



The price of values: Exploring the effects of
biospheric, altruistic, egoistic and hedonic values
on price premiums for local food products

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Abstract

Shortening the food supply chain can reduce its negative effects on the environment.

Consumption of local food products is associated with less transport emissions, waste and energy use. However, it is challenging to encourage consumers to purchase these products since they are often in higher price segments. This study investigated how the promotion of biospheric, altruistic, egoistic or hedonic values on a webshop can contribute to an increase in consumers' willingness to pay a higher price for local food products compared to "conventional" products (price premium). An experiment was conducted where Dutch participants ($N = 261$) were randomly assigned to one of five conditions emphasizing one of the four values or the control condition, and price premiums were measured afterwards. Results showed no significant differences between exposure to any of the values and the control group, and there was no significant difference between exposure to self-transcendent values and self-enhancement values. In general, participants displayed willingness to pay a higher amount for animal-based products compared to plant-based products, although the price premium for animal-based products was relatively lower percentage wise. Exploratory analyses revealed that vegans and vegetarians had higher price premiums than meat eaters. The study's conclusions indicate that presenting values in this manner does not lead to significantly different price premiums, but there is an effect for product type and dietary preference. Explanations and implications of the results are discussed. The findings suggest the need for further exploration of factors influencing consumers' behavior in the context of purchasing local products.

Key words: values, food supply chain, price premium, local

The Price of Values: Exploring the Effects of Biospheric, Altruistic, Egoistic and Hedonic Values on Price Premiums for Local Food Products

As our awareness of the impact of our lifestyle on the earth's climate and resources grows, it becomes evident that our food supply chain must change fundamentally. Addressing climate change requires transformations in how we produce and distribute food. Current agricultural practices contribute significantly to global greenhouse gas (GHG) emissions through high energy and land use (IPCC, 2022), while the import and export of food products further contribute to CO₂ emissions, stemming from transportation, as well as energy-intensive processing, packaging, and storage along their journey to their consumption destination (Sim et al., 2007; Jarzębowski et al., 2020; Tubiello et al., 2022). Nowadays food trading occurs on a global scale, and the distance between where food is produced to where it is consumed contributes largely to a products' environmental impact (Sim et al., 2007). The global food supply chain is a major factor in human-caused climate change. As climate change progresses it has negative consequences on the worldwide food supply caused by extreme weather events, droughts, plagues, diseases and lack of water availability. This will severely impact food production practices and increase the number of people exposed to climate-driven food insecurity (FAO, 2016; IPCC, 2022). Therefore change is necessary on how and where food is produced to mitigate and to adapt to climate change.

The Netherlands is considered the world's second largest exporter of agricultural goods. Export of Dutch agricultural goods was worth €122.3 billion in 2022 (Chivot et al., 2018; Jukema et al., 2022). Dutch food production is characterized by high animal density, high nutrient input levels and high yields, which negatively impacts the climate and soil quality (Jongeneel & Gonzalez-Martinez, 2021). Dutch agriculture was responsible for 26.6 megatonnes of GHG emissions in 2021 (CBS, n.d.) as well as high nitrogen levels and high emissions of ammonia (Van Grinsven et al., 2019; Jongeneel & Gonzalez-Martinez, 2021), impacting water, soil and air quality and biodiversity (Moerkerken & Smit, 2016). Even

though high pollution levels due to agriculture negatively affect the country, most food products produced in the Netherlands are consumed elsewhere (Jukema et al., 2022). Therefore, a fundamental change in the Dutch food supply system is necessary. A reduction of 38% in CO₂-emissions has to be realized by 2030 if the Netherlands is to reach the goal set by the national Climate Agreement (Rijksoverheid, 2019). Better management of carbon and nitrogen cycles and increasing efficiency in food production is crucial for reducing GHG emissions and reducing demand of natural resources (FAO; 2016). To achieve this, the Dutch agricultural industry may have to surrender part of their land to forestation, while reducing the amount of livestock. However, this results in decreased profits that can be made from export due to lower production levels, leading to a substantial decrease in farmers' income (Jongeneel & Martinez-Gonzalez, 2021). Additionally, to reduce transport emissions in the food supply chain, lowering imports is crucial. 75% of food consumed in the Netherlands, including feed for livestock and base ingredients, is imported (Mulwijk et al., 2018).

Short Food Supply Chains

The reasons mentioned above lead to the conclusion that the Netherlands must give priority to smaller-scale production in order to address the excessive environmental impact of its agriculture, even if it means facing a decline in profits from export. A potential solution to address this issue is to shorten the supply chain by providing Dutch consumers with products that are produced within their own country or region, reducing intermediaries between producers and consumers (Jensen et al., 2019; Jarzębowski et al. 2020; Tacke et al., 2021). A reduction in intermediaries may increase earnings that go directly to the farmer (Zhang et al., 2019). Currently, the market share of these Short Food Supply Chains (SFSC) in the Netherlands only lies between 1 and 4%, depending on the exact definition and amount of intermediaries (Tacke et al., 2021).

Transitioning to SFSCs diminishes the reliance on product import and export, resulting in reduced resource and energy consumption. This reduction stems from decreased emissions associated with transportation, packaging requirements, and food waste during the food supply process (Michalský & Hooda, 2015; FAO, 2019, Jarzębowski et al., 2020). Other advantages of local food production include less dependence on import from other countries, more food security and self-sufficiency, less emissions in the exporting countries, more transparency in the food production process and promotion of less polluting production methods (Sim et al., 2007; Feldmann & Hamm, 2014; IPCC, 2019; Jarzębowski et al., 2020).

However, a more sustainable food system can only be feasible if farmers generate sufficient profits so that they are able to make investments in more climate-friendly practices such as SFSC's. Also policies have to be enacted that support this (Jongeneel & Martinez-Gonzalez, 2021). Currently, farmers that operate on a smaller scale tend to not get the same level of government assistance as large-scale producers, but are faced with the same or higher costs to produce food (Carter, 2017). Dutch small-scale and innovative farmers get fewer loans from banks to make investments in their farm (Fi-compass, 2020). This leads to small-scale farmers needing to sell their products at a higher price for their business to be profitable. If policies and financial institutions provide insufficient support, it becomes essential that consumers are willing to pay higher prices for food that can be classified as "local" (Wägeli et al., 2015).

Consumer Perceptions Of Local Products

Consumers mainly understand the attribute "local" in terms of geographical parameters, such as "nationally produced" or "produced nearby" but a clear definition is lacking (Jensen et al., 2019). However, even without a clear definition consumers tend to view local products positively. They perceive benefits such as taste and freshness, healthiness, trustworthiness and food safety, increased animal welfare and reduced environmental impact

(Feldmann & Hamm, 2014; Hasselbach & Roosen, 2015; Hempel & Hamm, 2015; Jensen et al., 2019; Ditlevsen et al., 2020; Chen et al., 2022). Many of these perceived attributes of local products overlap with perceived attributes of organic products, and therefore organic-minded consumers tend to have a higher willingness to pay for products that are produced locally compared to “conventional” products (Hasselbach & Roosen, 2015; Hempel & Hamm, 2015; Ditlevsen et al., 2020). There is also a subset of consumers who prioritize local products without considering environmental factors or organic attributes (Ditlevsen et al., 2020). These consumers perceive unique social benefits associated with local products, including farmworker welfare, producer enthusiasm, support for the local economy, and a closer consumer-producer relationship (Jensen et al., 2019; Ditlevsen et al., 2020). As the organic food sector becomes more industrialized, local products can fulfill specific consumer demands that may not be met by large-scale organic production (Jensen et al., 2019).

There is considerable potential in the differentiation and promotion of locally versus organically and conventionally produced food products. Local foods can attract different “types” of consumers by promoting a wide range of perceived benefits. On the other hand, consumers are also price-motivated (Sirieix et al., 2011). Dutch consumers are especially focused on getting “good” value for price when choosing which products to purchase (Tacken et al., 2021; CBI, 2022). Even though consumers are interested in purchasing local products, they are often unwilling to compromise on price (Holt, 2005; Darby et al., 2006). Products in higher price segments have to be differentiated and perceived as having sufficient added value in order to compete with conventional supermarket products (CBI, 2022). The group of non-organic minded consumers is especially sensitive to price (Hempel & Hamm, 2015), highlighting the need for an intervention that can increase willingness to pay for local products among all consumers, including those who place less value on food attributes such as organic.

Apart from the higher price, there are other factors that hinder consumer adoption of local products. A meta-analysis showed that lack of availability, inconvenience and challenges in identifying products prevent consumers from shopping local products (Feldmann & Hamm, 2015). Local products are often found at farmers markets, which require time and planning to visit as they are tied to specific locations and times. They can also be found at specialty stores or bought directly from the farmer. Even though this is a more frequently available option, most consumers are not willing to put in effort to visit these stores or the farmer (Maynard et al., 2003; Holt, 2005; Tacken et al., 2021). On the other hand, supermarkets are easily accessible to most people in the Netherlands (CBS, 2010). Therefore, Dutch consumers mainly buy their products at supermarkets as availability of foods and convenience strongly influence food consumption choices (Geurts et al., 2017; Tacken et al., 2012).

The Influence Of Values

The benefits of purchasing local products align with psychological values that shape pro-environmental behaviors. Pro-environmental behaviors (PEBs) can be defined as “positively impacting the availability of materials or energy from the environment, or altering the structure and dynamics of ecosystems or the biosphere” (Stern, 2000). Buying local food products can be considered a PEB because of its possible benefits for the environment as described earlier. According to Stern (2000), personal norms about having to behave pro-environmentally are activated when a person believes that something they value is threatened. The individual then must act to reduce this threat. Through this path values influence pro-environmental behaviors indirectly. Values can be defined as “desirable trans-situational goals, varying in importance, which serve as a guiding principle in someone’s life” (Schwartz, 1992). Values influence what people attend to, which knowledge becomes cognitively

accessible, which consequences of actions they consider important and which goals and behaviors they strive for (Schwarz, 1992; Lindenberg & Steg, 2007).

Schwartz (1992) distinguishes between “self-enhancement” and “self-transcendent” values which are highly relevant to the environmental domain. Self-enhancement values reflect a concern with personal costs and benefits, while self-transcendent values reflect the consideration of collective interests. Steg et al. (2014) demonstrated that four values (self enhancement: biospheric, altruistic; self-transcendent: egoistic, hedonic) within these dimensions can be distinguished empirically. The four values are underlying to a range of different pro-environmental behaviors. All people hold these values, but they prioritize them differently (Steg et al., 2014). Their influence can vary per situation, and making them more salient can increase their influence (Abrahamse et al., 2005; De Groot & Steg, 2008). A more detailed explanation on the meanings of the four values and their relations to the behavior of shopping local products will be discussed later on.

