sans & Combris, 2015). This unprecedented surge can be attributed to many interconnected social, cultural, and economic factors that have reshaped the global food landscape, including the advancements in the food industry, the successful implementation of marketing strategies amidst urbanization and infrastructure development, and the pervasive influence of globalization (Canseco-Lopez & Miralles, 2023; Pereira & Vicente, 2013; West et al., 2014).

One key driver of increased meat consumption is the agricultural and meat industry's remarkable technical progress. Advances in livestock breeding, feed production, and animal husbandry practices have significantly boosted the meat supply, making it more accessible and affordable to a larger population (Fabbrizzi et al., 2016).

Furthermore, the successful implementation of distribution networks and marketing strategies has played a pivotal role in meeting the growing demand for meat products, particularly in urban areas where infrastructure development and improved transportation have facilitated efficient supply chains (West et al., 2014).

Economic growth and urbanization are the principal drivers of increased meat consumption and production. As nations develop, rising incomes and urban lifestyles lead to changes in dietary preferences, with a greater demand for meat as a source of high-quality protein. According to Delgado (2003), the phenomenon known as the "livestock revolution" is characterized by the burgeoning demand for animal protein in developing countries, driven by economic growth and urbanization. This demand has led to significant increases in meat production to meet the growing consumption needs.

In addition to these industry-related factors, the influence of globalization must be considered. As societies become more interconnected and cultures merge, dietary preferences and consumption patterns are influenced by global food trends (Fabbrizzi et al., 2016). The

proliferation of multinational fast-food chains, the widespread availability of imported meat products, and the exposure to diverse culinary traditions through media and travel have all contributed to the increased consumption of meat (Sans & Combris, 2015).

While a confluence of factors may drive the surge in meat consumption, it is crucial to recognize the associated implications and challenges. The current global food system is co-responsible for a range of critical issues. It plays a significant role in the rise of Non-Communicable Diseases (NCDs), influences the emergence, and spread of pandemics, contributes to animal suffering, and exacerbates climate change challenges (Lobstein, 2019; Mardones et al., 2020; Savage et al., 2020; Springmann et al., 2018). This system also intersects with social concerns, failing to adequately address human rights issues, world hunger, and food justice (Herrero et al., 2021; Khatri et al., 2023; Mason & Lang, 2017).

The risks associated with meat consumption and production have evolved, with some risks successfully controlled or eliminated while new risks and diseases have emerged (Alewy Almashhadany, 2021; Johnson et al., 2009). First, Non-Communicable Diseases (NCDs) have emerged as significant public health challenges in the 21st century (WHO, 2017). The role of nutrition in the escalating relevance of NCDs has been evidenced. Contemporary dietary patterns characterized by excessive consumption of red meat and processed meat products have been closely associated with an increased risk of various diseases, including but not limited to high blood pressure, osteoporosis, obesity, cancer, and heart disease (McAfee et al., 2010). Second, meat processing poses an additional threat in the form of potential carcinogenic contaminants, such as temperatures, and the utilization of additives such as nitrites and nitrates (Clonan et al., 2016). Finally, raising animals for human consumption has assumed a growing public health topic, with urgent concerns related to antibiotic-resistant bacteria (as highlighted by Landers et al., 2012) and the burgeoning threat of zoonotic diseases (e.g., Brown, 2004). The gravity of these issues is underscored by the stark demonstration provided by the COVID-19 pandemic, which has effectively highlighted the pressing need for comprehensive attention to the potential health risks associated with the human-animal interface in food production.

The ethical concerns surrounding animal welfare and the immense animal suffering within the meat industry cannot be overlooked (Boyle, 2007; D'Souza et al., 2022; Rothgerber, 2015). The sheer magnitude of animal slaughter is staggering, with approximately 75 billion land animals being subjected to this fate annually (FAO, 2022). Consequently, the prevailing method of raising and confining animals within factory farms has become the norm. While this

practice enables meat production at relatively low prices, it comes at a tremendous cost regarding animal well-being and suffering (Williams, 2008). Ultimately, this issue presents a profound ethical dilemma with far-reaching social, economic, and environmental ramifications (Asher & Cherry, 2015; Docherty & Jasper, 2023; May & Kumar, 2023).

Meat production and consumption also negatively impact the environment (Godfray et al., 2018). United Nations (UN) has officially recognized animal agriculture as the leading emitter of the most severe environmental challenges, such as Greenhouse Gases (GHGs), responsible for over a third of the world's GHGs output (Bimbo, 2023). Consequently, it plays a significant role in escalating global temperature, giving rise to climate change that detrimentally affects human well-being, animal welfare, and crop yields (Crippa et al., 2021). Moreover, animal agriculture mainly contributes to other environmental problems, such as land degradation, air pollution, water shortage, and biodiversity loss (Asher & Peters, 2020a, b).

Given the acknowledgment that the prevailing conventional food system is not only detrimental to health but also fraught with ethical concerns and environmental unsustainability, there is an increasing awareness that dietary decisions must actively confront and mitigate a significant portion of these mentioned consequences (Beal et al., 2023; D'Souza et al., 2022; Zinsstag et al., 2023). The detrimental impacts of meat consumption have generated a global outcry for immediate action, highlighting the urgent need for dietary transformation (Dijkstra et al., 2022). In response, the concepts of dietary "transition" and lifestyle "transformation" have gained significant attention concerning the United Nations' Sustainable Development Goals (SDGs) and human well-being (Hartmann & Siegrist, 2017; Sachs et al., 2019). The increasing food transformation dialogue reflects a shared concern among stakeholders, including policymakers, scholars, and society (Dagevos & Voordouw, 2013). To effectively tackle the complex challenges of public health, morality of what we consume, and climate change, it is essential to acknowledge the role of our food choices. In this context, scientific research has underscored the significance of a nutritional transition towards reducing meat consumption.

II. Proposed solution: transition to a vegan diet

The promotion of the protein transition, a change in food patterns advocated by the United Nations (UN) and the Food and Agriculture Organization of the UN (FAO, 2022), emerges as a key strategy for achieving specific Sustainable Development Goals (SDGs), notably "Zero Hunger," (SDG2), "Good health and well-being" (SDG3), "Sustainable cities and

communities" (SDG11), "Responsible consumption and production" (SDG12), as well as "Climate Action" (SDG13) and "Life Below Water" (SDG 14) (Arenas-Gaitán et al., 2020; Judge & Wilson, 2019; Judge et al., 2022). It is discerned that the adoption and sustained commitment to VEG lifestyles emerge as pivotal strategies in pursuing this goal, as substantiated by scholarly investigations.

In alignment with this global perspective, adopting policies that endorse Plant-Based Diets (PBDs) not only contributes to the improvement of food accessibility and the advancement of social equity but also fosters the betterment of health and the preservation of the environment and saves billions of farm animals from unnecessary suffering and slaughtering (Sabaté & Soret, 2014). The indisputable consensus underscores the intrinsic connection between food choices, environmental considerations, and human well-being, further emphasizing the interdependency of diet, health, and the planet that has been explained in the previous section (Tilman & Clark, 2014). In other words, embracing a global shift towards adopting a predominantly plant-based diet holds immense potential for mitigating the ecological impact of food systems, enhancing human health, and reducing the harm inflicted on animals within the livestock industry (de Backer & Hudders, 2015; Fox & Ward, 2008; Kershaw et al., 2023).

Embracing a plant-based diet has become increasingly popular as a feasible option for fostering well-being. This diet has been shown to offer numerous health benefits, including a lower risk of atherosclerosis, coronary heart disease, type 2 diabetes, metabolic syndromes, and certain cancers, as well as supporting weight management and reducing inflammation (MacInnis & Hodson, 2021; Peña-Jorquera et al., 2023). The consumption of healthful plant foods like whole grains, fruits, vegetables, nuts, and legumes is associated with these benefits due to their nutrient density and the presence of beneficial mono- and polyunsaturated fatty acids, omega-3 fatty acids, antioxidants, minerals, phytochemicals, fiber, and plant protein (Satija et al., 2017). Moreover, plant-based diets rich in antioxidants from various dietary plants can protect against chronic oxidative stress-related diseases (Carlsen et al., 2010).

A shift toward plant-based diets represents a meaningful stance on animal welfare, as it inherently reduces the demand for animal-derived food products and the subsequent need for industrial farming practices, which often prioritize efficiency over the well-being of animals (Uppal et al., 2023). By choosing plant-based options, individuals can contribute to a decrease in the exploitation of animals and the harsh conditions they often endure in large-scale farming operations. This not only includes the cessation of inhumane treatment and confinement of

livestock but also supports the elimination of practices such as routine antibiotic use and genetic modifications for rapid growth, which can lead to health issues in animals (Alcorta et al., 2021). Embracing a plant-based diet is not only a personal health choice but also an ethical commitment to reducing the suffering of animals, contributing to a growing movement that advocates for the rights and humane treatment of all living beings.

From an environmental perspective, plant-based diets require fewer natural resources and are associated with lower greenhouse gas emissions compared to diets high in meat and dairy products. The production of plant-based foods generally requires less water, land, and energy and contributes less to deforestation and biodiversity (Baroni et al., 2007). This mounting evidence suggests that embracing plant-based diets can substantially mitigate climate change and alleviate environmental strains caused by conventional animal farming practices, leading to a more sustainable food system (Hartmann & Siegrist, 2017; Sabaté & Soret, 2014).

Moreover, a global dietary shift towards increased consumption of plant-based foods could contribute to food security by promoting more efficient use of land and resources. This is critical in the face of the growing global population and the need to feed more people sustainably (Tilman & Clark, 2014). Additionally, by prioritizing plant-based dietary patterns, we can address both the prevention and treatment of obesity and other metabolic syndromes, creating a positive impact on public health outcomes (Magkos et al., 2019).

However, suggesting the choice of a plant-based lifestyle may hold a vague definition (Sterling & Bowen, 2019). In this thesis, the proposed solution directly concerns following vegan and vegetarian (VEG) diets. It is discerned that the adoption and sustained commitment to VEG lifestyles emerge as pivotal strategies in pursuing this goal, as substantiated by scholarly investigations.

Following a vegan lifestyle and increasing the choices of vegan products offer potential solutions to address unfulfilled societal requirements, encompassing sustainable approaches to tackle pressing challenges like animal rights, climate change, or the prevalence of non-communicable diseases (Salehi et al., 2023). In a similar vein, following a vegan diet has been recognized as an innovative solution that necessitates careful attention to promote its adoption effectively (Kim et al., 2020; Klöckner, 2017; Lea & Worsley, 2003; Morris et al., 2014).

Merely a couple of decades ago, the term "vegan" might have been perceived as ambiguous, leading to uncertainty about its precise definition and, at times, encountering resistance to the

associated concepts (Giacoman et al., 2021; Wescombe, 2019). Over the years, there has been a growing awareness of this subject, reflected in academic literature where numerous scholars have made efforts to either broaden the definition of veganism or focus on specific facets of it. This has led to a phenomenon aptly described by Wrenn (2017), where various individuals have developed their interpretations of veganism. Examining the diverse ways veganism has been defined in scholarly works exemplifies the different approaches researchers have taken to elucidate this phenomenon. According to the Vegan Society (n.d.), which describes veganism as:

> *[A] philosophy and way of living which seeks to exclude—as far as is possible and practicable—all forms of exploitation of, and cruelty to, animals for food, clothing, or any other purpose; and by extension, promotes the development and use of animal-free alternatives for the benefit of humans, animals, and the environment. In dietary terms, it denotes dispensing with all products derived wholly or partly from animals*.

First, according to this definition, veganism is seen as a principled response to carnism, and by extension, speciesism, grounded in a compassionate perspective of all sentient beings and a deep appreciation of intrinsic values as expounded by scholars (De Groeve & Rosenfeld, 2022; Díaz, 2016; Greenebaum, 2017). This perspective is notably pertinent, as ethical considerations undeniably serve as a prominent driving force behind the adoption of veganism, a trend that has persevered over the years. However, it is worth acknowledging that additional motivations, including concerns related to health, environmental sustainability, and spiritual belief, have also played substantial roles in guiding individuals toward embracing veganism (De Groeve et al., 2022; Hopwood et al., 2021; Jabs et al., 1998; Janssen et al., 2016; North et al., 2021; Ruby, 2012). This perspective shall be delineated as “activist” veganism—a paradigm that propels a more revolutionary envisioning of veganism. It fosters enhanced critical contemplation, consciousness, and dedication toward issues of social justice (White, 2018).

Second, as articulated by White (2018), “activism” veganism should be differentiated from the alternate form of veganism, identified herein as “lifestyle” or “corporate” veganism. The latter is currently prevalent within mainstream society, predominantly fixated on dietary concerns yet significantly disengaged from actions pertinent to interspecies social justice. Lifestyle veganism is substantially championed and propelled by corporate entities and investments.

Finally, the intricate interplay between the dietary aspects of veganism and the construction, portrayal, and interpretation of veganism philosophy assumes paramount significance in this study, as it reflects the multifaceted nature of veganism. This significance is heightened by the realization that veganism is not only shaped by individuals who identify as vegans but is also subject to interpretation and reinterpretation within non-vegans by breaking away from prevailing traditional behavioral patterns.

Consequently, this thesis posits veganism as far more than just a mere dietary choice; instead, it is conceived as a comprehensive philosophy and way of living; a phenomenon that provides a life orientation, movement, activism, and a well-being tool that transcends altruistic motives in present-day society (Gheihman, 2021; Judge & Wilson, 2019; McDonald, 2000), as well as considering the phenomena to social and individual identities. Furthermore, in the thesis, an expansive view of veganism is taken, and veganism could be regarded not only as a journey that individuals progress to adhere to but as an indicator that appreciates the tiny acts of non-vegans who endeavor to "veganize" (Lawo et al., 2020; Schyver & Smith, 2005) aspects of their lives in varying degrees.

In the context of this thesis, veganism is acknowledged as a phenomenon that extends beyond dietary choices and encompasses broader lifestyle commitments, shaping the identity of individuals as "vegan"; informed by a moral stance against animal exploitation. However, the investigation is specifically narrowed to its dietary dimension. In alignment with the discourse established in the scholarly literature (Janssen et al., 2016; Ruby, 2012), the term "vegan diet" will henceforth be employed to denote this particular aspect. Adopting this term is deliberate, demarcating the dietary practices devoid of animal products from the broader ethical framework of veganism. This terminological clarity allows for a nuanced exploration of the myriad motivations for adopting a vegan diet, which extend beyond ethical considerations alone.

A less ethically compromised diet that could also solve some food industry impacts to some extent, is vegetarianism. Vegetarianism, a dietary choice that aligns with the objectives of promoting health, ethical treatment of animals, and environmental sustainability, is characterized by the exclusion of animal flesh, such as meats from mammals, birds, and fish[2], and extends to avoiding products derived from the killing of animals, including those made

[2] The term 'seafood' is deliberately avoided here due to its potential ambiguity, as it may sometimes include non-animal marine life, such as algae, which are generally acceptable in vegetarian diets.

with insects. Historical texts suggest that the term "vegetarian" originally encompassed what is now recognized as veganism, signifying an abstention from all animal-derived products (Davis, 2006). In contemporary usage, however, vegetarianism allows for variations in the inclusion of certain animal-derived products such as dairy or eggs, leading to subcategories like ovo-vegetarians and lacto-vegetarians. In this thesis, a vegetarian diet is defined by its exclusion of meat and other animal flesh (Ruby, 2012). This study uses the designation "VEG" as an inclusive term to denote both those who follow vegan diets and those who adhere to the broader spectrum of vegetarian dietary patterns, acknowledging the diversity within this practice.

Evidently, studying consumers' daily actions, notably their dietary practices and food choices, plays a pivotal role in exacerbating the ongoing health-related, ethical, and environmental sustainability challenges (Frewer et al., 2023; Mont et al., 2014). Despite the increased awareness of the consequences of mainstream food practices over recent years, this has not translated into a significant and immediate change in individuals' daily behaviors or a noticeable reduction in adverse outcomes of current dietary choices (Otto & Pensini, 2017). For instance, per capita meat consumption in Western countries has only marginally decreased by 8% over the past decade despite growing concerns about the consequences of animal-derived product production and consumption (Vieira et al., 2023). Similarly, adopting sustainable and ethical food products still represents a relatively small fraction of overall consumer choices, with vegan foods[3] accounting for just 5% of total food sales in the U.S. in 2022 (Buttny & Kinefuchi, 2020; Clay et al., 2022). These figures underscore the challenge of bridging the gap between awareness and behavioral change in dietary choices.

However, despite many efforts in consciousness-raising toward the vegan lifestyle, recent years have witnessed significant variability in the effectiveness of implemented interventions (DaSilva et al., 2020). The challenge lies in unraveling the intricate web of factors contributing to the perpetuation of meat consumption and devising intervention designs that effectively instigate behavior change. Shifting long-standing dietary habits and convincing individuals to adopt choices necessitates a nuanced understanding of the psychological, social, and cultural influences (Sutton, 2015). Despite the compelling reasons and increasing interest in sustainable consumption, there remain segments of consumers who may display disengagement and

[3] In this context, "vegan food" specifically pertains to specialized vegan products designed as alternatives to animal-based items, distinguishing them from the broader category of vegan foods (i.e., fruits, vegetables or nuts).

hesitancy in altering their dietary habits (Lea et al., 2006a, b; Lea & Worsley, 2008; Pohjolainen et al., 2016; Szenderák et al., 2022; Zur & Klöckner, 2014).

These figures suggest that the transition to a new diet (here, VEG) is challenging and involves a complex series of interconnected decisions at various stages of the adoption process (Ploll et al., 2020). Thus, persuading individuals to reduce their meat intake and promoting behavior change in this context is a multifaceted process that requires a better knowledge regarding how behavior change towards vegan diet occurs and the development of effective intervention strategies. Merely relying on communication alone is inadequate to ensure the successful dissemination of vegan food (Dijkstra & Rotelli, 2022; Riverola et al., 2017).

Considering these identified challenges, the main objective of this thesis is to improve our understanding of the progress of consumer behavior change towards a vegan diet to improve information and support campaigns for people facing challenges in adopting a vegan diet and ultimately increase the number of people adopting a vegan diet in society.

To advance the achievement of this objective, we propose three main research questions:

RQ1: What do we currently know about the transition to vegan diet?
RQ2: How does the transition to vegan diet take place?
RQ3: Are the main determinants of the adoption of a vegan diet the same or different at all stages of the transition?
In the following section we explain how we have worked to give an answer to those RQs.

III. Mapping, Modeling, and Measuring (3Ms) the transition to a vegan diet

To navigate and mitigate the challenges in behavior change towards veganism, the academic community has underscored the need for proactive measures to outline a more feasible trajectory for promoting the vegan lifestyle. Several scholars have engaged in this area of research, aiming to respond to these calls for future exploration on dietary transitions. The expanding body of literature over the past decade emphasizes the need for an up-to-date and comprehensive understanding of this evolving field. Accordingly, we conducted a systematized mapping of the latest research on veganism to address our first research question (RQ1): ***What do we currently know about the transition to a vegan diet?***

While previous narrative reviews have provided valuable insights, a gap remains for a review that systematically integrates findings, particularly from quantitative studies, to identify current research gaps. This thesis aims to fill this gap by conducting a systematic literature review focused on quantitative research, which is essential for establishing clear, evidence-based conclusions. We called this exercise **"mapping"** since it served as a foundation to comprehensively understand the nuances and complexities of dietary behavior change. Through this systematic literature review, we endeavor to contribute to the body of knowledge by providing a clearer, evidence-based picture of the transition towards a vegan lifestyle, thereby aiding in the development of targeted interventions and policies that support individuals in this dietary change.

One of the main challenges encountered during the mapping was addressing the vague and inconsistent definitions within the field, such as the conflation of vegan and vegetarian terms or the broad use of 'plant-based' to describe various diets. This inconsistency, as observed in multiple studies (e.g., El Jasser et al., 2019; Lea et al., 2006a), underscored the need for clear differentiation. Our "**mapping**" approach aimed to clarify these distinctions within vegan and vegetarian studies. Additionally, formulating specific sub-research questions allowed for a holistic view of the literature, covering aspects such as time span, geographical scope, and publication discipline. This approach, however, revealed the complexity of classifying research streams in vegan and vegetarian studies, highlighting the diverse scholarly motivations for studying veganism, ranging from ecological concerns to animal rights. This diversity prompts further investigation into the psychological, social, and behavioral determinants underlying the transition to veganism. In sum, our literature review not only allowed us to chart the existing knowledge but also to pinpoint areas that are under-researched or poorly understood, setting the stage for future inquiries that could address these identified gaps.

Our work recognizes veganism as a dynamic phenomenon that often involves a gradual transition process. This realization has laid the groundwork for applying stage behavior change theories to conceptualize the transition more effectively to a vegan diet. Following this line of inquiry, we have observed that in recent years, the academic community has intensified efforts to explore the multifaceted nature of veganism (Espinosa & Treich, 2020; Vestergren & Uysal, 2022). However, a notable limitation in this body of research is the infrequent application of theoretical models to analyze the adoption process of veganism. Our systematic review found that less than 30% of studies on veganism and vegetarianism have employed theoretical models

in their analyses (Salehi et al., 2023), highlighting the critical need for employing robust theoretical frameworks to advance understanding and design effective interventions.

Among the studies that have applied theoretical frameworks, Fishbein and Ajzen's (2011) Theory of Reasoned Action (TRA) and Ajzen's (1985) Theory of Planned Behavior (TPB) were frequently used. However, these models often focus more on the transition from intention to behavior, without delving into the detailed process of adopting veganism. This oversight is significant, as the transition to veganism often starts from a non-vegan background and occurs gradually (Asher & Peters, 2020; Ruby, 2012; Ruby & Heine, 2016). Furthermore, the literature suggests that adopting and maintaining a vegan diet results from navigating through various phases influenced by different psychological and social factors, and that individuals may react to the phenomenon of veganism differently (Bacon & Krpan, 2018; Bagci et al., 2022).

In response to these observations and to further address our second research question (RQ2): ***How does the transition to vegan diet take place?*** We identified a pressing need for a more detailed exploration of the vegan journey. This need, alongside the previously noted dynamic nature of veganism, emphasizes the necessity for a model that thoroughly delineates the steps individuals take toward embracing a vegan diet. Consequently, Chapter two is dedicated to this task, aiming to construct a detailed stage model that accurately illustrates the nuances of this transition.

In developing our "**modeling**" step, we drew inspiration from Mendes (2013), employing an abductive approach to understand how individuals become aware of veganism, decide to adopt it, and navigate the initial steps towards a vegan diet. This study aimed to examine individuals' experiences transitioning to veganism through the lens of the Transtheoretical Model (TM). We aimed to uncover the thoughts, emotions, and behaviors throughout this journey, focusing on the motivators, barriers, and coping strategies encountered. However, during our research, we recognized the need to delve deeper into avoidance decisions, defined as the moments when an individual decides not to continue their journey towards vegan diet or veganism —a concept not fully explored in previous stage model applications. Previous literature often treated this decision as homogeneous, failing to acknowledge that the characteristics of this decision can vary significantly depending on when it occurs within the transition process. By closely examining these critical points, we identified four distinct stages of exit, highlighting the nuanced nature of avoidance decisions in the journey towards veganism. This observation

prompted us to integrate the Precaution Adoption Process Model (PAPM) with the Transtheoretical Model (TM) framework. This integration allowed us to develop a comprehensive model that effectively maps out the entire journey of transitioning to vegan diet, including the nuanced stages of abandonment. This innovative approach culminated in the proposal of the Transtheoretical Adoption Precaution Model (TAPM), a model that enriches our understanding of the complex dynamics involved in the decision to exit the vegan journey.

The conceptual model we developed, aligning with existing models in the literature, highlights the critical roles of two constructs as determinants of behavior change: *decisional balance* and *self-efficacy.* Moreover, the qualitative insights that informed the model's development indicate that decisional balance and self-efficacy are dynamic, evolving as individuals progress through different stages of the transition. This observation prompted us to delve into our third research question (RQ3): ***Are the main determinants of behavior change consistent across all stages of the transition?*** Addressed in Chapter 3, during the "**measuring**" phase, we aimed to empirically assess how consumers' perceptions of adopting a vegan diet vary across the process. For this matter, we conducted a quantitative study to investigate how decisional balance and self-efficacy evolve across these stages. We also hypothesized that perceptions toward a vegan diet would differ significantly between "adherence stages" (where individuals actively follow a vegan diet) and "avoidance stages" (where individuals disengage or relapse from the diet), leading to an in-depth analysis of how these perceptions shift, thereby deepening our understanding of the dynamics of adopting a vegan diet. Furthermore, it paves the way for additional research into dietary patterns and behaviors within the wider context of Healthy, Ethical, and Sustainable (HES) lifestyles.

The main objective, along with the three overarching research questions outlined earlier, have been distilled into more precise objectives and research questions, all of which are summarized in Table 1.

IV. Thesis structure

The realm of following a vegan diet lacks adequate attention in designing campaigns promoting Healthy, Ethical, and Sustainable (HES) choices.

Table 1. Objectives and research questions

General objective	Specific objectives	Specific Research questions
Mapping: Synthesizing the Veganism and Vegetarianism Literature		
Mapping the state of the art, identifying trends and gaps in quantitative research, clarifying existing findings	Exploring the development of studies on VEG through the period, geographical expansion, and related journals	WHEN was the VEG studies published?
		WHERE was the VEG research conducted?
		WHO published the VEG research?
	Identifying and classifying the main research streams in VEG studies	WHAT was studied in the VEG literature?
	Recognizing the reasons that make VEG a vital topic to be studied	WHY do scholars consider VEG essential to be studied?
	Identifying the factors examined in VEG and the variables associated with VEG-related behavior change	WHICH variables were measured in the VEG research?
	Analyzing the methodological tools that researchers implemented in learning VEG	HOW were the VEG research conducted?
Modeling: Developing a Theoretical Framework for Transitioning to a Vegan Diet		
Conceptualizing stages of change in veganism transition: building on theoretical frameworks, this study aims to explore the lived experiences during the transition to following a vegan diet among current and former vegans.	Characterizing different stages that individuals may pass to become and maintain vegan	How do people become aware of following a diet?
	Exploring how individuals' perceptions may influence decision to follow a vegan diet	How and why do they decide to follow a vegan diet?
	Exploring how individuals take the initial steps in their dietary change journey	How do individuals start to follow a vegan diet?
	Providing a detailed picture of how individuals experience the journey to follow a vegan diet	What thoughts, emotions, and behaviors accompany people on the journey toward a vegan diet?
	Exploring how different processes of change may influence their journey to become and maintain vegan	What helped/hindered people from changing their lifestyle practices
		What strategies did/do you use to benefit from the process or cope with obstacles?
Measuring: Validating the Theoretical Framework for Transitioning to a Vegan Diet		
Empirically exploring consumers' perceptions toward following a vegan diet by how the main constructs of the TM	Analyzing the relevance of the TAPM variables in studying following a vegan diet	Do people in different stages of change differ in terms of their perceptions toward following a vegan diet?

Table 1. Objectives and research questions (Continued)

General objective	Specific objectives	Specific Research questions
model (decisional balance and self-efficacy) vary according to the different stages of change among French adult consumers	Investigating pros and cons of a vegan diet across different stages of change.	Does the pros and cons of a vegan diet vary among the different stages of change?
		Do people in the adherence stages have higher levels of pros than those in the avoidance stages?
		Which category of motivators (i.e., wellness, or ethical) is more important in each stage?
		Which category of barriers (i.e., practical) is more important in each stage?
	Comparing the perceived ability to follow a vegan diet across people in different stages of change.	Does the level of self-efficacy (perceived ability) differ among the various stages of change?
		Do people in the adherence stages have higher levels of perceived ability to follow a vegan than those in the avoidance stages?

The inconsistency of research on veganism in the context of HES behaviors underscores the necessity for a systematic literature review, as discussed in Chapter 1 (mapping), which delves into the systematic map of quantitative studies on veganism and vegetarianism in behavioral science and social science. The insufficiently studied concept of following a vegan diet as a dynamic and stage-based journey involving the overlooked theoretical frameworks highlights the need to comprehend the stages of change individuals undergo during their dietary change to follow a vegan diet.

The analysis of the interviews with former and current vegans in relation constitutes the focus of analysis in Chapter 2 (modeling). The theoretical model developed in the qualitative analysis has been empirically explored in Chapter 3 (measuring). The thesis structure depicted in Figure 2 outlines the core focus of synthesizing the literature on veganism (and vegetarianism), advancing the theoretical frameworks, and validating the proposed model.

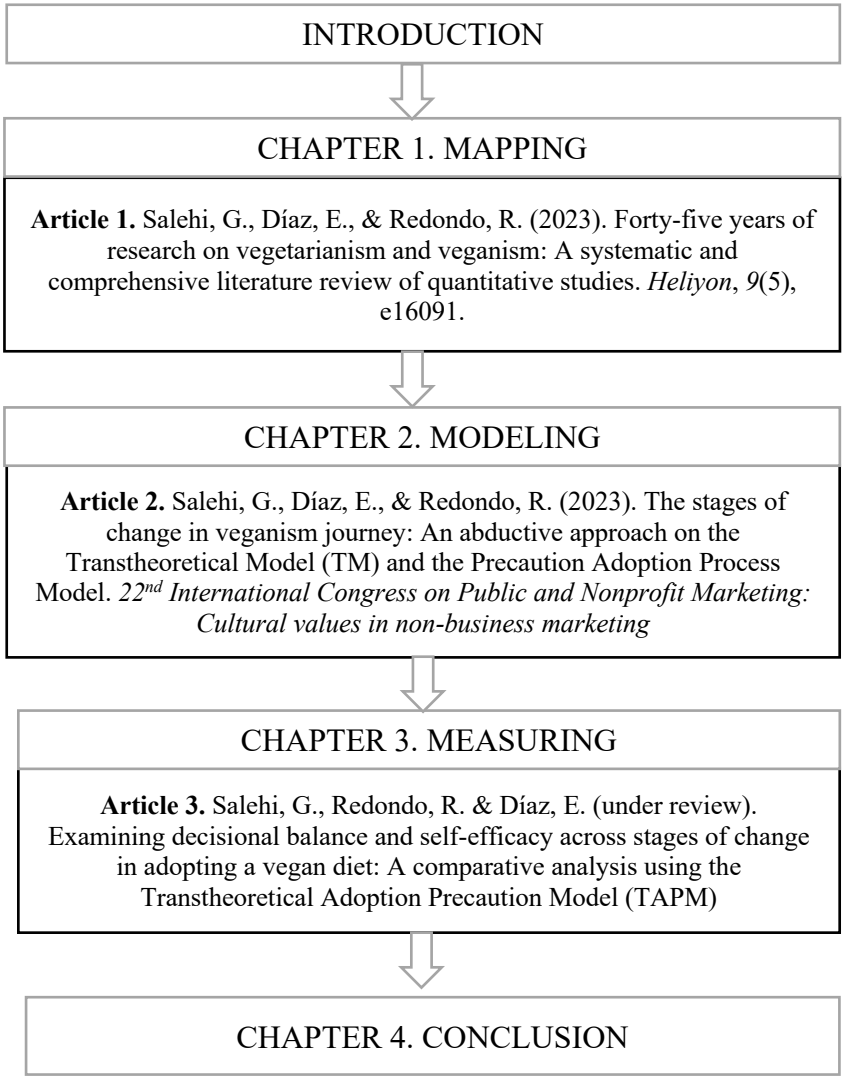

Figure 2. Thesis structure

V. References

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CHAPTER 1. Mapping: Synthesizing the Veganism and Vegetarianism Literature

This Chapter has been published in the Heliyon Journal in May 2023: Salehi, G., Díaz, E., & Redondo, R. (2023). Forty-five years of research on vegetarianism and veganism: A systematic and comprehensive literature review of quantitative studies. *Heliyon*[4]*, 9*(5), e16091.

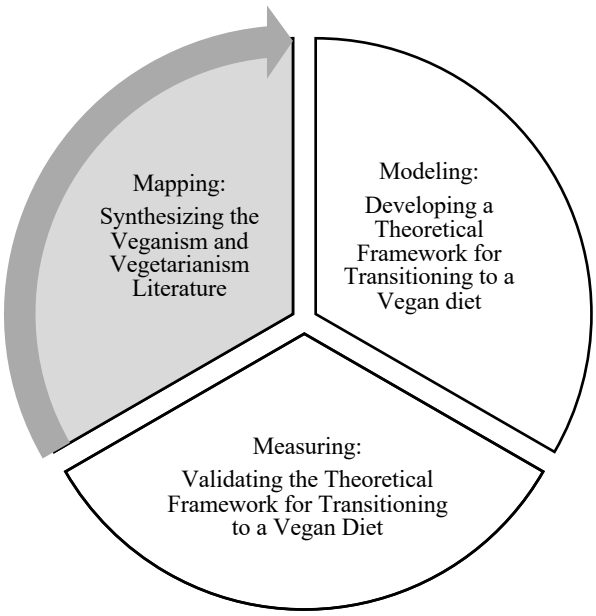

Figure 3. Mapping: synthesizing the veganism and vegetarianism literature

[4] Heliyon is a scholarly research journal that specializes in publishing multidisciplinary research. It is a publication under the auspices of Elsevier BV and is assigned the International Standard Serial Number (ISSN) 24058440. According to data sourced from Scopus, Heliyon holds a SCImago Journal Rank (SJR) of 0.609, classifying it within the Q1 category. In terms of journal ranking, it is positioned in the Q2 quartile based on the Journal Impact Factor (JIF).

1.1 Abstract

Meat production and consumption are sources of animal cruelty, responsible for several environmental problems and human health diseases, and contribute to social inequality. Vegetarianism and veganism (VEG) are two alternatives that align with calls for a transition to more ethical, sustainable, and healthier lifestyles. Following the PRISMA guidelines, we conducted a systematic literature review of 307 quantitative studies on VEG (from 1978 to 2023), collected from the Web of Science in the categories of psychology, behavioral science, social science, and consumer behavior. For a holistic view of the literature and to capture its multiple angles, we articulated our objectives by responding to the variables of "WHEN," "WHERE," "WHO," "WHAT," "WHY," "WHICH," and "HOW" (6W1H) regarding the VEG research. Our review highlighted that quantitative research on VEG has experienced exponential growth with an unbalanced geographical focus, accompanied by an increasing richness but also great complexity in the understating of the VEG phenomenon. The systematic literature review found different approaches from which the authors studied VEG while identifying methodological limitations. Additionally, our research provided a systematic view of factors studied on VEG and the variables associated with VEG-related behavior change. Accordingly, this study contributes to the literature in the field of VEG by mapping the most recent trends and gaps in research, clarifying existing findings, and suggesting directions for future research.

Keywords: systematic literature review, vegetarianism, veganism, 6W1H

1.2 Introduction

Meat production contributes to animal suffering (Perry et al., 2001), environmental problems (loss of biodiversity, climate change, or water pollution) (Asher & Peters, 2020), and public health problems (zoonotic diseases such as COVID-19 and chronic non-communicable diseases such as type II diabetes) (Cliceri et al., 2018). Consequently, there is an increasing interest in a dietary transition to reduce or exclude animal products (D'Souza et al., 2022; Schobin et al., 2022; Siegrist & Hartman, 2019; Taufik et al., 2019). Such dietary transitions would directly support goal 12 of the Agenda for Sustainable Development of the United Nations (2019), which is to "ensure sustainable consumption and production patterns" (Arenas-Gaitán et al., 2020). Adopting and maintaining vegetarian and vegan lifestyles are two of the most promising ways to achieve this goal (Judge et al., 2022; Wang et al., 2022).

VEG has a long history, dating back to ancient Greek philosophers, and can encompass various underlying approaches, including dietary behaviors, food and other product choices, social justice movements, and political activism (Ruby, 2012). Vegetarianism, as a philosophy of life, generally relates to the protection of non-human animals (hereafter referred to as "animals"), which, in practice, translates to a lifestyle that abstains from the consumption of all types of animal flesh, including meat (i.e., beef, pork), poultry (i.e., chicken, turkey), and fish and seafood (Segovia-Siapco et al., 2019). Vegetarianism comprises several modalities: ovo-vegetarianism (accepts the consumption of eggs but not dairy products), lacto-vegetarianism (accepts the consumption of dairy products but not eggs), or lacto-ovo-vegetarianism (accepts the consumption of both eggs and dairy products) (Asher & Peters, 2020; De Groeve et al., 2021). By contrast, veganism can be understood as a philosophy of life rooted in anti-speciesism, which, in practice, translates to rejecting the consumption of any product (or service) that involves the exploitation of an animal either in the context of food (meat, eggs, dairy, honey, gelatin), clothing (leather, silk), or any other form (entertainment and experimentation) as far as possible and practicable (Díaz, 2016; Díaz & Horta, 2020). Veganism also promotes the production and consumption of alternatives free of animal use. To address vegetarianism and veganism (VEG), both of which avoid animal flesh products, many authors use the term "*veg*an-ism*" (Arenas-Gaitán et al., 2020; Tan et al., 2021).

Over the last 50 years, the interest of consumers, entrepreneurs, and public institutions in the VEG phenomenon has grown (Bagci & Olgun, 2019; Brausenberger & Flamm, 2019). VEG has increasingly spread worldwide (Bagci & Olgun, 2019; Clark & Bogdan, 2019; D'Souza et

al., 2022); for example, the number of individuals following some VEG lifestyles is considered to have doubled from 2009 to 2016 (Apostolidis & Mcleay, 2019), with 2019 being labelled "the year of the vegan" by The Economist (Arenas-Gaitán et al., 2020). The growing realization of the importance of these phenomena has also been reflected in academia, where studies on VEG have flourished in the last decade (D'Souza et al., 2022). In this regard, VEG has rapidly expanded from philosophical and medical disciplines to other areas related to psychology, consumer behavior, and behavioral science (Rosenfeld, 2018). One of the reasons for the increase in this research is related to the fact that, although VEG is seen as a promising avenue that brings a more ethical, sustainable, and healthier society, such a lifestyle transition is also seen as a challenge (Earle & Hodson, 2017; Lourenco et al., 2022).

This extraordinary progression of scientific knowledge makes it advisable to know the current trends to map and have an overview of VEG research. Previous narrative literature reviews (Asher & Cherry, 2015; Rosenfeld, 2018; Ruby, 2012) have been of great relevance for this and have illuminated the way for researchers, practitioners, and public actors. However, owing to the increasing number of studies published in the last decade, it is highly recommended to update the knowledge and have a holistic view of the VEG literature. To achieve this, the most appropriate methodology is a systematic literature review (Harari et al., 2020; Rother, 2007). This logic has been recently used to analyze the aspect of identity in veganism (Vestergren & Uysal., 2022).

In this study, we conducted a systematic literature review in the VEG field to extend, complete, and update previous literature reviews. Specifically, our work principally focused on reviewing the quantitative studies in psychology, behavioral science, social science, and consumer behavior literature published in scientific journals from 1978 up to December 31, 2022, on VEG. A successful systematic literature review relies on straightforward research questions provided at the beginning of the process (Harari et al., 2020); therefore, we articulated our objectives using the 5W1H (Cook, 1998), which explores a phenomenon from multiple perspectives based on the following questions: (1W) "WHEN" refers to the period of the analysis and possible trends in VEG research; (2W) "WHERE" focuses on the countries in which VEG studies have been conducted; (3W) "WHO" refers to the journals in which VEG studies have been published; (4W) "WHAT" refers to the different research streams and frames included in the VEG body of research; (5W) "WHY" includes the reasons (environmental, health, or animals) that made VEG an essential topic for scholars to study; and (1H) "HOW"

focuses on reviewing the different research methodologies and statistical analyses employed in the literature on VEG. Additionally, we added another question, "WHICH," comprising the variables measured in the studies. Thus, we followed a 6W1H approach (Figure 4).

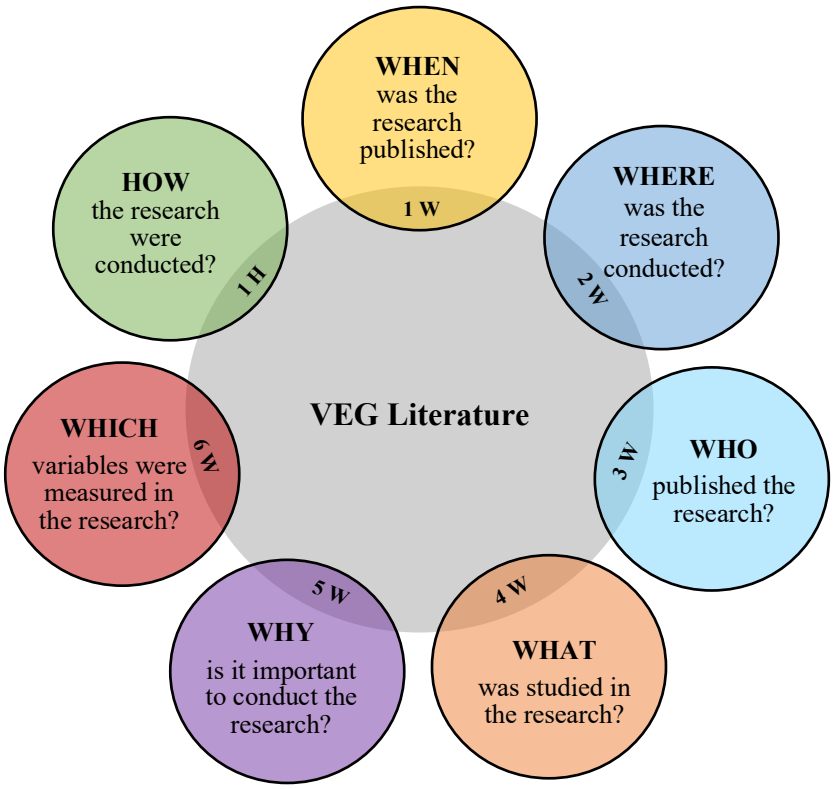

Figure 4. 6W1H approach applied to VEG literature.

This study contributes to the existing literature on VEG by mapping the state of the art, identifying trends and gaps in research, clarifying existing findings, and suggesting directions for future research. Our systematic literature review also highlighted the factors examined in VEG and the variables associated with VEG-related behavior change, thus playing an important role in advancing research on VEG. For practitioners, our study will help elucidate possible interventions and design more effective (marketing) campaigns to improve and promote the transition to VEG. Additionally, these interventions may be beneficial for private organizations and public authorities seeking to design policies to encourage fairer and more sustainable consumption and healthier lifestyles.

This article is organized as follows: In section 2, we outline the methodology. Next, we present the results of our analysis, which was performed using the 6W1H approach. In Section 4, we discuss the main findings and future avenues of research. Finally, in Section 5, we highlight the main contributions and managerial implications of the study.

1.3 Methods

The systematic search included articles up to December 31, 2022. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were used for reporting the methods of this systematic literature review (Moher et al., 2009). The systematic literature review protocol included the following steps: (1) search strategy; (2) inclusion, exclusion, and selection criteria; and (3) data extraction.

