



Short Communication

Shopping for a sustainable future: Two case studies on consumer perception of organic cotton and wine

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ABSTRACT

Grape and cotton are agricultural products with high pesticide usage. With an eye towards sustainability, regions are looking towards organic farming to protect soil health. However, given the higher prices associated with organic products, it is crucial to understand consumer attitudes and perception towards such products in order to shift consumer behaviour.

To this end, we conducted two sets of studies focusing on organic cotton (in the form of stuffed toys) and wine (Chianti DOCG). For both products, two studies were carried out using (unknown to the participants) identical samples. In Study 1, participants were told which of the two products was “organic” and which was “conventional”. Liking, willingness to pay (WTP), and evaluation of product properties (textural or flavour pleasantness for cotton and wine, respectively) were then collected. In Study 2, participants were only told which product was organic only after they had made their initial preference decision. They then evaluated product properties and WTP. For stuffed toys, all consumers (N = 59) were willing to pay more for the organic toy, even though only consumers with high tendency to buy organic products found it more pleasant to touch. Furthermore, consumers (N = 33) were willing to pay more for the organic toy regardless of their original preference. For wine, consumers (N = 128) were also willing to pay more for the “organic” wine, but only if they had high tendency to buy organic products. Moreover, consumers (N = 57) were only willing to pay more for organic wine if they had preferred it initially.

Overall, this work highlights that consumers are willing to pay more for organic products; however, this stems from concern for environmental sustainability in the case of cotton, but from taste preference in the case of wine. Moreover, organic labelling led to a more positive perceptual evaluation of cotton toys, while this halo effect did not carry over to wine.

1. Introduction

Organic farming is an agricultural system whose goal is to produce healthy and sustainable products through farming practices based on ecosystem management, integrated cropping and livestock systems, diversity of products, reliance on natural pest and disease control without conventional agrochemical-based pesticide treatments (Azadi et al., 2011). Owing to growing interest and consumer demand for healthy and environmentally sustainable products, consumer perception of organic products has received significant attention in the literature.

While evidence of actual benefits of organic farming is mixed, including its sustainability viz-a-vis that of conventional farming (e.g., Suci, Ferrari, & Trevisan, 2019), consumers have consistently shown to

hold favourable views towards organic products (e.g., Sörqvist et al., 2015). Previous research has shown, for example, that consumers view organic food products as being more environmentally friendly (e.g., Mamouni et al., 2016), healthier (e.g., Apaolaza, Hartmann, Echebarria, & Barrutia, 2017), and more nutritious (e.g., Bourn & Prescott, 2002) than their conventional counterparts.

Attitudes and beliefs (e.g., environmental concerns and perceived sustainability), can also influence the perceptual experience (Piqueras-Fiszman & Spence, 2015). Accordingly, several studies have reported that food and beverages labelled as organic tend to be liked more and/or rated as more flavourful than identical but unlabelled products (e.g., Apaolaza et al., 2017; Caporale & Monteleone, 2004; Lee, Shimizu, Kniffin, & Wansink, 2013; Sörqvist et al., 2013; Wiedmann, Hennigs,

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Henrik Behrens, & Klarmann, 2014). Organic labelling, in other words, can produce a “halo effect” in the same way that consumers like products better if they think they are expensive and/or come from certain brands (Linder et al., 2010; Plassmann, O’Doherty, Shiv, & Rangel, 2008). It is not clear, however, that all results in the literature align well with this notion. For example, Schuldt and Hannahan (2013) reported the opposite effect (organic being rated liked less), possibly explained by a believed taste/healthy trade-off. Laureati, Jabes, Russo, & Pagliarini, 2013 found that the positive halo effect may only work on certain consumers, specifically those with high interest in sustainability. Thus, as concluded in a prominent review on the topic (Piqueras-Fiszman, & Spence, 2015), more research is still needed to fully understand the effects of organic labelling.

