

Research Report: Do Consumer Beliefs Impact Their Preferences for Organic Specialty Baked Goods?

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Abstract

Past studies found that organic labels may influence consumer taste perceptions either positively or negatively, and the latter may be an issue for products consumed for pleasure. We compared taste beliefs associated with organic and conventional specialty baked goods and conducted choice experiments to examine the impact of taste beliefs on choice. Results show that respondents feel organic specialty baked goods taste worse than conventional, which impacts their willingness to pay. Offering product taste information reduced the negative impact of taste beliefs. Providing organic labeling information did not eliminate negative taste associations but did reduce the impact of taste beliefs on choice.

Keywords: baked goods, choice experiment, organic, taste information, taste beliefs, willingness to pay

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Introduction

Past studies found that organic labels may affect consumer taste perceptions and ratings, regardless of whether the consumer has tasted the product or not. For some products, the organic label induced positive taste associations, possibly related to the organic halo effect (Apaolaza et al., 2017). However, in other cases organic-labeled products were perceived to have inferior taste, particularly for those products where good taste is typically more important than healthiness (Van Doorn and Verhoef, 2011; Ellison et al., 2016; Nadricka, Millet, and Verlegh, 2020).

Taste is one of the most important attributes for bakery/pastry products (Sajdakowska et al., 2019; Drugova, Curtis, and Akhundjanov, 2020; Kuhar et al., 2020) and likely even more so for specialty baked goods, which are consumed as treats and/or for special occasions. In general, consumers have high-quality expectations for specialty baked goods, but they are also willing to pay more for them. Thus, specialty baked goods have the potential to absorb the higher cost of organic wheat flour. However, the organic label may induce negative taste connotations for these products, negatively impacting consumer demand and willingness to pay. Thus, the first objective of this study is to examine and compare respondent taste ratings for selected organic and conventional specialty baked goods. Second, we examine consumer preferences and willingness to pay for these products, focusing on the effect of elicited (*subjective*) taste beliefs and provided (*objective*) taste information. Finally, we examine the impact of organic label knowledge on the taste beliefs and preferences for organic products.

Literature Review

Not surprisingly, past studies found differences in taste ratings between organic and conventional products under “blind” tasting scenarios (Hemmerling et al., 2013; Bi et al., 2015; Teuber, Dolgoplova, and Nordström, 2016). The taste of organic foods was rated higher in some studies (Annett et al., 2008; Costanigro et al., 2014) and inferior in others (Hemmerling et al., 2013; Bi et al., 2015; Teuber, Dolgoplova, and Nordström, 2016). However, when consumers are given information indicating the product was made using organic methods or ingredients, their taste ratings may improve significantly in comparison to conventional products (Hemmerling et al., 2013; Teuber, Dolgoplova, and Nordström, 2016). Interestingly, past studies also found differences in taste ratings between organic products and the same but unlabeled organic products following product tasting (Lee et al., 2013; Apaolaza et al., 2017; Bernard and Liu, 2017; Schouteten, Gellynck, and Slabbinck, 2019), as well as changes in taste ratings of organic products after the organic label was revealed (Napolitano et al., 2013; Teuber, Dolgoplova, and Nordström, 2016; Gross, Waldrop, and Roosen, 2021). These studies provide evidence that organic labeling may indeed influence consumer taste perceptions and that taste ratings are more dependent on the labeling information than on actual product sensory properties. In this study, we examine the impact of organic labelling on taste ratings for three selected specialty baked goods—bread loaf, croissant, and large cookies.

Food choice studies have begun to incorporate consumer beliefs about product attributes in utility functions (Malone and Lusk, 2017; Gross, Waldrop, and Roosen, 2021; Neuhofer and Lusk, 2021).

