



A comparison of sustainability attitudes and intentions across generations and gender: a perspective from U.S. consumers

Comparación de las actitudes e intenciones en relación a la sostenibilidad entre generaciones y género: una perspectiva de los consumidores de Estados Unidos

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ABSTRACT

As firms increasingly focus on corporate sustainability initiatives and offer more sustainability-related products, there is a need to continually assess consumer attitudes towards and involvement in sustainable consumption. Additionally, there is a need to determine if some consumer characteristics may typify how they think, feel, and behave towards sustainability initiatives. Based on an online sample of 1,250 U.S. consumers, this present research utilizes a cross-sectional design to examine whether generational cohort and gender help explain variations in how consumers react to the notion of sustainability. This research is also focused on sustainability in the food and grocery industry. The findings suggest that attitudes towards sustainability and the degree to which consumers feel sustainability is important is more positive for younger consumers and women. The Baby Boomer generation is less interested in sustainable consumption and less likely to be persuaded by sustainability claims. The main limitations of this study are that data were collected only through self-reporting from consumers in the United States. For marketers promoting sustainability-related products, this data should help them better understand segments of the U.S. market and develop more successful promotional initiatives. Knowing the nuances of how generational cohorts think about sustainability and how they may consider it when making purchase decisions should motivate marketers to utilize these differences when creating their marketing mix. Though some marketers are moving away from gender-based promotional tactics, the findings also suggest that gender segmentation could still be useful when it comes to sustainability-related products.

Keywords: sustainability, grocery, triple bottom line, cohort theory, shopper behavior, sustainability attitudes.

RESUMEN

A medida que las empresas se centran cada vez más en iniciativas relacionadas con la sostenibilidad corporativa y ofrecen más productos relacionados con la sostenibilidad, es necesario evaluar continuamente las actitudes de los consumidores hacia el consumo sostenible y su implicación en él. Además, es necesario determinar si algunas características de los consumidores pueden tipificar su forma de pensar, sentir y comportarse ante iniciativas en materia de sostenibilidad. A partir de una muestra online de 1.250 consumidores de Estados Unidos, la presente investigación utiliza un diseño de sección transversal para examinar si la cohorte generacional y el género ayudan a explicar las variaciones en la forma en que los consumidores reaccionan ante la noción de sostenibilidad. Esta investigación también se centra en la sostenibilidad en la industria alimentaria y de comestibles. Los resultados sugieren que las actitudes hacia la sostenibilidad y el grado en que los consumidores consideran que ésta es importante son más positivos para los consumidores más jóvenes y las mujeres. La generación del Baby Boomer está menos interesada en el consumo sostenible y es menos probable que se deje convencer por las afirmaciones de sostenibilidad. Las principales limitaciones de este estudio residen en que los datos se recogieron únicamente a través de declaraciones de los propios consumidores en Estados Unidos. Para los comercializadores que promueven productos relacionados con la sostenibilidad, estos datos deberían ayudarles a entender mejor los segmentos del mercado estadounidense y a desarrollar iniciativas promocionales más exitosas. Conocer los aspectos de la forma de pensar de las cohortes generacionales sobre la sostenibilidad y cómo pueden tenerla en cuenta a la hora de tomar decisiones de compra debería motivar a los profesionales del marketing a utilizar estas diferencias a la hora de crear su marketing mix. Aunque algunos vendedores se están alejando de las tácticas promocionales basadas en el género, los resultados también sugieren que la segmentación por género podría seguir siendo útil cuando se trata de productos relacionados con la sostenibilidad.

Palabras clave: sostenibilidad, comestibles, triple cuenta de resultados, teoría de cohortes, comportamiento del comprador, actitudes de sostenibilidad.

1. INTRODUCTION

Amidst technological advances, consumer trends and social movements, it is imperative to continue studying how consumers think about, react to, and perceive their role in the world. One such issue is how consumers think about sustainability as they make consumption choices. This is aligned with the fact that firms are increasingly adopting (and often promoting) triple-bottom-line (TBL) strategies aimed to reduce the negative impact on the environment, while making positive strides for society and economic health. Indeed, sustainable consumption is a topic that receives increasing attention from scholars and researchers (e.g., Fischer *et al.*, 2017; Leary *et al.*, 2014), but also the marketing community at-large. In fact, a 2019 Nielsen report predicted that shoppers would spend nearly \$150 billion per year on sustainable products in 2021. Besides product choices, data from the 2021 Sustainable Market Share Index™ suggested that consumers are willing to pay a premium of nearly 40% more for sustainably marketed products over their conventional counterparts (Kronthal-Sacco & Levin, 2021). In addition, it showed that sustainability marketed products accounted for 54.7% share of the overall market growth between 2015-2019, and accounted for 16.8% of all purchases in 2020, an increase from 13.7% in 2015 (Kronthal-Sacco & Levin, 2021). The trend is similar as it pertains to food choices. A food intelligence report claimed that, compared to 2019, 23% more U.S. consumers prioritized sustainable food choices in 2020 (Gelski, 2020).

From a research standpoint, attention has mostly focused on how consumers feel about sustainable consumption, including whether they feel they can make a difference in helping to preserve the environment through their own personal actions. A large portion of this research focuses specifically on young consumers since sustainability marketing efforts are often targeted towards this group (Fischer *et al.*, 2017; Kadic-Magljajilic *et al.*, 2019). Researchers are also trying to uncover what specific actions are relevant in constituting sustainable consumption behaviors, since extant literature employs a wide range of methods to measure it (Geiger *et al.* 2018).

