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A qualitative exploration of how communicative and direct experiences shape students' dietary climate awareness

Anna Steinfeldt¹ and Tina Bartelmeß^{1*}

*Correspondence:

Tina Bartelmeß

tina.bartelmess@uni-bayreuth.de

¹Faculty of Life Sciences: Food, Nutrition and Health, University of Bayreuth, Kulmbach, Germany

Abstract

This study explores the development of dietary climate awareness and its influence on dietary changes among university students. Given the substantial role of food systems in greenhouse gas emissions, fostering climate-conscious eating is critical. The study investigates communicative and experiential factors that shape students' awareness and transitions to vegan, vegetarian, or flexitarian diets. Episodic interviews were conducted with 18 students from the University of Bayreuth who made dietary changes within the past five years. Data were analysed using qualitative content analysis. Results show that dietary transitions are highly individualized and typically unfold over time, following a non-linear process consistent with the Transtheoretical Model. Climate awareness and behaviour change were shaped by institutional, media, and interpersonal communication, as well as direct experiences such as studying abroad or witnessing environmental degradation. Key influences included family norms, peer networks, media content (e.g., documentaries), and transitional life phases. Specific turning points—such as pivotal conversations or impactful media—often initiated dietary shifts. Participants who reached a stable dietary pattern frequently became advocates within their social environments, contributing to broader norm changes. The study highlights the communicative and experiential dynamics underlying climate-conscious eating among students and offers insights for strategies to promote sustainable dietary behaviour in this demographic.

Keywords Climate-conscious diet, Communicative experiences, Direct experiences, Dietary behaviour, Dietary climate awareness, University students

1 Introduction

The climate crisis is one of the most pressing challenges of the twenty-first century [1]. While the role of the food system in contributing to climate change is increasingly acknowledged in public discourse and policy debates, this growing awareness is not yet matched by corresponding changes in individual dietary behaviour [2–4] or by the fundamental, system-wide transformations needed to achieve global sustainability goals [4–6]. The global food system, encompassing production, distribution, and consumption, is responsible for up to one-third of global greenhouse gas emissions [7, 8], with meat



and animal-derived products being major contributors to methane, nitrous oxide, and carbon dioxide emissions [9]. Compared to plant-based foods, animal-based products account for approximately double the greenhouse gas emissions (57% versus 29%) within the agricultural and food sector [10, 11]. Thus, transforming the food system is crucial for building a climate-resilient future.

Individual dietary choices hold substantial potential for reducing greenhouse gas emissions, especially when supported by institutional mechanisms that link consumption patterns to production impacts. Transitioning to a plant-based diet can lead to reductions of 50–84% in food-related emissions, depending on the quantity and type of animal-based products consumed [12–14]. To achieve such dietary shifts, fostering awareness of the relationship between food choices and climate change—referred to as dietary climate awareness—is essential. Awareness, coupled with behavioural intentions, forms the foundation for climate-conscious actions [15]. Therefore, understanding how to promote dietary climate awareness through targeted communicative strategies is a societal priority.

However, it is increasingly recognised that focusing solely on individual behaviour change risks what Grunwald has termed the “privatisation of sustainability” [16]. This approach places the burden of systemic transformation on individuals, while often neglecting the broader structural, political, and cultural conditions that shape and constrain dietary practices [17]. Research has shown that sustainable transitions in the food sector require not only changes in individual consumption, but also coordinated action at multiple levels, including policy interventions, institutional reforms, and shifts in socio-technical systems [18, 19]. Thus, while individual dietary choices are important, they must be understood within the context of wider societal, economic, and political frameworks that enable or hinder sustainable behaviour.

Young individuals, including university students, represent a particularly significant demographic. Not only will they face the long-term consequences of climate change [20], but they also hold the potential to lead transformative changes in the food system through future leadership roles [21, 22]. This group, particularly individuals aged 14–29 and those with higher educational attainment, tends to view environmental issues as highly relevant and express strong emotional concern about environmental degradation and climate change [23]. Furthermore, individuals within this demographic who exhibit higher climate awareness are generally more receptive to plant-based dietary alternatives [24]. University life marks a critical period characterized by significant changes in dietary behaviours. This transitional phase often disrupts previously family-based eating patterns due to changes in the physical and social environment, leading to both challenges and opportunities for establishing new dietary habits [25–27].

In sum, promoting dietary climate awareness and supporting individual behaviour change remain important but must be situated within a broader understanding of the systemic and structural transformations required for a sustainable food system. This perspective avoids the pitfalls of over-individualisation and highlights the importance of empowering young people not only as consumers but as future decision-makers capable of driving change at multiple societal levels [28].

