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Marketing

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WILL CLEARER MESSAGES CLOSE THE GREEN GAP?

An Examination of Attitude Formation in Organic Produce Buying

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Abstract:

In the area of green consumption there is a gap between the environmental concern expressed by people and the actions they are prepared to take as consumers. This so-called 'green gap' phenomenon means that while consumers' environmental beliefs are stable or even intensifying, they do not necessarily behave in an eco-friendly way or buy environmentally minded products. In this study, the green gap was explored by focusing on the formation of 'green' attitudes towards organic produce. Specifically, the role of values and specific vs. general environmental beliefs was examined. Data was collected via a standardized, quantitative survey (n=278) and analyzed with the help of hierarchical multiple regression analysis. Universalism values and specific environmental beliefs emerged as predictors of positive attitudes towards organic fruit and vegetables. Thus, the use of universalism values is recommended for the segmentation of the green market. Furthermore, marketers should communicate very clearly how buying organic will benefit the environment.

Keywords:

Green gap, organic, consumer behavior, attitude formation, theory of planned behavior

1 Introduction

2020 – the year that brought us environmental disasters such as massive bush fires in Australia, several severe storms, an increase in the deforestation of the Brazilian rainforest, the worst coral bleaching in the Great Barrier Reef to date as well as a global pandemic caused by a zoonotic virus – is, ironically, also the 50th anniversary of Earth Day. Started by a junior senator from Wisconsin, Earth Day has since become a global movement that mobilizes people in more than 190 countries (Earth Day Network, 2020).

One of the largest environmental movements turning half a century is a good opportunity to take stock of where we stand regarding environmental concern. On the surface, the numbers look great: 94% of Europeans consider protecting the environment important, 56% even very important (European Commission, 2017). This number is slightly lower for Americans, 43% of whom worry "a great deal" about the environment (Gallup, 2020). However, the same polls also indicate that people are still reluctant to take individual steps. They are slow to translate their attitudes into action.

One area where this is quite obvious is purchasing behavior. For instance, the global rise of SUVs is very counterintuitive considering increasing environmental concern (Research and Markets, 2019). Another interesting study subject is organic food. It should be high on the list of consumers who are concerned about the environment, considering that its production causes less pollution and soil erosion, conserves water and energy, and supports wildlife protection. Based on this reasoning and the above-cited statistics, organic goods should make up at least a third of the market. However, reality is far from it. Denmark - the country with the highest organic food market share in the world - barely reaches double digits (11.5%) (Willer et. al, 2020). Germany and the US are the countries with the highest total sales of organic food, yet market shares remain minuscule at 5.68% and 5.8% respectively (Organic Trade Association, 2020; Schaack, 2020).

Clearly, there is a gap between the environmental concern expressed by people and the actions they are prepared to take as consumers. This phenomenon, often referred to as the green gap, means that while consumers' environmental beliefs are stable or even intensifying, they do not necessarily translate those beliefs into action (Groening et. al, 2018).

The green gap creates a challenge for products or brands with eco-friendly USPs that use environmental messages as signal benefits (Ottman et. al, 2006): If consumers do not act on their environmental beliefs, does it make sense to appeal to them with environmental marketing messages?

To answer this question, this study examined the green gap phenomenon by focusing on the level of specificity of environmental beliefs. Furthermore, the intersection of beliefs, values, and demographics during the attitude formation of the green consumer was studied. The following text will provide a brief overview of green gap research as well as the theoretical framework (theory of planned behavior). After that, the methodological approach and results will be presented. Finally, implications for research and practice will be discussed.

2 Theoretical Framework

2.1 The Green Gap

When it comes to eco consumerism, there seems to be a disconnect between actions and words and consumers behave seemingly irrational (Hopkins & Roche, 2009). This mismatch is often called the "green gap" and defined as the gap between "the spoken plans of consumers (the things they tell others are important to them), and the actions they take" (Murphy et. al, 2010, p. 137). Others refer to this phenomenon as the green intention-behavior gap (Frank and Brock, 2018), the green attitude-behavior gap (Park and Lin, 2018), or the motivation-behavior gap (Groening et al., 2018).

The existence of this dissonance has been well documented through empirical research in recent years. ElHaffar et. al (2020) identify four distinct research perspectives concerning the green gap: (1) modeling the gap, (2) methodological bias, (3) prioritizing the self over the environment, and (4) coping with the gap. Studies in the first category aim to create theoretical models that explain the green gap by identifying variables that might be causing it. These include intrapsychic as well as contextual factors. Based on the theory of planned behavior, researchers of this view study how these various variables influence behavior, mediated by attitude and intentions. The present study follows this tradition as well.