1.3.1 Search strategy

The first step of conducting the systematic literature review was keyword design. Following the backward and forward search methods (Harari et al., 2020), we created a pool of terms related to VEG literature that represented the main objectives of the review and were included in the previous reviews (Rosenfeld, 2018; Ruby, 2012). Additionally, we screened through the preliminary keyword results in several non-medical articles that focused on VEG. The resulting keyword syntax designed was: title, abstract, and keywords=[(vegan* OR vegetarian* OR plant-based*)] AND [(diet* OR food* OR lifestyle* OR movement* OR activism*) OR (eat* OR choos* OR choice* OR behavio* OR chang* OR purchas* OR buy* OR pay* OR cosnum* OR substitut* OR lik* OR familiar* OR reject* OR avoid* OR accept* OR restrict* OR disgust* OR information*) OR (motiv* OR reason* OR attitude* OR intention* OR willing* OR belief* OR perception* OR value* OR identity* OR emotion* OR empathy* OR norm* OR social* OR knowledge* OR familiarity* OR gender*)].

We used Web of Science (WoS) for our search. WoS was preferred to other databases because it is the world's leading scientific citation search engine and the most widely used research database (Birkle et al., 2020; Li et al., 2018). WoS has guaranteed scientific content, strict filtering, and anti-manipulation policies, and offers many resources for searching and collecting metadata (De Souza et al., 2020; de Winter et al., 2013; Halpern & Fernandez-Mendez, 2022). In addition, WoS focuses on Social Sciences and Humanities (and less on Health Sciences) (Falagas et al., 2008), which is more in line with the objectives of our study and covered all major journals relevant to our topic. However, it is worth mentioning that the final number of articles included in our systematic literature review resulted from reviewing the reference list of studies retrieved through WoS.

1.3.2 Inclusion, exclusion, and selection criteria

1.3.2.1 Inclusion criteria

The systematic search included articles up to December 31, 2022. During the initial search, 25,739 articles were identified through their titles, abstracts, and keywords (Figure 5). Once the articles were identified, we filtered the results following the inclusion criteria based on the following: (1) *discipline:* we included articles related to behavioral science, psychology, sociology, and business economics; (2) *document type*: we included only peer-reviewed articles; and (3) *language:* we only included articles written in English to ensure consistency and comparability of terms across the included studies. This was especially important as VEG is a recently emerging multi-disciplinary area.

1.3.2.2 Exclusion criteria

Initially, selected articles were removed based on the following: (1) *research area*: if their key focus was not on behavioral and psychological aspects of VEG. Thus, articles concerning medical issues (e.g., nutritional status or diseases), specific environmental problems (e.g., gas emissions or water), and technological challenges of food science (e.g., the chemical process of producing vegan products) were not included; (2) *unit of analysis:* studies with units of analysis different from individuals or households were excluded; and (3) *methodology*: we excluded qualitative studies. This decision was made because qualitative and quantitative approaches differ not only in their research techniques but, more importantly, in the ontological and epistemological perspectives they adopt (Slevitch, 2011). Thus, we considered that separating quantitative from qualitative studies was advisable to gain a deeper knowledge on the issue. We focused on quantitative studies because there has been a more pronounced growth of quantitative studies and a greater interest in statistically measuring the factors that explain the adoption (or rejection) of VEG lifestyles. The selection protocol had no restrictions on sample characteristics (country and sex) and study setting (laboratory or restaurant).

This step left 203 articles for a full manuscript review. Finally, the reference list of articles was also reviewed, and 48 qualifying articles were added to the sample for data extraction. A total of 251 articles (307 studies, given that some articles included several studies) were recognized for data extraction. Initial screening for eligibility was performed by the three authors, each of whom reviewed one-third of the articles through the abstracts. To ensure consistency in the selection process, 5% of the articles were randomly assigned to a different author to perform

an inter-reviewer reliability test (Redondo et al., 2020; Staples & Niazi, 2007). The results indicated excellent agreement in this first step, as 96.5% of the articles were equally identified by the reviewers, and Cohen's kappa was 0.91.

1.3.3 Data extraction

A coding template was designed in Excel to extract specific data to answer the 6W1H questions. Information on WHEN (year of publication), WHERE (country of the sample), and WHO (journals) was coded directly. The coding of WHAT was more complicated; therefore, we designed a coding protocol to perform a preliminary content analysis of the data following the recommendations of Welch and Bjorkman (Welch & Bjorkman, 2015). We initially started pilot coding 30 articles, considering two *main research streams*: veganism (Vgn) and vegetarianism (Vgt). The coding of these research streams was based on the provided definitions of VEG and explained earlier. In this understanding, some scholars addressed their objective on vegetarianism (Vgt) and considered veganism (Vgn) as a sub-category of vegetarianism (Vgt). In these studies, we coded the stream as Vgt-Vgn. It should be noted that some studies also used the term "plant-based" in their studies; however, when reviewing the work, we observed that the authors used that term as a synonym for vegetarianism, veganism, or both. Therefore, following the same approach for vegetarianism, we coded these studies in the corresponding group of currents. In the second round of coding, we identified that veganism and vegetarianism were also studied simultaneously (Vgt-Vgn) as well as with other phenomena: meat consumption, animal-human relationship, and cultured meat consumption; we called these three new streams *secondary streams*. In total, coding was performed with seven streams.

To provide more nuanced information concerning WHAT, a further coding step was conducted to reclassify the studies not only concerning the streams but also the following three frames: (1) food, referring to specific products; (2) diet, referring to dietary practices; and (3) philosophy of life, referring to a social movement and lifestyle, focusing on the characteristics of the person consuming VEG products or following a VEG diet or philosophy of life. As mentioned previously, sometimes, these three frames were analyzed in combination (e.g., food and diet). Overall, five research frames were identified. To ensure the decision in coding, each article was scanned for keywords using an agreed a priori system. The manuscripts were also re-checked, ensuring accuracy and agreement, and differences were discussed with the third researcher to reach inter-coding agreement, which provided a measure of consistency.

For WHY, we were interested in coding the reasons that scholars considered VEG as an important subject to be studied. Reasons from existing literature were classified into two broad categories: central and peripheral reasons. Central reasons included health issues, concern for animals, and environmental sustainability. Peripheral reasons comprised justice and world hunger; faith, religion, and spirituality concerns; sensory factors; cultural and social aspects; financial and economic aspects; and political concerns.

WHICH aimed to explore the variables measured in the VEG studies (attitudes or values). Finally, for HOW, we collected information contained in the methodology section of the articles regarding the type of study, sample, and statistical techniques. Thus, we collected information regarding the unit of analysis (individuals vs. objects), type of data (longitudinal vs. cross-sectional), data sources (secondary vs. primary), number of data sources, data collection methods (archival data, or surveys), and the year of data collection. Information on the sample comprised the size, country, mean age, percentage of female participants, racial or ethnic origin of respondents, and VEG orientation of respondents (vegetarian or vegan). Additionally, we checked whether the sample was representative of the corresponding general population. Subsequently, the studies were classified into non-experimental or correlational or experimental (choice experiment, or within-subject and between-subjects).

We also collected information regarding the dependent and independent variables, number of constructs, and the theoretical frameworks and scales used to measure them (especially if the scale used was designed *ad hoc* to study the VEG phenomenon). Finally, regarding the statistical techniques, we compiled information about the analyses and techniques used (e.g., t-tests, correlation tests, ANOVA, MANOVA, regressions, SEM, and latent class analysis). We also checked for the use of normality tests (if required), scale validation, moderation, and mediation tests, as well as whether the study was aware of the possible threat of common method effects (if required), social desirability, or other potential biases. The criteria for coding HOW included the guidelines of the Effective Public Health Practice Project.

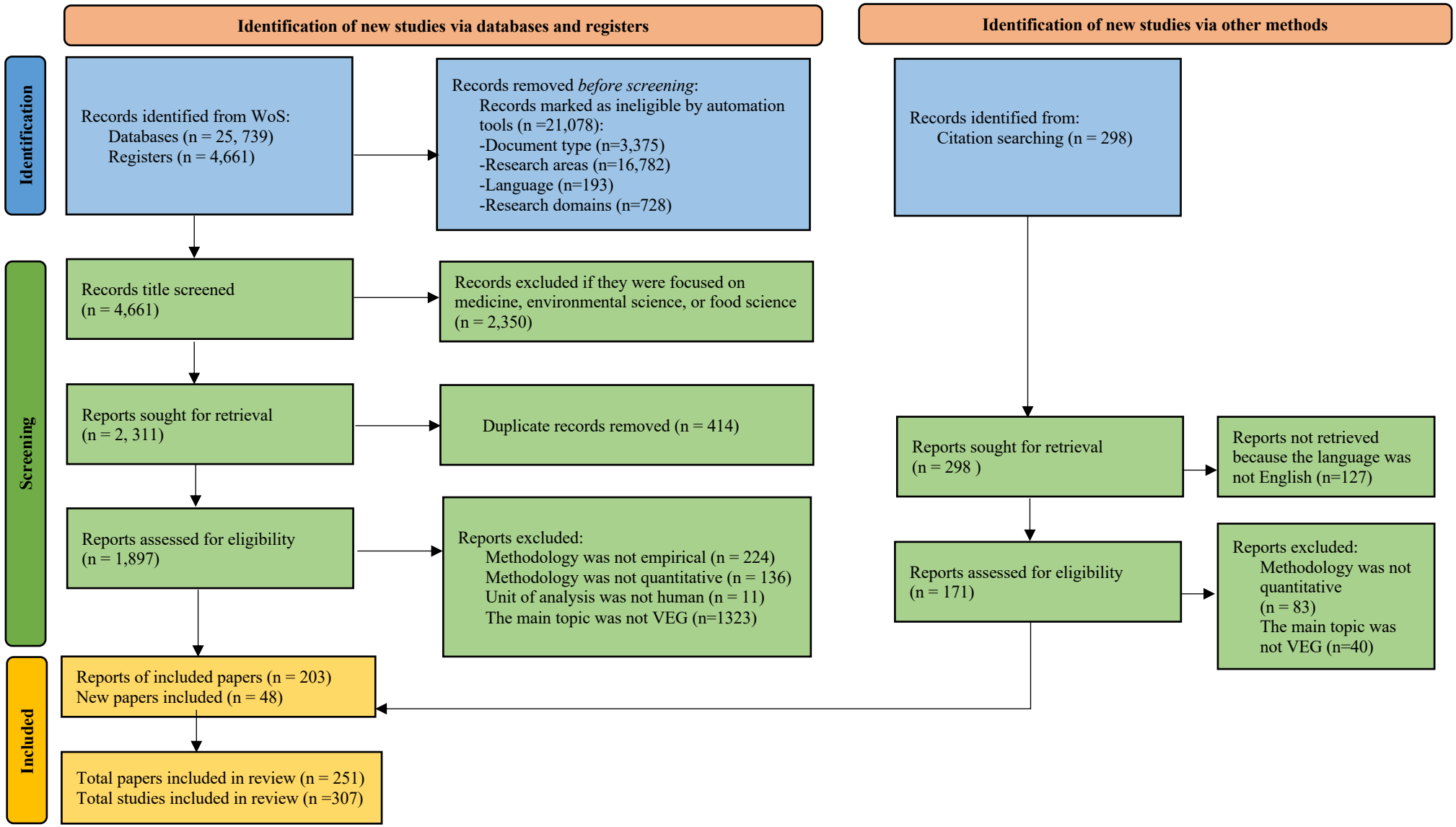

Figure 5. PRISMA Flow diagram of the systematic literature review of quantitative VEG studies (Moher et al., 2009)

1.4 Results

1.4.1 WHEN were the VEG studies conducted?

The final 307 studies covered a period from 1978 to December 31, 2022. The characteristics of the studies are summarized in Appendix. Eighty-four percent of the studies included in this review were published in the last ten years (see Figure 6). The findings provide reasonable evidence that academic interest in VEG research has grown exponentially. Exploring the evolution in more detail, we observed three peaks in the number of publications. First, in 1999 the number of publications per year increased from one to four; second, in 2015, the number of publications increased again to approximately more than ten articles per year. Finally, the most significant evolution occurred in 2019, when the number of publications doubled (from 14 to 35). The trend also grew steadily until 2021; in 2022, this number increased to 61 studies. Most of the publications in 2021 were related to the special issue of *Appetite* journal, titled "The psychology of meat-eating and vegetarianism."

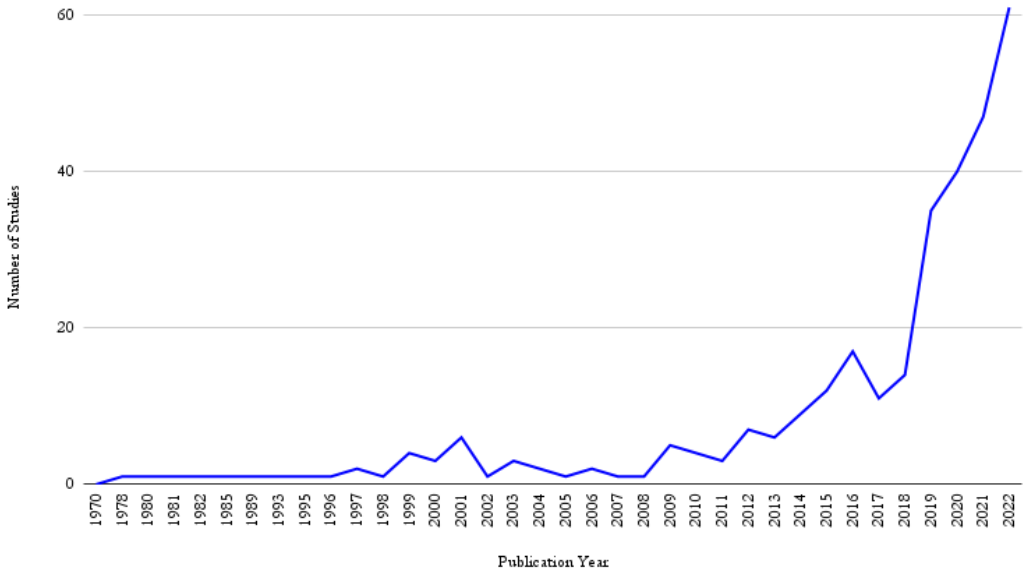

Figure 6. Count of VEG topic studies published from 1978 up to 31st December 2022

1.4.2 WHERE were the VEG studies conducted?

In terms of regional concentration, research has predominantly centered on developed countries, with the United States taking the lead, comprising approximately 33% of the total studies. The United Kingdom (10%), Germany (6.5%), Australia (3.5%), Canada (3.3%), and Spain (3.3%) also demonstrated substantial concentration. It is worth noting that many studies

(12%) included data from more than one country, but these international samples were primarily from the United States and the United Kingdom.

A simultaneous analysis of WHEN (publication year) and WHERE (country) also reveals that the pioneer countries were the United States, United Kingdom, Australia, and Canada. These countries initiated quantitative inquiries into VEG studies in the late 1970s and 1980s. Subsequently, other nations quantitative inquiries on VEG started in 2000 by studies in New Zealand, Finland, and the Netherlands. Furthermore, geographical orientations became notably more widespread from the year 2015 onward (Table 2).

1.4.3 WHO published the VEG studies?

The reviewed articles were published in 92 different journals (Table 3). Regarding the number of articles published in each journal, the relevance of *Appetite* was evident, with 21.8% of all articles reviewed published in this journal. This was followed by *Food Quality and Preference* (6.8%), *Sustainability* (4%), and *British Food Journal* (3%).

1.4.4 WHAT has been studied in VEG research?

1.4.4.1 Streams of VEG

As it is shown in Table 4, we discerned the following seven streams: vegetarianism and veganism (Vgt-Vgn); vegetarianism (Vgt); veganism (Vgn); vegetarianism, veganism, and meat consumption (Vgt-Vgn-M); vegetarianism and meat consumption (Vgt-M); vegetarianism, veganism, meat consumption, and cultured meat consumption (Vgt-Vgn-M-C); and vegetarianism, veganism, animal-human relationship (Vgt-Vgn-AHR). The research mainly focused on Vgt-Vgn (30%), Vgt-Vgn-M (17.6%), Vgt (13%), and Vgt-M (12%).

Table 2. Simultaneous analysis of WHERE and WHEN

Country of data	Publication year of each study																																				
	Sum	1978	1980	1981	1982	1985	1989	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
USA	101	1	1	1		1	1		1		1		3		2		1					1	2	3		4	5	7	3	7	6	2	12	16	7	13
International	35														1				1							1		1	3	1	2		3	5	11	6
UK	31							1		1			1	1	1			1												2		3	2	5	3	10
Germany	20																						1						2	2		3		2	3	7
Australia	11										1	1					2			2													2		2	1
Spain	10																													1	1	1		1	6	
Canada	10				1											1																1	2	1	1	3
Finland	9														2								2						1	1		1	1			1
New Zealand	7													2															1				1		2	1
France	7																																	4	1	2
Italy	7																													1		2	2		1	1
China	7																																1			6
Switzerland	6																															1	2	2	1	
Portugal	6																												2	2			1			1
Netherlands	6																	1								1								1	1	2
Belgium	6																				1										1		1		3	
Austria	3																																1	2		
Denmark	3																																2		1	
Poland	3																								3											
Turkey	3																																1		2	
Taiwan	3																																			3
Brazil	2																																		1	1
Chile	2																																		1	1
Sweden	1																																			1
Argentina	1																																1			
Ireland	1																							1												
Norway	1																											1								
Croatia	1																									1										
Slovenia	1																										1									
Malaysia	1																														1					
Vietnam	1																																	1		
Korea	1																																			1
Sum	307	1	1	1	1	1	1	1	1	1	2	1	4	3	6	1	3	2	1	2	1	1	5	4	3	7	6	9	12	17	11	14	35	40	47	61

Table 3. Journals and their research area

Research Areas	Papers	Journal Name
Behavioral Sciences & Nutrition-Dietetics	124	Appetite; Food Quality and Preference; Sustainability; British Food Journal; Foods; Future Foods; Plos One; International Journal of Behavioral Nutrition and Physical Activity
Behavioral Science & Public health	42	Nutrition & Food Science; Journal of the Academy of Nutrition and Dietetics; Applied Research in Quality of life; Asia Pacific Journal of Clinical Nutrition; European journal of clinical nutrition; Complementary Medicine Research; Obesity science & practice; Ecology of food and nutrition; Journal of nutrition education and behavior; Journal of the American Dietetic Association; Florida Public Health Review; Nutrients; Public health nutrition; Journal of Adolescent Health; Journal of Biological Education; Frontiers in Nutrition; Journal of the Royal Society of Medicine; Health Education Journal; Journal of the Academy of Nutrition and Dietetics; Nutrition Research; bmc public health; Research in Veterinary science; International Journal of environmental research and public health
Psychology	28	Group Processes & Intergroup Relations; The Journal of Social Psychology; Basic and Applied Social Psychology; The Psychological Record; European Journal of Social Psychology; Stigma and Health; Psychosomatics; International Journal of Psychology; Personality and Individual Differences; Eating behaviors; International Journal of Social Psychology; Journal of affective disorders; Motivation and Emotion; Social Psychological and Personality Science; Psychology of Men & Masculinity; Social Psychology; Psychological Science; Frontiers in Psychology; Bulletin of the Psychonomic Society; Journal of Environmental Psychology; Journal of Health Psychology; Health Psychology and Behavioral Medicine
Business & Economics (Consumer behavior)	21	Ernahrungs Umschau; Journal of Food Products marketing; Journal of Managerial Issues; Journal of Consumer Ethics; American Journal of Agricultural Economics; International Journal of Consumer Studies; Amfiteatru Economic; Psychology & Marketing; Ecological Economics; Journal of Retailing and Consumer Services; Journal of Marketing Communications; Data in Brief; Applied Perspectives and Policy; International Journal of Hospitality Management
Sociology & Anthropology	19	Social Development; Social Justice Research; Social Choice and Welfare; Society & Animals; Rural Sociology; Anthrozoös; Collegium Antropologicum; Journal of Contemporary Religion; Political Studies; Animals; Fat Studies; Societies
Behavioral Science & Food-Technology	17	Food Policy; Food Research International; Futures; Scientific Reports; Agriculture and Agricultural Science Procedia; Food Hydrocolloids; Online Information Review; Environmental Innovation and Societal Transitions; Sustainable Production and Consumption; Environmental Communication; Journal of Food Science; Livestock Science; Agricultural and Food Economics
Sum	251	

Table 4. WHAT streams have emerged in the VEG quantitative studies?

STREAMS	Studies	References
PRINCIPAL		
Vgt-Vgn	92	Allen et al. (2000I); Arenas-Gaitán et al. (2020), Aschemann-Witzel & Peschel (2019); Bagci & Olgun (2019); Boaitey & Minegishi (2020); Bobić et al. (2012); Brandner et al. (2022); Braunsberger et al. (2021); Brouwer et al. (2022); Bryant (2019); Cardello et al., (2022); Chung et al., 2022; Clark & Bogdan (2019); Cliceri et al. (2018, 2019); Cramer et al. (2017); Crnic (2013); Davitt et al. (2021); Estell et al. (2021); Falkeisen et al. (2022); Feltz et al. (2022); Ghaffari et al. (2021); Gili et al. (2019); Graça et al. (2015 II, 2019); Haas et al. (2019); Hibbeln et al. (2018); Hoffman et al. (2013); Isham et al. (2022); Judge & Wilson (2015, 2019); Kessler et al. (2016, 2018); Krizanova et al. (2021); Krizanova & Guardiola (2021); Larsson et al., (2001); Ma & Chang (2022); MacInnis & Hodson (2017, 2021); Montesdeoca et al. (2021); Moore et al. (2015); Moss et al. (2022); Müssig et al. (2022); Nguyen et al. (2020); Nocella et al. (2012); Noguerol et al. (2021); Norwood et al (2019) Obesity science & practice; Palnau et al. (2022); Paslakis et al. (2020); Pechey et al. (2022); Pfeiler & Egloff (2018a); Ploll et al. (2020); Pointke et al. (2022); Pribis et al. (2010); Reuber et al. (2022); Rondoni et al. (2021); Rosenfeld (2019a,c); Rothgerber (2014b, 2015a); Ruehlman & Karoly (2022); Siebertz et al. (2022); Spencer et al. (2018); Tan et al. (2021); Taufik et al. (2021); Thomas (2016);Tian et al. (2021); Valdez (2018); Valdes et al. (2021); Vergeer et al. (2020); Veser et al. (2015); Villette et al. (2022); Vizcaino et al. (2021); Wang et al. (2022); Weiper & Vonk (2021); Wyker & Davison (2010)
Vgt	41	Back & Glasgow (1981); Bacon & Krpan (2018); Barnes-Holmes et al. (2010); Barr & Chapman (2002); Cooper et al. (1985); Dietz et al.(1995); Hargreaves et al. (2021); Hopwood et al. (2020), Janda & Trocchia (2001); Kalof et al. (1999); Kim et al. (1999); Lea & Worsley (2003a,b); Lindeman & Sirelius (2001); Lusk & Norwood (2016); Mohamed et al. (2017); Parkin et al. (2022); Piester et al. (2020); Plante et al. (2019); Preylo & Arikawa (2008); Rosenfeld (2019b, 2020); Rosenfeld & Tomiyama (2020); Rosenfeld et al. (2019); ; Schenk et al. (2018); Segovia-Siapco et al. (2019); Sims (1978); Stockburger et al. (2009); Thomas et al. (2019); Tian et al. (2019); Vinnari et al. (2009); White et al. (1999); Worsley & Skrzypiec (1997, 1998); Zhang et al. (2021)
Vgn	30	Adise et al. (2015); Braunsberger & Flamm (2019); Bresnahan et al. (2016); Crimarco et al. (2020b); De Groeve et al. (2022); Dyett et al. (2013); Eckart et al. (2010); Heiss et al. (2017); Heiss et al. (2020); Janssen et al. (2016); Judge et al. (2022); Kalte (2020, 2021); Kerschke-Risch (2015); Mace & McCulloch (2020); Marangon et al. (2016); Miguel et al. (2020); Phua et al. (2019, 2020); Radnitz et al (2015); Raggiotto et al. (2018); Rothgerber (2014c); Stremmel et al. (2022); Wrenn (2017a,b)
SECONDARY		
Vgt-Vgn-M	54	Allen et al. (2000 II); Amato et al. (2022); Anderson et al. (2019); Asher & Peters (2020a,b); Bagci et al. (2021); Davitt et al. (2021); De Groeve et al. (2021); Duchene & Jackson (2019); Faber et al. (2020); Falkeisen et al. (2022); Faria & Kang (2022); Feltz et al. (2022); Forestell et al. (2012); Graça et al. (2015 I); Grassian (2020); Grünhage & Reuter (2021); Hagmann et al. (2019); Haverstock & Forgays (2012); Hinrichs et al. (2022); Kirsten et al. (2020); Lea et al. (2006a,b); Lim et al. (2021); Mann & Necula (2020); Migliavada et al. (2022); Montesdeoca et al. (2021); Neale et al. (1993); Nykänen et al. (2022); Papies et al. (2020 II&III); Pohojolanian et al. (2015); Povey et al. (2001); Profeta et al.

Table 4. WHAT streams have emerged in the VEG quantitative studies? (Continued)

STREAMS	Studies	References
		(2021a); Rabès et al. (2020); Pechey et al. (2022b); Reipurth et al. (2019); Rothgerber (2015b); Schobin et al. (2022); Sharps et al. (2021); Sucapane et al. (2021); Timko et al. (2012); Tonsor et al. (2022); Trethewey & Jackson (2019); Urbanovich & Bevan (2020); Vainio (2019);Vainio et al. (2016, 2018); Waters (2018); Zur & Klöckner (2014)
Vgt-M	37	Apostolidis & McLeay (2019); Beardsworth & Bryman (1999, 2004); Besson et al. (2020); De Houwer & De Bruycker (2007); Earle & Hodson (2017); Fessler et al. (2003); Giacoman et al. (2021); Giraldo et al. (2019); Graça et al. (2016); Hoek et al. (2004); Hussar & Harris (2009); Lindeman & Sirelius (2001 study II); Lourenco et al. (2022); Mullee et al. (2017); Neumanet al. (2020); Patel & Buckland (2021); Rosenfeld (2019b); Rosenfeld & Tomiyama (2019); Rosenfeld et al. (2020); Rothgerber (2013b); Rozin & Fallon (1980); Rozin et al. (1997); Ruby et al. (2016); Santos & Booth (1996); Schösler et al. (2012, 2015); Shickle et al. (1989); Siegrist & Hartmann (2019); Timko et al. (2012); Vandermoere et al. (2019); Weinstein & de Man (1982)
Vgt-Vgn-M-C	29	Apostolidis & McLeay (2016a); Bryant et al. (2021); Carlsson et al. (2022); Chen et al. (2022); de Visser et al. (2021); Gómez-Luciano et al. (2019); Gousset et al. (2022); Jang & Cho (2022); Karate et al. (2022) Li et al. (2021); Marcus et al. (2022); Martinelli & De Canio (2021); Michel et al. (2021a,b); Milfont et al. (2021); Ortega et al. (2022); Oven et al. (2022); Pais et al. (2022); Profeta et al. (2020., 2021b); Slade (2018); Tonsor et al. (2022); Van Loo et al. (2020); Ye & Mattila (2022)
Vgt-Vgn-AHR	24	Bilewicz et al. (2011); D'Souza et al. (2022); Díaz (2016, 2017); Dodd et al. (2019, 2022); Espinosa & Treich (2020, 2021); Fiestas-Flores & Pyhälä (2018); Hamilton (2000); Hielkema & Lund (2021); Knight & Satchell (2021); Lund et al. (2016); Phillips & McCulloch (2005); Ploll & Stern (2020); Pohlmann (2021); Rothgerber (2013a, 2014a)
Sum	307	

Vgt: Vegetarianism; Vgn: Veganism; M: Meat consumption; AHR: Animal-Human relationship; C: Cultured meat consumption

By simultaneously analyzing WHAT (streams) and WHEN (publication years), we noticed that the first quantitative study on the Vgn stream was conducted in 2010 (Figure 7). Academic interest in Vgn research grew steadily, except for a decline in 2018. However, Vgt studies started decades earlier, in 1981. The Vgt stream was the pioneer in the quantitative approach of VEG, but this trend was not continuous; we observed a gap from 2010 to 2016 in the Vgt stream. Interestingly, in 2020 there was a peak in research focused on Vgn and Vgt streams. Finally, we observed an evolutionary increase of studies in the Vgt-Vgn-M-C stream.

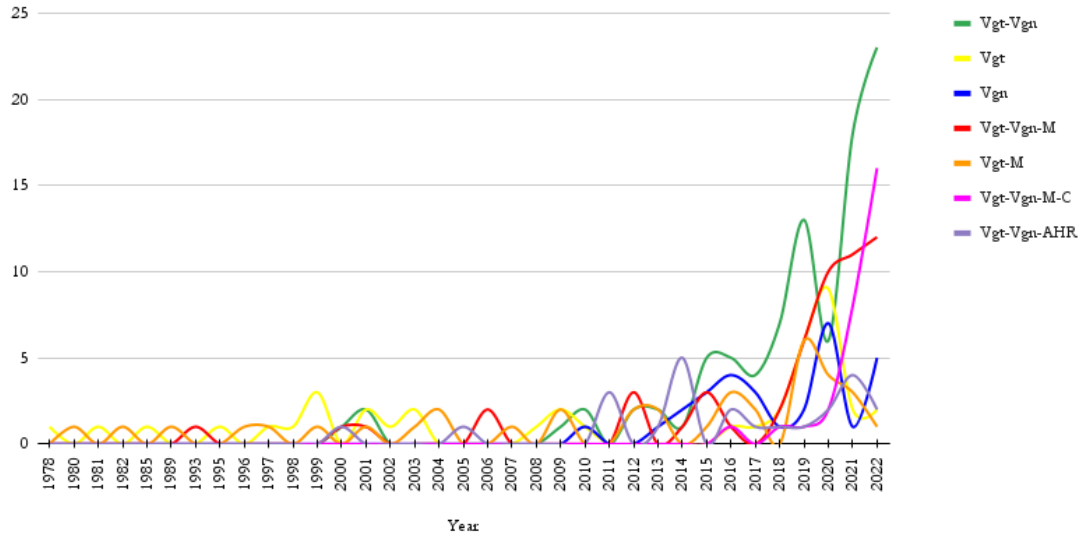

Figure 7. WHEN and WHAT (streams)

1.4.4.2 Frames of VEG

By analyzing the different conceptualizations of VEG in research, we observed that 56% of studies framed it as diet, 24% as consumption of VEG food products, and 6% as the philosophy of life. Some studies also considered VEG as a combination of two frames: diet and consumption of VEG food products (6.5%) and diet and philosophy of life (6%). To get a more accurate picture of the focus of researchers, we crossed the streams with the frames of VEG. As shown in Table 5, framing the VEG phenomenon as diet was more present in Vgt stream (70.7%), followed by Vgt-Vgn-M (68.5%) and Vgt-M (67%) streams. Expectedly, framing VEG as food was more prevalent in Vgt-Vgn-M-C (79%). Through the simultaneous evaluation of seven streams and five frames, we found a total of 35 distinct research categories on VEG. This analysis showed that 19.5% of studies focused on Vgt-Vgn.*D* stream, followed by Vgt-Vgn-M.*D* (12%), Vgt-*D* (9%), and Vgt-M.*D* (8%). It is noteworthy to mention that in four research categories Vgt-Vgn-M.*P*, Vgt-Vgn-M.*DP*, Vgt-Vgn-M-C.*P*, and Vgt-Vgn-AHR.*DF*), we did not find any published articles.

Table 5. VEG has been studied in WHAT frames through the stream?

STREAMS	Frames					
	Sum	*D*	*F*	*P*	*DF*	*DP*
PRINCIPAL						
Vgt-Vgn	92	60	20	4	6	2
Vgt	41	29	6	2	3	1
Vgn	30	11	5	7	1	6
SECONDARY						
Vgt-Vgn-M	54	37	15		2	
Vgt-M	37	25	5	2	4	1
Vgt-Vgn-M-C	29	1	23		4	1
Vgt-Vgn-AHR	24	11	1	4		8
SUM	307	174	75	19	20	19

Vgt: Vegetarianism; Vgn: Veganism; M: Meat consumption; AHR: Animal-Human relationship; C: Cultured meat consumption; *D*: Diet; *F*: Food; *P*: Philosophy of life

The publication of five VEG research frames over the years is shown in Figure 8. Studying VEG through the diet frame increased over the years, with peaks in 2021 (28 studies) and 2015 (11 studies). However, this interest decreased to 15 studies in 2022. By contrast, there was a relatively high number of studies analyzing VEG in the food consumption frame, with two peaks in 2022 (35 studies) and 2020 (10 studies). It is worth noting that the number of studies in other frames was relatively small and did not seem to follow any temporal pattern.

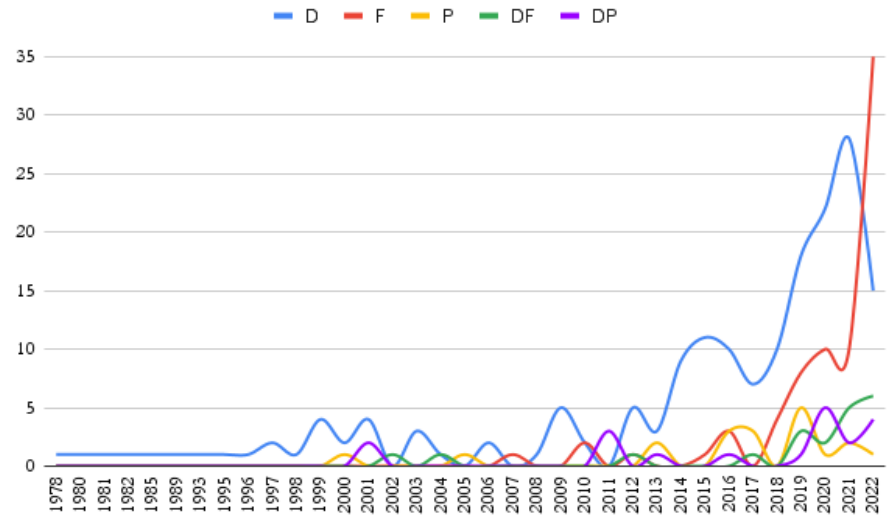

Figure 8. WHEN and WHAT (frames)

1.4.5 WHY have researchers found it relevant to study VEG?

In Section 1.3, we undertook a classification of the relevance of studying the VEG phenomenon as cited in the reviewed articles. Our analysis yielded two distinct groups: central and peripheral reasons. The former comprised concerns related to health, environmental issues, and animal welfare. The latter encompassed a diverse range of additional factors, including cultural and social considerations, sensory preferences, faith, financial and economic implications, political concerns, and world hunger. For clarity, we will discuss these nine motives below according to the order of importance in which they appear in the reviewed studies.

1.4.5.1 Central motives

Among the reasons identified in the studies to justify the importance of studying VEG, **health** concerns (83%) had the highest presence. Exploring this further, we found that many articles referred to the health aspect of VEG as the respondents' motivation (Adise et al., 2015; Allen et al., 2000). Some authors explained the positive effect of VEG on the human body by mentioning specific benefits, such as reducing cholesterol, blood pressure, or risk of diabetes, as well as reducing the incidence of cancers, heart disease, and hypertension (Asher & Peters, 2020a; Bresnahan et al., 2016; Cliceri et al., 2018; Hibbeln et al., 2018). More recently, a body of research interested in a more holistic view of health considered VEG options as an essential contributor to well-being and quality of life (Arenas-Gaitán et al., 2020; Cramer et al., 2017; Hargreaves et al., 2021). However, a minority referred to the potential adverse physical health effects, such as nutritional deficiencies (vitamin B12, zinc, or iron) if a well-planned VEG diet is not followed (Cramer et al., 2017), or mental health risks, such as risks of stigmatization, discrimination, or feelings of embitterment (Bagci & Rosenfeld, 2021; Brouwer et al., 2022; Reuber & Muschalla, 2022). Simultaneous analysis of WHY and WHAT showed that health considerations were the most frequently cited concern across all streams. Notably, more articles focused on Vgn (93%) and Vgt-Vgn (89%). Table 6 summarizes the convergence of these motives in each stream.

In the reviewed literature, there was a significant presence of referring to the **environmental** benefits of VEG (75%). Diversity in arguments and approaches was also observed when analyzing the environmentalist discourse. Some authors emphasized specific impacts; for example, they discussed how replacing animal-based diets with VEG diets could help reduce greenhouse gas emissions (Graça et al., 2015; Judge et al., 2019, 2022) and soil degradation (Braunsberger & Flamm, 2019; Haas et al., 2019; Judge & Wilson, 2015), and tackle current

problems related to air, soil, and water pollution (e.g., Hoek et al., 2004), biodiversity loss (e.g., Hass et al., 2019), as well as climate change (e.g., Graça et al., 2019). Nevertheless, most studies addressed the environmental benefits of VEG quite loosely, using terms such as a "sustainable" strategy (Mann & Necula, 2020) or alternatives to lessen the impacts of the current animal agriculture. Similarly, some authors mentioned that VEG alternatives comply with the United Nations 2030 Sustainable Development Goals. However, the terms "vegan" or "vegetarian" are absent in these goals (Arenas-Gaitan et al., 2020). Analyzing the frequency of environmental concerns among different streams indicated that environmental issues were the most frequently cited concern in the Vgt-Vgn-M-C stream with a prevalence of 89.6%, followed by 87% in the Vgt-Vgn-M stream and 83% in the Vgt-M stream. This suggests that environmental issues may have a significant role in encouraging studies transitioning from meat consumption to cultured meat consumption.

Table 6. WHY did scholars consider VEG important to be studied?

REASONS	Sum	HL	EN	AN	CL	SN	FN	FT	PL	JS
PRINCIPAL										
Vgt-Vgn	92	82	65	51	30	24	17	16	12	5
Vgt	41	34	29	26	17	12	13	14	1	7
Vgn	30	28	24	26	12	14	7	9	6	11
SECONDARY										
Vgt-Vgn-M	54	44	47	31	17	17	13	8	9	5
Vgt-M	37	31	31	29	13	15	7	9	5	5
Vgt-Vgn-M-C	29	22	26	20	5	9	16	5	1	3
Vgt-Vgn-AHR	24	15	9	24	9	12	4	9	4	
Sum	307	256	231	207	103	103	77	70	38	36

Vgt: Vegetarianism; Vgn: Veganism; M: Meat consumption; AHR: Animal-Human relationship; C: Cultured meat consumption

HL: Health; EN: Environment; AN: Animals; CL: Cultural & Social; SN: Sensory factors; FT: Faith; FN: Financial & economic; PL: Political; JS: Justice & world hunger

Approximately two-thirds of the reviewed studies (67%) included varied arguments on **animal-related** concerns. In some instances, animal-related concerns were considered a central aspect of VEG discourse, while in others, they were only tangentially referenced. References to animal concerns appeared implicit and subsumed under the general term of "ethical" (e.g., Duchene & Jackson, 2019; Hoffman et al., 2013) or "moral" reasons (e.g., Janda & Trocchia, 2001; Giraldo, Buodo, & Sarlo, 2019). Conversely, in other instances, the phenomenon of VEG

appeared firmly rooted in the animal rights or animal protection movement (Díaz, 2016). Another example of these differences was found when researchers discussed the drivers of following, adopting, or consuming VEG options. For example, some researchers emphasized the positive aspects of VEG for animals; we found references to "compassion toward animals" (Crnic, 2013), "animal advocacy" (Espinosa & Treich, 2020), "affection toward animals" (Díaz, 2016), or "animal welfare" (Knight & Satchell, 2021; Michel et al., 2021). In contrast, other researchers highlighted the detrimental effects of the current animal agriculture on animals and how VEG alleviates this negative impact. These studies often used expressions such as "animal suffering" (Janda & Trocchia, 2001), "animal exploitation" (Fiestas-Flores & Pyhälä, 2018), or "animal slaughter" (Nocella et al., 2012).

Notably, we also found diverse philosophical approaches adopted in the studies to defend VEG. Some research aligned strongly with welfarist positions (Crimarco et al., 2020; Dietz et al., 1995; Hussar & Harris, 2009), while others aligned with abolitionist or animal rights perspectives (Dodd et al., 2019; Graça et al., 2015; Hopwood et al., 2020); to a lesser extent, anti-speciesism discourses were also incorporated (Díaz, 2017). The presence of animal concerns significantly depended on the stream. Expectedly, in the Vgt-Vgn-AHR stream, animal considerations were found in all the studies, followed by 86% in the Vgn stream.

1.4.5.2 Peripheral motives

In this category, distinguished three sub-groups according to the relevance with which they appeared in the reviewed research. In the first sub-group, we found cultural and social, and sensory motives, each present in 33% of the studies**. Cultural and social** factors included the influence exerted by certain people or groups on an individual's decisions about their VEG choices. Specifically, studies focused on analyzing the impact of people's close networks, mainly families or peers (Apostolidis & Mcleay, 2019), and online vegan discussion groups (Brausenberger & Flamm, 2019). Cultural and social factors were mainly observed in the Vgt stream (41%).

For **sensory** reasons, we referred to consumer or producer concerns about the sensory aspects of VEG alternatives, which are typically related to VEG foods (i.e., taste, texture, odor, or appearance) (Adise et al., 2015; Janda & Trocchia, 2001; Spencer et al., 2018). Sensory reasons were primarily observed in the Vgt-Vgn-AHR (50%) and Vgn (46%) streams.

In the second place, we found references to financial and economic, and faith reasons, present in 25% and 22% of the articles, respectively. VEG studies citing financial and economic reasons were relatively scarce. These typically covered cost savings from the consumer's perspective (Grassian, 2020). These concerns were primarily mentioned in the studies on the Vgt-Vgn-M-C stream (72%), which was expected owing to the growing market of VEG products. **Faith** motives included both religious (Apostolidis & McLeay, 2016; Back & Glasgow, 1981) and spiritual beliefs (Bobić et al., 2012). Generally, these reasons were typically studied as drivers of VEG choices (Kessler et al., 2016; Thomas, 2016); however, these concepts require further exploration. Faith reasons appeared mainly in the Vgt-Vgn-AHR stream (37%). Finally, we found that political; and justice and world hunger arguments (Kalte, 2021; Rosenfeld, 2020) had a much lower presence in the studies; specifically, they were each mentioned in only 12% of the articles. **Political** aspect of the VEG referred to connections to other social movements and other political issues beyond animal protection; in this sense, we found references to claims for women's or LGBTQ rights (Espinosa & Treich, 2020). In most cases, these political issues were neither defined nor explained in depth. Political motives were primarily observed in the Vgn (20%) and Vgt-Vgn-AHR (16%) streams.