Increasing Price Premiums Through Values

In this study, I will examine how local food products can be best presented to consumers while they shop to increase their price premium for these products. The price premium is the percentage of extra money participants are willing to pay for a product with the attribute “locally produced” relative to a similar “conventional” product (Chen et al., 2022). A price premium is necessary to ensure sufficient income for the farmer so that producing for a short supply chain is profitable (Zhan et al., 2019). I aim to investigate whether exposure to values can increase the consumers’ price premium.

As mentioned before, reducing inconvenience and effort are crucial factors to support consumers in buying more locally produced food products. A suitable solution proves to be the setting up of an online store, which makes the products accessible to a wide range of consumers, who can then receive their orders delivered at home or at a pick-up location.

Research confirms that online shopping, especially on mobile devices, increases order sizes and rates due to convenient access and being able to habitually purchase products (Wang et al., 2015). In this study, participants will be exposed to the four different values while viewing a webshop that offers locally produced foods. The different values will be emphasized through text and pictures informing the consumer on the benefits of local food products. By increasing the saliency of the different values, the price premium for the products offered on the webshop could be increased. Previous research has shown that providing consumers with information about the consequences of their online shopping behaviors can significantly encourage pro-environmental choices (Schwartz et al., 2020; Berger & Burkhalter, 2022). In the following, I will examine the four values and how they could influence people's willingness to pay for local food products.

Biospheric values. Biospheric values are self-transcendent values. Biospheric values reflect a concern with the costs and benefits of behavior on the ecosystem and the biosphere. Saliency of biospheric values in specific situations or increased cognitive accessibility makes people more likely to behave pro-environmentally (De Groot & Steg, 2008). Consumers who consider environmental impact are more likely to buy organic food products (Gil et al., 2000) and those that value eco-friendliness of the production process are more likely to purchase local food products (Feldmann & Hamm, 2014; Wägeli et al., 2015). Therefore, I expect that emphasizing biospheric values on the webshop will increase price premiums compared to a webshop where no values are emphasized (control condition).

H1: Participants exposed to the biospheric experimental condition have a significantly higher price premium for local products than participants exposed to the control condition.

Altruistic values. Altruistic values are also self-transcendent values. These values reflect a concern with the costs and benefits of behavior for other people (De Groot & Steg, 2008). Although acting pro-environmentally can be considered an altruistic behavior on its

own, as benefits for the environment are benefits for other people as well (Stern, 2000; De Groot & Steg, 2008), local products have additional perceived benefits that can be considered as altruistic. Local products are associated with support of local farmers, the local community and economy, and better working conditions (Holt, 2005; Carpio & Isengildina-Massa 2009; Feldmann & Hamm, 2014; Wägeli et al., 2015; Jensen et al., 2019; Profeta & Hamm, 2018; Ditlevsen et al., 2020). Research has shown that altruistic values such as good working conditions can influence consumption choices such as choosing at which restaurant to eat (Steg et al., 2014). Therefore I expect that emphasizing altruistic values, even when not related to environmental benefits, would increase the price premium consumers are willing to pay compared to the control condition.

H2: Participants exposed to the altruistic experimental condition have a significantly higher price premium for local products than participants exposed to the control condition.

Egoistic values. Egoistic values are self-enhancement values. Egoistic values reflect a concern with the costs and benefits of the behavior for the individual (De Groot & Steg, 2008). Egoistic values often do not align with pro-environmental behaviors, as they tend to have less personal benefits. By making egoistic values compatible, or less incompatible with PEBs, these behaviors can be promoted (De Groot & Steg, 2008).

Most purchases are driven by egoistic motivations, as people try to find the best cost-benefit ratio (Lindenberg & Steg, 2007; Kareklas et al., 2014; Prakash et al., 2019).

Unfortunately, it is challenging and costly to lower prices of local products (Holt, 2005).

However, health and safety can be considered as egoistic motivations to buy local products because they personally benefit the individual. Dutch consumers consider health as one of the most important food quality values (Geurts et al., 2017) and local foods are perceived as healthier and more nutritious by many people (Feldmann & Hamm, 2014; Chen et al., 2022). Personal health and well-being are also important reasons for consumers to buy organic (Gil

et al., 2000; Zanolli & Naspetti, 2002). Food safety is also an important motivator to buy locally (Feldmann & Hamm, 2014). Large supply chains have little transparency and traceability in the production process, and consumers have better knowledge about the origin of their food in a short supply chain (Wägeli et al., 2015; Zhang et al., 2019).

H3: Participants exposed to the egoistic experimental condition have a significantly higher price premium for local products than participants exposed to the control condition.

Hedonic values. Hedonic values are also self-enhancement values. They reflect a concern with improving one's feelings and reducing effort (Steg et al., 2014). Hedonic values are often negatively related to pro-environmental behaviors, as PEBs often require effort and sacrifice of comfort and pleasure (Steg et al., 2014). Although finding and purchasing local products requires effort (Holt, 2005), emphasizing the convenience of online shopping can align hedonic values with the behavior of buying locally. As food quality significantly influences consumers' willingness to pay for organic products (Zanolli & Naspetti, 2002; Krystallis & Chryssohoidis, 2005), highlighting hedonic qualities like taste, freshness and enjoyment of cooking can enhance satisfaction and pleasure and make people more likely to engage in the behavior (Lindenberg & Steg, 2007). Taste and food quality rank high as motivations for purchasing local products, even among consumers who are not specifically focused on organic options (Caprio et al., 2009; Hempel & Hamm, 2015; Jensen et al., 2018; Ditlevsen et al., 2020).

H4: Participants exposed to the hedonic experimental condition have a significantly higher price premium for local products than participants exposed to the control condition.

Self-enhancement and self-transcendent values. Altruistic and biospheric value considerations provide the most stable basis for pro-environmental behavior. They are less influenced by personal and situational circumstances, because people can react flexibly and remain pro-environmental if they base their behavior on norms (Lindenberg & Steg, 2007; De

Groot & Steg, 2008). Altruistic and biospheric values tend to have a stronger influence on PEBs than egoistic values (Bouman et al., 2018; Bouman et al., 2021). This has been demonstrated in research by Kareklas et al. (2014) and Prakash et al. (2019), who found that environmental and altruistic claims were more effective than egoistic claims regarding health on participants' intention to eat organic or purchase eco-friendly packaged products. Hedonic values also tend to have a weaker effect on PEBs than biospheric and altruistic values (Bouman et al., 2021). Hedonic considerations are driven by anticipated emotions, such as pleasure from purchasing products, and are dependent on mood (Lindenberg & Steg, 2007; Steg et al., 2014). This is a fickle basis for achieving stable PEBs, as the individual does not behave pro-environmentally if they do not feel like it (Lindenberg & Steg, 2007). I am interested if altruistic and biospheric values indeed have a stronger effect on the behavior of shopping local products than egoistic and hedonic values.

H5: Participants exposed to the biospheric and altruistic experimental conditions have a significantly higher price premium for local products than participants exposed to the egoistic and hedonic experimental conditions.

Plant-based and animal-based products. Price premium can differ between different categories of local products. A meta-analysis on willingness to pay for products with sustainable attributes such as “local” and “organic” by Li & Kallas (2021) revealed that people have the highest price premium for fruits and vegetables (38.8%), compared to other types of food products, such as meat (29.4%), dairy (34.9%) and seafood (16.6%). The authors attributed the higher percentage to increased perceptions of food safety, quality and healthiness as fruits and vegetables are more fresh and perishable compared to other types of products, making these attributes more identifiable (Gil et al., 2000; Li & Kallas, 2021). Establishing shorter supply chains between production and consumer can result in products that are fresher and longer-lasting (Besik & Nagurney, 2017), making the products more

appealing to consumers. Also, fruits and vegetables play a fundamental role in maintaining a healthy diet (Besik & Nagurney, 2017). Unlike other food categories they are difficult to substitute, which could contribute to consumers' higher price premiums, especially among those that prioritize health. Additionally, organic and local fruits and vegetables are perceived by consumers as more nutritious than their conventional alternatives (Li & Kallas, 2021).

Differences in price premiums can also be explained by initial price differences between various types of food categories. In the Netherlands, there are substantial variations in supermarket prices for animal-based and plant-based products. Dutch consumers spend a relatively large amount of their grocery budget on products such as meat and cheese, compared to bread, potatoes, fruits and vegetables, despite meat and dairy products only having a small contribution to overall food consumption (Geurts et al., 2017). Price sensitivity prevents consumers from paying substantial price premiums for local products (Holt, 2005; Tacken et al., 2021; CBI, 2022), and this could negatively influence price premiums especially for products that make up a large part of the budget that people spend on food, such as meat and dairy. A study by Carpio and Isengildina-Massa (2009) in South Carolina found that their sample generally spent twice as much of their grocery expenses on animal-based products compared to plant-based products. They also measured price premiums for local products, which was 27% for plant-based products and 23% for animal-based products. These results suggest that there may be a relationship between initial grocery expenses and willingness to pay extra for plant-based and animal-based products. Unfortunately, the authors did not specify for which products exactly they measured price premiums and what the initial supermarket prices for these products were.

The objective of this study is to replicate and extend previous findings regarding consumers' willingness to pay a higher price premium for plant-based products compared to animal-based products. To my knowledge, this comparison has not been measured in the

context of local products in the Netherlands, and previous studies did not include initial supermarket prices in their findings. Finding a difference in willingness to pay for plant-based or animal-based products could provide insights into possible variations in consumer perceptions or the effects of initial price differences.

H6: Participants have a higher price premium for local plant-based products than for local animal-based products in all experimental conditions.

Besides testing for the six hypotheses, additional analyses are carried out to check for interactions between type of product and values. However this is purely explorative, as to my knowledge there is no scientific literature yet on how the price premium of different types of food products could be influenced by the four values.

Method

Design

The present study uses a between-subjects design with five experimental conditions, corresponding to the variable “emphasized value” (biospheric / altruistic / egoistic / hedonic / neutral). The dependent variables were total price premium (total PP), price premium for plant products (plant PP) and price premium for animal products (animal PP), ranging from 0 to 100%.