Scholars whose efforts fall into the second category maintain that the existence of the green gap is mainly caused by methodological flaws. For instance, social desirability bias might distort reported environmental concern (Barber et. al, 2016; Harth, 2017) or overestimation bias is responsible for the results (Schäufele & Hamm, 2018). The third perspective considers the impact of self-interest values. Self-transcendence values and altruism or the lack thereof have been shown to mediate attitude as well as behavior (Jacobs et. al, 2018; Reimers et. al, 2017). Finally, some authors are more interested in how consumers justify their attitude-behavior inconsistency (Gruber & Schlegelmilch, 2014; McDonald et. al, 2015). They found that consumers try to neutralize the gap by denying responsibility, by finding fault with the people who point out the inconsistency or by defending their actions as necessary.

2.2 Theory of Planned Behavior

Since green gap research focuses on consumer beliefs, attitudes, intentions, and the connections between these, the theory of planned behavior (TPB) was used as the theoretical framework for this study. It is based on the theory of reasoned action (TRA) by Ajzen and Fishbein (1980), which suggests that any type of behavior is preceded by a respective behavioral intention. Intentions to behave a certain way are formed when the behavior in question is viewed as favorable by the individual (individual attitude) as well as society as a whole (subjective norms). Therefore, the TRA implies that individuals always have full control over their own behavior.

However, a person might have a strong intention to behave a certain way but is hindered by lack of opportunity or resources. The TPB recognizes this shortcoming of the TRA and introduces the idea of behavioral control (Ajzen, 1991; Montano and Kasprzyk, 2015). It assumes that any kind of behavior is the result of a reasoned process that considers personal attitudes and subjective norms, but also possible deterrents to the behavior. This fixed causal sequence has been widely accepted in social psychology and is supported by empirical evidence (Smith et. al, 2008). More importantly, it is a common theoretical framework for examinations of the green gap (ElHaffar et. al, 2020).

Figure 1 illustrates the key relationships of the TPB (Ajzen, 1991): (1) Behaviors are caused by intentions and hindered by perceived behavioral control. (2) Intentions in turn are influenced by attitudes, subjective norms and again perceived behavioral control. (3) Each of these determinants are influenced by corresponding salient beliefs.
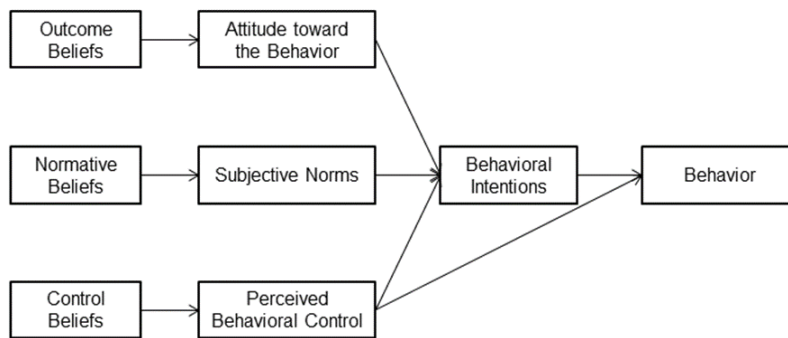
Figure 1. The theory of planned behavior (TPB), based on Ajzen (1991).

As a theoretical model, the TPB is explicitly open. If empirical research uncovers additional predictors of intentions, they can be added to the theory. This notion has resulted in a slew of additional variables that have been proposed over the years, for example

- individual factors, such as self-identity (Michaelidou & Hassan, 2008; Shaw et. al, 2000; Smith et. al, 2008), internalized ethical rules (Shaw & Shiu, 2003), personal norms, perceived self-efficacy, willingness to pay, perceived simplicity, benefit certainty (Litvine & Wüstenhagen, 2011), trust (Tung et. al, 2012), denial, conflicting goals, tokenism (Gifford & Chen, 2017), environmental awareness, perceived effectiveness (Mishal et. al, 2017), green stigma, green reservations, perceived difficulty of being green (Johnstone & Tan, 2015), lack of justification, lack of social awareness (Han et. al, 2017), intergroup identity of the consumer (Gupta & Ogden, 2009) and

- contextual factors, such as marketing mix variables (Lee Weisstein et. al, 2017), utilitarian value of the product (Park & Lin, 2018), default choice nudge (Momsen & Stoerk, 2014), sale information (Frank & Brock, 2018), atmospheric responsiveness of the store (Campbell & Fairhurst, 2016), social and physical context of the purchase (Aschemann-Witzel & Niebuhr Aagaard, 2014; Barbarossa & Pastore, 2015), peer pressure (Vermeir & Verbeke, 2006) and economic pressures (Kalafatis et. al, 1999).