Communicative elements such as interpersonal discussions, media exposure, and other forms of communication play a pivotal role in shaping awareness and behaviour. These factors influence knowledge, attitudes, and intentions [22, 29, 30]. Given the

urgency of transitioning toward climate-conscious, meat-reduced diets, as well as the significant influence of university life and communication on dietary behaviours, this study seeks to explore how communicative and direct experiences shape dietary climate awareness among university students and foster the adoption of climate-friendly dietary practices. Specifically, it investigates (1) the types of communicative and direct experiences that encourage climate-conscious dietary behaviours and examines (2) the pivotal experiences and key actors that drive students' dietary transitions.

This study advances the understanding of climate-conscious dietary change by mapping communicative and experiential influences across stages of behaviour change. It shows how informal and institutional communication, social modelling, and direct experiences play distinct roles at different points in the change process—from early awareness to long-term maintenance. By highlighting both cumulative and pivotal moments of influence, particularly during life transitions, the study extends existing research that often focuses on single factors, such as the impact of individual documentaries, campaigns, social media or educational formats on sustainability awareness and behaviour, and typically does not systematically consider how such influences may vary or become particularly salient at specific points in the life course (e.g., [31–33]).

The paper first presents the theoretical background on dietary climate awareness, key communicative and direct experiences, and the Transtheoretical Model. Next, the methodology section details the episodic interviews and qualitative content analysis. The results highlight key patterns and experiences in students' dietary transitions, followed by a discussion of their implications for fostering sustainable eating. The paper concludes with a summary of findings and suggestions for future research.

2 Theoretical background

This study builds on three central theoretical concepts: the conceptualization of dietary climate awareness, a theoretical framework on the formation of experiences through communication, and direct phenomena [34], and the Transtheoretical Model of Behaviour Change (TTM) [35].

2.1 Dietary climate awareness

Dietary climate awareness, rooted in the broader concepts of environmental and climate change awareness, integrates cognitive, affective, and conative dimensions [36–39]. These dimensions include recognizing climate risks, emotional concern, and intentions to mitigate harm, which are linked to sustainable and healthy dietary behaviours [36, 40]. Dietary climate awareness specifically focuses on understanding how food choices contribute to greenhouse gas emissions, such as carbon dioxide, methane, and nitrous oxide [40].

The cognitive aspect includes knowledge of how food production, transportation, packaging, and consumption contribute to the climate crisis, with students demonstrating particular concern about issues such as food waste and plastic usage [41]. Interventions that enhance understanding, such as compulsory climate change education and targeted messaging, have shown potential for fostering more sustainable dietary behaviours, though knowledge alone may not consistently predict behaviour change [42, 43]. Affective dimensions capture emotional responses and concerns regarding dietary practices, with generational, gender, and disciplinary differences influencing attitudes toward

climate-sustainable diets [43]. While affective engagement, such as worry about climate change, can support climate-friendly food choices, causality remains uncertain [44]. The conative dimension reflects the willingness and behavioural intentions to adopt sustainable diets, with studies indicating that undergraduate students, particularly women and those in natural sciences, exhibit greater receptivity to dietary changes for environmental reasons [45]. Interventions in universities, including the use of marketing materials in dining halls, have successfully increased climate impact awareness and reduced red meat consumption, underscoring the efficacy of sustainability efforts beyond traditional educational settings [46, 47]. Research highlights the multidimensional nature of dietary climate awareness, underscoring the importance of integrated educational and communicative strategies to promote sustainable dietary practices. However, driving behavioural change through communication remains challenging due to the deep entrenchment of behaviours and habits within existing social norms, values, and emotional frameworks [48]. Despite increased awareness and positive intentions, a significant intention-behaviour gap persists, illustrating the difficulty individuals encounter in consistently translating climate awareness into sustained, tangible actions [49].

2.2 Communicative and direct experiences in climate awareness

Climate communication aims to close the intention-behaviour gap by leveraging psychological mechanisms to foster climate-conscious actions [50]. Climate-related food communication operates across institutional, media-based, and interpersonal channels, each playing a vital role [51]. Institutional efforts, such as educational programs, official campaigns, and structured events within universities, schools, and workplaces, are led by professional actors to promote sustainable dietary practices [52, 53]. Simultaneously, media platforms, including social networks and mass media, reach broader audiences by amplifying climate-related messages [54]. Informal interpersonal interactions, such as peer and family discussions, further shape attitudes and behaviours [55], emphasizing the multidimensionality of climate communication pathways.

