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**Positive Emotional Appeals on Plant-based Protein Packaging: Effects of
Empathy-evoking Messages on Gen Z Protein Choice**

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Abstract

This study examines whether positive emotional appeals on plant-based packaging shift Gen Z consumers toward more sustainable protein choices. Across three experiments ($N = 250$), empathy-, pride-, and hope-based messages were compared with a control condition. All appeals increased the selection of the plant-based option, with significant effects for pride and hope, and a marginal effect for empathy. Despite small directional trends, no significant moderation by political orientation or centrality of religion, or mediation via self-efficacy emerged. Findings indicate that emotional framing can narrow, but not fully close, the intention–behavior gap in sustainable consumption.

Keywords

Consumer behavior, Plant-based proteins, Emotions, Nudging, Meat consumption, Sustainability

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1. Introduction

1.1. Background

Food production is one of the major drivers of global environmental change. Key pressures include disruptions to biogeochemical cycles, biodiversity loss and climate change (Hoehnel et al., 2022). Within this system, the consumption and production of animal-based-proteins rank among the most environmentally harmful components, with the livestock sector being responsible for roughly 15% of global greenhouse gas emissions (De Bakker & Dagevos, 2012; Gerber et al., 2013; Kwasny et al., 2022). Furthermore, demand for animal-based protein is expected to increase substantially in the coming decades in line with population growth, rising incomes and urbanization, particularly in emerging economies (Godfray et al., 2010; Schneider et al., 2011). Some projections even estimate a demand increase of up to 80% by 2050 (Wanasundara et al., 2017).

As a reaction to this development, scholars increasingly argue that reducing the consumption of animal-based protein is essential for achieving a healthier and more sustainable food system (Willett et al., 2019). The global "protein transition", which entails a systemic shift from animal-based to plant-based protein sources, has therefore gained prominence as a crucial strategy to address the environmental, health and ethical challenges associated with current meat-heavy diets (Aiking & De Boer, 2020; Marques et al., 2018; Nijdam et al., 2012; Ranganathan et al., 2016). Reflecting this shift, the market for plant-based meat substitutes has expanded rapidly, with the sector currently valued at around \$7.87 billion and expected to grow to \$16.13 billion by 2032 (Fortune Business Insights, 2025). Producers and retailers are diversifying their portfolios, and consumers are increasingly exposed to plant-based alternatives (Aschemann-Witzel et al., 2021).

However, the adoption of plant-based substitutes has not kept pace with sustainability imperatives. While awareness of the environmental and health implications of meat

consumption is rising, many consumers still underestimate meat's impact on the climate, and demand for animal protein remains persistently high (De Boer et al., 2016, 2017; Graça et al., 2015; Hoehnel et al., 2022; Tobler et al., 2011). Systematic reviews suggest that, despite stated willingness to reduce meat intake or substitute with plant-based alternatives, actual behavior change is modest (Hartmann & Siegrist, 2017). This divergence between attitudes and behavior has been widely described as an intention-behavior gap in sustainable consumption (De Bakker & Dagevos, 2012; Kollmuss & Agyeman, 2002; Sheeran & Webb, 2016).

Addressing this gap requires coordinated efforts across the food system, including policy-makers, retailers and food manufacturers (Hoehnel et al., 2022). Policy initiatives such as menu design, procurement guidelines and package labeling can increase the salience of plant-based options at the point of choice (Bianchi et al., 2018; Hartmann & Siegrist, 2017). Yet policy-makers and industry stakeholders are often reluctant to address meat reduction explicitly, given political and economic sensitivities (Aiking & De Boer, 2020). As a result, corporate actors increasingly turn to green marketing as a more incremental lever to promote sustainable offerings (Irfan & Bryła, 2025). In this context, packaging acts as a central marketing communication tool that captures attention, conveys brand values and signals product attributes (Mahajan et al., 2023). Through design, claims and emotional cues, packaging can shape consumers' perceptions of plant-based products and potentially nudge choices in more sustainable directions.

1.2. Problem Discussion

Despite growing interest, the drivers of consumer acceptance of plant-based meat substitute products remain complex. Prior research highlights a range of barriers, including food neophobia, meat attachment, unfamiliarity and perceived sensory inferiority (Bryant et al., 2019; Hoek et al., 2013; Siegrist & Hartmann, 2019; Slade, 2018; Ye & Mattila, 2021). Social norms and cultural meanings of meat further reinforce these barriers (Akinmeyer et al., 2024;

Pronk et al., 2025; Sanchez-Sabate & Sabaté, 2019). Price premiums for plant-based proteins can additionally deter adoption, especially under economic uncertainty (Chen et al., 2025; Springmann, 2024).

Opposed to older generations, Generation Z (Gen Z), comprising individuals born between 1997 and 2012 (Eldridge, 2025), is frequently portrayed as a generation of sustainable consumers. Gen Z exhibits high levels of environmental awareness and is more likely than older cohorts to view dietary choices as part of their personal contributions to climate mitigation and social responsibility (Jakubowska et al., 2024; Lopes et al., 2024; Marinova & Bogueva, 2022; Meixner et al., 2024; Raptou et al., 2024). Yet empirical work shows that Gen Z also displays a pronounced intention-behavior gap. Although they express concern about environmental and ethical implications of meat, many still prioritize taste, convenience and stick to habits in protein choice (Ford et al., 2023; Halicka et al., 2025; Ham et al., 2022). This discrepancy requires particular attention, as they represent a pivotal cohort of emerging consumers whose growing purchasing power positions them as central to shaping future sustainability outcomes (Seemiller & Grace, 2018). Since habits formed at a young age often remain stable across the life course (Ruzgys & Pickering, 2024), the diets Gen Z develops today will shape the future of meat consumption.

A growing body of literature suggests that emotional processes are central to understanding drivers of Gen Z's protein choice. Food choices are not purely cognitive, they are shaped by reactions and feelings (Pham, 2007; Zandstra et al., 2024). Studies comparing informational versus emotional message framing indicate that emotionally framed messages tend to have stronger effects on reducing intentions to consume meat (Berndsen & Van Der Pligt, 2005; Carfora et al., 2019; Kwasny et al., 2022). Both negative emotions (e.g., disgust) and positive emotions (e.g., satisfaction) have been shown to influence sustainable food intentions (De Sio et al., 2024; M. Onwezen et al., 2014; Zandstra et al., 2024). However, the

literature remains fragmented. Many interventions focus on negative emotional appeals or on discouraging meat consumption, and many are implemented in advertising or menu contexts rather than directly on product packaging (Kwasny et al., 2022; Palomo-Vélez et al., 2018; Ye & Mattila, 2021).

In contrast, comparatively little is known about the persuasive potential of positive emotional appeals embedded in packaging that promote the attractiveness of plant-based protein products themselves. Specifically, there is limited empirical evidence on how positive emotions such as empathy, pride and hope may influence protein choice at the point of purchase. This gap is particularly salient for Gen Z consumers, who combine strong sustainability values with persistent behavioral inconsistency. Understanding whether and how positive emotional cues can help narrow this intention-behavior gap represents both a theoretical and practical challenge.

1.3. Research Purpose and Research Question

Building on this background, the present research aims to examine the influence of positive emotional appeals on Gen Z consumers' choices between meat and plant-based meat substitutes, from now on referred to as animal-based and plant-based protein. Specifically, it focuses on the three emotions empathy, pride and hope. Although these have been empirically linked to prosocial and pro-environmental behavior, they remain underexplored in the context of plant-based protein choice and packaging interventions (Antonetti & Maklan, 2014; Mathur et al., 2021; Ojala, 2015; M. C. Onwezen et al., 2022; Tracy & Robins, 2007).

This thesis investigates how positive emotional appeals on food packaging influence consumers' choices between plant-based and animal-based protein options. It examines packaging as a moment-of-choice nudge mechanism and focuses particularly on Gen Z omnivores, a group that expresses strong sustainability values yet often struggles to align them with food choices.

Accordingly, the central research question guiding this study is:

“To what extent do positive emotional appeals on product packaging influence Gen Z’s choice between plant-based and animal-based protein products?”

2. Theoretical Background and Hypotheses Development

2.1. Sustainable Consumer Behavior

Sustainable consumption behavior (SCB) "refers to purchasing and using goods and services in a way that minimizes negative environmental and social impacts while ensuring long-term economic sustainability" (Theocharis & Tsekouropoulos, 2025, p. 4). In recent years, SCB has emerged as a critical area of study, driven by escalating global challenges such as climate change, resource depletion, and environmental degradation. Consequently, businesses have been increasingly compelled to reevaluate and redesign their marketing strategies, positioning sustainability as a core component to appeal to the growing segment of environmentally conscious consumers (Cao Minh & Nguyen Thi Quynh, 2024; Syed et al., 2024; Theocharis & Tsekouropoulos, 2025).

Traditionally, consumer behavior has been influenced primarily by factors such as price, convenience, and brand loyalty. However, contemporary consumption patterns increasingly reflect sustainability-driven preferences, wherein environmental concern and pro-ecological values play a central role in product choice. Research indicates that the degree of environmental concern can significantly predict the adoption of sustainable behaviors, including recycling and the purchase of green products (Kostadinova, 2016). Social norms further shape these behaviors, as influences from family, peers, and broader cultural expectations can either reinforce or inhibit sustainable actions (Banytė et al., 2023; Snaebjornsson et al., 2017). Moreover, personal motivations, including moral responsibility, self-identity, and the desire to make purposeful choices, have been shown to influence consumers’ willingness to select sustainable products (Luchs & Mooradian, 2012).

Lifestyle and everyday routines represent additional determinants of SCB. For many individuals, sustainability is embedded within broader lifestyle patterns that shape daily activities, including transportation, food consumption, and household energy use. These habits are dynamic and evolve over time, reflecting changes in personal circumstances, life stages, and societal trends. For instance, adopting a minimalist lifestyle, which emphasizes simplicity and reduced consumption, may encourage individuals to make more environmentally conscious choices in their daily routines (Nguyen & Tran, 2025). Nonetheless, consumers often encounter trade-offs related to price, convenience, or product availability, which can limit their willingness to adopt sustainable alternatives (Gleim et al., 2013). Limited trust in producers' sustainability claims, particularly concerns regarding greenwashing, further constrains the adoption of sustainable consumption.

Understanding the drivers and barriers of SCB is essential for designing marketing strategies that effectively promote responsible consumption. This is particularly relevant in the context of plant-based proteins, where the adoption of environmentally sustainable dietary choices is still hesitant.

2.2. Determinants of Consumer Protein Choice

To effectively promote sustainable food consumption among consumers, it is essential to gain a comprehensive understanding of the motives and determinants underlying consumers' acceptance of plant-based protein products (Mustapa et al., 2025). This involves examining the multidimensional drivers of food choice, including product attributes, psychological and ethical considerations, as well as social or identity-related influences.

To understand how product-related factors shape consumer acceptance, plant-based protein products can be examined through the various processing methods used to derive them, such as silking, extrusion, and conditioning. Soybeans are the most commonly utilized raw material due to their high protein content, favorable nutritional properties, and relatively low

cost (Siddiqui et al., 2022). The increased consumption of such plant-based proteins is associated with reduced risks of cardiovascular diseases and other chronic illnesses (Visioli, 2024). This perceived health benefit serves as a relevant driver of consumer acceptance, and many consumers view plant-based proteins as healthier options, associating them with lower levels of saturated fat and calorie content. Nonetheless, ensuring a high nutritional value equivalent to animal proteins remains a challenge for plant-based proteins, because of inherent limitations in essential amino acids, minerals, and trace elements compared to meat (Akinmeye et al., 2024). Moreover, these products are frequently categorized as ultra-processed or artificial, leading to confusion about their actual nutritional quality (Appiani et al., 2023).