Because consumer attitudes towards sustainability are likely to still be evolving, as consumers are increasingly made aware of how production and consumption of goods impact our natural environment and marketers are increasingly using sustainability claims, researchers must continue to study consumer characteristics that influence the adoption of sustainable products. Indeed, Hanss and Böhm (2012) pointed out that consumers' understanding of sustainability changes due to media coverage and a greater societal emphasis on sustainability issues. Therefore, this research aims to understand current attitudes and behaviors towards sustainability, the level of importance consumers assigns to sustainability, and sustainability-related values that may correspond to sustainable consumption, while also examining some of the more intricate nuances of how consumers think about and act with respect to sustainable food consumption. For example, do consumers believe that plant-based diets are beneficial to sustainability efforts? Are consumers willing to spend more for grocery products that are less harmful to the environment? Do the answers to these questions vary based on generational cohort and gender?

To date, evidence of age and gender effects on sustainability behaviors is consistently mixed (Jerónimo *et al.*, 2020). Answers to these questions will address important gaps evident in current literature and help sustainability marketers better understand these demographically defined consumer groups. This is a key contribution of the paper since there is limited research comparing generational cohorts in the context of sustainable food consumption (Kamenidou *et al.*, 2020).

Another subject that has received less attention from researchers, but which ultimately affects sustainable consumer behaviors, is the extent to which consumers feel that firms are exercising best efforts to be sustainable in their practices. This is because consumer skepticism may inhibit consumer adoption of brands that make sustainability claims. For example, do consumers believe that firms have a responsibility to limit their negative impact on the natural environment? Do the sustainability efforts some firms make outweigh the costs to achieve them? Through the lens of generational cohort, this research also examines consumer opinions about corporate efforts to be sustainable and protect the environment.

Thus, the overarching research question is: are there generational differences in the way cohort groups think, feel, and act towards sustainability in general, as well as in the context of food consumption/grocery shopping? If so, does gender moderate this effect?

In the literature review that follows, the concept of environmental sustainability and its role in the triple-bottom-line is reviewed, research related to consumer attitudes and consumption trends with respect to environmental sustainability is discussed, and finally, it is argued that generational cohort theory can be a useful lens through which to examine consumers' attitudes and intentions towards sustainability and sustainable food consumption/intentions. This review leads to several hypotheses that were tested with a sample of U.S. consumers in a cross-sectional survey.

2. LITERATURE REVIEW

2.1. Environmental sustainability

Sustainability is a top-of-mind concern not only for businesses, who work to promote triple-bottom-line sustainability (TBL), but also for the modern consumer. TBL is a business concept that emphasizes a firm's commitment to engage in practices that focus on sustainability within social, environmental, and economic impact (Elkington, 2013). TBL efforts are now integrated into business strategies as firms seek to create programs, measure, and optimize their successes in all three of these areas. However, the term "sustainability" has environmental overtones that may appeal to consumers more than economic or social ones. Though many definitions and conceptualizations of the term "sustainability" exist in the literature, our focus here is on environmental sustainability, which refers to the practice of "meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them (Morelli, 2011, p. 6)".

2.2. Consumer attitudes towards environmental sustainability

Firms are increasingly engaging in environmental sustainability efforts. The impetus for such efforts is derived not only from a corporate philosophy to be more environmentally responsible, but also from consumer demand for products that are, or are believed to be, less harmful to the environment (Stranieri *et al.*, 2017). For example, the use of chemicals and pesticides in agricultural products poses risks to both the environment and human health. As consumers become more educated about the effects of pesticides, they may seek products grown and raised without them (i.e., natural, and organic). Firms are also addressing consumer concerns related to waste by reducing the use of plastic in packaging and reducing packaging materials overall (Ma *et al.*, 2020). This is supported by one study concluding that consumers make food product and retail store choice decisions based on the company's pro-environmentally sustainable practices (Hampl and Loock, 2013).

However, do consumers consider the benefits of reduced packaging when making grocery purchase decisions? One study using French, German and American participants found that American and European consumers were both more concerned with "end-of-life" package attributes (e.g., recyclability, reusability) compared to beginning-of-life package attributes (e.g., made from recycled materials) (Herbes *et al.*, 2018). While attitudes towards organic foods and determinants of organic food consumption have been studied widely (for a systematic review see Kushwah *et al.*, 2019), attitudes towards other types of environmentally sustainable practices are still relatively scarce (Stranieri *et al.*, 2017). This includes attitudes towards plant-based foods and towards products with reduced packing that limits waste.

2.3. Trends in pro-environmental consumer behavior

Pro-environmental consumer behavior includes not only the action of purchasing goods but is also "a process of decisions and actions that include purchasing, product use, and the handling of any remaining tangible product after use (Lim, 2017, p. 69)." Now, more than ever, there is evidence that consumers may be motivated to engage in sustainable consumption practices and utilize sustainability information when making purchase decisions. For example, consumers who are more involved in healthy and sustainable eating tend to also hold more favorable attitudes and behavior towards sustainable eating practices, like eating a plant-based diet (Van Loo *et al.*, 2017).