For one, inconsistencies in the literature suggest that the effect of organic labelling on the perceptual experience may be product-dependent. Since most of existing research comes from the food domain, a related question is whether the perceptual halo from organic labelling extends food to non-food agricultural products (e.g., textiles), whose product experience is defined by other sensory modalities than taste and flavour. Another open question pertains to how (which) individual differences are relevant to explaining organic halo effects. In theory, for (organic) labelling to exert a positive effect on the perceptual experience, it is necessary that the consumers endorse the value that the label symbolizes (cf. Allen, Gupta, & Monnier, 2008). Therefore, individuals with pro-environment attitudes and with stronger beliefs about the benefits of organic farming (e.g. high sustainability consumers) should be more likely affected by the halo effect of organic labelling, a theory that has received support in at least two studies on yoghurt (Laureati et al., 2013) and cookies (Schuldt & Schwarz, 2010), but failed to replicate in other product categories (Apaolaza et al., 2017; Lee et al., 2013). Moreover, different consumers may have different reasoning behind their preference for organic products. In the case of coffee, for instance, high sustainability consumers base their willingness to pay a premium on environmental concerns, whereas low sustainability consumers are driven by taste preference (Sörqvist et al., 2013). Moreover, there may potentially be differences in consumer attitudes whether the organic products are produced in the same country or imported; by purchasing local organic products, consumers are protecting the soil health of their own country, whereas purchasing imported organic products (such as coffee for Europe-based consumers) would be protecting the soil health in the country of production.

Situated within this context, this short communication addresses the following two research questions (RQs): Does organic labelling lead to differences in sensory perception and willingness-to-pay for food and non-food products? (RQ1). If so, does the effect depend on whether consumers ascribe positive attributes to organic products? (RQ2).

To address them, we conducted two sets of studies focusing on organic cotton (in the form of stuffed toys) and wine (Chianti DOCG). The inclusion of two separate studies was motivated by increasing the generalizability of the findings, and the two specific product categories were chosen to represent different sensory modalities (vision and touch for cotton toys, versus the chemical senses for wine) and motivation (utilitarian for toys, hedonic for wine) during the product experience. Moreover, our study is novel in that there is a dearth of research considering consumer perception of organic cotton. On the other hand, organic labelling in wine has shown a halo effect, whereby the identical wine receives a more positive sensory evaluation and higher willingness to pay in New Zealand (Forbes, Cohen, Cullen, Wratten, & Fountain, 2009), Germany (Gassler, Fronzeck, & Spiller, 2019; Wiedmann et al., 2014) and Spanish (Apaolaza et al., 2017) consumers as well as with American wine critics (Delmas et al., 2016). That said, the Danish market presents a novel context as both cotton and wine are, for all intents and purposes, imported products for Danish consumers. In addition, both grape and cotton are agricultural products with high pesticide usage (Ferrigno et al., 2017; Mailly et al., 2017), as well as major commodities, thus a better understanding of consumer perception

towards these imported product categories is also consequential from a practical perspective.

2. Method

2.1. Participants and design

A convenience sample of 224 Danish participants were recruited for four separate studies (see Table 1). Participants for Study 1A and 2A were recruited at a local zoo in autumn 2019, participants for Study 1B were recruited at a food festival in autumn 2019, and participants for study 2B were recruited at a workplace canteen in autumn 2020. All participants gave their informed consent in writing before the study took place. In Study 1, participants were asked to evaluate two cotton toys (1A) or wine samples (1B). Participants were instructed that one product was as organic whereas the other as conventionally produced/farmed. Unbeknownst to the participants, both products were identical. In Study 2, participants were again given two (unbeknownst to them) identical products to evaluate, but were told which was organic only until after they had made their initial preference decision. The design of both studies thus included one within-participant factor (claim: organic vs. conventional); Study 2 additionally included one between-participant factor (preference: organic preference vs. conventional preference).

2.2. Product category selection

In studies 1A and 2A, a toy elephant (20 cm in height) produced from certified organic cotton was selected among the product portfolio of a partner company (Nature Planet ApS, Middelfart, Denmark) specializing in quality toys and accessories for zoos, aquariums, museums and family parks. At the time the study was conducted (fall 2019) the company only produced toys from polymer-based fabrics, with their organic cotton line being introduced to market shortly thereafter (2020).