Answering consumer demands, numerous efforts have been directed toward developing plant-based protein products that replicate the aesthetic, sensory and chemical attributes of meat, over the past years (Appiani et al., 2023). Since sensory quality is a decisive factor in consumer food choices, plant-based proteins must achieve broad acceptance in terms of palatability and credibility to effectively substitute animal proteins (Akinmeye et al., 2024). Accordingly, plant-based proteins are often marketed through explicit comparisons with meat to leverage consumers' positive sensory expectations (e.g., "tastes like meat") (Giacalone et al., 2022). Nevertheless, evidence indicates that the sensory performance of plant-based proteins remains inferior to conventional meat, often receiving lower ratings in sensory evaluations (Appiani et al., 2023; Giacalone et al., 2022). Hoek et al. (2011) further observed that sensory appeal varies according to familiarity with meat substitutes, with non-users and light users frequently citing a lack of sensory attractiveness (Akinmeye et al., 2024). In particular, non-vegetarians seem to be reluctant to try plant-based proteins due to the belief that consuming healthy products might compromise taste (Fiorentini et al., 2020). Moreover, visual attributes also influence consumer acceptance. Before tasting, aspects such as shape, color, and overall appearance may be more influential than flavor or texture. Consequently, producers of plant-

based protein products often attempt to replicate the color characteristics of meat (Giacalone et al., 2022). Sucapane et al. (2021) demonstrated that packaging color can meaningfully shape consumer perceptions of plant-based proteins, with red packaging, commonly associated with meat, consistently produced directionally higher evaluations and behavioral intentions than green packaging, suggesting that color cues can enhance perceived substance, satiety, and overall appeal.

Along with sensory concerns, social norms, defined as behaviors perceived as appropriate within a group or community, significantly shape consumer behavior and acceptance of plant-based proteins (Akinmeye et al., 2024). Meat consumption has long been central to many cultures, reflecting not only nutritional needs and agricultural practices but also cultural identity (Pronk et al., 2025). In Western societies, meat is frequently associated with masculinity, which can hinder men's acceptance of plant-based proteins (Akinmeye et al., 2024). Furthermore, research shows that women are consistently more open to reducing meat when compared to men (Hartmann & Siegrist, 2017). Studies also found that individuals who receive encouragement from family and friends to follow plant-based diets report higher consumption of plant-based proteins, whereas perceiving meat-eating as socially desirable correlates with lower plant-based proteins intake (Zaleskiewicz et al., 2025).

Similarly to all consumption contexts, economic factors remain a major driver as well. Despite the growing interest, higher prices have contributed to a downturn in both market sales and investment (Chen et al., 2025). For instance, in high-income countries, vegan burgers are, on average, 36% more expensive per serving than beef burgers (Springmann, 2024). Such price disparities are particularly meaningful in the context of global economic uncertainty and inflationary pressures.

Psychological factors also shape consumer acceptance. Research indicates that food neophobia, the reluctance to try unfamiliar foods, is negatively associated with willingness to

consume plant-based proteins (Rao et al., 2025; Stubelj et al., 2025). Similarly, strong commitment to meat consumption correlates with lower intentions to reduce or substitute meat (Pronk et al., 2025). Adversely, one segment of consumers is primarily motivated by ethical and moral considerations, e.g. concerns for animal welfare and sustainability (De Boer et al., 2017). These individuals are aware of livestock's climate footprint or express concern about animal suffering, and often reduce their meat consumption or choose plant-based proteins as an expression of personal ethics (Sanchez-Sabate Sabaté 2019). Nonetheless, the degree and consistency of moral motivation vary considerably among consumers. Many omnivores remain unaware of meat's ethical impacts or do not prioritize them when making food-related decisions (Hartmann & Siegrist, 2017).

2.3. Gen Z and the Future of Protein Consumption

Gen Z represents a critical demographic for shaping sustainable consumption patterns and is exerting a pronounced influence on contemporary and, by extension, future marketplace dynamics. As young consumers with rapidly evolving preferences, Gen Z increasingly demands change, catalyzes new food trends, influences the trajectory of food production, and expresses clear preferences for more resilient and sustainable food systems (Raptou et al., 2024).

Among all generational cohorts, Gen Z stands out for its pronounced and well-documented commitment to sustainability, driven by environmental literacy and awareness of climate change. Consequently, Gen Z exhibits substantially higher levels of environmental consciousness compared to older cohorts (Jakubowska et al., 2024; Lopes et al., 2024; Makowska et al., 2024). Empirical evidence from a cross-generational study in Spain further indicates that Gen Z assigns responsibility for climate action to corporations, expresses the strongest demand for behavioral change, and demonstrates a higher willingness to act in response to climate-related crises compared to Millennials, Generation X, and Baby Boomers (Divasson-J et al., 2025).

This environmental consciousness is also reflected in Gen Z's evolving food identity. Young consumers are increasingly expecting their dietary choices to contribute to environmental solutions rather than exacerbate ecological degradation (Marinova & Bogueva, 2022). Motivated by this perspective, many pursue more sustainable eating practices as a targeted strategy for mitigating climate change. Bogueva and Marinova's (2022) study of Australian Gen Z's attitudes toward meat consumption and alternative proteins found that 38% of participants recognized the environmental impact of livestock production and expressed interest in alternative proteins as a means of reducing climate-related effects. Additionally, an analysis of three million American students revealed that 65% favored incorporating more vegetables into their diets, while 79% reported reducing meat consumption by adopting a flexitarian approach (Marinova & Bogueva, 2022).

Ford et al. (2023) further noted that meat reduction among young consumers is influenced by transitional life circumstances, such as leaving home and managing limited food budgets. Establishing these dietary practices early in life enables younger individuals to construct lifestyle patterns that are likely to persist into adulthood (Ruzgys & Pickering, 2024). Furthermore, motivations for consuming plant-based protein products include convenience, positive sensory experiences, and social influence, whereas perceived barriers commonly relate to concerns about negative health implications and excessive processing (Meixner et al., 2024).

As a generation that has grown up in a digital environment, Gen Z consumers tend to be highly informed, socially aware, and responsive to brand narratives centered on transparency, innovation, and sustainability. Their consumption choices often signal broader commitments to enduring environmental and ethical principles rather than isolated purchase decisions (Theocharis & Tsekouropoulos, 2025). Unlike older cohorts, Gen Z actively researches brand practices and expects companies to demonstrate authenticity and ethical conduct (Ling et al., 2024). These heightened expectations have reshaped contemporary

branding strategies, compelling firms to prioritize corporate social responsibility and eco-conscious innovation (Theocharis & Tsekouropoulos, 2025).

Overall, firms' efforts to align with the values of Generation Z are increasingly essential for shaping purchase intentions, as young consumers deliberately seek products and brands that resonate with their personal and environmental values (Theocharis & Tsekouropoulos, 2025). Moreover, as a growing share of this cohort pursues healthier lifestyles compared to previous generations, understanding Gen Z's food-related preferences becomes a critical factor in effectively marketing sustainable products (Su et al., 2019).

2.4. Psychological Barriers and the Intention-Behavior Gap

Research consistently shows that consumers often express strong intentions to behave more sustainable but fail to follow through in daily life. In the food domain, many individuals report wanting to purchase sustainable products or reduce meat consumption, yet their actual choices remain largely unchanged. Robinson and Smith (2002) found that, although consumers supported sustainably produced foods, they lacked confidence in their ability to purchase them consistently. Likewise, even individuals with strong intentions to reduce meat consumption often eat only slightly less meat than those with no intention, illustrating the limited predictive power of intentions (Linder et al., 2025). This discrepancy, widely referred to as the intention–behavior gap is central to understanding why positive attitudes toward plant-based choices do not automatically translate into meaningful behavioral change (Sheeran & Webb, 2016).

The Theory of Planned Behavior (TPB) provides the dominant framework for explaining why intentions do not always lead to action. According to Ajzen (1991), behavior is driven by intentions, which depend on attitudes, subjective norms and perceived behavioral control. Ajzen and Fishbein (1974) showed that intentions correlate with these predictors and with subsequent behavior, but they also demonstrated that situational events could weaken the intention-behavior link. Even individuals who hold favorable attitudes toward plant-based diets

may fail to act on them if practical constraints interfere. This aligns with broader accounts of the value–action gap. For instance, the inconsistency between pro-environmental attitudes and behaviors may partly reflect moral factors, where moral attitudes do not reliably translate into corresponding moral actions (Zaikauskaitė et al., 2023). Recognizing these limitations, scholars have proposed extensions to TPB that incorporate emotional and situational influences. For instance, Rees et al. (2018) found that implementation intentions help individuals better translate meat-reduction intentions into behavior, implying that additional self-regulatory strategies are often needed.

Cognitive processes, particularly habits, play a central role in maintaining the intention-behavior gap. Food choices are largely habitual, occurring with minimal deliberation. For instance, the inconsistency between pro-environmental attitudes and behaviors may partly reflect moral factors, where moral attitudes do not reliably translate into corresponding moral actions (Rees et al., 2018). Linder et al. (2025) likewise found that routine meat purchasing patterns explain why consumers continue eating meat despite their intentions to cut back. Perceived behavioral control and self-efficacy are additional barriers. Robinson and Smith (2002) noted that consumers support sustainable options in principle but lack confidence in consistently accessing them. Low perceived availability of sustainable products can further reduce intentions and limit behavioral follow-through (Vermeir Verbeke, 2006).

Emotions add another layer of complexity to protein choice. Many consumers feel ambivalent: they enjoy meat’s taste and familiarity but also experience guilt related to environmental and ethical concerns. Ye and Mattila (2021) found that highlighting the social costs of meat consumption increases this ambivalence. This emotional tension is central to the “meat paradox,” the conflict between caring about animals and consuming them. Cognitive dissonance theory explains that, rather than changing their behavior, consumers often reduce psychological discomfort by justifying meat eating, avoiding information about animal

suffering, or dissociating meat from animals (Aaltola, 2019; Rothgerber, 2020). According to Fechner and Isbanner (2025), individuals who have no intention of reducing meat rely heavily on rationalizations, while those further along in the change process are more likely to adjust their behavior to resolve dissonance. These emotional and motivational defenses protect short-term pleasure, thereby maintaining meat consumption despite pro-plant-based intentions.

Finally, social and contextual factors significantly shape the translation of intentions into behavior. Food choices occur within social relationships and cultural norms, and peer norms can strengthen intentions to buy sustainable products even when personal attitudes are mixed (Vermeir & Verbeke, 2006). Communication strategies also influence behavior. Ye & Mattila (2021) showed that social appeals in advertising, emphasizing enjoyment or approval by others, enhance preferences for plant-based dishes. However, real-world constraints such as limited availability of plant-based protein options or prominent placement of meat dishes reinforce conventional choices (Andersson & Nelander, 2021; Garnett et al., 2019).

