

Research Report: The Role of Healthy Diet Belief in Mediating the Organic Label Effect on Increased Food Consumption

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Abstract

This study investigates the effect of consuming organic foods on perceived dietary health and how the healthy diet belief mediates the organic label effect on increased organic food consumption. We find that consumers who buy organic foods rate their dietary health significantly higher than those who do not. The mediation analysis suggests that observing an organic label is associated with higher ratings of dietary health, which in turn promotes organic food consumption. This mechanism has important implications for organic food marketing in that purchasing organic food can be fostered by using the healthy diet perception as a marketing cue.

Keywords: dietary health, organic label effect, propensity-score matching

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Introduction

Findings on the nutritional differences between organic and conventionally grown foods have been inconsistent (Kushi et al., 2012). It is largely unknown whether observed differences in pesticide residues and antibiotic-resistant bacteria may translate into health benefits such as lower risk of cancer (Kushi et al., 2012). In spite of these uncertainties, nationally representative data indicate that an increasing number of American families have made organic foods part of their everyday diet. About 82.3% of the 100,000 households in an Organic Trade Association study (2019) reported purchasing organic foods in 2016, up 3.4% from 2015.

Frequent purchase of organic products has been associated with sociodemographic characteristics, health concerns, and environmental awareness (Van Doorn and Verhoef, 2011). Consumers consider organic foods to be superior to conventional foods in many aspects such as health, flavor, quality, and safety (Vega-Zamora et al., 2014). Perceived health benefits are one of the major forces driving the increasing demand for organic food consumption (Grankvist and Biel, 2001; Magnusson et al., 2003; Vega-Zamora et al., 2014). Previous studies have found that consumers underestimate the calorie content of organic products relative to their conventional counterparts, even though their calorie content is the same (Lee et al., 2013; Schuldt and Schwarz, 2010).

Past research indicates that package elements—such as labels—can influence consumer consumption of a product as well as how they evaluate that food product (Bublitz, Peracchio, and Block, 2010). Under routine buying situations, such as weekly grocery shopping, consumers have low involvement when searching for product information; little consideration in brand and product choice leads to a halo effect (Lee et al., 2013), which occurs when a consumer's perception of one product attribute strongly biases his or her perception of other attributes of the same product. The perceived health benefit of observing the organic label may lead to omission of information from the nutrition facts panel (organic halo effect), underestimation of calorie content, and increased consumption of organic foods.

Most previous research has studied health benefits as the motivational antecedent for consuming organic food. Rarely has any prior studies examined perceived healthy diet as the consequence of organic consumption. To address this gap in research, this study aims to investigate (i) the effect of consuming organic foods on perceived dietary health and (ii) how the healthy diet belief mediates the organic label effect on increased organic food consumption.

Method

Using data from the 2009–2010 National Health and Nutrition Examination Survey, we first described the differences in dietary health and food consumption behaviors between buyers of organic and conventional food. Second, we used propensity-score matching to compare the self-rated dietary health of organic food buyers with that of consumers who do not buy organic foods but have similar demographic characteristics and dietary composition. The matching variables included gender; age; race; education; marital status; household size and income; and at-home consumption of fruits, vegetables, snacks, milk, and soft drinks. Third, we used a regression

analysis to examine the various factors associated with dietary health rating (dependent variable). Dietary health rating measures the healthfulness of the overall diet on a scale from 1 (poor) to 5 (excellent). Organic buyer is a dummy variable identifying consumers who bought food with an organic label in the 30 days prior to the survey. As a proxy for food consumption behaviors, availability of different foods at home—including fruits, dark green vegetables, fat-free/low-fat milk, salty snacks, and soft drinks—is measured on a scale from 1 (never) to 5 (always). Demographic variables—gender, age, race, education level, marital status, household size, and annual household income—are included as covariates. Finally, we used a mediation model to test whether the effect of organic label on increased consumption is mediated by the belief of having a healthier diet.