Even though many people say that they want to be more sustainable in their consumption decisions (Diddi *et al.*, 2019), trends in consumer culture are working in opposition of this claim. Briceno and Stagle (2006) summarized several of these trends, which includes an increase in individualistic attitudes in global societies, the increased number of private cars which has reduced demand for public transportation, and a prioritization of economic goals. However, the United States is one such place where individualistic attitudes and consumption patterns are historically more prevalent, and therefore may be

less evident between generations. In fact, studies conducted in the new millennium found that the U.S. still can be characterized as a "throw away" society, whereby people often opt to throw away something that could be fixed, choosing to replace it instead of repairing it (McCollough, 2010). Thus, the present study should uncover whether generational cohorts within the U.S. could be partially responsible for some of the contradictions in the literature (see Table 1 for a summary review of research on sustainability contextualized by generations).

2.4. Sustainability attitudes and behaviors among generational cohorts

Because age is one of the most common predictors of differences in behaviors and attitudes, examining sustainability from the lens of generational cohort could provide important insights. Generational cohorts represent roughly 20-year spans of age groups, whereby those born during that span tend to experience similar historical events and social trends. This follows Generational Cohort Theory (Inglehart, 1977) which proposes that groups who have shared life experiences during early adulthood will continue to share similar values, attitudes, and behaviors throughout their lives. At present, the main cohort groups of adult consumers in the U.S. are Baby Boomers (1946-1964), Gen X (1965-1976), Millennials/Gen Y (1977-1995), and Gen Z (1996-present).

Marketers often find that cohort analyses offer a rich understanding of consumer behaviors and attitudes as well as if these behaviors and attitudes evolve over time. For example, Millennials and Gen X are found to be more attentive to environmental information on food labels and more intricate nutrition facets, like food being grown locally, compared to Baby Boomers and Gen Z (Sanchez-Bravo *et al.*, 2021). Furthermore, the acceptance, use, and trust of mobile devices and services is greater among Millennials compared to Baby Boomers (Obal & Kunz, 2013; Yang & Jolly, 2008), and Gen Z tends to be less brand loyal than Millennials and older generations (Accenture, 2017).

Other researchers highlight the increasingly post-materialist values of younger generations, suggesting that Millennials exhibit the highest levels of awareness and concern for the environment (Fien *et al.*, 2008; Heo & Muralidharan, 2019; Hwang & Griffiths, 2017). For example, young Chinese consumers are thrifter and more willing to consume second-hand clothing, compared to older generations (Liang & Xu, 2018), perhaps suggesting that younger generations feel that sustainable consumption is more important than do older consumers. However, the researchers note that the youngest generation (classified as born post-1990's) were motivated mostly by a desire for uniqueness and perceived economic value, whereas consumers born in the 1970's and 1980's were driven by environmental values. Heo and Muralidharan (2019) found that environmental knowledge is directly related to environmental buying behaviors for the youngest U.S. Millennials.

Another recent study found that Millennial consumers in Brazil and Portugal were more influenced by the COVID-19 pandemic to engage in sustainable consumption compared

to older cohorts (Severo *et al.*, 2021). Indeed, a meta-analysis compiled by Kamenidou *et al.* (2020) demonstrates that research on Millennials generally finds them to be more familiar with and hold more favorable attitudes towards sustainable food consumption. These attitudes usually result in more frequent purchase and consumption of sustainable food. It appears that attitudes towards sustainability may continue to be more influential for younger generations; a systematic review conducted by Dabija *et al.* (2019) suggests that the Gen Z consumers are the greenest and most sustainability-oriented of any previous cohort. Despite evolving consumer attitudes and behaviors toward sustainability, these research streams support the presence of generational divides as it pertains to sustainability consumption (Gelski, 2019) and highlight nuances of responsible consumption that the younger generations are believed to possess.

On the other hand, some studies have found very little overall difference between generations on self-reported measures of sustainable consumption (Bulut *et al.*, 2017; Huttenen & Autio, 2010), and others seem to be in complete opposition of these generational characteristics. For example, some argue that the younger generations exhibit behaviors that support the predominant narrative that they are maturing into an increasingly consumer-driven society that is environmentally destructive (Carr *et al.*, 2012). Some have labeled younger generations as “the most consumption oriented of all generations” (Bucic *et al.*, 2012, p. 114). In comparison, the Baby Boomers are characterized by thriftiness resulting from growing up in times of scarcity (Carr *et al.*, 2012), with a strong motivation to under-consume. According to Gray *et al.* (2019), there are no generational differences as it pertains to environmental concern, but an environmental value orientation and a self-reported political orientation is better able to predict this outcome. Indeed, a meta-analysis by Wiernik *et al.* (2013) concluded that extant literature is inconclusive as it pertains to the influence of age/generation on sustainability concerns and actions.

While valuable, most past research endeavors also conclude with the generational breakdown with the Millennial group because the Gen Z consumer was too young to make individual consumer decisions. This paper includes the Gen Z cohort, the youngest of the adult cohort groups. This is an important contribution because as this generation transitions into independent consumers, their decisions and consumption habits must be understood. Based on the preceding literature review (including the meta-analysis by Kamenidou *et al.*, 2020), it seems likely that the younger generations place a higher value on sustainable consumption and are more likely to make purchase decisions based on their feelings towards environmental sustainability. Thus, the following hypotheses relates to the role of generational cohort in predicting consumer attitudes towards sustainability and the importance they assign to sustainability.

Hypothesis 1: Gen Z have more positive sustainability attitudes than a) Gen X and b) Baby Boomers.

Hypothesis 2: Millennials have more positive sustainability attitudes than a) Gen X and b) Baby Boomers.

Hypothesis 3: Gen Z perceive sustainability as more important than a) Gen X and b) Baby Boomers.

Hypothesis 4: Millennials perceive sustainability as more important than a) Gen X and b) Baby Boomers.