2.5. Choice Manipulation

Given the persistence of the intention–behavior gap in sustainable food choices, researchers and practitioners increasingly turn to subtle forms of choice manipulation to steer consumers toward more sustainable options. Such interventions operate through adjustments in the decision environment, rather than through mandates or economic incentives, and have been shown to influence behavior by shaping how options are perceived, evaluated, and selected (Johnson et al., 2012; Thaler & Sunstein, 2008). By modifying the contextual features of choice, these strategies hold promise for translating pro-environmental intentions into concrete action, thereby addressing a central challenge in sustainable consumption research (Lehner et al., 2016).

2.5.1. Nudging

In recent years, nudging has become a widely discussed and applied concept in

behavioral economics, offering a means to steer behavior in predictable ways while preserving freedom of choice (Hertwig & Grüne-Yanoff, 2017). Coined by Thaler and Sunstein (2008), a “nudge” refers to “any aspect of the choice architecture that alters people’s behavior without forbidding options or significantly changing economic incentives” (p.6). Nudges are especially valuable in contexts where individuals face complex or ambiguous decisions, such as in health, finance, or consumer markets.

Traditional economic theory assumes that individuals act rationally to maximize utility. However, behavioral economics demonstrates that decision-making is often bound by cognitive limitations, heuristics, and emotional influences (Kahneman, 2003; Thaler, 2015). Nudges exploit these behavioral patterns to encourage more beneficial choices, for example, increasing retirement savings, reducing energy consumption, or promoting healthier diets, without the use of mandates or bans.

In practice, nudges can take many forms. These include setting beneficial default options, changing the framing or wording of choices, using timely reminders or salient cues, and providing social norm feedback, such as informing consumers that others are engaging in a certain behavior. These interventions are typically subtle, low-cost, and designed to align with individuals’ cognitive tendencies (Sunstein, 2014). The goal is to improve decision quality in contexts where people are prone to inertia, limited attention, or biases like loss aversion and present bias.

The effectiveness of nudges depends on the medium through which they are delivered, as different touchpoints vary in their ability to capture attention, convey information, and influence behavior at the moment of choice. In retail environments, product packaging represents one of the most consequential and immediate channels for shaping consumer decisions, as it constitutes the primary interface between the product and the consumer at the point of purchase. Packaging not only draws visual attention but also functions as a heuristic

device that enables consumers to efficiently infer product attributes, especially under time pressure or low involvement (Silayoi & Speece, 2004). Prior research further shows that packaging-based cues, including sustainability labels, visual signals, and textual claims, are processed differently depending on consumers' environmental knowledge: individuals with higher literacy engage more deeply with detailed sustainability information, whereas those with lower involvement rely more heavily on simple, salient cues (Atkinson & Rosenthal, 2014; Grunert et al., 2014). Compared to other media, such as advertising or digital prompts that target earlier stages of the decision process, packaging uniquely influences consumers at the precise moment a choice is made, making it an especially suitable medium for interventions aimed at shifting actual purchase behavior.

The success of nudging has led to its widespread adoption in public policy and private sector applications. Governments have established “nudge units” (e.g., the UK’s Behavioral Insights Team), and companies increasingly integrate behavioral design into digital platforms and marketing strategies (Benartzi et al., 2017). While nudges are often viewed as a benevolent form of guidance, some scholars, particularly psychologists and ethicists, have raised concerns about transparency and manipulation (Gigerenzer, 2015). These debates emphasize the importance of implementing nudges ethically, with sensitivity to context and individual autonomy.

Overall, nudging offers a promising tool for enhancing consumer decision-making by accommodating real-world behavioral tendencies.

2.5.2. Emotional Appeals

Building on the broader concept of nudging, one particularly influential category of interventions is the use of emotional appeals. While traditional nudges often rely on cognitive biases and structural changes to the decision environment, emotional appeals operate through the affective system, shaping decisions by eliciting specific emotional responses (Lerner et al.,

2015). These appeals are especially powerful in consumer contexts, where choices are frequently guided not by deliberate reasoning but by gut feelings, moods, and emotional associations (Pham, 2007).

In general terms, emotional appeals refer to persuasive messages that seek to trigger emotional reactions, such as fear, happiness, pride, shame, guilt, or empathy, to influence attitudes or behavior (Lerner et al., 2015; Pham, 2007). These appeals do not offer additional factual information but instead alter the affective framing of a decision, making certain options desirable based on how they make the individual feel. Emotional appeals are typically classified as positive or negative, each influencing decision-making in different ways. Research suggests that positive appeals are generally more effective in promoting behaviors related to identity and brand loyalty, while negative appeals are more impactful in risk-averse or health-related contexts where urgency and problem awareness are critical (Yousef et al., 2021; Zhang et al., 2014). For example, anti-smoking campaigns often use fear-based images (negative appeal), while charitable fundraising frequently relies on empathy-inducing stories of individuals in need (positive appeal). While the literature presents mixed findings on the relative efficacy of emotional appeal strategies, several studies suggest that positive emotions are particularly effective in promoting sustainable consumer behavior. These emotions reinforce a sense of personal efficacy and moral identity, encouraging pro-environmental actions without the defensive reactions, often triggered by fear or guilt-based messaging (Antonetti & Maklan, 2014). Accordingly, this study solely focuses on positive emotions.

Emotional appeals can be conveyed through various formats, including images, videos, or written messages. While much of the literature explores emotionally charged visuals or video-based storytelling, written textual appeals have also proven effective, particularly for eliciting specific, positive emotions such as pride or gratitude (Antonetti & Maklan, 2014;

Zhang et al., 2014). This study focuses on the latter, as further elaborated on in the methods section.

The affective component of nudging has received increasing attention in both public policy and marketing literature. Rather than viewing emotions as irrational or disruptive, scholars now recognize them as essential guides in complex decision-making environments, particularly under conditions of uncertainty (Loewenstein & Lerner, 2003). Emotional appeals thus offer a way to design persuasive interventions that resonate more deeply than fact-based arguments alone. Further, emotions not only affect what consumers choose but also how strongly they commit to those choices, often enhancing message recall and behavioral follow-through (Baumeister et al., 2007). This makes it worthwhile to investigate their potential to nudge consumers' protein choice from meat to plant-based options.

2.6. Empathy

2.6.1. Empathy in Consumer Decision-Making

Empathy is broadly defined as the capacity to understand and share the feelings of another and is often conceptualized by including two key components. Cognitive empathy refers to understanding another's emotions or point of view, whereas affective empathy refers to feeling an emotional response that mirrors or resonates with the other's emotion. Most contemporary definitions of empathy include both cognitive and affective elements, acknowledging that one can know what another feels and simultaneously feel concern or compassion in response (Cuff et al., 2016).

Research in psychology supports a distinction between cognitive and affective components. For example, individuals with autism spectrum disorders often show impairments in cognitive empathy, but can have relatively normal levels of affective empathy, whereas psychopathic individuals display the opposite pattern (Baron-Cohen et al., 2001; Blair, 2005). Neuroscientific studies further suggest that understanding an individual's mental state and sharing their emotions engage overlapping, but distinct brain networks. Despite these distinctions, cognitive and affective empathy usually work in tandem in everyday experience, with cognitive perspective-taking able to amplify or modulate emotional empathic responses (Cuff et al., 2016).

While empathy can be understood as a stable trait, which describes a person's general, enduring tendency to respond empathetically across contexts, it can also occur as a state that is triggered by situational cues. State empathy fluctuates with momentary exposure to emotionally relevant stimuli and is sensitive to contextual features (Heyers et al., 2025). As such, state empathy arises during message processing when individuals attend to another's circumstances. It reflects an acute, dynamic experience rather than a stable predisposition (Shen, 2010). Because message framing interventions aim to evoke empathic reactions in a specific moment,

state empathy is the relevant form for consumer response to packaging messages.

Empathy in consumer behavior research has been examined as a factor that shapes how people respond to others' experiences, for example seeing someone in need. A widely used approach is, to have participants read or watch a scenario involving a victim or affected party and imagine how that person feels, versus a control group asked to remain objective. Such perspective-taking inductions have been shown to reliably heighten empathic emotions and compassionate behavior (Koessler et al., 2023). Other empathy inductions involve exposing people to vivid emotional content, for example, narratives, images, or videos that depict another's suffering or situation in a relatable way. These methods elicit affective empathy which then influences decision-making (Lehmann et al., 2022).

2.6.2. Empathy's Impact on Sustainable Food Choices

A growing body of literature links empathy to sustainable consumption decisions, particularly in the domain of food choices. Existing evidence suggests that higher empathy is associated with more plant-centered eating patterns (Mathur et al., 2021). Further research has found that vegetarians and vegans score higher on empathy measures compared to omnivores (Holler et al., 2021), suggesting that empathic orientation may facilitate dietary patterns that avoid causing harm to animals.

Beyond correlational findings, experimental studies offer insights into empathy's causal influence on food choices. Zickfeld et al. (2018) conducted a series of experiments, showing that making an animal appeal more cute increased empathy toward the animal and therefore reduced participants' willingness to consume its meat. Similarly, research on dissociation, the psychological distancing of meat from the animal it originates from, demonstrates that when this cognitive connection is weakened, empathy toward animals is reduced, ultimately increasing willingness to eat meat (Kunst & Hohle, 2016).

However, the literature also points to some gaps and contradictory findings. One

challenge is that an empathic reaction does not always translate into concrete action, especially when personal sacrifice is involved. In the context of meat consumption, researchers refer to the meat paradox (Kunst & Hohle, 2016). Consumers may feel empathy for an animal when confronted with its suffering yet still eat meat due to habit or taste preferences (Graça et al., 2019). These findings mirror the previously discussed intention-behavior gap in sustainable consumption.

2.6.3. Using Empathy as a Nudge: Message Framing and Emotional Appeals

Because empathy can support pro-environmental and ethical behavior, many intervention strategies attempt to evoke empathic emotions to shift food choices. Research on persuasive messages shows that highlighting social or moral benefits can guide consumers toward sustainable options. For example, messages that frame plant-based foods as contributing to animal welfare or environmental preservation can prompt positive evaluations and even anticipated pleasure from choosing such options (Iweala et al., 2019; Ye & Mattila, 2021). In restaurant menu contexts, social-framed appeals outperform health-framed appeals in increasing preference for plant-based alternatives, particularly when they communicate the sense of doing good for society (Ye & Mattila, 2021).

Nudges in food contexts often target moral emotions. Kwasny et al. (2022) found that showing consumers messages or pictures connecting meat products to living animals increases empathy and disgust, ultimately reducing meat-eating intentions. Palomo-Vélez et al. (2018) concluded across multiple studies that disgust-based messages can be equally as effective, or even more effective, than moral welfare appeals in shifting attitudes away from meat consumption. Together, these studies suggest that interventions can leverage different emotional pathways, though empathy-based approaches tend to focus on compassion, caretaking, and moral concern.

Empathy nudges also appear in packaging contexts, where sustainability labels or

emotional cues can influence product evaluations. For example, Cho (2015) found that consumers respond more favorably to sustainability labels when messages emphasize personal impact reminding consumers that their choice makes a difference. This aligns with findings that feelings of prosocial contribution enhance evaluations of sustainable food items (Iweala et al., 2019).

