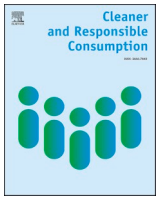
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Sustainable food consumption behaviors of generations Y and Z: A comparison study

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ABSTRACT

This study examines the differences in food consumption behaviors between generations Y and Z to support the strategy development for a generational transition towards sustainable food consumption. Empirical data for the study is collected through an online survey with the participation of 175 young people in Germany. The Young Consumers' Sustainable Consumption Behaviors (YCSCB) scale by Fischer et al. (2017) is applied as a foundation for questionnaire development with necessary adaptation to the topic of the study. This analysis theoretically breaks down the sustainable food consumption behavior measurement into thematic sub-categories that reflect specific aspects of food consumption among young adults, including throwaway-, carnivore-, healthy-lifestyle, food awareness, and food cost saving. The findings show that generation Z has greater food cost savings than generation Y. Besides age, correlations between gender and sustainable parental household to sustainable food awareness and food cost savings were also found. In order to efficiently promote sustainable consumption ideology and habits to different generations, businesses and social policies should tailor marketing and education campaigns such as emphasizing food cost saving to generation Z, or highlighting health benefits to men. The methodology and measurement scale applied in this study could be replicated in different research settings across different population groups and contextual factors.

1. Introduction

Consumption, especially food consumption, creates significant impact on the environment (Duchin, 2005). For this reason, sustainable food consumption plays an important role in preserving natural resources for the sake of future generations (Kamenidou et al., 2019). Responsible Consumption and Production has also been listed as a separate goal in the United Nations' Sustainable Development Goals (SDG 12). Even though sustainable food consumption has been previously studied in literature, there has not been a universal definition for sustainable food consumption. Verain et al. (2012) considered sustainable consumption as a combination of environmentally friendly choices of food such as organic food, animal welfare, and fair trade. While there have been studies published on sustainable food choices in general and consumption behaviors in particular, the number of studies focusing on consumer segmentation is still limited (Verain et al., 2012), especially generational clusters. At the time of this research, there has been less than a handful of studies focusing on generational differences in sustainable food consumption behaviors.

Generational cohorts are defined as people born within a similar time range and experience similar life-changing events (Mannheim, 1952). Research pointed out that generational benchmarking is necessary when it comes to consumption behaviors as different attitudes and consumption patterns are affected by the generational values in which they were born and grow up (Fountain and Lamb, 2011), and is considered more robust than age benchmarking (Noble and Schewe, 2003). Against this background, it is of importance to examine whether these generational differences lead to differences in sustainable food consumption and whether such differences may have an influence on further social and practical implications. This study focuses on young consumers as a key target group for sustainable development because they have a stronger environmental mindset on the topic of nutrition (Forsa, 2020; Fowler, 2016; Sanchez-Sabate and Sabaté, 2019), are still motivated and willing to learn, and their behaviors can still be influenced (Fischer et al., 2017). However, among the youngest adolescent/adult generations, specifically generation Y and Z, there could also be significant differences in terms of sustainability awareness and consumption behaviors.

As of the time of this research, there are only a few studies comparing

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sustainable food consumption patterns between generations; they leave large theoretical and empirical gaps to fulfill. Most of the previous studies in this field focus on a specific behavior such as meat consumption, organic food consumption, food waste (Kamenidou et al., 2019) or the behaviors of a specific age and gender group without comparison (Christian et al., 2023; Lakatos et al., 2018). The few studies that investigate both food consumption behaviors and generational differences (Mucha and Oravecz, 2025; Pilařová et al., 2023; Skypalova et al., 2022; Szejda et al., 2021) also focus on one particular behavior without pointing out an overall comprehensive picture of different aspects and factors of sustainable food consumption in general. There are also limited connections made between behavioral patterns, their dimensions, and their underlying influences. Therefore, the following research questions were formulated: (1) "Which components and differences can be derived from the food sustainable consumption behaviors of generations Y and Z?" and (2) "Could other characteristics such as gender and parental household be used to explain these differences?". Our main hypotheses are that generation Z, being exposed to more information about sustainable consumption from education and parental household, might show better understandings and more sustainable behavioral patterns when it comes to food consumption.

In order to collect data for this empirical research, we targeted different groups of people that belong to the generation Y and Z cohorts in the same geographical and cultural settings. As previous literature has confirmed that the level of education positively influences the choice of sustainable food consumption and sustainable diet (Mensink et al., 2016), we looked for a setting where the general level of education as well as the level of awareness in sustainability are high. Germany was chosen as the country of study since it has long been considered one of the leading nations in sustainability in Global North and has initiated the National Programme for Sustainable Consumption (Reisch et al., 2020). The high level of education and sustainability consumption awareness in Germany would provide transparent and comparable data for our empirical research.

This study adds to the literature and empirical gap in a way that it provides a better understanding of the specific components of sustainable consumption behavioral patterns while also considers the driving factors for those differences between generations, which has been understudied in the field (Tifferet et al., 2017). The results would provide insights on the understanding of social norms and generational identities and impacts in shaping sustainable consumption behaviors, which helps business-, industry-, and policy-level decision makers to develop strategies that effectively and efficiently targeting the right generational cohorts. As generation Y and Z are the generations that will bring out significant changes in the social and political context of the near future society, as well as educating the further future generations Alpha and beyond, it is important to use the findings of this study to create business strategies and social education policies to further promote responsible and sustainable food consumption in the future. Even though the scale of this study is small and limited in terms of generalization, the measurement and validation applied here is designed to be replicated in different research settings across different generational groups and social/cultural factors.

The rest of the paper is divided into five sections. Section 2 presents relevant theoretical foundations and research hypotheses. The methodology of this work is explained in more detail in section 3. Section 4 contains the results, followed by the discussion as well as the implications and suggestions for future research in section 5.

2. Theoretical background

2.1. Underlying theories in sustainable food consumption behaviors

2.1.1. Theory of planned behavior

The theory of planned behavior is an extension of the theory of reasoned action that explains human behaviors based on their intention to act according to their social norms, attitude, and perceived behavioral control (Ajzen, 1991, 2015). Theory of planned behavior has been the most popular and important theory used in the context of food consumption (Alam et al., 2020) with more than 600 empirical studies in the last decade (Casper, 2007). The three factors mentioned in this theory have been empirically proven to explain 40–50 % of an individual's intention, and subsequently, 19–38 % of their behaviors in food consumption (Thompson et al., 1994). However, there has been only a small number of studies applied the theory of planned behaviors to examine sustainable food consumption (Alam et al., 2020). Studies by Alam et al. (2020) in Malaysia and Vermeir and Verbeke (2006) in Flanders prove that all three factors significantly explain sustainable food behaviors. To be more specific, factors that could stimulate sustainable food consumption include social peer pressures about sustainability issues, personal involvement with sustainability, and perceived availability of sustainable products.

2.1.2. Environmentally related norms and attitudes

Individual values and characteristics such as environmental concern is an important indicator for sustainable consumption behaviors (Diaz-Ruiz et al., 2018; Hoek et al., 2021). For examples, personal connection to nature is higher associated with vegan food choice behavior (Kautish et al., 2024). Environmental consciousness has been considered a related concept to the theory of planned behaviors (Mucha and Oravecz, 2025). Previous research has shown that environmentally conscious consumers show more positive behaviors when it comes to food waste prevention and recycling (Diaz-Ruiz et al., 2018). Ethical consumers who are concern for animal rights are more likely to consume ethical products, e.g., fair trade and organic food (Bezençon and Blili, 2010). While the theory of planned behaviors has been criticized with a lack of cultural context, cultural relevant norms are suggested to be of importance in terms of organic food purchase and food waste (Randall et al., 2024). The consensus from these studies suggests that environmental awareness and ethic aspects are strong determinants of sustainable food consumption behaviors, and should be incorporated in sustainable food consumption interventions.