Hypothesis 5: Gen Z have stronger sustainability related consumption values than a) Gen X and b) Baby Boomers.

Hypothesis 6: Millennials have stronger sustainability related consumption values than a) Gen X and b) Baby Boomers.

Hypothesis 7: Gen Z have stronger intentions towards sustainability-related grocery purchases than a) Gen X and b) Baby Boomers.

Hypothesis 8: Millennials have stronger intentions towards sustainability-related grocery purchases than a) Gen X and b) Baby Boomers.

2.5. The influence of gender on feelings towards sustainability

Research suggests that women exhibit more pro-environmental behaviors and attitudes than men (Cottrell, 2003; Lee & Holden, 1999). This could be because women tend to be more prosocial and altruistic (Dietz *et al.*, 2002). Some researchers argue that this discrepancy can be attributed to the notion that environmentalism carries feminine connotations and this is a stereotype consistent across both men and women (Brough *et al.*, 2016). In fact, in a series of seven studies Brough *et al.* (2016) found that both men and women associate greenness with femininity, causing men to be resistant to green behaviors. Indeed, several studies point to gender differences with respect to sustainability (see Table 1).

These differences in how men and women feel and act towards sustainability can be explained by theories of social norms, which are strong drivers of human behavior (Cialdini *et al.*, 1991). In fact, studies have found that this gender gap in sustainability consciousness is even evident in adolescents aged 12-19 who are part of the Gen Z population, and that this gap grows wider as age increases (Olsson & Gericke, 2017). Furthermore, Zelezny *et al.* (2000) conducted a study across 14 countries, finding that women overwhelmingly hold more pro-environmental attitudes than men within the same country. Therefore, gender should moderate the effect of the generational cohort on sustainability attitudes and importance such that women have stronger sustainability attitudes, rate sustainability as more important, and report more consumption behaviors related to sustainability. More formally:

Hypothesis 9: Women will have more positive sustainability attitudes than men.

Hypothesis 10: Women will rate sustainability as more important than men.

Hypothesis 11: The effect of generational cohort on a) sustainability attitude and b) sustainability importance will be moderated by gender.

Table 1
Sustainability Research Based on Generation and Gender Cohorts

Reference	Cohorts Studied	Key Findings
Yamane and Kaneko, 2021	Generational Cohort	Some generational differences exist. Younger generations show increased sustainable lifestyles compared to the older generations; Millennials were more environmentally conscious than Gen Z. 30.1% would pay a premium for sustainable goods; 14.2% claimed they care about corporate contributions to the sustainable developmental goals
Blodhard and Swim, 2020	Gender Cohort	Gender differences exist. Women are more likely to reuse items and participate in water and energy reduction. Women buy more organic food, green cleaning products, and sustainably produced clothing than men. Men demonstrate avoidance behaviors like reusing shopping bags and line drying clothes.
Kamenidou <i>et al.</i> , 2020	Generational Cohort	All generations of Greek consumers have favorable attitudes towards organic food Baby Boomers and Gen X more frequently buy organic food than younger groups.
Modlinska <i>et al.</i> , 2020	Gender Cohort	Women more likely to be Vegan/Vegetarian than men. Culture and diet create gender differences.
Shrestha <i>et al.</i> , 2020	Gender Cohort	Females demonstrate higher energy-saving attitudes and practices
Tait <i>et al.</i> , 2020	Generational Cohort	Generational differences exist; Younger cohorts are more environmentally concerned. Attitudes and preferences toward sustainability in wine by generations resulted in younger generations consuming more sustainable wines than older cohorts.
Diprose <i>et al.</i> , 2019	Generational Cohort	Generational differences exist; Younger generations are more sustainability aware than those over 70, but don't necessarily take action.
Gray <i>et al.</i> , 2019	Generational Cohorts	Found no generational differences. Declines in overall environmental health in regards to climate change saw no difference in environmental loss by age group.
Kamenidou <i>et al.</i> , 2019	Generational Cohort, focus on Gen Z	Sustainable food consumption behaviors of Gen Z college students is limited to eating seasonal fruits and vegetables and purchasing locally grown. Gen Z does not show a lifestyle of sustainable food consumption.
Liang and Xu, 2018	Generation Cohort	Some Generational differences exist. The clothing and textile industry has a negative environmentally sustainable impact since clothing and textiles are a part of the "throwaway trend". No differences in concerns for value, hygiene, financial and status inferiority, and emotional discomfort are evident within clothing consumption across generations. Gen X (Post-80s) held the highest perceived environmental values for second-hand clothing.
Bulut <i>et al.</i> , 2017	Gender and Generation Cohort	Gender differences exist; Women are more likely to have sustainable consumption behaviors. Generational differences do not exist. Found no difference in sustainable consumption between generations.
Olsson and Gericke, 2017	Gender Cohort	Gender differences exist; Girls (under 18) reported stronger pro-environmental attitudes and behavior.
Wiernki <i>et al.</i> , 2013	Generational Cohorts	Generational differences do not exist for environmental concern, values, commitment, awareness, knowledge, but do exist for behavior. Generational differences do not exist for behavioral intentions of performing pro-environmental behaviors. However, for actual behavior (versus intentions), older individuals perform more behaviors that relate to protection of ecosystems and avoidance of pollution. Older generations' sustainable behaviors are motivated by societal norms. Younger generations have more positive attitudes towards sustainable behavior.
Dietz, 2002	Gender Cohort	Gender differences exist; Women ranked altruism more important than men as this correlate to environmental concern and pro-environmentalism.