However, while many studies examine the effects of interventions on meat packaging, relatively little work investigates interventions directly on plant-based products. This represents a gap: most interventions attempt to disrupt meat consumption by highlighting animals, whereas far fewer focus on strengthening the positive appeal of plant-based options through empathic cues. This gap reinforces the relevance of the current study.

2.6.4. The Moderating Role of Religion in Empathy-Based Interventions

A factor that may moderate the impact of empathy nudges is religion, specifically individuals' level of religiosity or the centrality of religion in their lives. Centrality of religion can shape one's values, worldviews, and moral priorities, which in turn could influence how a person responds to empathy-driven messages about protein choices. This raises the question of whether highly religious individuals react differently to empathy appeals for sustainable eating compared to less religious individuals. Existing literature suggests that religiosity can play a role in prosocial and environmental behaviors, although the relationship is complex (Preston & Baimel, 2021).

Many religions emphasize compassion, pro-sociality, and moral responsibility. Religious teachings often encourage caring for others, including vulnerable beings, which may extend to animals and the environment. For example, Christianity emphasizes love and charity toward others ("Proverbs 12:10", 2011) and Islam encourages kindness to humans and animals (Ibn Mājah, n.d.). Empirical evidence supports this interpretation: religiosity is positively associated with empathy and prosocial actions (Ghanam, 2024; Łowicki & Zająkowski, 2017).

Higher religiosity can provide clear moral guidance that encourages helping behaviors, rooted in narratives and norms emphasizing kindness and support for those in need. If empathy-based messages align with these values, individuals who view religion as central to their identity may be especially receptive to compassionate nudges on sustainable food packaging.

However, religion's relationship with empathy is not uniformly positive. Beliefs and interpretations vary, and some religious frameworks endorse more hierarchical or authoritarian God-images. Research modeling religion's influence on empathy shows that individuals who view God primarily as punitive or dominant may act in less empathic ways, whereas those who perceive God as loving tend to act more compassionately (van Ments et al., 2018). These findings suggest that religiosity does not operate as a single, linear predictor of empathic responding; rather, its influence depends on doctrinal interpretations and personal experiences. Additionally, certain religious worldviews are more anthropocentric, prioritizing human interests over animal or environmental concerns, which may dampen the impact of empathy appeals regarding food choices (Preston & Baimel, 2021).

2.6.5. Deduction and Hypothesis Development

The preceding sections highlight that empathy can influence consumers' moral evaluations of food and can be activated through targeted message framing. While prior work has demonstrated that empathy-based cues can alter attitudes toward meat and sustainable products, little is known about whether such messages on plant-based protein packaging can actively steer consumers toward choosing these alternatives. This gap is particularly relevant given that interventions in this domain have primarily focused on discouraging meat consumption rather than enhancing the appeal of plant-based protein products.

In addition, individual characteristics may shape responses to empathy-evoking messages. Religiosity, especially when central to a person's identity, influences how moral and emotional cues are interpreted. As such, it presents a theoretically meaningful moderator that

may strengthen or weaken the influence of empathy-based interventions.

The present study focuses on Gen Z, a cohort commonly associated with strong environmental and ethical concern (Lopes et al., 2024), yet one that also exhibits an intention-behavior gap in sustainable food choices (Ham et al., 2022). While Gen Z expresses awareness of the environmental and animal welfare implications of diet, their actual purchasing behavior is often guided by taste, habit, and convenience (Halicka et al., 2025). Importantly, there is currently little empirical evidence on how Gen Z responds to empathy-based message framing, making this demographic especially relevant for investigating whether such interventions translate stated sustainable values into concrete dietary choices.

Based on these considerations, the following hypotheses are proposed:

H1a: *Empathy-evoking messages positively influence Gen Z's protein choice toward plant-based options.*

H1b: *The effect of empathy-evoking messages on plant-based protein choice of Gen Z is positively moderated by the centrality of religion in one's life.*

3. Methods

3.1. Procedure

To test the presented hypotheses, a survey was developed. Participants were recruited through social media platforms, including LinkedIn, WhatsApp, and Instagram, to ensure broad reach within the target population. The data collection took place from October 28, 2025, to November 12, 2025, through the online survey platform Qualtrics, which allowed for a standardized and user-friendly participation process. The study was presented to potential respondents as research on general consumption behavior to prevent bias and maintain the authenticity of responses.

During participation, individuals were screened to ensure they met the inclusion criteria. Only members of Generation Z were retained for the final sample, and respondents who reported adhering to a diet that excludes meat consumption were excluded to maintain the relevance of the experimental choice task.

The experimental part of the survey consisted of three experimental conditions designed to evoke distinct emotions (empathy, pride and hope), alongside a neutral control condition. Following exposure to one of these scenarios, participants engaged in a simulated choice task between two protein options, one animal-based and one plant-based, to assess the behavioral impact of the preceding manipulation. Subsequently, participants provided demographic information, including their gender, age, home country and highest level of education.

Participation was voluntary and based on informed consent obtained prior to the survey. Respondents were informed that they could discontinue participation at any time without penalty. No personally identifying information was collected, and responses were analyzed in aggregated form only. Data were stored securely and used exclusively for academic purposes.

3.2. Participants

A total of 336 individuals initiated the survey. Out of these, one respondent did not

provide consent under the described conditions, five did not belong to Gen Z, 22 reported dietary habits excluding meat (e.g., vegetarian or vegan), 26 indicated that they never consume beef, two stated that they had not eaten meat in the past year and 30 did not complete the whole questionnaire. After these exclusions, the final sample comprised 250 valid responses.

All participants were members of Gen Z (born between 1997 and 2012). Ages ranged from 14 to 28 years ($M = 23.28$, $SD = 1.77$). The sample consisted of 54% male participants ($n = 135$), 45% female participants ($n = 112$), 0.4% diverse participants ($n = 1$), and 0.8% who preferred not to disclose their gender ($n = 2$). In terms of educational attainment, nearly half of respondents reported holding a bachelor's degree or equivalent (49%), followed by 34% with a master's degree or equivalent, 11% with upper secondary education and 0.4% with a doctoral degree.

Participants primarily resided in Germany (55%) and Portugal (30%), with smaller proportions from Italy (5%), France (3%) and the United Kingdom (1%). A further 6% reported other countries, including Argentina, Australia, Bangladesh, Brazil, Colombia, Mexico, Mozambique, the Netherlands, New Zealand, South Africa, and the United States.

3.3. Pre-Tests

All participants were asked to indicate their year of birth to determine whether they belonged to Generation Z (individuals born between 1997 and 2012). Participants who indicated a birth year outside of that range were immediately forwarded to the end of the survey. For participants who were part of Gen Z, the next question checked whether they eat meat or follow a strict diet, prohibiting it (e.g., vegan or vegetarian). Those who indicated that they do not eat meat at all were forwarded to the end of the survey, since their choice of protein is expected to be in opposition to the animal-based option and in favor of the plant-based option, regardless of exposure to manipulations. Frequency of meat consumption was not implemented as a knock-out criterion, since occasional meat eaters can provide valuable insights into the

choice dynamics of protein consumption as well.

3.4. Scenario Conditions

After the pre-tests, participants were randomly allocated to one of four scenario conditions (three experimental conditions and one control condition). The experimental conditions encompassed empathy-evoking emotional appeal ($n = 65$), pride-evoking emotional appeal ($n = 62$), hope-evoking emotional appeal ($n = 63$) and no emotional appeal in the control group ($n = 60$). Before being exposed to the choice scenario, participants were asked to imagine they needed to buy products for dinner and face the choice between two products in the supermarket. The animal-based option, beef, was chosen as an example over other meats because it is widely known and consumed throughout Europe and is subject to fewer dietary and religious restrictions than other meats, such as pork, the consumption of which is forbidden by Islam and Judaism (Christian, 2003). Furthermore, the vegan substitute product for minced beef is among the most common plant-based protein products. In the USA, for instance, burgers and patties (i.e., ground beef substitutes) were among the three top-selling plant-based protein products in 2019 (Ahmad et al., 2022). Hence, using beef minimizes novelty and ensures plausibility of the experimental stimuli. Participants were also told to consider that all basic product features (e.g., weight, nutrients) were the same, and the products cost the same amount of money. Afterwards, participants were shown an image of the products they could choose to mimic a realistic choice scenario. All aspects of the packaging design were kept equal, except the emotional appeal message and the “plant-based”-label to isolate the effect of the manipulation. The emotional appeal message was displayed on the plant-based protein option (vegan ground meat), whereas the animal-based protein option (regular ground beef) contained no message. In the control condition, neither the animal-based (Figure 1) nor the plant-based option (Figure 2) displayed a message. The message for each experimental condition was phrased in a way that evokes the targeted emotion.

Figure 1 Ground-Beef packaging shown to all participants



Note. Adapted from 80% Lean / 20% Fat Ground Beef Chuck, 1 lb Tray, Fresh, All Natural, by Walmart Inc. (2025), Walmart. [Walmart.com](https://www.walmart.com)

Figure 2 Plant-Beef packaging shown to the control group



Note. Adapted from 80% Lean / 20% Fat Ground Beef Chuck, 1 lb Tray, Fresh, All Natural, by Walmart Inc. (2025), Walmart. [Walmart.com](https://www.walmart.com)

The empathy-evoking emotional appeal read “Care for animals, choose kind!” (Figure 3). This message was positively framed to elicit compassion toward animals while maintaining a constructive and encouraging tone. Positive, empathy-based appeals aim to activate other-oriented emotions such as warmth and tenderness, which in turn foster moral identification and prosocial motivation (Batson et al., 1997; Pohlmann, 2022).

Figure 3 Empathy-evoking packaging design



Note. Adapted from 80% Lean / 20% Fat Ground Beef Chuck, 1 lb Tray, Fresh, All Natural, by Walmart Inc. (2025), Walmart. [Walmart.com](https://www.walmart.com)

Prior research in sustainable consumption contexts has shown that empathy-evoking messages which emphasize care and kindness toward animals can promote plant-based choices

by stimulating empathic concern (Dobson, 2023; Kwasny et al., 2022). In contrast, negatively framed or guilt-inducing messages may provoke defensive reactions, thereby reducing behavioral change (Dobson, 2023; Shulman et al., 2021). Accordingly, the present message was designed to emphasize kindness and shared responsibility rather than guilt or blame.

The pride-evoking emotional appeal read “You’re making the right choice — one your future family will be proud of” (Figure 4), emphasizing moral responsibility and authentic pride. This formulation was designed to evoke anticipated authentic pride, as it refers to an action, the choice, that the consumer can be proud of. Moreover, it appeals to values of family, conscientiousness, and competence, which are particularly salient among conservative audiences (Feinberg & Willer, 2013; Graham et al., 2009). It targets two components of pride: pride through competence and conscientiousness, i.e. the right choice, and confirmation from a valued external party, i.e. the future family. Further, the specification “future family” was chosen since most individuals belonging to Gen Z do not have children yet, at the time this study was conducted. When targeting Gen Z at a later point, referring to “family” without the addition might be more effective. Lastly, stronger patriotic cues, framing the protein choice as a service to the consumer's country were avoided to minimize conflict with liberal beliefs.