2.1.3. Identity, generational identity and behaviors

De Boer et al. (2017) emphasize the importance of the identity concept, in which a person's belief and identity label such as "vegetarian" and "non-vegetarian" influence changes in food consumption behaviors: a behavior, e.g., learning new cooking recipes, could become automatic and require less motivation when it is identity-congruent, but more difficult to adopt and overcome when it is against their chosen identity. Such identity, which are influenced by a person's values, norms, and social relationships, plays a crucial role in shaping individual's food choices and behaviors (Oyserman, 2009). Intrinsic values, for example, are proved to motivate Danish consumers to consume less meat products (Schulze and Janssen, 2024).

Mannheim's generational theory states that a generation is a social group that shares social experience, orientation, understanding, and attitudes, which contribute to their unique perspectives that differ them from other generations (Mannheim, 1952). Generational identity, which includes distinctive characteristics exclusively belong to and attached to a generation, could therefore also be considered a social identity (Chen, 2010). Therefore, generation identity congruence shaped by a generation's sustainability values could be assumed to play a crucial role in shaping a person's sustainable food consumption behaviors.

2.2. Concepts and components of sustainable food consumption behaviors

The concept of consumption is based on the concept of property. Consumption generally means the consumption and/or use of material and intangible resources by the end consumer (Kirchgeorg et al., 2021). The concept of sustainable consumer behavior was developed at the Oslo Symposium in 1994 (Quoquab et al., 2019). Basically, it can be said

that every consumption begins with a purchase decision. The longer the end consumer can use the purchased products, the more sustainable they are (Kropp, 2019). Closely linked to sustainable consumption is the ethical background of consumers when making purchasing decisions (Figueroa-García et al., 2018). The concept of sustainable consumption includes the qualitative and quantitative change of the original consumption concept (Bulut et al., 2017). The change lies in the fact that the use of natural resources today and in the future should be used with care and consideration by humanity in order to be able to recognize limits (Vantamay, 2018). This means that the satisfaction of one's own needs, which includes the ecological and socio-economic conditions of all living people (now and in the future), is not affected (Geiger et al., 2017). To achieve this requirement, people must strike a balance between self-sufficiency and limited resources (Vantamay, 2018).

Sustainable consumer behavior is defined as consumer behavior that satisfies basic needs such as housing or food (Geiger et al., 2017) and thus results in a better quality of life (Bulut et al., 2017). The behavior of humanity can be understood as the aggregation of the individual actions of each individual (Geiger et al., 2017). When it comes to the sustainable aspect of consumption, the sustainability of the ecological system is primarily taken into account (Vantamay, 2018). Product waste also plays a major role, which should be minimized as much as possible (Bulut et al., 2017; Figueroa-García et al., 2018). Consumption includes the following three areas: the acquisition, use, and disposal of goods and services (Geiger et al., 2017; Liu et al., 2012).

Over the last few years, there have been major changes in humanity's consumer behavior (Mainardes et al., 2021). In the current situation, people are not acting as sustainably as might be necessary in order not to endanger our natural basis of life (Kropp, 2019). Currently, the need for natural resources is increasing in parallel with the population and its consumption (Bulut et al., 2017). This leads to water, soil and air being contaminated with pollutants, rainforests being destroyed and species being irretrievably eradicated (Kropp, 2019). There is currently a need to create alternative sources to relieve the burden on nature and to bring people closer to conscious consumption, explicitly avoiding consumption, thrift, and awareness (Bulut et al., 2017; Figueroa-García et al., 2018). Problems with people's application of conscious consumption lie in the fact that many do not have the necessary knowledge. Added to this is the lack of willingness to take responsibility and the resulting costs. It should be added here that people can lead unsustainable lives despite buying sustainable products. It mainly depends on the lifestyle of the person (Kropp, 2019).

As pointed out by Fischer et al. (2012) and Geiger et al. (2017), there is a lack of consensus in how these sustainable consumption behaviors are measured: whether they assess the underlying intentions of the behaviors (intent-oriented) or evaluating the actual environmental and social impacts of the behaviors (impact-oriented). They also pointed out that most of the existing research in the field focused on the explanation of the consumption motivations (intent) while not considering whether such intentions lead to factual outcomes. For example, the previously mentioned underlying theories in consumption behaviors (the theory of planned behaviors, environmental related norms, and generational identity, see section 2.1.) all aim to investigate the consumer perspectives and therefore could all be considered intent-oriented approaches. Building on the necessity to combine both approaches to advance research in the field, Geiger et al. developed the Sustainable Consumption Behaviors (SCB) cube model (see Fig. 1) in 2017 to adequately measure sustainable consumer behavior. The model serves as a concept of sustainable consumption, explicitly for evaluation (Geiger et al., 2017). Originally, sustainable consumer behavior was divided into three aspects: sustainability dimension (ecological and socio-economic), consumption phase (acquisition, usage, disposal), and consumption area (food, housing, mobility, clothing, etc.) (Sravani Chari, 2019). In addition, the authors added a fourth dimension for empirical research, the impacts (Geiger et al., 2017). By combining the insights from social science human behaviors and natural science impact nexus, the SCB

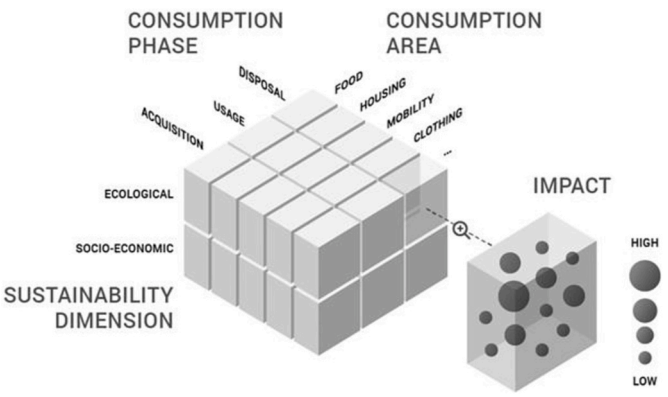


Fig. 1. SCB cube model.
Source: Geiger et al. (2017).

model thus could avoid the intent-impact gap of current measurement methods. It relates to the intention-based theories in the sense that the environmental and social psychology is still embedded in both the sustainability dimension and the consumption scope (Geiger et al., 2017).

In order to measure the consumption behaviors, statements were created in relation to the aspects presented in the SCB cube. Fig. 2 below shows statements that were developed based on the food consumption area in relation to the two sustainability dimensions (ecological, socio-economic) and the three consumption phases (acquisition, usage, disposal).

Even though the SCB cube model provides an interdisciplinary approach that is dynamic and flexible to apply to a wide range of contexts, in empirical studies, it could be considered abstract and overly complex. Furthermore, despite its strong theoretical basis on sustainability dimension and consumption phase, it does not emphasize the underlying factors that influence human behaviors and the decision-making process. In order to apply this framework into research, validating the scale as well as adding consumer behavior and decision influence factors seem to be necessary.

In that sense, a qualitative and quantitative study from Fischer et al. (2017) tested the validity of this SCB model in a German young consumer setting. They found out that, compared to this matrix, a hierarchical model with sub-factors emerged from factor loading provide a more satisfactory fit for measurement and named that the Young Consumers' Sustainable Consumption Behaviors (YCSCB) scale (Fischer et al., 2017). Fig. 3 below shows the amended items in this YCSCB scale. These items include control questions (2), nutrition choices (8), and purchase choices (6, excluding one deleted item). It could be concluded that in the German young consumer context, this validated scale is a better fit than the original theoretical model. Therefore, the YCSCB scale was chosen to apply in our study. We also aim to integrate underlying factors to provide a more comprehensive understanding of consumer behaviors (see section 2.3). More details about the study design are provided in section 3.