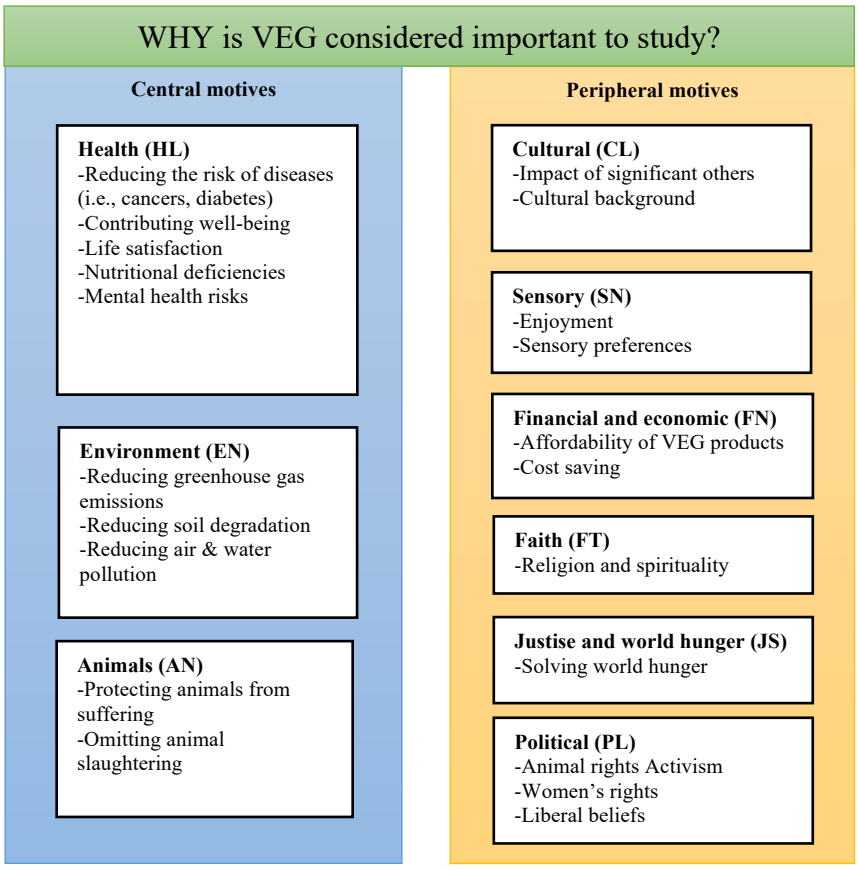

Figure 9. WHY it is important to study VEG?

Justice and world hunger concerns referred to the world hunger problem (Asher & Peters, 2020a; Zur & Klockner, 2014) and various arguments on how VEG can improve food availability or exacerbate social inequality and injustices (Raggiotto et al., 2018; Wrenn, 2017). A visual illustration of these motives is illustrated in Figure 9. However, these arguments require more specificity and detail. They were mainly explored in Vgn studies (36%). In general, we observed that 50% of studies were commonly mentioned in HL-EN-AN (Appendix).

1.4.6 WHICH variables have been measured in VEG studies?

Before proceeding to a detailed study of the variables examined in the literature, it should be noted that only 29.6% of the studies used theoretical frameworks to measure the variables under examination. In this group of studies, we found that 33.7% used the Theory of Planned Behavior (TPB) (Ajzen, 1991); 8.6% of the studies used the Unified Model of Vegetarian Identity (Rosenfeld & Burrow, 2017); 7.6% applied human values theory (Schwartz, 1992); 7.6% employed the Transtheoretical Model (Prochaska et al., 1993), and 4% used Social Dominance Orientation (Pratto et al., 1994). The usage of these theories across the seven streams of studies is summarized in Table 7. It is worth noting that approximately 11% of the reviewed studies applied other theoretical frameworks than the five most prevalent ones.

For the specific variables analyzed in the literature, we grouped them into five categories: *psychological dispositions, cognitive-affective variables, behavioral constructs, social determinants,* and *situational variables.* Table 8 summarizes the convergence of these variables and constructs in each stream; as illustrated, the prevalence of the variables depended on the stream in question, and in many of them, some variables were overlooked. For clarity, we analyzed each construct group according to the order of frequency in which the variables appeared in the studies.

1.4.6.1 Psychological dispositions

Psychological dispositions included variables related to attitudes, motivations, values, and personality traits. **Attitudes**, understood as perceptions and opinions on VEG-related issues, applied to different aspects, and 67% of the studies measured attitudes. This variable was mainly constructed as attitudes toward animals (Anderson et al., 2019; Díaz, 2017; Thomas et al., 2019), meat (Tian et al., 2019; Worsely & Skrzpiec, 1998), and VEG lifestyles (Crnic, 2013; Wyker & Davison, 2010).

Table 7. Most extensively researched theories in each stream of VEG studies

STREAMS /THEORIES	Theory of planned behavior (TPB) (Ajzen, 1991)	Unified Model of Vegetarian Identity (UMVI) (Rosenfeld & Burrow, 2017)	Human values (Schwartz, 1992)	Transtheoretical model (TM) (Prochaska et al., 1993)	Social Dominance Orientation (SDO) (Pratto et al., 1994)
PRINCIPAL					
Vgt-Vgn	Chung et al. (2022); Clark & Bogdan (2019); Graça et al. (2015); Nocella et al. (2012); Wyker & Davison (2010)	Montesdeoca et al (2021); Reuber & Muschalla (2022); Rosenfeld (2019a)		Wyker & Davison (2010)	Allen et al. (2000); Braunsberger et al. (2021); Veser et al. (2015)
Vgt	Janda & Trocchia (2001)	Plante et al. (2019); Rosenfeld (2019b, 2020); Rosenfeld et al. (2019a)	Dietz et al. (1995); Kalof et al. (1999); Lindeman & Sirelius (2001)	Lea & Worsley (2003a, b)	
Vgn	Phua et al. (2019,2020)				Braunsberger & Flamm (2019)
SECONDARY					
Vgt-M		Rosenfeld (2019b. II); Rosenfeld et al. (2020)	Lindeman & Sirelius (2001)	Lourenco et al. (2022)	
Vgt-Vgn-M	Asher & Peters (2020a, b); Graça et al. (2015); Lim et al. (2021); Povey et al. (2001); Urbanovich & Bevan (2020); Zur & Klöckner (2014)	Amato et al. (2022); Bagci et al. (2021); Kirsten et al. (2020); Montesdeoca et al. (2021)	Allen et al. (2000); Pohjolainen et al. (2015); Zur & Klöckner (2014)	Asher & Peters (2020b); Lea et al. (2006a, b); Waters (2018)	
Vgn-Vgt-M-C	Chen (2022); Marcus et al. (2022)		Apostolidis & McLeay (2016)		Milfont et al. (2021)
Vgt-Vgn-AHR	D'Souza et al. (2022); Díaz (2016, 2017); Ploll & Stern (2020)			Hielkema & Lund (2021)	Bilewicz et al. (2011)

Table 8. WHICH variables have been measured in each stream of VEG quantitative studies?

STREAMS	Sum	*Psychological dispositions*				*Cognitive-affective variables*		*Behavioral constructs*			*Social determinants*			*Situational variables*	
		A	M	V	T	E	K	B	I	S	N	D	O	P	F
PRINCIPAL															
Vgt-Vgn	92	57	34	23	18	20	14	63	19	10	13	9	7	20	16
Vgt	41	26	19	10	5	4	5	28	2	1	11	8	2	6	5
Vgn	30	17	16	5	2	6	6	23	10	3	13	3	3	4	10
SECONDARY															
Vgt-Vgn-M	54	36	17	13	5	14	13	46	15	7	11	11	8	15	7
Vgt-M	37	26	19	6	4	12	8	28	6		11	2		7	5
Vgt-Vgn-M-C	29	23	8	3	3	7	5	18	19	3			2	16	9
Vgt-Vgn-AHR	24	21	8	6	1	10	2	15	6	2	3	3	4	2	7
Sum	307	206	121	66	38	73	53	221	77	26	62	36	26	70	59

Vgt: Vegetarianism; Vgn: Veganism; M: Meat consumption; AHR: Animal-Human relationship; C: Cultured meat consumption

A: Attitudes; M: Motivations; V: Values, T: Personality; E: Emotions; K: Knowledge; B: Behavior; I: Intentions; S: Self-efficacy or Perceived Behavioral Control; N: Networks; O: Norms; D: Identity; P: Product Attributes; F: Information

In addition, some studies measured attitudes in the context of justification strategies for non-VEG lifestyle choices (Espinosa & Treich, 2020). Some authors differentiated between positive, negative, and neutral attitudes (Bryant, 2019; Earle & Hodson, 2017), but most studies did not make such distinctions and referred to attitudes as a uniform construct. Similarly, they did not differentiate between cognitive, affective, and conative aspects recognized in the consumer behavior literature (Hogg & Vaughan, 2011). Attitudes were primarily found in studies on Vgt-Vgn-AHR (87%), followed by those focusing on Vgt-Vgn-M-C (79%).

Regarding **motivations**, 39% of the reviewed studies were interested in studying the reasons that encouraged consumers to practice VEG (i.e., becoming a VEG, following a VEG diet, consuming VEG products). Notably, studies focused on analyzing three types of motivations. First, studies with a strong hedonistic character which were related to personal health, sensory appeals, and economic considerations (Aschemann-Witzel & Peschel, 2019). Second, studies with a strong altruistic, ethical (Arenas-Gaitan et al., 2020; Janssen et al., 2016), or even spiritual character (e.g., Buddhism) on the adoption of VEG choices (Hamilton, 2000; Kessler et al., 2016). Here, authors differentiated between interest in animal protection (protecting animals from unnecessary suffering), environmental conservation (climate change and global

warming), and human rights (the relationship between world hunger and the dedication of resources to livestock production rather than agriculture) (Asher & Peters, 2020a; Besson et al., 2020; Brausenberger & Flamm, 2019; Cooper et al., 1985). Third, studies with a strong social character, in which we detected an interest in studying the effect of following VEG diets due to living with VEG family members or friends (Cramer et al., 2017; Dietz et al., 1995). It is worth mentioning that some studies took a broader approach to motivations and studied them abstractly as a general concern to pursue their choice of VEG, but without delving into the type of motivation that affected the decision-making (Asher & Peters, 2020b). The interest in measuring motivations was observed, especially in studies on Vgn (53%), Vgt (46%), and Vgt-M (51%).

Values, understood guiding principles (Allen et al., 2000), were present in 21% of the studies. They were typically measured with extensively validated instruments, such as the Social Dominance Orientation scale (Pratto et al., 1994), (e.g., Graça et al., 2016; MacInnis & Hodson, 2017; Thomas et al., 2019; Veser et al., 2015), the Theory of Basic Human Values of Schwartz (1992), (e.g., Dietz et al., 1995), or Altemeyer's Authoritarianism scale (Altemeyer, 1998), (e.g., Judge & Wilson, 2019; MacInnis & Hodson, 2017). These studies concluded that the likelihood of practicing VEG was associated with greater endorsements of liberalism, universalism, and left-wing ideology (Crnic et al., 2017; Wrenn, 2017a, b). As more specific values related to the VEG, we found speciesism measurement, understood as the belief in the supremacy of humans over animals (Brausenberger & Flamm, 2019; Graça et al., 2016; Rosenfeld, 2019b; Thomas et al., 2019); in these cases, the use of the Dhont et al.'s (2014) speciesism scale stood out. Similarly, we found the measurement of carnism, namely, the belief system that supports the consumption of certain animals as food (Rosenfeld, 2019); in this case, the variable was measured using Monteiro et al.'s (2017) scale. It should be mentioned that many scholars considered values as motivations (i.e., referring to religious reasons as religious values) (Hoffman et al., 2013). Values were observed the most in the Vgt-Vgn-M stream (25%).

Our data also showed that 12% of studies focused on measuring **personality traits** (Back & Glasgow, 1981; Cliceri et al., 2018). These studies employed the Eysenck Personality Questionnaire (Bobić et al., 2012; Cooper et al., 1985), the Big Five test (Kessler et al., 2018; Palnau et al., 2022; Pfeiler & Egloff, 2018], and the Food Neophobia (reluctant to try or eat

novel food) scale (Cliceri et al., 2019; Faria & Kang, 2022). Personality traits were observed in the Vgt-Vgn stream (19.5%), followed by the Vgt stream (12%).

1.4.6.2 Cognitive-affective variables

Cognitive-affective variables referred to variables associated with the emotional responses to and knowledge regarding VEG. Regarding **emotions**, many scholars acknowledged that VEG lifestyles and choices were affectively charged (Greenebaum, 2012; McDonald, 2000). Despite this recognition, emotions were only present in 23% of the studies in this field. The emotions associated with VEG lifestyle and choices included disgust (toward meat) (Rothgerber, 2015), sensory (dis)liking VEG foods (Adise et al., 2015; Rothgerber, 2015), guilt related to diet consistency or pet food choice (Rothgerber, 2013, 2015), anger (Bresnahan et al., 2016), shame (Graça et al., 2016), fear (MacInnis & Hodson, 2021), and affect or empathy responses (the capacity to feel what others are experiencing) (Braunsberger et al., 2021; Cliceri et al., 2018; Día, 2017; Rothgerber, 2015; Thomas et al., 2019). Most previous studies did not use validated instruments to measure these emotions. Notable exceptions were found in the assessment of meat disgust and meat enjoyment, which was mainly measured using the disgust scale (Cliceri et al., 2018) and the meat attachment questionnaire (Graça et al., 2016; Palnau et al., 2022), respectively. Emotional concerns were more prevalent in the Vgt-Vgn-AHR (41%) and Vgt-M (32%) streams.

Knowledge was measured in 17% of studies and referred to the familiarity with VEG products (Adise et al., 2015; Schösler et al., 2015), VEG diet (Asher & peters, 2020; Faber et al., 2020), and the understanding of the relevance and impacts of VEG on health (Vergeer et al., 2020) and environment (Vainio et al., 2016). Knowledge was explored primarily in studies focused on Vgt-Vgn-M (24%).

1.4.6.3 Behavioral constructs

In the behavioral constructs, we observed behaviors, intentions, and self-efficacy. The measurement of **behaviors** was present in 72% of the reviewed studies, primarily involving self-reported food consumption habits (Anderson et al., 2019; Asher & Peters, 2020a; Cliceri et al., 2018). In many cases, the inclusion of this construct was intended to complement and compare the self-reported status as vegan, vegetarian, or neither (Anderson et al., 2019; Asher & Peters, 2020a). Most of these scales measured general food consumption behaviors. The Food Frequency Questionnaire (Pribis et al., 2010; Siegrist & Hartmann, 2019), the Food

Choice Questionnaire (Rosenfeld & Tomiyama, 2020), and purchase frequency (Arenas-Gaitan et al., 2020; Janssen et al., 2016; Mann & Necula, 2020) were the most used instruments to measure this variable. Notably, two articles advanced the measurement of behaviors using observational measurement via experimental designs (Piester et al., 2020; Thomas et al., 2019).

Another pattern we observed in our review was the interest in the temporal aspect in which behaviors are performed. In this regard, although most studies focused on current consumption behaviors, some highlighted the relevance of past behaviors (Bacon & Krpan, 2018) and the duration for which individuals practiced VEG lifestyles (Asher & Peters, 2020a; Bagci & Olgun, 2019; Fiestas-Flores & Pyhala, 2018; Hoffman et al., 2013; Worsley & Skrzpiec, 1998; Wrenn, 2017b). Additionally, a few studies measured more than one behavior, as sometimes, all behaviors were directly related to food consumption. For example, Crimarco et al. (2020) measured participants' overall food consumption frequency, adherence to the vegan diet, and restaurant-related behaviors. In other studies, measured behaviors were related more to health, such as alcohol consumption (Cooper et al., 1985) or adequate nutritional intake (Rabès et al., 2020), and more rarely, to animal-related behaviors (Dodd et al., 2019; Preylo & Arikawa, 2008; Rothgerber, 2013). This variable appeared most frequently in the Vgt-Vgn-M (85%) and Vgn (76%) studies.

Intentions were included in 25% of the studies. In the reviewed articles, they were measured as the willingness to cut down on meat (Zur et al., 2014), try VEG foods (Adise et al., 2015), adopt a VEG lifestyle (Povey et al., 2001; Schösler et al., 2012), being VEG (Díaz, 2016), or continue practicing a VEG lifestyle in the future (Asher & Peters, 2020a). Some studies specified a time frame (e.g., next month, next two years) in their questions (Bryant, 2019; Díaz, 2016). For example, in Wyker and Davison's (2010) study, intention was measured by asking for agreement to the statement, "*I intend to follow a plant-based diet in the next year*." To assess intentions, some studies applied the Transtheoretical Model (Asher & Peters, 2020b; Wyker & Davison, 2010), but primarily drew on TPB (Asher & Peters, 2020b; Díaz, 2017). Among the different streams, measuring intention was predominant in the Vgt-Vgn-M-C (65%), Vgn (33%), and Vgt-Vgn-M (27%).

Self-efficacy was only present in 8% of the studies and referred to personal control, perceived ability, and perceived level of ease or difficulty in following the VEG lifestyle (Asher & Peters, 2020a; Urbanovich & Bevan, 2020; Wyker & Davison, 2010). Self-efficacy was predominantly

based on TPB, referred to under the term Perceived Behavioral Control. This construct was adapted to the VEG context by several scholars (Díaz, 2017; Graça et al., 2016; Povey et al., 2001). This variable was most prevalent in studies on Vgt-Vgn-M (13%). Interestingly, self-efficacy was not observed in the Vgn and Vgt-M streams.

1.4.6.4 Social determinants

The social determinants included variables related to the influence of *social ties or networks*, as well as *identity* and *social norms* to act (or not) in accordance with VEG. **Social network** was present in 20% of the studies and measured through a variety of constructs, such as group membership (Thomas et al., 2019), having VEG friends and family (Arenas-Gaitan et al., 2020), or participation in a social movement (Wrenn, 2017). An analysis of its presence in the different streams showed that it was most prevalent in research on Vgn (43%) and Vgt-M (29%). None of the reviewed studies measured social networks in the Vgt-Vgn-M-C stream.

Our analysis showed that **identity** was present in 11% of the studies and was analyzed using different approaches, such as political (Wrenn, 2017), social (Bagci & Olgun, 2019; Plante et al., 2019; Rosenfeld & Tomiyama, 2020), or self (Povey et al., 2001; Zhang et al., 2021) identities. A notable recent construct was that of "dietarian identity" (Bagci & Olgun, 2019; De Groeve et al., 2021; Kirsten et al., 2020; Rosenfeld et al., 2019), as measured by the Dietary Identity Questionnaire (Rosenfeld & Burrow, 2017). Dietarian identity refers to individuals' self-image regarding consuming or avoiding animal-based products, regardless of their actual food choices (Amato et al., 2022; Asher & Peters, 2020a; Bagci et al., 2021). This latter qualifier is important to consider in VEG studies, because people's actual diets and their self-reported dietary identity may appear inconsistent. For example, people who self-identify as a "vegan" might still consume animal products occasionally, while other people may strictly avoid animal products but not consider themselves to be "vegan." (Amato et al., 2022). This variable stood out in studies on the Vgt-Vgn-M stream (20%), followed by Vgt (19%).

Finally, another way in which social determinants appeared in the literature was through the **social norms**, which referred to the social pressure received from society and significant others to adopt (or reject) VEG alternatives (Graça et al., 2015). Specifically, we found this variable in 8% of the studies. In some cases, it referred to imperative (perceived social pressure) and descriptive norms (the number of VEG people in the participant's circle) (Worsley & Skrzypiec, 1998; Zur & Klockner, 2014). However, it was more commonly understood as

subjective norms, close to the operationalization in TPB (as the extent to which participants consider that significant people in their lives think they should follow or avoid a VEG lifestyle) (Asher & Peters, 2020a; Díaz, 2017). Social norms were mainly analyzed in the Vgt-Vgn-AHR (16%) and Vgt-Vgn-M (14%) streams.

1.4.6.5 Situational variables

This group included *product attributes* and *informational signals* regarding VEG. Present in 22% of the studies, research on **product attributes** focused on two types of attributes: (1) extrinsic attributes, such as labeling, nutrition information, functional claim, visibility, affordability, accessibility, origin, promotion, or availability (Adise et al., 2015; Apostolidis & McLeay, 2019; Martinelli & De Canio, 2021; Pechey et al., 2022); and (2) intrinsic attributes, such as texture, taste, smell, visual appearance, color, or size (Adise et al., 2015; Apostolidis & McLeay, 2016). Product attributes were observed dominantly in studies on Vgt-Vgn-M-C (55%), followed by Vgt-Vgn-M (27%), and Vgt-Vgn (21%).

Our analysis identified that 19% of the studies focus on analyzing the effect of different **informational signals** on raising awareness of VEG (e.g., Bilewicz et al., 2011; Bresnahan et al., 2016; Duchene & Jackson, 2019), promoting VEG products (Cliceri et al., 2019), and eliciting cognitive or emotional responses to VEG information (Cliceri et al., 2019). For example, some studies focused on measuring the effect of exposure to specific ethical or environmental messages (Duchene & Jackson, 2019; Espinosa & Treich, 2020; Lim et al., 2022), documentaries (Wrenn, 2017b), or campaigns (Grassian, 2020) on the perception of VEG alternatives. Another group of studies measured the impact that different VEG food images had on consumers (Cliceri et al., 2019; Pechey et al., 2022; Schobin et al., 2022). It is worth noting that these studies were often experimental and were conducted online or in laboratory settings (Cliceri et al., 2018; Duchene & Jackson, 2019). Informational signals were mainly explored in studies in Vgn (33%), followed by Vgt-Vgn-M-C (31%) and Vgt-Vgn-AHR (29%) streams.

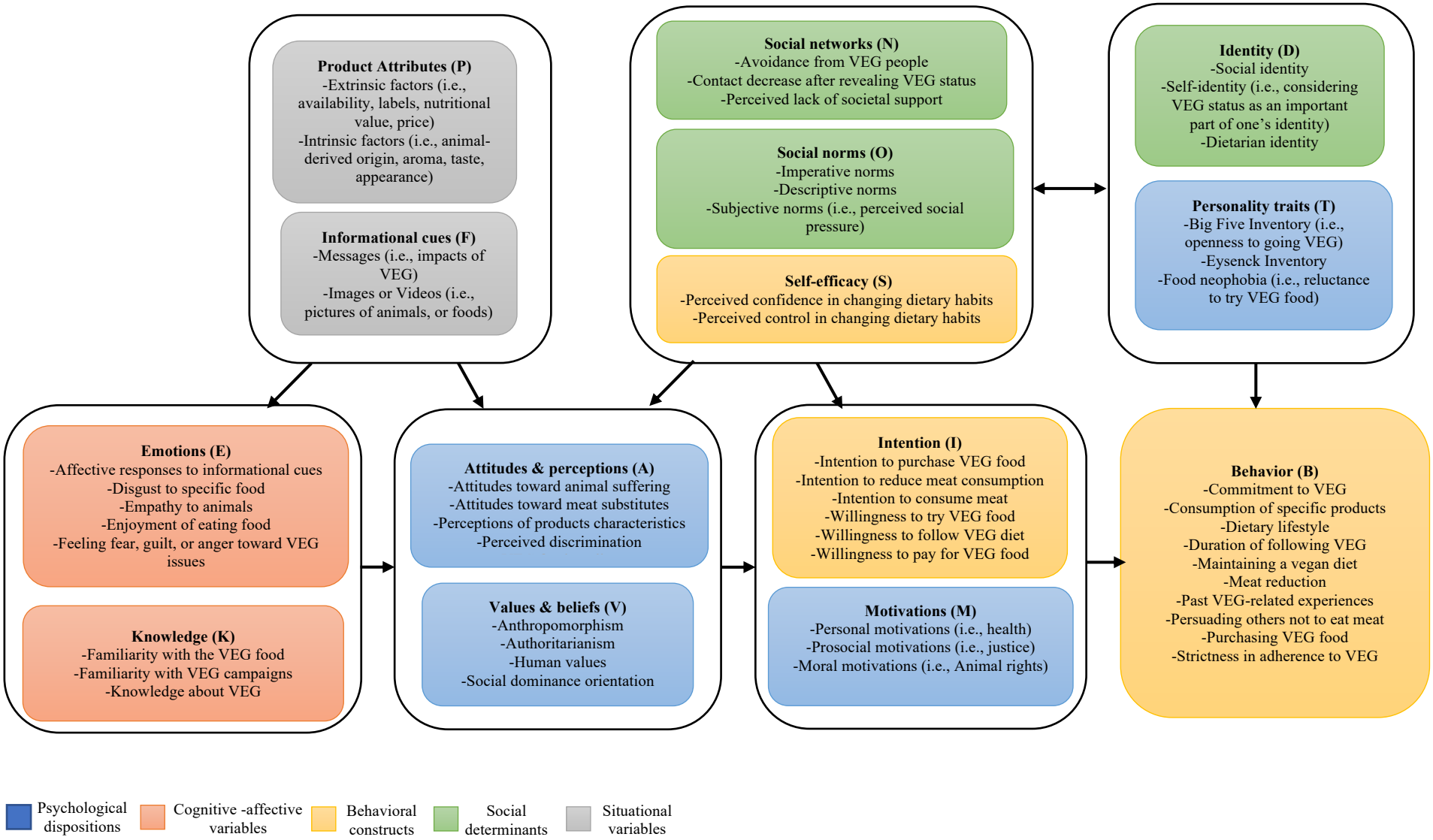

Figure 10. Conceptual map of measured variables in quantitative VEG studies

1.4.7 HOW were the VEG studies conducted?

All 307 studies in this review were quantitative, as per the inclusion criteria; however, we found that the studies included different research designs. Sixty-eight percent of the studies were conducted based on correlational or non-experimental design (collecting data based on surveys). Among the non-experimental studies, eight were mix-method designs and included both qualitative and quantitative data, for which we coded the quantitative part (Appendix). Thirty-two percent of the studies were experimental. Among these, 17 were choice experiments. In addition to varied research designs, we observed different types of information regarding the data collection, sample characteristics, and statistical analysis. We discuss these three aspects below.

1.4.7.1 Data collection

Regarding the type of studies conducted, 87% were based on cross-sectional data (vs. 13% longitudinal data) (Rothgerber, 2014; Vinnari et al., 2009; Waters, 2018). It is worth mentioning that only 47.5% of the studies reported the year of data collection. Among the experimental studies, 31% dealt with between-participant and 9% with within-participant designs. Furthermore, the settings of these experiments were mainly online (Marangon et al., 2016; Phua et al., 2020, Rothgerber et al., 2014), in research laboratories (De Houwer & De Bruycker, 2007; Stockburger et al., 2009), or in restaurants or cafeterias (Nykanen et al., 2022). Manipulations varied depending on the research objective, but many involved the use of exposures to different stimuli, such as informational text messages (Bacon & Krpan, 2018; Dietz et al., 1995; Papies et al., 2020), images of food (Anderson et al., 2019; Barnes-Holmes et al., 2010; Pechey et al., 2022; Schobin et al., 2022), or manipulated menu design (Bacon & Krpan, 2018; Nykanen et al., 2022; Parkin & Attwood, 2022).

Analyzing the data sources utilized in the reviewed studies revealed that 92% of the studies relied on primary sources, 7% employed secondary data, and only a limited number used both primary and secondary data (Apostolidis & McLeay, 2016, 2019; Asher & Peters, 2020a). The secondary data sources were mainly obtained from national panels, such as the US National Health Survey (Cramer et al., 2017), the Swiss Food Panel (Hagmann et al., 2019; Siegrist & Hartmann, 2019), the UK Integrated Household Survey (Waters, 2018), and the German Socioeconomic Panel (Pfeiler & Egloff, 2018). An examination of the methodologies used for collecting primary data revealed that many studies relied on a single source (89.5%). Relatedly,

the most used method was self-reported data. Only 13% of the studies supplemented the self-reported method with additional information such as body measurements (Cooper et al., 1985; Valdez et al., 2018; Wrenn, 2017b), brain responses (Anderson et al., 2019; Stockburger et al., 2009), or implicit attitudes (Aschemann-Witzel & Pechel, 2019; Barnes-Holmes et al., 2010; Cliceri et al., 2018; De Houwer & De Bruycker, 2007).

Of the studies that used primary data, most employed surveys to collect data; among these, the use of Likert scales (ranging from 1 to 5) and yes-or-no questions was prominent. Although the reliability of the scales was addressed in general terms (mainly through Cronbach's alpha), the validity of the scales was often not considered. In this sense, factor analyses (exploratory and confirmatory) were only used in 14% of studies as the most appropriate techniques to test the validity of the scales. It should be mentioned that although many complex concepts related to VEG were investigated, 65% of the studies did not use constructs but single variables. Moreover, most variables did not result from the operationalization of the constructs from a specific theoretical framework.

1.4.7.2 Sample

The unit of analysis in 98% of the studies was the individual respondents; the rest focused on other units, such as households (Mann & Necula, 2020; Waters, 2018). Additionally, we found that sample sizes ranged from 10 (Valdez et al., 2018) to 143,362 (Waters, 2018) and that 11% of the studies used 100% student samples. The measurement of some socio-demographic variables was present in all the studies as necessary information to describe the sample; however, not all studies presented all or the same type of information. Regarding sex, the sample consisted of both male and female participants, except for six studies conducted exclusively with females (Barr & Chapman, 2002; Faria & Kang, 2022; Lindeman & Sirelius, 2001; Neale et al., 1993; Timko et al., 2012). The data also showed that female participation was generally higher than male participation, with an average of 64% of the total sample. Among those that provided this data, the percentage of female participants was higher than 50% of the total number of cases in 72% of the cases. Concerning the ethnic composition of the sample, we found that only 8% of the studies provided information on ethnicity, 74% of the respondents from the samples (on average) were Caucasian and that one study was conducted entirely on African Americans (Weinstein & de Man, 1982). In terms of age, 40% of the studies did not report the mean age of respondents and 98% used adults as a sample, meaning that only a few studies focused on children (Boaltey & Minegishi, 2020; Hussar &

Harris, 2009; Segovia-Siapco et al., 2019; Worsley & Skrzypiec, 1997, 1998). Regarding the VEG status of the respondents, 54% of the studies were conducted on VEG and non-VEG participants (Allen et al., 2000; Weinstein & de Man, 1982; Zur & Klockner, 2014) 25% on only VEG participants (Bagci & Olgun, 2019; Bobić et al., 2012; Haverstock & Forgays, 2012) and 20.84% on only non-VEG participants (Adise et al., 2015; Asher & Peters, 2020b; Bacon & Krpan, 2018).

1.4.7.3 Statistical techniques

The most used statistical techniques in order of relevance were ANOVA (or ANCOVA and MANCOVA; 44%), chi-square test (21%), t-tests (17%), and Mann-Whitney test (3%). A few studies adopted a more predictive approach by running a model with the corresponding dependent and independent variables. In these cases, the most used techniques were OLS regression (16%) (e.g., Welch & Bjorkman), logistic regression (15%) (Bacon & Krpan, 2018), or SEM/PLS models (9.7%) (Díaz, 2017; Earle & Hodson, 2017; de Visser et al., 2021). Very few studies performed additional analyses, such as mediation (8%) (Bresnahan et. 2016), and moderation (2%) (Díaz, 2017). Some other studies tried to classify individuals according to different characteristics and primarily used statistical techniques, such as cluster (2%), (e.g., Janssen et al., 2016; Palnau et al., 2022; Pribis et al., 2010; Reipurth et al., 2019) or latent class (1%) (Apostolidis & McLeay, 2016; Vainio et al., 2016) analyses.

However, normality was assumed in most cases; only 14% of all studies (experimental and non-experimental) reported (non)compliance with the normality assumption (Allen et al., 2000; Bresnahan et al., 2016; Díaz, 2017). Additionally, very few studies (20%) warned of the risk of particular or potential bias, especially the risk associated with Common Method Effects, such as selection or social desirability biases. Of these few studies, only some performed any statistical technique to ensure that bias did not threaten the results; they mainly mentioned this in the limitations.

1.5 Discussion

This systematic literature review shed light on the development of quantitative peer-review studies on VEG published up to December 31, 2022, within psychology, behavioral science, social science, and consumer behavior domains. The 6W1H analytical approach was chosen as a guide for analysis to have a holistic view of the literature and capture its multiple angles. This

approach aimed to answer the questions of WHEN, WHERE, WHO, WHAT, WHICH, WHY, and HOW the research on VEG was published. To the authors' knowledge, this is the first systematic literature review conducted on VEG. This section highlights and discusses the most relevant findings and gaps we drew from the study.

In line with the increasing worldwide attention to VEG alternatives and with other authors' observations (D'Souza et al., 2022; Rosenfeld, 2018; Ruby, 2012), our study confirmed that researchers' interest in studying VEG has grown, especially in the last ten years. The results of our review showed exponential growth of publications in recent years, specifically, the average number of publications, which increased from one in the 1980s and 1990s to 61 in 2022.

The present study also showed that such interest is particularly robust within English-speaking Western countries; in this regard, we identified a geographical gap in the literature, as the studies reviewed were mainly concentrated in the US, (e.g., Adise et al., 2015; Asher & Peters, 2020a, b) and the UK (e.g., Apostolidis & McLeay, 2019; Bryant et al., 2019; De Groeve et al., 2021). This geographical dominance, which could be due to multiple causes beyond the scope of this article (e.g., greater number of researchers, potential for research funding, availability of technology, and trajectory of veganism), is a major constraint to advancing knowledge on VEG, given that both human-animal relationships and food consumption are strongly influenced by cultural factors (Bu et al., 2013; Cherry, 2006). Accordingly, several criticisms have emerged, claiming that research on VEG is racially biased and strongly appropriated by Western culture (Wrenn, 2017).

As for the journals in which research on VEG was published, we observed an interesting change of focus. The study on this phenomenon was born with a strong link to journals focused on animal rights and activism as VEG was clearly presented as a manifestation of a philosophical, ethical, and political stance that questions the anthropocentric position of human beings with respect to the rest of the animals. However, our review clearly showed the preference of authors in recent years to publish their research in journals highly focused on analyzing the relationship between behavioral change and nutritional or dietary choices. In this sense, we found that *Appetite* was the journal chosen most frequently to publish quantitative studies on VEG. This evolution indicates that the rationale for healthy and sustainable eating in VEG research has become more prominent than ever, while the implications these alternatives have for animals have been diluted. In line with this, we found that the Vgt-Vgn.*D* approach of research dominated the literature, while the most prominent gap in the literature was of VEG as a life

philosophy or social movement. This was illustrated by the arguments expressed by researchers to defend the relevance of studying VEG, the main driver being health, followed by animal protection, environmental concerns, and other considerations (religion or spirituality, world hunger, social factors, and sensory appeal). Taken together, our results add evidence to a recent concern in the literature about the *depoliticization* of VEG in society (especially in veganism) that is fading from its antagonistic origins (Bertuzzi, 2022). The spread of VEG in academic endeavors, as well as in business and personal practices, seems more often motivated by personal health reasons (understood in terms of physiological health) than by ethical considerations.

Focusing on the objectives and methodological approach of the studies reviewed, we highlighted five main gaps. First, through the overview obtained on the topic, we realized a notable lack of research on consumer behavior change or the process of transitioning to VEG. We identified only a few studies that analyzed self-reported lifestyle changes (e.g., Haverstock & Forgays, 2012), especially measuring actual behavior change over time (e.g., Grassian, 2020).

Second, among the variables used, we noted a preference for studying rational and conscious content over emotions, feelings, and the unconscious mind in human behavior (e.g., Antonetti & Maklan, 2014; Gregory-Smith et al., 2007; Tsuchiya & Adolphs, 2007). To illustrate, although there was a strong interest in studying attitudes toward meat substitutes (Apostolidis & McLeay, 2016), VEG individuals (MacInnis & Hodson, 2021), or VEG diet (Bresnahan et al., 2016), it was very rarely accompanied by an adequate definition and measurement of the cognitive, affective, and conative dimensions widely recognized in the literature (Anderson& Cunningham, 1972; Webster, 1975). Despite plenty of measures developed to examine the psychology of meat-eating (De Groeve & Rosenfeld, 2022: Rosenfeld, 2018), such as carnism inventory (Monteiro et al., 2017), meat attachment (Graça et al., 2015), or moral disengagement to meat (Graça et al., 2016), we found gaps in the tools used to measure the variables examined in VEG studies. Although some well-known scales were incorporated, such as the disgust scale (Pliner & Pelchat, 1991) or personality traits (Barrett et al., 1998), in general, the instruments used to measure the constructs were often not validated in the literature but constructed *ad hoc* for the specific research being conducted. Very little progress has been made in developing constructs and scales tailored to VEG. The exceptions to this are the Dietary Identity

Questionnaire (Rosenfeld & Burrow, 2017), Vegetarian Eating Motives Inventory (Hopwood et al., 2020) and Vegetarianism Treat Scale (Dhont et al., 2014).

Third, we observed that in the field of VEG, data-driven research was more prominent than theory-driven research. This is a critical shortcoming, given that data-driven methods are less likely to offer clear theoretical perspectives to help analyze results (Terri & Pigott, 2017). We agree with Schoenfeld (2011) that "theory is, or should be, the soul of the empirical scientist" (p 105). The theory-driven approach is especially important in quantitative research owing to its deductive logic based on "a priori theories." (Yilmaz, 2013, p312). Thus, the lack of anchoring research on VEG in theoretical frameworks is another of the gaps detected in our review.

Fourth, the rapid growth and innovation of software, together with the increased availability of diverse data sources, have expanded analytical capabilities and methodological options adapted to each topic. However, our research showed that such advances had minimal impact on the field of VEG studies (at least in the non-medical VEG literature), as the richness of the data was not large (mainly self-reported and cross-sectional studies); descriptive and correlational statistical techniques remained the most used analytical approaches, highlighting another gap in VEG literature. However, one innovation that was recently incorporated in VEG research and is worth mentioning is brain response measurements. These types of measurement methods were rarely used (Anderson et al., 2019) as the field is still dominated by self-reported surveys, as mentioned above. Nevertheless, the contrasting results of self-reported versus physiological responses in Anderson et al.'s (2019) study highlighted the importance of using multiple data sources when attempting to analyze people's responses and to inform the dietary patterns required in dietary scales, as they provide a richer and better picture of consumer behavior.

Fifth, with respect to the samples used in the VEG studies, it is pertinent to address two important matters. On the one hand, vegans and vegetarians were often merged and studied as a unified group. However, a growing body of research demonstrated that vegans and vegetarians not only present differences in terms of behavioral and attitudinal characteristics (such as identity profiles (Rosenfeld, 2019), value orientations (Allen et al., 2000), and cognitive ability (Cooper et al., 1985), but that the motivations driving the adoption of their lifestyles (animal protection, environment, and health) also influence how the person experiences the VEG alternative. On the other hand, studies were expected to clearly indicate the composition of their sample according to socio-demographic variables; however, our

review showed that this practice was not always met, especially regarding ethnicity, sex, and age, variables highly relevant to food, ethical consumption, and animal protection (Bresnahan et al., 2016; Díaz, 2017). Analyzing the studies that provide such information would reveal that research involving minors and culturally diverse groups (Crnic et al., 2013) is notably scarce. However, considering that the adoption of VEG has traditionally had a philosophical foundation (Díaz & Horta, 2020; Francione, 1993; Perry et al., 2001; Regan, 1987, 2004) and that certain responses to it are learned by social contagion (Christakis & Fowler, 2013), different mechanisms depending on the age of the participants and their cultural setting are expected. In addition, we detected a very narrow and traditional approach to the concept of "gender" in that most studies used the dichotomous categories of male and female. This approach does not align with the existing discourse on diversity and gender fluidity (Diamond, 2020) and could hinder progress in deepening our understanding of the relationship between VEG, gender issues, and animal advocacy (Adams, 2010; Allcorn & Ogletree, 2018).

1.6 Conclusion

1.6.1 Contributions

Our systematic literature review contributes to the literature by providing an overview and mapping the growing body of research on VEG, which allowed us to clarify existing findings as well as identify trends and gaps in existing research. Using the 6W1H approach, we offered a novel lens for examining the topic and a systematized mapping of the variables examined by researchers when studying VEG, and more specifically, the new and emerging factors that influence VEG-related behavior change.

Three main conclusions can be drawn from our research. First, our study highlighted the growing body of research on VEG. However, Anglophone countries dominate the research in this field, which may lead to a certain bias in the analysis of the phenomenon. In this regard, some scholars and practitioners have raised some criticisms, claiming that VEG is racially biased and strongly appropriated by Western thought.

Second, reflecting holistically on the evolution of VEG research, it appears to be shifting from a political-philosophical positioning to an individual consumption choice or dietary option. This shift in framing is relevant because it may have important implications for its progress in the sense that the approach we adopt as researchers, when investigating any phenomenon or idea, influences its conceptualization and development in society (Morris et al., 2021). After

all, “meanings do not naturally or automatically attach to the objects, events, or experiences we encounter, but arise through culturally mediated interpretive processes” (Snow, 2004, p144).

Third, we observed that the field of VEG is still dominated by data-driven research; however, to gain a richer and deeper understanding of the VEG phenomenon and advance the discipline, studies should be grounded in theory. In addition, it is advisable to increase the richness of the data, quality of the measurements, and sophistication of the statistical techniques applied by broadening the variables examined, extending the populations under investigation, and improving the methods of analysis.

1.6.2 Academic and managerial implications

Our comprehensive overview and mapping of VEG research can benefit scholars in different ways. On the one hand, by highlighting and identifying the latest gaps, this study can be useful in leading and guiding researchers toward topics, the unit of analysis, and methods to advance VEG research and, thus, move the discipline forward. In this sense, our study aimed to show “the path” so that by understanding our current status, we can plan the future of our research. On the other hand, as academics, we need to select the journal that we consider most appropriate for disseminating our work. To this end, we usually apply two central criteria (Caligiuri, 1999; Redondo et al., 2020): (1) the suitability of the topic studied that is of interest to an audience of academics and practitioners; and (2) the prestige of the journal, a variable that contributes to the credibility and diffusion of our findings. In some cases, this decision may be a simple task; however, it is more complicated in novel fields studied from multiple disciplines and approaches, as is the case of VEG. Therefore, we expect that this study will assist researchers in this regard.

The systematized mapping of measured variables can also help practitioners and public policymakers design innovative and more effective interventions aimed at fostering more just, healthy, and environmentally sustainable societies. Considering that the lack of awareness and confusion about the different VEG options acts as barriers to their adoption, this study can help clarify the different perspectives on the phenomena. This, in turn, can help public and private institutions involved in animal rights, environmental sustainability, and public health in designing educational programs tailored to the idiosyncrasies of the target group. In this sense, future policies could develop educational activities targeting adults and younger generations.

In addition, interventions have focused on VEG food choices or reducing meat consumption as stand-alone strategies so far, but future interventions could be more effective if designed through nudging strategies.

From the perspective of understanding consumer behavior, marketers of VEG foods could benefit from our study by having a deeper understanding of consumers' motivations, goals, and objectives toward VEG products, which, in turn, will serve to better segment markets and offer products more tailored to their needs and desires. Marketers can also encourage the consumption of VEG products; for example, by promoting the adoption of short-term actions, such as the "Lundi-Vert" campaign in France or "Veganuary" in the UK, aimed at increasing people's familiarity with these products and improving their perception of them. In addition, the studies reviewed showed the role of monetary incentives on VEG products, which could be used in future policies to increase the willingness to buy them.

1.6.3 Limitations

Systematic literature reviews present potential shortcomings, especially in the selection process of the publications that constitute the corpus, which could exclude some relevant information. In this sense, although WoS is a very comprehensive and reputable database, we cannot exclude the possibility that some articles may have been excluded from our selection and analysis. Additionally, to provide greater homogeneity and consistency to the study, we focused on articles published in English and in peer-reviewed academic literature. Future research could complement our study with those published in other languages (e.g., Spanish, French, German, or Chinese) as well as in books, conferences, or "gray literature" (Adams et al., 2017; Grant & Booth, 2009).

Another difficulty inherent to the systematic literature review is related to the process of coding the content of the studies that constitute the corpus to be analyzed. As mentioned in the Methodology, in our study the coding was agreed upon and performed by the three researchers. However, it cannot be ruled out that the position of the three investigators may sometimes differ from that of the readers or authors of the studies reviewed.