Figure 4 Pride-evoking packaging design



Note. Adapted from 80% Lean / 20% Fat Ground Beef Chuck, 1 lb Tray, Fresh, All Natural, by Walmart Inc. (2025), Walmart. [Walmart.com](https://www.walmart.com)

The hope-evoking emotional appeal read “Every bite builds a greener future. Yours starts here!” (Figure 5) was designed to reflect the theoretical and empirical foundations of hope as a future-oriented, goal-directed positive emotion. Prior research shows that hope oriented messages that link personal action to a desirable future increase climate related engagement, especially when they emphasize personal agency (Geiger et al., 2023). The first clause, “Every bite builds a greener future” emphasizes the desired outcome, a more sustainable and environmentally friendly future, thereby reinforcing the goal-directed motivation underlying the agency component of hope, which reflects the motivated drive toward achieving valued goals (Sadiq et al., 2026; Snyder et al., 1991). The second clause, “Yours starts here!” introduces an actionable pathway, emphasizing that the recipient can initiate change immediately by making plant-based choices. By presenting dietary change as an achievable action that contributes to a larger goal, the message is designed to activate the mechanisms through which hope can increase self-efficacy and motivate pro-environmental behavior (Lui et al., 2025).

Figure 5 Hope-evoking packaging design



Note. Adapted from 80% Lean / 20% Fat Ground Beef Chuck, 1 lb Tray, Fresh, All Natural, by Walmart Inc. (2025), Walmart. [Walmart.com](https://www.walmart.com)

When exposed to the two protein options, participants were able to select their preferred option, representing the dependent variable.

3.5. Post-Tests

After exposure to the scenario conditions, participants in the experimental conditions were shown the picture of the plant-based protein option with the respective emotional appeal again and were asked a series of questions to test whether the implemented emotional appeal evoked the intended emotion (i.e., a manipulation check) and measure the respective moderator or mediator. Importantly, participants in the control condition were also exposed to all post-test measures. They completed the same emotional scales and all moderator and mediator questions as the experimental groups, ensuring that baseline levels could be assessed across all conditions.

To assess participants' experienced empathy after exposure to the empathy-evoking message, the study employed a six-item Empathy Index developed by Batson et al (1997), specifically capturing empathic concern, that is, other-oriented affective empathy directed toward another's suffering. This index has been used to measure momentary, state empathy rather than stable trait dispositions. Because validated instruments to measure state empathy toward animals are scarce, the present study adapted Batson's approach and substituted the human target with animals. Participants indicated the extent to which they currently felt "sympathetic", "compassionate", "soft-hearted", "warm", "tender", and "moved" when thinking about animals, using a seven-point Likert scale (*1 = not at all, 7 = extremely*). The index serves as a common manipulation check due to internal consistency ($\alpha > 0.80$ in previous research) (Stocks et al., 2017).

To measure the centrality of religion, the study used the Intrinsic Religiosity subscale of the Duke University Religion Index (Koenig & Büssing, 2010). Participants rated three statements: 1. "In my life, I experience the presence of the Divine (i.e., God)", 2. "My religious beliefs are what really lie behind my whole approach to life" and 3. "I try hard to carry my religion over into all other dealings in my life", on a seven-point Likert scale from *1 (definitely not true)* to *7 (definitely true)*. The Intrinsic Religiosity subscale originally used a five-point

scale. It was increased for enhanced consistency to other parts of this study. The items were averaged to form an intrinsic religiosity index ($\alpha > 0.75$), representing the centrality and internalization of religious faith in participants' daily life.

To assess participants' experienced pride after exposure to the pride-evoking emotional appeal, the study employed a reduced version of the nine-item scale developed by Williams and DeSteno (2009), using the five items that most accurately capture authentic pride. Participants were asked to indicate the extent to which they currently felt each of the following emotions: "proud", "fulfilled", "accomplished", "achieving", and "full of self-worth". Responses were recorded on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Consistent with Williams and DeSteno (2009), all items were averaged to create a single composite authentic pride score. The items reflect authentic pride as defined by Tracy and Robins (2007), capturing self-evaluative feelings of accomplishment and moral worth rather than hubristic or superiority-based pride.

To measure the corresponding moderator, political orientation, participants were asked to indicate their political orientation on a seven-point Likert scale from 1 (*very liberal (far left)*) to 7 (*very conservative (far right)*). This single-item indicator represents the most commonly employed measure of political ideology and has demonstrated strong predictive validity (Nash & Leota, 2022).

A growing body of literature conceptualizes hope as a multidimensional construct (C. Li & Monroe, 2018), encompassing both emotional experience and cognitive evaluations of future possibilities (Ojala, 2015; Snyder, 2002). Research further indicates that context-specific measures of climate-change hope capture the construct more effectively than general hope scales, such as Snyder's original Hope Scale, which have demonstrated weak or inconsistent associations with pro-environmental behaviors (Ojala, 2023; Pleeging et al., 2021; Simpson et al., 2021). In contrast, studies that adapt and conceptualize hope in line with Snyder's Hope

theory, emphasizing its cognitive components, generally find that hope is positively associated with climate-change engagement and pro-environmental behaviors in children and adolescents (Finnegan, 2023; Kerret et al., 2016; Ojala, 2023; Stevenson & Peterson, 2015).

Accordingly, in the present study, hope was measured using a five-item scale designed to capture both its cognitive and emotional components. To assess participants' experienced hope following exposure to a hope-evoking message, they were asked to indicate their agreement with each item on seven-point Likert scales (*1 = strongly disagree, 7 = strongly agree*). The full list of scale items is provided in Appendix A.1.

To measure self-efficacy, the proposed mediator, a five-item scale was developed in accordance with Bandura's self-efficacy guidelines (Bandura, 1977). The scale was constructed based on the recommendations of Witte et al. (1996) and adapted from prior validated research (Lui et al., 2025; Nabi & Myrick, 2019). Participants indicated their level of agreement with the statements on a 7-point Likert scale (*1 = strongly disagree; 7 = strongly agree*). The items included were: "I am able to choose plant-based meals instead of meat-based ones when I want to", "Choosing plant-based proteins instead of meat is easy for me", "It is convenient for me to find and choose plant-based proteins in my daily life", "I can maintain plant-based eating habits even when dining out or in social situations", and "Choosing plant-based proteins helps reduce my personal environmental impact".

To account for individual differences in dietary habits and environmental orientation, several control questions were included in the survey. First, respondents were asked: "Over the past 12 months, how often did you consume meat (any kind of animal flesh, e.g., pork, beef, poultry, etc.)?" Response options ranged from never to daily. This type of frequency question aligns with dietary assessment practices, such as the Meat Frequency Questionnaire (Keating et al., 2007) and the Oxford Meat Frequency Questionnaire (Stewart et al., 2021). Next, participants indicated which of the following meats they never consume: "pork", "beef",

“chicken”, or “none of the above”. This disguised screening question served to identify respondents who never eat beef, ensuring that the product choice task (involving a beef-based product) remained relevant. Use of such filtering questions is common in food choice research (Hoek et al., 2011). Finally, two control items were included to capture participants’ baseline environmental orientation. The first, “Protecting the environment is an important part of who I am,” reflects the importance dimension of environmental identity as conceptualized by Clayton (2003). The second, “I feel a personal responsibility to take actions that protect the environment,” corresponds to the personal norm dimension validated in prior pro-environmental behavior research (Niu et al., 2023). These measures served as controls for preexisting environmental attitudes in the subsequent analyses.

3.6. Data Analyses

For all three studies, collected data was analyzed using IBM SPSS Statistics Version 31.0.1.0. Before testing the hypotheses, the internal consistency of the used multi-item scales was examined. The six-item Empathy Index, adapted from Batson et al. (1997), to capture state empathic concern toward animals, demonstrated excellent reliability. Cronbach's α was .96, exceeding the recommended threshold of .70 (Appendix C.1). All items were retained and the six items were averaged into a composite empathy score. Centrality of religion as the moderator was measured with the Intrinsic Religiosity subscale of the Duke University Religion Index (Koenig & Büssing, 2010). This scale also demonstrated excellent internal consistency (α = .95) (Appendix C.2). The three items were averaged to form a centrality of religion score, which was subsequently mean-centred for moderation analyses.

Similarly, the five-item pride index, adapted from Williams and DeSteno (2009), showed strong reliability with a Cronbach's α of .95 (Appendix D.1). The moderator, political orientation, does not require a reliability check, as it is only composed of one question item. It was mean-centred for moderation analyses.

Furthermore, reliability analyses were conducted for the hope multi-item measures using Cronbach's alpha to evaluate the internal consistency of the two multi-item constructs. The hope scale demonstrated strong reliability Cronbach's α of .93 (Appendix E.1), and the self-efficacy scale presented good reliability ($\alpha = .86$) (Appendix E.2). As both scales displayed adequate internal consistency, composite scores were computed and used in subsequent analyses.

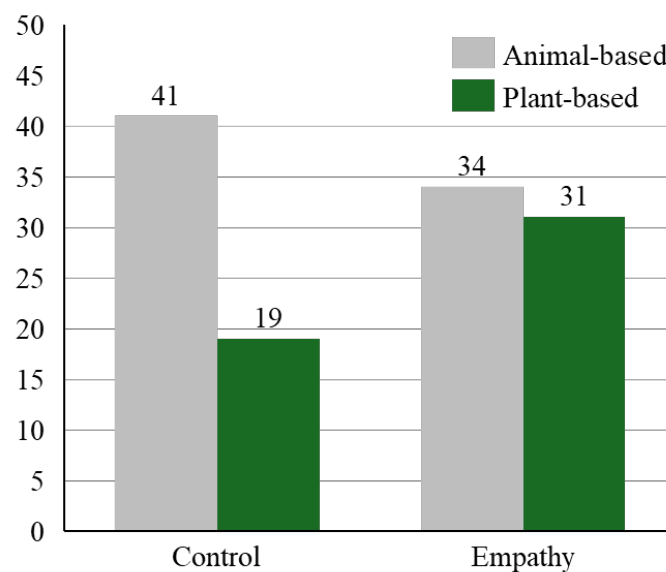
4. Results and Analysis

4.1. Empathy Study

4.1.1. Hypothesis 1a

Hypothesis 1a investigates whether the exposure to an empathy appeal message on plant-based packaging increases Gen Z's protein choice toward plant-based options over animal-based protein. Participants in the empathy condition ($n = 65$) reported higher levels of state empathy ($M = 3.67$, $SD = 1.84$), than those in the control condition ($n = 60$; $M = 3.24$, $SD = 1.47$). An independent-samples two-tailed t-test was performed to assess whether the manipulation increased state empathy. The difference between control and empathy group was not statistically significant, $t(123) = -1.44$, $p = .154$. The effect size was small, Cohen's $d = -0.26$, 95% CI $[-0.61, 0.10]$. Although the means were in the expected direction, the manipulation did not significantly increase empathic concern. Thus, any effects on choice should be interpreted with caution, as the experimental manipulation failed to reliably alter the intended psychological state.

Figure 6 Protein choices – Empathy vs. Control



Note. Number of respondents who chose the animal-based and

plant-based option, clustered by message condition

Despite the weak manipulation, a chi-square test examined whether the empathy message influenced the actual behavioral choice between meat-based (0) and plant-based (1) protein alternatives. Among participants in the control group, 19 out of 60 (31.7%) chose the plant-based option, whereas in the empathy condition, 31 out of 65 (47.7%) chose the plant-based option (Figure 6).