In both Study 1B and 2B, we selected a red wine from the Chianti Classico DOCG (guaranteed and controlled denomination of origin) in the region of Tuscany in Italy. Due to its warm and dry climate, Tuscany is ideal for organic viticulture (Fielden, 2009). Moreover, most Danish consumers are familiar with the region, with Italy being the leading supplier of wine to Denmark by value (Eurostat, 2020). In Study 1B, we used Castello di Querceto Chianti Classico 2015. We were unable to access the same wine for study 2B, but instead used La Misse di Candialle Chianti Classico 2015 to match the vintage and region of origin. Each wine sample contained 25 mL and was served in 21.5 cl ISO glasses.

2.3. Procedure

2.3.1. Study 1

Participants received two products (Study 1A: cotton toy, Study 1B: wine) in random order. One product was labelled as organic and the other conventional. This information was either verbally relayed by the experimenter (Study 1A) or presented on an iPad running a questionnaire programmed in Qualtrics (Study 1B). Participants evaluated each product in terms of their preference, attribute pleasantness (texture in Study 1A, flavour in Study 1B), and willingness to pay (WTP). Attribute pleasantness was measured on a 1–7 scale from 1 = “not very pleasant” to 7 = “very pleasant”. For study 1A, WTP was anchored by a reference price of 200 DKK, corresponding to the average price of cotton toys in

Table 1
Demographic information of participants.

	Product	N	% Female	Mean Age (SD)
Study 1A	Toy	59	61%	50 (14)
Study 1B	Wine	75	51%	37 (14)
Study 2A	Toy	33	49%	42 (14)
Study 2B	Wine	57	35%	41 (14)

that size from the producer. For study 1B, WTP was anchored by the statement “the average price of a bottle of red wine from Tuscany is about 100 kr”. Finally, participants were asked to respond to the following questions as a measure of their organic purchasing attitude (adopted from Sörqvist et al., 2013). “How often do you buy organic products?”, “How important is it to you to buy organic alternatives?” and “Do you feel guilty when you buy non-organic alternatives?”. Responses from these three questions were averaged to create an index of organic product purchase tendency ($\alpha = 0.78$), and participants were classified as high- or low- organic tendency based on a median split of the index value. Data collection was carried out with a paper questionnaire (Study 1A) or iPad (Study 1B).

2.3.2. Study 2

The procedure was identical to Study 1, with the exception that participants first indicated which product they preferred. Then, half the participants were randomly assigned to the “organic-preference” condition, where they were told that their preferred product was organic. The other half were in the “conventional-preference” condition, where they were told that their preferred product was conventional. Participants then evaluated both the products in the same way as in Study 1, and organic product purchase tendency was once again calculated ($\alpha = 0.84$).

3. Results

3.1. Study 1

3.1.1. Product preference

For cotton, 71% participants ($N = 59$) preferred the organic labelled toy, 10% preferred the conventional label, and 19% did not have a preference. For wine, while 39% of participants ($N = 75$) preferred the organic labelled wine, 40% preferred the conventional label, and 21% did not have a preference. There were no differences between low- and high- organic tendency participants when it came to preference for cotton toy ($\chi^2 = 3.72$, $p = .155$) or for wine ($\chi^2 = 2.19$, $p = .335$).

3.1.2. Attribute pleasantness

For cotton products (Fig. 1A), a repeated measured ANOVA with label (organic vs. conventional) as within-participant factor and organic

tendency (low vs. high) as between-participant factor revealed no significant main effect of organic tendency ($F(1,57) = 0.63$, $p = .429$, $\eta_p^2 = 0.01$), but a significant main effect of label ($F(1,57) = 10.03$, $p = .002$, $\eta_p^2 = 0.15$), which was driven by a significant interaction effect between label and organic tendency ($F(1,57) = 9.12$, $p = .004$, $\eta_p^2 = 0.14$). Specifically, the high organic tendency consumers perceived the organic toy as more pleasant to the touch compared to the conventional toy ($M_{\text{organic}} = 6.14$ (SE = 0.22), $M_{\text{conventional}} = 4.79$ (SE = 0.29), $p < .005$). In contrast, when it comes to wine (Fig. 1B), there were no differences in flavour pleasantness of wines in terms of label ($F(1,73) = 0.14$, $p = .705$, $\eta_p^2 = 0.002$), organic tendency ($F(1,73) = 1.78$, $p = .185$, $\eta_p^2 = 0.02$), or interactions ($F(1,73) = 0.88$, $p = .352$, $\eta_p^2 = 0.01$).