2.3. *Generation Y and Z and their sustainable consumption behaviors*

Generational segmentation has become increasingly important over the last two decades. The era in which a person was born has a significant and formative influence on the experiences they have while growing up, their behavior, attitudes, and values (Fountain and Lamb, 2011). Influencing factors can be environmental disasters, changes in the economy, the current political situation, technological innovations and general changes (Fountain and Lamb, 2011). However, a clearly defined chronological classification of the individual generations cannot be derived from research. Generations flow smoothly into each other, which is why different sources define different boundaries of birth years per generation. For this work, the Borchert (2019) and Unicum (2021)

Sustainability dimension	Consumption phase		
	Acquisition	Usage	Disposal
Ecological dimension	[1] I eat meat for the main meals. [2] I eat dairy products. [3] I buy certified organic food. [4] I buy imported fruits from overseas (e.g. mango).	[5] I cook in an energy saving way (with little water, suitable lids etc.). [6] I buy frozen foods and meals.	[7] I dispose of food in the garbage. [8] I refrain from foods with excessive packaging. [9] I use left-overs for the next meal. [10] I buy snacks and drinks in one-way packaging (e.g. take away, fast food).
Socio-economic dimension	[11] I buy fair trade food products. [12] I buy regional food products. [13] I produce/grow food myself.	[14] I eat healthily. [15] I cook my own meals with fresh ingredients.	[16] I buy foods close to their expiration date.

Fig. 2. SCB food scale.
Source: Geiger et al. (2017)

5. Control question: How often do you buy food for yourself?	–
13. Control question: How often do you prepare meals for yourself?	–
Factor: Nutrition choices (original item numbering)	Standardized factor loadings
1. I eat meat (steak, ham, etc.)	0.58
14. I use frozen foods for meal preparations	0.50
17. I use fresh ingredients for meal preparations	0.47
16. I reuse leftovers for the next meal	0.46
6. I buy snacks and beverages in disposable packaging (take away, fast food, coffee to go, etc.)	0.46
4. It happens that I discard food products	0.36
3. I keep a healthy diet	0.35
2. I eat dairy products (butter, cheese, yoghurt, etc.)	0.30
Factor: Purchase choices	
8. I avoid food products in excessive packaging	0.80
7. I buy organic food products	0.76
9. I buy fair-trade food products (e.g. with a fair-trade label)	0.71
11. I buy locally grown food products	0.63
15. I cook/prepare my meals energy-efficiently	0.46
10. I buy food products even just before the best before date expires	0.35
12. I buy fresh fruits and vegetables from overseas (e.g. mangos, avocados)	*Deleted*

Fig. 3. Items of the YCSCB food scale.
Source: Fischer et al. (2017).

generation concept was taken into account, which defined generation Y as people born between 1980 and 1995 and Generation Z from 1996 to 2010. In Germany, as of December 31, 2020, generation Y accounted for 19.04 % of the (15.8 million people) and made up a large amount of the labor force, while generation Z accounted for 13.73 % (11.4 million people) (Statista, 2021a, 2021b).

The people of generation Y are also referred to as "millenials" (Fountain and Lamb, 2011; Schmitz, 2019). Y-ers consciously experienced the turn of the millennium, including the Internet boom and globalization (Grada, 2021a); therefore, they had almost permanent access to multiple sources of information such as Google (Klaffke, 2014). Y-ers live in the here and now (Kuhlmann-Rhinow, 2019); they don't think much about the future and live very independently (Grada, 2021b). From previous research, it can be deduced that generation Y has a high level of education (Grada, 2021b) and is interested in a sustainable lifestyle (Schnetzer, 2021a). Their interest is primarily placed in green living and energy efficiency (Bulut et al., 2017). Over the years, generation Y has become accustomed to being able to express their own lifestyle through branded products, and the generation's consumption becomes a medium for profiling oneself through individual purchasing behavior (Klaffke, 2014). As a result of the recent Corona pandemic, people from generation Y want to take on more responsibility for society and the future, focusing on supporting regional and small businesses (Schnetzer, 2021a).

Generation Z are also referred to as the "zombie" (Schmitz, 2019) or the "stay-at-home generation" (Springer Professional, 2019). They grew up with the development of Internet and smartphones, and since then have only known everyday life with digitalization (Grada, 2021b; Schmitz, 2009). Growing up in an age with constant crises, they perceive the world as unfair and are critical of political and social events (Klaffke, 2014; Springer Professional, 2019). Their generation values animal protection, sustainability, equality, diversity and human rights

(Springer Professional, 2019). When it comes to consumption, they want to emphasize their own individuality (Springer Professional, 2019). Z-ers values online convenience and real experience (Lina et al., 2022); therefore, their consumption patterns are heavily influenced by friends, celebrities or social media advertising (Duffett, 2017; Le and Ngoc, 2024; Ninan et al., 2020; Nugroho et al., 2022). In general, the desire to behave in a sustainable or environmentally friendly manner is high in this generation, especially when it comes to travel (Khan, 2024). Generation Z could be greatly influenced by sustainability social campaigns such as the Fridays for Future movement (Schnetzer, 2021b). In summary, it can be said that both generations are concerned with green consumer behavior (Bulut et al., 2017).

2.4. Previous empirical evidence and hypothesis development

Even though there has only been a limited number of studies directly related to our research interest, we could define two literature streams relevant to our research field. First of all, in the literature stream of sustainable food consumption, the majority of previous research has focused on different aspects of consumption such as fair trade, animal welfare, food production, meat consumption, local products consumption, organic food consumption, and waste behaviors (Kamenidou et al., 2019). While there have been studies published on sustainable food choices in general and consumption behaviors in particular, the number of studies focusing on consumer segmentation, especially age segmentation, is still limited (Verain et al., 2012). More consideration was given to broader topics such as drivers of behaviors (Amatulli et al., 2023; Utama et al., 2021) or the impacts of digital advertisement and video content (Zaman, 2022; Zhang et al., 2024).

Secondly, in the literature stream of generational consumption behaviors, there has been an increasing number of studies focusing on sustainability as well as one or more generations without direct comparison (Christian et al., 2023; Lakatos et al., 2018). Examples could be listed as the study of organic food consumption behavior of both generation Y and Z (Kabir, 2023), buying intention of corporate social responsibility brands among Chilean Y and Z generations (Bianchi et al., 2024), and meat consumption of generation Y and Z in Germany (Mayerding and Kuper, 2024). However, age and generational comparison studies are still limited. Research from other fields pointed out that generational benchmarking is necessary when it comes to consumption behaviors, as different attitudes and consumption patterns are affected by the generational values in which people were born and grow up (Fountain and Lamb, 2011). Some scholars considered generational benchmarking more robust than age benchmarking (Noble and Schewe, 2003). This observation was empirically tested between generations X and Y in New Zealand (Fountain and Lamb, 2011), between three generations X, Y, Z in Azerbaijan (Mammadli, 2023), or between generation Y and Z (Nguyen and Nguyen, 2024).