The chi-square test indicated a marginal association between condition and choice, $\chi^2(1, N = 125) = 3.34, p = .068$. Cramer's V was .16, suggesting a small effect size. Although statistically non-significant at the conventional $\alpha = .05$ level, the results show a directional trend consistent with H1a: participants exposed to empathy-evoking content were more inclined to select the plant-based protein product.

Across these analyses, the results consistently favored the predicted direction: participants in the empathy condition showed higher, but non-significant levels of empathy and plant-based choice. Thus, 1a was not statistically supported, though the pattern of results suggests a weak directional trend in line with the hypothesis.

4.1.2. Hypothesis 1b

Hypothesis 1b proposed that the effect of the empathy-evoking message on protein choice of Gen Z would be positively moderated by individuals' centrality of religion, indicating that the message would be more effective among participants for whom religion plays a larger role in life. To test this, a binary logistic regression was conducted with protein choice as the dependent variable (0 = meat; 1 = plant-based), the mean-centered religion score as the moderator and their interaction term representing the hypothesized moderation.

The overall regression model was not statistically significant, $\chi^2(3, N = 125) = 3.72, p = .293$, indicating that the predictors collectively explained a modest nonsignificant amount of variance in protein choice. Nagelkerke's R^2 was .04, suggesting a very small improvement in

model fit.

In the full model, the empathy-evoking message showed an effect that was marginally significant, $B = 0.73$, $SE = 0.41$, $p = .075$. This pattern was consistent with the trend observed in the chi-square test. The corresponding odds ratio ($\text{Exp}(B) = 2.08$) indicates that participants exposed to the empathy message showed 2.08 times higher odds of choosing the plant-based alternative compared to the control condition, although this effect did not achieve statistical significance and, given the non-significant omnibus test, these values should be treated as exploratory.

Centrality of religion did not significantly predict protein choice, $B = -0.10$, $SE = 0.19$, $p = .599$, suggesting that religion alone did not influence the odds of choosing plant-based over animal-based protein. Crucially for 1b, the interaction between the empathy message and centrality of religion was nonsignificant, $B = 0.13$, $SE = 0.22$, $p = .554$. The odds ratio for the interaction term ($\text{Exp}(B) = 1.14$) indicates a negligible effect size. Thus, individuals with higher religious centrality did not respond more strongly to the empathy-evoking message than those with lower religious centrality. Hypothesis 1b was not supported.

Although the empathy message itself showed a marginally positive trend, centrality of religion did not moderate this effect. Their interaction term was statistically nonsignificant and adding religion to the model did not improve predictive accuracy.

4.1.3. Empathy Discussion

Interpreting the previous findings requires returning to core theoretical concepts within empathy research. Situationally induced empathy is fragile and highly dependent on message strength. In consumer contexts, state empathy is triggered by specific stimuli and is sensitive to contextual features such as vividness and emotional richness (Heyers et al., 2025; Shen, 2010). Prior work typically uses immersive narratives or images that make another's experience concrete and emotionally salient (Koessler et al., 2023; Lehmann et al., 2022). In contrast, the

present intervention relied on a brief, text-only message on plant-based packaging. It invited participants to care about animals but did not provide an image, story or concrete scene. Hence, the insignificant effect in self-reported empathy is less surprising. However, even a low-intensity cue was associated with a higher proportion of plant-based choices, although this effect was statistically marginal.

The domain of protein choice further constrains the behavioral impact of empathy. Research on sustainable food consumption emphasizes that many consumers experience the "meat paradox": they care about animals yet continue to eat meat due to taste preferences, habits, and social norms (Graça et al., 2019; Kunst & Hohle, 2016). When mild empathy cues are introduced in this context, consumers do not necessarily change their choices. Instead, they often reduce psychological discomfort through moral disengagement and dissociation, downplaying animal suffering, avoiding thinking about the animal behind the product, or justifying meat as normal and necessary (Aaltola, 2019; Rothgerber, 2020). The empathy message in this study operated against these established patterns. It may have activated moral concern for some participants, as reflected in the directional increase in plant-based choice, but for many others, the stimulus was likely too weak to override hedonic motives and routine behavior.

The weak manipulation supports this interpretation. The message seems to have heightened awareness that animals are affected but may not have generated substantial affective resonance. This distinction is consistent with the broader empathy literature, which notes that cognitive understanding of another's state does not automatically translate into strong emotional sharing (Cuff et al., 2016). Studies showing larger effects of empathy on meat avoidance typically employ more vivid, affect-rich stimuli, such as "cute" animal depictions or explicit links between meat products and living animals (Kunst & Hohle, 2016; Zickfeld et al., 2018). Relative to these interventions, the current packaging message represents a conservative, low-

arousal implementation of empathy-based framing.

The absence of a moderating effect of centrality of religion also merits consideration. The theoretical background suggested that religiosity could shape responses to empathy appeals, given that many religious traditions promote compassion and moral responsibility while others endorse more anthropocentric views that prioritize human interests (Ghanam, 2024; Preston & Baimel, 2021). However, in this study, higher centrality of religion did not strengthen the effect of the empathy message on plant-based protein choice. There are possible conceptual reasons why centrality of religion may not have been a salient frame in this context. Existing evidence links religiosity and empathy concerns to human-directed pro-sociality. Whether such compassion is extended to animals in everyday food decisions is less clear. Moreover, the message itself did not invoke religious narratives or norms, making it less likely that participants spontaneously connected it to their religious identity.

Despite its modest effects, the empathy study contributes to understanding the boundary conditions of empathy-based interventions in sustainable food marketing. First, the findings tentatively indicate that minimal empathy cues on plant-based packaging may shift Gen Z consumers' choices in the desired direction. Second, the small and statistically fragile effect underscores that simple text labels are unlikely to be sufficient to overcome entrenched meat habits and the psychological mechanisms that sustain the meat paradox. This aligns with research showing that empathy often influences moral evaluations more readily than concrete behavior when sacrifice or hedonic loss is involved (Graça et al., 2019; Mathur et al., 2021). Third, the null moderation by centrality of religion suggests that general religiosity, measured as centrality, is not a straightforward amplifier of empathy-based appeals in this domain, highlighting the need for more nuanced conceptualizations of religious influences on animal-related moral behavior.

5. General Discussion

5.1. *Comparison of Emotional Appeals and Implications for the Intention–Behavior Gap*

The analyses of three distinct emotional appeal messages, aiming at evoking empathy, pride, and hope produced convergent yet differentiated results. The empathy-evoking appeal increased the frequency of participants choosing the plant-based protein option to 47.7%, compared to 31.7% in the control group. For the pride appeal and the hope appeal, the frequency was 53.2% and 52.4%, respectively. The differences between the experimental and control conditions reached significance at the .05 level for pride and hope, whereas the empathy appeal yielded only a marginally significant effect ($p = .068$).

Comparing the three emotional appeals unveils that these have the potential to increase the likelihood of choosing a plant-based protein option over meat among Gen Z consumers. This finding aligns with existing literature indicating that emotional appeals can induce pro-environmental behavior (Antonetti & Maklan, 2014; Mathur et al., 2021). It is also consistent with prior research showing that Gen Z holds strong pro-environmental attitudes, including opting for plant-based eating, and is responsive to value-congruent messaging (Grappi et al., 2024; Luong et al., 2024; Mahasuweerachai et al., 2023). Thus, even low-intensity emotional cues can generate directional shifts in their protein choice, indicating that emotional framing reinforces existing inclinations (i.e., pro-environmental attitudes) rather than fundamentally transforming them.

Although differences between the appeals were modest, pride and hope showed stronger, more significant effects than empathy. This observation is slightly surprising, given that prior studies find empathy to be a powerful initiator of pro-social and pro-environmental action, particularly when animals are the subject of such action (Pearce et al., 2021), which was the case in the experiment. However, in the reviewed literature, there is no study directly comparing pride and empathy or hope and empathy regarding their impact on pro-

environmental behavior, making it difficult to set the results of this experiment into perspective. Thus, the observed differences between the three emotions should be treated carefully and could be partially attributed to the weak manipulation of reported empathy and pride and the small sample size, limiting the reliability of the results.

The observed patterns of effects for empathy, pride and hope appeals illustrate the intention-behavior gap described in the theoretical background in concrete terms. All three message exposures changed protein choice only modestly, even when effects reached statistical significance. This is in line with evidence that intentions and moral concern predict sustainable food choices only weakly once actual behavior is measured (Linder et al., 2025; Robinson & Smith, 2002; Sheeran & Webb, 2016). From a theory of planned behavior perspective, the appeals primarily targeted moral components, but did not materially alter perceived behavioral control, structural constraints or situational cues, which influence the intention-behavior link (Ajzen, 1991; Ajzen & Fishbein, 1974; Zaikauskaitė et al., 2023). Moreover, the limited effect sizes are consistent with the central role of habits in protein choice. Meat consumption and grocery shopping routines are largely automatic and remain the strongest correlates of actual intake, even among high-intention groups (Linder et al., 2025; Rees et al., 2018). Emotional and motivational dynamics further constrain behavior. Ambivalence about meat and the meat paradox facilitate dissonance-reducing strategies, such as rationalizing meat consumption or dissociating meat from animals, rather than genuine behavioral change (Aaltola, 2019; Fechner & Isbanner, 2025; Rothgerber, 2020; Ye & Mattila, 2021). Finally, because the broader social and contextual environment that typically reinforces meat choices was left unchanged, the results suggest that emotional packaging appeals can narrow, but not entirely close, the intention-behavior gap in plant-based protein choice (De Sio et al., 2024), especially among Gen Z consumers who favor authenticity, positive reinforcement, and identity-affirming narratives.

5.2. Theoretical Contributions

This study contributes to theory in several ways. First, it extends research on the role of emotions in choice architecture (Pham, 2007) by demonstrating that emotionally framed nudges can meaningfully influence protein selection. The findings also support evidence that positive emotional appeals can activate identity-based behavior, i.e. sustainable protein consumption (Yousef et al., 2021; Zhang et al., 2014). Given the particularly strong connection between sustainability and identity among Gen Z, this study adds theoretical value by confirming that emotional appeals can shape sustainable protein choices within a demographic where limited research has been conducted.

Furthermore, the results demonstrate how distinct emotional appeals alter choice between plant-based and animal-based proteins. The study reinforces Antonetti and Maklan's (2014) conclusion that pride can promote pro-environmental behavior, showing that pride-evoking messages increase the likelihood of selecting plant-based proteins. Finally, it extends research on hope's positive influence on pro-environmental behavior among adolescents and young adults (Garfin et al., 2024; Ojala, 2015; Stevenson & Peterson, 2015) by demonstrating a direct effect of hope-inducing messages on protein choice toward plant-based options.

Overall, these findings advance theoretical understanding of how discrete emotions function as choice-architectural mechanisms shaping sustainable consumption, particularly within Gen Z.