3.1.3. Willingness to pay

For cotton (Fig. 1A), a similar ANOVA analysis revealed a significant main effect of label ($F(1,57) = 36.13$, $p < .005$, $\eta_p^2 = 0.39$), where participants were always willing to pay more for organic cotton ($M_{\text{organic}} = 183$ DKK (SE = 6.96), $M_{\text{conventional}} = 143$ DKK (SE = 6.09), $p < .005$); there were no main effect of organic tendency ($F(1,57) = 1.28$, $p = .263$, $\eta_p^2 = 0.02$) or interactions ($F(1,57) = 3.63$, $p = .062$, $\eta_p^2 = 0.06$). When it comes to wine (Fig. 1B), there were no main effects of label ($F(1,73) = 1.30$, $p = .258$, $\eta_p^2 = 0.02$) or organic tendency ($F(1,73) = 0.24$, $p = .627$, $\eta_p^2 = 0.003$), but there was a significant interaction effect ($F(1,73) = 6.29$, $p = .014$, $\eta_p^2 = 0.08$) where only high organic tendency participants were willing to pay more for organic wine ($M_{\text{organic}} = 104$ DKK (SE = 5.23), $M_{\text{conventional}} = 94$ DKK (SE = 4.43), $p = .015$).

3.2. Study 2

3.2.1. Attribute pleasantness

For cotton (Fig. 2A), a repeated measured ANOVA with label (organic vs. conventional) as within-participant factor, and preference condition (organic-preference vs. conventional-preference) and organic tendency (low vs. high) as between-participant factors revealed no significant main effects of any factors (label condition, $F(1,29) = 0.73$, $p = .399$, $\eta_p^2 = 0.025$; preference condition, $F(1,29) = 1.85$, $p = .184$, $\eta_p^2 = 0.06$; organic tendency, $F(1,29) = 4.02$, $p = .055$, $\eta_p^2 = 0.12$) nor any interaction effects. In contrast, results from wine (Fig. 2B) validated the experimental manipulation whereby participants in the organic



Fig. 1. Mean results from Study 1 for (A) cotton and (B) wine. Error bars indicate standard errors of the mean. Asterisks * indicate significant differences at $p < .05$ (Bonferroni-corrected post-hoc pairwise comparisons).

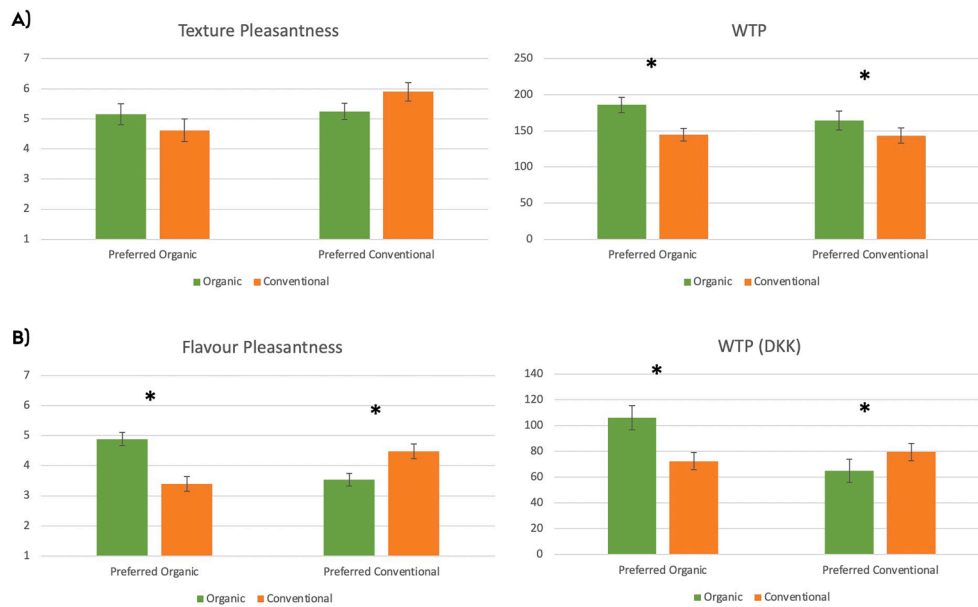


Fig. 2. Mean results from Experiment 2 for (A) cotton and (B) wine. Error bars indicate standard errors of the mean. Asterisks * indicate significant differences at $p < .05$ (Bonferroni-corrected post-hoc pairwise comparisons).