Source: Authors' own elaboration.

3. METHODOLOGY

The study was conducted using a Qualtrics online cross-sectional survey design.

3.1. Sampling and procedures

Participants were recruited from Amazon's MTurk workforce using the CloudResearch sampling platform with several data quality assurances in place (verified U.S. IP addresses, verified age and gender, 95% HIT approval rating, English as a first language). As a cross-check, an open-ended response item was implemented and subjected to an English fluency analysis. Only data from those who passed the English fluency analysis was kept for hypothesis testing. Following the suggestion of [Abbey & Meloy \(2017\)](#), guided response questions were embedded to ensure participant attention. Those who failed the attention check questions were immediately terminated from the survey. Quotas built into Qualtrics were used to stratify gender across four generational groups ($n = 1,250$, 51% male; see Table 2 for participant profiles and sample sizes)¹.

Table 2
Participant Profile by Generational Cohort

	Baby Boomer n = 308	Gen X n = 324	Millennial n = 314	Gen Z n = 304
Gender				
Male	51%	53%	48%	50%
Female	49%	47%	42%	50%
Marital Status				
Married	55%	64%	46%	12%
Divorced	20%	9%	4%	1%
Single	20%	21%	38%	70%
Living with Partner	5%	5%	11%	17%
Income				
<\$50K	42%	36%	43%	52%
\$50K to <\$100K	42%	38%	44%	32%
>\$150K	16%	25%	13%	16%
Education				
GED or some HS	1%	2%	1%	2%
HS Graduate	9%	8%	9%	10%
Some College /Trade School	29%	20%	20%	37%
College Degree	36%	44%	37%	42%
Post College Degree	8%	7%	11%	2%
Employment				
Employed Full-time	41%	63%	73%	46%
Employed Part-time	18%	21%	15%	28%
Not Employed	7%	11%	11%	24%
Retired	34%	3%	<1%	0%

Source: Authors' own elaboration.

¹ The sample sizes for each cohort ranged between 304 – 324. Based on total US population estimates from the 2019 US Census, the margin of error for each cohort group, using a 95% Confidence level = +/- 5%

In addition, participants were asked how much of the household shopping for which they were responsible. Those who indicated that they do at least 50% of the household grocery shopping were allowed to continue. This was to ensure a focus on U.S. consumers making grocery purchase decisions. Additionally, participants indicated whether they were born in the United States. To help ensure cultural homogeneity, only those who indicated being born in the United States were allowed to continue. Last, participants were told that the study was about trends that influence how people live and shop and to indicate if they were familiar with any of the following: recycling, sustainability, solar energy, and energy conservation (e.g., "going green"). Those who indicated being familiar with sustainability were kept in the study.

3.2. Measures

Attitude towards sustainability was measured with four items adapted from Wan et al.'s (2017) attitude towards recycling scale. The items were 1) sustainability is good, 2) sustainability is useful, 3) sustainability is sensible, and 4) sustainability is responsible (1 = strongly disagree to 5 = strongly agree; Cronbach's alpha = .94).

Sustainability importance was measured with response to two statements: 1) how important is sustainability to you? (1 = not at all important to 5 = very important) and 2) sustainability is necessary for planet health (1 = strongly disagree to 5 = strongly agree; Cronbach's alpha = .92).

Sustainability related consumption values were measured using three items drawn from Haws et al.'s GREEN scale (2014): 1) It is important to me that the products I use do not harm the environment, 2) I consider the potential environmental impact of my actions when making purchase decisions, and 3) I would describe myself as environmentally responsible (Cronbach's alpha = .87). This scale measures tendencies to express the value of environmental protection through one's purchases and consumption values. [All multi-item measures were analyzed using summed composite scores].

In addition, participants were asked several specific shopping intention questions dealing with sustainability and other sustainability-related food choices. These questions are shown in Table 4. For control purposes, basic demographic data was collected including income and education levels as they have been shown to influence purchase probability for things like second-hand fashion and pro-environmental consumption ([Park & Lin, 2020](#)) and a greater overall concern for sustainability ([Sanchez-Bravo et al., 2021](#)).

4. RESULTS

4.1. Hypothesis tests

A series of regression models using the PROCESS macro in SPSS and ANCOVAs were conducted to test the hypotheses. In the first model (model 1, [Hayes, 2017](#), 5,000 bootstrap samples), generational cohort was a multi-categorical independent variable (X, using indicator coding), sustainability attitude was the dependent variable (Y), and gender was the moderator (W; male = 0, female = 1). Education and income were included as covariates. All variables and their interactions were mean centered.

Results indicated that both Millennials and Gen Z hold more positive sustainability attitudes than the Baby Boomers ($p = .01$, $p < .01$ respectively), supporting H1b and H2b, however, Gen X reported similar attitudes to both Millennials and Gen Z (see Table 3). Therefore, H1a and H2a are rejected. This model also shows support for H9 as women indicated more positive sustainability attitudes ($M = 24.01$) than men ($M = 22.80$; $B = 2.08$, $p < .001$). However, gender was only a significant moderator when compar-

ing Baby Boomers and Gen X ($B = 12.70$, $p < .01$), showing that men attenuate the relationship between generational cohort and sustainability attitudes. Therefore, the moderating role of gender (H11a) is conditional on generational cohort (see Figure 1). Income and education were not significant in the model (p 's $> .50$) and are not shown in the table. All descriptive statistics and ANCOVA tests across generational cohort are shown in Table 4, and a summary of the hypothesized results are provided in Table 5.