Considering the impossibility of including all these factors into an empirical model, the choice was made to use a basic TPB model for the purpose of this study (see Figure 2).
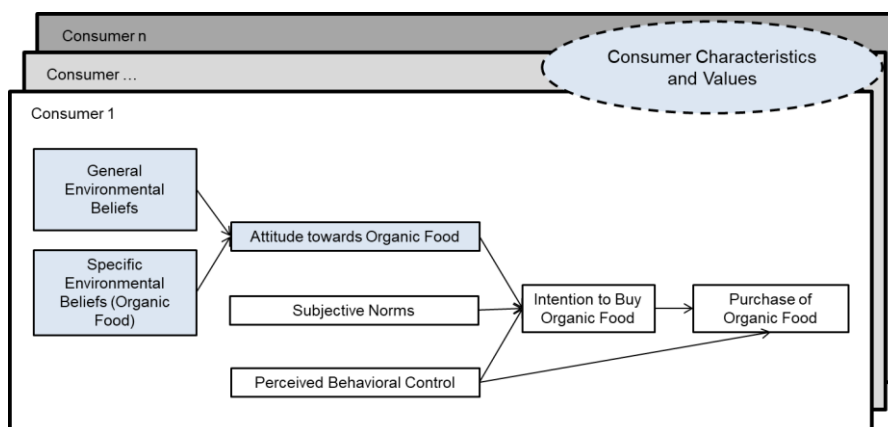
Figure 2. Model of the organic food buying process. Adapted from Ajzen (1991).

Most notably, the model does not present a direct link between environmental beliefs and purchase behavior. Instead, a multitude of predictors is considered. Furthermore, the diversity of consumers and their propensity to develop their own beliefs is taken into account. While certain consumers will act on their environmental beliefs, others might not (Dahm et. al, 2009; Kim, 2011). Identifying the crucial "green segments" who are motivated to buy organic products based on their beliefs and attitudes could help closing the green gap.

In addition, the model highlights the two main areas of interest for this study: (1) level of specificity of environmental beliefs and (2) the intersection of beliefs, values, and demographics during the attitude formation.

ElHaffar et. al (2020) argue that there is a major methodological flaw in much of green gap research. The TPB requires that attitude be related to the very action in question, not some associated notion; only a specific attitude can predict a specific intention, which then predicts a specific behavior. Therefore, pro-environmental attitudes in general cannot predict the intention to buy a specific environmentally friendly product. In fact, the gap between the attitude towards a specific organic product and buying it and the gap between more general green attitudes and consumer behavior are sometimes considered two entirely separate phenomena (Perry & Chung, 2016). Acknowledging this issue, this study aims to shed light on how specific the antecedents to attitude should be. There is some indication that beliefs become more actionable the more specific they are (Mainieri et. al, 1997), but there is not much research in this area. Having a more detailed understanding of attitude formation will improve the modeling of the green gap as a whole.

Furthermore, several studies found that the link between intention and action is generally rather weak but can be increased by certain consumer-related factors (Jacobs et. al, 2018; Kim, 2011; Reimers et. al, 2017). These factors play a role by mediating the attitude. Thus, the intersection of beliefs, values, and demographics during the attitude formation of the green consumer was the second focus of this study.

3 Methodology

3.1 Hypotheses

A quantitative, cross-sectional research design was developed to test several aspects of the aforementioned model. Specifically, the goal was to study how beliefs and consumer characteristics affect the attitude formation towards buying organic food. Figure 3 depicts the various hypotheses of this study.
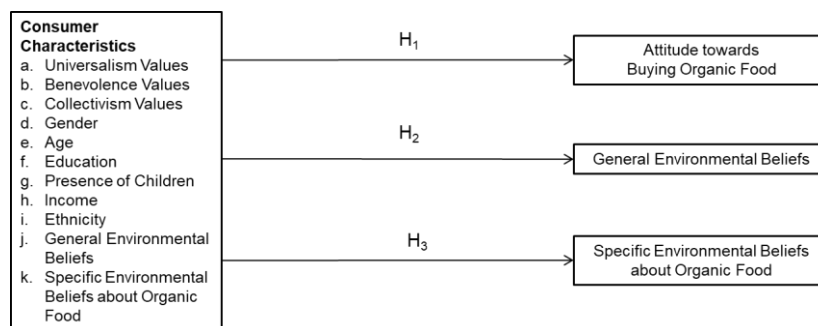
Figure 3. Conceptual model of the variables (constructs) and hypotheses in the study.

3.2 Instrumentation

Since previous research had indicated that asking about a specific product category increases the predictive ability of beliefs and attitudes (Makatouni, 2002), this study focused on organic fruit and vegetables. Not only are they somewhat of a gateway product into organic purchasing (Dettmann & Dimitri, 2010; Pearson et.al, 2011), most consumers are familiar with these products today (Padel & Foster, 2005) and thus able to answer survey questions about them.

The standardized, self-completion online questionnaire consisted of five different sections. Table 1 illustrates these along with the respective items and measures.

	Variable	Source	Items	Measurement
Section 1	*General Environmental Beliefs (IV / DV)*	Short version of the NEP Scale adapted from Dunlap, Van Liere, Mertig, and Jones (2000)	10 items	6-point Likert scale
Section 2	*Environmental Beliefs about Organic Food (IV / DV)*	Developed based on Chih and Chen (2010)	3 items	6-point Likert scale
Section 3	*Attitudes towards Buying Organic Produce (DV)*	Developed based on Ajzen (1991) and Tarkiainen and Sundqvist (2009)	2 items	6-point Likert scale
Section 4	*Personal Values (IV)*	Adapted from Schwartz (1992) and Kim (2011)	9 items	6-point Likert scale
Section 5	*Socio-demographics (IV)*			

Table 1. Sections of the instrument with variables and measures.