These studies found that beliefs, including taste beliefs, helped explain consumer choice and influenced WTP significantly. In the present study, we examine the impact of taste beliefs on choice in the context of specialty baked goods. We hypothesize that taste beliefs are influential in the choice of specialty baked goods because they are consumed for hedonistic purposes, so it is important to understand the effect of the taste beliefs to determine the success of these products. Specifically, we examine whether perceived taste ratings—either positive or negative—influence WTP for organic specialty baked goods.

Finally, several studies also provided information about organic production practices while investigating taste ratings of organic products (Napolitano et al., 2013; Gross, Waldrop, and Roosen, 2021). In these studies, the organic label—paired with information about organic production systems—positively impacted rating scores compared to those for the same products under a blind tasting scenario. However, it is not clear whether the rating scores were affected by the provided organic labelling information or by simply stating that the products were organic. The present study aims to explore this question using specialty baked goods.

Methods

Data for the study were collected through an online survey using Qualtrics in fall 2021. The survey included hypothetical choice experiments for three specialty baked goods—a bread loaf, croissant, and large cookie—and questions about taste beliefs after the choice experiments. The alternatives in the choice experiments varied in organic and local labels (present or absent), provided taste information (poor, fair, good, or unknown taste), and four price levels which were based on market prices in summer 2021. We employed efficient design with Bayesian priors to build the choice experiments. The final design contained 12 choice tasks per product, which were divided into two blocks. In total, each respondent evaluated 18 choice tasks. Further, we developed two versions of the survey, which differed in whether information about organic labeling standards was provided (before the choice experiments) or not, and respondents were randomly assigned to each. In total, we received 721 responses, of which 359 received information about organic labeling standards (treatment group), and 362 did not receive the information (control group).

We analyzed the data using a random parameter logit model. The utility function of respondent n associated with alternative i in choice scenario t for a given bakery product is specified as

$$U_{nit} = ASC_{n,NoBuy} + \beta_{price}Price_{nit} + \beta_{n,organic}Organic_{nit} + \beta_{n,local}Local_{nit} \quad (1) \\ + \beta_{n,poor}TastePoor_{nit} + \beta_{n,fair}TasteFair_{nit} + \beta_{n,good}TasteGood_{nit} + \\ \beta_{n,belief}TasteBelief_{ni} + \varepsilon_{nit},$$

where $ASC_{n,NoBuy}$ is alternative-specific constant for the no-purchase alternative; $Price_{nit}$ is price of the product; $Organic_{nit}$ and $Local_{nit}$ are dummy variables equal to 1 when the labels are present and 0 otherwise; $TastePoor_{nit}$, $TasteFair_{nit}$, and $TasteGood_{nit}$ are dummy variables indicating taste information; and ε_{nit} is unobserved utility, assumed to be *i.i.d.* type I extreme value. $TasteBelief_{ni}$ ranges from 1 (“very poor”) to 5 (“very good”) and represents perceived

taste rating for the given bakery product. β coefficients measure marginal effects on overall utility. Except for the price, all β coefficients were allowed to vary across respondents following a normal distribution $f(\beta_n | \theta)$, and its parameters were estimated.

Results

Table 1 summarizes the socio-demographics of the control group and treatment group. The proportion of Caucasians is significantly higher in the control group, but otherwise the two groups are comparable. Table 2 reports average taste ratings for the organic and conventional specialty baked goods. On average, respondents in both groups rated the taste of the organic products significantly lower than the conventional. This confirms the hypothesis that consumers may rate organic versions of products consumed for hedonistic purposes as less tasty compared to conventional products.