Table 3
Regression Results

Antecedent	Sustainability Attitude (Y)			Sustainability Importance (Y)		
	B	t	p	B	t	p
Constant	22.04	34.36	.00	7.85	19.10	.00
Gen X vs Baby Boomer (X1)	3.80	3.71	.00	1.52	3.99	.00
Millennial vs. Baby Boomer (X2)	2.23	2.13	.03	1.47	3.77	.00
Gen Z vs. Baby Boomer (X3)	2.99	2.84	.00	1.40	3.58	.00
Gender (W)	2.08	4.42	.00	.67	5.22	.00
X1 x Gender	-1.70	-2.59	.01	-.49	-2.95	.00
X2 x Gender	-.90	-1.37	.17	-.48	-3.09	.00
X3 x Gender	-1.30	-1.55	.12	-.37	-2.29	.02

Source: Authors' own elaboration.

Table 4
Descriptive Statistics & ANCOVA Tests

Measures	1946 -1964 (Baby Boomer)	1965- 1976 (Gen X)	1977 - 1995 (Millennial)	1996 - 2002 (Gen Z)	ANCOVA (1246, 3)
Sustainability attitude ^a	22.50	23.78	23.41	23.95	7.55**
Sustainability importance	8.14	8.60	8.50	8.69	7.39**
GREEN ^a	14.40	14.87	14.58	14.62	.93
What is your <i>desired</i> level of involvement in sustainability?	3.79	3.98	4.05	4.09	8.12**
How much impact do products that <i>contribute to sustainability</i> have on your grocery purchase decisions? ^d	2.92	3.07	3.16	3.27	5.00**
How much impact do products that <i>has responsibly sourced ingredients</i> have on your grocery purchase decisions? ^d	3.31	3.33	3.40	3.41	.55
How much impact do products with <i>reduced packaging</i> have on your grocery purchase decisions? ^d	3.18	3.22	3.22	3.28	.39
How much impact do products that are <i>free of chemicals and dyes</i> have on your grocery purchase decisions? ^d	3.78	3.60	3.51	3.30	8.39**
How important is it to you to consume natural/organic foods? ^c	3.84	4.09	4.11	4.16	1.68
Producing products that are not harmful to the environment is necessary. ^b	4.47	4.50	4.31	4.44	3.58*
The positive impact of company sustainability efforts on the environment is greater than the cost to achieve them. ^b	3.74	3.91	3.99	4.08	5.90**
Eating a plant-based diet helps promote sustainability of the environment. ^a	3.65	3.81	3.72	3.89	3.43*

^a 1 = strongly disagree, 7 = strongly agree; ^b 1 = strongly disagree, 5 = strongly agree; ^c 1 = very unimportant, 5 = very important; ^d 1 = no impact at all, 5 = a major impact control variables: income, education

Source: Authors' own elaboration.

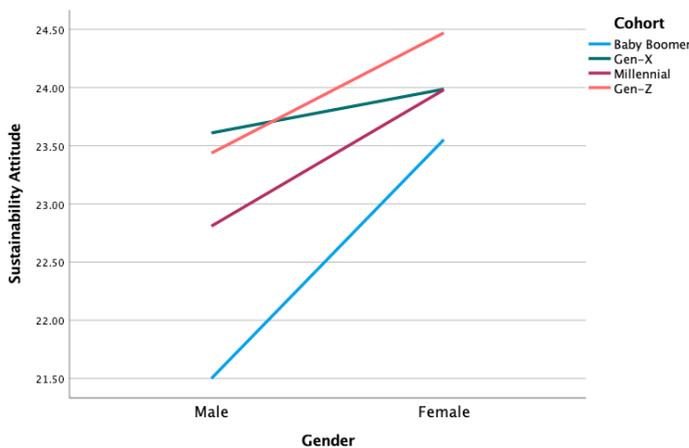


Figure 1

Conditional moderation of gender on sustainability attitude.

Source: Authors' own elaboration.

In the second regression (PROCESS model 1), generational cohort was a multi-categorical independent variable (X), sustainability importance was the dependent variable (Y), and gender was the moderator (W). Education and income were covariates. Results indicate that Millennials and Gen Z (and Gen X) feel that sustainability is more important than do the Baby Boomers (see Table 3). Therefore, H3b and H4b are supported. However, the ANCOVA test indicates that sustainability importance is equal between Gen Z and Gen X ($p = .82$) and between Millennials and Gen X ($p = .80$) Therefore, H3a and H4a are rejected.

Hypothesis 10 is also supported as women rated sustainability as more important than men ($B = 1.12, p < .01$). This time, significant interactions were observed such that sustainability importance across each generational cohort is moderated by gender, thereby fully supporting H11b (see Table 3 & Figure 2). As expected, women in each cohort view sustainability as more important than men within their cohort. One additional observation is that Baby Boomer men rate sustainability as much less important than men in any other cohort (see Figure 2).

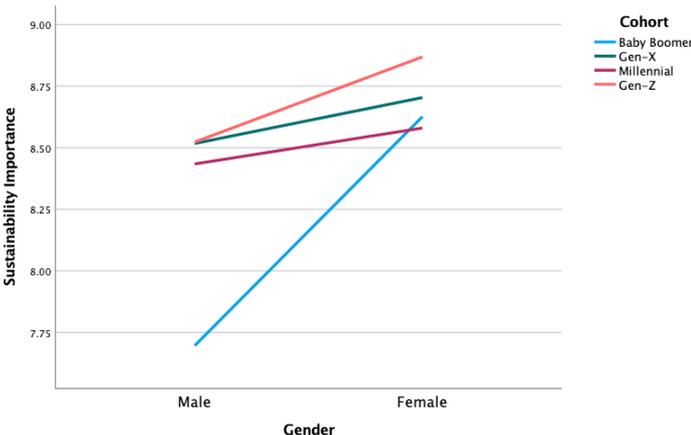


Figure 2

Moderation of gender on sustainability importance

Source: Authors' own elaboration.