1.6.4 Recommendations and future research avenue

In accordance with the research gaps identified, we propose some avenues for future research to contribute to the advancement of VEG research. First, to address geographical gap, we

consider it important to broaden the scope of studies to other countries (e.g., Eastern regions or Spanish-speaking countries), and to conduct more cross-cultural research (e.g., Ruby et al., 2016). We also recommend that future research focus on the analysis of the less examined VEG frames (e.g., as a philosophy of life or social movement), and explore the sociological and political aspects or dimensions of the phenomenon to have a more comprehensive understanding of it, especially in the case of veganism, which goes far beyond eating habits. However, we also believe that research attempts on VEG will be more fruitful if they incorporate separate (or comparative) analyses of the different streams, as well as the study of attitudes and behaviors toward animals.

To overcome the lack of research on VEG, we encourage scholars to adopt a more dynamic perspective on the phenomenon by incorporating the temporal factor into the design of their studies. This can be achieved, for example, by conducting longitudinal and experimental studies, and by using the so-called "stage theories" in their research. This approach will make it possible to observe how different constructs develop over time and how they influence the process of rejecting or adopting VEG. It may be of great interest for future literature reviews could focus on other topics related to VEG that were only tangentially explored in our work (e.g., cultured meat, pescatarianism, flexitarianism). Additionally, it would be interesting to synthesize the manifold advantages and disadvantages from multiple angles (ethical, environmental, social, and health) of adopting the different VEG options.

In addition, to advance research knowledge, theoretically underpinning future research attempts on VEG will provide a richer and deeper understanding not only on the topic under analysis but also the theoretical framework used in the research. In this regard, it would also be desirable to be more innovative (e.g., including gender diversity and fluidity) (Diamond, 2020) and to show greater diversity (e.g., in terms of age and race) with respect to the population analyzed. This recommendation is more than timely, considering the current overrepresentation of some groups of participants.

In terms of methodology, our research showed that there is much room for improvement in terms of data collection, the variables studied, the tools used to measure these variables, and the statistical techniques used for subsequent analysis. Broadly speaking, future research should consider the following recommendations: (1) use diverse sources to collect information so that studies can combine observed, self-reported, and behavioral data, for which digital technologies can be implemented; (2) examine new variables and use scales and instruments

previously validated in the literature to obtain good reliability and validity of the measures to capture the proposed concepts and avoid biases; and (3) conduct complementary analyses to delve deeper into the topic under investigation, using powerful statistical techniques to go beyond simple descriptive and correlational analyses and pave the way for deeper causal analyses.

As stated on multiple occasions, the present article aimed to review the existing quantitative literature to date on VEG. The large number of studies selected and the great heterogeneity observed among them (related to objectives, data, and streams) highlighted the complexity of performing a meta-analysis. Nevertheless, in future research, we will consider the possibility of performing a meta-analysis to deepen the effect of the relationships between some of the variables revealed in our study. Additionally, future reviews can focus on qualitative studies to examine whether their results are like ours.

The general conclusion we reach is that, despite the boom in research on VEG in recent years and the great and laudable efforts made to date by researchers, the study of the phenomenon is still in its early stages. This conclusion offers good news: the path of VEG research is still ahead of us, and there is sufficient scope for innovation.

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CHAPTER 2. Modeling: Developing a Theoretical Framework for Transitioning to a Vegan Diet

Preliminary results of this study are presented at an academic conference: Salehi, G., Díaz, E. M., & Redondo, R. (2020). Consumers' Reaction to Following Vegan Diet (FVD): An Application of Transtheoretical Model (TM) and Precaution Adoption Process Model. *IAPNM 19th conference.* Also, some scholars considered the proposed model as a framework[6].This chapter consists of a paper that is submitted to the Journal of Social Work in Public Health.

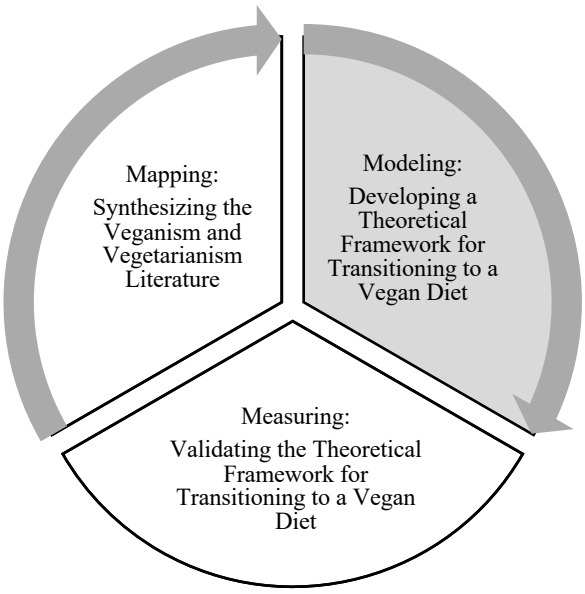

Figure 11. Modeling: developing a theoretical framework for transition to a vegan diet

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2.1 Abstract

The shift towards a Healthy, Ethical, and Sustainable (HES) food system is critical, necessitating understanding the underlying cognitive and behavioral dynamics in dietary transition. This qualitative study employs an abductive approach to integrate the Transtheoretical Model (TM) and the Precaution Adoption Process Model (PAPM), exploring the personal narratives of thirty-four individuals who are either actively vegan or have previously followed a vegan diet. The analysis reveals that transitioning to a vegan diet typically occurs incrementally and involves distinct stages. Through thematic analysis, we present a new conceptual framework that aligns with the TM's core variables, the PAPM variable, and the results of our qualitative analysis. The Transtheoretical Adoption Precaution Model (TAPM) identifies the critical "avoidance stage," including disengagement, rejection, hesitation, and relapse. Building upon these identified stages of change and incorporating other key TM variables, we propose a novel conceptual framework termed. Our research is relevant to researchers, practitioners, and policymakers encouraging Healthy, Ethical, and Sustainable (HES) innovative behaviors.

KEYWORDS: Veganism, Vegan diet, Consumer behavior, The Transtheoretical Model (TM), The Precaution Adoption Process Model (PAPM), The Transtheoretical Adoption Precaution Model (TAPM)

2.2 Introduction

Dominant dietary practices, which focus on high consumption of animal-based foods, are linked to multiple problems (Aavik, 2019; Aleixo et al., 2021; Amiot et al., 2018; Jurgilevich et al., 2016; Lubowiecki-Vikuk et al., 2021). First, studies such as those by Ghaffari et al. (2022) have shown that these practices contribute to the prevalence of Non-Communicable Diseases (NCDs), including pancreatic cancer, diabetes, hypertension, and coronary heart disease, as well as pandemics such as COVID-19, according to Dinu et al. (2017) and Sandhu et al. (2021). Second, regarding animal welfare, more than 75 billion animals suffer cruel treatment and exploitation in the food industry annually (Abbate, 2019; Allen et al., 2000, 2023; Dillard, 2008; Ojeda et al., 2022). Third, the environmental impact of livestock farming is equally alarming. Consequences such as climate change, land misuse, water scarcity, Greenhouse Gases (GHGs), and soil erosion are well documented by researchers (e.g., Balasundram et al., 2023; Chai et al., 2019). Lastly, animal husbandry and consumption practices undermine social justice and human rights by failing to address social problems, such as world hunger, as Besson et al. (2020) indicated. Taken together, these findings highlight the urgent need to rethink dominant diets in favor of more sustainable and ethical alternatives.

In the face of these pressing challenges, there is an urgent need to transform our food system and encourage more ethical, sustainable, and healthy consumption habits (Amiot et al., 2018; Jurgilevich et al., 2016). This dietary transition also aligns with the UN Sustainable Development Goals (SDGs), particularly SDGs 2, 3, 12, 13, 14, and 15, focusing on food security, promoting health and well-being, climate change, and responsible consumption (Assembly, 2015). In this context, veganism has emerged as a viable alternative that seeks to transform the food system along these lines. Rooted in the animal defense movement, veganism defends the moral consideration of the interests of animals, rejecting speciesism and, thus, the human exploitation of animals. In the market, this moral position involves avoiding the consumption of all animal products, including food (such as meat, poultry, fish, dairy, eggs, honey, and gelatin), clothing, beauty products, cosmetics, as well as any services, such as entertainment or sports that involve animals, or any other activity that involves their use (Cole & Morgan, 2011; Díaz, 2016). While there is growing evidence of the positive effects of veganism, adopting this lifestyle is still limited (Jovanovic et al., 2022). This phenomenon may be due, in part, to the complexity of changing human attitudes and behaviors and the barriers associated with this change. Similarly, despite growing interest and support for veganism, it remains a novel and relevant field of study (Rosenfeld, 2018, 2019; Ruby, 2012; Wolstenholme

et al., 2021). Understanding the transition to veganism is key to designing future interventions that promote fairer and more sustainable food systems (Adamczyk et al., 2022). In this sense, gaining insights into individuals' cognitive, emotional, and behavioral experiences along their vegan journey is critical (Bryant et al., 2022, 2023; Waters, 2018). Based on established theoretical frameworks, this study explores lived experiences during the transition to a vegan diet among current and former vegans.

This study makes a substantive contribution to the field of behavior change by presenting a novel framework that not only extends previous models but also introduces fresh phases and constructs critical for understanding the complexities of initiating and disrupting lifestyle changes, with a specific lens on veganism. It enhances empirical knowledge by unraveling the nuanced intricacies of the vegan lifestyle's adoption, persistence, and cessation. The granular understanding furnished by this research is particularly crucial for stakeholders in health promotion, providing a robust foundation for developing strategies tailored to the unique journey of individuals adopting a vegan lifestyle, thereby supporting more effective interventions and policies to encourage and sustain vegan practices.

The article is structured as follows. First, in the theoretical framework section, we discuss the theoretical lens of this study. Second, the abductive approach, qualitative data collection, and thematic analysis are explained in the methods. In the results and discussion section, we present the findings from the in-depth interviews and interpret them through the novel theoretical framework that we propose based on our analysis. Finally, in the Conclusion section, we summarize our main results, outline theoretical and practical implications, acknowledge our study's limitations, and suggest future research directions.

2.3 Theoretical framework

The lack of theoretical frameworks in vegan studies is fundamental to advancing knowledge and designing effective interventions that promote positive changes in attitudes and behaviors (Salehi et al., 2023). Among the few studies that have used a theoretical framework, the use of Fishbein and Ajzen's (2011) Theory of Reasoned Action (TRA) and Ajzen's (1985) Theory of Planned Behavior (TPB) stand out, as seen in studies such as Povey et al. (2001). Although these approaches have provided valuable insights, the TPB, in particular, does not provide a detailed analysis of the process of adopting veganism despite the literature has shown that most people adopt this lifestyle gradually, starting from an initial non-vegan background (Asher &

Peters, 2020; Ruby, 2012; Ruby & Heine, 2016). Furthermore, the literature suggests that adopting and maintaining a vegan diet results from going through various phases influenced by different psychological and social factors and that individuals may react to the phenomenon of veganism differently (Bacon & Krpan, 2018; Bagci et al., 2022). In this context, stage-based theories, such as the Transtheoretical Model (TM, Prochaska & DiClemente, 1982, 1983; Prochaska & Velicer, 1997), offer a more holistic perspective by considering the different stages an individual goes through in their transition to veganism.

The Transtheoretical Model (TM) acts as a framework that illustrates the complex cognitive and behavioral dynamics in adopting new behaviors, highlighting the different stages that individuals may go through in their pursuit of behavioral change (Figure 12). Specifically, it proposes that adopting a new behavior over time results from going through six *stages of change*: precontemplation, contemplation, preparation, action, maintenance, and termination. The TM has three other theoretical constructs: *decisional balance* (weighing the trade-offs of adopting the new behavior), *self-efficacy* (perceived ability in one's capacity to change the behavior), and the *process of change* (strategies that people use to go through the different stages) (Prochaska & DiClemente, 1982).

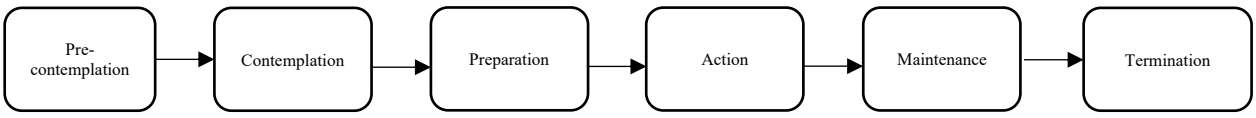

Figure 12. The Transtheoretical Model (TM, Prochaska & Velicer, 1982)

Several studies have applied the TM to examine changes in various behaviors, including ethical decisions (Chitsa et al., 2022; Inman et al., 2022; Scott et al., 2022) and dietary choices (Blow et al., 2022; Rodrigues et al., 2023). In our field, researchers have used the TM framework to delineate the complex journey to veganism conceptually (Mendes, 2013), as well as to profile participants following plant-based diets (Arnaudova et al., 2022; Asher & Peters, 2020; Lea & Worsely, 2003; Lea et al., 2006; Lourenco et al., 2022). Although these studies have contributed significantly to our understanding of behavior change, they have one notable shortcoming: the need to pay more attention to the “avoidance stages” within the TM. Prochaska et al. (1982) explicitly acknowledged the possibility that not all individuals will eventually adopt the expected behavior and abandon the journey; however, research has focused primarily on understanding how people successfully progress through the different stages, but not on understanding when the subject decides to stop, abandon or retreat from the

target behavior. Furthermore, the model assumes that the subject changes over time as he or she progresses through the different stages, an issue that has also not been adequately addressed in previous literature. These issues are particularly relevant for behaviors with which the subject is unfamiliar and where uncertainty about the pathway is more significant (such as veganism) so that the subject can be expected to need more time to become convinced that it is beneficial for him/her (Weinstein et al., 2020). Studying these moments of "failure" informs us about the difficulties experienced by the individual and the coping strategies of those who manage to overcome them and move on. To address this limitation, we consider another relevant theory of behavior change that recognizes the relevance of stages of avoidance: The Adoption Precaution Model (PAPM, Janis & Mann, 1977), a comprehensive model designed to elucidate the stages of the decision-making process and the subsequent transition from undesirable to desirable behaviors (De Vet et al., 2008).

The Precaution Adoption Process Model (PAPM) describes a sequential approach to decision-making regarding health behaviors, starting from unawareness and culminating in action or inaction (Figure 13). Distinct from the Transtheoretical Model (TM), PAPM includes stages of unengaged individuals and those who decide against action. While it aligns with TM in recognizing stages of awareness, contemplation, and preparation, PAPM does not incorporate additional factors that may influence transitions between these stages, marking a limitation of the model. Integration with TM may enrich the predictive power of PAPM.

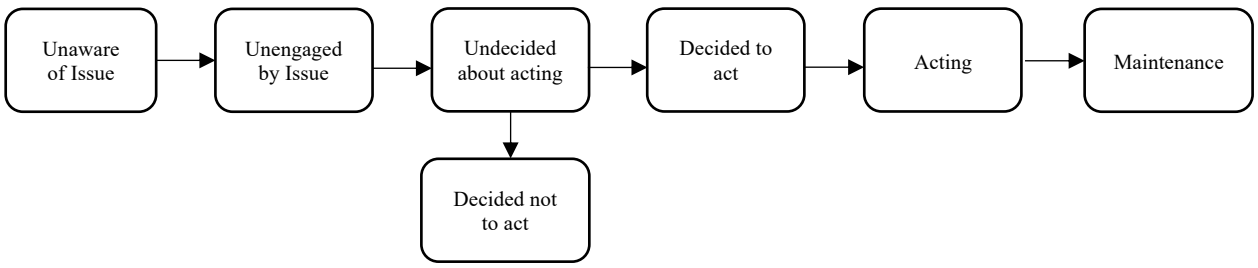

Figure 12. The Precaution Adoption Process Model (PAPM, Janis & Mann, 1977)

2.4 Methods

This research utilized an abductive approach, conducting 34 semi-structured interviews focusing on French vegans living in France, in the Îls-de-France region. Research participants were recruited through the vegan Meet-up and Facebook groups. The sessions, conducted from July to October 2021, were audio-recorded using a digital voice recorder. The sociodemographic and lifestyle characteristics of respondents are summarized in Table 9.

Table 9. Demographic and lifestyle characteristics of participants

ID	Psyneduem	Gender	Age	Area	Duration	TAPM stages of change[7]									
						PC	CN	DE	PR	RJ	AC	HS	MT	RL	TR
FR1	Pauline	Female	25	Paris	2 years	X	X		X		X	X	**X**		
FR2	Camille	Female	25	Paris	3 years	X	X	X	X	X	X		**X**		
FR3	Sylvie	Female	25	Paris	4 years	X	X		X		X		**X**		
FR4	Sybille	Female	26	Boulogne	6 years	X	X		X		X	X	X		**X**
FR5	Julien	Male	37	Paris	1 year before relapse	X	X		X		X		X	**X**	
FR6	Claire	Female	39	Neuilly	5 years	X	X		X		X		X		
FR7	Fanny	Female	34	Paris	8 years	X	X		X		X		X		**X**
FR8	Manon	Female	26	Paris	6 years	X	X		X		X		X		**X**
FR9	Chloé	Female	24	Paris	1.5 years	X	X	X	X		X		**X**		
FR10	Juliette	Female	42	Levallois	19 years	X	X		X		X		X		**X**
FR11	Jean	Male	22	Paris	4 years	X	X		X		X		**X**		
FR12	Charlotte	Female	24	Paris	1 year	X	X		X		**X**				
FR13	Anais	Female	43	Paris	2 Years	X	X		X		X		**X**		
FR14	Valentin	Female	26	Paris	2 Years	X	X		X		X	X	**X**		
FR15	Ines	Female	26	Paris	2 years before relapse	X	X		X		X		X	**X**	
FR16	Sophie	Female	22	Paris	6 months	X	X	X	X		**X**				
FR17	Josephine	Female	36	Creteil	22 years	X	X		X		X		X		**X**
FR18	Emma	Female	35	Paris	1 year before relapse	X	X		X		X		X	**X**	
FR19	Alice	Female	38	Paris	3 years before relapse	X	X		X		X		X	**X**	
FR20	Isabella	Female	18	Paris	7 months	X	X		X		**X**				
FR21	Hugo	Male	25	Paris	1 year before relapse	X	X		X		X		X	**X**	
FR22	Elodie	Female	44	Paris	5 years before relapse	X	X		X		X		X	**X**	
FR23	Delphine	Female	29	Paris	1 year	X	X		X	X	X		**X**		
FR24	Lucie	Female	27	Puteaux	2 years	X	X	X	X		X		**X**		
FR25	Léna	Female	22	Paris	3 years	X	X		X		X		**X**		

[7] The stages marked are those that respondents have completed, while the gray cells indicate the stages at which interviewees were positioned at the time of the interview.

Table 9. Demographic and lifestyle characteristics of participants (Continued)

ID	Psyneduem	Gender	Age	Area	Duration	TAPM stages of change[7]								
						PC	CN	DE	PR	RJ	AC	HS	MT	RL	TR
FR26	Sandra	Female	31	Paris	7 years	X	X		X		X		X		**X**
FR27	Jules	Female	32	Nanterre	2 years	X	X		X		X		**X**		
FR28	Brigitte	Female	24	Paris	2.5 years	X	X		X		X		**X**		
FR 29	Lea	Female	29	Paris	1 year	X	X		X	X	**X**				
FR 30	Olivier	Male	32	Issy	1 month	X	X		X		**X**				
FR 31	Marie	Female	30	Paris	3.5 years	X	X	X	X		X		**X**		
FR 32	Louise	Male	24	Paris	2 years	X	X		X		X		**X**		
FR 33	Paul	Male	22	Paris	3 months	X	X		X	X	**X**				
FR 34	Florence	Female	27	Paris	6 months before relapse	X	X		X		X			**X**	

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PC: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

The interviewees were between 21 and 44 years old (mean age 29). The participants were predominantly female (82%). It is important to note that this gender distribution may not accurately reflect the composition of the vegan community in France, as the sample is not representative. However, global evidence suggests that women are more frequent adopters of veganism (Díaz, 2017a; Hargreaves et al., 2021; Salehi et al., 2021). The duration of veganism among interviewees ranged from six months to approximately a decade. All respondents were French and resided in urban areas of the Ile-de-France department, with 79% living in Paris. All were university-educated.

Interviews spanned a range of topics grounded in veganism, including motivations, behavior change, and adaptation strategies. Interview transcripts, originally conducted in French, were translated into English for further analysis. Qualitative data analysis followed Braun and Clarke's (2006) thematic analysis principles, starting inductively, and moving to a theory-driven approach. This led to identifying new stages within the vegan transition process, culminating in the development of the Transtheoretical Adoption Precaution Model (TAPM), which elucidates the diverse trajectories of adopting veganism.

Our initial inductive analysis disclosed insightful descriptions of the attitudes and experiences of vegan respondents. The emerging themes were (1) becoming aware of veganism, (2) transitioning to veganism, (3) maintaining veganism, as well as (4) describing the enablers and barriers throughout the veganism journey. Building upon these findings, we conducted a more detailed theory-driven approach in the second round, following the stages of change in the Transtheoretical Model (TM), and the Precaution Adoption Process Model (PAPM). Finally, we merged the two rounds of coding to develop a thematic map. As a result of this process, we found new stages (in total, ten stages) that comprise what we have named the Transtheoretical Adoption Precaution Model (TAPM). Each participant assigned to which stages they have passed and their current stages (Table 9). In addition to the stages of change, for the three other constructs of TM a coding guideline has been prepared and results of thematic analysis has been merged with characteristics that was in compliance with processes of change, decisional balance and self-efficacy. The interviews also brought to light different journeys in the adoption of veganism.

2.5 Results

The results presented in this section correspond to the Transtheoretical Adoption Precaution Model (TAPM), the product of our research (see Figure 14 for a visual representation). Building on the core constructs of the Transtheoretical Model (TM), the TAPM enriches the TM by integrating a total of ten stages. These stages include the original six stages of the TM (precontemplation, contemplation, preparation, action, maintenance, and termination), augmented by four additional stages representing possible deviations from the desired trajectory: disengagement, rejection, hesitation, and relapse. In the following subsections, we will delve deeper into the constructs of this model, starting with an analysis of the *stage of change* and the *processes of change* **(**Table 10**).** Later, we will discuss the constructs of *decisional balance* and *self-efficacy*.

2.5.1 The stages of change and processes of change

Precontemplation is the initial stage of the TAPM, where individuals may not be familiar with a vegan lifestyle and have yet to consider changing it (Lea et al., 2006). At this stage, people do not consider veganism a possibility for themselves, some even ridicule vegans' moral position.

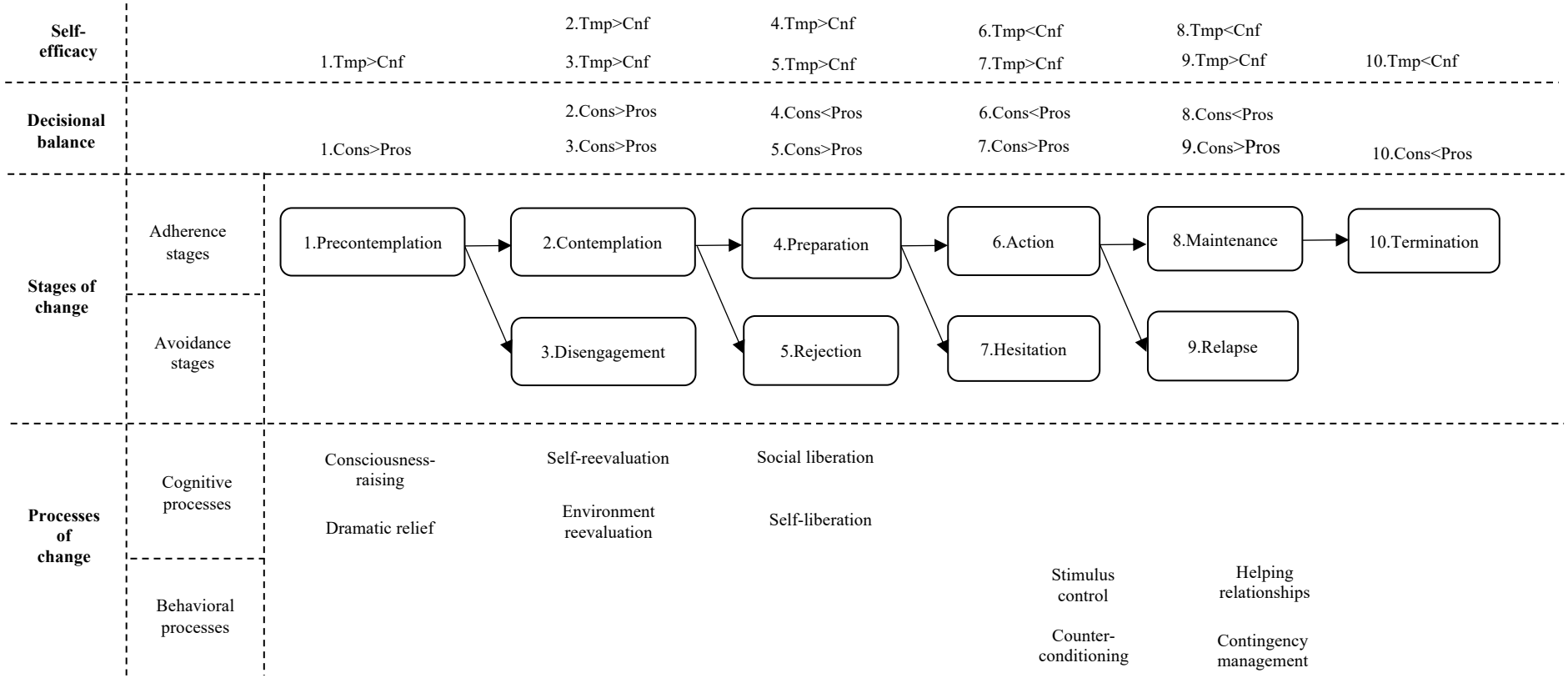

Figure 13. Transtheoretical Adoption Precaution Model (TAPM)

Tmp: Temptation
Cnf: Confidence

This fits in with the literature about the stigma and discrimination (vega-phobia) that vegans suffer (Bresnahan et al., 2016; Cole & Morgan, 2011; Griffin, 2017; Rosenfeld, 2019). The following quotes are clear examples of this negative response to veganism:

> *In fact, if you had asked me about veganism back then, I would have probably laughed and dismissed it as something ridiculous. I simply didn't understand the ethical and environmental implications of my dietary choices, and I viewed vegans and vegetarians as eccentric individuals who were out of touch with reality*. (Camille).

> *I held deep-seated negative emotions towards veganism and vegans. I viewed it as an extreme and rigid lifestyle, and I despised the heated debates that often ensued between omnivores and vegans. (...) I felt they were imposing their beliefs on others and adopting a self-righteous attitude.* (Delphine)

By becoming aware or being involved in *consciousness-raising,* individuals may move to the next stages. *Consciousness-raising* could be commenced in two ways: experientially or environmentally. Experiential consciousness-raising occurs when an individual becomes aware of his/her preferences and values and links them to behavior change (Raggiotto et al., 2018). These preferences could be related to sensory appeals such as meat disgust (e.g., Adise et al., 2015; Buttlar & Walther, 2021; Plasencia et al., 2019). As we observed this through the respondents' narratives.

> *My journey towards veganism began in my childhood when I was young. I vividly remember my parents insisting on consuming meat for good health and being served meals with meat regularly. However, even at a young age, I didn't take pleasure in eating meat. I would consume it because I was told to, but I never enjoyed it. Similarly, I was never drawn toward milk or eggs. I found drinking a big glass of milk or eating a fried egg with runny yolk impossible.* (Pauline)

The environmental consciousness-raising could be related to animal rights or ecological consequences of dietary choices (Díaz, 2017a, b; Espinosa & Treich, 2021; Rosenfeld & Tomiyama, 2021) as it is explored in the narratives:

> *I had grown up eating meat, and I wasn't sure how I would be able to give them up. But as I continued to learn about the benefits of a plant-based diet, both for my health and the environment, I became more motivated to make the change.* (Chloé)

Table 10. Brief and preliminary description and examples of TAPM variables

STAGES OF CHANGE	**DESCRIPTION**
Precontemplation	Unaware
Contemplation	Aware and engaged to veganism, but not decided for the next month
Disengagement	Aware but not engaged
Rejection	Decided to follow veganism
Preparation	Decided to follow veganism within the next month
Hesitation	Consumes vegan products regularly but hesitates to become vegan
Action	Following veganism for more than one month and less than 6 months
Relapse	Following veganism for a duration of fewer than 6 months and quitting the vegan lifestyle.
Maintenance	Following veganism for more than 6 months and less than 5 years
PROCESSES OF CHANGE	**DESCRIPTION**
Consciousness raising	Finding or learning new facts, ideas, and tips that toward the veganism
Dramatic relief	Experiencing the negative feelings after becoming aware of cons of non-vegan lifestyle choices
Self-reevaluation	Realizing that veganism is an important part of one's identity as a person
Environmental reevaluation	Realizing the negative impact of the omnivorous diet on one's social and/or physical environment
Self-liberation	Making a firm commitment to intentions of following veganism
Social liberation	Realizing that the social norms are changing in the direction of supporting the vegan dietary practice
Counterconditioning	Substitution of some/all non-vegan choices with vegan choices
Stimulus control	Removing reminders or cues to engage non-vegan lifestyle and adding cues or reminders to engage to veganism
Reinforcement Management	Increasing the rewards for veganism and decreasing the rewards of a non-vegan lifestyle
Helping relationships	Seeking and using social support for to veganism
DECISIONAL BALANCE	**DESCRIPTION**
Pros	Perceived benefits of veganism
Cons	Perceived costs of veganism
SELF-EFFICACY	**DESCRIPTION**
Confidence	Perceived confidence of practicing veganism across different challenging individual and social situations
Temptation	Perceived temptation to relapse to a non-vegan diet across different challenging individual and social situations

> *Before, I never imagined that one day I could be vegan myself. However, over time my understanding of the impact of animal agriculture on the environment and animal welfare began to ameliorate. I started to realize that the consumption of meat and dairy products was contributing significantly to greenhouse gas emissions, deforestation, and the degradation of soil and water resources.* (Camille)

> *I had grown up eating meat and dairy products, and I wasn't sure how I would be able to give them up. But as I continued to learn about the benefits of a plant-based diet, both for my health and the environment, I became more motivated to make the change.* (Chloé)

Learning about veganism can often (but not always) trigger a profound shift in an individual's perspective, evoking a sense of emotional upheaval or *dramatic relief* (McDonald, 2000). This cognitive process is well-documented in the academic literature, which offers insights into the powerful emotional responses that individuals may experience when first exploring the tenets of veganism, as is illustrated by Pauline when she spoke of the catharsis she experienced when watching a documentary film exposing the suffering of animals on livestock farms:

> *One evening, I stumbled upon a video, which left a profound impact on me. I couldn't sleep all night as I reflected on the suffering endured by animals in the meat and dairy industries…As I spent the night crying and contemplating the implications of my dietary choices, I knew that I no longer be a part of the system that caused so much suffering.* (Pauline)

People who consider veganism relevant enough to take the time to seriously reflect on it and inform themselves enter the next phase: contemplation. Otherwise, they would not engage in it and enter the disengagement stage.

2.5.1.1 Transition 1: contemplation (stage 2) versus disengagement (stage 3)

The contemplation stage is characterized by the fact that consumers are, at least partly, convinced of its relevance, and they begin to think seriously about changing their behavior, but as they have not yet decided on adoption, they continue practicing the old behavior (Lea et al., 2006; Prochaska et al., 2015). For example, they may struggle with identification, managing difficulties, or acquiring knowledge about veganism, in which case he/she will abandon the "vegan career." Individuals may remain in this contemplation stage for a long time, or even

forever if they need to decide about the benefits of the new behavior (Prochaska & DiClemente, 1982). This situation of mixed feelings and thoughts is made clear in the following quotation:

> *The Cowspiracy documentary that I watched four years ago was highly intriguing. However, even after watching it, I continued consuming meat without significantly changing my dietary habits. Nevertheless, I did acknowledge that meat production and consumption had significant ecological implications. Although this realization did not immediately impact my eating habits, I knew I had to change at some point.* (Sylvie)

During the contemplation phase, individuals may engage in a twofold re-evaluation process. On the one hand, they reflect on their values, attitudes, and identity (*self-reevaluation)*, a process that has been previously recognized in the literature on the transition to veganism (Amato et al., 2022; Fox & Ward, 2008; Grassian, 2020; Sturgeon Delia, 2021). In the following quote, Chloé identifies herself as "an animal lover," a trait she identifies as key in her path to abandoning animal consumption.

> *Before becoming vegan, I had been a vegetarian for several years. Transitioning from a vegetarian diet to a vegan lifestyle was a significant change. I have been able to do this transformation because I had always been an animal lover, and caring about animals played a crucial role in my decision to adopt a vegetarian and later a vegan lifestyle.* (Chloé)

On the other hand, we observe a process of *environmental re-evaluation*, which involves reflecting on the role that different actors play in the situation and how one's own behavioral change (e.g., from meat-eating to vegan) would impact the world, including social relations, animals, and the planet (Asher & Peters, 2020). In the following quote, Sylvie shares her awakening about her perception of the livestock industry and how she wants to stop supporting the sector.

> *Furthermore, the female chicks that survived were never allowed to experience the outside world and were raised in cages for their entire lives. The video was a wake-up call, and I could not ignore the ethical implications of consuming eggs and meat. It was clear to me that the animal farming industry was inhumane, and I had to make a change.* (Sylvie)

As noted earlier, not all individuals will undergo this transformational experience. While some may continue to the next stage (preparation), others may consider veganism as an exciting concept that they do not feel obliged to follow and, therefore, will leave the path. This decision now is what we call the disengagement stage, in which individuals are aware of the possibility of the new behavior but do not adopt it because they do not have a definite judgment about its relevance, necessity, or even ethical character (Janis & Mann, 1977). This is in line with the literature when talking about a phase marked by not having a firm but rather vague or neutral opinion on veganism (Ruby & Heine, 2011). This situation has also been called attitudinal ambivalence (Buttlar & Walther, 2022; Povey et al., 2001), a variable found to moderate (negatively) the relationship between attitudes and intentions or behaviors. We can see this unclear indifference towards veganism in the following quote from one of the participants:

> *When I first became aware of veganism, I didn't consider it to be of much importance.* (Camille)

At this point of the journey, the subject often experiences contradictory postures toward the behavior. For example, they may perceive meat eating as harmful and unhealthy; however, at the same time, they positively value its sensory and symbolic characteristics, which is known as the "meat paradox" (Graça et al., 2016). Different mechanisms have also been observed to resolve the mental tension or cognitive dissonance that comes with such ambivalence and allow the person to continue consuming animals; for example, denying the cruelty imposed on animals throughout their lives (Vollum et al., 2014) or rejecting the capacity of animals to feel pain (Bilewicz et al., 2011; Díaz, 2016). Individuals in the disengagement stage also deliberately deactivate the ethical self-regulation procedure by considering the cost associated with behavior change to reduce dissonance Graça et al. (2016). Similar reactions to other aspects of veganism not related to animal suffering could be observed, (i.e., by resorting to negative thoughts about the consequences it may have for their health or the challenges it may pose for their environment). It is important to note that people in this stage may never commit to veganism and may not continue their journey towards it despite being informed (Janis & Mann, 1977; Weinstein, 1988):

> *Despite understanding the benefits of veganism, I found myself torn. The truth is, I have grown up with certain cultural traditions and a love for the taste and texture of animal-based foods. It was a sort of culinary nostalgia that lingered within me. It created this*

> *internal struggle where I question whether I can fully commit to a vegan lifestyle without sacrificing the enjoyment I find in certain foods*. (Lucie)

The disengagement stage in interviewees' narratives does not necessarily mean that all participants mentioned characteristics associated with this stage. However, distinguishing between individuals who have never thought about taking action (disengagement) and those who have given it some consideration but remain undecided (contemplation) is valuable as those who have thought about acting are likely to be more knowledgeable and different communication strategies may be required to encourage them to take further action (Salehi et al., 2020; Weinstein et al., 2020).

Individuals with established positions on the issue, despite not having acted yet, show distinct responses to information (Brockner & Rubin, 1985; Ditto & Lopez, 1992). The distinction between decision and action is expected in behavior change theories like the Theory of Planned Behavior (Ajzen, 1985), or Protection Motivation Theory (Rogers, 1975), suggesting that individuals first develop intentions and then develop coping skills.

2.5.1.1 Transition 2: preparation (stage 4) versus rejection (stage 5)

According to Glanz et al. (2008), the **preparation** stage is characterized by consumers' motivation to adopt the new behavior within the next month. For those considering veganism, this means they start weighing the pros higher than the cons (Chin et al., 2002) and demonstrating a solid intention to adopt veganism (Povey et al., 2001). In this stage, individuals may exhibit some behavior related to veganism, such as eliminating animal-based products while reading about veganism and purchasing some vegan products (Raggiotto et al., 2018). In the following quotes, our participants share their experiences on how they took their first steps into veganism, reading, and learning to cook:

> *One day, I came across an article on the internet that discussed veganism and a raw fruit diet. Intrigued, I conducted some research and decided to give it a try.* (Sybile)

> *I had no idea how to cook and prepare vegan meals. However, with determination and the right resources, I was able to learn and grow my cooking skills.* (Manon)

Research highlights the disparity between intending to act and action, highlighting the fact that helping individuals develop specific processes can reduce these barriers (Gollwitzer, 1999;

Séré de Lanauze & Sirieix, 2022). The liberation processes play a crucial role. Liberation can appear in a double sense: on oneself (self-liberation) or on others (social liberation). *Self-liberation* involves engaging in new behaviors and refraining from old ones (Prochaska & DiClemente, 1982); it refers to the process that the subject undergoes of questioning his/her assumptions and start separating from his/her old self to construct a new identity. In this sense, the level of "strictness", a variable reminiscent of the United Model of Vegetarian Identity (UMVI, Rosenfeld & Burrow, 2018), with which the subject decides to embrace veganism is very important for continue and step into the next stage:

> *To adopt a vegan lifestyle, I have consciously decided to eliminate all animal-based products, including meat and dairy, not only from my diet but also from my daily life as a guiding principle. Although this may seem daunting, I have found that it simplifies many aspects of my lifestyle, including my cosmetic choices, clothing purchases, and household products.* (Charlotte)

People in the preparation phase also put into practice the set of strategies adopted during their short practice of veganism that serve to anchor their decision in front of others. This *social liberation* allows them to become more resilient in the face of contextual pressures and dominant norms, as the following narratives illustrate well. In this phase, participants often point out how the increased availability of vegan products and alternatives contributes not only to greater individual freedom of action, but also to a more hopeful attitude towards the acceptance of veganism by society, as the following quotes show:

> *The transition has been made easier by the growing availability of vegan products, as more and more companies recognize the importance of catering to the vegan community. This trend has been especially evident in the realm of cosmetics, where there is now a broad range of vegan options that are easily accessible. However, I have also noticed this transition has been slower in food, with fewer vegan options available in some areas. Nonetheless, the overall trend toward plant-based diets and lifestyles have given me hope that this, too, will change. I am committed to doing my part to support this movement.* (Charlotte)

Nevertheless, during the decision-making, individuals may encounter a situation where they perceive the negative aspects of veganism to outweigh the positive ones and decide to stop the journey, as highlighted by Ruby and Heine (2011). This critical juncture in the behavior change

journey toward veganism, termed *rejection* in the TAPM represents one of the avoidance stages. At this stage, some individuals may remain forever, or at least for a significant duration. Delphine's experience mirrors the latter phenomenon, as she initially vehemently rejected the idea of embracing veganism. However, she eventually reconsidered her stance, opting to explore the possibilities and prepare for the transition:

> *As time went on, my perspectives began to shift. It was a gradual process, sparked by moments of self-reflection and exposure to different perspectives. I started questioning the origin of my animosity [towards vegans and veganism] and realized that it was rooted in ignorance and prejudice. I decided to challenge my own biases and embarked on a journey of exploration and education*. (Delphine).

According to the literature, consumers may reject veganism due to food neophobia: "a reluctance to ingest novel foods" (Pliner & Salvy, 2006, p.75). Furthermore, the long-standing and cherished position that meat has long occupied in Western dietary culture, along with the "meat symbolism" (Twigg, 1979), may also play a role in consumers' reluctance to embrace veganism. In this sense, research suggests that a stronger attachment to meat would result in a higher likelihood of rejecting veganism (Graça et al., 2015; Piazza et al., 2015). On the other hand, individuals who perceive more benefits than drawbacks in adopting veganism are more likely to continue their journey.

2.5.1.2 Transition 3: Action (Stage 6) versus Hesitation (Stage 7)

People who overcome the multiple challenges they encounter and adopt strategies that allow them to continue veganism for more than a month will enter the action phase. At the action stage, consumers have already modified their behavior and have been practicing the new behavior (veganism) over the past six months (Prochaska & DiClemente, 1982). The action stage requires significant time, effort, and commitment (Prochaska et al., 2015). Therefore, the behavioral changes in the action stage tend to be more noticeable. In this phase, the subject usually begins to experience certain mental and physical benefits of her/his new lifestyle, such as an altruistic feeling of not harming animals or weight loss (Mendes, 2013). Consumers in the action phase are more committed to the new behavioral experiment, with higher levels of self-liberation than in previous phases (Prochaska & DiClemente, 1992). However, they may also experience conflicts that test their determination; the extent to which they can manage different internal and external stimuli plays an essential role in resolving these conflicts. At this

point of the journey (as well as in the maintenance stage), c*ounterconditioning* and *stimuli control* are critical processes that individuals undergo. *Counterconditioning* refers to relapsing the undesirable response to a particular stimulus with a more favorable one (Plasencia et al., 2019). In the context of veganism, individuals who enjoy the taste of meat but choose to adopt a vegan lifestyle may seek out vegan alternatives that replicate the sensory attributes of meat:

> *I realized that there were many things I missed and that this sense of loss was something I needed to address. However, I also recognized that the beauty of the vegan lifestyle is that it provided an opportunity to explore new foods and flavors that I had never tried before. For instance, I found myself missing the taste of a juicy burger. However, instead of giving in to my craving for meat, I decided to seek out high-quality vegan burgers. Through this process, I discovered a new world of vegan burgers that were not only delicious but also provided the same satisfying taste and texture that I had been missing.* (Charlotte)

That counterconditioning strategy could also be accompanied by *stimuli control* (Prochaska et al., 1992), where individuals strive to control the environment to minimize exposure to triggers that may provoke them to revert to non-vegan behaviors. For example, they may remove all animal products from their refrigerators or choose to dine exclusively at vegan restaurants:

> *As I delved deeper into the world of veganism, I started to browse various vegan recipes and was pleasantly surprised by how diverse and delicious they were. However, I soon realized that adopting a vegan lifestyle required some adjustments, particularly regarding my pantry staples. I had to completely redo my pantry because most food items I previously consumed were not vegan-friendly. This was a bit daunting initially, but I found it a fun and exciting challenge. Additionally, individuals may seek out new social circles of like-minded individuals who understand or promote veganism, another example of stimulus control.* (Anais)

Coming from the preparation phase, some subjects report encountering practical and cognitive barriers that prevent them from committing to this way of life and stepping into action. We have termed this stage "hesitation." This phenomenon is reminiscent of the so called "vegan paradox", to express the state of mind in which individuals find themselves when they can recognize the importance and relevance of veganism and experiment with it but find it difficult to implement the lifestyle change (De Groeve et al., 2022). Despite frequently consuming

vegan products, individuals at this stage are only partially committed to changing all aspects of their lifestyle (e.g., clothing, cosmetics). The cause of this hesitation can be attributed to the various barriers they face during the preparation stage or to their lack of intention not to employ effective strategies to overcome them (Salmivaara et al., 2022). The following testimonies illustrate some of the difficulties often encountered by people who are hesitant to adopt a vegan lifestyle fully. In this case, participants comment on the difficulty of avoiding the temptation to consume a particular product (e.g., cheese, meat) and the complexity of openly sharing their transition with others:

> *Despite my commitment to veganism, I have found it challenging to refuse meat, especially when dining out or at social events with family and friends. This difficulty may be due to various factors, such as social pressure, fear of missing out on certain foods, or lack of vegan options.* (Valentine)

2.5.1.3 Transition 4: maintenance (stage 8) versus relapse (stage 9)

If individuals continue adhering to veganism for more than six months, they enter the maintenance stage. Research reveals that the longer individuals adhere to veganism, the less likely they are to relapse (Hodson & Earle, 2018) or, one would expect, to drop out. Although the individuals already have experience with practicing veganism in this stage, they are not entirely free from the probability of exiting the journey; therefore, they still need to make efforts to continue and not backslide (Prochaska et al., 1992).