Results and Discussion

Approximately 36.23% of respondents ($n = 5,060$) had bought organic foods in the 30 days prior to the survey, and about 56.63% of them reported that they had seen the USDA organic seal (Table 1). Consumers who buy organic foods rate their dietary health significantly higher than those who do not (mean difference = 0.33, $p < 0.001$) (Figure 1 and Table 1). However, this effect might stem from underlying differences in their dietary composition: Organic buyers consume significantly higher amounts of fruits, vegetables, fat-free/low-fat milk and significantly lower amounts of salty snacks and soft drinks, making their diets healthier than others (Figure 2 and Table 1). Organic food buyers also differ from nonorganic food buyers in demographic characteristics: Organic buyers have a higher proportion of female and white respondents and a lower proportion of Mexicans and blacks than conventional buyers. Organic buyers have a higher education level and annual household income and are more likely to be married. The average household size is smaller among organic buyers.

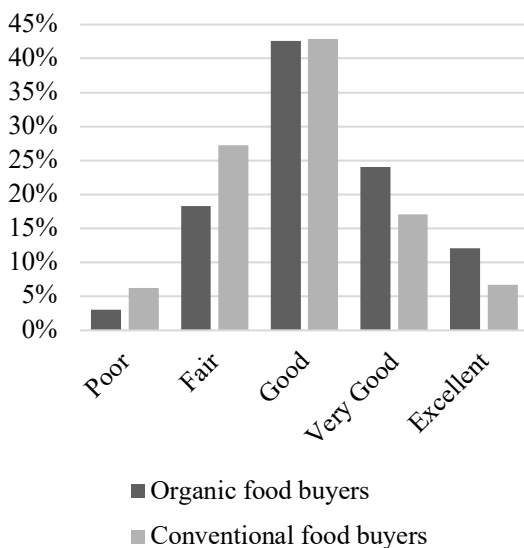


Figure 1. Rating of Dietary Health among Organic and Conventional Food Buyers

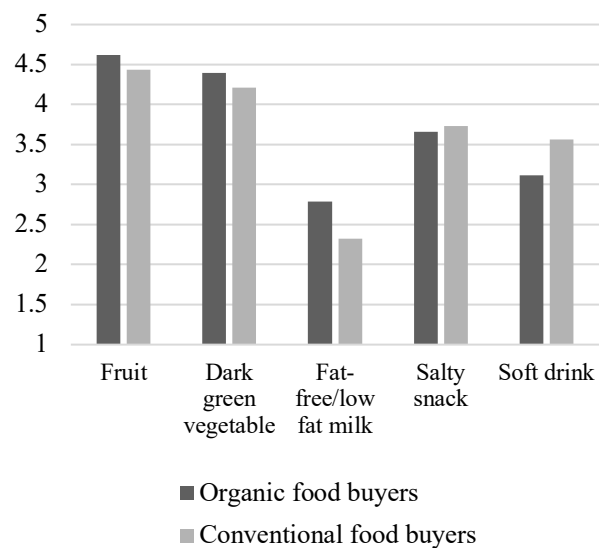


Figure 2. Food Consumption at Home among Organic and Conventional Food Buyers

Table 1. Descriptive Statistics of the Sample

Variable	Whole Sample (<i>N</i> = 5,060)	Organic Food Buyer (<i>N</i> = 1,833)	Conventional Food Buyer (<i>N</i> = 3,227)	Mean Difference	<i>p</i> -Value
	Mean	Mean	Mean		
Dietary health rating	3.03 (0.99)	3.24 (0.99)	2.91 (0.97)	0.33	< 0.001
Organic seal (yes = 1, no = 0)	0.57 (0.50)				
Fruit	4.50 (0.82)	4.62 (0.75)	4.43 (0.85)	0.19	< 0.001
Dark green vegetable	4.28 (0.97)	4.40 (0.88)	4.21 (1.01)	0.19	< 0.001
Fat-free/low-fat milk	2.49 (1.80)	2.79 (1.85)	2.32 (1.76)	0.47	< 0.001
Salty snack	3.71 (1.23)	3.66 (1.24)	3.73 (1.21)	-0.08	0.0353
Soft drink	3.40 (1.49)	3.12 (1.52)	3.56 (1.45)	-0.45	< 0.001
Age	45.90 (18.95)	46.02 (18.14)	45.84 (19.40)	0.18	0.7389
Gender (male = 1, female = 0)	0.47 (0.50)	0.42 (0.49)	0.49 (0.50)	-0.08	< 0.001
White (yes = 1, no = 0)	0.49 (0.50)	0.54 (0.50)	0.45 (0.50)	0.09	< 0.001
Mexican (yes = 1, no = 0)	0.19 (0.39)	0.14 (0.34)	0.22 (0.41)	-0.08	< 0.001
Other Hispanic (yes = 1, no = 0)	0.10 (0.30)	0.11 (0.32)	0.09 (0.29)	0.02	0.0164
Black (yes = 1, no = 0)	0.18 (0.39)	0.15 (0.35)	0.20 (0.40)	-0.06	< 0.001
Other race (yes = 1, no = 0)	0.05 (0.21)	0.06 (0.24)	0.04 (0.19)	0.02	< 0.001
Education level	3.29 (1.26)	3.76 (1.18)	3.02 (1.23)	0.74	< 0.001
Married (yes = 1, no = 0)	0.53 (0.50)	0.55 (0.50)	0.51 (0.50)	0.04	0.0042
Household size	3.35 (1.74)	3.21 (1.69)	3.44 (1.76)	-0.23	< 0.001
Annual household income level	7.70 (3.58)	8.66 (3.60)	7.14 (3.46)	1.52	< 0.001

Note: Numbers in parentheses are standard deviations. The means for binary variables indicate the proportions of respondents with a value of 1. *p*-values are calculated from two sample *t*-tests for the difference in means between organic and conventional buyers.