Theoretical insights from Lörcher's [34] experience formation framework elucidate how communicative and direct experiences foster climate awareness. Communicative experiences arise from mediated or interpersonal exchanges, while direct experiences involve sensory interactions with climate change impacts. These experiences, processed subjectively, contribute to an 'experience reservoir' encompassing knowledge, emotions, attitudes, and skills. This dynamic reservoir evolves through interactions with new stimuli, reinforcing or reshaping behaviours like sustainable eating. Transformative experiences often become turning points for long-term behavioural changes, whereas peripheral ones fade unless reinforced.

Empirical studies highlight the complex effects of communicative experiences on climate awareness. Education and media exposure are key factors. Education and media exposure have been identified as critical to raising climate awareness. Jiménez-García et al. [56] found media has a stronger influence on youth than education, though environmental educommunication can boost educational outcomes. Junsheng et al. [57] and Bakaki and Bernauer [58] emphasized media's role in raising awareness, especially for those with low initial knowledge. Social media has become central in promoting global and local environmental campaigns [59, 60]. Almansa-Martínez et al. [61] noted that university students engage more with digital media but identified gaps in university

communication efforts. Effective climate communication should use diverse media, foster peer networks, and incorporate participatory methods [62]. Perceived social norms and media use also influence sustainable behaviour [63]. Artistic formats, including films and podcasts, help make climate change more tangible and emotionally engaging [64–66]. Interpersonal communication often increases climate engagement [67].

Direct experiences, such as exposure to climate events, complement media influence. Otto [68] and Brito et al. [69] suggest that media reporting is less effective than personal experience in raising awareness. Misniakiewicz et al. [70] found that proximity to crises, like the Russia-Ukraine conflict, boosts concern for related issues. However, Gavin [71] and Ho et al. [72] argue people rely on media for distant phenomena. Rosenthal [73] shows that media can create vicarious experiences of environmental events, especially when aligned with personal experiences and worldviews.

This study examines how communicative and direct experiences interact to promote climate-conscious dietary behaviours, focusing on media, interpersonal communication, and engagement with environmental impacts in shaping sustainable diets.

2.3 Theories of behaviour change: the transtheoretical model (TTM)

Dietary transitions among young adults, including students, are shaped by individual, social, and environmental factors. The TTM offers a dynamic framework to analyse pivotal experiences and key actors influencing these transitions.

The TTM outlines six nonlinear stages of behaviour change: pre-contemplation (no intention to change), contemplation (awareness and intention), preparation (planning), action (behaviour initiation), maintenance (stabilization), and termination (full integration) [35, 74]. Applied across domains like climate-conscious behaviours [75] and dietary shifts such as meat reduction [76, 77], the model highlights the iterative nature of change. Key processes of change—such as early-stage consciousness-raising and later-stage strategies like helping relationships—address both cognitive awareness and practical behaviour implementation [78].

Despite growing climate awareness, students often face an intention-behaviour gap, where actions fail to align with intentions [79, 80]. Contextual and interpersonal factors, including peers, family, and institutions, significantly influence these transitions [35]. The TTM links external influences, such as communicative and direct experiences, with internal processes driving behaviour. This study uses the TTM to identify critical experiences and actors in students' dietary transitions. By mapping stages and processes, it examines how communicative and direct experiences act as catalysts for progression.

3 Methodology

3.1 Research design and approach

This study employed episodic individual interviews, a method blending open-ended inquiry with storytelling to capture both episodic (personal experiences) and semantic (general knowledge) insights [81, 82]. This approach enabled an in-depth exploration of general attitudes and individual experiences related to climate-conscious eating, providing a nuanced understanding of dietary transitions. Episodic and narrative interviews are particularly appropriate for exploring how attitudes and behaviours develop over time and in response to specific influences, as they enable participants to recount concrete episodes and meaning-making processes in their own words [81, 82]. However,

we acknowledge that interview responses rely on memory, which may be selective or shaped by recall bias [81].

A semi-structured interview guide included targeted questions on dietary climate awareness and narrative prompts to elicit detailed reconstructions of personal experiences. This design facilitated the analysis of complex processes shaping dietary choices, allowing participants to reactivate and reflect on key experiences throughout their lives.

3.2 Data collection and sample characteristics

Ethical approval for the study was obtained from the University of Bayreuth Ethics Board (Number: 24–013). Participants were recruited between March and May 2024 from the university, with efforts to ensure gender balance and diversity across academic disciplines and age groups. Recruitment materials were distributed via flyers, social media, student organizations, sustainability program coordinators, and personal networks, including WhatsApp.

Eligible participants, aged 20–27 years (mean: 24.3 ± 1.7 years), had transitioned to vegan, vegetarian, or flexitarian diets within the past five years, motivated by climate protection goals. The final sample comprised 18 students, equally representing each dietary group and gender, drawn from six of the university's seven faculties, including nine bachelor's students, eight master's students, and one law student, spanning academic levels from the 2nd bachelor's to the 6th master's semester (see Table 1).