In the maintenance stage, *reinforcement management* and *helping relationships* are the crucial processes of change that consumers incorporate. *Reinforcement management* pertains to the rewards and positive outcomes individuals achieve by practicing the new behavior (Prochaska et al., 1993). In veganism, experiencing health benefits or the pleasurable experiences of consuming new vegan recipes reinforces the appeal and likelihood of maintaining vegan (Papies et al., 2022). The feeling of satisfaction is also reflected in the previous literature as one of the positive outcomes that influence individuals to continue practicing veganism (Rosenfeld & Burrow, 2018):

> *I had health problems at the very beginning. I had chronic sinusitis, which completely disappeared after the first few weeks of following a vegan diet. I had eating disorders, so I had an unhealthy relationship with food, and veganism helped me feel better about myself and not have this feeling of guilt after meals.* (Sybile)

On the other hand, they are *helping relationships* refer to the support from belonging to or being connected to a network of trusted subjects who practice the behavior and care about helping others maintain the practice (Prochaska et al., 1992). In the context of veganism, these supportive social networks are essential throughout the process but appear especially relevant in the maintenance phase (Bryant et al., 2022). Evidence shows that individuals with vegan friends and family feel more encouraged to continue veganism and perceive stronger social norms toward veganism (Schenk et al., 2018). Beyond the networks, very close to the subject, pro-vegan messages on social networks can also be supportive, especially when they are not limited to disseminating information (perhaps the most relevant position in the sensitization process). Still, they can also serve to spark dialogues, reinforce the idea of being accompanied, and broaden interactions between subjects (Bryant et al., 2022):

> *I am grateful that I have had a positive experience with my family and friends regarding my veganism. My family has been supportive of my choices and respectful of my dietary preferences. This has made it easier for me to stick to a vegan lifestyle, as I am not faced with pressure or tension from those closest to me. In addition, my friends have been open to trying vegan food with me. It can be challenging to introduce others to a different way of eating, but I have found that many of my friends are curious and willing to try new things. This has given me the opportunity to share my passion for veganism with others and showcase the wide variety of delicious and nutritious plant-based foods that are available*. (Josephine)

Some individuals, after practicing veganism for at least six months, still do not overcome the personal and social challenges of their adoption; this is when relapses occur (Hodson & Earle, 2018). For example, studies show that those subjects who abandoned veganism did not participate in vegan communities (Asher & Cherry, 2015). At this point, they may return to a non-vegan lifestyle or, in other words, some form of "*usoanimalism"* (Díaz, 2016), such as vegetarianism, flexitarianism, carnism, or just a plant-based diet. Several indicators, including the inconvenience, craving for animal-derived foods, social awkwardness, and health concerns, can influence individuals to abandon their vegan commitment (Hodson & Earle, 2018; Menzies & Sheeshka, 2012).

> *I stopped being vegan, and I needed to take a step back from this experience, and as I praised the benefits of veganism at the beginning, and now I'm also considering the health problems*. (Ines)

Interestingly, individuals who relapse from veganism usually don't go entirely to their old "omnitarian"[8] habits (Díaz, 2023, p.11) based on "the ideological and moral stance advocating for a deliberate dietary practice that includes the consumption of all food types, both animal-based and plant-based, devoid of ethical reservations or moral considerations, particularly about the interests of animals". Still, they may consider buying leather goods, eating vegetarian food, or not checking labels. In the following quote, Florence talks about this transitional stage of taking a step back, in which she perceives inconsistencies and tensions, but without having completely abandoned the idea of being vegan in the future:

> *While I won't proclaim a complete abandonment of my convictions. I don't consume meat, which is still undeniably distant from my current beliefs.* (Florence)

Finally, despite those who relapse from the journey, those who continue practicing veganism for more than five years can be in the termination stage.

2.5.2 Decisional balance and self-efficacy

Consumers, when moving along the transition to veganism, are engaged in a complex decision-making process that includes weighing the perceived benefits ("pros") and drawbacks ("cons") of such a lifestyle. This evaluation process involves two fundamental strategies: *self-reevaluation* and environment *re-evaluation*, integral components of the "*decisional balance."* In self-reevaluation, individuals consider personal factors such as health implications, or quality of life. This includes assessing pros and cons, which may consist of decisions about food preparation, shopping, and eating out, which aligns with previous literature on barriers (Faber et al., 2020; Johnson, 2015; Radnitz et al., 2015).

Simultaneously, social reevaluation addresses broader social and ecological considerations. This process examines potential conflicts or lack of support from family and social networks (Lea et al., 2003; Markowski & Roxburgh, 2019), ethical issues related to animal welfare (Rosenfeld & Tomiyama, 2021), sustainability (Aleksandrowicz et al., 2016) and broader global concerns, such as addressing world hunger (Besson et al., 2020). Examples of these issues are provided in Table 11.

[8] In this thesis the term, omnitarianism is used instead of omnivorism as it better captures the idea of consious choice of a type of ethics.

Table 11. Decisional balance and reevaluation processes

Change Processes	Self-reevaluation				Environment-reevaluation			
Decisional balance	Health	Quality of life	Dietary habits	Convenience	Social networks	Animals	Ecology	World hunger and food justice
Perceived advantages of following vegan diet (Pros)	By making the switch to veganism, I have improved my own health and, I fight the appearance of the future pandemics. (FR2)	I had a more positive vision of things in general. (FR1)	I also relearned how to enjoy a salad without seasoning... my taste buds have completely changed, and they have begun to appreciate the simple foods that nature offers us. (FR1)	Through my journey as a vegan, I discovered the immense joy of cooking at home. (FR6)	I realized that my decision to adopt a vegan lifestyle was first solely driven by trends or fashion. (FR22)	I decided to be vegan at that time it was really at first for reasons of animal suffering. (FR18)	I became a vegan, driven by a growing awareness of the environmental implications of animal agriculture. (FR23)	I noticed adopting veganism can play a role in addressing world hunger issues: by efficient use of resources, reduction of food waste, and increased crop efficiency. (FR2)
	I had chronic sinusitis, which completely disappeared after the first few weeks of following a vegan diet. (FR4)	After adopting a vegan lifestyle, I experienced improved physical health, increased energy levels, and a greater sense of well-being. (FR3)	Transitioning to a vegan lifestyle opened up a whole world of exciting culinary possibilities, I tasted several new flavors, ingredients, and meals that I've never known that they exist. (FR6)	I discovered that cooking became incredibly easy and convenient. With no need to marinate meat or worry about complex cooking techniques, I embraced the simplicity and versatility of vegetable-centric meals. (FR8)	This experience that deeply impacted me and left me quite frustrated was encountering people who make completely ignorant and hurtful remarks or judgments solely because of my choice to be vegan in their presence. (FR10)	I learned about the cruel conditions of factory farming and the suffering of animals raised for food. (FR2)	I learned about the massive amounts of water and land required to raise animals for food, as well as the significant contribution of animal agriculture to greenhouse gas emissions and deforestation. (FR9)	I delved deeper into the interconnectedness of global food systems; I began to comprehend the immense potential of veganism in addressing the pressing issue of world hunger. (FR8)

Table 11. Decisional balance and reevaluation processes (Continued)

Change Processes	Self-reevaluation				Environment-reevaluation			
Decisional balance	Health	Quality of life	Dietary habits	Convenience	Social networks	Animals	Ecology	World hunger and food justice
Perceived disadvantage of following vegan diet (Cons)	I was told that consuming meat was necessary for good health and that avoiding it could result in nutrient deficiencies (FR2).	Despite my commitment to veganism, I have found it challenging to refuse meat, especially when dining out or at social events with family and friends. (FR14)	It was ingrained in my eating habits to the point where a visit to a restaurant or even a single meal without a substantial steak felt incomplete. (FR 21)	Eating out was a little bit challenging at the beginning, this was because of lack of vegan options in some restaurants. (FR14)	Engaging in social gatherings posed the task of responding to inquiries about my dietary choices from new acquaintances. (FR18)		There is nothing that is white or black because it is vegan that it is good for all! there are vegan that are not good for the environment. (FR4)	
	I began to realize several negative effects of this diet on my body. (FR5)	I was dissatisfied after meals. However, I allowed myself the time and space to adapt. (FR16)	I couldn't imagine living without cheese. (FR1)	Vegan products are always more expensive than their animal-based counterparts. (FR6)	There were some relatives and friends whom I had not talked to about my changed diet, and I didn't want to bother them. I occasionally ate meat. (FR4)			

An essential factor in adopting a new behavior is *self-efficacy*, such as the individual's belief in her or his ability to perform the behavior (Devries & Backbier, 1994). In veganism, self-efficacy helps people cope with personal doubts and social pressures to change their lifestyle (Prochaska et al., 2015). The following quote demonstrates how one participant, Josephine, dealt with these challenges:

> *At first, engaging in open communication with friends and family regarding my dietary choices posed a challenge. However, I discovered that this dialogue was instrumental in garnering support from my loved ones. I could enlighten them about my perspective by expressing my motivations. Consequently, their comprehension of my choices improved and became more accommodating and supportive.* (Josephine)

New vegans often face social challenges, including the desire to avoid conflict or judgment, particularly in environments where meat consumption is normative (Minson & Monin, 2012). This situation and others similar can be violent for some people, especially at the beginning (or even in the first few months of moving to action), to the point of deterring them from identifying as vegan and consuming vegan-friendly products (Bryant et al., 2022). Adopting a vegan identity can be both a driver and a challenge in this journey. For example, at a meal out with family or friends, a vegan person must publicly "declare him or herself vegan" to inquire about vegan options on the menu or request that the restaurant serve her/him a vegan alternative. Despite these obstacles, individuals demonstrate resilience, exemplified by Emma, another participant's experience:

> *Initially, navigating dining out as a vegan presented its challenges. I found myself in the position of having to inform hosts or make prior arrangements with restaurants to ensure suitable options were available*. (Emma)

At this point, individuals may choose (1) to reinforce their commitment to a vegan lifestyle or (2) to give in to the temptation to return to old eating habits. Previous empirical research on the Transtheoretical Model (TM) observed higher levels of confidence in the later stages of change (Ôunpuu et al., 1999), suggesting that as individuals progress in their vegan journey, the temptation to return to animal products may diminish due to their strengthened confidence in their ability to practice and stick with the new behavior.

2.6 Discussion

More consumers are turning to veganism in line with the growing trend towards healthy, ethical, and sustainable lifestyles (Asher & Peters, 2020; Bagci & Olgun, 2019). Despite this shift, veganism remains predominantly an alternative or counter-cultural choice. Furthermore, although the exact degree of acceptance of veganism among the general population remains unclear, it is suggested that a significant proportion of consumers, at least in Western countries, are still in the pre-action stages of this lifestyle change (Lourenco et al., 2022). In this context, understanding the nuances of this transition process, as urged by some researchers (Rosenfeld, 2018; Salehi et al., 2023), is vital to facilitate the widespread adoption of veganism. Nevertheless, only a handful of studies have examined the process of change in detail (e.g., Lea et al., 2003; Wyker & Davison, 2010; see Salehi et al., 2023 for more details on this). Even among these few studies, some possible stages of change have often been overlooked. This may be due partially to the limitations of the dominant theoretical frameworks applied in these studies.

2.6.1 Contributions

As pointed out by Weinstein et al. (2020), the dominant theories adopted to study behavior change, such as the Theory of Planned Behaviour (TPB, Ajzen, 1985) or the Protection Motivation Theory (PMT, Rogers, 1975), focus primarily on factors that influence decision-making tend to address a single stage of the behavior change process, mainly on preparation stage (Stage 3). As a result, they often overlook the dynamic nature of the process, particularly the possibility that individuals may experience setbacks in their decision-making, leading them to regress to the contemplation stage (in this case, Stage 2). In sum, this unidirectional and linear view of behavioral change may not fully reflect the multifaceted and iterative nature of the transition to a vegan lifestyle; therefore, more comprehensive approaches are needed to understand the complex process of behavioral change and effectively promote the adoption of veganism.

To contribute to this literature and in response to calls for integrative theoretical approaches to behavior change (Diogo & Veiga, 2022; Willmott & Rundle-Thiele, 2022), in this article, we propose the Transtheoretical Adoption Precaution Model (TAPM). Our model builds on the current body of research exploring the adoption of veganism within the framework of the

Transtheoretical Model proposed by Prochaska et al. (2015) and used in the vegan context (e.g., Bryant et al., 2022, 2023; Mendes, 2013; Salehi et al., 2020). Specifically, the TAPM represents a refined, more comprehensive version of the initial extension of the TM model proposed by Salehi et al. (2020).

Using an abductive methodology based on the existing research on veganism and personal interviews with individuals at various stages of the vegan journey, TAPM augments the PAMP framework with two additional avoidance stages: (1) *hesitation*, which refers to the lack of commitment to becoming fully vegan despite being interested in veganism and consuming various vegan products; and (2) *relapse*, which refers to the stage when individuals abandon the practice of veganism due to overcoming some barriers or facing new obstacles. These two stages serve as alternatives to action and maintenance, respectively. As a result, TAPM provides a more holistic and fresh perspective on the factors that influence the transition through different stages of vegan adoption, capturing not only individual progression but also possible abandonment decisions. Our study highlights the dynamic and complex nature of the transition to veganism, which encompasses the stages of intention (contemplation, preparation), action (action, maintenance, termination), and avoidance (disengagement, rejection, hesitation, relapse). In fact, to the authors' knowledge, this is the first time that so many phases of the vegan process, including alternative routes out of veganism, have been empirically explored.

Another novelty of our research is that it is, to our knowledge, the first attempt to empirically examine the relevance of three other TM constructs in the vegan adoption process: the *process of change*, *decisional balance,* and *self-efficacy*. These constructs, largely overlooked in previous literature, seem crucial in adherence to veganism. For example, our study suggests that consciousness-raising and dramatic relief (process of change) help the subject to overcome the precontemplation phase. In contrast, self-reevaluation, and environment reevaluation (processes of change) help to progress from contemplation to the preparation phase. We have also observed that self-efficacy, together with self-liberation and social liberation, seemed to be more salient in the transition from preparation to action, whereas counterconditioning and stimulus control (processes of change) facilitate the transition from action to maintenance.

2.6.2 Practical implications

Our research findings have important practical implications for marketers, organizations, and government bodies seeking to promote veganism. These groups can improve their initiatives

by tailoring interventions to individuals' stages of the vegan journey, targeting the critical factors influencing their progression.

Those in the initial, precontemplation stage often need basic information about the benefits of veganism, as they are likely to be unaware of this lifestyle. Public outreach campaigns Grassian, 2020), marketing of vegan products (Apostolidis & Mcleay, 2016), educational programs introducing vegan alternatives (Goodland, 1997), and informational media can facilitate their transition (Zur & Klöckner, 2014).

The shift from precontemplation to contemplation is primarily driven by an individual's understanding of the perceptions of others, also known as 'dynamic norms' (Sparkman & Walton, 2017). As individuals become aware of societal norms, they may feel a moral obligation to develop their stance on animal agriculture (Harland et al., 1999). This is consistent with Norm Activation Theory (Schwartz, 1994), which argues that promoting awareness and responsibility can encourage ethical decision-making. In contrast, individuals in the disengagement stage will need personalized messages and connections with practicing vegans to understand the implications of consuming animal-derived foods.

Indeed, facilitating detailed planning for individuals in the preparation stage can significantly reduce the attitude-intention gap, a concept widely discussed in the literature (e.g., Gollwitzer, 1999). Detailed implementation information, while seemingly less relevant for individuals in the early stages, becomes essential for those who are ready to act (Weinstein et al., 2022). Such a pattern is consistent with Temporal Construal Theory (Trope & Liberman, 2003) and the Precaution Adoption Process Model (Janis & Mann, 1977), which propose that action decisions initially focus on abstract construal of options, but as individuals progress towards action, they pay increasing attention to the specifics of their chosen course. Collectively, these theories highlight the need for interventions that offer concrete, actionable steps, and strategies to individuals who have decided to transition to a vegan diet. Providing such targeted information can help them to effectively navigate the journey from decision to action, ultimately promoting the successful adoption of veganism.

Our results also indicate that those in the rejection phase present a unique challenge. As noted in previous research, these individuals often have extensive knowledge about the topic (Blalock et al., 1996; Weinstein & Sandman, 1992; Weinstein et al., 2020), yet they often dismiss or reject information that conflicts with their decision to stay away from the new behavior.

However, our narrative analysis shows that meaningful information can change their attitudes, although the type of information that can trigger these changes seems to vary significantly between individuals. This suggests that a single approach may not work for all; therefore, future research should identify patterns (e.g., sociodemographic, psychological) amongst people in this stage to tailor more effective and personalized interventions that broadly promote veganism.

Research also shows that sensory appeals work for those in the preparation stage, whereas labeling vegan products specifically benefits those in the *action* and *maintenance* stages (Bacon & Krpan, 2018). Additionally, it is important to recognize that partial replacement of animal-based foods is a different and potentially more manageable behavior than complete conversion to veganism (Apostolidis & McLeay, 2016). This is consistent with narratives from the newly identified hesitation stage in our proposed TAPM model. While campaigns that provide information seem to be crucial in the early stages, it is equally important to establish support networks that address the emotional challenges and identity struggles that individuals may face during the transition (Cherry, 2006, 2015; McDonald, 2000). These networks can inspire those in the hesitation stage to act and provide encouragement and a sense of community for those in the action, maintenance, and termination stages.

In conclusion, our study highlights the potential for more effective veganism campaigns that balance promoting the positive and ethical aspects of the lifestyle, individual moral responsibility, and social support rather than focusing solely on replacing animal products with plant-based alternatives.

2.6.3 Limitations

Despite this study's promising insights, it is crucial - as with all research - to acknowledge its limitations and point out opportunities for future inquiries. First, while our TAPM model offers a valuable theoretical framework for understanding the stages of vegan lifestyle adoption, we should be aware that the characteristics of these stages were sometimes drawn from participants' memories, not their experiences at the time of the interview. This retrospective approach might influence the accuracy and applicability of some of the information detailed for each stage. Furthermore, like all theoretical frameworks, TAPM represents a simplification of reality; in this sense, we present the stages of change as a linear process, although individuals may experience them differently.

2.6.4 Future research avenues

In anticipation, future research could focus on collecting and analyzing data from individuals at different stages of their vegan trajectory, which would provide further empirical evidence to corroborate our model. Quantitative and longitudinal studies would allow researchers to measure the differences amongst the stages regarding the variables observed in this study and follow individuals' dynamic progression over time.

Furthermore, this study was conducted in a single province of France. To improve the ability to compare and generalize the findings nationwide, future research should include multiple provinces in France.

While this study utilized a qualitative approach to investigate participant experiences and the impact of processes of change on veganism adherence, it may be necessary in the future to conduct research using both qualitative and quantitative methods. This broader approach would enable the exploration of a more comprehensive array of issues from various epistemological and ontological perspectives.

In addition, future studies should delve deeper into the role of specific social, cultural, and psychological factors at each stage of the process; this could facilitate the development of interventions better tailored to the needs of individuals at each stage. In this realm, to ensure the successful application of our model in real-world interventions, it will be recommendable to collaborate with various stakeholders, such as public health authorities and non-governmental organizations. This collaboration would help to develop culturally sensitive, widely acceptable, and practical strategies to implement, thus maximizing the potential impact of interventions and contributing to the promotion of veganism on a larger scale.

Additionally, integrating the TAPM model with other relevant theoretical models could provide valuable insights for future research, including studies focusing on veganism. For example, merging models of human values, such as Schwartz's (1994) theory of human values or the Theory of Planned Behaviour (TPB), with our model could lead to a complete understanding of the processes that lead to adopting new behaviors. This combined approach has been effectively demonstrated in previous research, such as the work of Graça et al. (2015), which combined TTM with TPB to study the adoption of plant-based diets.

Lastly, the utility of the TM was originally devised for smoking cessation but has since been effectively extended to a range of behavioral modifications, including the enhancement of physical activity or dietary change. Far from being a limitation, this adaptability of the TM is its strength, particularly as it pertains to addressing dietary choices, which can be as deeply ingrained as other forms of addictive behavior. In recognition of the TM's versatility and the potential of the Precaution Adoption Process Model (PAPM), we propose that the Transtheoretical Adoption Precaution Model (TAPM) could be constructively employed to examine a broader spectrum of sustainable behaviors. These may include, but are not limited to, reducing food waste, curtailing plastic use, and improving recycling practices. It is our expectation that through continued research and empirical substantiation, the TAPM will prove to be a robust framework for catalyzing and understanding these significant behavioral shifts.

2.7 Conclusion

In summary, this qualitative study proposes the Transtheoretical Adoption Precaution Model (TAPM), a framework emerging from previous behavior change models (TM and PAPM), and the thematic synthesis of narrative data. This model suggests a non-linear trajectory through ten distinct stages in adopting a vegan diet. The research recognizes the profound diversity in individual experiences of transitioning through the TAPM's stages, suggesting dietary change's personalized and idiosyncratic nature. In other words, although similarities were observed among individuals progressing through the stages, not all the individuals pass the stages through the same pattern. They may skip some stages or even stop in one stage for a long duration without progressing to the next step.

In the initial stages of dietary change (pre-contemplation, contemplation, or disengagement), cognitive mechanisms, particularly those involving consciousness-raising, are paramount. These stages are marked by a lack of readiness to embrace veganism, often influenced by societal stigma and misconceptions about vegan ethics and practices. As individuals move towards and beyond the preparation stage, behavioral processes gain prominence, with the nurturing of supportive relationships and engagement within vegan communities becoming pivotal.

Similarly to the TM, the TAPM underscores the interrelation of decisional balance and self-efficacy with an individual’s journey through veganism, emphasizing that these constructs are continually shaped by a complex interplay of cognitive and behavioral processes of change.

Furthermore, the qualitative findings suggest that decisional balance and self-efficacy are not static but may evolve as individuals interact with various stages of the TAPM.

These psychosocial constructs seem to be instrumental in determining the likelihood of initiating and maintaining the transition towards a vegan diet. Therefore, the TAPM, as derived from qualitative insights, enriches the discourse on dietary change, offering a sophisticated lens through which to view the adoption of a vegan diet. It calls for individualized intervention strategies that acknowledge the intricate and evolving nature of personal dietary journeys. The insights presented in this study serve as a theoretical extension to the field of health psychology and behavior change and as a practical guide for supporting individuals through the nuanced stages of adopting a vegan diet.

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CHAPTER 3. Measuring: Validating the Theoretical Framework for Transitioning to a Vegan Diet

In this chapter, the third step of the thesis, which we called measuring step is presented (Figure 15). The article titled, referred as Salehi, G., Redondo, R. & Díaz, E. (under review). Examining decisional balance and self-efficacy across stages of change in adopting a vegan diet: A comparative analysis using the Transtheoretical Adoption Precaution Model (TAPM) is presented.

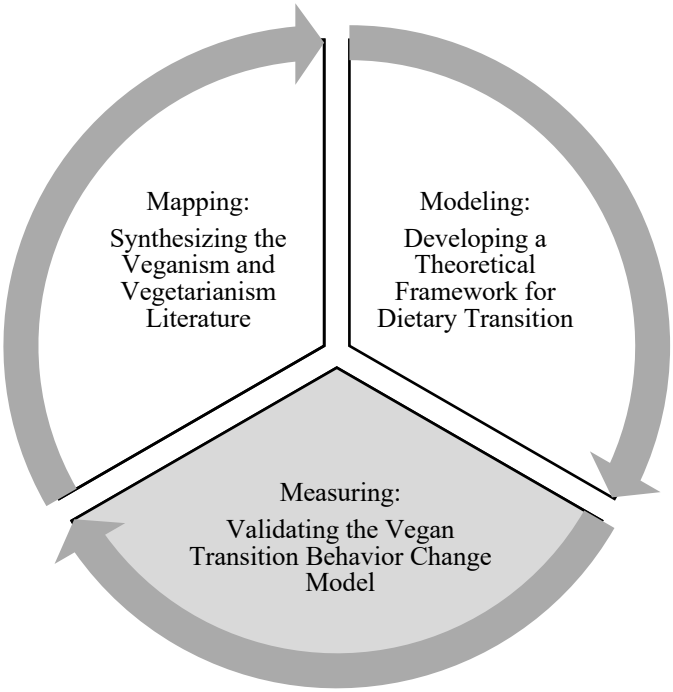

Figure 14. Measuring: validating the vegan transition behavior change model

3.1 Abstract

The current food system has been widely recognized as a significant contributor to public health problems, animal suffering, and environmental issues, making the transition to fairer, more sustainable, and healthier eating habits a crucial goal. However, there remains a significant knowledge gap in adopting more equitable and sustainable lifestyles, as well as diverse responses of individuals to dietary transformation. Drawing on the adapted Transtheoretical Model (TM), known as the Transtheoretical Adoption Precaution Model (TAPM), the main objective of this research is to empirically explore consumers' perceptions toward following a vegan diet by examining how *decisional balance* and *self-efficacy,* the main constructs of the TM model, vary according to the different *stages of change* among French adult consumers. A cross-sectional online survey was conducted using a randomly selected convenience sample of adults living in the Île-de-France department. The final sample size was 716 participants. The results offer deeper insight into the perceptions of French people about following a vegan diet depending on their stage in the path towards it, highlighting nuanced practical strategies and interventions for each target group to promote behavior change towards adopting a vegan diet. Targeted education and marketing communications could be key to promoting a vegan diet among consumers at different stages of change.

KEYWORDS: Veganism, Dietary transition, Consumer behavior, Transtheoretical Model (TM), Transtheoretical Adoption Precaution Model (TAPM)

3.2 Introduction

Traditional cultural symbols have historically linked meat consumption to the expression of wealth (Allen & Hung, 2003; Pereira & Vicente, 2013). However, consuming animal-derived products yields several adverse consequences. Firstly, the health considerations associated with animal consumption include the potential health risks stemming from excessive meat consumption, zoonotic diseases that can be transmitted from animals to humans, and the implications of dietary choices on human well-being (Espinosa et al., 2020; Key et al., 2006). Secondly, animal agriculture raises issues about animal rights and garnered significant attention in contemporary society (Pulina & Bertoni, 2023; Ursin, 2016). This involves problems with the ethical treatment of animals raised for food production, including issues related to confinement, transport, and slaughter. Lastly, large-scale animal farming contributes to environmental problems such as deforestation, water scarcity, air pollution, greenhouse gas emissions, and other adverse effects on natural resources (Aleksandrowicz et al., 2016; Fiala, 2008; Raihan, 2023). To address these challenges, various stakeholders have advocated reducing animal product use. Shifting towards a global system less reliant on animal exploitation holds immense potential for transforming the societal and economic structure, particularly, the food system (Arnaudova et al., 2022; de Backer & Dagevos, 2012; de Backer & Hudders, 2015; de Backer et al., 2019; FAO, 2016; Hartmann & Siegrist, 2017).

One prominent alternative is veganism, an ethical philosophy aimed to consciously minimize, as far as possible, animal exploitation by humans (The Vegan Society, n.d.). Rooted in the rejection of speciesism, understood as discrimination based on species (Dhont et al., 2016; Hagendorff et al., 2023; Larsson et al., 2003), veganism is a moral and political stance that encompasses all spheres of life of the adopter, such as food, fashion, experimentation, and entertainment (Díaz & Horta, 2020). However, in recent years, veganism has become strongly associated with the food dimension (Salehi et al., 2023), a phenomenon referred in the literature as *vegan diet.* It is imperative to distinguish the term "veganism" from "vegan diet," as emphasized by Díaz (2017). The former pertains to a comprehensive philosophy, lifestyle, and political movement grounded in moral principles, advocating for avoiding animal exploitation for human purposes, while the latter refers to dietary choices that would be suitable for vegans.

Scholars have explored categorizing dietary lifestyles within the *omnitarian-vegan* spectrum (Díaz, 2023) (Figure 16), revealing diverse practices. At one end, there's *omnitarians*, characterized by unconscious consumption of animal-origin food products (Adise et al., 2015;

Allen et al., 2000; Apostolidis & McLeay, 2016; Beardsworth & Keil, 1991; Díaz, 2023). Individuals reducing meat consumption fall under the *flexitarians*, also referred to as *reducetarians*, meat reducers, or semi-vegetarians (Amato et al., 2022). *Pollotarians* (or pollo-vegetarians) avoid red meat but consume other animal-based foods (Boyle, 2012). *Pescatarians* eat fish but exclude other types of meat (Christopher et al., 2018). *Vegetarians* abstain from all forms of meat while still incorporating other animal-origin food products like eggs and dairy items (Christopher et al., 2018; Strässner & Hartmann, 2023). At the opposite extreme are *vegans*, and followers of a *vegan diet* if it refers only to food, who completely avoid the consumption of foods of animal origin (Cooper et al., 1985).

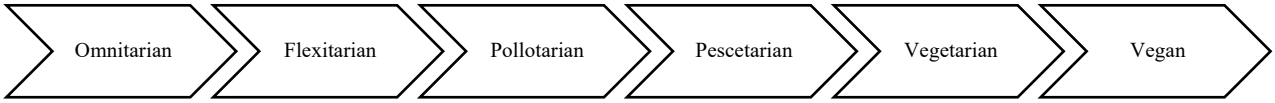

Figure 15. Omnitarian-vegan dietary continuum

Although there is no official global data[8] on the number of people who have adopted a vegan diet, research suggests that it is a growing worldwide trend that attracts a wide range of people interested in it for a variety of reasons, such as animal rights, food justice, environmental sustainability, wellbeing, longevity, and quality of life, or even the adventure of trying new dietary practices (Lourenco et al., 2022; Radnitz et al., 2015). But these growing numbers, although they bring hope, are still insufficient to solve the mentioned worldwide challenges. It would be necessary to involve much more people in this behavior change. However, adopting new dietary behaviors can be difficult, as some barriers and drawbacks make it problematic for many people to commit to change (Lea et al., 2006a, b; Prothero et al., 2011). In the case of veganism, it is observed that its implementation is often challenging, even if consumers are aware of its benefits (Arnaudova et al., 2022; Klöckner, 2015, 2017; Van Der Meer et al., 2023). In a society where it is normal and natural to consume animals (Joy, 2020), eliminating them from the diet means confronting deeply ingrained personal and societal symbols and patterns, which requires a deliberate or intentional change in attitudes and behaviors (Steg & Vlek, 2009). Understanding that process of change cannot be overlooked, so researchers and

[8] As per 2023 statistics from the VOU, the global vegan population is estimated to be around 88 million individuals. Given the world's population exceeded 8 billion by December 2022, this figure represents approximately 1.1% of the total.

practitioners have called for more attention to the topic (Amel et al., 2009; Menzies et al., 2023).

Within behavioral science, the "processual approach" postulates that behaviors should not be considered static events or fixed states. Instead, they manifest as a phenomenon that evolves and transmutes over time and can best be understood as a journey (Hirschler, 2011; McDonald, 1998, 2000; Vestergren & Uysa, 2022). Under this lens, the desired behavior emerges from transformations in cognitive and emotional dimensions that develop over different temporal phases (Mendes, 2013; Salehi et al., 2020a). Each phase encapsulates multiple factors (e.g., an individual's attitude towards the behavior, the degree of commitment or hesitancy they exhibit towards adopting or distancing themselves from the behavior). In this context, it seems inappropriate to categorize individuals into one of two monophasic positions: those who exhibit a desired behavior and those who do not. Instead of this distinction, the processual approach proposes a plurality of "positionings" in each category into which an individual may fall concerning a specific behavior. Consequently, the processual approach compels the academic community and researchers to embrace a more holistic, dynamic, and nuanced perspective when scrutinizing individual experiences and attitudes toward specific behaviors. This perspective goes beyond the dichotomy of “yes” or “no” and acceptance or rejection of the behavior.

Although the study of veganism and vegan diet has been extensive in recent decades, the state of the art on adopting a vegan diet from a dynamic perspective on behavior change remains very limited (Salehi et al., 2020b, 2023b). Results from previous studies on the process of becoming vegan indicated that this change is usually very personal, shaped by an individual’s biography and experiences, and it can be illustrated as a continuous and gradual process stimulated and inhibited by positive and negative reasons and perceived consequences (Beardsworth & Keil, 1991; Giacoman et al., 2021; Larsson et al., 2003; MacNair, 2001; McDonald, 2000). However, little is known about how these reasons and perceptions will influence individuals' adoption of the vegan behavior Therefore, further research is needed to improve our knowledge of how the transition to a vegan diet occurs and what are the key factors that facilitate or hinder it along the way. These questions will benefit those on their journey while helping to design more efficient actions and efforts to mitigate animal exploitation, promote public health, and protect the environment globally.

The latest research on the transition to a vegan diet advocate that this transition is not generally abrupt and fast but entails a significant and gradual shift away from an omnitarian diet. In this vein, the staged behavior-change models seemed promising frameworks to study veganism adherence. Applying this logic to the study of veganism implies reconsidering the dichotomous categories of "vegan" and "non-vegan" that prevail in the literature as if they were single-phase or monophasic positions (e.g., Aguilera-Carnerero & Carretero-González, 2021; Cherry, 2015; De Groeve et al., 2020). Far from denying the convenience and appropriateness of differentiating between vegans and non-vegans, in our research, we take a more complex view of both categories, considering it necessary to distinguish different states within each of them if we want to understand the process in depth. This adds tremendous value to the existing literature. Past research has explored the distinction in perceived barriers and facilitating factors between those individuals who adhere to vegan diets and those who do not (Lea et al., 2006a; Mendes, 2013; Salehi et al., 2020a). However, we find it plausible that these factors act differently depending on the stage of change the subject is at. For instance, for people who have recently adopted a vegan diet, one of the most pronounced barriers might be not finding suitable plant-based alternatives or not knowing how to cope in social situations, whereas, in the long-term, vegans might be dealing with possible nutritional deficiencies. Similarly, regarding facilitating factors, the relevance of ethical considerations, knowing how to cook well, or having the support of vegan communities may have different relevance for those thinking about it, have adopted it, or have been practicing it for a long time (Cherry, 2003; Judge et al., 2022). Similarly, people's confidence in their ability to adopt and follow a vegan diet may vary depending on the stage of change they are in (e.g., it may be much lower at the beginning than when the individual has been practicing it for some time or several years).

This study aims to contribute to the expanding body of literature about behavior change theories and veganism/vegan diet by comprehensively analyzing the multifaceted positive and negative determinants that influence individuals' adoption of the vegan diet across different stages of adoption. Previous research has studied facilitating factors and barriers and has made an important contribution to understanding the determinants that influence the uptake of veganism and vegan diets (Kerslake et al., 2022; Lea et al., 2006a). What sets our study apart is its holistic exploration of a more comprehensive myriad of factors within the behavior change process, offering a precandidate depth of insight into the intricate complexities that underline the choice to embrace a vegan lifestyle. Furthermore, we aim to give recognition and empirical evidence of avoidance stages (stages that consumers stop or relapse from progressing

in the veganism journey) by analyzing how enablers and barriers may act differently regarding going ahead or exiting the vegan diet path.

In pursuit of these objectives, our research employs an adapted version of the Transtheoretical Model, known as the Transtheoretical Adoption Precaution Model (TAPM), as the guiding framework. The TAPM integrates critical constructs from the Transtheoretical Model, the Precaution Adoption Process Model (PAPM), and insights from a recent qualitative study conducted by Salehi et al. (2023b). This amalgamation of theoretical foundations equips our study with a robust framework, enabling a nuanced examination of the various factors influencing vegan diet adoption across different stages, thereby enhancing our understanding of the dynamics at play in this context.

Our study adopts a quantitative methodology and covers a wide range of participants originating from France. We chose France as the setting for our research because of the remarkable transformations in its consumption patterns. In this country, it is estimated that about 2.7% of the population follows a vegan or vegetarian diet. This figure contrasts with the decline in meat consumption, from 94 kg per person in 1998 to 86 kg in 2014. In addition, a significant increase in sales of vegan and vegetarian products has been observed (Villette et al., 2022). These trends reflect an increased awareness among specific segments of the French population of the negative impacts of consuming animals. Examining this phenomenon in France is also particularly relevant for two main reasons. First, France's world-renowned gastronomy is characterized by a variety of meat-based dishes. The deep cultural connection to meat in the French culinary tradition presents an intriguing research challenge. Analyzing the behavior of the French in opting for a vegan diet provides insights into the challenges and motivations associated with decreasing meat consumption in an environment so deeply rooted in the carnivorous tradition. Second, with a robust agricultural sector and a notable presence in the meat industry, understanding French consumers' perspectives and behaviors towards veganism can offer deep insights into the socio-economic factors that influence dietary choices and sustainability concerns in such a meat-focused nation.

The body of knowledge generated in this pioneering research reveals substantive implications for the conceptualization and design of relevant campaigns, the articulation of targeted messages, and the formulation of evidence-based policies that advocate ethical, healthy, and sustainable dietary choices. Through a detailed analysis of the determinants that shape individuals' dietary choices across different stages of adherence, it is plausible to calibrate

interventions towards more effective facilitation of dietary and behavioral transitions, thereby catalyzing a shift towards more just, health-promoting, and sustainable practices. In line with Pachankis (2007), we consider that the findings of our study emphasize the imperative of identifying and confronting prevailing obstacles and simultaneously enhancing factors conducive to the adoption of new dietary patterns. By equipping individuals with the relevant resources and knowledge to overcome challenges and fully appreciate the inherent benefits of a vegan diet, our research stands as an invaluable work, enabling constructive dietary transformations in individual and collective contexts.

In the following section, we describe the theoretical framework for this study. In the fifth section, we explain the method adopted in the research and then present the results and discussion. The paper ends with a brief conclusion.

3.3 Theoretical framework

This study employs an adapted version of the Transtheoretical model (TM, Prochaska & Velicer, 1997), referred to as the Transtheoretical Adoption Precaution Model (TAPM), as the underlying theoretical framework to analyze the various phases involved in transitioning to veganism. The TAPM is derived from integrating constructs from the two staged behavior change theories, the Transtheoretical Model (TM), and The Precaution Adoption Process Model (PAPM, Janis & Mann, 1997), as well as recent empirical findings in the studies of the veganism journey (See Salehi et al., 2023b for further details).

The TAPM follows the assumptions of the TM and the PAPM; thus, the model assumes that following a vegan diet will be conducted through a gradual shift through different stages of change. People may stop, exit, or cycle through these stages multiple times before successfully reaching the termination stage. The model outlines ten stages of change: (1) precontemplation, (2) contemplation, (3) disengagement, (4) preparation, (5) rejection, (6) action, (7) hesitation, (8) maintenance, (9) relapse, and (10) termination. As depicted in Figure 17, these stages can be categorized into two groups: **adherence stages**, which include precontemplation, contemplation, preparation, action, maintenance, and termination, representing the phases through which individuals progress when adopting a desired behavior; and **avoidance stages**, consisting of disengagement, rejection, hesitation, and relapse, denoting the stages where individuals may either exit from the journey or become stagnant in the process.

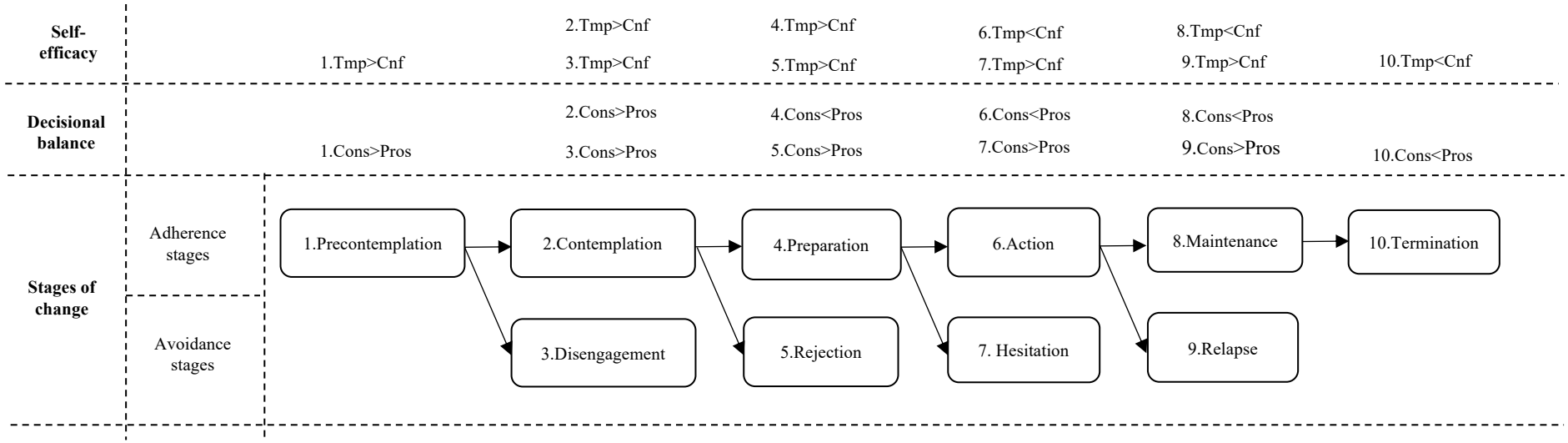

Figure 16. Self-efficacy, decisional balance, and stages of change in the Transtheoretical Adoption Precaution Model (TAPM)

Tmp: Temptation; Cnf: Confidence.

The *precontemplation* stage encompasses individuals who neither intend to adopt a vegan diet in the future nor are familiar with the potential benefits of this lifestyle. As awareness of veganism increases, some may remain uninterested and perceive the topic as insufficiently significant to warrant further consideration, thereby entering the *disengagement* stage. Conversely, there are those who, upon learning about veganism, find it intriguing and important yet remain undecided about embracing this lifestyle; these individuals are in the *contemplation* stage. At this juncture, some may opt against adopting a vegan diet, subsequently entering the *rejection* stage. However, if a person decides to proceed with adopting a vegan diet lifestyle, they advance to the *preparation* stage, which is characterized by a determination to commence a vegan diet in the following month. However, potential obstacles and a lack of confidence may cause some individuals to make occasional vegan choices without fully committing to the lifestyle, leading them into the *hesitation* stage. Conversely, those who consistently practice veganism for more than a month advance to the action stage. Nevertheless, faced with barriers along the way, some may not maintain this lifestyle over time and regress in their decision, which is what TAPM calls the *relapse* phase**.** On the other hand, those who can practice vegan eating for more than six months (and less than five years) reach the *maintenance* phase. Finally, there are those who adhere to a vegan diet for more than five years, in which case they reach the *termination* stage.