Results from propensity-score matching indicate that the average treatment effect (ATE) of buying organic foods on self-rated dietary health is much smaller and less significant ($ATE = 0.10, p < 0.05$) than that from a simple t -test without adjustment (Table 1). In the matched sample, organic buyers have similar sociodemographic characteristics and dietary composition but higher ratings of dietary health compared to conventional buyers. This study supports previous studies examining the halo effect of organic label: Consumers tend to underestimate the calorie content of organic foods, even when they are the same as their conventional counterparts (Lee et al., 2013; Schuldt and Schwarz, 2010).

Table 2 presents results from the regression analysis. Organic food buyers tend to rate their dietary health higher than conventional food buyers. Higher availability of fruits, vegetables, and fat-free/low fat milk at home is associated with higher dietary health rating, whereas higher availability of salty snacks and soft drinks is related to lower self-rated dietary health. Self-rated dietary health is higher for male, older, and married consumers and those who have a higher education level and household income. Dietary health rating is lower for those living in a larger household. Compared with whites, Mexicans, other Hispanics, and blacks have lower ratings of dietary health. Studies have consistently found a positive effect of household income on organic consumption, but previous findings on the effects of gender, educational level, and marital status on organic consumption are mixed (Rödiger and Hamm, 2015).

Table 2. Results from Regression Analysis of Perceived Dietary Health Rating

Independent Variable	Coefficient	<i>p</i> -Value
Organic food buyer (yes = 1, no = 0)	0.1430	< 0.001
Fruit	0.1492	< 0.001
Dark green vegetable	0.1217	< 0.001
Fat-free/low fat milk	0.0236	0.005
Salty snack	-0.0425	0.001
Soft drink	-0.0382	< 0.001
Gender (male = 1, female = 0)	0.0606	0.038
Age	0.0069	< 0.001
Married (yes = 1, no = 0)	0.0725	0.025
Education level	0.0926	< 0.001
Annual household income	0.0092	0.054
Household size	-0.0354	0.001
White (reference group)		
Mexican (yes = 1, no = 0)	-0.2055	< 0.001
Other Hispanic (yes = 1, no = 0)	-0.1370	0.012
Black (yes = 1, no = 0)	-0.1088	0.009
Other race	0.0063	0.931
Constant	1.4151	< 0.001

Results from the mediation analysis indicate the direct effect of seeing an organic label on increased organic food consumption (coefficient = 0.19, $p < 0.001$) (Figure 3). Observing a USDA organic seal is also significantly associated with higher ratings of dietary health, which in turn increases consumption of organic foods (Figure 3). A Sobel test for the significance of the mediation confirms the indirect effect of an organic label on organic consumption via the healthy diet belief (coefficient = 0.01, $p < 0.001$). This study echoes a previous finding that perceived health benefits of organic foods mediate the underlying pathway from organic label to increased food consumption (Lee et al., 2018).