Participants

Participants were recruited through public advertisements on websites, social media and the university’s SONA-credit system for first year psychology students. Additionally, flyers were distributed at supermarkets, libraries and the University of Groningen which contained a QR-code to the study. The study was in Dutch, so the advertising was targeted at Dutch-speaking individuals. The study was promoted with a chance to win a €15,- gift card as an incentive, and first year students could earn 0.3 course credits by participating.

A power analysis was carried out beforehand with G*power (Faul et al., 2009). A sample size of $N = 305$ participants (61 per condition) was needed for a power of $1 - \beta \geq .80$ (80%) with a small effect size ($f^2 \geq .025$) and an alpha of .05 (0.05%). Since restricted diets and allergies are common (Le et al., 2015; CBS, 2021), I aimed for at least 305 responses on the price premium scales. Due to time and resource limits, this number was not reached.

314 people initially filled in the survey. The data of 53 participants was removed as they did not complete all obligatory questions, or failed to pass the first attention check which verified that they viewed the webshop carefully. Out of the remaining 261 participants, 53 people were assigned to the control group, 52 to the biospheric group, 45 to the altruistic group, 55 to the egoistic group and 56 to the hedonic group. The average age of the sample was 38,5 ($SD = 17,1$), ranging from 18 to 81 years. The largest share of the participants (67.7%) ate meat at least once a week. The amount of participants following a vegan or vegetarian diet (18.9%) was higher than the average of 4.7% in the Netherlands (CBS, 2021). A detailed overview of the full sample based on demographics variables such as age, gender, dietary preferences, etc. can be found in Appendix A.

Procedure

Participants received an invitation to the experiment via a web link or QR-code. The survey could be completed either on a phone, tablet or PC. After reading the information form, participants were asked for their informed consent before starting the experiment. They were also asked whether they were 18 years or older and did groceries at least once a week. This was to make sure they were somewhat familiar with Dutch prices for grocery items. Those that did not meet the selection criteria or did not consent were excluded from analysis.

After consenting, the participants received a broad explanation on the content and duration of the experiment and were asked to answer questions on their demographics. Afterwards, the participants were given information about the webshop. A cover story was

used to not reveal the true intention of the study. The participants were told they were testing a beta version of a webshop that is selling local food products. Local food products were defined as “products that are consumed at a short distance from where they are produced”. They were told to scroll through the webshop and pay attention to the design, ease of finding products and user friendliness. They were also given a prompt to increase participant engagement with the webshop: “Imagine you want to make a simple meal with potatoes, vegetables and meat. Can you find all the products that you need quickly and easily?”

Next, the participants were randomly assigned to one of the five versions of the webshop shown to them, emphasizing one of the four values (experimental conditions) or no value (control condition). The link to the webshop was provided, as well as the first attention check (“What’s the name of the webshop?”) and the manipulation check. After scrolling through the webshop and answering the checks, participants were asked through which medium they viewed the shop (phone, tablet, PC or other). Then they answered questions on the usability of the webshop. These questions were not relevant for the research but were added as part of the cover story.

In the final part of the survey, participants were told that they would need to state their willingness to pay for a list of products, so that suitable prices could be determined for the products on the webshop. They were given instructions on how to answer the questions and then stated their price premium for ten local food products. This part also included an additional attention check. At the end of the survey participants were debriefed. The debriefing included a link to a separate page where participants could give their email address if they wanted to be informed about the results of the research or if they wanted to participate in the lottery to win the gift card. By collecting the email addresses separately from the survey, participants’ answers were kept anonymous.

Materials And Measures

Materials included an informed consent form (Appendix B), instructions on the webshop, demographic variable questions, the webshop (Appendix C and D), an attention check, a manipulation check (Appendix E) filler questions about usability of the webshop, the price premium questions and instructions (Appendix F) and a debriefing (Appendix G). The survey was carried out on Qualtrics and the webshop was built and hosted on Github. The survey contained a link to the webshop.

Webshop. The webshop was presented in Dutch and only offered food products that can be produced in the Netherlands, to create a feeling of localness for participants. In all conditions, the webshop consisted of a neutral logo with the name *De Buurtwinkel* (“The Neighborhood Store”), a non-functional shopping cart, a banner, a cartoon picture, a customer review and five food categories with a total of 46 products. All products were displayed with a neutral picture (white background, no or neutral logos, and no indication of other product attributes, e.g. organic), a description of the amount when necessary (in grams, liters or units) and a price based on the average price of the standard products at the time at the most visited Dutch supermarkets (Retail Index, 2023).

To manipulate the independent variable “emphasized value”, various elements of the webshop were different per experimental condition. The different webshop versions can be found in appendix C. The banner had the title “Why choose De Buurtwinkel?”, and four sentences explaining the benefits of local products and a background picture matching the manipulation. In the neutral condition, the text on the banner was “Order now at De Buurtwinkel!” The cartoon picture consisted of a drawing of vegetables and a text bubble with a few words fitting to the experimental condition. The customer review consisted of two to three sentences highlighting benefits of shopping at this webshop, consistent with the experimental condition. For PC and tablet users, the cartoon picture and the customer review

were shown on the left side and were always visible while the participant scrolled through the products. On the phone they were at the bottom of the page due to size restrictions.

Manipulation check. To test whether participants paid attention to the text on the website, they were given a manipulation check (Appendix E). The question was framed so that it did not reveal the true intention of the study. The manipulation check was the same for all participants, but the corresponding correct answer differed per experimental condition.

Price premium. I adopted the payment-card contingent valuation method, because direct methods on measuring willingness to pay for products have less hypothetical bias than indirect methods, according to a meta-analysis by Schmidt & Bijmolt (2020). I created a price premium scale for local products, similar to the one used by Chen et al. (2022). The products on the scale are commonly consumed among Dutch citizens (Borgdorff-Rozeboom, 2013; Growth from Knowledge & Nederlands Bakkerij Centrum, 2019; RIVM, 2020). An example question can be found in Appendix F.

Participants were shown a product with a reference price, based on the average Dutch supermarket price. They were asked to select the additional price premium (ranging from 0% to 100%) they would pay if this product had the attribute “local”. At the time, 1 kilo of Elstar apples cost €1.79 in the Dutch supermarket Albert Heijn, therefore participants could choose any price between €1.79 (0% extra) and €3.58 (100% extra) for how much they were willing to pay for the apples. If they would never buy a product due to dietary preferences or allergies, they could select “I would never buy this”. In total, the participants rated five plant-based products (onions, bread, apples, potatoes and tomatoes) and five animal-based products (milk, chicken breast, eggs, cheese and minced beef and pork meat). The 8th question was an attention check where participants had to select the highest price (100%) for honey.

Cronbach’s Alpha was used to estimate the reliability of the scale. The analysis found an $\alpha = .870$ ($n = 91$) for total PP, $\alpha = .870$ ($n = 196$) for plant PP and $\alpha = .871$ ($n = 110$) for

animal PP. However, this statistic uses listwise deletion and therefore only uses part of the data. Because participants with missing values are excluded from the analysis, the statistical power is low and it is likely to be an underestimation of true reliability (Matysova, 2019).

Data Analysis

The data was analyzed with IBM SPSS Statistics 27. A one-way ANOVA was carried out to test hypotheses 1 to 4; whether the independent variable “emphasized value” had a significant influence on total PP. A t-test was used to test hypothesis 5; whether participants exposed to self-transcendent values had a higher total PP than those exposed to self-enhancement values. A MANOVA was used to test whether plant PP was higher than animal PP for the whole sample (hypothesis 6) and whether there was an interaction with emphasized value.

Attention checks. Three participants were excluded as they did not pass the first attention check (“What’s the name of the webshop?”). It can be assumed that they did not view the webshop sufficiently. Those that did name something similar to the correct answer such as “Buurtsuper” or had spelling mistakes were considered for further analysis.

Out of the remaining 261 participants, a total 86 participants did not pass the second attention check (the 8th question in the price premium scale). Some participants indicated to the researcher afterwards or during the study that they did not understand what was expected of them. A t-test was carried out to test whether total PP of participants that failed this attention check ($M = 18.7$, $SD = 14.2$) differed significantly from the total PP of participants that passed the check ($M = 18.2$, $SD = 11.8$). The variances of both groups were equal ($F(259) = 1.384$ $p = .241$) and the mean price premium did not differ significantly between both groups ($t(259) = -1.418$, $p = .158$). After careful consideration, it was concluded

that the selection or presentation of the attention check may have been suboptimal, and keeping the participants who failed this check in the analysis was unlikely to have an impact on the study's findings.

Manipulation check. A total of 87 participants did not pass the manipulation check. The distribution of failed manipulation checks differed across experimental conditions, with the control group having the highest number of failures (appendix H). This can be attributed to the absence of a value being emphasized on the webshop in the control condition, which may have made the question confusing for participants. However, the reasons for the 62 failed checks in the other experimental conditions remains unclear. It is possible that the question was confusing, participants did not pay sufficient attention to the question, or the manipulation was not experienced consciously by the participants. However, dropping participants who failed the manipulation check does not necessarily lead to a stronger design and can introduce bias (Aranow et al., 2019; Varaine, 2022).

A t-test was carried out to test if the participants who failed the manipulation check differed significantly on total PP ($M = 17.3$, $SD = 13.4$) from the participants that passed the manipulation check ($M = 18.9$, $SD = 12.1$). Variances of both groups were equal ($F(259) = 1.118$ $p = .291$). The null hypothesis that there was no significant difference between the means of the groups was accepted ($t(259) = -.099$, $p = .922$). Therefore, it can be assumed that participants who did not pass the manipulation check did not differ significantly on the dependent variable from the rest of the sample. It was decided to keep them in the study, as a larger sample size contributes to the power of the statistical analyses.

Results

Assumptions And Outliers

The assumptions of independent and random samples and continuous dependent variables were met through the design of the research. Levene's test was carried out with each statistical test to check for the assumption of homogeneity of variances. Tests of normality indicated that the price premium scale was not normally distributed. The skewness was .947 ($SD = .155$) for total PP, .662 ($SD = .155$) for plant PP and 1.503 ($SD = .155$) for animal PP. A square root transformation was used, and skewness improved to -.298 ($SD = .151$) for total PP, -.376 ($SD = .151$) for plant PP and -.083 ($SD = .155$) for animal PP. The Shapiro-Wilk test indicated that the dependent variables still did not meet the normality assumption: total PP ($W(261) = .983, p = .003$), plant PP ($W(261) = .984, p = .005$) and animal PP ($W(246) = .980, p = .001$). Nonetheless, the histograms and plots indicated that they were approximately normally distributed (Appendix I) and the sample size is large ($n > 30$) per group, so ANOVA and t-test were still considered appropriate.