Decisional balance involves meticulously examining pertinent considerations associated with a specific behavior (Prochaska et al., 1994). In the context of following a vegan diet, these considerations are multifaceted and influenced by various individual, social, and ethical factors (Janssen et al., 2016). Empirical evidence suggests that the pros of following a vegan diet may include factors such as the perceived tastiness of vegan food (Faber et al., 2020), the ease of replacing vegan food with animal-based food (Apostolidis & McLeay, 2016b), the perception of trendiness (Estell et al., 2021), perceived health outcomes (Clark & Bogdan, 2019), or the ethical stance of protecting animals from being slaughtered (Rosenfeld & Tomiyama, 2019). Conversely, cons may include discomfort associated with changing dietary habits (Bogueva et al., 2017; Mendes, 2013) and the perceived limited availability of vegan food (Johnson, 2015). Extensive research on behavior change, under the lens of the TM, consistently highlighted that the pros and cons scales effectively differentiate among individuals in various *stages of change* (Prochaska et al., 1994). On this basis, we propose the first hypothesis which states:

H1. The level of pros and cons varies among the different stages of change.

Second, the TM posits that individuals are more likely to successfully adopt a new behavior if the pros outweigh the cons (Dishman, 1994). Moreover, consumers' pros tend to increase as they progress through the later "adherence stages" (Prochaska et al., 1994). Drawing from this literature, it is reasonable to hypothesize that the significance attributed to the pros may shift from early to later adherence stages. Accordingly, we propose that:

> H2: People in the adherence stages have higher levels of pros than those in the avoidance stages.

Third, the balance between pros and cons is acknowledged to vary according to individuals' stages of change (Prochaska et al., 1994). Within the context of veganism context, people who are not following a vegan diet, particularly those situated in avoidance stages, tend to express elevated levels of negative attitudes toward adopting a vegan diet, eating vegan foods, or associating with individuals adhering to a vegan diet (e.g., Adise et al., 2015; Rosenfeld & Burrow, 2018). Based on this premise, we posit the following hypothesis:

> H3: People in the avoidance stages have higher levels of cons than those in the adherence stages.

Fourth, as articulated by Devries and Backbier (1994), *self-efficacy* is characterized as an individual's confidence in the capability to effectively adopt a new behavior. It is imperative to acknowledge that this belief in one's proficiency is pertinent not only in private settings but also in the public sphere (Bandura, 1977; Ôunpuu et al., 1999; Prochaska et al., 1994). In the context of a vegan diet, self-efficacy could signify an individual's belief in their ability to navigate the temptation to consume animal-based food and consistently opt for vegan substitutes, particularly when confronted with challenging situations (Mendes, 2013). Studies on veganism show that omnivorous (or omnitarians according to Díaz, 2023) usually exhibit higher levels of meat attachment (Circus & Robinson, 2019), emphasizing a preference for the sensory characteristics associated with animal-based food over vegan options. Relatedly, as a person progresses through the stages of change, their self-efficacy scores may vary, likely reaching their peak in the final stage (Dishman, 1994). Consequently, we hypothesize:

> H4. The level of self-efficacy (perceived ability) differs among the various stages of change.

In this vein, the progression through the adherence stages will likely cultivate a heightened confidence in their capacity to cope with challenges and reap benefits associated with behavior change. This expectation is rooted in the premise that advancing through adherence stages signifies a robust commitment and adaptability to overcome hurdles in adopting a vegan diet. Consequently, we anticipate that individuals in the adherence stages will exhibit elevated levels of self-efficacy (Ôunpuu et al., 1999). Conversely, low self-efficacy may impede an individual's ability to overcome obstacles in transitioning toward a vegan diet (e.g., Ôunpuu et al., 1999; Shaver et al., 2019). This increases the likelihood of preventing previous eating habits and exiting the vegan path. For example, at a meal out with family or friends, a vegan person must publicly "declare him or herself vegan" to inquire about vegan options on the menu or request that the restaurant serve her/him a vegan alternative. This situation and others like it can be violent for some people, especially at the beginning, to the point of deterring them from identifying as vegan and consuming vegan-friendly products (Bryant et al., 2022). This literature leads us to propose the last of our hypotheses:

> H5. People in the adherence stages have higher levels of self-efficacy than those in the avoidance stages.

3.4 Methods

3.4.1 Sample and Survey Administration

Primary data collection was conducted through an online questionnaire made available to French adults. Surveys were created in Google Forms, and the link was distributed on social media platforms to reach both vegan and non-vegan people in various stages of change. Also, copies of the questionnaire were given to people in public libraries and cafes/restaurants in Paris, France. To reach enough individuals at the different stages of change, we used convenience sampling, which involves selecting individuals who are easily accessible or readily available. This method, while practical, may introduce biases and limit the generalizability of our findings due to the non-random nature of participant selection. However, since the main objective of this study is to compare the TAPM model variables across stages, we believe that this fact does not substantially affect our comparative analysis and results. Through this procedure, 716 surveys were successfully returned during 12 weeks in autumn 2022, starting on 30 September.

Only French women and men over 18 were invited to participate in the research. The study was developed through the guidelines of the Helsinki Declaration regarding working with human respondents, including voluntary participation, precautions for personal information protection during the presentation and processing of data, and informed consent. It was approved by the Ethics Committee at Comillas Pontifical University. Respondents provided informed consent before starting the study.

3.4.2 Questionnaire design

The research group created a comprehensive survey to gather data on individuals' dietary habits, perceptions, and intentions toward a vegan diet. The questionnaire was written in English and then translated into French. Then, the scales were backtranslated to English by two independent French Language instructors to ensure the comparability between English and French versions of the survey. The survey underwent pre-testing through cognitive interviews involving nine individuals representing various demographic groups from the recruitment criteria. Cognitive interviewing presents draft survey questions to respondents while simultaneously collecting verbal information about their responses (Beatty & Willis, 2007). This method is valuable to ensure that participants comprehend and interpret the questions accurately and that the response options are suitable (Peterson et al., 2017). This step was especially crucial given prior research indicating a lack of familiarity with a vegan diet among many individuals (Lea et al., 2006b). Some modifications were applied to the questionnaire after the competition of those interviews, including specific sentences in the pros and cons questions.

3.4.3 Measurements

The questionnaire encompassed a range of research topics, including but not limited to the following constructs.

-. *Sociodemographic characteristics (10 items).* The survey collected the sociodemographic characteristics of the participants through 10 items, including gender, age, nationality, living in the city, education level, employment status, marital status, number of children, religious beliefs, and political point of view.

-. *Dietary status and Food consumption frequency (1+1 items).* Respondents were also asked about their dietary practice through the question, "Which item describes better your current dietary practice?". Respondents chose among six dietary choices, and the definitions of each

dietary choice were given in the question below (1) vegan diet: not consuming meat, poultry, fish, dairy, eggs, honey, and any other animal-derived product; (2) vegetarian diet: not consuming meat, poultry and fish; (3) pescetarian diet: not consuming meat or poultry; (4) Pollotarian diet: not consuming red meat (5) Flexitarian diet (or semi-vegetarian diet) occasional inclusion of meat, poultry or fish; (6) Omnitarian diet: No restriction in terms of animal-based or plant-based choices. Additionally, using the first item of the Dietary Identity Questionnaire (DIQ) (Rosenfeld & Burrow, 2017), the participants were asked to indicate which products they exclude from their diet regularly (red meat, poultry, fish, dairy, eggs, and honey) to assess the possible mismatch between self-identified dietary classification and self-reported consumption of animal-derived food. Respondents answered questions about the frequency of consuming different food categories such as fruits and vegetables, meat, poultry, seafood, dairy, and eggs. The instrument was created to include both animal-based and plant-based food groups. The question "How often do you consume the following food groups?" asked individuals about their food consumption frequency, focusing on definitions of the omnitarian-vegan continuum. The food groups were rated separately on a 4-point Likert scale: never, 2-3 times per year, 3-4 times per week, and daily.

-. *Adoption Stages of change in TAPM (1 item).* For the adoption (contemplation, preparation, action, maintenance, and relapse) stages, the self-report scales of the Transtheoretical Model (TM) stages of change (e.g., McConnaughy et al.,1983) and were scale for stages of change in dietary change were adopted to follow a vegan diet. For the avoidance stages not mentioned in the original TM (disengagement, rejection, hesitation, and relapse), Salehi et al. (2020, 2023b) and Bryant (2022) descriptions of these stages were considered to design the questions. To classify respondents' TAPM "stage of change", they were asked to identify their status with respect to the vegan diet according to the questions presented in Table 12.

-. *Decisional balance (45 items).* Based on the Transtheoretical Mode (TM, DiClemente & Prochaska, 1982) and existing literature on vegetarianism, veganism, and plant-based diet (e.g., Salehi et al., 2023), this survey evaluated the pros and cons of a vegan lifestyle using 18 and 27 items, respectively, as detailed in Table 13 and 14. Some questions were modified from previous studies to align more closely with the context of vegan diet; for instance, questions initially from Lea & Worsley (2003), which focused on vegetarianism, were adapted to suit the vegan perspective. Additionally, some items were developed based on qualitative research, such as the work of Cole and Morgan (2011) on social stigma. These specially crafted questions

are marked as "authors-constructed". Respondents expressed their level of agreement with each statement using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 12. The Stages of Change in the Transtheoretical Adoption Precaution Model (TAPM)

Stages of change	Key concept	Items	References from studies on TM & PAPM	References from studies on VEG
Precontemplation	No intention to follow a vegan diet in the future.	I don't have enough information about a vegan diet.	Prochaska et al. (2013)	Asher & Peters (2020); Wyker & Davison (2010)
Disengagement	Not engaged in following a vegan diet.	I don't consider a vegan diet as an important topic to think about	Bandura, 2017; Shapiro et al. (2018)	Weber & Kollmayer (2022)
Contemplation	I consider veganism essential to think about but still have not decided yet.	I am interested in following vegan diet, but I have not decided yet about it.	DiClemente et al. (1985)	Lea et al. (2006a, b)
Rejection	Chooses not to follow a vegan diet.	I will not adopt a vegan diet.	Authors-constructed	
Preparation	I decided to pursue a vegan diet during the following month.	I think I might be ready to reduce animal food from my dietary choices from next month.	Di Noia & Prochaska (2010)	Mendes (2013)
Hesitation	I have already made changes but hesitating to commit to following a vegan diet.	I eat many vegan meals during the week, but I am thinking of going completely vegan.	Authors-constructed	
Action	Following a vegan diet for more than one month and less than six months.	I have been following vegan diet for more than one month and less than six months.	DiClemente & Prochaska (1982); Dishman (1994)	Klöckner (2017)
Relapse	Not continue following vegan diet.	I was following a vegan diet previously, but I quit.	Authors-constructed	
Maintenance	Following for more than six months.	I have been following a vegan diet for more than six months and less than five years.	DiClemente & Prochaska (1982)	Grassian (2020)
Termination	Following for more than five years.	I have been following a vegan diet for more than five years.	DiClemente & Prochaska (1983)	Mendes (2013)

Table 13. Pros measurements according to the Transtheoretical Adoption Precaution Model (TAPM)

Key concept	Items	Reference
Health	Following a vegan diet helps me to control my weight.	Arnaudova et al. (2022); Jovanovic et al. (2022); Lea et al. (2006a, b)
	Following a vegan diet prevents disease in general.	Hielkema & Lund (2021); Lea et al. (2006a, b)
	By following a vegan diet, I eat a vast variety of foods.	Arnaudova et al. (2022); Lea et al. (2006a, b)
	By following a vegan diet, I have plenty of energy.	Arnaudova et al. (2022); Hielkema & Lund (2021)
	By following a vegan diet, I stay healthy.	Arnaudova et al. (2022); Lea et al. (2006a, b)
	By following a vegan diet, I eat lots of vitamins and minerals.	Arnaudova et al. (2022); Hielkema & Lund (2021);
	By following a vegan diet, I eat a more "natural" diet.	Arnaudova et al. (2022); Lea et al. (2006a, b)
Quality of life	By following a vegan diet, I have a better quality of life.	Arnaudova et al. (2022); Lea et al. (2006a, b)
	By following a vegan diet, I am more content with myself.	Lea & Worsley (2003a); Lea et al. (2006a, b)
Convenience	Vegan foods are easy to replace.	Authors-constructed
	By following vegan diet, I have fewer storage problems.	Hielkema & Lund (2021); Lea et al. (2006b)
	Following a vegan diet saves time.	Arnaudova et al. (2022); Lea et al. (2006b)
	Following a vegan diet saves money.	Arnaudova et al. (2022); Jovanovic et al. (2022); Lea et al. (2006a)
Pleasure	Vegan foods are tasty.	Hielkema & Lund (2021); Lea et al. (2006a)
Environment	Following a vegan diet helps the environment.	Arnaudova et al. (2022); Culliford & Bradbury (2020); Hielkema & Lund (2021); Jovanovic et al. (2022)
World hunger	Following a vegan diet will decrease world hunger.	Arnaudova et al. (2022); Lea & Worsley (2003a); Lea et al. (2006b)
Animal rights	Following a vegan diet rescues animals from being slaughtered.	Authors-constructed
Social networks	By following a vegan diet, I appear more "trendy" to my friends.	Arnaudova et al. (2022); Lea et al. (2006a)

Table 14. Cons measurements according to the Transtheoretical Adoption Precaution Model (TAPM)

Key concept	Items	Reference
Health	There is not enough protein in vegan meals.	Arnaudova et al. (2022); Lea et al. (2006b)
	Vegan diet is not healthy for children.	Authors-constructed
	Vegan food is unnatural and processed.	Authors-constructed
	I wouldn't get enough energy.	Jovanovic et al. (2022); Lea et al. (2006a)
Knowledge	I lack information on how to follow vegan diet.	Lea et al. (2006b)
	I lack the right cooking skills to prepare vegan meals.	Arnaudova et al. (2022); Hielkema & Lund (2021); Lea et al. (2006a)
	I don't know what to eat instead of lots of meat.	Lea et al. (2006a)
Convenience	Vegan meals are not available in my shop, canteen or at home.	Arnaudova et al. (2022); Hielkema & Lund (2021); Lea et al. (2006a)
	Vegan meals are not or hardly available when I eat out.	Arnaudova et al. (2022); Lea et al. (2006a)
	It takes too long to prepare vegan meals.	Arnaudova et al. (2022); Lea & Worsley (2003)
	It is inconvenient.	Hielkema & Lund (2021); Lea et al. (2006a)
	I would have to go grocery shopping often.	Lea et al. (2006a)
	Eating vegan would be too expensive.	Hielkema & Lund (2021); Lea et al. (2006a)
Pleasure	I would (or do) miss eating meat.	Hielkema & Lund (2021); Lea et al. (2006a)
	Vegan diet would not be filling enough.	Arnaudova et al. (2022); Lea et al. (2006a)
	It would not be tasty enough.	Lea & Worsley (2003)
	Vegan food is disgusting.	Authors-constructed
Environment	Following a vegan diet is not necessarily helping the environment.	Authors-constructed
World hunger	Following a vegan diet will not decrease world hunger.	Authors-constructed
Animal rights	Following a vegan diet will not help animal welfare.	Authors-constructed
Social networks	By following vegan diet, I might be stigmatized.	Authors-constructed
	I may not be able to participate in meals because there is no vegan food.	Authors-constructed
	I might have no one to share vegan meals with.	Authors-constructed
	My family/partner won't eat vegan meals.	Lea & Worsley (2003)
	I don't want people to think I'm strange or a hippy.	Hielkema & Lund (2021); Lea et al. (2006a)
	I will not find a partner who follows vegan diet.	Authors-constructed
	It might be difficult for my partner to prepare vegan food for me.	Authors-constructed

-. *Self-efficacy (3 items).* Self-efficacy was measured by asking participants' motivation to follow a vegan diet in the future through measures adapted from Povey et al. (2001). A three-item scale was used to measure self-efficacy in the TAPM. Respondents were instructed to indicate their level of agreement to disagreement with the statement: (1) How much personal control, if any, do you feel you have over following a vegan diet in the future?; (2) To what extent, if any, do you see yourself as capable of following a vegan diet in the future?, and (3) How easy or difficult do you think it would be to follow a vegan diet in the future?. Each item was rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability of the self-efficacy scale, assessed using Cronbach's alpha, was determined to be 0.95. To create an aggregated score for self-efficacy, we computed the means of the three items.

3.4.4 Statistical analysis

To test our research questions, we conducted several statistical analyses. First, we measured the sociodemographic characteristics, dietary status, and stage of change of the sample. Also, we checked for the possible mismatch between participants' self-identified dietary classification and their self-reported consumption of animal-derived food to detect any inconsistencies in their responses by cross-tabulating the corresponding variables, as a quality of data check. The second step was to run descriptive statistics to examine all individual variables. We also cross-examined the other diets and the stages of change to identify possible paths from diets to different stages and vice versa.

In the third step, even though all our items were previously used and validated in other studies, we could not achieve validated scales for many of our concepts of interest, as Salehi et al. (2023a) warned. So, we had many pros and cons of individual variables, taken from different authors and not coming from validated scales. That is why Principal Component Analysis (PCA) was conducted, respectively, on the variables related to the pros and cons of following a vegan diet to reduce the number of variables to be analyzed without losing information. We decided to run PCA separately on the pros and cons variables to capture both nuances, allowing negative symmetry among them not to occur and, thus, allowing the possibility of a different factor structure.

To decide the number of components to be considered, the guidelines of Jolliffe (2002) and Peres-Neto et al. (2005) were followed. Accordingly, the eigenvalue greater-than-one rule was used to select the number of meaningful components and the decision rule for judging whether

an item was included in a particular factor loading greater than 0.40 with low cross-loadings (Towler & Dipboye, 2003). To better interpret the retained components, PCA was run using varimax rotation.

Subsequently, we checked for normality to decide whether to use parametric or non-parametric tests to check for the hypotheses. Accordingly, Quade's (1967) non-parametric ANCOVA analyses were used to analyze the impact of the stage of change on the different components and self-efficacy while controlling for sociodemographic variables to rule out the possibility of spurious relationships between stages of change and the components. Doing so, we ensured that possible differences in those components according to stages of change are not really provoked by differences in sociodemographic associated with the stages of change. Then, two-by-two Mann-Whitney tests were used to check whether significant differences existed in those new components and self-efficacy across the different stages of change. A p-value of 0.05 was employed as the threshold for significance in all conducted tests. All statistical analyses were performed using SPSS software.

3.5 Results

3.5.1 Descriptive analysis

3.5.1.1 Socio-demographic characteristics and dietary lifestyles

Table 15 presents the sociodemographic characteristics and dietary status of the sample. Regarding gender distribution, almost three-quarters of the sample identified themselves as women. Regarding age, participants were distributed across different age groups, with 39% falling in the 18-24 category, 40% in the 25-34 age range, and smaller proportions in older age groups. The mean age was 29.48 years (S.D.=10.42). The participants' educational backgrounds showed a relatively even distribution, and most of the sample had higher education. Regarding employment situation, most of the sample comprised employed or entrepreneurs. Marital status varied, with over half married or living with a partner. Almost all participants had no children. Regarding their beliefs, the majority declared themselves Christian and were closer to the liberal ideology.

3.5.1.2 Stages of change

When we analyzed the distributions of respondents among the different stages of change, 59% of the sample was in some of the phases related to the avoidance phases, and 40% were in one of the adherence phases. Overall, the phase in which the most significant number of people

were found was the phase of rejection stage (20%), followed by contemplation (13.82%), preparation (13%), and disengagement (13%), On the other hand, the least number of people were in the maintenance and action cases, with less than 3%.

Table 15. Sociodemographic characteristics and dietary status of the sample in terms of the number of participants (N) and percentage (%)

CONSTRUCT	VARIABLES	N	%
GENDER	Female	495	69
	Male	199	27
	Non-binary or not mentioned	22	3
AGE	18-24	282	39
	25-34	289	40
	35-44	81	11
	45-54	27	3
	55-64	39	5
LEVEL OF EDUCATION	More than high school degree	253	35
	Bachelor	160	22
	Master	258	36
	Ph.D. or higher	45	6
EMPLOYMENT SITUATION	Student	247	34
	Employed or entrepreneur	414	57
	Unemployed	55	7
MARITAL STATUS	Married	151	21
	Couple	256	35
	Single or divorced	309	43
NUMBER OF CHILDREN	No Children	608	84
	Having children	107	14
RELIGION	Christian	551	77
	Jewish	50	7
	Other	114	16
POLITICAL BELIEFS	Very liberal	244	34
	Slightly liberal	272	38
	Slightly conservative	200	28
DIETARY LIFESTYLE	Vegan	98	13
	Vegetarian	84	12
	Pescetarian	91	13
	Pollotarian	104	14
	Flexitarian	130	18
	Omnitarian	209	29

3.5.1.3 Quality of data check

To detect a possible mismatch between self-declared dietary status and food intake, we cross-analyzed corresponding variables (Table 16). A visual inspection of the results discarded non-reasonable discrepancies, awarding the quality of our data.

Table 16. Self-identified (SI) dietary status vs. Food Consumption (FC) frequency among different dietary practices

Dietary status	SI	Frequency	Nuts	Seeds	Legumes	Bread, Pasta, Rice, noodles	Red meat	Poultry	Fish & sea food	Eggs	Dairy	Honey
Vegan	98	Never					98	98	98	98	94	97
		2-3 times per year	11	3							4	1
		3-4 times per week	53	72	58	25						
		Daily	34	23	40	73						
Vegetarian	84	Never					75	75	74	56	2	73
		2-3 times per year		1	17	1	9	9	10		18	
		3-4 times per week								19	55	
		Daily								9	9	11
Pescetarian	91	Never				6	83	87	13		7	
		2-3 times per year				9	8	4	61			
		3-4 times per week	21		91				17	91	84	
		Daily	70	91		76						91
Pollotarian	104	Never					104					
		2-3 times per year	1		1			1	1			
		3-4 times per week	103	102	87	104		87	103	104	88	104
		Daily		2	16			16			16	
Flexitarian	130	Never					52			4	4	
		2-3 times per year		1	3	8	75	52				
		3-4 times per week	78	76	75		3	78	130	126	126	78
		Daily	52	53	52	122						52
Omnitarian	209	Never			9		3			3	6	
		2-3 times per year	9	123	167	9		4				1
		3-4 times per week	170	35	32	38	205	204	208	205	198	208
		Daily	30	51	1	162	1	1	1	1	5	
Total	716											

3.5.1.4 Cross-analysis of stages of change and dietary status

We crossed the variables among the stages of change to observe the distributions (Table 17). As is shown, vegans are fundamentally distributed by action, maintenance, and termination. Vegetarians, on the one hand, are contemplating or preparing the transition to vegan diet or, alternatively, have left vegan diet and are in the hesitation or relapse stage. Interestingly, all the pescetarian individuals in our sample are at the preparation stage, while the pollotarians are in disengagement or rejection. Flexitarians are spread across the initial stages of the path or in some of the avoidance stages as hesitation or disengagement, in a similar way as omnivorous.

Table 17. Cross-analyses of dietary status and stages of change (%)

Diet/**Stages**	**PC**	**CN**	**DE**	**PR**	**RJ**	**AC**	**HS**	**MT**	**RL**	**TR**	Total
Vegan						16.33	1.02	21.43		61.22	100
Vegetarian		13.10		3.60			20.24		63.10		100
Pescetarian				100							100
Pollotarian			1.00		99.00						100
Flexitarian	0.80	57.70	1.50								100
Omnitarian	33.01	6.22	40.70		20.10		40.00				100

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PR: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

In Table 18, we provide the information in a different way: we show how the different stages of change are distributed among individuals with different food states.

Table 18. Cross-analyses of stages of change and dietary status (%)

Diet/**Stages**	**PC**	**CN**	**DE**	**PR**	**RJ**	**AC**	**HS**	**MT**	**RL**	**TR**
Vegan						100	1.40	100		100
Vegetarian		11.10		3.20			24.30		100	
Pescetarian				96.80						
Pollotarian			1.10		71.00					
Flexitarian	1.43	75.80	2.30				74.30			
Omnitarian	98.60	13.10	96.60		29.00					
Total	100	100	100	100	100	100	100	100	100	100

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PR: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

As shown, precontemplation is mainly for omnivorous people, although there are a few flexitarians. The contemplation stage includes vegetarian and omnivorous (in percentages around 10%) but especially flexitarians. Not surprisingly, in disengagement, most people are

omnivorous. The preparation stage is fundamentally integrated by pescetarian, while, as expected, individuals at the action, maintenance, and termination stages are all vegan. In rejection, there is a majority of pollotarians (71%) and a significant proportion of omnitarians, whereas hesitation is mainly integrated by vegetarians (around 25%) and especially flexitarians. Finally, all the individuals in the relapse stage are vegetarians.

3.5.1.5 Decisional balance and self-efficacy

Table 19 shows that the benefits or pros are valued differently depending on what is at stake. The ones that are perceived as most relevant (having the highest mean values), are those with some altruistic or moral element, such as issues related to environmental sustainability, solving world hunger, and protecting animals.

Table 19. Mean and standard deviation of pros

	Variables	Mean	S.D.
Health concerns	Following a vegan diet helps me to control my weight.	2.66	1.42
	Following a vegan diet prevents disease in general.	2.22	1.33
	By following a vegan diet, I eat a vast variety of foods.	2.48	1.60
	By following a vegan diet, I have plenty of energy.	2.51	1.48
	By following vegan diet, I stay healthy.	2.52	1.57
	By following a vegan diet, I eat lots of vitamins and minerals.	2.63	1.48
	By following a vegan diet, I eat a more “natural” diet.	2.93	1.26
	By following a vegan diet, I have a better quality of life.	2.88	1.41
	By following a vegan diet, I am more content with myself	2.65	1.51
Convenience & financial concerns	Vegan foods are easy to replace.	2.37	1.37
	By following a vegan diet, I have fewer storage problems	2.81	1.28
	Following a vegan diet saves time.	2.90	1.33
	Following a vegan diet saves money.	3.36	1.29
Taste & trendiness concerns	Vegan foods are tasty.	2.90	1.35
	By following a vegan diet, I appear more "trendy" to my friends	4.69	5.50
Ethical concerns	Following it helps the environment.	4.47	6.69
	Following a vegan diet will decrease world hunger.	4.54	5.44
	Following a vegan diet rescues animals from being slaughtered.	4.68	5.04

Likert scales: 1: Strongly disagree; 2: Disagree; 3: Unsure/neutral; 4. Agree; 5: Strongly agree.

However, it is also noted that veganism is perceived as a way of being fashionable, in fact it is the item that receives the highest score. In contrast, the least relevant were related to the health benefits of following a vegan diet and the convenience of ordering or preparing vegan food.

Table 20 presents a summary of the perceived drawbacks or cons in relation to adopting a vegan diet, shedding light on individuals' concerns and reservations.

Table 20. Mean and standard deviation of cons

Category	Variables	Mean	S.D.
Health concerns	There is not enough protein in vegan meals.	3.26	1.88
	Vegan diet is not healthy for children.	3.73	1.60
	Vegan food is unnatural and processed.	3.62	1.39
	I wouldn't get enough energy.	3.23	1.20
	I lack information on how to follow vegan diet.	3.17	1.17
Convenience & financial concerns	I lack the right cooking skills to prepare vegan meals.	3.56	1.37
	I don't know what to eat instead of lots of meat.	3.30	1.24
	Vegan meals are not available in my shop, canteen or at home.	3.38	1.29
	Vegan meals are not or hardly available when I eat out.	3.46	1.56
	It takes too long to prepare vegan meals.	3.09	1.29
	It is inconvenient.	2.89	1.17
	I would have to go grocery shopping often.	3.12	1.28
	Eating vegan would be too expensive.	2.48	1.19
	I would (or do) miss eating meat.	2.35	1.24
Taste concerns	Vegan diet would not be filling enough.	2.74	1.06
	It would not be tasty enough.	2.78	1.11
	Vegan food is disgusting.	2.95	1.05
Ethical concerns	Following a vegan diet is not necessarily helping the environment.	2.83	1.57
	Following a vegan diet will not decrease world hunger.	2.82	1.70
	Following a vegan diet will not help animal welfare.	2.91	1.64
Social concerns	By following a vegan diet, I might be stigmatized.	3.17	1.46
	I may not be able to participate in meals because there is no vegan food.	3.08	1.47
	I might have no one to share vegan meals with.	3.32	1.24
	My family/partner won't eat vegan meals.	3.32	1.23
	I don't want people to think I'm strange or a hippy.	3.10	1.22
	I will not find a partner who follows vegan diet.	3.00	1.33
	It might be difficult for my partner to prepare vegan food for me.	3.32	1.24

Likert scales: 1: Strongly disagree; 2: Disagree; 3: Unsure/neutral; 4. Agree; 5: Strongly agree.

When considering the most relevant drawbacks, the lack of comfort of a vegan diet and the difficulty of social inclusion are notable concerns. In contrast, some perceived drawbacks seem less relevant in the decision-making process. These include taste preferences and economic concerns.

Finally, regarding the self-efficacy construct, we found that all three items received a similar rating, close to a value of 3 on the 5-point Likert scale. However, the highest mean value was related to the perceived ability to follow the vegan diet in the future, while perceived self-control received the lowest mean value (see Table 21).

Table 21. Mean and standard deviation of self-efficacy

Variables	Mean	S.D.
How much personal control, if any, do you feel you have on eating a vegan diet in the future?	2.71	1.27
To what extent, if any, do you see yourself as capable of following a vegan diet in the future?	3.05	1.11
How easy or difficult do you think it would be to follow a vegan diet in the future?	2.95	1.37

Likert scales: 1: Strongly disagree; 2: Disagree; 3: Unsure/neutral; 4. Agree; 5: Strongly agree.

3.5.2 Principal Component Analysis

3.5.2.1 Pros and conss of adopting a vegan diet

To improve our understanding and analysis of the pros and cons, we conducted two different Principal Component Analyses (PCA): one focusing on the pros and the other on the cons.

For the pros (see Table 22), PCA revealed three components with eigenvalues greater than 1.0, collectively accounting for 87.28% of the variance. All the commonalities were over 0.75, except for the one regarding the variable “By following a vegan diet, I appear more "trendy" to my Friends.”

Table 22. Classification of pros variables according to the explained variance

Component	Initial eigenvalues			Squared loading sums			Rotated squared loading sums		
	Total	%Variance	%Cumulated	Total	%Variance	%Cumulated	Total	%Variance	%Cumulated
1	12.12	67.34	67.34	12.12	67.34	67.34	9.96	55.33	55.33
2	2.57	14.28	81.62	2.57	14.28	81.62	4.10	22.76	78.09
3	1.02	5.66	87.28	1.02	5.66	87.28	1.65	9.19	87.28

Table 23 shows the loadings of the rotated component matrix. Results indicate that the three retained components represent an excellent reproduction of the information provided by the 18 pros variables measured.

Table 23. Classification of pros through Principal Component Analysis (PCA) - rotated matrix

PROS	Component		
	1	2	3
Following a vegan diet prevents disease in general.	0.94		
By following a vegan diet, I stay healthy.	0.93		
By following a vegan diet, I have plenty of energy.	0.93		
By following a vegan diet, I eat a vast variety of foods.	0.92		
Following a vegan diet saves time.	0.91		
Following a vegan diet helps me to control my weight.	0.90		
By following a vegan diet, I eat a more "natural" diet.	0.88		
By following a vegan diet, I have fewer storage problems	0.87		
By following a vegan diet, I am more content with myself	0.86		
By following a vegan diet, I eat lots of vitamins and minerals.	0.86		
Vegan foods are tasty.	0.78	0.41	
By following a vegan diet, I have a better quality of life.	0.74		0.58
Vegan foods are easy to replace.	0.69	0.56	
Following a vegan diet rescues animals from being slaughtered.		-0.96	
Following it helps the environment.		-0.85	
Following a vegan diet will decrease world hunger.		-0.83	
By following a vegan diet, I appear more "trendy" to my friends		-0.68	
Following a vegan diet saves money.			0.94

The first component, which we call the "Wellness Motivator", is closely related to the health and convenience factors perceived by the individual. The second component refers to variables related to social and altruistic motives, which has led us to label it as an (negative) "Eco-Ethical Motivator". Finally, the variables with the highest loadings in the last component are related to the perception that a vegan diet allows them to save money, so this third component has been named "Economical Motivator".

When examining the three factors and their respective variables, it becomes visible that the first and third factors reflect more self-centered or egoistic motivations. In contrast, the second factor reflects a more altruistic stance by focusing on items related to the well-being of other entities beyond the subject. Furthermore, the loadings of the second component are opposite (negative) to those of the first and third components, suggesting that individuals who score high on the first and third components tend to score low on the second component. This result

is in line with the correlation of the corresponding variables (not shown for simplicity, but available upon request from the authors) and indicates that people's perceptions of the benefits of veganism are quite polarized, between, what we might say, more self-centric and more altruistic reasons. To have a more intuitive view of the second component (negatively related to eco-ethical variables), we multiply by -1 the corresponding component scores for further analyses to have them in positive way.

Regarding the perceived drawbacks, the Principal Component Analysis (PCA) showed three components with eigenvalues greater than 1.0, which together accounted for 91.15% of the variance (Table 24). All common items were greater than 0.74, except for "Vegan diet is not healthy for children".

Table 24. Classification of cons variables through Principal Component Analysis (PCA)-explained variance

Component	Initial eigenvalues			Squared loading sums			Rotated squared loading sums		
	Total	% Variance	% Cumulated	Total	% Variance	% Cumulated	Total	% Variance	% Cumulated
1	18.63	68.99	68.99	18.63	68.99	68.90	9.51	35.22	35.22
2	4,30	15.94	84.93	4.30	15.94	84.94	7.86	29.13	64.35
3	1.68	6.21	91.15	1.68	6.21	91.15	7.24	26.80	91.15

The rotated component matrix shows the loadings in Table 25. These results indicate that the three retained components represent an excellent reproduction of the information provided by the 27 perceived drawbacks variables.

The principal components score for each respondent was also computed similarly as in the previous case. Unlike the pros, this time the sign for all the loadings was positive, indicating that people tend to signal all the cons in the same direction. However, the analysis of loading in the rotated matrix gives a less clean data structure than the one reached for pros, as components 1 and 3 have significant cross-loadings.

The first component was labelled "Practical Barriers," which encompasses tangible and material constraints that make behavior change seem costly and inaccessible. The second component was labelled “Ethical-Sensorial Barriers," as it reflects elements related to the fact that following a vegan diet may not help the environment, animal suffering or hunger in the world and elements referring to taste of vegan food. Finally, the third component, which we

named it "Social Barriers," mainly refers to difficulties and worries about how the change in diet might affect social life and romantic relationships.

Table 25. Simplification of cons variables through Principal Component Analysis (PCA) -rotated matrix

Cons	Component		
	1	2	3
I would have to go grocery shopping often.	0.94		
It is inconvenient	0.92		
Vegan meals are not or hardly available when I eat out.	0.88		
It takes too long to prepare vegan meals.	0.87		0.42
I lack information on how to follow vegan diet.	0.84		0.50
Vegan meals are not available in my shop, canteen or at home.	0.83		
I lack the right cooking skills to prepare vegan meals.	0.83		
I wouldn't get enough energy.	0.82		0.50
I don't know what to eat instead of lots of meat.	0.80		0.50
Eating vegan would be too expensive.	0.70	0.59	
Following a vegan diet is not necessarily helping the environment.		0.96	
Following a vegan diet will not help animal welfare.		0.95	
I would (or do) miss eating meat.		0.94	
Following a vegan diet will not decrease world hunger.		0.93	
Vegan diet would not be filling enough.		0.88	
It would not be tasty enough.		0.82	
Vegan food is disgusting.		0.78	
By following vegan diet, I might be stigmatized.		0.78	0.50
My family/partner won't eat vegan meals.	0.43		0.83
It might be difficult for my partner to prepare vegan food for me.	0.44		0.82
I might have no one to share vegan meals with.	0.49		0.82
I may not be able to participate in meals because there is no vegan food.			0.80
I don't want people to think I'm strange or a hippy.	0.57		0.76
I will not find a partner who follows vegan diet.	0.58		0.75
Vegan diet is not healthy for children.			0.74
There is not enough protein in vegan meals.	0.46	0.43	0.66
Vegan food is unnatural and processed.	0.58		0.63

3.5.3 ANCOVA and additional analyses

3.5.3.1 Comparison of decisional balance and self-efficacy across the stages of change to veganism

As in the previous section, to examine if the pros and cons were different according to the different stages in the transition process towards veganism, we conducted a series of Quade's (1967) non-parametric ANCOVA analyses on each of the pros and cons components to answer our first hypothesis, controlling for the sociodemographic variables (gender, age, employment,

and partner relationship). Initial analyses revealed significant differences between the different stages of change (see Table 26) in all the pros and cons components, with a significance level of p <.001 in all cases.

Table 26. Comparison of decisional balance factors and self-efficacy across different stages of change. Non-parametric ANCOVA results

	Pros			Cons			Self-efficacy
	Wellness	Eco-Ethical	Economical	Practical	Ethical-sensorial	Social	
F	180.16	45.10	51.8	449.27	73.48	107.4	258.35
DoF	9	9	9	9	9	9	9
P	<.001	<.001	<.001	<.001	<.001	<.001	<.001

DoF: Degrees of Freedom

This finding supports our initial hypothesis (H1). To identify differences and similarities in motivators and barriers across the stages, Mann-Whitney two-by-two tests were employed. The results obtained from these comparison tests are clear and consistent, showing a distinction in the motivational factors and barriers perceived by individuals at different stages of their change process.

However, it is important to note that a few two-by-two comparisons did not result in the rejection of equality for some factors (see Table 27). Our results indicate significant differences in the pros and cons components between the **stages of adherence** to a vegan diet. The *action* and *maintenance* stages show statistical differences in the eco-ethical, practical, and ethical-sensory components. We also observed significant differences in all components between *action* and *termination.* Similarly, *maintenance* and *termination* show significant differences in the economic, eco-ethical, ethical-sensory, and social components. Lastly, the *precontemplation*, *contemplation*, and *preparation* stages also show significant differences in all pros and cons components. The results are similar for the **avoidance stages** (*disengagement, rejection, hesitation, and relapse*), where the data show significant differences in all components. These results provide further support for hypothesis H1.

Table 27. Mann-Whitney analyses. Variables and stages where equality is not rejected.

Stages	PC	CN	DE	PR	RJ	AC	HS	MT	RL	TR
PC										
CN										
DE										
PR										
RJ										
AC					Ethical-Sensorial, Economical					
HS										
MT				Wellness	Social, Eco-Ethical, Economical	Social, Wellness, Economical	Ethical-Sensorial, Economical			
RL										
TR		Ethical-Sensorial						Social Wellness		

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PR: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

To better describe each of the phases in relation to the levels of the pros and cons components, we present the means for each factor and stage in Table 28.

Table 28. Mean scores for pros and cons components across stages.

	Pros			Cons		
Stages	**Wellness**	**Eco-Ethical**	**Economical**	**Practical**	**Ethical-Sensorial**	**Social**
PC	-0.64	0.59	-1.06	0.57	1.24	0.09
CN	0.39	-0.86	-0.02	0.53	-0.18	-1.35
DE	-0.66	0.46	-0.98	0.56	1.23	0.11
PR	0.98	0.39	0.58	-0.32	-0.60	-048
RJ	-1.17	0.48	0.65	1.14	-0.69	0..83
AC	1.47	0.45	0.64	-1.52	-0.87	-0.63
HS	-0.30	-0.88	0.21	-1.34	0.40	1.24
MT	1.11	-0.34	-0.05	-0.89	0.45	0.28
RL	0.56	-1.26	0.72	-1.69	-0.32	0.15
TR	1.44	0.41	-0.81	-0.84	-0.45	-0.81

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PR: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

Focusing first on **the stages of adherence** and pros, we observe that individuals in the *precontemplation* stage report the highest levels in the eco-ethical component, but very low

levels in the wellness and economic components. On the cons side, lack of practicality and sensory-ethical issues are the main barriers. Thus, it seems that people consider following a vegan diet primarily for altruistic reasons. However, the lack of convenience with this diet may be the main barrier to following it.

In the *contemplation* stage, however, on the pros, the scores on the wellness component are high, but low on the eco-ethical and close to average on the economic component. On the cons, practical barriers are high, ethical-sensory barriers are close to average, whereas social barriers are low. Thus, at this stage, the main facilitator for individuals to move on are health-related reasons and the main barrier is related to lack of convenience.

The *preparation stage* is characterized by scores clearly over the mean in all the pros components, while values clearly below the mean for all the cons components. Accordingly, individuals at this stage see clear advantages and little barriers in all the aspects of becoming vegan, thus, according to the definition of the stage, the individual is highly motivated to go ahead in the journey towards becoming vegan, into the *action* stage. The characteristics of this stage are like the ones in the previous stage in reference to the pros and cons, but even with higher scores in all the enabling components and lower in barriers, indicating a re-affirmation of the individual to go ahead to the *maintenance* stage. At this stage, scores for the wellness component remain very high, but scores on the eco-ethical and economic components are under the mean and on the mean, respectively. On the side of the cons, the lack of practicality is not a barrier, as the corresponding score is well negative. However, people at this stage start perceiving that a vegan diet is not that ethical and tasty, and may involve difficult social inclusion situations, as per the scores in the cons components. Accordingly, this stage involves certain difficulties in keeping vegan and, thus, transitioning to the termination stage. This may explain why some people move to relapse stage.

At the *termination* stag**e**, scores for the wellness and eco-ethical components are positive, but negative for the economic one, indicating that people being vegan for a longer time may find lower “financial” benefits in being vegan. However, individuals do not perceive big barriers, as the scores for all the cons components are well negative.

Regarding the **avoidance stages**, our results showed how the different stages of exit from the vegan path present significant differences in all the pros and cons components, showing that

avoiding the pathway to become vegan has different reasons depending on the phase where this happens. These results offer additional support to H1.

In the *disengagement stage*, the perception of low wellness and economic motivators stands out despite high levels of eco-ethical facilitators. Individuals at this stage also perceive significant practical and ethical-sensorial barriers, indicating that eco-ethical benefits are insufficient to outweigh perceived difficulties, thus hindering progress towards veganism. During the *rejection stage*, individuals recognize high eco-ethical and economic benefits but experience very low wellness, alongside substantial practical and social barriers. In this context, ego-centric factors dominate, deterring individuals from the vegan path. At the *hesitation stage*, low perceived wellness, and eco-ethical benefits contrast with high ethical, taste, and social barriers, suggesting that altruistic and social factors are the main obstacles to adopting veganism. Finally, in the *relapse stage*, despite high wellness and economic benefits and low practical and taste barriers, the lack of eco-ethical benefits and significant social barriers facilitate departure from the vegan journey.