General environmental beliefs were assessed with the help of the New Environmental Paradigm (NEP) Scale, one of the most used measures for environmental concern (Dunlap, 2008). It includes several ecological (pro-environment) and anthropocentric (anti-environment) statements to represent a respondent's eco-orientation. Specific environmental beliefs were measured by four self-developed items, which borrowed from the definition of green products by Chih and Chen (2010). The items for attitudes towards buying organic fruit and vegetables were developed based on previous research (Tarkiainen and Sundqvist, 2009). Consumer value measures were mainly adapted from Schwartz's (1992) inventory of personal values.

During a pre-test, 15 college students filled out the complete questionnaire and discussed it during an open critique. Small wording changes were made based on the feedback.

3.3 Sampling

A sample of 278 American consumers over the age of 18 was surveyed. The sample was provided by the market research company Survey Sampling International (SSI Inc.), who utilized a complex quota sampling procedure to produce a near-representative sample of the US population. SSI Inc. also carried out the data collection via online survey and delivered the raw data in the form of an Excel file.

3.4 Analysis

The data was analyzed with the help of SPSS. Cronbach alpha values were calculated to assess the internal consistency of the composite variables. The unidimensionality of the scales was determined via confirmatory factor analysis. To ensure that the various predictors of the model were empirically distinguishable, bivariate correlations were computed. Multiple hierarchical regression analysis was used to test the hypotheses of the study. The independent variables were added to the regression model in the following order: demographics without significant correlations, age, gender, collectivism values, benevolence values, universalism values, general environmental beliefs (pro and anti), specific environmental beliefs.

Eight regression models were evaluated for changes in the model fit for the test of hypothesis 1. The other two hypotheses required seven regression models.

4 Results

4.1 Descriptive Statistics

While the non-probability sampling procedure resulted in a non-representative sample, the quota procedure used by SSI resulted in a good reflection of the US population. Table 2 illustrates the demographic characteristics of the respondents.

Variable	Frequency in Sample	Expected Frequency based on Population
Age		
18-24	36	34
25-34	52	52
35-44	59	59
45-54	53	53
55-64	37	35
65+	41	45
Gender		
Male	141	139
Female	137	139
Ethnicity		
American Indian /Alaska Native /Native Hawaiian or Other Pacific Islander	3	3
Asian	9	10
Black or African American	31	34
Latino or Hispanic	36	40
White	191	210
Multiple	7	6
Other	1	15
Income		
Under 25,000	58	58
25,000 – 49,999	91	94
50,000 – 74,999	55	54
75,000 – 99,999	30	31
100,000 – 124,999	27	26
125,000 and over	17	15

Table 2. Characteristics of the sample

More than half of the surveyed consumers (54%) held strong pro-environmental beliefs. While only a few respondents viewed environmental concern negatively, there was a large section of the sample who remained undecided (41.7% answered neutrally for ecological beliefs and 57.2% for anthropocentric beliefs).

Only about a quarter of the respondents thought organic fruit and vegetables were good for the environment (26.3%) whereas the majority was not sure (56.1%). Accordingly, a large percentage did not know whether it was a good idea to buy them (45.7%). 34.5% considered organic fruit and vegetables a "good choice".

Further, the data revealed an overall moderate importance of collectivist values (M = 4.36, SD = 1.07), and somewhat stronger support for universalism (M = 4.92, SD = 0.98) and benevolence values (M = 5.17, SD = 0.86).

4.2 Construct Validity

Cronbach alphas were computed to check the internal consistency of the composite measures. The reliabilities were deemed satisfactory as Cronbach's alphas exceeded 0.70 (Nunnally, 1978). There was no case in which the Cronbach alpha value could have been improved by eliminating an item.

Construct	Items	Loading	Cronbach alpha	Variance explained
General pro-environmental beliefs (Ecological worldview)	We are approaching the limit of the number of people planet Earth can support.	0.58	0.77	47.2%
	When humans interfere with nature it often has disastrous consequences.	0.71		
	Humans are severely abusing the environment.	0.84		
	Plants and animals have as much right as humans to exist.	0.59		
General anti-environmental beliefs (Anthropocentric worldview)	Humans have the right to modify the natural environment to suit their needs.	0.68	0.83	46.2%
	Human ingenuity will ensure that we do not make the Earth unlivable.	0.73		
	The Earth has plenty of natural resources if we just learn how to develop them.	0.48		
	The balance of nature is strong enough to cope with the impacts of modern industrial nations.	0.76		
	Humans will eventually learn enough about how nature works to be able to control it.	0.71		
	The so-called "ecological crisis" facing humankind has been greatly exaggerated.	0.67		
Specific environmental beliefs (about organic food)	Companies that grow organic fruit and vegetables consume less energy than those that grow conventional produce.	0.86	0.85	66.2%
	Growing organic fruit and vegetables wastes fewer resources such as water and chemicals than growing conventional produce.	0.82		
	Overall, organic fruit and vegetables are less harmful to the environment than conventional produce.	0.75		
Collectivism	Harmony (maintaining harmony in my group of peers)	0.59	0.74	52.4%
	Consensus (respecting the majority's wish)	0.91		
	Fitting in (sacrificing self-interest for my group)	0.64		
Universalism	Equality (equal opportunity for all)	0.76	0.76	52.4%
	Unity with nature (fitting into nature)	0.60		
	Broad-minded (tolerant of different ideas and beliefs)	0.79		
Benevolence	Honest (genuine, sincere)	0.60	0.78	55.4%
	Helpful (working for the welfare of others)	0.86		
	Forgiving (willing to pardon others)	0.75		