In this study, we aimed to combine these two streams of literature to specifically target the components and differences in sustainable food consumption of different generations. At of the time of this research, there has only been a few recent publications about the topic. Examples are the research on cultured meat consumption between generation Y and Z in Czech Republic by Pilařová et al. (2023), the differences in adopting cultured meat among four generations: Baby Boomers, X, Y, and Z in the US and UK (Szejda et al. (2021), the purchase of organic food between generation Y and Z in Czech and Slovak (Skypalova et al., 2022), or most recently, the food wasting behaviors of generation X and Y in Indonesia (Mucha and Oravecz, 2025). Our research extends on both these streams by not only looking at a particular behavior such as meat consumption, organic consumption, or food waste, but investigating an overall comprehensive picture of different aspects and factors of sustainable food consumption in general. At the same time, we aim to classify different food consumption behaviors into specific sub-themes and their connections for a higher level of clarity and more possibilities for analysis, which increase the ability for businesses and policy makers to create more informed decisions.

Different literature suggested that both generations Y and Z are concerned with green consumption behaviors in general and food consumption in particular (Bulut et al., 2017) though there have been evidences for the differences regarding the behaviors between generations Y and Z. Previous research shows that Generation Z pays a little more attention to the sustainability of their behavior than Generation Y. For example, the desire for people to behave in a sustainable or environmentally friendly manner is very great in generation Z, especially when it comes to travel (Schnetzer, 2021b). People in Generation Z take their bicycle or the subway instead of a car more often, or use sustainable alternatives such as paper bags instead of plastic bags (Maeder, 2020). Around 25 percent of Generation Z already use reusable products (Springer Professional, 2019). Thus, this study develops hypothesis H1 as below.

H1. Generation Z engage in sustainable activities in everyday life more frequently than generation Y.

With regards to food consumption, there has been an increase in vegetarians in both generations and a more frequent use of alternatives to animal products (Forsa, 2020). The two generations Y and Z have differences in diet as well as in the origin and packaging of the food (Fischer et al., 2017). In generation Y, there is a large proportion of flexitarians and a small proportion of vegetarians; more and more Y-ers are voluntarily turning to vegetarian and vegan alternatives to animal products out of curiosity (Schnetzer, 2019). On the other hand, generation Z take into account the environmental impact and carbon footprint of products in their consumption, and there has been an increase in veganism and a more frequent use of alternatives to animal products (Forsa, 2020). This observation was empirically proved by Pilařová et al. (2023), who found out that generation Z are more opened to cultured meat compared to generation Y based on their ethical, environmental, and health values. There is, however, one aspect that might be more prevalent in generation Y compared to generation Z. Previous studies show that people from generation Y are more likely to already have their own family and children than people from generation Z; therefore, they pay more attention to organic products in their diet (Liu et al., 2012). However, an empirical study partly disproved this statement by confirming that generation Z are more opened to organic food than generation Y (Skypalova et al., 2022). When it comes to food waste, young people's throwaway behavior can be attributed to lack of understanding of the value of food (Bilska et al., 2019) and lack of knowledge and experience to handle food (Eyerund and Neligan, 2017; Karunasena et al., 2021). Generation Y, who has a higher likelihood to have their own family with more members, is assumed to produce more waste amount; however, one-person households from the younger generation Z are assumed to waste food more often (Marangon et al., 2014; Przezbórska-Skobie and Wiza, 2021). All in all, we state a general hypothesis H2 as below.

H2. Generation Z display more sustainable food consumption behaviors than generation Y.

In addition to sociological and psychological factors from generations, demographic variables also influence people's behavior. Individual characteristics such as age, gender, and family status play a major role in the decision to consume a particular product. As discussed earlier in the identity concept (see section 2.1.), gender identity also plays an important part in consumption behaviors (Bloodhart and Swim, 2020). A Swedish study proves that women, including those live in a high ranked culture of gender equality, still take over a higher share of household and family tasks (Isenhour and Ardenfors, 2009). This study also pointed out that women are more active in looking up information about sustainable consumption and alternatives, which results in a higher level of green consumption, e.g., in purchasing fair trade and organic products. Other empirical research also shows that, in most cases, men do not pay as much attention to the sustainability aspect as

women, and young women in particular are consuming more organic food (Azzurra et al., 2019), avoiding meat or animal products, and turning to plant-based alternatives (Liu et al., 2012). Therefore, this study tests hypothesis H3 as below.

H3. Gender has an impact on sustainable food consumption behaviors.

As pointed out in section 2.1., based on the ideology of the theory of planned behavior, behaviors could be affected from social learning related norms and attitudes. Previous research suggests a connection between the parents' home and consumer behaviors (Fischer et al., 2017), which could be explained through the intergenerational transfer process of these values from the parental generations to their offspring. For example, people with children pay more attention to organic products in their diet (Liu et al., 2012), rank sustainability at higher importance when choosing children food, and actively raise their children's sustainability awareness (Halicka et al., 2021). If parents act sustainably and have modeled this behavior for their children, in most cases the children will adopt the same behaviors, and only in a few exceptions do children change their behavior, for example when choosing products (Fischer et al., 2017). Parental awareness and lifestyle are confirmed to encourage children to adopt environmentally friendly food habits (Nazzaro et al., 2018). Family environmental concerns are also proved to shape It is also assumed that generation X, which is the parental generation of generation Z, is characterized by their self-care behaviors in the time they grow up and has a higher likelihood of passing their awareness and attitudes to their children generation (Haughwout and Mandel, 2019). Our hypothesis H4 is thus stated as below.

H4. The parental household has an impact on sustainable food consumption behaviors.

3. Methodology

3.1. Research settings

Empirical research was chosen for this study because it involves a description and analysis of a social phenomenon. Survey was chosen because it is one the most suitable methods for researching the opinions and behaviors of the generations regarding sustainable consumption behaviors due to its transparency and convenience to reach a larger sample.

As explained in the introduction section, we targeted generation Y and Z population in one geographical and cultural settings, and looked for a setting where the general level of education as well as the level of awareness in sustainability are high in order to observe more transparent behavioral patterns. Germany was chosen since it is one of the leading nations in sustainability in Global North and has initiated the National Programme for Sustainable Consumption (Reisch et al., 2020). Furthermore, there has been a significant amount of literature published in German language about young people's sustainable consumption behaviors in particular and sustainable consumption in general. The convenient reach, cultural understandings, and bypassing of language barrier by the authors further encourage the choice of Germany as the research context.

The targeted number of respondents of the survey was determined based on Jacob et al. (2019) that at least 100 subjects (if possible, more) should be found to take part in the empirical research. Due to the authors' limited reach and resources, the selection process for the research participants was carried out using convenience sampling instead of probability sampling. Convenience sampling is a sample selection that is commonly used, especially in the field of psychology (Stangl, 2021). This procedure was used because, on the one hand, it is a psychological aspect, the explanation and description of the consumer behavior of the generations, and on the other hand, convenience sampling is a cost-effective and time-saving process. The survey was distributed online on various social platforms due to the accessibility of German young people in both generations to social media. A field time of two weeks was set as optimal for this empirical study (Jacob et al., 2019).

Convenience sampling is subjected to different forms of bias. Due to its nature in non-probability, convenience sampling is less objective and limited the ability to extend the sample to generalize a population. Previous research pointed out that the motivation bias and self-selection bias from participants in convenience sampling result in the sample being over represented by younger and higher educated people (Hultsch et al., 2002; Ganguli et al., 1998). This occurrence, however, goes in the same direction as our intention of recruiting samples from the two youngest adult generations (Y and Z) as well as samples with high education and sustainability awareness in a Global North country (Germany). Since the hypotheses were framed as a comparison between two generations as two separate samples instead of a population that includes both generations, together with the limitation in reach and resources, we did not purposefully apply further population quotas or criteria.