Interviews were conducted between March and June 2024, primarily in person (except of one online via MS Teams), at the University of Bayreuth or the interviewer's private residence, lasting 38 to 70 min (mean: 53 min). Participants provided written informed

Table 1 Participant characteristics of included students

	Total number of participants
Sex	
Male	9
Female	9
Age (mean 24.3 ± 1.7 years)	
20–21	1
22–23	4
24–25	10
26–27	3
Field of study/Faculty*	
Law and economics	6
Biology, chemistry and geosciences	7
Mathematics, physics and computer science	1
Linguistics and literature studies	2
Cultural studies	4
Engineering sciences	2
Type of Study	
Bachelor	9
Master	8
State Examination	1
Diet	
Flexitarian	6 (3 male/3 female)
Vegetarian	6 (3 male/3 female)
Vegan	6 (3 male/3 female)

*Students studying to become teachers (three people) are assigned to several faculties at the same time due to their subject combinations

consent, including the agreement for audio recording before the interview. The interview guide comprised five thematic sections, starting with a warm-up question and concluding with a wrap-up. Sections 1 to 4 covered participants' understanding of climate-conscious eating, dietary climate awareness, the diet-climate link, and key communicative and direct experiences driving dietary transitions. The final section focused on strategies to promote climate-conscious eating. The complete interview guide and the short socio-demographic questionnaire can be found in the [Supplementary Material](#) (A, B).

3.3 Data analysis

The category system in MAXQDA was initially developed deductively, based on the thematic blocks of the interview guide as well as the underlying theoretical models and concepts. This process resulted in the following main categories: *Understanding of climate-conscious nutrition*, *Eating behaviour*, *Climate awareness in dietary choices*, *Communicative experiences*, *Direct experiences and impacts*, *Process of awareness development and dietary change*, and *Ideas for promoting climate-conscious nutrition*. While the main categories were theory-driven, the formation of subcategories was primarily informed by the interview material itself, with a few exceptions. For example, the category *Communicative experiences* was subdivided into *institutional*, *media*, and *interpersonal communication*, following the 'Theoretical Concept of Experience Formation' [34]. Similarly, the category *Process of awareness development and dietary change* was further structured based on theoretical models, incorporating elements such as *key experiences* and *the dynamics of communicative experiences* [34], as well as stages of behaviour change based on the TTM by Prochaska and Velicer [35].

Each main and subcategory was accompanied by clearly defined coding rules, definitions, and illustrative examples to ensure consistency in the coding process. These are compiled in the coding manual included in the [Supplementary Material](#) (C). The initial category system was further refined to include emergent themes not explicitly addressed in the interview guide. Two additional inductively derived main categories—*Motives for dietary change* and *Differences in awareness and eating behaviour*—were added based on their frequency, relevance to dietary transitions, and the novelty of the insights they provided. Thus, the final category system integrates both deductive and inductive elements, consistent with the approach outlined by Kuckartz and Rädiker [83].

Interview transcripts were generated using the online tool 'Happy Scribe' and subsequently manually corrected and anonymized to ensure accuracy and confidentiality. Qualitative content analysis was conducted in MAXQDA Analytics Pro (version 24.3.0). The initial coding framework, developed from interview themes and theoretical models, was iteratively refined to incorporate newly emerging categories. Main categories structured the data, while subcategories were primarily developed inductively based on content. Coding was conducted iteratively, with ongoing adjustments and quality checks. The MAXQDA tools *Code Relations Browser* and *Code Matrix Browser* were used to examine patterns and compare coded segments across cases. However, no significant group differences were identified. Throughout the iterative analysis process, data saturation was continuously assessed and effectively achieved within the set of 18 interviews. As coding progressed, no substantially new themes, categories, or relevant insights emerged, and a high degree of thematic redundancy became evident across participants. The ongoing recurrence of core patterns and the lack of novel information indicated that

further data collection was unlikely to provide additional conceptual depth, thereby supporting the adequacy of the sample size for this qualitative study.

To ensure the reliability and validity of our qualitative interview study, we implemented several rigorous checks [84]. To enhance truth value, we engaged in reflexivity by maintaining a reflective journal to document methodological decisions and their rationale. Peer debriefing sessions were conducted to critically assess and address potential biases, ensuring a balanced interpretation of data. The representativeness of findings was supported by employing semi-structured, audio-recorded episodic interviews, allowing for iterative analysis and alignment with participants' accounts. Thick, verbatim extracts from the 18 university students interviewed offer transparency and help readers evaluate the authenticity of our themes. Auditability was achieved through a clear and transparent description of the research process, from design to reporting. The use of MAXQDA software facilitated rigorous coding and analysis, including intercoder reliability checks to confirm consistency and reliability in theme identification. This process involved both researchers independently coding segments of the same interview transcripts and comparing their results to identify and resolve discrepancies. Finally, by providing a richly detailed account of the study's context and methodology, we enable readers to evaluate the transferability of our findings to other university settings and similar demographic groups.