Normality tests were also performed for each level of the independent variable emphasized value on the transformed dependent variables. The altruistic group did not meet the assumption of normality according to the Shapiro-Wilk test, and the control group did not meet the assumption of normality on total PP and animal PP (Appendix J). Histograms and plots indicated that they were at least approximately normally distributed on the independent variables. F-tests are relatively robust to non-normality (Blanca et al., 2017), therefore MANOVA was considered to be the most appropriate test compared to non-parametric alternatives. The other assumptions for MANOVA were also met. The Box's Test of Equality of Covariance Matrices indicated that the null hypothesis of equal observed covariance matrices can be accepted ($F(12,391530.554) = 1.636, p = .074$). Pearson correlation indicated that plant PP and animal PP were only moderately correlated ($r(259) = .670, p < .001$).

Values on the price premium scale that were more than three standard deviations from the mean were considered outliers. Seven cases on three different price premium questions were identified as outliers and carefully inspected. They did not seem to be the result of incorrectly entered or measured data, and did not influence the assumption of normality. Therefore it was decided to include the cases in the data analysis to avoid bias.

Phone, PC And Tablet Users

194 respondents viewed the webshop on a phone, 64 on a PC and two on a tablet. One person indicated that they used a different device (“Other”). Due to space restrictions on phones, the design of the webshop differed considerably from the PC and tablet version and some elements were presented at the bottom of the page (Appendix C and D). Since this could influence the manipulation, it was investigated with a t-test whether the group of phone users differed significantly on total PP from the group of PC and tablet users. The respondent that filled in “Other” was left out in this analysis.

The average total PP for phone users was 18.8% ($SD = 12.8$) and for PC and tablet users it was 17.5% ($SD = 11.5$). The means of the groups did not differ significantly from each other ($t(258) = .837, p = .405$). Levene’s test indicated that the variances of both groups were not equal ($F(258) = .002, p = .961$), therefore a non-parametric test was carried out as well. The results of the Mann Whitney U test also indicated that there was no significant difference between users and PC and tablet users on total PP ($U = 6057, p = .513$).

Dietary Preferences

18.9% of participants indicated that they follow a vegetarian or vegan diet. Their mean price premiums differed considerably from those who ate meat (table 1). The mean total PP per type of dietary preference can be found in Appendix K. A t-test was carried out to test whether the difference between the groups in total PP was significant. The five participants who used the option “Other” in the dietary preferences question were left out in this analysis.

Table 1*Mean price premiums of vegetarians and vegans and meat eaters*

	Plant PP	Animal PP	Total PP
Vegetarians and vegans			
<i>n</i>	46	33	46
<i>M</i>	23.8	21.8	23.3
<i>SD</i>	14.9	12.4	14.2
Meat eaters*			
<i>n</i>	258	243	258
<i>M</i>	20.0	16.1	18.5
<i>SD</i>	13.5	13.3	12.6

Note. *Participants who eat meat at least once a week.

Levene's test indicated that the variances of both groups were equal ($F(256) = .003, p = .960$). The means of the group of vegetarians and vegans were significantly higher than the means of participants who ate meat at least once a week ($t(256) = 2.687, p = .008$). Further analyses revealed that the difference mainly manifested in animal PP, as there was a significant difference between the group of vegans and vegetarians and the group of meat eaters ($t(241) = 3.014, p = .003$), while the difference between the two groups on plant PP almost reached significance ($t(256) = 1.931, p = .055$). It should be noted that the price premium scale for animal-based products only represents vegetarians.

The vegans and vegetarians were distributed fairly equally over all groups (appendix A), so it was not expected that it would influence the results. However, each statistical test was carried out twice for explorative reasons; once with and once without the covariate "dietary preference", in order to assess whether controlling for this variable affected the results.

Hypotheses 1-4

I hypothesized that participants exposed to the biospheric, altruistic, egoistic or hedonic experimental conditions had a significantly higher price premium for local products

Table 2*Means and standard deviations of price premium per experimental group*

Groups	Total PP	Plant PP	Animal PP
Control group			
<i>M</i>	18.93	19.99	16.62
<i>SD</i>	10.60	11.65	10.42
Biospheric group			
<i>M</i>	20.57	22.39	16.86
<i>SD</i>	15.02	15.79	13.98
Altruistic group			
<i>M</i>	17.56	18.46	16.60
<i>SD</i>	11.87	13.29	12.23
Egoistic group			
<i>M</i>	18.12	20.29	15.52
<i>SD</i>	12.71	13.80	13.83
Hedonic group			
<i>M</i>	16.77	18.41	14.94
<i>SD</i>	12.06	12.50	15.43
Full sample			
<i>M</i>	18.39	19.93	16.05
<i>SD</i>	12.51	13.44	13.26

Note. $N = 261$.

than participants exposed to the control condition. Table 2 displays the means and standard deviations of price premium per experimental group. A one-way ANOVA was carried out to test whether the groups differed significantly on total PP. According to Levene's test, variances of total PP did not differ across the groups ($F(4,256) = .328, p = .859$). The results of the F-test suggest that there is no significant difference between the groups on the dependent variable total PP ($F(4) = .669, p = .614, \eta^2 = .010$). The model explains 1% of the variability (R^2) in the dependent variable. Conducting an alternative analysis with the price

premiums in terms of euros instead of percentages also did not yield statistically significant results ($F(4,256) = .408, p = .803, \eta^2 = .006$).

For exploratory purposes, an ANCOVA was carried out with the covariate “dietary preference” to check if controlling for this variable influenced the results. Even though dietary preference ($F(1) = 6.869, p = .009, \eta^2 = .027$) was significant, the variable “emphasized value” was still not significant on total PP ($F(4) = .562, p = .690, \eta^2 = .009$). Hypotheses 1, 2, 3 and 4 are rejected. Participants who were exposed to biospheric, altruistic, egoistic or hedonic values did not have significantly different price premiums for local products than participants who were not exposed to any value.

Hypothesis 5

A t-test was conducted to test whether the group of participants exposed to self-transcendent (biospheric and altruistic) values had a significantly higher total price premium than the group of participants exposed to self-enhancement (egoistic and hedonic) values. The mean total PP of the self-transcendent group ($M = 19.36, SD = 13.67, n = 95$) was indeed higher than the mean total PP of the self-enhancement group ($M = 17.31, SD = 12.35, n = 113$). Levene’s test indicated that the variances of both groups were equal ($F(206) = .048, p = .827$). The means of the groups did not differ significantly ($t(206) = -1.017, p = .310$). The effect size, as measured by Cohen’s D, was $d = -.142$, indicating a small effect. An alternative analysis using euros instead of percentages for price premium also did not find statistically significant differences between the groups ($t(206) = -.846, p = .399, d = -.118$). Hypothesis 5 was rejected. Participants exposed to biospheric or altruistic values did not have a significantly higher price premium for local products than participants who were exposed to egoistic or hedonic values.

Hypothesis 6 + Additional Analyses

A MANOVA was carried out to test whether the participants had a significantly different mean for plant PP and animal PP, and whether there was an interaction with the dependent variable emphasized value. In all experimental conditions, mean plant PP was higher than mean animal PP (table 2). The price premium per product type can be found in Appendix L. The results of the F-test indicated that the overall means of plant PP ($M = 19.93$, $SD = 13.44$) and animal PP ($M = 16.05$, $SD = 13.26$) differ significantly, as Wilk's Lambda for the intercept was significant ($F(2000, 240.000) = 798.302$, $p < .001$, $\Lambda = .131$, partial $\eta^2 = .869$). Emphasized value was not significant ($F(2000, 48.000) = .556$, $p = .814$, $\Lambda = .982$, partial $\eta^2 = .009$), which indicates that there is no significant overall difference of the independent variable on plant PP and animal PP. The Scheffe post hoc test confirms that there are no statistically significant differences between any of the groups on both dependent variables. The model explains 0.8% of the variability (R^2) in the dependent variables. An exploratory analysis was carried out including the covariate dietary preferences. Dietary preference did have a significant effect on plant PP ($F(1) = 4.508$, $p = .035$) and animal PP ($F(1) = 8.991$, $p = .003$). The variable emphasized value was still not significant with the covariate included in the model. The model explains 2.5% (R^2) of the variability in the dependent variables.

The difference between the price premiums for plant-based and animal-based products was further analyzed with t-tests. A paired samples t-test indicated that the average percentage of price premium for plant-based products was significantly higher than for animal-based products ($t(245) = 6.172$, $p < .001$). However, this could be due to initial differences in supermarket prices on the price premium scale, as the average supermarket price for animal-based products was €3,09 higher than for plant products. Calculating the price premiums in terms of euros instead of percentages revealed that participants had a higher mean animal PP

($M = .76$, $SD = .72$) than mean plant PP ($M = .40$, $SD = .27$). A paired samples t-test revealed that this difference was significant ($t(245) = -8.665$, $p < .001$).

Hypothesis 6, which predicts that participants have a higher price premium percentage for local plant-based products than for local animal-based products in all experimental conditions, is partly accepted. Despite the initial observation that participants were willing to pay a higher percentage extra for plant-based products on top of their supermarket price, when converting the price premiums to euros participants were actually willing to pay a higher price premium for animal-based products.

Discussion

This study aimed to examine whether exposure to one of four psychological values (biospheric, altruistic, egoistic or hedonic) while viewing a webshop offering local food products would increase participants' price premium for these products; the percentage of extra money consumers would be willing to pay for food products that are locally produced compared to "conventional", non-local products that can be found in supermarkets. Ensuring a sufficiently high percentage is crucial to make local production economically viable for farmers, thereby encouraging the shortening of supply chains and associated environmental benefits. It was hypothesized that exposure to any value would lead to a higher price premium among participants than exposure to no value (hypothesis 1-4). It was also hypothesized that the self-transcendent (biospheric and altruistic) values lead to higher price premiums than the self-enhancement (egoistic and hedonic) values (hypothesis 5), and that among all conditions consumers had higher price premiums for plant-based products than for animal-based products (hypothesis 6).