3.2. Survey design

As explained in our theoretical background section (see section 2.3), the amended YCSCB scale by Fischer et al. (2017) serve as the basis for questionnaire development due to their validity and optimization for the operationalization of SCB and the selection of behaviors in a mostly similar geographical and contextual setting. We replicated their validation method by applying factor loading to the YCSCB scale on our sample before hypothesis testing. In our fieldwork, the original formulation of these items in German language and 7-point Likert scale was applied. The Likert scale ranges are defined as: 1-Never, 2, 3-Sometimes, 4, 5-Often, 6, 7-Always. In addition, the survey also included demographic questions for other hypotheses such as gender, year of birth, number of people in the current household, sustainability behaviors of the parental household, and the frequency of sustainable activities in everyday life. A list of items is presented in Appendix 1.

This survey design is not exempt from bias, which could include common method bias or social desirability bias. Common method bias, which could appear when both variables are measured by the same scale, was procedurally controlled by separating the control and further questions from the main items on different screens; therefore, a time lag was created between their measurements (MacKenzie and Podsakoff, 2012). Social desirability bias could occur in this context when respondents give less accurate self-report answers in order to enhance their self-images, since a more sustainable lifestyle is considered a more favorable presentation within the younger generations in Germany. This research aimed to minimize such bias through anonymous, confidential survey with an emphasis on the role of fair participation for research (Latkin et al., 2017).

3.3. Data collection and analysis

After a round of pre-tests on different media devices (smartphones and PCs running Windows, iOS, Android), the survey was distributed on different groups on social media platforms (WhatsApp, Instagram and Facebook). A total of 197 respondents took part in the survey and the data from 175 subjects remained for further analysis after being checked for completeness. The sample consists of 101 females (57.71 %), 73 males (41.71 %), and 1 unspecified. 76 people (43.43 %) can be assigned to Generation Y and 99 people (56.57 %) to Generation Z. Even though a small sample limits the generalization ability of the findings, this study could still provide preliminary insights into the topic, and set a sample methodological approach for similar studies in this area. A more detailed description of the sample characteristics is presented in section 4.1.

After data cleaning, descriptive analysis was carried out. The descriptive evaluation serves to create an initial overview of the data

and to find special features, such as outliers (Jacob et al., 2019). For the variables with a metric measurement level, the minimum, maximum, mean and standard deviation could be calculated using descriptive analysis.

Before testing the hypotheses, an exploratory principal component analysis similarly to Fischer et al. (2017) was carried out to explore the structure of behavioral patterns that constitute the overall picture of sustainable food consumption. This study sought to find other thematic behavior groups beyond the current division of the YCSCB items into nutrition choices and purchase choices because such a categorization could better explain the influences of underlying factors such as intentions, awareness, and attitudes on behaviors, as suggested by the theory of planned behavior. We did not apply confirmatory factor analysis to revalidate the scale because the YCSCB scale was already validated through confirmatory factor analysis methods (Fischers et al., 2017) and because of the similarities between the original sample and our chosen sample (both groups are convenience samples of German young consumers). We also organized the survey with the original statements in German language. A few other scholars have successfully applied the YCSCB scale without confirmatory revalidation on their studies such as Ianole-Călin et al. (2020) on the consumption behavior among Romanian students and Barrera-Verdugo and Villarroel-Villarroel (2022) among Chilean students. Since our aim was to further extends the interpretability and applicability of the scale, exploratory factor analysis performed on the already classified two sub-groups (nutrition choices and origin/packaging choices) is appropriate to find out the underlying constructs for these specific two sets of variables (Goudarzian, 2023; Hurley et al., 1997). Further reliability tests were also carried out (see the procedures in the paragraph below).

In the first step, the correlation and strength of the individual items within the category were checked. For this purpose, the bivariate correlation was used for the first category of control questions. Since not all variables were bivariate normally distributed, rather slightly bipolar, Spearman correlation was carried out. In addition, a scatter diagram matrix was created in order to be able to read any connections other than just linear connections. After correlations could be demonstrated, an exploratory factor analysis was carried out for dimensionality reduction. The coefficient, the significance levels, the KMO and Bartlett test as well as the anti-image (MSA values) were calculated into the correlation matrix of the factor analysis. Afterwards, reliability analysis was carried out using the split-half model (Spearman Brown coefficient) or Cronbach's alpha. Finally, the newly created scales were checked for normal distribution and intercorrelation. After successful testing, the new factor structure is used for further calculations in this work.

The hypotheses were tested by different appropriate statistical methods based on whether they are normally distributed or have linearity. If the distribution was normal, *t*-test were carried out; otherwise, the Mann-Whitney *U* test was applied. If there was linearity, regression analysis was used (Field, 2018). More details are explained in section 4.

4. Results

4.1. Descriptive statistics

The final sample for this empirical study consists of 175 test subjects, all with their main residence in Germany. The sample consists of 101 females (57.71 %), 73 males (41.71 %), and one other (0.57 %).

In the next step, the variable year of birth was evaluated. In order to get an optimal overview of the distribution of the years, a histogram is shown in Fig. 4. Based on the chosen generational definitions for this study, 43.43 percent (76 people) can be assigned to Generation Y and 56.57 percent (99 people) to Generation Z.

With regards to the size of the respondents' household they primarily live in, the largest proportion live in a household consisting of two

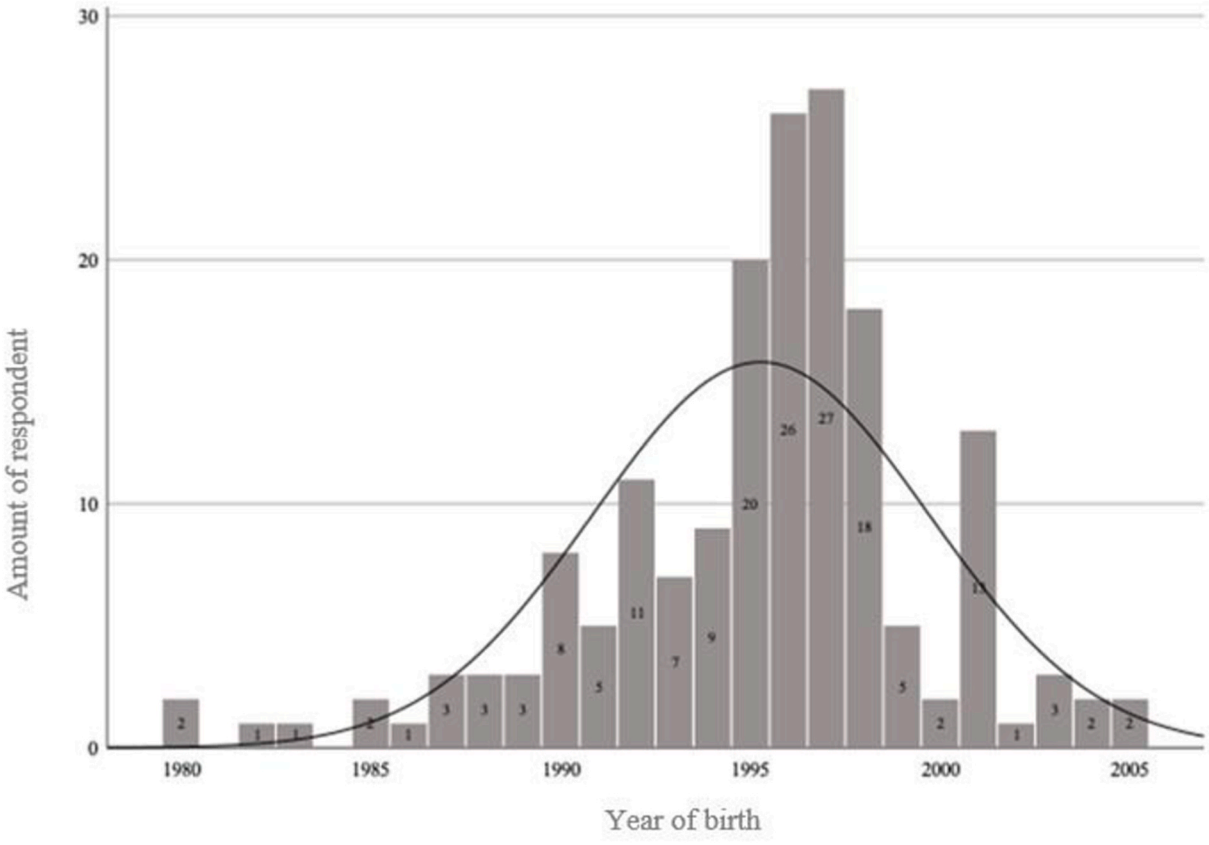


Fig. 4. Distribution of birth years of the sample.