Table 1. Sample Demographics

Characteristic		Control (C)	Treatment (T)	Diff. (C-T)
Age	2 = 18–24, 3 = 25–44, 4 = 45–64, 5 = above 64	3.61	3.69	-0.08
Female	1 = female, 0 = male	0.52	0.48	0.04
Children under 18	1 = yes, 0 = no	0.35	0.32	0.03
Education	1 = middle school, 2 = high school, 3 = some college, 4 = 2-year college, 5 = 4-year college, 6 = graduate school	3.69	3.74	-0.05
Employed	1 = yes (full- or part-time), 0 = no	0.66	0.65	0.01
Income	1 = < \$10,000, ... 6 = \$50,000–\$59,999, ... 12 = \$150,000 or more	5.98	5.99	0.00
Caucasian	1 = yes, 0 = no	0.81	0.74	0.07**
N		362	359	-

Notes: Double asterisk (**) denotes significance of difference in means at 5%.

Table 3 shows results of the estimated random parameter logit (RPL) models. First, price coefficients are negative and significant. Compared to a product with no taste information, poor taste information has a negative and significant effect on utility, while fair taste and good taste information has a positive and significant effect, as expected. The organic label is valued positively for each group and product when there is no difference in taste ratings (i.e., subjective taste beliefs) between organic and conventional bakery products. If the taste ratings are different, the utility from the organic product relative to the conventional product needs to be adjusted by the utility associated with the difference in the taste rating. Overall, the results show that taste beliefs have a large and significant impact on utility, as hypothesized. Finally, the local label also has a positive and significant effect on consumer utility in all categories, except cookies for the information group.

Table 2. Taste Ratings for Organic and Conventional Bakery Products

Product	Control (C)	Treatment (T)
Bread loaf		
Organic (O)	3.64	3.55
Conventional (C)	3.99	3.84
Diff. (O–C)	-0.35***	-0.29***
Croissant		
Organic (O)	3.66	3.56
Conventional (C)	4.12	3.93
Diff. (O–C)	-0.46***	-0.36***
Large cookie		
Organic (O)	3.61	3.53
Conventional (C)	4.20	4.03
Diff. (O–C)	-0.59***	-0.50***

Notes: Triple asterisk (***) denotes significance at the 1% level. Respondents were asked to rate the taste of each product from “very poor” = 1 to “very good” = 5. The question was asked after the choice experiment.

Table 3. RPL Models

	Control			Treatment		
	Bread Loaf	Croissant	Large Cookie	Bread Loaf	Croissant	Large Cookie
Price	-0.41***	-0.91***	-1.05***	-0.50***	-0.90***	-1.08***
Taste, poor	-3.28***	-5.37***	-3.44***	-4.26***	-4.32***	-3.83***
	(1.74***)	(3.75***)	(1.41***)	(2.60***)	(2.67***)	(1.90***)
Taste, fair	0.69***	0.70***	0.62***	0.73***	0.42***	0.56***
	(0.41)	(0.62*)	(1.17***)	(0.88***)	(0.35)	(1.01***)
Taste, good	2.43***	3.32***	3.43***	2.91***	2.98***	3.73***
	(1.40***)	(2.28***)	(1.86***)	(1.72***)	(2.11***)	(2.57***)
Organic	0.26**	0.90***	0.38***	0.45***	0.59***	0.29*
	(0.97***)	(1.50***)	(1.11***)	(0.96***)	(1.48***)	(1.25***)
Local	0.25***	0.34***	0.27***	0.38***	0.28***	0.14
	(0.05)	(0.03)	(0.52***)	(0.52**)	(0.14)	(0.54**)
None	-0.59	-0.43	-0.05	-1.12**	-1.90***	-0.44
	(2.47***)	(2.67***)	(2.75***)	(2.97***)	(3.08***)	(2.94***)
Taste belief	0.38***	0.51***	0.63***	0.29**	0.19*	0.49***
	(0.13)	(0.06)	(0.19)	(0.06)	(0.06)	(0.03)
Log-likelihood	-1,715.95	-1,528.97	-1,696.68	-1,607.78	-1,561.11	-1,648.30
AIC	3,461.91	3,087.94	3,423.37	3,245.57	3,152.21	3,326.60
BIC	3,563.64	3,189.67	3,525.10	3,347.17	3,253.82	3,428.21
No. of obs.	6,516	6,515	6,516	6,462	6,462	6,462

Notes: Single, double, and triple asterisks (*, **, ***) denote significance at the 10%, 5%, and 1% levels, respectively. Standard deviations for normally distributed coefficients in parentheses (all except price).