(conventional)-preference condition rated the organic(conventional) wine as tasting better ($F(1,53) = 52.74, p < .005, \eta_p^2 = 0.50$). There were otherwise no significant main effect of label ($F(1,53) = 2.85, p = .097, \eta_p^2 = 0.051$), preference condition ($F(1,53) = 0.17, p = .680, \eta_p^2 = 0.003$), or organic tendency ($F(1,53) = 2.59, p = .111, \eta_p^2 = 0.013$).

3.2.2. Willingness to pay

For cotton (Fig. 2A), a similar ANOVA analysis revealed a main effect of label ($F(1,29) = 15.48, p < .005, \eta_p^2 = 0.35$), where participants were always willing to pay more for organic cotton, regardless of their initial preference ($M_{\text{organic}} = 175 \text{ DKK (SE = 8.39)}$, $M_{\text{conventional}} = 144 \text{ DKK (SE = 6.85)}$, $p < .005$). There were no significant main effect of preference condition ($F(1,29) = 1.26, p = .271, \eta_p^2 = 0.042$), organic tendency ($F(1,29) = 0.87, p = .358, \eta_p^2 = 0.019$), or any interaction effects. For wine (Fig. 2B), there was no significant main effect of preference condition ($F(1,55) = 2.70, p = .106, \eta_p^2 = 0.05$), but there was a significant main effect of label ($F(1,53) = 4.76, p = .034, \eta_p^2 = 0.082$), driven by the significant interaction effect ($F(1,53) = 29.51, p < .005, \eta_p^2 = 0.36$) where participants in the organic-preference condition were willing to pay more for the organic wine ($M_{\text{organic}} = 106 \text{ DKK (SE = 9.24)}$, $M_{\text{conventional}} = 72 \text{ DKK (SE = 6.80)}$, $p < .005$), and those in the conventional-preference condition were willing to pay more for the conventional wine ($M_{\text{organic}} = 65 \text{ DKK (SE = 9.07)}$, $M_{\text{conventional}} = 80 \text{ DKK (SE = 6.68)}$, $p = .028$). There were no significant main effect of organic tendency ($F(1,53) = 1.04, p = .313, \eta_p^2 = 0.019$) or any related interaction effects.

4. Discussion

Overall, the studies above revealed differences in consumer attitudes towards organic cotton versus wine products. To address our initial research questions, organic labelling did lead to differences in sensory perception and willingness-to-pay (RQ1), but this effect also depended on consumer attitude towards organic products (RQ2). Study 1 revealed that, whereas all consumers were willing to pay more for the cotton toy when it was labelled organic, only high-organic tendency consumers were willing to pay more for the organic-labelled wine. Moreover, Study 2 demonstrated that product preference was necessary to promote higher willingness to pay for wine, but not necessary for cotton toys. Put together, it appears that organic cotton is a product that resonates amongst Danish consumers, such as even those who do not necessarily

find it more pleasant to the touch (Experiment 1, Fig. 1A), or prefer it initially (Experiment 2, Fig. 2A), are willing to pay more for it. In contrast, organic labelling does not have as much of a halo effect when it comes to wine, so that people are only willing to pay more for organic wine if they like how it tastes. This is in contrast to prior studies (Forbes et al., 2009; Wiedmann et al., 2012; Apaolaza et al., 2017; Gassler et al., 2019) showing that organic labelling does have a halo effect for wine. This could be due to differences in the level of wine familiarity, since all previous studies have been conducted in wine-producing countries (e.g. Germany, Spain, New Zealand), where consumers have, in general, a higher level of wine knowledge. Another reason could be due to differences in the local market, as there already exists a premium for alcohol in Scandinavian countries, therefore it might be difficult for organic labelling to further influence willingness to pay.