people (42.86 %), followed by the one-person household with 26.29 percent. The remaining share of 30.85 percent is distributed across larger-size households. Among those who live in a household consisting of at least two people, 93.14 percent have children in their household while the rest 6.86 percent do not. Among the main occupation groups (school, training, studying, working or other), 49.14 percent of those surveyed have already started their working life and 40.57 percent are still studying. The remaining share of 10.29 percent is allocated to school, training, or other.

The statistical distribution of the items in the YCSCB scale are presented in Appendix 2. A few items of the scale received no answer as "1-Never" and had a mean statistic higher than median, including: "How often do you buy food for yourself?", "How often do you prepare meals for yourself?", "I use fresh ingredients for meal preparations", and "I keep a healthy diet". This suggests a high attention level of young people regarding meal preparation and healthy diet.

4.2. Exploring the consumption patterns

After successful testing of the correlations of all items in different categories, exploratory factor analyses (principal component method, varimax rotation, Kaiser criterion, screen plot criterion) were carried out for the nutrition choices group and purchase choices group. One of the first, rougher requirements for combining several items into a new variable is, on the one hand, similar mean values and approximately the same standard deviations (Klopp, 2012). This means that the probability of a balanced relationship between the items (balance and measurement quality within classical test theory) is higher. In the next step, the values from the KMO and Bartlett tests were analyzed in more detail. The value of the Kaiser-Meyer-Olkin sample suitability measure should not be less than 0.6, otherwise the sample is considered unsuitable (Hemmerich, 2021). The value for nutrition was slightly below the limit at 0.591. Due to the slight undershoot of 0.009, the sample could be considered of limited suitability by rounding up the value. Therefore, the factor analysis was carried out further. In addition, the Bartlett significance at $p < 0.001$ showed that it was highly significant. This criterion for sample suitability was therefore met. Furthermore, the anti-image correlations were checked. Each individual value should not fall below the limit of 0.6 (Hemmerich, 2021). In this case, the frozen food item was removed, as this is where the lowest value emerges from the calculation. The renewed factor analysis showed a sample suitability measure according to Kaiser-Meyer-Olkin over 0.6 and a significance according to Bartlett with $p < 0.001$, so the connection was highly significant (Pfeiffer, 2019). In the retest, the anti-image correlations according to the calculations were within the limits (Hemmerich, 2021). This means that the seven items were retained and no further variables needed to be removed. In the last step, the number of components can now be determined. The total explained variance of the solution found is 66.3 percent. The scree plot shows that a 3-component solution was possible. The rotated component matrix, shown in Table 1, presents the 3-factor solution.

The three factors were named according to their thematic similarities as followed:

- Throwaway lifestyle (disposal of food, food leftovers and disposable packaging)
- Carnivore lifestyle (dairy consumption and meat consumption)
- Healthy lifestyle (fresh ingredients and healthy diet)

In the following step, the suitability of the newly created scales was checked in order to ensure their use for further calculations. Suitability was confirmed through a reliability analysis. Afterwards, a similar process was carried out for the purchase choices items and resulted in the following rotated component matrix (Table 2).

The two factors were named according to their thematic similarities as follows:

- Food awareness (fair trade food, organic food, regional food and avoidance of excessive packaging)
- Food cost saving (food expiry dates and cooking in an energy-saving manner)

The further classification of the YCSCB scale into smaller sub-groups contributes to explain the differences between generations in more details, and sheds a light to the influencing factors that comprise consumption behaviors. With regards to nutritional choices, food disposal, carnivore lifestyle, and healthy lifestyle emerge as factors, suggesting that there are stark differences in attitudes and norms relating to consuming meat/dairy and consume a fresh and healthy diet between different groups of different identities, which in this study, are gender identity and generational identity specifically. Purchase choices are further reduced to food awareness and food cost saving, implying that the influencing factors, such as intergenerational awareness transfer or social learning behaviors, could influence either of these categories separately and significantly. This further proved the purpose of exploratory analysis, as a high score in purchase choices could now be interpreted either having more sustainable choices, save more food cost from sustainable/unsustainable choices, or both.

4.3. Hypotheses testing

The test for normal distribution and visual inspection of the histograms showed that there was no normal distribution, but rather a bimodal distribution. The Mann-Whitney *U* test with two independent variables was therefore used for hypothesis testing (Field, 2018; Mac-Farland and Yates, 2016). The results of the test can be found in Table 3. Test statistics show significant differences (,021, 2-tailed).

From the results of the test, it can be concluded that there is a significant difference in the frequency of sustainable activities in everyday life between generation Z (mean rank = 95.16) and generation Y (mean rank = 78.67). The mean rank of generation Z is higher than that of generation Y, suggesting that generation Z engage in sustainable activities more frequently. From the value $z = -2.306$, a weak effect size of 0.175 can be derived (Field, 2018). H1 is therefore supported.

For this hypothesis, *t*-test with independent samples was used. In the first step, the normal distribution was checked for the investigation. The Shapiro Wilk test shows a highly significant difference for all scales thus there is no normal distribution. The Q-Q diagrams for the scales with the

Table 1
Rotated component matrix for nutritional choices.

Item No. and description	Component		
	1	2	3
4.Food disposal	,849		
16.Food leftover	,814		
6.Disposable packaging	,543		
17.Fresh ingredients		,873	
3.Healthy diet		,753	
2.Dairy consumption			,875
1.Meat consumption			,788

Table 2
Rotated component matrix for purchase choices.

Item No. and description	Component	
	1	2
9.Fair trade food	,858	
7.Organic food	,838	
11.Regional food	,704	
8.Avoidance of excessive packaging	,549	
10.Food expiry dates		,788
15. Cooking in an energy-saving manner		,748

Table 3
Rank mann-whitney-U-test.

Group	N	Mean Rank	Sum of Rank
Generation Y	76	78,67	5979,00
Generation Z	99	95,16	9421,00
Total	175		

respective division into female and male showed that all diagrams are approximately normally distributed. The distribution problems found can be dealt with using the bootstrapping method with 5000 samples. The results are presented in Table 4.

From the results, it can be concluded that there are no significant differences between generation Y and Z in terms of carnivore lifestyle, healthy lifestyle, throwaway lifestyle, or food awareness. However, generation Z (M = 3.95, SE = 1.12) has greater food cost saving than Generation Y (M = 3.52, SE = 1.03). The Cohen's effect size is d = 0.39 and therefore represents a medium effect. Therefore, H2 is partially supported in case of food cost saving.

For this hypothesis, *t*-test with independent samples was used. In the first step, the normal distribution was checked for the investigation. The Shapiro Wilk test shows a highly significant difference for all scales thus there is no normal distribution. The Q-Q diagrams for the scales with the respective division into female and male showed that all diagrams are approximately normally distributed. The distribution problems found can be dealt with using the bootstrapping method with 5000 samples. The results are presented in Table 5.