The research resulted in the following findings: Firstly, participants were willing to pay an average of 18% on top of a supermarket price for local food products. This price

premium differed significantly between plant-based products (19.9%) and animal-based products (16.1%). However, supermarket prices of most animal-based products are higher than those of plant-based products, and in terms of euros participants were willing to pay more for animal-based products. Participants who were exposed to one of the four values did not have a significantly different price premium percentage than participants who were not exposed to any value. Also, participants exposed to self-transcendent values did not have a significantly higher price premium percentage than participants exposed to self-enhancement values. Lastly, exploratory analyses revealed that dietary preference did significantly influence price premiums. That is, the participants that follow a vegan or vegetarian diet had a higher price premium percentage than participants who ate meat at least once a week.

Values

Different mean price premium percentages were found between participants who were exposed to different values, but these means did not differ significantly from each other or the control group. Exposure to any of the four values on the webshop does not lead to higher price premium percentages, and hypotheses 1-4 were rejected. A possible reason for this finding is that shopping is highly functionally motivated and consumers are mainly influenced by factors such as price, convenience, reliability, assortment and product quality (Geuens et al., 2001). In this study the cover story, asking participants to test the webshop's usability, may have enhanced the influence of these factors, and emphasis on certain values alone may not have been sufficient to influence price premiums.

However, there are several alternative explanations why the experiment did not yield significant results for hypotheses 1-5. First of all, it is possible that the manipulation in this experiment did not have the intended effect due to high inflation in the Netherlands during the time of data collection (CBS, 2023). In times of economic growth decline and inflation, consumers are more price conscious, sensitive to product value, less likely to purchase ethical

alternatives and more likely to buy cheaper grocery brands (Hampson & McGoldrick, 2013). This could have diminished the impact of the manipulation, as participants may have been less responsive to the emphasized benefits presented in the different experimental conditions. Specifically, the effects of the self-transcendent values may have been decreased, as previous research (Andorfer & Liebe, 2015; Joshi & Rahman, 2015) demonstrated that higher prices often outweigh ethical considerations.

Secondly, egoistic values were only partly represented which may have decreased their strength. They are defined as “consideration of personal costs and benefits of the behavior” (De Groot & Steg, 2008). Other studies usually test their influence with the use of financial incentives (Maki et al., 2016). Due to the nature of the current study, price could not be manipulated and instead the egoistic experimental condition focused on personal benefits in the form of health and safety. While health and safety can be important considerations when purchasing food products (Feldmann & Hamm, 2014; Wägeli et al., 2015; Zhang et al., 2019), they may not hold the same level of immediate and tangible benefits as financial savings and thus may not have been effective in influencing price premium percentages.

Previous research has also shown that both egoistic and hedonic values have weaker relationships with pro-environmental behaviors than altruistic and biospheric values, and that egoistic values have stronger and longer-lasting effects on pro-environmental behaviors if they are supported by altruistic or biospheric values (De Groot & Steg, 2008; Kareklas et al., 2014; Bouman et al., 2021). In this study, the four values were kept separately to measure their isolated effects, which were not statistically significant. In subsequent studies, the combined effects of self-enhancement and self-transcendent values could be investigated by exposing participants to multiple values within a single experimental condition.

Lastly, the impact of the sampling techniques and sample characteristics should be acknowledged. Due to time and resource constraints, data collection relied partly on

convenience sampling. This had negative consequences for the representativeness of the sample, as not everyone in the Dutch population had an equal chance of being included in the study (Etikan et al., 2016). Nevertheless, due to the use of randomization to assign participants to experimental groups and implementing a control group, comparisons between the groups could still be interpreted. However, it should be noted that vegans, vegetarians and people with a high educational background were overrepresented. Generalizability to the Dutch population is limited, because previous studies indicated that individuals with these demographic characteristics exhibit more environmentally conscious shopping behaviors (Kaufmann et al., 2012; Iris et al., 2018; Fan et al., 2019; Witek & Kuźniar, 2020). Moreover, since a considerable share of participants may already have been aware of pro-environmental shopping behaviors and may have been less affected by the emphasized benefits of local products, this could have decreased the effects of the manipulation.

In conclusion, the study found that exposure to values in the experimental conditions did not lead to significantly higher price premiums for local products compared to the control condition. Several factors may have contributed to this result, including the impact of economic factors such as inflation, the choices regarding value presentation, and the sampling techniques employed.

Plant-based Products And Animal-based Products

Participants had a significantly higher percentage of price premium for plant-based products (19.93%) than for animal-based products (16.05%), replicating findings from previous research (Carpio & Isengildina-Massa, 2009; Li & Kallas, 2021). However, when comparing the price premiums of both types of products in euros rather than percentages, participants were on average willing to spend €0.36 more on animal-based products. This adds to the previous understanding of research which has indicated that consumers generally place higher value on locally produced plant-based products compared to animal-based

products due to perceptions of freshness and nutritional quality (Gil et al., 2000; Besik & Nagurney, 2017; Li & Kallas, 2021). The higher price premium percentages for plant-based products therefore may be explained by the initial cheaper supermarket prices for these products, making a higher percentage more likely even if the actual euro increase was the same or lower than for animal-based products. Unfortunately, the aforementioned studies did not include the actual prices of the products in euros, making direct comparisons not possible.

This study does not suggest any clear reasons for the finding that participants were willing to spend an average of €0.36 extra on animal-based products. Factors such as perceived taste of meat products (Maynard et al., 2003) and concern for animal welfare (Hempel & Hamm, 2015) could have increased price premiums for animal-based products, but these factors were not measured in this study. Future research could investigate the relationship between price premium and type of product further by measuring consumer perceptions of taste, freshness, animal welfare and price of locally produced foods.

Also, future studies should further explore the relationship between dietary preferences and price premiums. Vegans and vegetarians in this sample exhibited higher price premiums compared to meat eaters, particularly for animal-based products, which may be attributed to factors as environmental friendliness and animal welfare being more important to vegans and vegetarians (Rosenfeld, 2018). Considering there were only 48 vegans and vegetarians in this study, the findings should be replicated with a larger sample before drawing conclusions about the influence of diet on price premiums for local products. Additionally, it would be valuable to include other types of diets such as pescetarianism or religious dietary restrictions.

Limitations

As mentioned before, some of the limitations of this study concern the representativeness of the sample, the method of sampling, the inflation rates influencing

grocery prices during the study period, and the representation of the egoistic values in the experimental conditions. Future studies should use different sampling techniques, carefully choose the timing of the study and investigate different ways of value representations, as well as study the combined effects of values. Another shortcoming is that the desired sample size of 305 participants was not reached, resulting in reduced power of the statistical tests. This decreased the ability to detect a true effect, especially considering the fact that the observed effect sizes were small. Future studies should therefore aim for a larger sample size.

Another major flaw in the study concerns the fact that it could not be ensured that participants were sufficiently exposed to the webshop and value messages. Participants were encouraged to interact with the webshop through a prompt but there was no required minimum time to be spent on the webshop before answering the survey. To improve exposure to the manipulation, future studies should include more interactive elements in the experiment which encourage engagement with the webshop, such as ordering products following a shopping list. The decision not to incorporate such questions was made as to minimize the survey length and likelihood of dropout.

Following exposure to the webshop, a manipulation check was performed, assessing participants' ability to recall the emphasized value. One-third of the participants failed this check. However, analyses showed no significant differences between those who passed and those who failed, indicating that the values may not have been a key factor which made people consider a different price premium. As none of the hypotheses were supported, the importance of an unknown factor, such as the previously discussed inflation rates, might have played a more significant role in shaping participants' responses than the presented values.

Further, the validity of the manipulation check has to be questioned. The lack of difference in price premiums between participants who failed and those that passed the manipulation check, suggests that the check may have failed to accurately identify

participants who did not perceive the manipulation. The framing of the question in this study could have made participants aware of the other benefits of local products not presented in their experimental condition, diminishing the isolated effect of the emphasized value. Future studies should aim to use different types of manipulation checks which should be tested in pilot studies, and involve multiple analyses with and without those that failed the checks. An alternative manipulation check could ask participants for specific details of the experimental condition, such as recalling the content of the pictures, rather than relying on recall of the general emphasized value. This minimizes the chance that participants are made aware of the content of the other experimental conditions. Another option is to omit the manipulation check entirely, as manipulation checks can influence the participants' thought processes and responses (Hauser et al., 2018).

Another limitation concerns the price premium scale. In this study, a direct method of measuring was chosen based on a meta-analysis by Schmidt & Bijmolt (2020), e.g. asking participants directly how much they were willing to pay for the products. However, this does not take into account attitude-behavior gaps. Previous research has shown that local and organic preferences are only partly reflected in actual purchase decisions, which indicates that their stated preferences do not always translate to actual purchasing behaviors (Hempel & Hamm, 2015). Other disadvantages of the direct method include participants' heightened attention to product prices and the potential for strategic responses if they believe their answers may impact future prices (Schmidt & Bijmolt, 2020). Also, the increased focus on prices may have decreased saliency of the previously viewed values and reduced willingness to pay extra.

The price premium scale in this study only measured price premiums between 0 and 100% on top of the supermarket price. The supermarket prices in this study may have influenced the participants' answers by acting as an anchor and participants using this price as

a reference, which is a common bias in measures of willingness to pay (Simsonson & Drolet, 2004). Furthermore, for five cases in this study participants filled in 100%, which may not have reflected their true price premium due to a ceiling effect. The price premium scale in this study also did not allow participants to indicate if they would be willing to pay less for a product when it is produced locally (negative price premiums).

Lastly, follow-up studies could explore alternative measures, such as implementing realistic shopping scenarios where participants actually spend money. This approach may reflect participants' actual purchase decisions better and incorporate the influence of routines and habits, which have been found to be significant factors in behavior change (Stern et al., 2000). Grocery shopping is a highly routine behavior associated with limited information seeking and short decision-making processes (Beharrell & Denison, 1995), but this aspect was not considered in this research.

Practical Implications

Although some shortcomings have been identified, the results of this study do have valuable practical implications. First and foremost, it advances scientific knowledge on the influence of exposure to values on pro-environmental behaviors, and the conditions under which emphasizing these values may not lead to behavior change. Values may not have been effective in this context, given that shopping is a highly functionally motivated behavior and consumer's heightened price sensitivity due to factors like inflation and the method of measuring. However, the results offer insights into possible conditions where values may motivate people to pay a higher price premium for local products. To enhance effectiveness of values, their salience must be increased as otherwise price sensitivity seems to be more relevant for food shopping behavior. This implies that policy interventions need to target the price of local food products to ensure accessibility. Furthermore, future research should explore strategies for enhancing the salience of values, for example by combining different

values, and examine potential combinations with price interventions. Despite the non-significance of the results in this study, it provides a basis for designing future studies aimed at increasing food product preferences via webshops. Moreover, this study represents an effort of closing the research gap regarding consumers' price premiums for different types of local food products, and laying the groundwork for future studies to build upon.