4 Results

The analysis of 18 episodic interviews with university students revealed a range of communicative and direct experiences contributing to their dietary climate awareness and subsequent dietary behaviours. While the findings cannot be generalized beyond this sample, they offer insights into how such experiences may operate in a student context. Communicative experiences can be categorized into institutional, media, and interpersonal communication, while direct experiences complement these influences.

4.1 Institutional communication

4.1.1 Schools

Interview data consistently highlight the lack of substantive engagement with the climate impacts of dietary practices in school education. Most participants reported minimal exposure to these topics, with isolated mentions of healthy or seasonal eating during special events or cafeteria meals. However, such initiatives were not viewed as pivotal in shaping climate-related dietary awareness. An exception was reported by a participant who attended a Waldorf school, where a pronounced focus on nutrition and climate awareness left a lasting impression.

4.1.2 Universities

The university emerged as a key environment for promoting climate-conscious eating. Initiatives like sustainability campaigns, course content, and cafeteria offerings influenced students, though with limitations. Vegan options at university events provided initial exposure, positively impacting students' intentions to adopt sustainable diets.

Academic content on sustainability was unevenly integrated, with greater focus in natural science fields like geosciences and biology, while other faculties offered limited

coverage. Many students sought additional knowledge through electives or thesis topics, reinforcing climate-conscious behaviours.

The cafeteria served both as a provider of climate-friendly meals and a space for discussions on sustainability. The availability of vegetarian and vegan options, along with informational displays, encouraged behavioural shifts and could further enhance awareness through targeted educational initiatives.

4.1.3 Museums and exhibitions

Two participants described visiting exhibitions—one on environmental sustainability and another focusing on planetary boundaries—that included information on food's ecological impact. These visits occurred during school field trips. Activities like carbon footprint calculators and interactive graphics left lasting impressions, though behavioural change did not immediately follow. These engagements acted more as seeds for future reflection.

4.2 Media communication

Media emerged as a pivotal channel influencing the various stages of dietary behaviour change, providing diverse and multifaceted impacts. Participants described a range of media types—including social media, documentaries, podcasts, traditional print, and mass media—as contributing to their awareness, knowledge building, reflection, and reinforcement of climate-conscious dietary choices. Social media platforms such as Instagram and YouTube offered daily, often indirect, exposure to sustainable diet content, frequently via influencers or peers. For example, eight students reported that Instagram's algorithm reinforced their interest in vegetarian recipes and sustainability tips, helping to normalize climate-conscious eating habits. Deliberate engagement with documentaries like *Seaspiracy* or *Cowspiracy* was particularly formative; ten students identified films and documentaries in general as major turning points that shaped their ethical and environmental perspectives regarding animal products. Podcasts, although less frequently mentioned, were valued for delivering reflective content in low-effort contexts such as commuting. Print materials—including magazines and books—were cited by a smaller subset of participants ($n = 9$), often associated with influential authors or movements.

Mass media, including television and newspapers, were generally viewed as less effective, frequently failing to explicitly link food choices to climate issues. Nevertheless, some participants ($n = 2$) noted that food labelling and marketing—such as 'CO₂-neutral' stickers—played a role in guiding their daily shopping behaviours. Overall, media contributed to creating initial awareness, building knowledge, encouraging reflection, and reinforcing behaviours. Large-scale media events, like coverage of global climate movements, rarely connected diet and climate directly but occasionally inspired independent exploration. The impact of media varied according to the intentionality of media consumption, with deliberate engagement fostering deeper understanding, while habitual exposure tended to exert more subtle influences. Despite its often diffuse nature, media communication cumulatively strengthened climate-conscious attitudes and behaviours, with particularly impactful moments linked to specific content, as summarized in Table 2.