Based on the two significant differences, it can be concluded that men (M = 4.69, SE = 1.23) have a more carnivorous lifestyle than women (M = 4.12, SE = 1.39). The Cohen's effect size is d = 0.43 and therefore represents a medium effect. It could also be seen that women (M = 5.02, SE = 0.74) have a stronger healthy lifestyle than men (M = 4.48, SE = 1.02). The Cohen's effect size is d = 0.62 and therefore represents a strong effect. There are no significant differences between men and women in terms of throwaway lifestyle, food awareness, or food cost saving. Thus, H3 is partially supported in the situations of carnivore lifestyle and healthy lifestyle.

Regression models were conducted for parental household sustainability behaviors and the five different factors of sustainable food consumption behaviors. All models were checked for validity for regression analysis. In order not to report repeating tests, we only showed valid and significant effect in this results section. There is no signification relationship between a sustainable parental household and carnivore lifestyle, healthy lifestyle, or throwaway lifestyle.

For food awareness, the distribution problems found can be dealt with using the bootstrapping method with 5000 samples. The result of the regression is shown in Table 6 below.

The regression coefficient is 0.280 with a medium effect size. It can be deduced from this that with increasing sustainability in the parental home, the level of food awareness of the children (fair trade products, organic products, regional products, avoidance of excessive packaging) increases.

Similarly, the results for food cost saving is presented in Table 7 below.

The regression coefficient is 0.158 with a medium effect size. From this, it can be deduced that with increasing sustainability in the parental home, food cost saving manners (avoiding excessive packaging, buying products shortly before the best-before date is reached and cooking in an energy-saving manner) increase. Therefore, H4 is partially supported in case of food awareness and food cost saving.

Table 8 below shows a summary of the results of our hypothesis testing.

Table 4
Bootstrap generation and sustainable consumption behaviors.

	Mean difference	Bias	Standard error	Sig. (2-tailed)
Carnivore lifestyle	,34556	-,00653	,20211	
Healthy lifestyle	-,02014	,00203	,13620	
Throwaway lifestyle	,11696	-,00260	,14412	,427
Food awareness	,02645	,00277	,15561	
Food cost saving	-,42757	,00044	,16317	,010

Table 5
Bootstrap gender and sustainable consumption behaviors.

	Mean difference	Bias	Standard error	Sig. (2-tailed)
Carnivore lifestyle	-,57297	-,00300	,19931	,004
Healthy lifestyle	,53540	,00001	,13813	,000
Throwaway lifestyle	-,04987	,00206	,14861	,733
Food awareness	-,01682	,00011	,15614	,914
Food cost saving	,05819	,00415	,16906	,743

Table 6
Regression parental household and food awareness.

Predictor	b^a	SE_b^a	t	p
(Constant)	2531 [2042; 2997]	,227	11,168	0,001
Parental household	0,280 [0,152; 0,415]	0,057	4868	0,001

Table 7
Regressions parental household and food cost saving.

Predictor	b^a	SE_b^a	t	p
(Constant)	3175 [2667; 3653]	0,257	12,331	0,001
Parental household	0,158 [0,031; 0,292]	0,065	2412	0,017

5. Discussion and conclusion

Our theoretical contribution, first of all, was to replicate and explore components of the YCSCB scale in the area of food consumption for the German Y and Z population. Based on the factor loading results, the food consumption behavior scale was broken down into thematic subcategories that reflect the aspects of food consumption style among young adults and adults among generations Y and Z as below.

Nutrition choices:

- Throwaway lifestyle (disposal of food, food leftovers and disposable packaging)
- Carnivore lifestyle (dairy consumption and meat consumption)
- Healthy lifestyle (fresh ingredients and healthy diet)

Purchase choices:

Table 8
Summary of hypothesis testing results.

Hypothesis	Result
H1: Generation Z engage in sustainable activities in everyday life more frequently than generation Y.	Supported
H2: Generation Z display more sustainable food consumption behaviors than generation Y.	Partially supported in case of food cost saving
H3: Gender has an impact on sustainable food consumption behaviors.	Partially supported in case of carnivorous and healthier lifestyle
H4: The parental household has an impact on sustainable food consumption behaviors.	Partially supported in case of food awareness and food cost saving

- Food awareness (fair trade food, organic food, regional food and avoidance of excessive packaging)
- Food cost saving (food expiry dates and cooking in an energy-saving manner)

This statistical and thematic classification of sub-category contributes to deepening our insights in the research matter. This categorization of various food consumption behaviors into distinct sub-themes and their relationships provide a clearer understanding of the subject and give us more insights on which category was the influencing factor during our hypothesis testing. This will enable businesses and policy-makers to make more informed decisions by having a deeper understanding of the complex relationships between different food consumption behaviors. For future studies using a similar generational focus and similar geographical and cultural settings, this scale could be directly applied in applicable research. Otherwise, the research design of this study could be replicated in different research settings across different population groups and contextual factors such as geographical locations, social classes, and cultural clusters. In these cases, applying confirmatory factor analysis is necessary to revalidate the testing scale and increases the reliability of measuring the relevant research concepts.

Our hypothesis testing provides insights into the characteristics of two different generations in food consumption behaviors in Germany. In the current economic, social and ecological situation, more and more people are addressing the issue of sustainability and rethinking their consumption behavior. The data also points out that generation Z participate in more daily sustainable activities than generation Y in general and food consumption activities in particular, specifically food cost saving. We also found out that men have a more carnivore lifestyle than women, and women have a stronger healthy lifestyle than men. We also confirmed previous research ideas that a sustainable parental household might shape as model behaviors for food awareness and food cost saving behaviors, which are built by knowledge, attitude, and consistency. Reflecting on the underlying theories and concepts in the field, we support the ideology of generational theory and the theory of planned behavior. The findings are consistent with those above-mentioned theories in the sense that generation characteristics from generation Y and Z are considered an identity and differ them from each other. The connection between a stronger intention to engage in sustainability and higher level of food sustainability in generation Z proves that intention is a predictor of behavior. With regards to attitudes and subjective norms, the connections between gender and carnivore- and healthy-lifestyle, for example, suggest that the perceived social and peer pressures might play a part in shaping gender-related behaviors. The relationship between parental household awareness and behaviors on the next generations further demonstrates the idea of planned behavior that attitudes and norms are transferable and could be a driving factor for consumption behaviors. All in all, the findings strengthen the role of intention, norms, attitude, and behavior control to change long-term sustainable food consumption habits. At a more meta-level, by applying a combination both intent- and impact-oriented approaches through the SCB cube and the YCSCB scale, our research advances the proportion of impact-oriented studies in the field. Similar to when the YCSCB scale extending the empirical fit of the SCB cube, we, in turn, empirically extend the fit of the YCSCB scale further. The sub-categorization of food consumption in particular provides a heuristic and interpretable basis for evaluating the social and environmental impacts of the behaviors that result from the consumer intentions. Providing such a reflective and applicable impact-based behavior could bridge the intent-impact gap that has been separating research and practice, and facilitate comparable interdisciplinary strategy development and policy making.