From a practical perspective, the finding of a positive halo effect that organic labeling on hedonic evaluation of cotton and on willingness to pay of both cotton toys and wine has significant implications for marketers of these products. In the case of cotton, organic labeling seems to tap into expectations of a better sensory experience for high organic tendency consumers, so marketing efforts could be appealing to these expectations by highlighting the texture of organic cotton. For low organic tendency participants, the organic halo effect could nevertheless appeal to a concern for environmental sustainability, which may be especially salient as the product in this case (cotton toys) are meant to be used for their children. In the case of wine, it is likely that organic labeling generates expectations of sustainability and environmental impact (recall that only consumers with high organic tendency were willing to pay a premium for organic in Study 1B), so our findings suggest the use of communicational claims that highlight these advantages with respect to organic winegrape growing. That said, it should be kept in mind that wine drinking is, after all, predominantly associated with sensory pleasure (Charters & Pettigrew, 2005), and as observed in the current paper, people were only willing to pay more for organic wines if they liked the taste. Therefore, organic labeling for wine should be combined with other positive messaging such as enjoyment or health.

The most important implication of our findings pertains not to marketing but consumer advocacy: since the findings show that consumer perception of identical products can be changed by simply adding calling it organic, there is an urgent need to deploy a credible sustainable labelling framework that covers organic in synergy with other

relevant aspects such as the actual nutritional, climate, environmental and social aspects of agricultural products – as it is not obvious that organic products are superior to conventional in any of these aspects (e.g., Bourn & Prescott, 2002). Moreover, such a framework could greatly reduce consumer confusion, since current labelling practices often cast a wide halo effect over the entire product when the certification itself is actually limited in scope. For instance, organic wine certification only relates to grape growing practices, and does not involve the winemaking process (Fielden, 2009). On the other hand, labels like “fair trade” deal only with economic implications. End user confusion over such a growing number of limited-scope sustainability labels could help explain the variability in consumer research findings, and the introduction of an all-encompassing sustainability label would therefore better align consumer expectations with the actual production ecosystem.

In closing, we acknowledge some important limitations that can be productively addressed in follow-up research. First, all studies employed a limited sample size, and it is therefore not possible to exclude that some results to be non-significant (in particular the expected interaction between wine pleasantness and organic tendency) may in fact turn out to be significant with a larger sample size. Besides the issue of power, larger sample sizes are advised in future research to further explore individual differences. This could involve, among other things, segmenting consumers in terms of expertise and sensory acuity which are known to affect wine perception (Spence & Wang, 2019) and may make consumers more or less susceptible to the organic halo and other perceptual biases. In a similar vein, preference for the extraction and use of product haptic information, as measured through e.g., the need for touch scale (Peck & Childers, 2003), seems a promising direction in the case of cotton products. In addition, as the cotton studies (1A, 2A) and wine studies (1B, 2B) were carried out in different locations by different researchers using different data collection methods (paper questionnaire vs. iPad), this could have impacted the results of the study. In the future, studies could be designed to ask the same consumer to assess multiple products in the same setting, in order to elucidate differences in attitude towards different organic labelled products.

The other main limitation is that while our studies only considered one specific example of toy/wine, variation *within* these product categories is likely to exist. For example, it is likely that consumers' responsiveness to organic labelling in cotton products would depend on the overall size of the product (with larger products making the issue of sustainability and resource use more important to consumers), the type of interaction and length of dermal exposure, etc. (the “organic” halo may be bigger in a product that one is going to wear for a long time, e.g. shirts, tampons, panty liners, and less so in products such as cotton buds, pads, pouches etc. where material properties may not be as salient). Likewise in wine, price range may be an issue as consumers may be more comparatively responsive to organic information in high-end wines (like the one used in this research), where they are already willing to pay a premium. Therefore, additional research with more variants within each of these two product categories is warranted to understand the boundary conditions for the effects reported in our study.

CRediT authorship contribution statement

Qian Janice Wang: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing. **Julie Dalsgard:** Conceptualization, Methodology, Investigation, Writing – review & editing. **Davide Giacalone:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

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