Note: All factor loadings were significant at p = 0.05 (Hair, Anderson, Tatham, & Black, 1998).

Table 3. Cronbach alphas and confirmatory factor loadings for composite variables.

The only measure that did not achieve sufficient internal consistency (Cronbach alpha of 0.55) was "attitudes towards organic fruit and vegetables", consisting of the statements "Comparing the benefits and cost of organic fruit and vegetables, buying them is a good choice for me and my family." and "I do not see any benefits of organic fruit and vegetables over conventional ones and think it is foolish to buy them." To solve this issue, these items were used as individual dependent variables.

4.3 Bivariate Correlations

Bivariate correlations provided some initial insight into the relationships between the variables (see table 4). They imply that values influence both the establishment of environmental beliefs and attitudes towards organic fruit and vegetables. Specific environmental beliefs seem to be related to positive attitudes towards organic fruit and vegetables. Finally, the demographic variables age, gender and possibly ethnicity emerged as possible criteria for describing an organic consumer segment.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Positive Attitude towards Organic Food	1	-.38**	.386**	.183**	.689**	.279**	.353**	.198**	-.26**	.184**	-.056	.034	.060	.069	.113	-.18**	.063	.057	.020	.003	.003	.030
2. Negative Attitude towards Organic Food	-.38**	1	-.064	.394**	-.23**	.046	-.18**	-.077	.139*	-.18**	.012	.007	.039	.062	-.075	.036	-.106	-.044	-.008	.081	.041	-.027
3. General pro-environmental Beliefs	.386**	-.064	1	-.040	.543**	.313**	.528**	.345**	-.003	.118*	-.056	.030	-.071	-.006	.074	-.042	.012	-.034	-.036	-.076	-.011	-.052
4. General anti-environmental Beliefs	.183**	.394**	-.040	1	.147*	.184**	-.016	.065	-.094	-.036	.010	.002	.108	.155**	.059	-.19**	.021	.046	-.004	.023	.125*	.032
5. Specific Environmental Beliefs	.689**	-.23**	.543**	.147*	1	.293**	.429**	.282**	-.18**	.141*	-.111	.060	.013	.106	.096	-.19**	.056	.012	.029	.000	-.050	-.031
6. Collectivism	.279**	.046	.313**	.184**	.293**	1	.551**	.583**	.056	-.031	-.062	.008	-.050	.104	.119*	-.14*	.038	.065	.120*	.049	-.040	.002
7. Universalism	.353**	-.18**	.528**	-.016	.429**	.551**	1	.627**	.032	.079	-.071	.056	-.034	.047	.099	-.13*	.059	-.006	.023	-.015	-.057	-.059
8. Benevolence	.198**	-.077	.345**	.065	.282**	.583**	.627**	1	.092	.041	-.058	-.034	-.045	-.013	.081	-.046	.048	.061	.127*	-.051	.048	-.045
9. Age	-.26**	.139*	-.003	-.094	-.18**	.056	.032	.092	1	-.20**	.124*	-.007	-.14*	-.030	-.18**	.264**	-.15*	-.29**	-.31**	-.14*	-.048	.010
10. Gender	.184**	-.18**	.118*	-.036	.141*	-.031	.079	.041	-.20**	1	-.101	-.103	.023	-.029	.048	-.017	.071	.093	.072	.042	-.043	-.14*
11. Education	-.056	.012	-.056	.010	-.111	-.062	-.071	-.058	.124*	-.101	1	-.010	.010	-.045	.000	.031	-.025	.114	.078	.049	.146*	.400**
12. Native	.034	.007	.030	.002	.060	.008	.056	-.034	-.007	-.103	-.010	1	-.019	-.037	-.040	-.15**	-.017	-.081	-.044	-.040	-.041	-.005
13. Asian	.060	.039	-.071	.108	.013	-.050	-.034	-.045	-.14*	.023	.010	-.019	1	-.065	-.071	-.27**	-.029	.109	.159**	-.070	-.033	-.093
14. Black	.069	.062	-.006	.155**	.106	.104	.047	-.013	-.030	-.029	-.045	-.037	-.065	1	-.14*	-.53**	-.057	.007	-.017	.017	-.008	-.078
15. Latino	.113	-.075	.074	.059	.096	.119*	.099	.081	-.18**	.048	.000	-.040	-.071	-.14*	1	-.57**	-.062	.075	.068	.102	.033	-.005
16. White	-.18**	.036	-.042	-.19**	-.19**	-.14*	-.13*	-.046	.264**	-.017	.031	-.16**	-.27**	-.53**	-.57**	1	-.24**	-.066	-.062	-.026	-.017	.050
17. Multiple	.063	-.106	.012	.021	.056	.038	.059	.048	-.15*	.071	-.025	-.017	-.029	-.057	-.062	-.24**	1	-.030	-.068	-.062	.069	.091
18. Children	.057	-.044	-.034	.046	.012	.065	-.006	.061	-.29**	.093	.114	-.081	.109	.007	.075	-.066	-.030	1	.544**	.495**	.506**	.214**
19. 0-6 years	.020	-.008	-.036	-.004	.029	.120*	.023	.127*	-.31**	.072	.078	-.044	.159**	-.017	.068	-.062	-.068	.544**	1	.186**	-.052	.063
20. 7-12 years	.003	.081	-.076	.023	.000	.049	-.015	-.051	-.14*	.042	.049	-.040	-.070	.017	.102	-.026	-.062	.495**	.186**	1	.288**	.113
21. 13-18 years	.003	.041	-.011	.125*	-.050	-.040	-.057	.048	-.048	-.043	.146*	-.041	-.033	-.008	.033	-.017	.069	.506**	-.052	.288**	1	.197**
22. Income	.030	-.027	-.052	.032	-.031	.002	-.059	-.045	.010	-.14*	.400**	-.005	-.093	-.078	-.005	.050	.091	.214**	.063	.113	.197**	1