Following the results of this study, people are in general willing to pay extra for local products. If subsidies are necessary for stimulating the purchase of local products, they should aim to be high enough to achieve a price that is a maximum of 20% more expensive for plant-based products, and 16% more expensive for animal-based products compared to “conventional” supermarket products. Interventions aimed at increasing price premiums could target both types of products. Although plant-based products had higher price premiums percentage-wise, participants were overall willing to pay more in terms of euros for animal-based products. Considering that animal-based products typically have higher production costs (Gray et al., 2014), it may be economically feasible to focus on both product types, taking into account the specific production costs per product. Vegans and vegetarians could be a relevant target group for interventions aimed at increasing the popularity of local products, as they seem more likely to spend extra money on them. On the other hand, meat eaters may need extra incentives to consider local products.

All in all, this study suggests that the price of a food product might be most influential in consumers' shopping choices. Studies show that price sensitivity has a large impact on price premiums for local products (Holt, 2005; Darby et al., 2006, Tacken et al., 2021). The initial supermarket prices of plant-based and animal-based products were likely to be the main reason for differences in price premiums, with participants overall being willing to pay a higher percentage extra for products that were lower in price. The way that participants were

exposed to the values in this study was not sufficient to significantly influence the price premium.

Conclusion

This study aimed to explore the influence of values on consumers' willingness to pay more for local food products. Research in this field is necessary to support local farmers, promote short food supply chains and establish more sustainable agriculture to mitigate and adapt to climate change. In conclusion, emphasizing different values in the form of text and pictures on a webshop did not lead to significantly different price premium percentages for the products. An overall effect was found for the type of product; participants were willing to pay a higher price premium percentage for plant-based products, but in terms of euros, the amount of money they are willing to pay extra is less than that for animal-based products. Dietary preferences had an effect on price premium; vegan and vegetarian diets were associated with higher price premiums for local food products. The study illustrates that influencing behaviors through value exposure is a complex matter, and in the context of food shopping may be very limited by price sensitivity. Future studies should aim to advance this study with the recommendations discussed, such as combining different values to make them more salient. Additionally, future research should aim to shed light on the factors contributing to the difference in price premium between plant-based and animal-based products such as animal welfare, taste perceptions and price differences. In practice, interventions should be implemented that match the price premium people are willing to pay for the different types of local products. Although the results of this study are limited by a homogenous sample and high inflation at the time of data collection, the insights gained in this research advance the academic literature on the topic of values, behavior change in online shopping, and preferences for different types of local food products.

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Appendix A

Demographic Characteristics of the Sample

Table 3

Gender and Dietary Preferences of Participants across Conditions

Characteristic	Control group	Biospheric group	Altruistic group	Egoistic group	Hedonic group	Full sample	
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	%
Gender							
Male	15	18	17	16	18	84	32.2
Female	37	33	27	37	37	171	65.5
Non-binary	1	1	0	1	0	3	1.1
Other/Prefer not to say	0	0	1	1	1	3	1.1
Dietary Preferences							
Vegan	1	4	2	1	1	9	3.4
Vegetarian	8	9	7	7	8	39	14.9
<1 time*	5	4	3	4	5	21	8.0
1-2 times*	15	14	11	12	16	68	26.1
>2 times*	23	21	21	30	24	119	45.6
Other	1	0	1	1	2	5	1.9

Note. $N = 261$. *The amount of times per week meat is consumed by the participant.

Table 4*Education Level and Income Level of Participants across Conditions*

Characteristic	Control group	Biospheric group	Altruistic group	Egoistic group	Hedonic group	Full sample	
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	%
Education Level*							
No diploma	0	0	1	0	0	1	0.4
Primary Education	1	0	0	0	1	2	0.8
VMBO, HAVO /VWO onderbouw, MBO1	4	3	7	2	5	21	8.0
HAVO/VWO, MBO2-4	17	12	9	12	15	65	24.9
Bachelor (HBO/WO)	12	15	14	21	14	76	29.1
Master (HBO/WO)	18	22	12	18	19	89	34.1
Doctor, PhD	1	0	2	2	2	7	2.7
Income Level**							
0-500	9	4	5	6	7	31	11.9
500-1000	6	10	8	8	6	38	14.6
1000-2000	6	7	8	8	11	40	15.3
2000-3000	12	11	2	13	14	52	19.9
3000-4000	8	8	6	10	5	37	14.2
4000-5000	2	3	4	0	4	13	5.0
5000-7500	7	6	6	5	5	29	11.1
7500-10.000	3	2	5	1	3	14	5.4
>10.000	0	1	1	4	1	7	2.7

Note. $N = 261$. *The highest level of completed education. **Gross income in euro's per month.

Table 5*Number of participants and mean age per group*

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Control group	53	39.9	18.0	18	78
Biospheric group	52	39.8	18.1	20	79
Altruistic group	45	38.9	17.0	19	78
Egoistic group	55	32.7	13.3	18	70
Hedonic group	56	41.5	17.7	21	81
Full sample	261	38.5	17.1	18	81

Appendix B

Consent Form

- Ik heb de informatie over het onderzoek gelezen. Ik heb genoeg gelegenheid gehad om er vragen over te stellen.
- Ik begrijp waar het onderzoek over gaat, wat er van me gevraagd wordt, welke gevolgen deelname kan hebben, hoe er met mijn gegevens wordt omgegaan, en wat mijn rechten als deelnemer zijn.
- Ik begrijp dat deelname aan het onderzoek vrijwillig is. Ik kies er zelf voor om mee te doen. Ik kan op elk moment stoppen met meedoen. Als ik stop, hoef ik niet uit te leggen waarom. Stoppen zal geen negatieve gevolgen voor mij hebben.
- Ik geef hieronder aan waar ik toestemming voor geef.

Toestemming voor deelname aan het onderzoek:

Ja, ik geef toestemming voor deelname; deze toestemming loopt tot 31-08-2023

Nee, ik geef geen toestemming voor deelname

Toestemming voor de verwerking van mijn persoonsgegevens:

Ja, ik geef toestemming voor de verwerking van mijn persoonsgegevens zoals vermeld in de onderzoeksinformatie. Als ik besluit om te stoppen met deelname, kan ik hierom vragen.

Nee, ik geef geen toestemming voor de verwerking van mijn persoonsgegevens.

Bent u ouder dan 18 jaar?

Ja

Nee

Doet u tenminste één keer per week boodschappen?

Ja

Nee

U heeft recht op een kopie van dit toestemmingsformulier.

Appendix C

Webshop on PC (The Five Different Versions) and Links to the Webshop

Figure 1

Neutral condition on PC

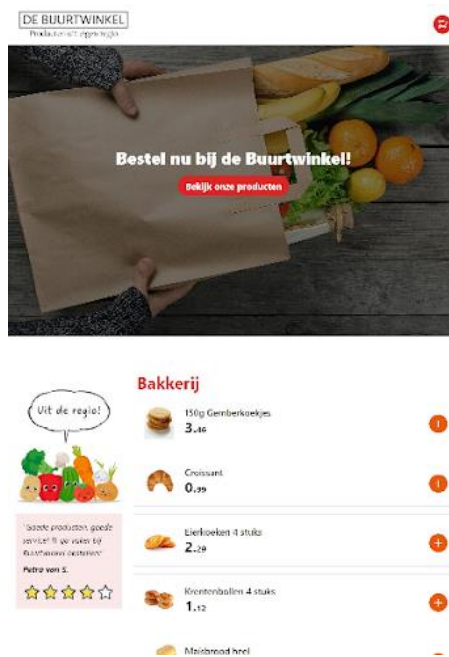


Figure 2

Biospheric condition on PC



Figure 3

Altruistic condition on PC

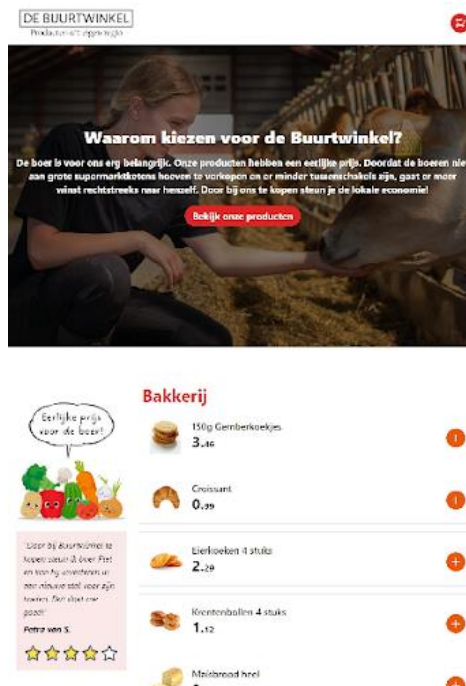


Figure 4

Egoistic condition on PC

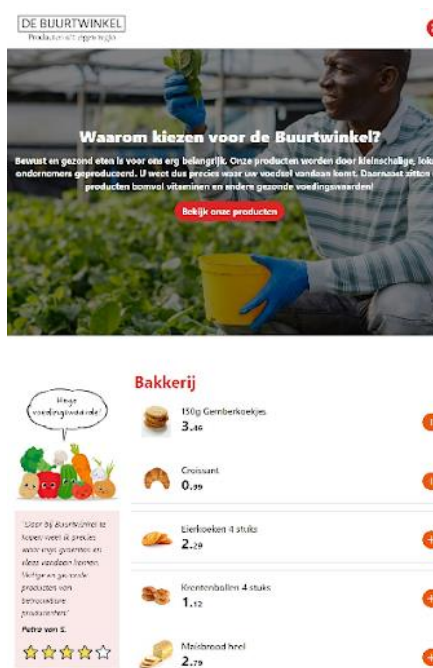


Figure 5

Hedonic condition on PC



Links to the actual webshops:

[Control condition](#)

[Biospheric condition](#)

[Altruistic condition](#)

[Egoistic condition](#)

[Hedonic condition](#)

Appendix D

Webshop on Phone

Figure 6

Egoistic condition on phone



Appendix E

Manipulation Check

Als bedrijf willen wij graag onze belangrijkste waarden benadrukken op onze webshop. Kunt u aangeven welke voordelen van het kopen van lokale producten het sterkst naar voren komen op de webshop?