Table 2 Forms of media communication and their effects

Medium	Types of communication and examples	Effect	Frequency
Social media	Information exchange, visual and educational content	Unconscious experiences tend to be 'background noise'; awareness raising, need for information, influence on an emotional level	18/18
Instagram	Selective and algorithm-driven content (nutritional content not necessarily related to climate change)	Motivation and inspiration to try out new things, facilitates implementation, perceived 'bubble' on climate and nutrition-related content	8/18
Facebook	Ideologization of a meat-free diet, misinformation, 'anti-veganism culture'	Encouraging for own diet despite criticism	1/18
TikTok	Entertainment, personalized content	Rejection as an informative medium	1/18
Videos/Documentaries	Active search and targeted selection, suggested or recommended, on YouTube, media archives or private streaming services	High visual impact; formative influences on awareness and nutritional behaviour; especially <i>Seaspiracy</i> with effect on reduced fish consumption and <i>An Inconvenient Truth</i>	10/18
Online information/research	Information mainly from popular scientific websites, often because of a specific need for information; sometimes as follow-up communication	Building knowledge and awareness for climate-friendly nutrition	9/18
Podcasts	Low-threshold, occasional availability	Reflecting on content	3/18
Print media	Magazines, books, flyers, posters, rarely newspapers, decoupling of climate and nutrition topics, flyers and posters as low-threshold impulses	Significant information effect, new stimuli for raising awareness and changing the diet of one participant	9/18
Television and news programs	Random media use, decoupling of climate and nutrition issues	No significant effect	4/18
Food labelling/marketing	Advertising, seals on products and in the supermarket	Influence on purchasing and nutritional behaviour	2/18

4.3 Interpersonal communication

Social interactions were a significant source of influence on dietary behaviour, occurring primarily in everyday contexts such as shopping, cooking, or dining together. Conversations ranged from casual remarks to in-depth discussions about dietary choices and their environmental implications. Common themes included motivations, practical advice, and challenges, which often prompted participants to reconsider their eating habits. These interpersonal exchanges played a crucial role in knowledge sharing, attitude formation, and motivating the adoption of climate-conscious diets.

However, emotionally charged or confrontational discussions sometimes caused participants to avoid conversations about their dietary habits altogether. The impact of interpersonal communication was highly dependent on the social environment and the attitudes of those involved. Table 3 provides an overview of frequently discussed topics and their roles in influencing dietary transitions.

Table 3 Experienced dialogue content on climate-conscious nutrition

Aspects of the conversations	Explanation
Motives for the diet	The question 'Why?' is a frequent starting point for conversations about climate-conscious diets
Imparting knowledge and facts & education	Education and knowledge dissemination on the climatic effects of nutrition and meat consumption
Motivation	Motivating others to make climate-conscious nutritional choices, corresponding purchasing decisions and to engage with the topic
Practical implementation and concrete realization	Tips and suggestions for implementing a meat-reduced diet and demonstrating its simplicity
Rejection and counterarguments	Rejection of the climate-conscious diet by others and counterarguments against the chosen diet, especially between generations
Justification	Justification for own meat consumption and products with a high carbon footprint by conversation participants
Separation of content	Separation of climate change and nutrition-related aspects, merging of both aspects in individual efforts
Emotional components	Emotional stress and pressure through conversations
Positive feedback and encouragement	Positive feedback from others has an encouraging effect on the chosen diet and can act as positive peer pressure
Negative feedback	Negative feedback as well as judgment and criticism following the change in diet; accusations of morality
Recommendation of media contents	Recommendations of media content such as podcasts, documentaries or social media posts
Exchange of information on nutrition	Exchange on nutrition, experiences and important aspects of one's own diet as a source of information and inspiration

4.4 Direct experiences influencing climate-conscious eating

Participants described a range of direct experiences that significantly shaped their climate-related dietary awareness and behaviours. These experiences, though less frequent, were often highly impactful and included sensory encounters, personal observations, and pivotal life events.

Sensory and ethical experiences played an important role; for example, participants recounted formative moments such as visiting slaughterhouses during childhood or volunteering at animal sanctuaries abroad. These encounters fostered deeper ethical reflection and a stronger connection to the environmental implications of dietary choices.

Environmental observations, particularly during travel or study-abroad programs in the Global South, exposed participants to tangible climate impacts such as drought, deforestation, land-use changes, and extreme weather events. Six students specifically noted how these observations made the link between diet and climate change more concrete, reinforcing their motivation to adopt sustainable eating habits.

Additionally, pivotal life transitions—such as moving out of the parental home, starting university, or participating in a semester abroad—were frequently cited as 'windows of change'. These moments provided opportunities for students to reassess and often modify their eating behaviours in response to new social and environmental influences.

4.5 Key actors and pivotal experiences

Participants identified family, peers, friends, and institutional actors as central influences in their dietary transitions. Early exposure to climate-conscious diets often originated within the family context, through practices such as vegetarian meals or discussions about ethical and environmental issues, which laid the foundation for later changes. However, peer networks—particularly within the university community—were more frequently described as catalysts for action. Friends, roommates, and classmates played

critical roles in raising awareness, sharing knowledge, and providing practical support, with interactions in shared spaces like cafeterias facilitating these exchanges.