As for H2, which hypothesizes that people in the **adherence stages** have significantly higher levels of benefits than those in the avoidance stages, we find that this is clear for the wellness component, but not so clear for the other benefits. Consequently, our result does not fully confirm H2[9].

A similar analysis was conducted to test H3, according to which people in the avoidance stages have significantly higher levels of perceived inconvenience than those in the avoidance stage. However, as can be seen from Table 28, these differences are not clear for any of the barriers. Therefore, the data do not support H3.

3.5.3.2 Comparison of self-efficacy across the stages of change to veganism

We used the same approach to examine H4, which suggests that people's self-efficacy (or beliefs in their ability to change) varies across different stages of change. Our non-parametric ANCOVA test validated this hypothesis, showing significant differences ($F(9,706) = 258.354$; $p < 0.001$), in line with H4. To delve deeper into how these stages differ, we conducted pairwise, or two-by-two, comparisons using the Mann-Whitney test. Our results indicated that the *hesitation* and *contemplation* ($p=0.955$) and *maintenance* and *preparation* ($p=0.154$) stages

[9] As stages are different in most of the components two-by-two, grouping all the stages into two categories to conduct a Mann-Whitney test was considered little meaningful.

were the only pairs that did not show statistically significant differences (or did not reject the null hypothesis of equality between the groups). Thus, these results strongly support H4.

To investigate H5, we examined the average self-efficacy scores across different stages, with the findings detailed in Table 29. H5 posited that individuals in the **adherence** stages would exhibit higher self-efficacy levels compared to those in the **avoidance** stages. Our analysis largely supports this hypothesis, except for the *relapse* stage. Interestingly, self-efficacy peaks during *relapse*, indicating that deciding to leave the vegan diet, especially after fully adopting it, can be a difficult decision that requires a high level of self-efficacy and confidence to achieve.

Table 29. Mean scores of self-efficacy variable across stages

Stages	**Self-efficacy**
PC (Precontemplation)	2.00
CN (Contemplation)	3.29
DE (Disengagement)	1.98
PR (Preparation)	3.33
RJ (Rejection)	1.53
AC (Action)	4.92
HS (Hesitation)	2.83
MT (Maintenance)	3.70
RL (Relapse)	5.00
TR (Termination)	4.76

3.6 Discussion

This study has presented a comprehensive and detailed quantitative description and comparison of the pros and cons and self-efficacy associated with following a vegan diet, viewing this behavioral change as a gradual and dynamic process that recognizes the existence of several discernible stages along the corresponding transformative journey. Going beyond previous studies, this research offers a more granular examination of the motivators and barriers in the "vegan journey", revealing that these do not affect the individual in the same way at each stage. The level of detail presented provides a comprehensive view of the challenges individuals face at each stage and the specific facilitators that can help them move forward. Indeed, the main hypothesis was that motivators, barriers, and self-efficacy vary by stage of change, a claim that we have confirmed empirically. Therefore, our findings enrich the understanding of why people continue or leave the vegan path, filling a gap in the literature that until now suggested

that pros, cons, and self-efficacy might be similar at all stages (Beardsworth & Keil, 1991, 1992; Larsson et al., 2003).

The selection of France as the study population was not arbitrary. This specific context, with its considerable potential for transformative changes in dietary behaviour related to veganism (Véron, 2016; Villette et al., 2022), allows us to delve deeper into how motivations and barriers manifest themselves in a particular cultural setting. The quality and size of our sample, along with the inclusion of novel variables, enrich the validity and applicability of our findings.

Our study shows that individuals evaluate their choices based on various pros and cons. Focusing first on motivations, our analysis reveals a polarization in terms of the factors driving individuals towards a vegan diet. Some are motivated primarily by ego-centric considerations, while others are more motivated by altruistic reasons. Interestingly, few individuals are strongly influenced by both types of motivations at the same time. This distinction is crucial for understanding the spectrum of factors that may encourage the adoption of a vegan diet along the journey. In terms of barriers, we observed a consistent trend among participants, who similarly perceive practical, ethical, taste, and social barriers. This homogeneity in the perception of barriers suggests key areas where interventions could be particularly effective in facilitating change towards veganism.

The analysis of multiple motivations and barriers offers a holistic view of vegan dietary behaviour. In this sense, while various scholars have emphasized the role of perceived healthiness in following a vegan diet (De Groeve et al., 2022; Ghaffari et al., 2022; Williams, 2008; Williams et al., 2023), our study suggests that the corresponding perception are particularly clear to those people in *action*, *maintenance*, and *termination* stages. This perspective is reinforced by Arnaudova et al. (2022), wherein even people in later stages of change in their study placed great importance on valuable nutrients in vegan foods.

Nevertheless, as this study also indicates, people are not driven solely by health motivations. Some people are more receptive to ethical and ecological concerns, especially at the beginning of the journey. This may indicate a shift for some individuals in attitudes and behaviours regarding a vegan diet from food-related issues to more morally related reasons (Salehi et al. 2023, a, b) and suggests that ethical motivators may be the most important reason for deciding to embark on the vegan journey. In this regard, Wyker and Davison (2010) note that individuals who are informed about the ethical and environmental benefits of following a vegan diet show

better self-regulation in adopting this behavior, which reinforces our results suggesting the idea of the importance of these motivators for initiating and following the process.

Among the factors that make it difficult to follow a vegan diet, we found that in early stages people face practical and sensory challenges (i.e. taste, availability), as well as a lack of wellness. In this sense, and in line with past literature (Arnaudova et al. 2022; Graça et al., 2014, 2019) it seems that altering their ingrained perspective that animal-based foods are indispensable for maintaining good health and that a vegan diet may lack essential nutrients may be highly relevant. In addition, there was a prevalence of social barriers in the intermediate (mainly exit or avoidance) stages, including considerations of vegan food choices while still socializing. This was suggested by Salmivaara et al. (2022), who stated that individuals facing social and psychological barriers often attempt to employ different strategies to overcome these barriers (e.g., answering questions from friends and family about veganism through calm, science-based conversations). Conversely, when they have little capacity to carry out these strategies (or perceive that these strategies do not work) they may decide to pursue veganism silently, which could be termed "invisible vegans", or they consume animal foods occasionally to overcome these barriers, or they drop out, as evidenced in our study.

Another relevant finding of our study concerns the formation of subjects' favorable or negative attitudes towards the vegan diet throughout the journey. Specifically, from our examination of the mean scores of pros and cons associated with adopting a vegan diet, it does not follow that individuals in avoidance stages report significantly lower levels of advantages and those in adherence stages demonstrate significantly lower levels of disadvantages. Although this is mainly the case for the components "Wellness Motivator" and "Social Barrier", we cannot extend this conclusion to all components. These results underline the intricate interplay of personal motivations within the journey towards veganism, as elucidated by Menzies et al. (2023). Our results, however, are in line with Arnaudova et al. (2022) who indicate that the factors related to personal well-being become particularly pronounced in the context of individuals adhering to a vegan diet. Additionally, the relevance of the "Social Barrier" component in the avoidance stages could be interpreted as an indication that this barrier is an important main reason for abandoning the vegan diet, especially for those individuals who are not able to improve coping strategies in various social situations, as proposed by Asher and Peters (2020).

In contrast to the pros and cons, our study revealed an interesting pattern in terms of changes in the level of perceived self-efficacy throughout the process. Our data indicate that people's perception tends to increase as they move along the journey, including the relapse avoidance phase. This suggests that leaving the vegan diet path after having followed it for some time is a complex decision that requires considerable self-confidence in their ability to adapt to new food-related situations.

3.6.1 Main contributions

As global interest in veganism continues to grow, both for its health benefits and its positive impact on the environment and animals, it is imperative to understand the underlying dynamics that drive or deter people from adopting and maintaining this lifestyle. Despite the wealth of existing research on the motivations for following a vegan diet, there is a critical need to unravel the complexities of the behavioral change process, especially regarding adherence and avoidance. This study aims to fill that gap, offering a detailed and nuanced view of the stages of transition to and from veganism, with the aim of contributing both theoretically and empirically to the growing body of literature in this field.

From a theoretical perspective, our study makes a significant contribution to behavior change theory by decomposing the transition to a vegan diet into a dynamic and multifaceted process. Thus, we challenge previous monolithic conceptions of the process of adopting a vegan diet, offering a more detailed understanding of its various phases. Specifically, in our research, we shed light on the stages associated with the abandonment of the change process, a dimension that the existing literature has traditionally viewed as a homogeneous and unitary phase, without recognizing its complexity (Prochaska et al., 1994). This simplistic approach has left a crucial phenomenon relatively unexplored in both the theory of motivational change and the study of veganism and vegan diet. In response to this omission, we have identified and examined in detail four distinct phases of abandonment on the path to veganism: *disengagement*, *rejection*, *hesitation*, and *relapse*. Each of these phases reveals unique characteristics, enriching the behavior change model with a more diverse and nuanced understanding of abandonment. This theoretical differentiation challenges the traditional dichotomous categories of "vegan" and "non-vegan" (e.g., Cherry, 2003, 2015; Rosenfeld & Tomiyama, 2019), challenging and expanding existing theories of behavior change. By naming and exploring these phases, we not only add new terms to the vocabulary of behavior change

related to veganism and vegan diet, but also provide a platform for future research that wishes to explore these phases in greater depth or related to other behaviors.

Empirically, we add value to literature in several ways. Firstly, we provide evidence of how motivators, barriers, and self-efficacy, involved in the process of behavioral change towards a vegan diet, act differently depending on the stage of change the individual is at. This overcomes previous research that focused mainly on the distinction between perceived barriers and facilitating factors between those who adhere to vegan diets and those who do not (Lea et al., 2006a, b; Mendes, 2013; Salehi et al., 2020b). Furthermore, we provide an in-depth insight into the complexities underlying the decision to adopt a vegan lifestyle, unveiling the intricate dynamics that influence this process of change.

Second, our study illuminates a more nuanced reality despite the prevailing notion in the literature that the benefits of following a vegan diet operate uniformly across individuals (e.g., Lea et al., 2006a, b). We observe a clear divergence in the pros of a vegan diet, encompassing what we might call more egocentric reasons, such as what we term "Wellness Motivators," and those rooted in altruism, such as "Ethical Motivators." This finding underlines the diversity in individuals' motivations for embracing a vegan diet, challenging the homogeneity often attributed to perceptions and motivations in the existing literature (e.g., Janssen et al., 2016).

In contrast, such logic is not reflected in the cons, where individuals tend to uniformly express resistance across several dimensions. This alignment in signaling barriers suggests a collective consensus regarding the challenges associated with adopting a vegan diet. This nuanced understanding enhances our appreciation of the complexity inherent in individuals' perceptions and motivations in the context of veganism, providing valuable insights for more targeted interventions and tailored strategies aimed at fostering a better understanding of the various dynamics at play in the decision-making process related to vegan dietary choices.

Research indicates that self-efficacy, the belief in one's ability to enact change, significantly influences dietary-related behaviors (Prestwich et al., 2014). In this study's context, the nuanced findings that self-efficacy peaks during the relapse stage offer a compelling insight into the complex psychological processes at play when individuals contemplate reverting from a vegan diet. This peak suggests that even as individuals decide to depart from a diet they had fully adopted, a high self-confidence level is requisite, possibly to overcome the perceived barriers or to manage the cognitive dissonance associated with the shift (Warziski et al., 2008).

Moreover, the differentiation between stages of change aligns with the hypothesis that individuals in adherence stages exhibit higher self-efficacy than those in avoidance stages, as supported by the general literature on dietary self-efficacy (Ochsner et al., 2013). The significant differences in self-efficacy across stages of change underpin the importance of targeted interventions that enhance self-efficacy at critical junctures of dietary behavior change. Such interventions could incorporate strategies like self-monitoring, feedback on performance, and stress management, which have been shown to increase dietary self-efficacy (Prestwich et al., 2014).

Finally, the recognition and empirical investigation of the **stages of adherence** (stages at which consumers progress along the vegan path) and **avoidance** (stages at which consumers stop or relapse in their progress along the vegan path) in our study has shown that there are no clear differences or trends in the levels of motivators and barriers reported by individuals in this regard. In this sense, this work highlights the need to consider that there must be other factors affecting the decision to abandon the "vegan path" that will need to be explored further in the future in relation to why people decide to abandon the vegan transition.

3.6.2 Limitations and future research directions

Our study, while fruitful in its findings, faces several limitations that suggest directions for future research. A primary limitation is the use of cross-sectional data to explore attitudes and perceptions across stages of change towards a vegan diet. This methodology limits our ability to capture the evolution of these aspects in the same individuals over time. Therefore, future research may benefit from longitudinal approaches to trace the progression of subjects through these stages.

Another critical aspect is the sampling methodology. Our study was based on convenience sampling, predominantly of French women, which may restrict the generalizability of the results to a wider population. Gender differences in dietary preferences, especially in meat consumption (Beardsworth & Keil, 1991, 1992; Rosenfeld & Burrow, 2018), underline the need for more diverse samples to extend the applicability of our findings. Therefore, any conclusions drawn from this study should be interpreted with caution, and further research using more representative sampling methods would be necessary to make broader generalizations about the population's behavior change dynamics. Additionally, self-assessment by participants to rate their own stage of change introduces subjective variability

that could influence the accuracy of results. Future research could also improve this by using more objective criteria to determine participants' stages of change.

Finally, we recognize that unexamined factors such as political ideology, religiosity and spirituality may significantly influence the transition to vegan diet. These elements, potentially crucial to understanding the success and pace of the transition, represent limitations in our study and offer a rich vein for future research.

In summary, although this study provides valuable insights into the transition to a vegan diet and the stages of avoidance, its results should be considered preliminary. We encourage future research to delve deeper into the cognitive, emotional, and behavioral aspects of this process, exploring the complex dynamics that influence individuals' decisions to follow or abandon the "vegan path".

3.6.3 Practical implications

It is essential to emphasize that changing eating habits and daily food routines represents a formidable challenge. These changes require a co-evolutionary transformation of social norms, both collective and individual (Welch & Warde, 2015). Consequently, it is imperative to employ effective strategies that facilitate the shift towards a vegan diet, enabling a smoother transition to a healthier, more ethical, and sustainable food system. This involves designing relevant campaigns, articulating targeted messages, and formulating evidence-based policies that promote HES food choices. Our detailed analysis of the determinants that influence individuals' food choices at different stages of adherence (and avoidance) provides valuable information to plan interventions that more effectively facilitate dietary and behavioral transitions, and to equip individuals with the resources and knowledge to overcome the challenges and fully appreciate the benefits of a vegan diet.

In the same vein, in addressing the challenges faced by consumers at different stages of the transition to a vegan diet, it is crucial to design interventions that effectively mitigate the specific barriers identified. According to our results, for consumers in the pre-decision stages (*precontemplation*, *contemplation* and *disengagement*), who constitute the majority percentage of society regarding the vegan diet, increasing the health and sensory aspects of vegan foods, along with greater practicality and more accessible prices, is key. At stages marked by negative wellness perceptions, such as *disengagement*, strategic health communication that highlights

the benefits of plant-based nutrition can positively change attitudes (Carfora & Catellani, 2022). For example, public outreach campaigns and the media play a crucial role in improving those perceptions towards veganism by emphasizing that animal-based foods are not essential for maintaining good health, as a vegan diet provides essential nutrients (Sanford & Lorimer, 2022; Zur & Klöckner, 2014).

Additionally, vegan food retailers and producers might play a vital role in this process by ensuring the accessibility of vegan food products, offering practical guidance on how to incorporate vegan options into daily meals, and providing culinary and nutritional education (Arnaudova et al., 2022; Parkin & Attwood, 2022; Rogerson, 2017). By increasing the variety of vegan products available in markets and shops, and by making prices more affordable, they can help consumers overcome the perception that vegan products are financially unaffordable.

Our findings, in line with previous research, show that individuals, especially in the *precontemplation* and *rejection* stages, often face difficulties with *self-efficacy*, doubting their ability to follow a new diet (Helledie, 2014; Hirschler, 2008). To counter this, educational interventions that introduce the principles of veganism gradually and celebrate small dietary changes can be effective (Kulkami & Ghate, 2023). Also, challenges related to practicality, present from preparation to completion stage, can be mitigated through hands-on culinary workshops and the introduction of user-friendly vegan products, bridging the gap in consumer knowledge and accessibility to vegan options (Amiot et al., 2018; Williams et al., 2023). In addition, sensory-ethical and social aspects, which are particularly deficient in the rejection and contemplation stages respectively, can be improved through sensory marketing strategies and the promotion of "vegan-friendly" social environments that support the process of vegan adoption (Bailey & Harper, 2015; Van Riemsdijk et al., 2017). These stage-specific strategies, informed by consumer research and dietary transition theory, aim not only to facilitate the transition to veganism, but also to ensure its long-term adoption (Aberle et al., 2022; Arnaudova et al., 2022).

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CHAPTER 4. Conclusions

This chapter provides a concise yet comprehensive overview of the thesis-as-a-whole research contributions, shedding light on the novel facets of our study and suggesting directions for future academic inquiry, particularly in consumer behavior. This is followed by a presentation of the limitations, and we provide a summary of practical implications. For detailed contributions, limitations and implications of each research, the reader should go to the corresponding chapter.

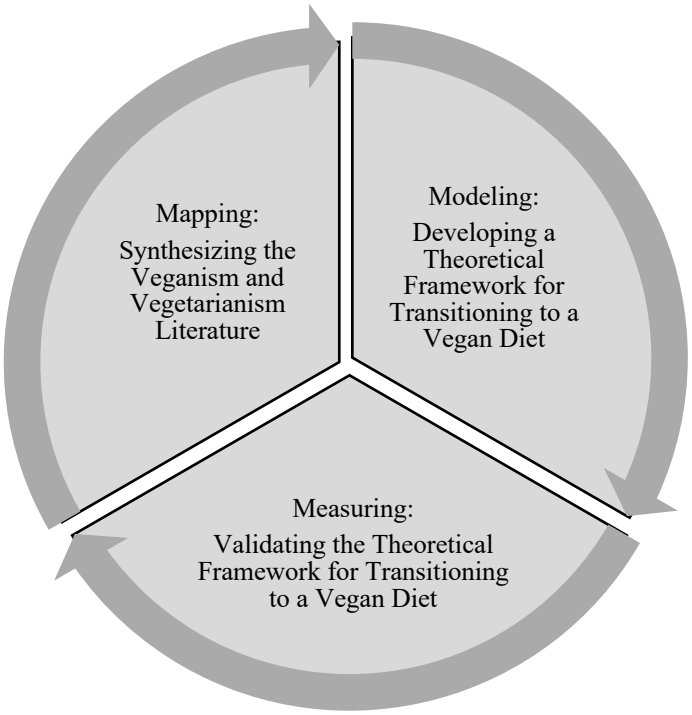

Figure 17. Mapping, Modeling, and Measuring (3Ms) the transition to a vegan diet

4.1 Introduction

In the contemporary academic landscape, it is crucial to situate inquiries into human life within a global framework that extends beyond human society, incorporating broader dimensions encompassing other species and environmental sustainability concerns (Amiot et al., 2018; Bertuzzi, 2020; Besson et al., 2020; Bolderdijk & Cornelissen, 2022; Sandhu et al., 202). The interplay between human well-being, the welfare of diverse species, the vitality of ecosystems and the sustainability of our planet gains particular significance in this era. The practice of raising animals for human consumption emerges as a central driver of these concerns. Current research underscores the urgent need for a transformation in dietary choices, as a way to mitigate the problems mentioned. However, the intricate nature of dietary change, particularly in the context of adopting a vegan diet explored in this thesis, often makes the transition daunting and sometimes inaccessible (Bryant et al., 2022; Laakso et al., 2022; Nevalainen et al., 2023).

Research concerning human health, animal ethics, and ecological sustainability are interconnected within this complex and interdependent web of global phenomena (Aavik & Velgan, 2021). In recent decades, behavioral and social science literature has substantially expanded, examining the significance of incorporating dietary transformation related to HES innovative solutions within the consumer behavior realm (e.g., Graça et al., 2019; Nevalainen et al., 2023). This study addresses a relatively unexplored element that could play a significant role in the HES innovative solutions: following a vegan lifestyle. While previous research has made valuable contributions to theoretical and empirical insights concerning the determinants of veganism adoption, it is essential to recognize certain limitations within these approaches, particularly in theoretical insights. Despite the growing interest and support for vegan studies in recent decades, it remains a relatively novel phenomenon that warrants scholarly investigation (Rosenfeld, 2018; Ruby, 2012; Wyker & Davison, 2010). Consequently, the main objective of this thesis was to improve current knowledge of the transition to vegan diet to help consumers face the challenges of the transition and, ultimately, increase the number of individuals embracing this diet.

To achieve this objective, we proposed to investigate the following main research questions: *What do we currently know about the transition to vegan diet? How does the transition to vegan diet take place? Are the main determinants of the adoption of a vegan diet the same or different at all stages of the transition?*

To address our research questions, we employed a multidimensional and sequential approach to thoroughly examine the transition towards a vegan diet. Initially, we embarked on "**mapping"** the current landscape of research through a systematic literature review. This step was crucial for identifying the current state of knowledge and pinpointing existing gaps concerning the journey to adopting a vegan diet. By meticulously cataloging and analyzing existing studies, we established a comprehensive foundation for our investigation, setting the stage for further exploration.

Subsequently, drawing upon qualitative data and employing an abductive reasoning approach, we proceeded by "**modeling"** the dietary transition process. We developed a process-oriented, dynamic conceptual model that delineates the various stages individuals navigate through as they modify their behavior towards a vegan diet. This model vividly illustrates how individuals progress through these stages, influenced by a decisional balance weighing the pros and cons of continuing their journey, as well as self-efficacy, or the belief in their capacity to effect this change. This phase of our research offers a granular view of the transition, highlighting the fluid nature of behavior change and the critical factors that propel or hinder progression.

In the final phase of our study, we utilized quantitative data to empirically investigate on important constructs of the conceptual model established in the previous step. Adopting a positivist approach, we focused on "**measuring"** decisional balance and self-efficacy across the transition journey. Our aim was to explore how these variables impact the various stages of the transition process, thereby providing nuanced insights into their effects. This quantitative analysis allows us to not only validate the theoretical constructs of our model but also to refine our understanding of how decisional balance and self-efficacy dynamically interact with each stage of the vegan transition journey.

This comprehensive approach, combining systematic review, with qualitative insights and quantitative analysis, has significantly advanced our understanding of the dietary transition process. By exploring both the theoretical underpinnings and the practical determinants of behavior change, this research contributes to a more robust framework for understanding and facilitating the adoption of a vegan diet.

4.2 Contributions

Our thesis heralds significant theoretical and empirical advancements in the field of dietary behavior change, particularly in the context of adopting a vegan lifestyle. From a **theoretical standpoint**, it profoundly enriches our comprehension of behavior change by deconstructing the transition towards a vegan lifestyle into a dynamic, intricate series of steps. With the demand for more comprehensive theoretical frameworks in the realm of behavior change (Atkins et al., 2017; Diogo & Veiga, 2022; Prochaska & Velicer, 1997), as well as studying veganism through a dynamic point of view, we introduce the Transtheoretical Precaution Adoption Model (TAPM). TAPM represents a novel theoretical breakthrough that provides a detailed analysis of the transition phases, including an innovative focus on the exit phases—critical junctures previously overlooked in research. We identify four distinct "avoidance" stages: *disengagement, rejection, hesitation,* and *relapse*, each characterized by unique attributes and challenges.

This proposed model enriches behavior change theory with a nuanced perspective on dietary transitions, challenging the simplistic binary classification of individuals as "vegan" or "non-vegan" and proposing a more nuanced understanding that appreciates the complexity of the transition process. Our study thus broadens our understanding of the sub-segments within non-vegan and vegan individuals, which has received relatively scant attention in the existing veganism literature. Furthermore, our contribution extends to consumer dietary behaviors, which are infrequently addressed within the Transformative Consumer Research (TCR) literature (Diogo & Veiga, 2022). By integrating insights from vegan studies with those from behavior change, we offer novel perspectives on mitigating the current food industry crisis, building upon the foundational work of scholars such as Mendes (2013).

By developing the TAPM model and emphasizing the importance of exit phases, our study not only introduces new concepts into the vocabulary of behavior change theory but also establishes avoidance stages as key points to understand the transition and to focusing on, in order to help consumers cope with the challenges they encounter. At the same time, these exit stages constitute a foundation for further research to increase current knowledge of the journey to adopt a vegan diet. This model encourages a broader exploration of dietary behavior changes beyond the vegan diet, offering a comprehensive framework for future studies.

Furthermore, our work sheds light on the diverse landscape of quantitative vegan studies outside the medical literature for the first time. It extends the scope of prior research and reveals significant limitations in terminologies, theories, and methodologies that demand additional exploration. Our systematic review enhances the vegan literature by providing a thorough overview, identifying research gaps, and suggesting directions for future investigations. By synthesizing cognitive, behavioral, and social determinants, we offer a systematic map that improves our understanding of the behavioral changes associated with vegan diets.

In line with this, a novel finding of our thesis, coming from our systematic review, was the prevalent confusion between vegetarianism and veganism in existing literature, as both concepts have been largely studied jointly. This lack of clear distinction has muddled the understanding and study of these two distinct dietary practices. Our research, therefore, clarifies this ambiguity, emphasizing the need for academic precision and the benefits such clarity brings to advancing research in both areas.

In light of the little research on the connection between staged models and veganism-related behaviors (Bryant et al., 2022; Culliford & Bradbury, 2020; Graça et al., 2019; Lea & Worsley, 2003; Mendes, 2013; Rothman et al., 2009; Salehi et al., 2020), our thesis makes several **empirical contributions**.

First, we have identified a critical void in the application of theoretical models or frameworks tailored for the study of veganism. This lack has stymied a comprehensive understanding of vegan dietary practices, leaving a gap ripe for the development of theoretical models that can accommodate the complexity and dynamism inherent in vegan dietary transitions. Additionally, our findings underscore a notable deficiency in the recognition of the processual nature of adopting a vegan diet. Traditional perspectives have often treated veganism as a static end-point rather than a dynamic journey marked by various stages of transition. Highlighting this oversight, our research advocates for a paradigm shift towards viewing veganism as a continuum, thereby fostering a more nuanced comprehension of the dietary transformation process.

Second, another innovative aspect of our research is that, to the best of our knowledge, it represents the initial endeavor to empirically assess the significance of additional constructs within the framework of the Transtheoretical Model (TM, Prochaska et al., 1997) concerning adopting a vegan diet. These constructs, which have received relatively limited attention in

prior literature, are revealed to be pivotal in understanding and promoting adherence to veganism.

Third, the analyses of our rich datasets have provided insightful empirical insights. Our first dataset, through a qualitative study, has allowed us to both complement and enhance the theoretical model previously proposed by TM concerning the adoption phases (Mendes, 2013). On the one hand, this study has enriched the model by incorporating insights into the adoption phases, providing a more nuanced understanding of the process. On the other hand, a significant improvement has been the inclusion of avoidance stages, which we have identified as the primary theoretical contribution of this thesis. This addition not only deepens the model's complexity but also addresses a critical aspect of behavior change that had not been thoroughly explored in previous research.

Our second dataset, utilizing a quantitative approach, has enabled us to delve deeper into the different determinants of behavior change across each of the phases of change. For the first time in the literature, as far as the authors know, this thesis has examined constructs associated with the TM model that had been overlooked in the existing literature: decisional balance and self-efficacy. By studying these constructs, we have revealed their pivotal roles in the process of adopting a vegan diet. This investigation sheds light on how individuals weigh the pros and cons of dietary change (decisional balance) and their confidence in their ability to make these changes (self-efficacy). These findings not only contribute to our understanding of the TM and TAPM models but also offer new insights into the mechanisms underlying behavior change, providing valuable information for designing more effective interventions to support individuals in their transition to a vegan diet.

4.3 Limitations and future research avenues

Our thesis has underscored numerous pivotal areas for future exploration in veganism research, while recognizing certain limitations and suggesting potential improvements. In this section, we reflect on the most significant of these limitations.

First, in our attempt to synthesise and better understand the current knowledge on the adoption of veganism, we have focused on quantitative designs and reliance on Web of Science for literature review, which may have narrowed our scope, excluding qualitative and non-empirical studies that could offer broader insights into veganism.

Future studies are encouraged to incorporate diverse research designs and databases to provide a more comprehensive understanding of veganism as both a dietary choice and a broader lifestyle or social movement.

Second, our research on vegan adoption has primarily concentrated on motivational and attitudinal factors, yet these alone do not fully explain behavior change, highlighting the need to explore social determinants and the impact of social networks on veganism adoption in the future. In this vein, exploring the integration of TAPM with other models, such as the Theory of Planned Behavior (TPB, Ajzen, 1991), could provide new insights into the attitude-behavior gap in veganism adoption.

Third, there is a growing global interest in veganism with significant geographical disparities, suggesting a need for international research that considers cultural influences on dietary choices. However, we were not able to study possible cultural influences in the adoption of a vegan diet given that all our data was collected in France.

Also, in future research, it would be interesting to explore new criteria for classifying stages beyond the one proposed by the literature based mainly on the length of time the subject has been practising the behaviour.

Lastly, acknowledging the susceptibility of our dataset to biases and the absence of the processes of change measurement, future research should aim for experimental designs and incorporate comprehensive constructs to capture the nuanced dynamics of veganism adoption more accurately. This approach will enhance the model's utility and contribute to a richer understanding of the factors influencing dietary behavior change.

Notwithstanding, our thesis does not cover all the research gaps identified throughout our study. Therefore, further efforts are necessary to continue expanding our understanding of the transition to a vegan diet and veganism as a whole. As an initiative to offer guidance for future research, Table 30 outlines some gaps in the literature and suggests potential avenues for future investigation.

Table 30. Research gaps and potential future directions for dietary transition studies in VEG field

Gaps	Gaps in the existing literature	Potentiates for future research
Contextual	Studying VEG as a lifestyle or social movement is overlooked, and in the recent decades most studies focused only on dietary and food aspect	· A holistic viewpoint on VEG, considering multiple consumption dimensions (i.e., clothing, beauty products) · Extending focus to relatively unexplored activism, and political dimensions of VEG in consumer research
	Research on VEG adoption has focused on constructs and variables related to motivations and attitudes	· Analyzing and comparing the social determinants of VEG adherence
Theoretical	The possibility of including unexplored determinants in the TAPM	· Implementing theoretical frameworks in research designs · Future stage theories could implement moderating factors such as habits, or motivation to enhance the conceptualization of veganism transition · Integrating other behavior change theories with TAPM framework
Methodological	Expanding diversity of samples in vegan studies	· Incorporating sampling in less explored countries · Considering inclusion of all genders in the sampling
	Improve our systematic review	· Integrative or meta-analytical analyses through specific determinants of veganism transition · Expanding the future systematic reviews on veganism to other databases such as Scopus · Extending the inclusion criteria of systematic reviews on veganism to qualitative and non-empirical methodologies
	Improve the quality of data	· Conducting interviews with people in different stages of change · Considering longitudinal studies to observe how consumer pass through different stages · Following mix-method designs to overcome limitations of memory constraint
	Explore the potential challenges of confounding variables	· Conducting experimental designs in the field stages of change in veganism transition · Employing rigorous data collection to mitigate the influence of these potential biases

4.3 Practical implications

It is essential to emphasize that changing dietary habits and daily routines is a formidable challenge. Such changes require a coevolutionary transformation in social norms, encompassing collective and individual norms (Welche & Warde, 2015). Consequently, it is imperative to employ effective strategies that facilitate a shift toward following a vegan diet,

enabling a smoother transition to a healthier, ethical, and sustainable food system and design of relevant campaigns, the articulation of targeted messages, and the formulation of evidence-based policies that advocate Healthy, Ethical, and Sustainable (HES) dietary choices. Our detailed analysis of the determinants that shape individuals' dietary choices across different stages of adherence offers very valuable information to plan interventions towards more effective facilitation of dietary and behavioral transitions and to equip individuals with the relevant resources and knowledge to overcome challenges and fully appreciate the inherent benefits of a vegan diet. We summarized these suggestions in Table 31, taking into account that the classification of people in the different stages of change is based on the decisional point, motivation, and action to emphasize the relevance of proposed strategies.

Table 31. Practical implication tailored to different stages of TAPM dietary transition to veganism

Stages	Decision-making	Motivation	Action	Invention strategy	Proposed solutions	Sectors	Theoretical framework
PC	Pre-Descio-nal	Not motivated	Non-active	Consciousness-raising: Defining and explaining the veganism phenomena	Public outreach campaigns, educational programs introducing vegan alternatives, and informational media	Government bodies, NGOs, and educational institutions.	Norm Activation Theory (Schwartz, 1977)
CN	Decisio-nal point	Not motivated	Non-active	Consciousness-raising toward pros and cons of veganism	Informational messaging regarding the impacts of following vegan diet	Academic institutes, Marketing agencies	Ethical Decision-Making Model (Jones, 1991)
DE	Pre-descion-al	Not motivated	Non-active	Consciousness-raising toward ethical aspects of veganism	Imaged-based messaging regarding the ethical and ecological aspects of following a vegan diet	Academic institutes, Marketing agencies	Moral disengagement (Bandura, 2017); Cognitive dissonance model (Bénabou & Tirole, 2002)
PR	Post-decision	Motivated	Partially active	Educational programs toward practical information; Marketing communications	Accessibility of vegan food products, providing practical guidance on incorporating vegan options	Culinary institutes, Informative websites/applications, MOOC platforms, Vegan food producers, Vegan Events	Temporal Construal Theory (Trope & Liberman, 2003)
RJ	Post-decision	Not motivated	Non-active	Economic policies, marketing	Taxation on animal-based products, economic incentives	Government bodies, Retailers,	The law of similarity (Rozin & Nemeroff, 1990)

Table 31. Practical implication tailored to different stages of TAPM dietary transition to veganism (Continued)

Stages	Decision-making	Motivation	Action	Invention strategy	Proposed solutions	Sectors	Theoretical framework
				communication	on vegan products, vegan product development considering similarities with animal-based counter parts, considering point-of-purchase in marketing of vegan foods	Vegan food producers, Food Science labs	
AC	Post-decision	Motivated	Active	Social support, Marketing communication	Increasing social support, access to medical advice, and vegan options	Medical sector, Vegan food producers, Vegan communities	Temporal Construal Theory (Trope & Liberman, 2003)
HS	Post-decision	Not motivated	Partially active	Supporting networks, Increasing self-efficacy	Enhancing the vegan communities through associations	Vegan communities, Veganism associations,	Unified Model of Vegetarian Identity (UMVI, Rosenfeld & Burrow, 2017, 2018)
MT	Post-decision	Motivated	Active	Social support, Marketing communication	Increasing social support, access to medical advice, and vegan options	Medical sector, Vegan food producers, Vegan communities	Temporal Construal Theory (Trope & Liberman, 2003)
RL	Post-decision	Not motivated	Non-active	Supporting networks, Increasing self-efficacy	Practical workshops or therapy sessions for increasing self-efficacy	Vegan communities, Veganism associations, Psychologists	Relapse prevention theory (Marlatt, 1982)
TR	Post-decision	Motivated	Active	Social support, Marketing communication	Increasing social support, access to medical advice, and vegan options	Medical sector, Vegan food producers, Vegan communities	Temporal Construal Theory (Trope & Liberman, 2003)

PC: Precontemplation; CN: Contemplation; DE: Disengagement; PR: Preparation; RJ: Rejection; AC: Action; HS: Hesitation; MT: Maintenance; RL: Relapse; TR: Termination

Consumers in the pre-decisional stages (precontemplation and disengagement), which constitutes the majority in the context of following a vegan diet, may reinforce social norms that encourage change and a heightened sense of personal responsibility. For individuals in this stage, the critical question pertains to "*Why should I change something?*" (Klöckner, 2015, p. 444). For this group, the consciousness-raising strategy, considering the assumptions of Norm

Activation Theory (Schwartz, 1977), ascribing the increased perceived responsibility will lead to behavioral intention will be helpful. Public outreach campaigns (Sanford & Lorimer, 2022), and informational media can raise awareness toward veganism (Zur & Klöckner, 2014). Promoting a knowledge-based society that encourages the sharing and exchanging of information toward social responsibility related to following a vegan diet holds promise, particularly for this segment. Practical frameworks are established by institutions such as government bodies, Non-Governmental Organizations (NGOs), and educational institutions.

These frameworks may emphasize the importance of dietary change to this group. NGOs can act as intermediaries, bridging the gap between consumers and policymakers by raising awareness about the necessity of dietary change and advocating for policy reforms (Laestadius et al., 2014). It is worth noting that veganism and animal rights campaigns have already demonstrated success in this realm, according to user-generated responses in social media and related organizations' reports (Giakoumelou et al., 2023; Sanford & Lorimer, 2022). Furthermore, veganism can drive comprehensive transformation within educational campaigns, especially in younger generations; concerning that higher intention to follow a vegan diet can be achieved through increased familiarity (Szenderák et al., 2022). While public awareness campaigns might be helpful for both precontemplation and disengagement groups, tailored-based messaging provoking the moralization of veganism, might be more beneficial for people in the disengagement group. Relatedly, studies showed that a novel way of presenting already-known information, which could be renaming animal-based products or overcoming the cognitive dissonance (Bénabou & Tirole, 2002) bias through image or video-based messages concerning animals ‘human-related attributes, has impacted some people to become engaged toward veganism. These proposed solutions also align with the Moral Disengagement Theory (Bandura, 2017).

In the decisional point (contemplation stage), where the focus shifts to identifying alternative behaviors, the key lies in providing support to discover personally fitting alternatives. According to Jones (1991) ethical decision-making model, the ethical decision-making process commences by becoming aware, making decisions, and establishing motivations. Thus, information-based messaging interventions aiming to increase knowledge of veganism's health-related, ethical, and ecological aspects showed promising results for individuals in decision-making (Bertolotti et al., 2020). Moreover, initiatives focused on enhancing food literacy have demonstrated positive outcomes, particularly for non-active consumers who are

not motivated to dietary change might be helpful (Aberle et al., 2022; Fernandez et al., 2020; Kelly & Nash, 2021). In line with to the Temporal Construal Theory (Trope & Liberman, 2003), individuals in the initial decision-making stages start with abstract considerations gradually shifting their focus to specific details as they progress. Thus, for people in the preparation, referred to as the "vegan-to-be" (McDonald, 1998, p.14) stage, who are still gaining experiences toward practicing veganism and are motivated to follow a vegan diet, ensuring the accessibility of vegan food products, providing practical guidance on incorporating vegan options into meals, and offering culinary and nutritional education (Arnaudova et al., 2022; Parkin & Attwood, 2022; Rogerson, 2017). Retail and vegan food production companies assume a vital role in this context. Moreover, vegan events such as "Veggie World" and Massive Open Online Course (MOOC) platforms are vital in increasing access to information and related products.

For concrete implementation, access to practical advice, social support, and vegan products becomes imperative in the action, maintenance, and termination stages. People in these stages are receptive to most proposed practical interventions, particularly the need for tailored education and social communities among the general population. Finally, it is crucial to maintain consistent availability and improve the product attributes of vegan food to guarantee the adequate intake of essential nutrients for these groups. This group is a user of vegan labels, and food guides will help them to maintain their diet. Finally, trained healthcare professionals, such as dietitians, will facilitate practicing veganism in different stages of life.

Finally, for the post-decisional stages that decide not to follow veganism, especially for people in the rejection stage, economic policies and marketing communication may motivate them to choose vegan options or this product because of their attributes. Such indicators might encompass the initiation of higher taxes on animal-based products (Caillavet et al., 2016), and economic incentives on vegan products (Garnett et al., 2021). The utilization of nudging strategies and point-of-purchase interventions holds the potential to reduce the demand for animal-based food products and further stimulate the vegan food market (Ammann et al., 2023; Arnaudova et al., 2022; Graça, 2015, 2016; Hoek et al., 2004; Nguyen et al., 2022). In line with the law of similarity (Rozin & Nemeroff, 1990), even people who refuse to try vegan food may like vegan foods that are like their animal-based counterparts (Adise et al., 2015). Thus, product development is crucial to convincing them to substitute some of their choices. Therefore, when developing and introducing vegan products, critical considerations should include product

marketing, positioning, and distribution (Graça, 2014). A fundamental challenge in product development lies in creating vegan food substitutes that offer palatability, match the nutritional value of animal-based products, and comply with ecological food production guidelines. This transition entails not perceiving vegan alternatives as inferior substitutes but as standalone products, thus highlighting the need for equivalence in taste, nutritional value, and environment-friendly criteria. Marketing of vegan products (Apostolidis & Mcleay, 2016).

4.4 Personal reflections

As long as Man continues to be the ruthless destroyer of lower living beings, he will never know health or peace. For as long as men massacre animals, they will kill each other. Indeed, he who sows the seed of murder and pain cannot reap joy and love.

Pythagoras

Pythagoras‘s philosophical standpoint has significantly influenced my thesis within the Cetis Ph.D. program at Comillas, which began in the 2018-2019 academic year. This thesis serves as a personal interlude for conducting research and designing practical implementation on the ongoing endeavors in promoting Healthy, Ethical, and Sustainable (HES) innovations in the realms of veganism studies. This cyclical journey has enabled my active involvement in the evolving growth of an interdisciplinary and cohesive academic community focused on the scholarly exploration of these fields. It has also prompted me to establish fresh objectives for reshaping how veganism is understood in the academic community and proposing novel theoretical frameworks that enhance future practices imbued with innovative dietary shifts.

The importance of this study lies in its relevance to those examining consumer dietary changes, particularly the transition to veganism. Awareness of HES innovations has remarkably increased, yet challenges such as rising food prices and limited product accessibility affect people's dietary choices and consumption patterns. Now, more than ever, it is imperative for the research community, industry, government bodies, policymakers, and other essential stakeholders to come together and collaborate at various levels to tackle the interconnected challenges stemming from the post-Covid-19 era, rising living costs, and the on-going conversations on the environmental impact of animal agriculture.

Through extensive interviews with numerous participants over recent years and a thorough exploration of the topic's evolution, I have increasingly come to recognize the emergence of a new phenomenological concept within the realm of the modern consumer. This concept

revolves around individuals striving to align their actions with their deeply held values, all while embracing flexibility. This evolving concept can be encapsulated as the transformation of veganism, wherein it shifts from being a matter of identity and status to an ideal state that individuals aim to approach without requiring total commitment as they redefine their identities. This transformation is often referred to as "Veganizing our lifestyle."

Profound transformations in the field of veganism transition, increasingly vital, are occurring in tandem with a surge in social perspectives. This capacity for transformation and this ongoing journey offer a valuable opportunity for self-reflection and pose a substantial intellectual endeavor in comprehending the multifaceted nature of this transition. The insights I have gained in crafting this thesis led me to the realization that we are merely at the initial stages of this transformative process.

This is also an opportune moment for scholarly dialogue and an expression of gratitude to all those dedicated contributors who have been an integral part of this journey over the years. The research endeavor is designed to activate an underexplored theoretical framework within the veganism transition field and the domains of behavior change. This framework holds the potential for broader application across various fields and institutions. These individuals collectively represent a unified voice, their collective experiences equipping them to articulate their concerns and aspirations. They contribute diverse perspectives that advocate for integrating more profound transformative ideologies within the veganism transition sphere. The primary aim of this study on dietary behavior transformation is to bring into focus the significant issues related to public health, ethical and ecological issues, and world hunger within a shared forum where all perspectives can coexist harmoniously. The thesis fundamentally revolves around the mission of raising awareness among consumers, academics, and stakeholders in the veganism transition sphere, with the ultimate aim of reshaping the deeply entrenched dietary system, emphasizing the requirement to consider integrative approaches to make a sustainable change rather that laser focus on one aspect with considering ongoing problems in the food industry.