5.3. Practical Implications

From a managerial perspective, the findings suggest that emotional on-pack messaging can function as a supportive, but limited, lever to promote plant-based choices among Gen Z. First, the small to modest effects observed across conditions indicate that packaging can function as a nudge within the choice architecture. However, emotional messages might require greater salience, such as stronger visual prominence and consistent use across product lines, to

compete with entrenched meat cues and habitual shelf-scanning patterns. Second, emotional appeals should not be used in isolation but combined with concrete sensory and practical claims. Given the modest observed effects and evidence that taste expectations, meat attachment and convenience remain central barriers to adoption of plant-based proteins (Halicka et al., 2025; Ye & Mattila, 2021), effective packaging should explicitly reassure consumers about flavor, texture, preparation time and price parity, thereby addressing the drivers that often override sustainability motives at the moment of choice. Third, the effect of the hope appeal, together with the robust association between self-efficacy and plant-based choice, underline the importance of future-oriented messages that activate personal agency and provide simple pathways for change (e.g., CO₂ savings per purchase) alongside cues that make the behavior feel achievable (e.g., quick recipes, usage suggestions). Fourth, the effect of the pride appeal further suggests that plant-based options may benefit from on-pack messages that frame the choice as socially commendable, such as by referencing future family or close social roles, thereby reinforcing responsible self-identity without overt moralizing. Finally, the persistence of the intention-behavior gap and the documented role of habit and availability (Linder et al., 2025; Vermeir & Verbeke, 2006) imply that emotional packaging should be embedded in a broader choice architecture strategy, including favorable shelf placement, increased availability of plant-based options in canteens and restaurants, and menu designs in which plant-based dishes are presented as visible, normative options rather than niche alternatives.

5.4. Limitations

Several limitations of the present research should be acknowledged when interpreting the findings and deriving implications. First, the characteristics of the sample constrain the generalizability of the results. Participants were mostly students or highly educated young adults residing mainly in Germany and Portugal, with a smaller proportion from other countries. As such, the findings may not extend to individuals with lower levels of education or consumers

in non-European markets, whose dietary habits and responses to emotional appeals may differ. In addition, although the data set includes respondents from multiple countries, cultural context was not explicitly modeled. Cultural norms around meat consumption, environmental concern and religiosity are likely to vary across contexts, yet the sample was treated as a single pool, precluding conclusions about cross-cultural differences.

Second, several design features affect ecological validity. The dependent variable was a simulated choice task presented in an online survey, rather than observed purchase behaviors in an actual retail environment. In supermarkets, time pressure, competing visual stimuli and social context may attenuate the impact of emotional packaging, and the intention-behavior gap might be larger. The study focused on a single product category, namely ground beef versus a plant-based ground meat alternative, which limits the generalization of results to other meat types (e.g., poultry, pork) or to other plant-based formats such as sausages, nuggets or ready meals. Furthermore, participants were exposed to the packaging only once. In practice, consumers encounter packaging repeatedly in-store and across communication channels. One-shot exposure may underestimate, but could also misrepresent, the cumulative effect of sustained campaigns. Finally, the experimental scenario controlled for price and basic product attributes and guaranteed availability. While this strengthens internal validity, it also removes real-world constraints that are central to food choice, such as price differences, stock-outs or limited shelf space.

Third, the nature of the stimuli and manipulations imposes further constraints. The emotional appeals were conveyed via short, text-only labels without supporting images, icons or other visual elements. This minimalistic design facilitates the isolation of message effects but may underestimate what more visually salient, multi-modal executions could achieve in practice. Moreover, the three appeals each carried moral content related to animal welfare, responsibility or a greener future. Their observed effects may therefore not reflect “pure”

discrete emotions, but partly a shared underlying moral framing, making it difficult to disentangle emotion-specific from moral-normative influences.

Fourth, the measurement strategy and statistical power introduce limitations. Sample sizes were adequate for detecting main effects but relatively modest for testing moderation and mediation. Interaction effects, such as the hypothesized moderation by centrality of religion and indirect effects involving self-efficacy require larger samples to be estimated with sufficient precision. Non-significant findings in these models may thus partly reflect limited power rather than the absence of any underlying effect. The outcome was operationalized as a binary forced choice between meat and a plant-based option. This dichotomous measure does not capture more nuanced dimensions of behaviors, such as willingness to pay, intention to repurchase and small shifts in this single decision may either understate or overstate broader dietary change. In addition, social desirability cannot be ruled out. Despite assurances of anonymity, respondents might have been inclined to choose the plant-based option or to respond more favorably to “virtuous” messages, given the salience of sustainability and animal welfare themes.

Finally, the scope of psychological mechanisms examined was necessarily restricted. The studies focused on three positive emotions and on a limited set of moderators and mediators, namely religiosity, political orientation, and self-efficacy. Other theoretically relevant processes, such as guilt, disgust, perceived social norms or meat attachment, were not directly manipulated or measured, which constrains the ability to explain why certain appeals were more effective than others. Finally, the cross-sectional design captures only immediate reactions to a single exposure and does not provide insight into habit formation, long-term substitution or the durability of emotional nudges over time.

6. Conclusion

The present work examined whether positive emotional appeals on plant-based packaging can influence Gen Z consumers' protein choices and thereby help narrow the intention-behavior gap in sustainable eating. Across three studies, messages intended to evoke empathy, pride, and hope increased the frequency of choosing the plant-based protein over meat. Effects were small and statistically significant for pride and hope, whereas empathy only reached marginal significance. These findings indicate that emotional framing at the point of choice can shift decisions in a more sustainable direction, even in a domain that is strongly shaped by habit, taste expectations, and situational constraints. At the same time, the modest effect sizes and relatively subtle emotional manipulations suggest that emotional framing functions best as a complementary rather than standalone intervention to narrow the intention-behavior gap.

Future research should build on these insights in several ways. First, emotional appeals ought to be tested in broader and more culturally diverse samples to examine whether their effectiveness generalizes beyond relatively homogeneous Gen Z student populations. Second, field experiments in real shopping environments are needed to assess whether emotional packaging leads to measurable increases in plant-based purchases under realistic time pressure, social influences, and price variation. Third, subsequent studies should more systematically compare different emotional profiles, incorporate richer multimodal stimuli, and explicitly measure mechanisms such as meat attachment, identity, and ambivalence. Such work would help establish whether the observed effects translate to real-world purchasing contexts and the extent to which they generalize across consumer populations and settings.

Taken together, our research suggests that emotional packaging cues can function as a complementary approach to supporting more sustainable food choices among Gen Z.

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Appendix

Appendix A - Experimental Study Design

Appendix A.1 - Survey Structure

Introduction

Welcome and thank you for taking part in this survey!

This study is part of our master thesis at Nova School of Business and Economics.

The survey will take approximately 4-5 minutes to complete. Please answer each question honestly. There are no right or wrong answers - we are only interested in your personal opinions. Your participation is completely anonymous and voluntary.

By continuing, you confirm that you have read the information above and consent to participate in this study. You can withdraw the survey at any given time. If you have any questions, feel free to contact us at: 65505@novasbe.pt

Consent

Do you consent to participate in this study under the conditions described previously?

- Yes, I consent to participate.
- No, I do not wish to participate.

Screening Questions

Is your birth year between 1997 and 2012?

- Yes
- No

Do you eat meat (i.e., any type of animal flesh)?

- Yes, I eat meat.

- No, I follow a strict vegetarian or vegan diet.

Empathy Study Group

Imagine you are at the supermarket, planning to buy products for dinner. You find two products that are identical in price, weight, and nutritional content. One is animal-based (regular ground beef) and one is plant-based (plant-based ground meat). Please look carefully at the product packages shown below before making your choice.



Given the situation you have read and the packages you have seen, which of the displayed products would you decide for?

- The plant-based ground meat
- The animal-based ground beef

Please take another look at the plant-based meat



To what extent do you feel each of the following emotions toward animals right now?

	Not at all	Slightly	A little	Moderately	Quite a bit	Very much	Extremely
Sympathetic							
Compassionate							
Warm							
Moved							
Tender							
Soft-hearted							

Please indicate to what extent the following statements apply to you personally

	Definitely not true	Mostly not true	Slightly not true	Unsure	Slightly true	Mostly true	Definitely true
In my life, I experience the presence of the Divine (i.e., God)							
My religious beliefs are what really lie behind my whole approach to life							
I try hard to carry my religion over into all other dealings in life							

Pride Study Group

Imagine you are at the supermarket, planning to buy products for dinner. You find two products that are identical in price, weight, and nutritional content. One is animal-based (regular ground beef) and one is plant-based (plant-based ground meat). Please look carefully at the product packages shown below before making your choice.



Given the situation you have read and the packages you have seen, which of the displayed products would you decide for?

- The plant-based ground meat
- The animal-based ground beef

Please take another look at the plant-based meat



To what extent do you experience the following emotions right now:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
proud							
fulfilled							
accomplished							
achieving							
full of self-worth							

Please indicate your political orientation. Consider the political spectrum on a scale from liberal to conservative, i.e. left to right.

	very liberal (far left)	liberal	somewhat liberal	moderate/ centrist	somewhat conservative	conservative	very conservative (far right)
political orientation							

Hope Study Group

Imagine you are at the supermarket, planning to buy products for dinner. You find two products that are identical in price, weight, and nutritional content. One is animal-based (regular ground beef) and one is plant-based (plant-based ground meat). Please look carefully at the product packages shown below before making your choice.



Given the situation you have read and the packages you have seen, which of the displayed products would you decide for?

- The plant-based ground meat
- The animal-based ground beef

Please take another look at the plant-based meat



To what extent do you agree with the following statements right now:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
This product made me feel a sense of hope about the future.							
I feel hopeful that choosing plant-based proteins will lead to a better future for the environment.							
This product gives me hope that my everyday choices can contribute to climate solutions.							
This product gives me hope that collective action through dietary change can help address climate change.							
This product motivates me to choose plant-based proteins more often.							

Please indicate to what extent you agree with the following statements when looking at this product:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
I am able to choose plant-based meals instead of meat-based ones when I want to.							
Choosing plant-based proteins instead of meat is easy for me.							
It is convenient for me to find and choose plant-based proteins in my daily life.							
I can maintain plant-based eating habits even when dining out or in social situations.							
Choosing plant-based proteins helps reduce my personal environmental impact.							

Control Group

Imagine you are at the supermarket, planning to buy products for dinner. You find two products that are identical in price, weight, and nutritional content. One is animal-based (regular ground beef) and one is plant-based (plant-based ground meat). Please look carefully at the product packages shown below before making your choice.



Given the situation you have read and the packages you have seen, which of the displayed products would you decide for?

- The plant-based ground meat
- The animal-based ground beef

Please take another look at the plant-based meat



To what extent do you feel each of the following emotions toward animals right now?

	Not at all	Slightly	A little	Moderately	Quite a bit	Very much	Extremely
Sympathetic							
Compassionate							
Warm							
Moved							
Tender							
Soft-hearted							

To what extent do you experience the following emotions right now:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
proud							
fulfilled							
accomplished							
achieving							
full of self-worth							

To what extent do you agree with the following statements right now:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
This product made me feel a sense of hope about the future.							
I feel hopeful that choosing plant-based proteins will lead to a better future for the environment.							
This product gives me hope that my everyday choices can contribute to climate solutions.							
This product gives me hope that collective action through dietary change can help address climate change.							
This product motivates me to choose plant-based proteins more often.							