In addition to the composite measure of importance, participants were asked “What is your desired level of involvement in sustainability,” where answers ranged from 1) much less involved to 5) much more involved. Results from the ANCOVA are in line with the regression findings, showing that the Baby Boomers reported less desire for sustainability involvement than the other three cohorts, $F(1246, 3) = 8.12, p < .0001$ (see Table 4). None of the other three cohorts differed from one another.

Table 5
Summary of Results

	Hypothesis	Result
H1a	Gen Z will have more positive sustainability attitudes than Gen X	Rejected
H1b	Gen Z will have more positive sustainability attitudes than Baby Boomers.	Supported
H2a	Millennials will have more positive sustainability attitudes than a) Gen X.	Rejected
H2b	Millennials will have more positive sustainability attitudes than Baby Boomers.	Supported
H3a	Gen Z will view sustainability as more important than Gen X.	Rejected
H3b	Gen Z will view sustainability as more important than Baby Boomers.	Supported
H4a	Millennials will view sustainability as more important than Gen X.	Rejected
H4b	Millennials will view sustainability as more important than Baby Boomers.	Supported
H5a	Gen Z will demonstrate stronger sustainability related consumption values than Gen X.	Rejected
H5b	Gen Z will demonstrate stronger sustainability related consumption values than Baby Boomers	Rejected
H6a	Millennials will demonstrate stronger sustainability related consumption values than Gen X.	Rejected
H6b	Millennials will demonstrate stronger sustainability related consumption values than Baby Boomers.	Rejected
H7a	Gen Z will have stronger intentions towards sustainability-related grocery purchases than Gen X.	Rejected
H7b	Gen Z will have stronger intentions towards sustainability-related grocery purchases than Baby Boomers.	Rejected
H8a	Millennials will have stronger intentions towards sustainability-related grocery purchases than Gen X.	Rejected
H8b	Millennials will have stronger intentions towards sustainability-related grocery purchases than Baby Boomers.	Rejected
H9	Women will have more positive sustainability attitudes than men.	Supported
H10	Women will rate sustainability as more important than men.	
H11a	The effect of generational cohort on sustainability attitude will be moderated by gender.	Conditional
H11b	The effect of generational cohort on sustainability importance will be moderated by gender.	Supported

Source: Authors' own elaboration.

Next, we analyzed if sustainability-related consumption values would differ across generational cohorts. Using a one-way ANCOVA with the GREEN scale as the dependent variable, scores were equal across all cohort groups, $F(1246, 3) = .93$, $p = .42$. This suggests that, even though the oldest generation seems to view sustainability as less important than younger generations, and they hold less favorable attitudes towards sustainability, they express similar consumption values related to environmental sustainability (see Table 4). Therefore, H7a, H7b, H8a, and H8b are not supported.

Finally, the extent to which more specific sustainability-related attributes in the food and grocery category impact consumer purchase decisions was examined. The results are summarized in Table 4. Results showed that Baby Boomers are less likely to be persuaded by claims that products contribute to sustainability when making grocery purchase decisions, compared to younger generations (#5), however there were no differences among the generational cohorts pertaining to the influence of responsibly sourced ingredients (#6) or reduced packaging (#7), and the importance of eating natural/organic food was also equal among the groups (#9). Interestingly, Baby Boomers were more interested in foods free of chemicals and dyes than the younger generations (#8), but they were least likely to agree that a plant-based diet contributes to environmental sustainability (#12). Thus, while the results did show support for Hypotheses 1 and 2 pertaining to general sustainability, when making more specific decisions that characterize some products as more environmentally responsible, generational differences did not surface.

4.2. Exploratory analysis

In addition to the formal hypotheses, some exploratory analyses on other grocery-based sustainability attitudes, intentions, and behaviors were conducted. Descriptive statistics and results of one-way ANCOVA tests are reported in Table 4.

When asked how much participants feel that producing products that are not harmful to the environment is necessary² (#10), differences were found only between the Gen X and Millennials, $p = .02$, where Gen X was in stronger agreement. When asked whether eating a plant-based diet helps promote sustainability of the environment (#12), a similar generational gap existed, but only between the youngest generation (Gen Z) and the oldest (Baby Boomer), $F(1246, 3) = 3.43$, $p = .01$.

The generations also feel differently about the benefits and costs to achieve sustainability. When asked if the positive impacts of sustainability efforts on the environment is greater than the cost to achieve them (#11), agreement was higher for the Millennial and Gen Z cohorts compared to the Baby Boomers, $p < .01$ and $p < .001$, respectively. This suggests that younger consumers may be more apt to value corporate sustainability programs, and may explain why they also are willing to pay more for sustainable products.

Last, this study examined how sustainability-related attributes of a product might relate to the premium price each gen-

eration cohort is willing to pay. The survey included statements that asked participants to indicate if they were willing to pay more for products if they 1) are environmentally friendly, or 2) come from ingredients sourced responsibly. The answer options were, I would not pay more, I would pay up to 25% more, I would pay 25% - 50% more, I would pay more than 50% more. To evaluate the relationship between cohort and willingness to pay, we conducted a series of chi-square tests of association (χ^2).