Note: Pearson correlation (2-tailed), * p<0.05, ** p<0.01.

Table 4. Bivariate correlations of all variables examined.

4.4 Hypothesis 1

The attitudes towards organic fruit and vegetables was the dependent variable for hypothesis 1 (H1). The following independent variables were tested with a hierarchical regression analysis: universalism values (H1a), benevolence values (H1b), collectivism values (H1c), gender (H1d), age (H1e), education (H1f), presence of children (H1g), income (H1h), ethnicity (H1i), general environmental beliefs (H1j), and specific environmental beliefs (H1k).

Of these, only gender, age, and specific environmental beliefs had a statistically significant effect on the dependent variable (see table 5).

Interestingly, universalism values and general environmental beliefs had a statistically significant effect on negative, but not positive, attitudes towards organic fruit and vegetables.

Step	Predictor	R	R²	R² change	F	d.f.	β
	Prediction of positive attitudes						
1	Income, ethnicity, education, presence of children	0.202	0.041	0.041	1.032	11,266	-0.064- 0.189
2	Age	0.298	0.089	0.048	2.153*	12,265	-0.150**
3	Gender	0.334	0.112	0.023	2.552**	13,264	0.088*
4	Collectivism	0.446	0.199	0.087	4.676**	14,263	0.109
5	Benevolence	0.452	0.204	0.005	4.473**	15,262	-0.076
6	Universalism	0.498	0.248	0.044	5.376**	16,261	0.095
7	General environmental beliefs (pro) General environmental beliefs (anti)	0.558	0.311	0.063	6.498**	18,259	-0.004 0.061
8	Specific environmental beliefs	0.727	0.528	0.217	15.181**	19,258	0.601**
	Prediction of negative attitudes						
1	Income, ethnicity, education, presence of children	0.178	0.032	0.032	0.793	11,266	-0.199- 0.120
2	Age	0.222	0.049	0.017	1.142	12,265	0.120*
3	Gender	0.270	0.073	0.024	1.600	13,264	-0.113*
4	Collectivism	0.272	0.074	0.001	1.506	14,263	0.090
5	Benevolence	0.296	0.088	0.014	1.675	15,262	-0.039
6	Universalism	0.347	0.120	0.032	2.230**	16,261	-0.169*
7	General environmental beliefs (pro) General environmental beliefs (anti)	0.515	0.265	0.145	5.201**	18,259	0.228** 0.448**
8	Specific environmental beliefs	0.573	0.329	0.064	6.647**	19,258	-0.324**

Note: * $p<0.05$, ** $p<0.01$. Beta coefficients computed after all variables in the equation.

Table 5. Hierarchical regression analysis predicting attitudes towards organic fruits and vegetables.

4.5 Hypothesis 2

General environmental beliefs were the dependent variable for hypothesis 2 (H2). The same independent variables as for hypothesis 1 were tested with a hierarchical regression analysis: universalism values (H1a), benevolence values (H1b), collectivism values (H1c), gender (H1d), age (H1e), education (H1f), presence of children (H1g), income (H1h), ethnicity (H1i), general environmental beliefs (H1j), and specific environmental beliefs (H1k).