- Vers / hoge kwaliteit / snel bezorgd
- Gezondheid / veiligheid / kleinschaligheid
- Klimaatvriendelijkheid / lage uitstoot
- Eerlijke prijs voor de boer
- Geen / niet duidelijk

Appendix F

Price Premium Scale Instructions and Example Question

Nu volgen nog een paar vragen over uw betalingsbereidheid voor de lokale producten, om de beste prijs voor de producten op de webshop te kunnen bepalen. Dit is het laatste onderdeel van deze vragenlijst.

Hieronder staat een aantal producten met supermarktprijs in euro's. Deze supermarktprijs is gebaseerd op de gemiddelde prijs voor dit type producten van het huismerk van de meest bezochte Nederlandse supermarkten.

Geef aan hoeveel u bereid zou zijn om te betalen als dit product lokaal zou zijn. Als u bereid bent twee keer zoveel te betalen dan de supermarktprijs, verplaatst u de slider helemaal naar rechts. Als u bereid bent niet meer te betalen dan de supermarktprijs, laat u de slider staan. U kunt geen prijs aangeven die lager is dan de supermarktprijs.

Als u wegens dieetwensen of allergieën het product niet zou kopen, kies dan de optie "Ik zou dit nooit kopen".

Voorbeeld: De supermarktprijs van een komkommer is €1,-. U bent bereid hier ongeveer 50% extra voor te betalen als de komkommer lokaal geproduceerd zou zijn. U verplaatst de slider naar ongeveer het midden: €1,50.

Figure 7

First question of the Price Premium scale



Gele uien, 1 kg

1.79

2.15

2.51

2.86

3.22

3.58

Supermarktprijs: €1.79

Ik zou dit product nooit kopen.

1.79



Appendix G

Debriefing

Bedankt voor uw deelname aan dit onderzoek.

Het doel van dit onderzoek was om te zien of het benadrukken van bepaalde waarden in een webshop uw bereidheid om te betalen voor verschillende lokale producten beïnvloedde. Deze waarden zijn: biosferisch (belang hechten aan kwaliteit van natuur en omgeving), altruïstisch (belang hechten aan het welzijn van anderen), egoïstisch (belang hechten aan het verminderen van kosten en vergroten van baten voor uzelf) en hedonistisch (belang hechten aan eigen inspanning verminderen en eigen plezier vergroten). U bent willekeurig in een van de experimentele condities ingedeeld waarin één van deze waarden werd benadrukt op de webshop door middel van labels, plaatjes, tekst en klantenbeoordelingen. Dit is aan het begin van dit experiment niet volledig aan u duidelijk gemaakt, omdat anders uw antwoorden beïnvloed konden worden.

Mocht u nog vragen hebben over het onderzoek, neem dan contact op via f.b.van.rijn@student.rug.nl. Als u psychisch last heeft vanwege uw deelname aan deze studie, neem dan contact op met uw huisarts.

Appendix H

Distribution of Failed Manipulation Checks per Experimental Condition

Table 6

Number of participants per group that passed and failed the manipulation check

Groups	<i>Pass</i>	<i>Fail</i>	<i>% Fail</i>
Control group	28	25	47.2
Biospheric group	36	16	30.8
Altruistic group	35	10	22.2
Egoistic group	32	23	41.8
Hedonic group	43	13	23.2
Full sample	174	87	33.3

Note. $N = 261$.