First, an analysis was conducted to determine if generational cohort was related to price willing to pay for products that are *environmentally friendly*. Results showed that 50% of the Baby Boomers said they would not pay more, compared with 31% of Millennials and 26% of Gen Z. In fact, 30% of Millennials and 28% of Gen Z indicated a willingness to pay over 25% more, whereas only 10% of Baby Boomers and 16% of Gen X felt the same way. The chi-square test was significant ($\chi^2 = 70$, $p < .001$).

The second test evaluated differences with respect to *responsibly sourced ingredients*. Here a similar pattern emerged. Fifty percent of Baby Boomers said they would not pay more, compared to 36% of Gen X, 31% of Millennials, and 27% of Gen Z. Again, Millennials (32%) and Gen Z (29%) were more likely to be willing to pay at least 25% more these types of products, compared to Baby Boomers (10%) and Gen X (20%). The chi-square test was significant ($\chi^2 = 65$, $p < .001$).

5. DISCUSSION AND IMPLICATIONS

Overall, the results from this study show that Baby Boomers have less favorable attitudes towards sustainability and place lower importance on sustainability when making purchase decisions compared to the younger generations. Holistically, these findings suggest that other consumers born after 1964 have generally similar feelings about sustainability and its importance. Thus, while many researchers have focused their efforts specifically on the Millennials, it seems that Millennials are more like other generations when it comes to sustainability attitudes, intentions, and behaviors related to food consumption. Similarly, while the present results support previous studies with respect to main effects of gender, this study finds that these gender differences, where women have more positive feelings towards sustainability, may be contextualized by the generational cohort, particularly when considering consumer attitudes towards sustainability. This is an important finding as most researchers do not utilize gender when studying generational cohort in the context of sustainability issues.

Furthermore, this study focused on some of the more intricate nuances of sustainability consumption related to grocery products so that food marketers may better understand consumer feelings and intentions. It is most important to point out that the Baby Boomers have less desire to involve themselves in sustainability efforts, are less influenced by sustainability claims when making purchase decisions, and don't subscribe to the notion that firms' sustainability efforts are worth the costs to achieve them. Thus, it seems that this generation has strong attitudinal barriers that are influencing their purchase decisions and resistance to sustainable consumption in several ways.

² According to Rossiter and Bergkvist (2009), carefully crafted single-item measurements for constructs that are defined down to their concrete components are at least as valid as their multi-item counterparts.

Collectively these findings suggest that marketers of sustainability-oriented products who wish to attract the Baby Boomer consumer must find ways to persuade this group of the importance of adopting sustainable consumer practices. One way to achieve this could be by utilizing descriptive norming practices in their marketing campaigns. *Descriptive norm* communications (like advertising) illustrate for their target audience how most people behave in a particular situation, which then produces substantial changes consumers' sustainable behaviors (Cialdini 2003). A campaign focused on showing older consumers embracing sustainability could help a brand enhance the Baby Boomers' feelings towards sustainable practices. The same could be said for male consumers. It seems that marketers must find ways to de-feminize sustainability to better appeal to the male consumer, particularly Baby Boomer men. Casting or featuring older male models or spokespersons (including celebrities) may be an effective strategy to achieve this goal.

Finally, this research indicates that these attitudes and feelings about sustainability may be expressed by consumers with their wallets, as the younger consumers are willing to pay a price premium for products that are environmentally friendly or that have responsibly sourced ingredients. This suggests an opportunity to capture the Baby Boomer segment if brands can find a way to make sustainable products affordable or within a range of price acceptance for this cohort group. This could be especially fruitful for brands who can utilize marketing claims like "free of chemicals and dyes," as the findings show that Boomers are especially interested in these benefits. While researchers have understandably been motivated to study younger generations, Baby Boomers currently hold about 53% of the wealth in the U.S. (Federal Reserve, 2022). Therefore, sustainability marketers should still be looking for ways to attract this lucrative segment.

6. LIMITATIONS AND FUTURE RESEARCH

This study has some limitations. First, the focus was on U.S. consumers, therefore, the same generational patterns may not exist in other parts of the world – or they may be even more pronounced. Future studies should broaden the sampling pool directly compare cohorts from the U.S. vs. other Westernized and non-Westernized countries. Similarly, while the gender-based results are in line with some previous research, it may not replicate across other cultures where people's views of femininity are different than in the United States. Future research should continue to evaluate gender differences in the sustainability context and utilize it as a moderator of generational cohort differences.

Despite these limitations, the United States represents the largest consumer market in the world with 325 million people and a GDP of \$20 trillion. Therefore, future researchers should also stay focused on the U.S. consumer. This study can serve as a baseline for future generational cohort research in the context of sustainability attitudes, importance, and food consumption.

The present study focused only on self-reported influences for making sustainable consumption decisions, but future research could revolve around specific marketing tools that might drive these decisions. For example, researching elements

of packaging and advertising of sustainable food products as it relates to generational cohorts is a worthwhile stream of study. Researchers should also make efforts to determine what are the most effective strategies and tactics to improve general attitudes towards sustainability for each generational cohort group and whether this may be contextualized by the type of products or services under consideration. The present study did not attempt to uncover these indicators, but given the contemporary business focus on TBL initiatives, discovering how to influence consumers' attitudes about sustainable products should be a top of mind research agenda.

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