In recognition of the idea that the modern-day consumer wields more influence than merely making consumption choices, this study underscores the capacity of individuals to effect positive change through their daily decisions. Additionally, it acknowledges that marketing extends beyond mere product promotion; it is a potent tool for shaping a better future.

4.5 References

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APPENDIX

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
1	Adise et al.	2015	USA	Food Quality and Preference	Vgn.*F*	HL-EN-AN-SN	EKIFP	EX
2	Allen et al. I	2000	New Zealand	The Journal of social psychology	Vgt-Vgn.*D*	HL-EN-CL-SN-PL	V	CR
3	Allen et al. II	2000	New Zealand	The Journal of social psychology	Vgt-Vgn-M.*D*	HL-EN-CL-SN-PL	V	CR
4	Amato et al.	2022	Italy	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-EN-AN-CL	AMBND	CR
5	Anderson et al.	2019	USA	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-EN-AN-CL-SN	AVEBF	EX
6	Apostolidis & McLeay	2016	UK	Food Policy	Vgt-Vgn-M-C.*F*	HL-EN-AN-CL-FN-FT	AVP	EXC
7	Apostolidis & McLeay	2019	UK	Food Quality and Preference	Vgt-M.*F*	HL-EN-AN-CL-FN	VP	EXC
8	Arenas-Gaitán et al.	2020	Spain	Sustainability	Vgt-Vgn.*DF*	HL-EN-CL-SN-FN	ABN	CR
9	Aschemann-Witzel & Peschel	2019	Denmark	Food Hydrocolloids	Vgt-Vgn.*F*	HL-EN	AMP	EX
10	Asher & Peters	2020a	USA	Ecology of food and nutrition	Vgt-Vgn-M.*D*	HL-EN-AN-CL-SN-FN-JS	AEBISNDO	CR
11	Asher & Peters	2020b	USA	British Food Journal	Vgt-Vgn-M.*D*	HL-EN-AN-CL-SN	AMEKISNDO	CR
12	Back & Glasgow	1981	USA	Basic and Applied Social Psychology	Vgt.*D*	AN-CL-SN-FN-FT	TN	CR
13	Bacon & Krpan	2018	UK	Appetite	Vgt.*F*	HL-EN-CL-FN	BIP	EXC
14	Bagci & Olgun	2019	Turkey	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL-FN-PL	ABSND	CR
15	Bagci et al. I	2021	Turkey	Group Processes & Intergroup Relations	Vgt-Vgn-M.*D*	HL-EN-AN-FT-PL	AVEBND	CR
16	Bagci et al. II	2021	Turkey	Group Processes & Intergroup Relations	Vgt-Vgn-M.*D*	HL-EN-AN-FT-PL	AVEBND	CR
17	Barnes-Holmes et al.	2010	Ireland	The Psychological Record	Vgt.*F*	HL	AF	EX
18	Barr & Chapman	2002	Canada	Journal of the American	Vgt.*DF*	HL-EN-AN-FT	AB	M-CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
				Dietetic Association				
19	Beardsworth & Bryman	1999	UK	British Food Journal	Vgt-M.*D*	HL-EN-AN-CL-FN-FT	MVB	CR
20	Beardsworth & Bryman	2004	UK	British Food Journal	Vgt-M.*D*	HL-EN-AN	MVB	CR
21	Besson et al. I	2020	France	Ecology of food and nutrition	Vgt-M.*F*	HL-EN-AN-JS	AMKBIP	EX
22	Besson et al. II	2020	France	Ecology of food and nutrition	Vgt-M.*F*	HL-EN-AN-JS	AKBIP	EX
23	Bilewicz et al. I	2011	Poland	European Journal of Social Psychology	Vgt-Vgn-AHR.*DP*	AN	AE	CR
24	Bilewicz et al. II	2011	Poland	European Journal of Social Psychology	Vgt-Vgn-AHR.*DP*	AN	A	CR
25	Bilewicz et al. III	2011	Poland	European Journal of Social Psychology	Vgt-Vgn-AHR.*DP*	AN	AVEF	EX
26	Boaitey & Minegishi	2020	USA	Sustainability	Vgt-Vgn.*F*	HL-AN-CL-SN	AB	CR
27	Bobić et al.	2012	Croatia	Collegium AntroPlogicum	Vgt-Vgn.*D*	HL-EN-AN-FT	MTB	CR
28	Brandner et al.	2022	International	Nutrients	Vgt-Vgn.*DF*	HL-EN	KB	CR
29	Braunsberger & Flamm	2019	USA	Journal of Managerial Issues	Vgn.*P*	HL-EN-AN-CL-SN-FN-FT-PL-JS	MVB	CR
30	Braunsberger et al. I	2021	USA	Sustainability	Vgt-Vgn.*D*	HL-EN-AN-FN-FT-JS	MVEB	CR
31	Braunsberger et al. II	2021	USA	Sustainability	Vgt-Vgn.*D*	HL-EN-AN-FN-FT-JS	MVEB	CR
32	Bresnahan et al. I	2016	USA	Stigma and Health	Vgn.*P*	HL-EN-AN-CL-SN	ABNOF	EX
33	Bresnahan et al. II	2016	USA	Stigma and Health	Vgn.*P*	HL-EN-AN-CL-SN	AEKF	EX
34	Brouwer et al.	2022	USA	Food Quality and Preference	Vgt-Vgn.*P*	HL-EN	AVIN	CR
35	Bryant	2019	UK	Sustainability	Vgt-Vgn.*D*	HL-EN-AN-SN-FN	AIN	CR
36	Bryant & Sanctorum I	2021	Belgium	Appetite	Vgt-Vgn-M-C.*F*	HL-AN	AMEIP	CR
37	Bryant & Sanctorum II	2021	Belgium	Appetite	Vgt-Vgn-M-C.*F*	HL-AN	AMEBIP	CR
38	Cardello et al.	2022	New Zealand	Food Quality and Preference	Vgt-Vgn.*F*	HL-EN-SN	AEKBP	EX

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
39	Carlsson et al.	2022	Sweden	Ecological Economics	Vgt-Vgn-M-C.*F*	EN-FN	ABIP	EXC
40	Chen	2022	Taiwan	Nutrients	Vgt-Vgn-M-C.*F*	EN-SN-FN-FT	AMEISO	CR
41	Chung et al.	2022	Taiwan	Journal of Food Science	Vgt-Vgn.*F*	HL-EN-AN-SN-FN-FT	EP	EX
42	Clark & Bogdan	2019	Canada	Journal of food products marketing	Vgt-Vgn.*DF*	HL-EN-AN-SN-FN	MBIDFP	CR
43	Cliceri et al.	2018	Italy	Food Quality and Preference	Vgt-Vgn.*D*	HL-EN-AN-SN	ATEBF	EX
44	Cliceri et al.	2019	Italy	Food Quality and Preference	Vgt-Vgn.*F*	HL-SN	ATF	EX
45	Cooper et al.	1985	USA	Psychosom-atics	Vgt.*D*	HL-AN-CL-SN-FT-JS	AMTBNF	CR
46	Cramer et al.	2017	USA	Journal of nutrition education and behavior	Vgt-Vgn.*D*	HL-EN-AN-CL-FT	MBF	CR
47	Crimarco et al.	2020	USA	Food Quality and Preference	Vgn.*DF*	HL-EN-AN-CL-SN-FN-JS	AEB	EX
48	Crnic	2013	Slovenia	Collegium Antroplogi-cum	Vgt-Vgn.*DP*	HL-EN-AN-CL-SN-FT	AVB	CR
49	D'Souza et al.	2022	Australia	Journal of retailing and consumer services	Vgt-Vgn-AHR.*D*	HL-EN-AN	AMEKISDO	CR
50	Davitt et al.	2021	USA	Journal of nutrition education and behavior	Vgt-Vgn-M.*DF*	HL-EN-AN	AMVKBP	CR
51	De Groeve et al.	2021	UK	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN	AVTBND	EX
52	De Groeve et al. I	2022	UK	Appetite	Vgn.*D*	HL-EN-AN-JS	AMTEBIN	EX
53	De Groeve et al. II	2022	UK	Appetite	Vgn.*D*	HL-EN-AN-JS	AMTBIN	EX
54	De Houwer & De Bruycker	2007	Belgium	International Journal of Psychology	Vgt-M.*F*	SN	AP	EX
55	de Visser et al.	2021	Internati onal	Appetite	Vgt-Vgn-M-C.*DF*	HL-EN-AN	ABF	M-CR
56	Díaz	2016	Spain	Anthrozoös	Vgt-Vgn-AHR.*P*	HL-AN-FT-PL	ABI	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
57	Díaz	2017	Spain	Journal of consumer ethics	Vgt-Vgn-AHR.*P*	AN-CL-SN-PL	ABIO	CR
58	Dietz et al.	1995	USA	Rural Sociology	Vgt.*D*	HL-EN-AN-CL-FN-JS	V	CR
59	Dodd et al.	2019	Internati onal	Plos One	Vgt-Vgn-AHR.*F*	HL-EN-AN-FN	MB	CR
60	Dodd et al.	2022	Internati onal	Research in Veterinary Science	Vgt-Vgn-AHR.*DP*	AN	BP	CR
61	Duchene & Jackson	2019	Canada	Society & Animals	Vgt-Vgn-M.*D*	HL-EN-AN	KBIF	EX
62	Dyett et al.	2013	USA	Appetite	Vgn.*D*	HL-EN-AN-CL-FT	MB	CR
63	Earle & Hodson	2017	Internati onal	Personality and Individual Differences	Vgt-M.*D*	CL-SN	AEBN	CR
64	Eckart et al.	2010	USA	Florida Public Health Review	Vgn.*F*	HL-SN	BIP	EX
65	Espinosa & Treich	2020	France	American journal of agricultural economics	Vgt-Vgn-AHR.*DP*	HL-EN-AN-FT-PL	AVBF	EX
66	Espinosa & Treich	2021	France	Social Choice and Welfare	Vgt-Vgn-AHR.*DP*	AN	AVB	CR
67	Estell et al.	2021	Australia	Sustainabili-ty	Vgt-Vgn.*F*	HL-EN	AB	CR
68	Faber et al.	2020	Internati onal	Appetite	Vgt-Vgn-M.*D*	HL-EN-PL-JS	AK	CR
69	Falkeisen et al. I	2022	Canada	Food Research International	Vgt-Vgn.*F*	HL-EN-AN-SN	EP	EX
70	Falkeisen et al. II	2022	Canada	Food Research International	Vgt-Vgn-M.*F*	HL-EN-AN-SN	EP	EX
71	Faria & Kang	2022	USA	Appetite	Vgt-Vgn-M.*F*	HL-EN-AN-CL-FN-FT-JS	MTI	CR
72	Feltz et al. I	2022	USA	Appetite	Vgt-Vgn-M.*D*	AN	AVTKB F	EX
73	Feltz et al. II	2022	USA	Appetite	Vgt-Vgn.*D*	AN	AVTKB F	EX
74	Fessler et al.	2003	USA	Appetite	Vgt-M.*D*	HL-EN-AN-SN-PL	MEBN	CR
75	Fiestas-Flores & Pyhälä	2018	Spain	Society & Animals	Vgt-Vgn-AHR.*D*	HL-EN-AN-CL-SN-FN-PL	AMKBI N	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
76	Forestell et al.	2012	USA	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-SN-FN	ATB	CR
77	Ghaffari et al.	2021	International	International Journal of Consumer Studies	Vgt-Vgn.*D*	HL-EN-AN-SN-FN	AMVEBIP	M-CR
78	Giacoman et al.	2021	Chile	British Food Journal	Vgt-M.*D*	EN	MB	CR
79	Gili et al.	2019	Argentina	Nutrients	Vgt-Vgn.*DP*	HL	B	CR
80	Giraldo et al.	2019	Italy	Appetite	Vgt-M.*DF*	HL-EN-AN-SN	MEF	EX
81	Gómez-Luciano et al.	2019	International	Amfiteatru Economic	Vgt-Vgn-M-C.*F*	HL-EN-SN-FN	AI	CR
82	Gousset et al.	2022	France	Livestock Science	Vgt-Vgn-M-C.*DF*	HL-EN-AN-SN-FN-JS	AMKBIP	CR
83	Graça et al. I	2015	Portugal	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-CL-FN	AVEBIDO	CR
84	Graça et al. II	2015	Portugal	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL-FN	AEISO	CR
85	Graça et al. I	2016	Portugal	Personality and Individual Differences	Vgt-M.*D*	HL-EN-AN	AVEBID	CR
86	Graça et al. II	2016	Portugal	Personality and Individual Differences	Vgt-M.*D*	AN-EN-AN	AVEBI	CR
87	Graça et al.	2019	Portugal	Appetite	Vgt-Vgn.*F*	HL-EN-CL-SN-FN-PL	AMBI	CR
88	Grassian	2020	UK	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-CL-SN-FN-FT-PL	AMBIF	CR
89	Grünhage & Reuter	2021	Germany	Social Justice research	Vgt-Vgn-M.*D*	EN-PL	AVB	CR
90	Haas et al.	2019	Austria	Sustainability	Vgt-Vgn.*F*	HL-EN-AN-CL-SN-FN	AMKBP	M-CR
91	Hagmann et al.	2019	Switzerland	Public health nutrition	Vgt-Vgn-M.*D*	HL-EN-AN-SN-FN-FT	MSB	CR
92	Hamilton	2000	UK	Journal of Contemporary Religion	Vgt-Vgn-AHR.*P*	HL-EN-AN-CL-SN-FT	AMVB	CR
93	Hargreaves et al.	2021	Brazil	Nutrients	Vgt.*D*	HL	AMBN	CR
94	Haverstock & Forgays	2012	USA	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-CL-PL	MBN	CR
95	Heiss et al.	2017	USA	Appetite	Vgn.*D*	HL-EN-AN-FT	B	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
96	Heiss et al.	2020	USA	Eating behaviors	Vgn.*D*	HL-EN-AN-CL-SN-FN-FT-PL	B	CR
97	Hibbeln et al.	2018	UK	Journal of affective disorders	Vgt-Vgn.*D*	HL	B	CR
98	Hielkema & Lund	2021	Denmark	Food Quality and Preference	Vgt-Vgn-AHR.*D*	HL-EN-AN-SN-FN	AMTBINDO	CR
99	Hinrichs et al.	2022	USA	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-EN	AEBF	EX
100	Hoek et al.	2004	Netherl-ands	Appetite	Vgt-M.*DF*	HL-EN-AN-FN	AKN	CR
101	Hoffman et al.	2013	USA	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL-FT	MVKB	CR
102	Hopwood et al. I	2020	USA	Plos One	Vgt.*D*	HL-EN-AN-CL-FN-FT	M	CR
103	Hopwood et al. II	2020	USA	Plos One	Vgt.*D*	HL-EN-AN-CL-FN-FT	M	CR
104	Hopwood et al. III	2020	Netherla nds	Plos One	Vgt.*D*	HL-EN-AN-CL-FN-FT	M	CR
105	Hopwood et al. IV	2020	USA	Plos One	Vgt.*D*	HL-EN-AN-CL-FN-FT	M	CR
106	Hussar & Harris I	2009	USA	Social Developme-nt	Vgt-M.*D*	HL-AN-CL-SN-FN-FT	AMENF	EX
107	Hussar & Harris II	2009	USA	Social Developme-nt	Vgt-M.*D*	HL-AN-CL-SN-FN-FT	ABNF	EX
108	Isham et al. I	2022	UK	International Journal of Environmental Research and Public Health	Vgt-Vgn.*F*	HL-EN	EIFP	EX
109	Isham et al. II	2022	UK	International Journal of Environmental Research and Public Health	Vgt-Vgn.*F*	HL-EN	EIFP	EX
110	Janda & Trocchia	2001	USA	Psychology & Marketing	Vgt.*D*	HL-EN-AN-CL-SN	AMT	M-CR
111	Jang & Cho	2022	Korea	International Journal of Environmental Research and Public Health	Vgt-Vgn-M-C.*F*	HL-EN-AN-FT	AVEI	CR
112	Janssen et al.	2016	Germany	Appetite	Vgn.*D*	HL-EN-AN-SN-FT-JS	AMB	CR
113	Judge & Wilson	2015	New Zealand	Futures	Vgt-Vgn.*D*	EN-CL	AI	M-CR
114	Judge & Wilson	2019	New Zealand	European Journal of	Vgt-Vgn.*D*	HL-EN-AN-CL	AV	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
				Social Psychology				
115	Judge et al. I	2022	International	Appetite	Vgn.*DP*	HL-EN-AN	MEBSND	CR
116	Judge et al. II	2022	International	Appetite	Vgn.*DP*	HL-EN-AN	MEBSND	CR
117	Kalof et al.	1999	USA	Rural Sociology	Vgt.*D*	HL-EN-AN-CL-SN-JS	AMV	CR
118	Kalte	2020	Switzerland	Political Studies	Vgn.*P*	HL-EN-AN-CL-SN-FN-FT-PLJS	MB	CR
119	Kalte	2021	Switzerland	Political Studies	Vgn.*P*	HL-EN-AN-CL-SN-FN-FT-PL-JS	M	CR
120	Katare et al.	2022	USA	Applied Economics Perspectives and Policy	Vgt-Vgn-M-C.*F*	HL-EN-AN-FN	BIFP	EX
121	Kerschke-Risch	2015	Germany	Ernahrungs Umschau	Vgn.*D*	HL-EN-AN	AMB	CR
122	Kessler et al.	2016	Germany	Complementary Medicine Research	Vgt-Vgn.*D*	HL-EN-AN-CL-FN-FT	MVTEB	CR
123	Kessler et al.	2018	Germany	European journal of clinical nutrition	Vgt-Vgn.*D*	HL-EN-AN-CL	MVTEB	CR
124	Kim et al. [119]	1999	USA	Journal of the Academy of Nutrition and Dietetics	Vgt.*D*	HL-EN-SN	AMKB	CR
125	Kirsten et al.	2020	Germany	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-AN-CL-PL	AMBND	CR
126	Knight & Satchell	2021	International	Plos One	Vgt-Vgn-AHR.*DP*	HL-AN-SN	ABP	CR
127	Krizanova & Guardiola	2021	Spain	Applied research in Quality of Life	Vgt-Vgn.*P*	HL-EN	AEBD	CR
128	Krizanova et al.	2021	Spain	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL-SN-PL	MVBIP	CR
129	Larsson et al.	2001	International	Public health nutrition	Vgt-Vgn.*D*	HL-AN	AKB	CR
130	Lea & Worsley	2003a	Australia	Public health nutrition	Vgt.*D*	HL-EN-AN-JS	AB	CR
131	Lea & Worsley	2003b	Australia	Asia Pacific Journal of Clinical Nutrition	Vgt.*D*	HL	AVK	CR
132	Lea et al.	2006a	Australia	European journal of	Vgt-Vgn-M.*D*	HL	AB	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
				clinical nutrition				
133	Lea et al.	2006b	Australia	European journal of clinical nutrition	Vgt-Vgn-M.*D*	HL-EN-AN	AKB	CR
134	Li et al. I	2022	China	Frontiers in Psychology	Vgt-Vgn-M-C.*F*	HL-EN-AN-CL-FN	AKIFP	EX
135	Li et al.II	2022	China	Frontiers in Psychology	Vgt-Vgn-M-C.*F*	HL-EN-AN-CL-FN	KIFP	EX
136	Li et al.III	2022	China	Frontiers in Psychology	Vgt-Vgn-M-C.*F*	HL-EN-AN-CL-FN	AIFP	EX
137	Li et al. IV	2022	China	Frontiers in Psychology	Vgt-Vgn-M-C.*F*	HL-EN-AN-FN	AKIFP	EX
138	Lim et al.	2021	USA	Foods	Vgt-Vgn-M.*D*	HL-EN-CL-SN	AVEBISOF	EX
139	Lindeman & Sirelius I	2001	Finland	Appetite	Vgt.*DP*	HL-EN-AN-SN-FN-FT-JS	AMVE	CR
140	Lindeman & Sirelius II	2001	Finland	Appetite	Vgt-M.*DP*	HL-EN-AN-SN-FN-FT-JS	MV	CR
141	Lourenco et al.	2022	Brazil	Sustainability	Vgt-M.*D*	HL-EN-CL-FN-JS	AKBI	CR
142	Lund et al.	2016	UK	Anthrozoös	Vgt-Vgn-AHR.*DP*	HL-EN-AN-CL-FT	MVB	CR
143	Lusk & Norwood	2016	USA	Ecological Economics	Vgt.*D*	HL-EN-AN-CL-FN-PL	VB	CR
144	Ma & Chang	2022	Taiwan	Foods	Vgt-Vgn.*DF*	EN-AN	AMVKBI	CR
145	Mace & McCulloch	2020	UK	Animals	Vgn.*DP*	HL-EN-AN-CL-SN-FN	AKBN	M-CR
146	MacInnis & Hodson I	2017	USA	Group Processes & Intergroup Relations	Vgt-Vgn.*D*	CL-PL	AVTKBINDO	CR
147	MacInnis & Hodson II	2017	USA	Group Processes & Intergroup Relations	Vgt-Vgn.*D*	CL-PL	AM	CR
148	MacInnis & Hodson III	2017	USA	Group Processes & Intergroup Relations	Vgt-Vgn.*D*	CL-PL	EBSN	CR
149	MacInnis & Hodson	2021	International	Appetite	Vgt-Vgn.*D*	HL-EN-AN-FT	AMTN	CR
150	Mann & Necula	2020	Switzerland	British Food Journal	Vgt-Vgn-M.*D*	HL-EN-AN-SN-FN	BP	CR
151	Marangon et al.	2016	Italy	Agriculture and agricultural	Vgn.*F*	HL-EN-AN-SN-FN-FT	AKIP	EX

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
				science procedia				
152	Marcus et al.	2022	Germany	Food Quality and Preference	Vgt-Vgn-M-C.*DF*	HL-EN-AN-FN	AMBISO	CR
153	Martinelli & De Canio	2021	Italy	Journal of retailing and consumer services	Vgt-Vgn-M-C.*F*	HL-EN-AN-SN-FN-FT	AMBI	CR
154	Michel et al.	2021a	International	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-EN-AN-SN	AFB	CR
155	Michel et al.	2021b	Germany	Food Quality and Preference	Vgt-Vgn.*F*	EN	AB	CR
156	Migliavada et al.	2022	International	Scientific Reports	Vgt-Vgn-M.*D*	EN	EKB	CR
157	Miguel et al.	2020	International	Sustainability	Vgn.*DP*	HL-EN-AN-CL	AMVKBIN	CR
158	Milfont et al.	2021	New Zealand	Appetite	Vgt-Vgn-M-C.*D*	HL-EN-AN-SN-FT-PL	AMVTES	CR
159	Mohamed et al.	2017	Malaysia	Journal of food products marketing	Vgt.*DF*	HL-AN-CL-SN	AKB	CR
160	Montesdeoca et al.	2021	Spain	British Food Journal	Vgt-Vgn-M.*DF*	EN	AMBND	CR
161	Montesdeoca et al. I	2021	Spain	International journal of social psychology	Vgt-Vgn.*D*	HL-AN-CL	AMBNDO	CR
162	Montesdeoca et al. II	2021	Spain	International journal of social psychology	Vgt-Vgn.*D*	HL-AN-CL	AMBNDO	CR
163	Moore et al.	2015	USA	Eating behaviors	Vgt-Vgn.*D*	HL	AEB	EX
164	Moss et al.	2022	Canada	Food Research International	Vgt-Vgn.*F*	HL-EN-AN-SN-FN	AEBIP	CR
165	Mullee et al.	2017	Belgium	Appetite,	Vgt-M.*D*	HLEN	AMBN	CR
166	Müssig et al. I	2022	Germany	PloS one	Vgt-Vgn.D	HL-PL	TB	CR
167	Müssig et al. II	2022	Germany	PloS one	Vgt-Vgn.D	HL-PL	VTB	CR
168	Neale et al.	1993	UK	Nutrition & Food Science	Vgt-Vgn-M.*D*	AN-FT	AMBN	CR
169	Neuman et al.	2020	UK	International Journal of Consumer Studies	Vgt-M.*F*	AN	AMB	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
170	Nguyen et al.	2020	Vietnam	Sustainability	Vgt-Vgn.*D*	HL-EN-AN-FT	AMKIN	CR
171	Nocella et al.	2012	International	Psychology & Marketing	Vgt-Vgn.*F*	HL-AN-SN	AVBISNO	EXC
172	Noguerol et al.	2021	Spain	Food Research International	Vgt-Vgn.*DF*	HL-EN	AMKP	CR
173	Norwood et al	2019	Australia	Obesity science & practice	Vgt-Vgn.*D*	HL	AMBIS	CR
174	Nykänen et al.	2022	Finland	Nutrients	Vgt-Vgn-M.*F*	HL-EN-CL	KBP	EXC
175	Ortega et al.	2022	China	Food Policy	Vgt-Vgn-M-C.*F*	HL-EN-AN-FN	BIP	EXC
176	Oven et al.	2022	International	Plus one	Vgt-Vgn-M-C.*DP*	HL-EN-AN	ABI	CR
177	Pais et al.	2022	Portugal	Agricultural and Food Economics	Vgt-Vgn-M-C.*DF*	HL-EN-FN-JS	B	CR
178	Palnau et al.	2022	Germany	International Journal of Environmental Research and Public Health	Vgt-Vgn.*D*	HL-EN-CL	AMVTBIS	CR
179	Papies et al. II	2020	UK	Appetite	Vgt-Vgn-M.*F*	HL-EN	EIP	EX
180	Papies et al. III	2020	UK	Appetite	Vgt-Vgn-M.*F*	HL-EN	AEBIP	EX
181	Parkin & Attwood I	2022	UK	Journal of Environmental Psychology	Vgt.*F*	EN-FN	BP	EX
182	Parkin & Attwood II	2022	UK	Journal of Environmental Psychology	Vgt.*F*	EN-FN	BP	EX
183	Paslakis et al.	2020	Germany	Scientific Reports	Vgt-Vgn.*D*	HL-EN-AN-SN	AB	CR
184	Patel & Buckland I	2021	UK	Food Quality and Preference	Vgt-M.*D*	HL-EN-AN-CL	ATKBN	EX
185	Patel & Buckland II	2021	Australia	Food Quality and Preference	Vgt-M.*D*	HL-EN-AN-CL	ATBN	EX
186	Pechey et al. I	2022a	UK	BMC public health	Vgt-Vgn.*F*	HL-SN	BP	EX
187	Pechey et al. II	2022a	UK	BMC public health	Vgt-Vgn.*F*	HL-SN	BP	EX
188	Pechey et al. III	2022a	UK	International Journal of Behavioral Nutrition	Vgt-Vgn-M.*F*	HL-EN	BP	EX

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
				and Physical Activity				
189	Perry et al.	2001	USA	Journal of Adolescent Health	Vgt-Vgn.*D*	HL-EN-AN-CL-FT-PL	AMVBS	CR
190	Pfeiler & Egloff I	2018	Germany	Appetite	Vgt-Vgn.*D*	HL-EN-AN-PL	AT	CR
191	Pfeiler & Egloff II	2018	Germany	Appetite	Vgt-Vgn.*D*	HL-EN-AN-PL	AT	CR
192	Phillips & McCulloch	2005	International	Journal of Biological Education	Vgt-Vgn-AHR.*P*	AN	A	CR
193	Phua et al.	2019	USA	Journal of Marketing Communications	Vgn.*D*	HL-EN-AN	MKBIOF	EX
194	Phua et al.	2020	International	Online Information Review	Vgn.*DP*	HL-EN-AN	AOF	EX
195	Phua et al.	2020	International	Online Information Review	Vgn.*DP*	HL-EN-AN	AINF	EX
196	Piester et al. I	2020	USA	Appetite	Vgt.*F*	EN	BFP	EX
197	Piester et al. II	2020	USA	Appetite	Vgt.*F*	EN	BFP	EXC
198	Plante et al.	2019	International	Appetite	Vgt.*P*	HL-EN-AN-CL-FT	AMESBND	CR
199	Ploll & Stern	2020	Austria	British Food Journal	Vgt-Vgn-AHR.*D*	EN-AN	AMBSO	CR
200	Ploll et al.	2020	Austria	Enironment-al Innovation and Societal Transitions	Vgt-Vgn.*D*	HL-EN-AN	MB	CR
201	Pohlmann	2021	USA	Data in brief	Vgt-Vgn-AHR.*D*	AN-SN	AVEBIDF	EX
202	Pohojolanian et al.	2015	Finland	British Food Journal	Vgt-Vgn-M.*D*	HL-EN-CL-SN-FN	AMVB	CR
203	Pointke et al.	2022	UK	Foods	Vgt-Vgn.*F*	HL-EN-AN-SN-FN	AMEKBP	CR
204	Povey et al.	2001	UK	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-CL-SN-FT	AISDO	CR
205	Preylo & Arikawa	2008	USA	Anthrozoös	Vgt.*D*	HL-AN-CL-FT	AMEB	CR
206	Pribis et al.	2010	USA	Nutrients	Vgt-Vgn.*D*	HL-EN-AN-CL	AMKB	CR
207	Profeta et al.	2020	International	Foods	Vgt-Vgn-M-C.*F*	HL-EN-AN-SN-JS	TEKBIP	EXC

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
208	Profeta et al.	2021a	Germany	Sustainability	Vgt-Vgn-M.*D*	EN-AN-CL-SN	AMTETKBP	CR
209	Profeta et al.	2021b	Belgium	Future Foods	Vgt-Vgn-M-C.*F*	HL-EN-AN-CL-SN	AMTEBP	CR
210	Rabès et al.	2020	France	Sustainable Production and Consumption	Vgt-Vgn-M.*D*	EN	B	CR
211	Radnitz et al.	2015	International	Appetite	Vgn.*D*	HL-EN-AN-SN	MBN	CR
212	Raggiotto et al.	2018	Italy	International Journal of Consumer Studies	Vgn.*F*	HL-EN-AN-FT-JS	AVBI	CR
213	Reipurth et al.	2019	Denmark	Food Quality and Preference	Vgt-Vgn-M.*D*	HL-EN-CL-SN	ABI	CR
214	Reuber & Muschalla	2022	Germany	Health Psychology and Behavioral Medicine	Vgt-Vgn.*D*	HL-EN-AN-CL	AMEBND	CR
215	Rondoni et al.	2021	International	Food Quality and Preference	Vgt-Vgn.*F*	HL-EN-AN	AFP	EX
216	Rosenfeld	2019a	USA	Food Quality and Preference	Vgt-Vgn.*D*	HL-AN	AMBND	CR
217	Rosenfeld I	2019b	USA	Motivation and Emotion	Vgt.*D*	HL-EN-AN-CL-SN-FT	AMBND	CR
218	Rosenfeld II [129]	2019b	USA	Motivation and Emotion	Vgt-M.*D*	HL-EN-AN-CL-SN-FT	MEB	CR
219	Rosenfeld I	2019c	USA	Anthrozoös	Vgt-Vgn.*P*	AN	MV	CR
220	Rosenfeld II	2019c	USA	Anthrozoös	Vgt-Vgn.*P*	AN	MV	CR
221	Rosenfeld I	2020	USA	Food Quality and Preference	Vgt.*D*	HL-EN	AMBND	CR
222	Rosenfeld II	2020	USA	Food Quality and Preference	Vgt.*D*	HL-EN	AMBND	CR
223	Rosenfeld & Tomiyama	2019	USA	Appetite	Vgt-M.*D*	HL-EN-AN-CL-SN	AMEBN	CR
224	Rosenfeld & Tomiyama	2020	USA	Appetite	Vgt.*D*	HL-EN-AN-CL-SN-FN	AMVTKBND	CR
225	Rosenfeld et al. [132]	2019	USA	Social Psychological and Personality Science	Vgt.*D*	HL-EN-AN	AMVBND	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
226	Rosenfeld et al.	2020	USA	Food Quality and Preference	Vgt-M.*D*	HL-EN-AN-PL	AMTBND	CR
227	Rothgerber	2013a	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-EN-AN	AMEB	CR
228	Rothgerber I	2013b	USA	Psychology of Men & Masculinity	Vgt-M.*P*	HL-EN-AN-SN-FT-PL	AB	CR
229	Rothgerber II	2013b	USA	Psychology of Men & Masculinity	Vgt-M.*P*	HL-EN-AN-SN-FT-PL	AB	CR
230	Rothgerber I	2014a	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-AN-CL-SN-FT	AENF	EX
231	Rothgerber II	2014c	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-AN-CL-SN-FT	AEBF	EX
232	Rothgerber III	2014c	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-AN-CL-SN-FT	AEF	EX
233	Rothgerber IV	2014c	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-AN-CL-SN-FT	AEF	EX
234	Rothgerber V	2014c	USA	Appetite	Vgt-Vgn-AHR.*D*	HL-AN-CL-SN-FT	AE	EX
235	Rothgerber	2014b	International	Plos One	Vgt-Vgn.*D*	HL-EN-AN	AM	EX
236	Rothgerber I	2014c	USA	Social Psychology	Vgn.*D*	HL-CL	AMBNF	EX
237	Rothgerber II	2014c	USA	Social Psychology	Vgn.*D*	HL-CL	AMBSNF	EX
238	Rothgerber	2015a	International	Appetite	Vgt-Vgn.*D*	HL-EN-AN-SN	AMEBD	CR
239	Rothgerber	2015b	USA	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-SN	AMVEND	CR
240	Rozin & Fallon	1980	USA	Appetite	Vgt-M.*D*	HL-AN-SN	MEP	CR
241	Rozin et al.	1997	USA	Psychological Science	Vgt-M.*D*	HL-EN-AN-CL-FN-FT	AMTE	CR
242	Ruby et al.	2016	International	Appetite	Vgt-M.*D*	HL-EN-AN-CL-SN-FN	AE	CR
243	Ruehlman & Karoly	2022	USA	Journal of Health Psychology	Vgt-Vgn.*D*	HL-EN-AN	MVTBS	CR
244	Santos & Booth	1996	UK	Appetite	Vgt-M.*D*	HL-EN-AN-CL-SN	AMB	CR
245	Schenk et al.	2018	Switzerland	Sustainability	Vgt.*D*	HL-EN-AN	AIDO	CR
246	Schobin et al.	2022	Chile	Appetite	Vgt-Vgn-M.*F*	EN-AN-FN	AB	EXC
247	Schösler et al.	2012	Netherlands	Appetite	Vgt-M.*DF*	HL-EN-AN	AMBF	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
248	Schösler et al.	2015	Internati onal	Appetite	Vgt-M.*D*	HL-EN-AN-JS	AMKBI	CR
249	Segovia-Siapco et al.	2019	USA	Frontiers in Nutrition	Vgt.*D*	HL	B	CR
250	Sharps et al.	2021	UK	Appetite	Vgt-Vgn-M.*D*	HL-EN	BO	CR
251	Shickle et al.	1989	USA	Journal of the Royal Society of Medicine	Vgt-M.*D*	EN	AKB	CR
252	Siebertz et al.	2022	Germany	Appetite	Vgt-Vgn.*DF*	EN	ATEBIO	CR
253	Siegrist & Hartmann	2019	Switzerla nd	Appetite	Vgt-M.*DF*	HL-EN-SN	AEKB	CR
254	Sims	1978	USA	Ecology of food and nutrition	Vgt.*D*	HL-AN-CL-SN-FN-FT	AVTK	CR
255	Slade	2018	Canada	Appetite	Vgt-Vgn-M-C.*F*	EN-SN	ABP	EXC
256	Spencer et al.	2018	USA	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL-SN-FN	AP	EX
257	Stockburger et al.	2009	Germany	Appetite	Vgt.*D*	HL-AN	AMBF	EX
258	Stremmel et al.	2022	Germany	Appetite	Vgn.*F*	HL-SN	AIP	EX
259	Sucapane et al. I	2021	Internati onal	Appetite	Vgt-Vgn-M.*F*	HL-EN-AN-SN	AKBP	EX
260	Sucapane et al. II	2021	Internati onal	Appetite	Vgt-Vgn-M.*F*	HL-EN-AN-SN	ABP	EX
261	Tan et al. I	2021	New Zealand	Appetite	Vgt-Vgn.*D*	HL-EN-AN	T	CR
262	Tan et al. II	2021	Internati onal	Appetite	Vgt-Vgn.*D*	HL-EN-AN	T	CR
263	Tan et al. III	2021	USA	Appetite	Vgt-Vgn.*D*	HL-EN-AN	T	CR
264	Taufik et al. I	2022	Netherla nds	Appetite	Vgt-Vgn.*F*	HL-EN-AN-JS	BP	EXC
265	Taufik et al. II	2022	Netherla nds	Appetite	Vgt-Vgn.*F*	HL-EN-AN-JS	BP	EXC
266	Thomas I	2016	USA	Appetite	Vgt-Vgn.*D*	HLCL-FT	ABF	EX
267	Thomas II	2016	USA	Appetite	Vgt-Vgn.*D*	HLCL-FT	ABF	EX
268	Thomas III	2016	USA	Appetite	Vgt-Vgn.*D*	HLCL-FT	ABF	EX
269	Thomas VI	2016	USA	Appetite	Vgt-Vgn.*D*	HL-CL-FT	ABF	EX
270	Thomas et al.	2019	USA	Group Processes & Intergroup Relations	Vgt.*P*	AN	AVEBN	CR
271	Tian et al. II	2019	China	Frontiers in psychology	Vgt.*D*	HL	AB	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
272	Timko et al. I	2012	USA	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-FT	AMBIP	CR
273	Timko et al. II	2012	USA	Appetite	Vgt-M.*D*	HL-EN-AN-FT	MB	CR
274	Tonsor et al. I	2022	USA	Applied Economic Perspectives and Policy	Vgt-Vgn-M-C.*F*	FN	BP	EX
275	Tonsor et al. II	2022	USA	Applied Economic Perspectives and Policy	Vgt-Vgn-M.*F*	FN	BP	EX
276	Tonsor et al. III	2022	USA	Applied Economic Perspectives and Policy	Vgt-Vgn-M.*F*	FN	BP	EX
277	Tonsor et al. IIII	2022	USA	Applied Economic Perspectives and Policy	Vgt-Vgn-M.*F*	FN	BP	EX
278	Trethewey & Jackson	2019	Australia	Appetite	Vgt-Vgn-M.*D*	HL-EN-AN-CL-JS	AVB	CR
279	Urbanovich & Bevan	2020	USA	Environmen-tal Communica-tion	Vgt-Vgn-M.*D*	HL-EN	AKSBIOP	CR
280	Vainio	2019	Finland	Appetite	Vgt-Vgn-M.*F*	HL-EN-FN	AMKB	CR
281	Vainio et al.	2016	Finland	Appetite	Vgt-Vgn-M.*F*	HL-EN-SN	MB	CR
282	Vainio et al.	2018	Finland	Appetite	Vgt-Vgn-M.*F*	HL-EN	AKBIF	EX
283	Valdes et al.	2021	Canada	Public health nutrition	Vgt-Vgn.*D*	HL-EN	B	CR
284	Van Loo et al.	2020	USA	Food Policy	Vgt-Vgn-M-C.*F*	HL	A	EXC
285	Vandermoere et al.	2019	Belgium	Sustainabili-ty	Vgt-M.*D*	HL-EN-AN-FN	ABNBP	CR
286	Valdez et al.	2018	USA	Health Education Journal	Vgt-Vgn.*D*	EN-AN-PL	AKBF	EX
287	Vergeer et al.	2020	Canada	Public health nutrition	Vgt-Vgn.*D*	HL	KB	CR
288	Veser et al.	2015	Germany	British Food Journal	Vgt-Vgn.*D*	EN-SN	AVB	CR
289	Villette et al.	2022	France	Nutrients	Vgt-Vgn.D	HL	AMB	CR
290	Vinnari et al. I	2009	Finland	Public health nutrition	Vgt-Vgn.*D*	HL-EN	B	CR
291	Vinnari et al. II	2009	Finland	Public health nutrition	Vgt.*D*	HL-EN	B	CR
292	Vizcaino et al.	2021	USA	Public health nutrition	Vgt-Vgn.*D*	HL-EN-AN	MVSB	CR

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No.	**Reference**	**WHEN**	**WHERE**	**WHO**	**WHAT**	**WHY**	**WHICH**	**HOW**
293	Wang et al.	2022	China	Foods	Vgt-Vgn.F	HL-EN-FN	AMIFP	EXC
294	Waters	2018	UK	Appetite	Vgt-Vgn-M.*D*	HL-AN	B	CR
295	Weinstein & de Man	1982	Canada	Bulletin of the Psychonom-ic Society	Vgt-M.*D*	HL	EBP	EX
296	Weiper & Vonk I	2021	Internat-ional	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL	AF	EXC
297	Weiper & Vonk II	2021	Netherl-ands	Appetite	Vgt-Vgn.*D*	HL-EN-AN-CL	AF	EXC
298	White et al.	1999	USA	Journal of the Academy of Nutrition and Dietetics	Vgt.*D*	EN-FT	B	CR
299	Worsley & Skrzypiec	1997	Australia	Nutrition Research	Vgt.*D*	HL-EN-AN-SN-FT-JS	AVB	CR
300	Worsley & Skrzypiec	1998	Australia	Appetite	Vgt.*D*	HL-EN-AN-JS	AMBNO	M-CR
301	Wrenn	2017a	Internat-ional	Fat studies	Vgn.*P*	AN-PL-JS	ABN	CR
302	Wrenn	2017b	USA	Societies	Vgn.*P*	AN-FN-PL	MVBNDF	CR
303	Wyker & Davison	2010	USA	Journal of nutrition education and behavior	Vgt-Vgn.*D*	HL-AN	ABISO	CR
304	Ye & Mattila I	2022	USA	International Journal of Hospitality Management	Vgt-Vgn-M-C.*F*	EN	ABIF	EX
305	Ye & Mattila II	2022	USA	International Journal of Hospitality Management	Vgt-Vgn-M-C.*F*	EN	AIF	EX
306	Zhang et al.	2021	Internati-onal	Appetite	Vgt.*DF*	HL-EN-AN-SN	ABD	EX
307	Zur & Klöckner	2014	Norway	British Food Journal	Vgt-Vgn-M.*D*	HL-EN-AN-JS	ABISO	CR

Vgt: Vegetarianism; Vgn: Veganism; M: Meat consumption; AHR: Animal-Human relationship; C: Cultured meat consumption; *D*: Diet; *F*: Food; *P*: Philosophy of life

HL: Health; EN: Environment; AN: Animals; CL: Cultural & Social; SN: Sensory; FT: Faith; FN: Financial & economic; PL: Political; JS: Justice & world hunger

A: Attitudes; M: Motivations; V: Values, T: Personality; E: Emotions; K: Knowledge; B: Behavior; I: Intentions; S: Self-efficacy or Perceived Behavioral Control; N: Networks; O: Norms; D: Identity; F: Information; P: Product Attributes

CR: Correlational or non-experimental: M-CR: Mixed method study including Correlational section; EX: Experimental; EXC: Choice Experiment