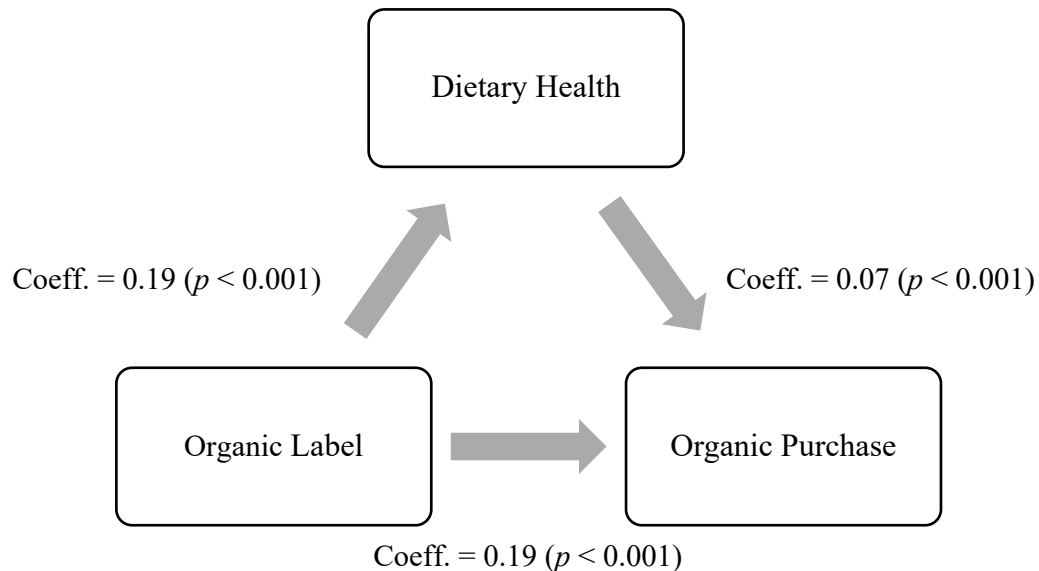


Figure 3. Results from Mediation Analysis

Conclusion

Despite inconsistent findings on the nutritional difference between organic and conventionally grown foods, demand for organic food has increased. This study aims to investigate the role of healthy diet belief in mediating the organic label effect on increased organic food consumption. Using data from the National Health and Nutrition Examination Survey, we first find that consumers who buy organic foods have a significantly higher rating of their dietary health than those who do not (difference = 0.34, $p < 0.001$). To reduce the observed bias stemming from the underlying differences in their dietary composition, we use propensity-score matching to compare the self-rated dietary health of organic food buyers with conventional food buyers with similar demographic characteristics and dietary composition. The resulting ATE of buying organic foods on self-rated dietary health is much smaller and less significant (ATE = 0.10, $p < 0.05$), confirming an organic label effect on healthy diet belief. Second, we use a mediation model to test whether the effect of organic label on increased consumption is mediated by the belief of having a healthier diet. Results from the mediation analysis indicate the direct effect of observing an organic label on increased organic food consumption (coefficient = 0.19, $p < 0.001$) and the indirect effect of organic label on organic consumption via the healthy diet belief (coefficient = 0.01, $p < 0.001$). Adding to previous research studying health benefits as the motivational antecedent for consuming

organic food, this study not only confirms perceived healthy diet as the consequence of organic consumption, but also suggests that observation of an organic label is associated with the healthy diet belief which in turn promotes organic food consumption. This mediation mechanism has important implications for organic food marketing in that purchase of organic food can be fostered by using the healthy diet perception as a marketing cue.

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