Please indicate to what extent the following statements apply to you personally

	Definitely not true	Mostly not true	Slightly not true	Unsure	Slightly true	Mostly true	Definitely true
In my life, I experience the presence of the Divine (i.e., God)							
My religious beliefs are what really lie behind my whole approach to life							
I try hard to carry my religion over into all other dealings in life							

Please indicate your political orientation. Consider the political spectrum on a scale from liberal to conservative, i.e. left to right.

	very liberal (far left)	liberal	somewhat liberal	moderate/ centrist	somewhat conservative	conser- vative	very conservative (far right)
political orientation							

Please indicate to what extent you agree with the following statements when looking at this product:

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
I am able to choose plant-based meals instead of meat-based ones when I want to.							
Choosing plant-based proteins instead of meat is easy for me.							
It is convenient for me to find and choose plant-based proteins in my daily life.							
I can maintain plant- based eating habits even when dining out or in social situations.							
Choosing plant-based proteins helps reduce my personal environmental impact.							

Control Questions

Over the past 12 months, how often did you consume meat (any kind of animal flesh, e.g., pork, beef, poultry)?

- Never

- Rarely (once a month or less)
- Occasionally (a few times per month)
- Weekly (about once per week)
- Several times per week (2-4 times per week)
- Almost daily (5-6 times per week)
- Daily

Is there any of the following meats that you never consume?

- Pork
- Beef
- Poultry
- None of the above

Please indicate to what extent you agree with the following statements

	strongly disagree	disagree	somewhat disagree	neither agree, nor disagree	somewhat agree	agree	strongly agree
Caring for the environment is important to me							
I feel personally responsible for helping protect the environment							

Please indicate your gender

- Male
- Female
- Diverse
- Prefer not to say

Please indicate your age (in years)

What is your highest level of education completed?

- Lower secondary education (e.g., GCSEs, Mittlere Reife)
- Upper secondary education (e.g., A-levels, Abitur, Baccalauréat)
- Vocational training / apprenticeship
- Bachelor's degree or equivalent (e.g., BA, BSc)
- Master's degree or equivalent (e.g., MA, MSc)
- Doctorate (PhD or equivalent)
- Other / prefer not to say

Please indicate your home country (in case of multiple nationalities, please select the country you spent more time in)

- Germany
- Portugal
- Italy
- France
- United Kingdom
- Other (please indicate)

We thank you for your time spent taking this survey.

Your response has been recorded.

Appendix B - Respondent Characteristics and Demographics

Appendix B.1 - Frequency Statistics for Gender

Gender

Statistic	<i>n</i>	Percent
Male	135	54.0%
Female	112	44.8%
Diverse	1	0.4%
Prefer not to say	2	0.8%

Appendix B.2 - Frequency Statistics for Age

Age

Statistic	Value
N	250
Mean	23.284
Standard Deviation	1.766

Appendix B.3 - Frequency Statistics for Education

Education

	Frequency	Percent
Lower secondary education	4	1.6%
Upper secondary education	28	11.2%
Vocational training / apprenticeship	8	3.2%
Bachelor's degree or equivalent	123	49.2%
Master's degree or equivalent	86	34.4%
Doctorate	1	0.4%
Other / prefer not to say	0	0.0%

Appendix B.4 - Frequency Statistics for Home Country

Home Country

	Frequency	Percent
Germany	137	54.8%
Portugal	75	30.0%
Italy	12	4.8%
France	7	2.8%

United Kingdom	3	1.2%
United States	3	1.2%
Mozambique	2	0.8%
Argentina	1	0.4%
Australia	1	0.4%
Bangladesh	1	0.4%
Brazil	1	0.4%
Colombia	1	0.4%
Mexico	1	0.4%
Netherlands	1	0.4%
New Zealand	1	0.4%
Scotland	1	0.4%
South Africa	1	0.4%

Appendix C - Results Empathy Study

Appendix C.1 - Reliability Empathy Index

Empathy Index

Statistic	Value
Valid cases	65 (26.0%)
Excluded cases	185 (74.0%)
Total	250 (100.0%)
Cronbach's Alpha	.963
Number of items	6

Appendix C.2 - Reliability Intrinsic Religiosity Subscale

Intrinsic Religiosity Subscale

Statistic	Value
Valid cases	65 (26.0%)
Excluded cases	185 (74.0%)
Total	250 (100.0%)
Cronbach's Alpha	.947
Number of items	3

Appendix C.3 - Independent Samples t-Test

Group Statistics

	<i>n</i>	<i>M</i>	<i>SD</i>
Control	60	3.242	1.474
Empathy	65	3.672	1.838

Independent Samples Test

	<i>t</i>	df	Two-sided <i>p</i>
Equal variances assumed	-1.436	123	.154

Independent Samples Test Effect Sizes

	Standardizer	Point estimate	95% Confidence Interval	
			Lower	Upper
Cohen's <i>d</i>	1.673	-.257	-.609	.096
Hedges' correction	1.683	-.256	-.605	.095
Glass's delta	1.838	-.234	-.586	.120

Appendix C.4 - Chi-Square test*Crosstabulation*

		Animal-based Protein	Plant-based Protein	Total
Control Group	Count	41	19	60
	Expected Count	36	24	60
Empathy Group	Count	34	31	65
	Expected Count	39	26	65
Total	Count	75	50	125
	Expected Count	75	50	125

Chi-Square Tests

Statistic	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.339	1	.068
Continuity Correction	2.704	1	.100
Likelihood Ratio	3.363	1	.067
Linear-by-Linear Association	3.312	1	.069
<i>N</i> of Valid Cases	125		

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.163	.068
	Cramer's <i>V</i>	.163	.068
<i>N</i> of Valid Cases		125	

Appendix C.5 - Binary Logistic Regression

Omnibus Tests of Model Coefficients

	Chi-square	df	Significance
Step	3.724	3	.293
Block	3.724	3	.293
Model	3.724	3	.293

Model Summary

Step	- 2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	164.529	.029	.040

Variables in the Equation

	<i>B</i>	<i>S.E.</i>	Wald	df	Significance	Exp (<i>B</i>)
Empathy vs Control	.730	.411	3.162	1	.075	2.076
Centered Religion	-.098	.186	.277	1	.599	.907
Empathy Interaction	.130	.221	.350	1	.554	1.139
Constant	.845	.317	7.094	1	.008	0.430

Appendix D - Results Pride Study

Appendix D.1 - Reliability Pride Index

Pride Index

Statistic	Value
Valid cases	62 (24.8%)
Excluded cases	188 (75.2%)
Total	250 (100.0%)
Cronbach's Alpha	.947
Number of items	5

Appendix D.2 - Independent Samples t-Test

Group Statistics

	<i>n</i>	<i>M</i>	<i>SD</i>
Control	60	3.717	1.288
Pride	62	4.058	1.468

Independent Samples Test

	<i>t</i>	df	Two-sided <i>p</i>
Equal variances assumed	-1.364	120	.175

Independent Samples Test Effect Sizes

	Standardizer	Point estimate	95% Confidence Interval	
			Lower	Upper
Cohen's <i>d</i>	1.382	-.247	-.603	.110
Hedges' correction	1.391	-.245	-.599	.109
Glass's delta	1.468	-.233	-.589	.126

Appendix D.3 - Chi-Square test*Crosstabulation*

		Animal-based Protein	Plant-based Protein	Total
Control Group	Count	41	19	60
	Expected Count	34.4	25.6	60
Pride Group	Count	29	33	62
	Expected Count	35.6	26.4	62
Total	Count	70	52	122
	Expected Count	70	52	122

Chi-Square Tests

Statistic	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.795	1	.016
Continuity Correction	4.947	1	.026
Likelihood Ratio	5.851	1	.016
Linear-by-Linear Association	5.748	1	.017
N of Valid Cases	122		

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.218	.016
	Cramer's <i>V</i>	.218	.016
N of Valid Cases		122	

Appendix D.4 - Binary Logistic Regression*Omnibus Tests of Model Coefficients*

	Chi-square	df	Significance
Step	21.258	3	<.001
Block	21.258	3	<.001
Model	21.258	3	<.001

Model Summary

Step	- 2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	145.205	.160	.215

Variables in the Equation

	<i>B</i>	<i>S.E.</i>	Wald	df	Significance	Exp (<i>B</i>)
Pride vs Control	1.210	.437	7.676	1	.006	3.355
Centered Political Orientation	-.814	.28	8.441	1	.004	.443
Pride Interaction	.450	.343	1.722	1	.189	1.569
Constant	-1.056	.349	9.148	1	.002	0.348

Appendix E - Results Hope Study**Appendix E.1 - Reliability Hope Index***Hope Index*

Statistic	Value
Valid cases	63 (25.2%)
Excluded cases	187 (74.8%)
Total	250 (100.0%)
Cronbach's Alpha	.934
Number of items	5

Appendix E.2 - Reliability Self-efficacy Index*Self-efficacy Index*

Statistic	Value
Valid cases	63 (25.2%)
Excluded cases	187 (74.8%)
Total	250 (100.0%)
Cronbach's Alpha	.861
Number of items	5

Appendix E.3 - Independent Samples t-Test*Group Statistics*

	<i>n</i>	<i>M</i>	<i>SD</i>
Control	60	4.130	1.556
Hope	63	4.597	1.507

Independent Samples Test

	<i>t</i>	df	Two-sided <i>p</i>
Equal variances assumed	-1.690	121	.094

Independent Samples Test Effect Sizes

	Standardizer	Point estimate	95% Confidence Interval	
			Lower	Upper
Cohen's <i>d</i>	1.531	-.305	-.660	.051
Hedges' correction	1.540	-.303	-.656	.051
Glass's delta	1.507	-.310	-.666	.049

Appendix E.4 - Chi-Square test*Crosstabulation*

		Animal-based Protein	Plant-based Protein	Total
Control Group	Count	41	19	60
	Expected Count	34.6	25.4	60
Hope Group	Count	30	33	63
	Expected Count	36.4	26.6	63
Total	Count	71	52	123
	Expected Count	71	52	123

Chi-Square Tests

Statistic	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.403	1	.020
Continuity Correction	4.588	1	.032
Likelihood Ratio	5.454	1	.020
Linear-by-Linear Association	5.360	1	.021
N of Valid Cases	123		

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.210	.020
	Cramer's <i>V</i>	.210	.020
N of Valid Cases		123	

Appendix E.5 – Hayes PROCESS Model 4 Mediation Analysis*Model Summary for the Mediator Self-efficacy*

<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	<i>F</i>	<i>p</i>	SEest
0.135	.018	.010	2.258	.136	1.298

Variables in the Mediator Model

	<i>B</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Hope vs Control	.352	.234	1.503	.136	-.112	.815
Constant	4.213	.168	25.148	< .001	3.882	4.545

Model Summary for the Outcome Variable Hope Choice

-2LL	ModelLL	<i>p</i>	McFadden	Cox & Snell	Nagelkerke
135.087	32.480	< .001	.194	.232	.312

Variables in the Logistic Regression Model

	<i>B</i>	<i>S.E.</i>	<i>Z</i>	<i>p</i>	LLCI	ULCI
Hope vs Control	.746	.419	1.780	.075	-.075	1.568
Mean Self-efficacy Score	.900	.203	4.438	< .001	.503	1.298
Constant	-4.776	.992	-4.816	< .001	-6.719	-2.832

Direct Effect of X on Y

Effect	<i>S.E.</i>	<i>Z</i>	<i>p</i>	LLCI	ULCI
.746	.419	1.780	.075	-.075	1.568

Indirect Effect of X on Y through M

	Effect	Boot <i>S.E.</i>	Boot LLCI	Boot ULCI
Mean Self-efficacy Score	.317	.232	-.100	.824

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