Table 4 reports mean WTP values, calculated using the Krinsky and Robb (1986) procedure. WTP for the organic label is positive for every product and group when not considering the difference in taste ratings between the organic and conventional products. However, the results show that taste beliefs contribute significantly to total WTP and when accounting for the difference in average taste beliefs, the significant premium for organic bakery products disappears. This illustrates the importance of taste beliefs when evaluating consumer WTP for organic products. However, provided taste information may compensate for the negative effects of taste beliefs on WTP for organic baked goods if the information is positive (fair or good taste). We also compared WTP values between the groups, finding that WTP tends to be smaller for the treatment group when the differences in taste ratings are considered, but it is significantly smaller for croissants only. However, this result suggests that providing information about organic labeling standards may diminish the importance of taste beliefs and their effect on choice. In line with the findings of RPL models, consumers are willing to pay extra for the local label, except for large cookies in the treatment group. Finally, consumers require a discount when taste is poor, and they prefer fair and good taste to unknown taste.

Table 4. WTP Values

	Control			Treatment		
	Bread Loaf	Croissant	Large Cookie	Bread Loaf	Croissant	Large Cookie
Organic, base utility	0.63**	0.98***	0.36***	0.89***	0.66***	0.26*
Organic, taste belief	3.33***	2.03***,a	2.17***	2.07***	0.73*,a	1.63***
Conventional, taste belief	3.65***	2.29***,a	2.53***	2.24***	0.81*,a	1.86***
Organic minus conventional	0.31	0.73	0.00	0.72	0.58	0.03
Local	0.61***	0.38***	0.26***	0.77***	0.32***	0.13
Poor taste	-7.91***	-5.87***,a	-3.28***	-8.46***	-4.79***,a	-3.56***
Fair taste	1.68***	0.77***	0.59***	1.47***	0.47***	0.53***
Good taste	5.89***	3.64***	3.28***	5.79***	3.30***	3.47***

Notes: Single, double, and triple asterisks (*, **, ***) denote significance at the 10%, 5%, and 1% levels, respectively. WTP associated with taste beliefs for organic and conventional products were evaluated at the group mean taste beliefs.

Superscript ^a denotes significant differences in estimated WTP between the control and the treatment groups for a given bakery product at 10% or better, based on the combinatorial test (Poe, Giraud, and Loomis, 2005).

Conclusions

We compared the taste ratings of organic and conventional versions of selected specialty baked goods and examined the impact of taste beliefs, provided taste information, and respondent knowledge of organic labeling standards on consumer choice and WTP for these products. We found that the examined organic specialty baked goods are perceived as less tasty than their conventional counterparts, which suggests that the “healthy = less tasty” bias holds for more hedonistic food items. Further, we found that taste beliefs explain a significant portion of utility and determine consumer WTP for these products, confirming findings of previous studies that taste beliefs play an important role in consumer food choice.

Providing organic labeling information does not appear to eliminate the negative taste bias associated with organic specialty baked goods, given that we found no significant differences in taste ratings between the control and treatment groups. It appears that taste beliefs are influenced more by what consumers believe organic means, rather than by their actual knowledge or information available. However, taste beliefs seem to have a greater effect on utility for the control group, which suggests that provision of the organic standards information may have reduced the importance of the respondents' subjective taste beliefs on their choice. Nevertheless, educating consumers about organic labelling standards may diminish the importance of taste beliefs in food choice only slightly and thus should not be a priority. Instead, consumers should be given the opportunity to sample the products, and marketing efforts should be targeted toward the smaller consumer segment with positive taste beliefs associated with the organic bakery products when compared to the conventional ones.

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