Of these, only universalism values and specific environmental beliefs had a statistically significant effect on the dependent variable (see table 6).

Notably, collectivism values had a statistically significant effect on anti- but not pro-environmental beliefs.

Step	Predictor	R	R²	R² change	F	d.f.	β
	Prediction of pro-environmental beliefs (ecological worldview)						
1	Income, ethnicity, education, presence of children	0.164	0.027	0.027	0.672	11,266	-0.246- 0.063
2	Age	0.164	0.027	0	0.613	12,265	0.033
3	Gender	0.205	0.042	0.015	0.888	13,264	0.051
4	Collectivism	0.384	0.148	0.106	3.252**	14,263	0.035
5	Benevolence	0.422	0.178	0.030	3.791**	15,262	-0.023
6	Universalism	0.552	0.305	0.127	7.163**	16,261	0.352**
7	Specific environmental beliefs	0.654	0.427	0.122	11.405**	17,260	0.404**
	Prediction of anti-environmental beliefs (anthropocentric worldview)						
1	Income, ethnicity, education, presence of children	0.264	0.070	0.070	1.810*	11,266	-0.078- 0.416
2	Age	0.271	0.073	0.003	1.745	12,265	-0.078
3	Gender	0.274	0.075	0.002	1.645	13,264	-0.035
4	Collectivism	0.326	0.106	0.031	2.227**	14,263	0.242**
5	Benevolence	0.327	0.107	0.001	2.087**	15,262	0.047
6	Universalism	0.352	0.124	0.017	2.307**	16,261	-0.230**
7	Specific environmental beliefs	0.373	0.139	0.015	2.472**	17,260	0.143*

Note: * $p<0.05$, ** $p<0.01$. Beta coefficients computed after all variables in the equation.

Table 6. Hierarchical regression analysis predicting general environmental beliefs.

4.6 Hypothesis 3

Specific environmental beliefs were the dependent variable for hypothesis 3 (H3). The same independent variables as for hypotheses 1 and 2 were tested with a hierarchical regression analysis: universalism values (H1a), benevolence values (H1b), collectivism values (H1c), gender (H1d), age (H1e), education (H1f), presence of children (H1g), income (H1h), ethnicity (H1i), general environmental beliefs (H1j), and specific environmental beliefs (H1k).

Of these, only universalism values, age and general environmental beliefs had a statistically significant effect on the dependent variable (see table 7).

Step	Predictor	R	R^2	R^2 change	F	d.f.	β
1	Income, ethnicity, education, presence of children	0.228	0.052	0.052	1.328	11,266	-0.165- 0.047
2	Age	0.263	0.069	0.017	1.639	12,265	-0.153**
3	Gender	0.287	0.082	0.013	1.818*	13,264	0.055
4	Collectivism	0.407	0.166	0.084	3.728**	14,263	0.023
5	Benevolence	0.436	0.190	0.024	4.089**	15,262	0.032
6	Universalism	0.502	0.252	0.062	5.492**	16,261	0.152*
7	General environmental beliefs (pro) General environmental beliefs (anti)	0.632	0.400	0.148	9.594**	18,259	0.441** 0.139**

Note: * $p<0.05$, ** $p<0.01$. Beta coefficients computed after all variables in the equation.

Table 7. Hierarchical regression analysis predicting specific environmental beliefs.

4.7 Summary of Results and Conclusions

Referring back to the model of the organic buying process discussed previously, figure 4 summarizes the most interesting results of this study. Confirming the assumptions of the TPB, attitude formation was strongly driven by beliefs. In fact, more than half of the variance (52.8%) in positive attitudes towards organic fruit and vegetables could be explained by the model developed for this study, but only about a third (32.9%) of the variance in negative attitudes. In addition, values played an important role and should be included in the model. Based on the results of this study, they could be placed within the causal sequence, as an antecedent to beliefs.
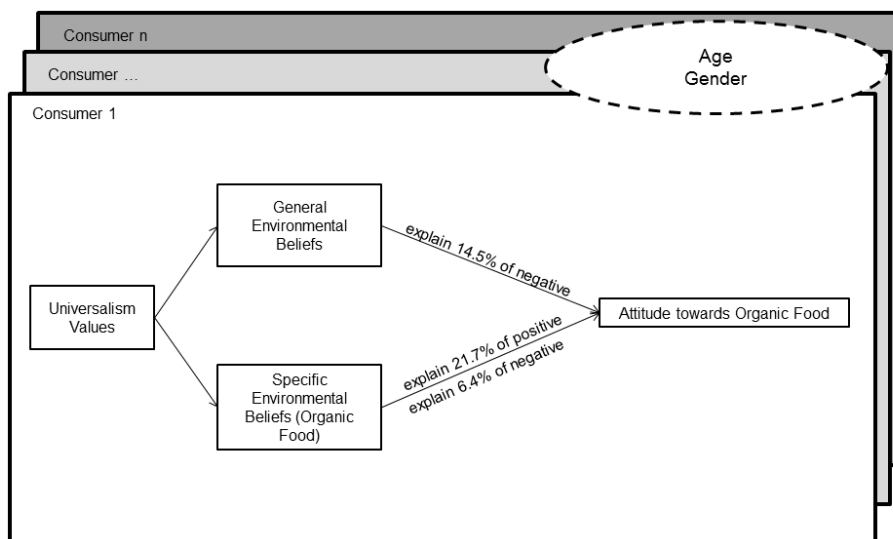

Figure 4. Model of environmental beliefs and attitude formation towards organic produce based on the present study.