Appendix I

Distributions Price Premium Scale

Figure 8

Distribution Transformed Total PP

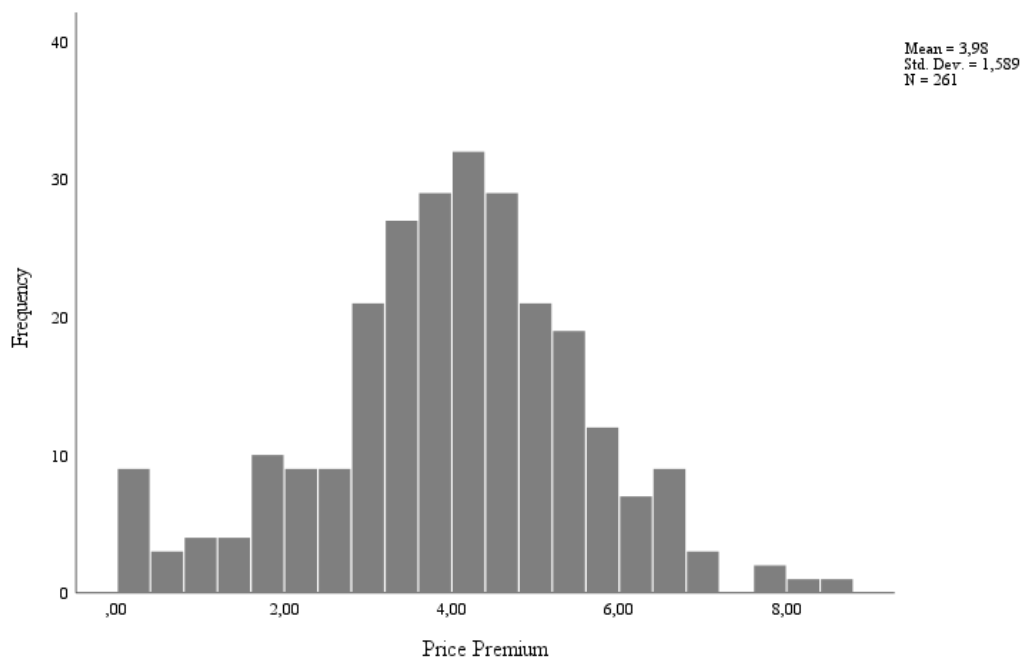


Figure 9

QQ-plot Transformed Total PP

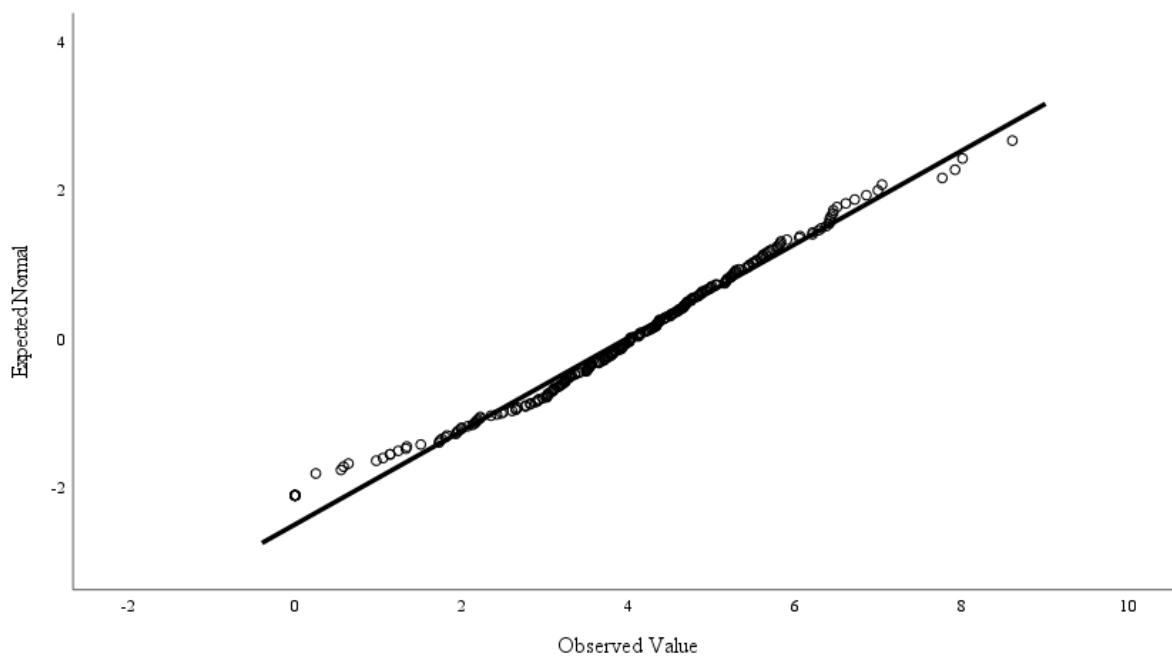


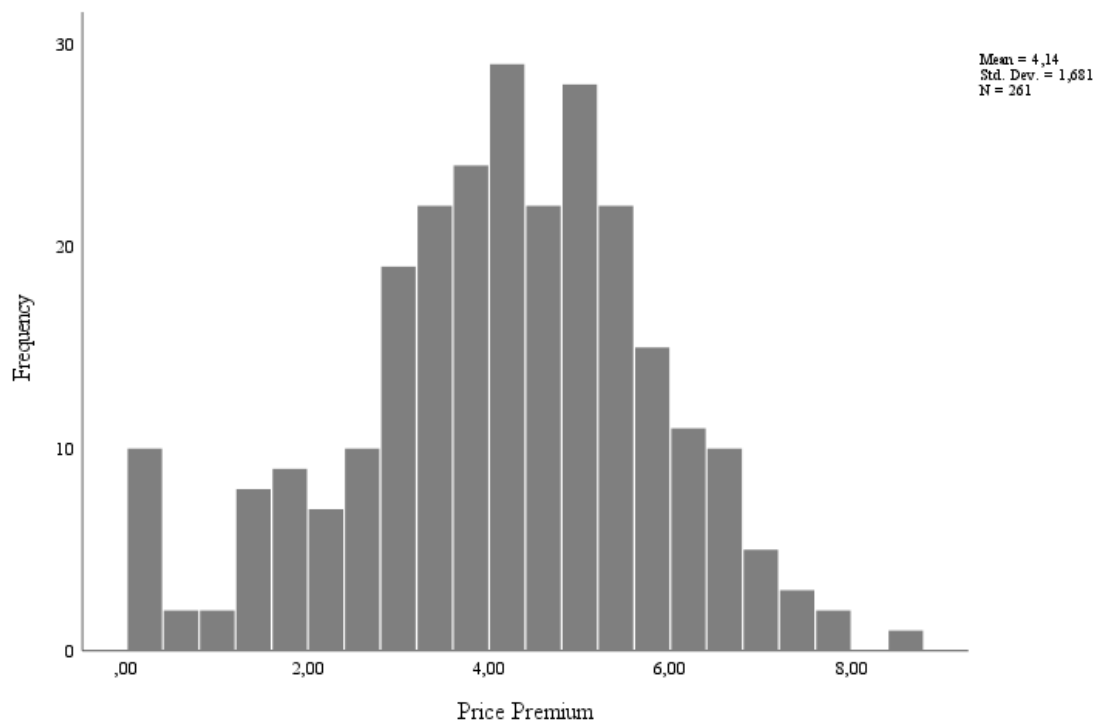
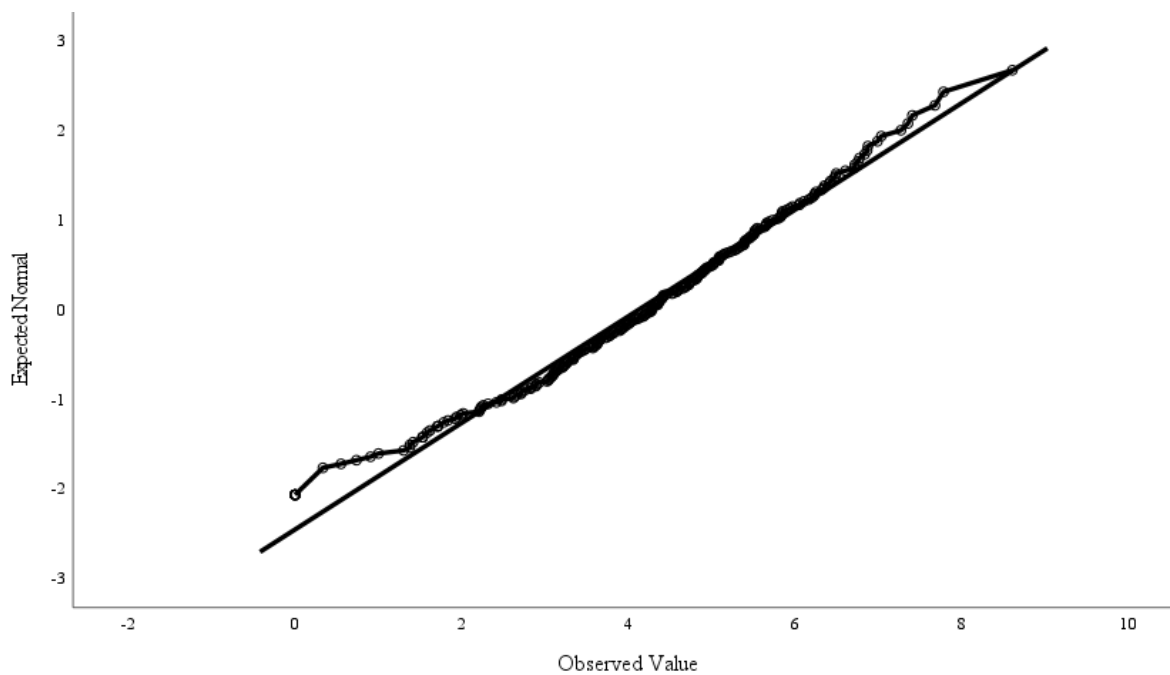
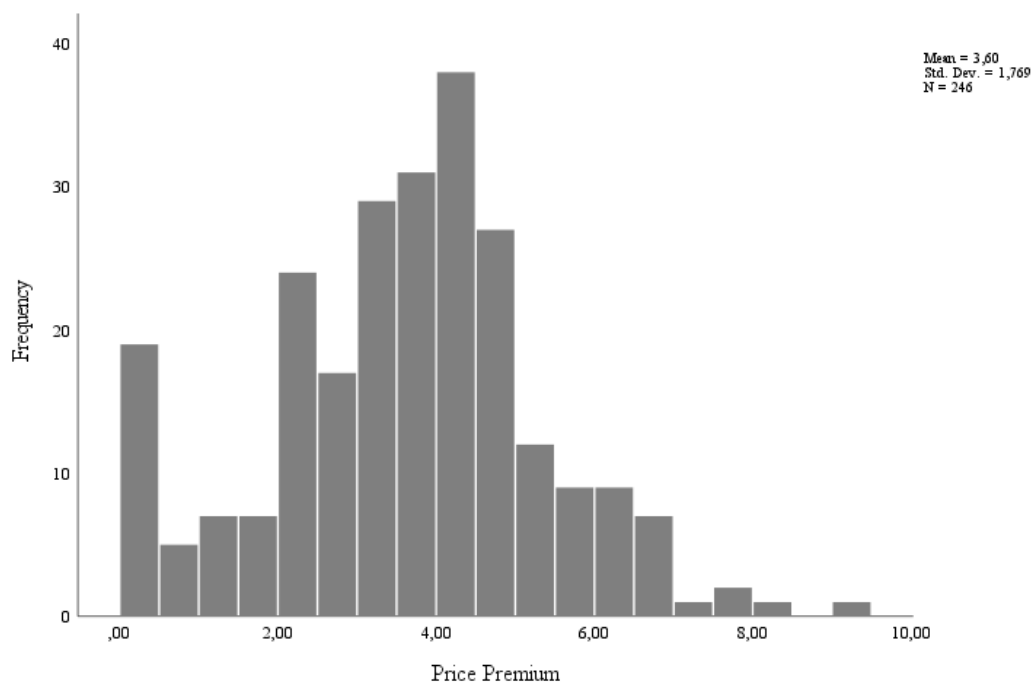
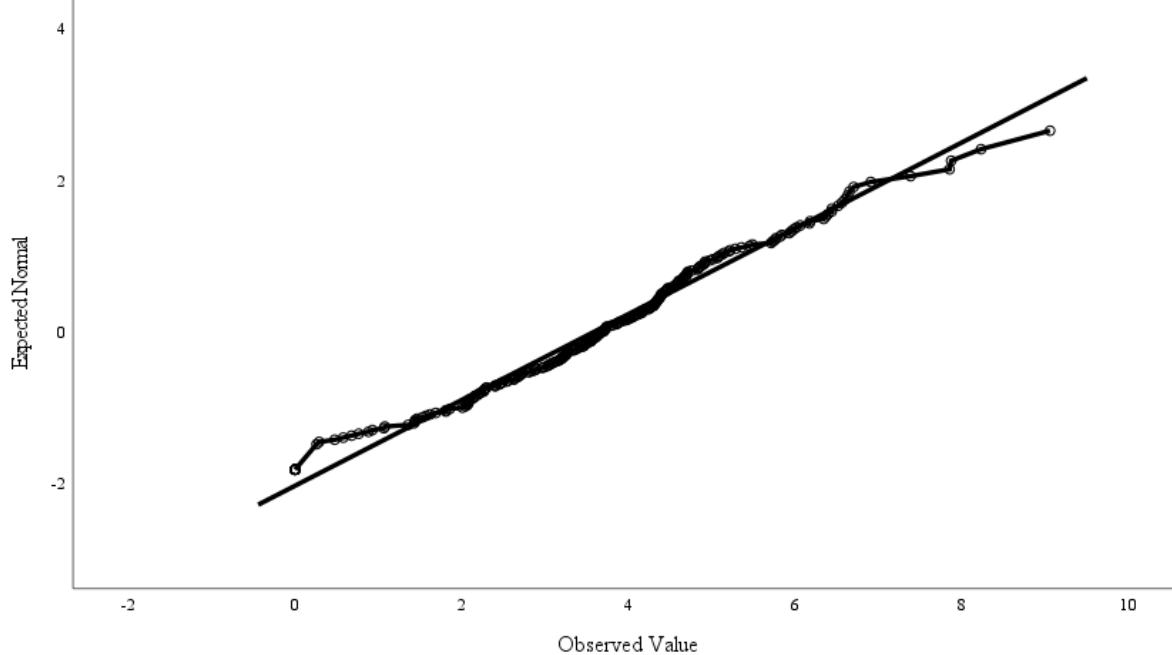
Figure 10*Distribution Transformed Plant PP***Figure 11***QQ-plot Transformed Plant PP*

Figure 12*Distribution Transformed Animal PP***Figure 13***QQ-Plot Transformed Animal PP*

Normal Q-Q Plot of Square_Root_PP_Animal



Appendix J

Table 7

Results of Shapiro-Wilk Test for Each Level of the Independent Variable on the Transformed Dependent Variables

Groups	Statistic	<i>df</i>	<i>p</i>
Transformed total PP			
Biospheric group	.988	46	.904
Altruistic group	.931	43	.012
Egoistic group	.981	53	.546
Hedonic group	.987	54	.824
Control group	.920	50	.002
Transformed plant PP			
Biospheric group	.990	46	.958
Altruistic group	.945	43	.040
Egoistic group	.972	53	.257
Hedonic group	.992	54	.982
Control group	.955	50	.057
Transformed animal PP			
Biospheric group	.978	46	.523
Altruistic group	.941	43	.028
Egoistic group	.983	53	.663
Hedonic group	.971	54	.205
Control group	.896	50	.000

Note. $N = 261$.

Appendix K

Mean Total PP per Dietary Preference

Table 8

Mean Total PP per Dietary Preference

Dietary Preference	<i>n</i>	<i>M</i>	<i>SD</i>
Vegan	9	22.5	25.5
Vegetarian	39	23.6	10.3
<1 time*	21	18.6	15.3
1-2 times*	68	15.8	10.4
> 2 times*	119	18.1	12.2
Other	5	11.5	2.5
Total	261	18.4	12.5

Note. *The amount of times per week meat is consumed by the participant.

Appendix L

Mean Price Premium per Product Type

Table 9

Number of cases, mean and standard deviation per product type

Products	<i>n</i>	<i>M</i> *	<i>SD</i> *	<i>M</i> **	<i>SD</i> **
Plant Products	261	19.93	13.44	0.40	0.27
Apples	253	23.80	18.39	0.43	0.33
Onions	251	19.98	15.75	0.36	0.28
Potatoes	236	21.03	18.25	0.39	0.34
Tomatoes	245	18.16	16.20	0.40	0.35
Bread	237	17.28	14.23	0.43	0.35
Animal Products	246	16.05	13.26	0.76	0.72
Milk	210	22.51	17.58	0.33	0.25
Eggs	224	11.49	15.17	0.46	0.61
Cheese	205	15.07	15.46	1.38	1.41
Chicken Breast	179	13.59	15.85	0.81	0.95
Minced Meat***	152	17.91	18.31	0.89	0.91

Note. *N* = 261. *mean percentage that participants are willing to pay on top of supermarket price.

**mean price in euros that participants are willing to pay on top of supermarket price

***consisting of pork and beef.