Singular interactions, such as conversations with vegan friends, recommendations from peers, or impactful university lectures, were often characterized as "turning points" that initiated or accelerated significant dietary shifts. Pivotal experiences, often referred to as 'windows of change,' tended to coincide with major life transitions such as moving for university, starting a new academic program, or participating in study-abroad opportunities. These moments provided students with supportive or novel environments in which to reassess and modify their eating habits. In particular, experiences abroad—such as volunteer service—heightened awareness of global climate impacts and reinforced ethical considerations, further motivating dietary change.

4.6 Dynamics of the dietary transition process

The transition toward climate-conscious eating was highly individual and typically unfolded over several months to years, aligning closely with the stages outlined in the TTM. Many students began in a precontemplation stage, initially unaware of the connection between diet and climate. Exposure to media and educational content often initiated a contemplation phase, followed by preparation—characterized by seeking information and experimenting with new meals—then action through concrete dietary changes, and eventually maintenance of climate-friendly habits. However, participants emphasized that this process was rarely linear; periods of increased engagement often alternated with relapse, regression, or stagnation, especially in environments lacking climate awareness or dominated by meat consumption.

The results highlight the complex interplay between communicative and direct experiences, which collectively influenced intentions, behaviours, and their sustainability. Positive reinforcement from social networks, firsthand experiences of climate impacts, and even opposition from others served as motivators, while unsupportive social or cultural contexts posed barriers to progress.

Importantly, many students who reached the maintenance stage also became advocates for climate-conscious eating within their social circles, thereby reinforcing their own habits and encouraging similar changes among peers. This ripple effect underscores the potential for individual dietary transitions to contribute to broader shifts in social norms and collective behaviours.

5 Discussion

This study offers an exploratory look at how communicative and direct experiences shape the development of climate-conscious eating behaviour in a sample of German university students. Though limited in size and scope, the findings provide nuanced insight into the diversity of triggers and pathways that can contribute to sustainable dietary transitions. Institutional and media communication, interpersonal exchange, and direct experiences collectively shape awareness, intentions, and sustainable behavioural change, with key actors and pivotal moments serving as catalysts in this dynamic process.

5.1 Reflections on the small-n design

Given the qualitative, small-n design ($n = 18$), this study does not seek to generalize findings, but to illuminate rich, context-specific processes that may guide or inspire future research. The episodic interview method was particularly suited to capturing narratives of change over time, revealing the layered interplay of information, context, and identity. This design allows for deep engagement with individual experiences and the micro-dynamics of influence—strengths that are sometimes lost in larger-scale studies. The limitations of this approach, especially in terms of representativeness and recall bias, are acknowledged and addressed further below.

5.2 Revisiting the role of communicative experiences

Institutional communication was not commonly cited as a direct trigger for dietary change, but it played a more subtle role by creating opportunities for reflection and experimentation. University cafeterias offering vegetarian and vegan meals, as well as elective courses with sustainability content, provided supportive environments for students to explore climate-conscious eating. These effects were particularly notable among students in environmentally oriented disciplines, expanding on previous findings that natural sciences students tend to show greater openness to climate-motivated dietary change [45, 61]. In terms of the TTM, such settings appeared to support progression through the preparation and action stages, even if institutional actors were not always consciously recognized as influential.

Media emerged as a more immediate and emotionally resonant influence on behaviour. While background media exposure contributed to general awareness, it was specific content—such as documentaries, news features, or curated social media posts—that participants most often credited with prompting reflection or action. These media experiences often corresponded to the contemplation and preparation stages of the TTM. Documentaries in particular were described as turning points, echoing prior studies that emphasize the role of emotional engagement in fostering behavioural change [66]. Social media, especially platforms like Instagram or YouTube, facilitated both peer modelling and knowledge sharing, making climate-friendly diets more visible and accessible in everyday life.

5.3 Interpersonal communication and the social environment

The influence of interpersonal interactions was consistently emphasized across the interviews. Conversations with friends, family members, or peers—whether casual or deeply reflective—shaped participants' attitudes toward food and climate. Social networks played a critical role during the preparation and action stages, with positive role modelling often serving as a motivator for dietary change. Friends or roommates who practiced vegetarian or vegan diets helped normalize such choices, while emotionally charged or judgmental exchanges could stall progress or lead to avoidance of the topic. These findings align with existing research on the significance of social modelling in dietary behaviour [55, 56, 63].

5.4 Direct experiences and embodied awareness

Direct experiences, although less frequent, were described as especially impactful. Events such as study-abroad programs, volunteer work, or firsthand encounters with

environmental degradation made the abstract connection between food and climate more tangible. These experiences typically coincided with key life transitions and were powerful enough to move participants from contemplation to action, and sometimes even into the maintenance stage. The vividness of such moments underscores prior research showing that embodied or place-based experiences can drive pro-environmental behaviour more effectively than abstract knowledge alone [69, 85].