Our findings have certain synergies with the findings from the limited amount of study in the field and in turn, provide consistent suggestions to businesses and social policies to take advantage of the generational differences in order to achieve efficient and visible results. Previous research on sustainable food consumption (Kamenidou et al., 2019; Mucha and Oravecz, 2025; Pilařová et al., 2023; Skypalova et al., 2022; Szejda et al., 2021) has primarily focused on a few chosen specific behaviors such as meat consumption or food waste without investigating the underlying intentions or how these particular behaviors are connected to consumers' general sustainable behaviors. Our study fulfills this lack of comprehension by incorporating multiple theoretical background and concepts to also look at the drivers of the intentions from social, and ecological, as well as generational norms. Therefore, our research is grounded in stronger theoretical settings and could better assist the sensemaking process of the results and subsequently the creation of strategies and policies. For example, previous studies suggested that younger generations are more opened to cultured meat, resulting in high potential of acceptance if the appropriate marketing actions towards promoting consumer willingness for generation Z are carried out (Szejda et al., 2021; Pilařová et al., 2023). Our findings agree and build on this premise with the insight that the best strategy to achieve this desirable effect would be to put the main emphasis on food cost saving for generation Z or on the quality of food and health benefits for men. For businesses, marketing campaigns could tailor their messages targeting different generational cohorts and gender to improve their competitive advantage, since information is of key importance to purchasing decisions (Baum et al., 2021). A few social examples could be promoting more sustainability activities in general and food saving in particular to generation Y within the media types and networks that are more popular among them, or targeting vegetarian campaigns directly to men. Social policy strategies include offering incentives and subsidies to young people to adopt sustainable products (e.g., scanning QR codes for fun facts and prizes, reducing prices for a specific age group or gender), enforcing regulatory frameworks that support proper labeling to increase perceived availability of sustainable options among young people, and collaborating with popular food and beverage brands among the younger generations or industry associations to sponsor social awareness and educational challenges. A few particular campaigns targeting generations Y and Z could involve influencers and social media personalities creating engaging and shareable viral content that showcase cost-saving benefits such as buying in bulk challenges, meal planning in bulk to share on social media, recycle food waste fun ideas, etc. In order to target men in particular, campaigns examples could include male personalities showcasing organic, grass-fed, wild-caught meat and meat substitutes. Our study also points out that generation Z are more engaged in sustainability behaviors in general and food consumption in particular; thus, we agree with and build on the ideas of Skypalova et al. (2022) that while they focus on paying as less as possible, generation Z also are more concerned with the food movement which will shape the future food market and could be convinced to act more sustainability through proper awareness raise alongside cost concern. Future implications also include the possibility of parental household influence. We are in the same mindset as multiple previous scholars (Kamenidou et al., 2019; Mucha and Oravecz, 2025) that young people are more likely to pass on the sustainability awareness, knowledge, and practice, that they are still motivated and willing to learn, and that their behavior can still be influenced (Fischer et al., 2017). Building on our theoretical basis of behavioral intentions through built social and ecological norms and our empirical findings on the influence of parental household, we further extend the application of that knowledge and experience passing to apply to the case of their children. Since young people, especially generation Y, are now at the stage of already have or will have their own families (Kamenidou et al., 2019), different awareness and targeted educational programmes should be placed on the current parent generations in order to promote sustainable development ideology and habits more strongly to generation Alpha and further. Similar to the social policy examples presented above, there should be strategies targeting young families with children in particular, e.g., policies for sustainable food classes and sustainable food source in kindergartens, children-friendly and ethical sustainable food advertisement and

labeling initiatives, raising awareness through children-related communities and organizations, social media, print media, and collaborating between community and industry for events such as recipes sharing, shopping guides, cooking workshops, children food fair, local garden visit.

This study is subject to various limitations, and therefore could be improved in a few certain ways. For example, a larger sample size that covers multiple countries would lower sampling error and create a higher possibility for generalization across nations and cultures. Applying confirmatory factor analysis could be beneficial to remove sample-specific variables and increases the reliability of measuring the relevant research concepts. Furthermore, due to the lack of theoretical grounding, the investigation of thematic sub-categorization of the food consumption behavioral patterns is considered exploratory without a predefined idea of factor structure, which limits the validity and reliability of the findings. We hope this study inspires further theoretical and qualitative studies in the area of impact-based behavioral consumption, especially food consumption. Furthermore, a strategic probability sampling would help increase the generalization of the findings into larger population settings. It should also be noted that the way young adults consume is constantly changing and evolving. As a result, the data should be constantly updated for relevance. However, the originality of this type of study could pave the way for future research in this direction to focus more on the future generations and how best to communicate and promote sustainable consumption behaviors among them. Future research in this field could focus on a deeper understanding of generational differences due to different societal and cultural factors, e.g., cultural cuisines that are more vegetarian friendly and their influence on promoting sustainable food consumptions, as well as generational factors that affect the effectiveness and efficiency of sustainability-related business and social education programmers such as social media and influencer promotion.

CRediT authorship contribution statement

My Hanh Doan: Writing – original draft, Visualization, Validation, Methodology, Conceptualization. **Anna-Lena Drossel:** Writing – original draft, Methodology, Investigation, Data curation. **Remmer Sassen:** Writing – original draft, Supervision, Project administration, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. Items of the YCSCB food consumption and further questions applied in the survey

Category	Item
Control question	How often do you buy food for yourself?
	How often do you prepare meals for yourself?
Nutrition choices	I eat meat (steak, ham, etc.)
	I use frozen foods for meal preparations
	I use fresh ingredients for meal preparations
	I reuse leftovers for the next meal
	I buy snacks and beverages in disposable packaging (take away, fast food, coffee to go, etc.)
	It happens that I discard food products
	I keep a healthy diet
	I eat dairy products (butter, cheese, yoghurt, etc.)
Purchase choices	I avoid food products in excessive packaging
	I buy organic food products
	I buy fair-trade food products (e.g., with a fair-trade label)
	I buy locally grown food products
	I cook/prepare my meals energy-efficiently
	I buy food products even just before the best before date expires
Further questions	How often do you participate in sustainable activities in your everyday life (e.g., use bicycle instead of car, use paper bags instead of plastic bags)?
	How often did or do my parental household purchase sustainable groceries?

Appendix 2. Descriptive statistics on the YCSCB items of the sample

Category	Item	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
Control question	How often do you buy food for yourself?	175	2	7	5,78	,105	1386
	How often do you prepare meals for yourself?	175	3	7	4,97	,081	1066
Nutrition choices	I eat meat (steak, ham, etc.)	175	1	7	3,91	,116	1534
	I use frozen foods for meal preparations	175	1	7	3,17	,078	1036
	I use fresh ingredients for meal preparations	175	2	7	4,94	,085	1120
	I reuse leftovers for the next meal	175	1	7	4,84	,113	1500
	I buy snacks and beverages in disposable packaging (take away, fast food, coffee to go, etc.)	175	1	7	3,26	,086	1134
	It happens that I discard food products	175	1	7	3,06	,079	1036
	I keep a healthy diet	175	2	7	4,80	,078	1003
	I eat dairy products (butter, cheese, yoghurt, etc.)	175	1	7	4,80	,125	1647
Purchase choices	I avoid food products in excessive packaging	175	1	7	3,66	,106	1404
	I buy organic food products	175	1	7	3,65	,102	1343
	I buy fair-trade food products (e.g., with a fair-trade label)	175	1	7	3,29	,091	1208
	I buy locally grown food products	175	1	7	3,79	,087	1151
	I cook/prepare my meals energy-efficiently	175	1	7	3,77	,134	1776
	I buy food products even just before the best before date expires	175	1	7	3,86	,117	1553

(*continued on next page*)

(*continued*)

Category	Item	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
Further questions	How often do you participate in sustainable activities in your everyday life (e.g., use bicycle instead of car, use paper bags instead of plastic bags)?	175	1	7	4.04	0.093	1224
	How often did or do my parental household buy sustainable groceries?	175	1	7	3,74	,095	1259
Total respondent		175					

Data availability

The data that support the findings of this study are available on request from the corresponding author.

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