Age, gender and specific environmental beliefs were shown to predict attitudes: Young respondents and women were more inclined to think positively about organic fruit and vegetables. Respondents who believed these products were good for the environment also thought so. Notably, specific environmental beliefs were better predictors of attitudes than general environmental beliefs.

Moreover, almost half of the variance (42.7%) in general pro-environmental beliefs was explained by the model. Interestingly, demographic variables played a very small role (4.2%), making values and believes the more important drivers. Universalism values and specific environmental beliefs were shown to predict an ecological worldview. Anti-environmental beliefs were not explained well by the model (13.9%), implying that these have entirely different predictors.

40% of the variance in specific environmental beliefs was explained by the developed model, with age and universalism values being the most reliable predictors.

In summary, pro-environmental beliefs emerged as the best predictors of positive attitudes towards organic produce; the more specific, the better their predictive power. Values could not be shown to predict attitudes directly, but strong universalism values led to the formation of general pro-environmental beliefs. This confirms the importance of values for the model, although not as direct antecedents to attitudes. Instead, the influence of values on attitudes flows through the formation of beliefs. Finally, the explanatory power of demographic characteristics was negligible, though age and gender had small effects.

5 Discussion

5.1 Closing the Green Gap

The green gap phenomenon describes consumers who do not exhibit pro-environmental buying behavior despite holding strong pro-environmental beliefs. This fact is sometimes used to discourage environmental marketing messages as useless (Mainieri et. al, 1997). However, there is no direct link between beliefs and behavior. According to the TPB, beliefs, attitudes and purchase intention are linked in a causal sequence that eventually, and together with additional factors, drives consumer behavior.

This study suggests a more nuanced perspective on environmental beliefs. While specific environmental beliefs do play a role (they were able to explain 21.7% of the variance in positive attitudes towards organic fruit and vegetables), more general environmental beliefs do not. This could provide an explanation for the green gap and confirms several previous studies which also maintain that beliefs are often measured at a too general level (Hines et. al, 1987; Mainieri, et. al, 1997; Pickett-Baker & Ozaki, 2008). However, the link between beliefs and attitudes is only the first in the TPB sequence. This study did not explain – nor was this the goal – why people with positive attitudes towards organic produce might still not purchase it.

5.2 Implications for Future Research

Though a large portion of the variance in attitudes was accounted for by the developed model, 47.2% remain unexplained. This is an obvious area for future research, beginning with inserting additional beliefs about organic produce into the model. Possible suggestions are health and safety beliefs. In addition, it would be interesting to take a closer look at how people form their specific environmental beliefs as values and demographics seem to be insufficient predictors.

Interestingly, the examined variables accounted for much more variance in the positive attitudes and beliefs towards organic produce than the negative ones (52.8% vs. 32.9% for attitudes and 42.7% vs. 13.9% for beliefs). Most notably, the three value types studied here explained 13.6% of the variance in positive attitudes, but only 4.7% of the negative ones. Thus, it is possible that negative attitudes are formed by an entirely different sequence. Future research should consider the influence of further value types or of specific consumption experiences. Qualitative research might be most helpful for uncovering these factors.

5.3 Practical Application

Respondents who held values such as equal opportunity for all, unity with nature and being tolerant of different ideas and beliefs (universalism) were more likely to have strong pro-environmental beliefs and positive attitudes towards organic fruit and vegetables. This finding implies the usefulness of these values as a segmentation criterion for the organic market.

Moreover, the analysis reinforced the importance of specific environmental messages for the marketing of organic products. Since they were shown to be a significant predictor of positive attitudes, they should be used strategically to create and communicate USPs. "Organic food is good for the environment" was a belief that lead to positive attitudes, but also one that most respondents (56%) were not sure was true. This provides a tremendous opportunity to engage in informative communication about the eco-friendly benefits of organic food. Instead of making general claims of naturalness or greenness, marketers should explain more thoroughly how their organic or eco-friendly brand/product benefits environmental conservation.

5.4 Limitations

General environmental beliefs in this study were operationalized based on the widely used New Environmental Paradigm (NEP) Scale (Dunlap, et. al, 2000). However, the internal consistency of the scale proved to be problematic, which is why pro-environmental beliefs and anti-environmental beliefs were treated as separate variables. Regardless of this change, the scale continued to produce contradictory results. The scale items may have been too general for the respondents. Future research should try to replicate the results of this study with the use of a different measure for general environmental beliefs.

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