5.5 From change to advocacy

Several students who had reached the maintenance stage of the TTM reported becoming more vocal about their dietary choices and actively advocating for climate-conscious eating among their peers. This form of behavioural spillover highlights the potential for individual transitions to influence broader social environments, reinforcing sustainable habits through shared norms and mutual encouragement.

5.6 Contribution to the literature

This study contributes to a growing body of research on climate-conscious consumption by providing a detailed, process-oriented account of how young adults develop awareness and change their eating habits. While it supports earlier findings regarding the role of media, social influence, and life transitions in dietary behaviour, it also adds nuance by illustrating how these factors interact over time and across different stages of change. By applying the TTM to climate-related dietary transitions, the study offers a structured understanding of how communicative and experiential factors jointly shape intention, behaviour, and long-term maintenance. While some findings align with previous research, our study advances the field by (1) systematically integrating media, institutional, interpersonal, and experiential influences within a single analytical framework, (2) highlighting not only pivotal moments and life transitions but also the cumulative and transformative nature of experiences that facilitate dietary change, and (3) demonstrating how interpersonal interactions and social networks can lead to behavioural spillover and advocacy, thus reinforcing climate-conscious eating beyond the individual level.

5.7 Limitations and future research

This study offers a rich, qualitative perspective on how climate-related food awareness develops and manifests in behaviour among university students. However, several limitations should be noted. First, the retrospective nature of episodic interviews places inherent reliance on participants' memory. While this approach enabled nuanced narratives across life stages, it also introduced potential recall bias—particularly concerning implicit influences or unconscious learning processes that may have shaped dietary change without being explicitly recognized. Some events or influences may have been retrospectively reinterpreted, coloured by later beliefs or current identity positions.

Second, the sample was small and composed of 18 students from a single university. While this enabled in-depth exploration of individual trajectories and allowed for identifying recurring patterns, it limits the generalizability of the findings. University students—especially those voluntarily participating in a study on climate-conscious behaviour—are more likely than the general population to be informed about climate issues and open to sustainable lifestyles [85]. This may have amplified the visibility of

certain influences (e.g., academic discourse, peer networks) while underrepresenting structural or cultural barriers more common in other demographics.

Future research could build on these findings by examining a more diverse sample, including individuals from non-academic backgrounds, vocational settings, or underrepresented socioeconomic groups. Such comparisons could reveal different communicative environments and cultural narratives shaping dietary choices and allow for more representative conclusions.

Another promising avenue involves quantitatively testing the thematic categories developed in this study. A larger-scale survey, grounded in the present findings, could assess the relative impact of institutional, media, interpersonal, and experiential influences on dietary behaviour and situate individuals within the stages of the TTM. This would allow for a more systematic investigation of patterns suggested by the qualitative data and would also help examine the intention-behaviour gap.

Finally, future studies should not only focus on those who have made a transition to climate-conscious eating but also include students and young adults who have not. Investigating the barriers and motivations present in earlier TTM stages (e.g., precontemplation and contemplation) could help clarify why some individuals remain resistant to dietary change and identify leverage points for more inclusive and targeted interventions.

By mapping communicative and experiential influences across different populations and behavioural stages, future research can more precisely evaluate how climate-conscious food practices emerge, stagnate, or take root in everyday life.

6 Conclusion

This study underscores the complex interplay of communicative and direct experiences in fostering climate-conscious dietary awareness. Institutional messaging, media exposure, and interpersonal communication serve as key informational channels, while emotionally salient direct experiences—although less frequent—often act as critical behavioural catalysts.

Importantly, communicative experiences can compensate for the inaccessibility of direct ones, especially when embedded within socially relevant or emotionally resonant contexts. The findings suggest that diversified and experience-rich communication strategies are essential for effectively promoting sustainable dietary behaviours among young adults.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1007/s43621-025-01776-8>.

Supplementary Material 1.

Author contributions

Conceptualization, A.S. and T.B.; Methodology, A.S.; Software, A.S.; Validation, A.S.; Formal Analysis, A.S.; Investigation, A.S.; Resources, T.B.; Data Curation, A.S.; Writing—Original Draft Preparation, A.S. and T.B.; Writing—Review & Editing, T.B.; Visualization, A.S.; Supervision, T.B.

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Data availability

The data presented in this study are available on reasonable request from the corresponding author.

Declarations

Institutional review board statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the University of Bayreuth (protocol code: 24-013 and date of approval: 23.04.2024).

Ethics approval and consent to participate

Informed consent was obtained from all subjects involved in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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