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A sequence analysis of organic and conventional food consumers' visual information acquisition

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Abstract

It is of significant importance in food marketing to know which pieces of information available during shopping are most relevant to consumers. The visual search behaviour of consumers allows inference on the relevance of information based on what information is acquired and when. It is assumed that price is a major barrier to the purchase of organic food. However, little is known about consumers' actual acquisition of information on organic food prices. To examine the information acquisition behaviour of consumers buying organic and consumers buying conventional food, a shopping simulation study was run in which participants (n=189) were invited to choose between different unfamiliar organic and conventional product alternatives while wearing eye-tracking glasses. The data were divided into three visual attention phases: orientation phase, comparison phase, and evaluation phase. The information intake in the phases was investigated comparing organic and conventional consumers. Organic consumers acquired less information on conventional prices in the orientation and evaluation phases. It is concluded that for organic consumers, price information is less relevant to making a purchase decision compared to consumers of conventional food.

Introduction

Daily food choice situations require a large amount of information processing for decision-making from consumers (e.g., Perry & Grace, 2015). Information economics assumes that individuals obtain just enough information necessary to make an informed decision (Solomon, 2015). Consumers weigh up the cost of obtaining pieces of information against benefits - costs being the time, effort, expenditure, and inconvenience of the search (Zander & Hamm, 2012; Hoyer & MacInnis, 2010), and benefits being purchase decisions that satisfy their preferences. If an extra piece of information is higher in marginal cost than in marginal benefit, that extra piece of information will not be collected (Solomon, 2015). Information economics further assumes that the most valuable pieces of information are collected first (Solomon, 2015). Therefore, the analysis of information search behaviour allows conclusions to be made regarding which pieces of information are more relevant for consumers than others (Zander & Hamm, 2010).

Eye-tracking enables the mechanical observation of visual information search and has been applied in many studies related to food marketing (e.g., Bialkova et al., 2014; Clement, 2007; Chandon, Hutchinson, Bradlow, &

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Young, 2009; Siegrist, Leins-Hess, & Keller, 2015). However, most studies based on eye-tracking use the sums of the duration or count of eye-tracking parameters such as fixations or dwells. An analysis of the sequence in which pieces of information are visually acquired is less widespread (examples of studies with a sequential analysis of eye tracking data are: Clement, 2007; Krajbich, Lu, Camerer, & Rangel, 2012; Russo and Leclerc, 1994). This study adopts a sequential perspective to analyse its data. The present study is concerned with consumers' decisions to purchase or not purchase organic food products. The organic food market has grown markedly in the last decades (Willer & Lernoud, 2018). However, the results of consumer surveys suggest the organic food market is not reaching its potential. In surveys, consumers expressed very positive attitudes towards organic food and declared their buying intention (Frostling-Henningsson, Hedbom, & Wilandh, 2014; Moser, 2016). Previous findings stressed the importance of price as a barrier to the purchase of organic food products (Aertsens, Mondelaers, Verbeke, Buysse, & van Huylenbroeck, 2011; Buder, Feldmann, & Hamm, 2014; Gottschalk and Leistner, 2013). Therefore, in this study, special attention is paid to consumers' search behaviour for price information during a purchase decision.

The aim of this study is to provide insight into consumers' decision making to purchase or not to purchase organic products with a focus on the search for price information in different attention phases. In section 2, the theoretical background of the research is provided, and the research questions are presented. In section 3, the study design and the methods of data collection, data processing, and data analysis are explained. The results of the study are presented in section 4 and discussed in section 5. In section 6, conclusions are drawn.

Theoretical Background and Research Question

Human gaze behaviour

Human gaze behaviour is distinguished into fixations, where the eye is relatively still while focusing on a locus and taking in information, and saccades, where the eyes move from one locus to another, taking in little and somewhat contextual information (Holmqvist et al., 2011; Rayner, 1998). Usually, fixations and attention are coupled so that the research of fixations allows inference on attention (Holmqvist et al., 2011; Rayner, 1998). Chandon et al. (2009) stated that in the first fixation, the semantic category, the spatial layout, and the level of clutter can be identified. For more details, individuals need to fixate objects, and re-examinations can be interpreted as an increase in information intake (Chandon et al., 2009; Balcombe, Fraser, & McSorley, 2015).

Based on information economics and empirical findings on gaze behaviour, it is assumed that consumers address their visual attention most to those attributes that are most relevant to their decision. This is deemed a utility effect (Orquin & Mueller Loose, 2013). Several studies have shown a close relationship between a high number of fixations or longer fixation durations and product choice (e.g., Chandon et al., 2009; Gere et al., 2016; Gidlöf, Anikin, Lingonblad, & Wallin, 2017; Pärnamets, Johansson, Gidlöf, & Wallin, 2016). Regarding consumers' gaze behaviour, it is known that, compared to the product package, price receives a relatively low amount of visual attention in product choice situations (Balcombe et al., 2015; van Loo, Nayga, Seo, & Verbeke, 2014). This could be the result of a higher amount of attribute information communicated on the package. Moreover, a relation between the last fixations and the final product choice was shown (Krajbich, Armel, & Rangel, 2010).

The visual information acquisition can be divided into several phases. So far, there is no clear evidence on the number of phases, so different authors use different numbers. A basic distinction can be made between the phases 'overview' or 'orientation', 'comparison' or 'discovery', and 'checking' or 'evaluation' (Orquin & Mueller Loose, 2013; Husić-Mehmedović, Omeragić, Batagelj, & Kolar, 2017). The first and the last phase were found to have shorter fixations than the middle phase (Krajbich et al., 2010). The middle phase is characterized by comparisons between products in the consideration set (Orquin & Mueller Loose, 2013).

Research question and hypotheses

The overall research question is: how much information do organic compared to conventional consumers collect on organic and conventional prices and packages during the orientation, comparison and evaluation phase. Two groups of consumers, specifically consumers who chose a conventional product and consumers who chose an organic product in the study, are compared regarding their visual information search. Hereinafter, the groups are called 'organic consumers' and 'conventional consumers' in reference only to their choice in the study. To develop hypotheses (abbreviated H) regarding consumers' visual information search, several assumptions had to be made due to a lack of research on the specific topic.

H1: Both, organic and conventional consumers take in less information on price than package information in the orientation compared to the other phases because more information on product attributes to form a consideration set is given on the package.
H2: Organic consumers take in less information on

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Table 1: Characteristics of the sample

		Sample	City under investigation[a]
Gender (n=189)	Female	46.6%	51.0%
	Male	52.9%	49.0%
Age (n=183)	Average (SD)	42.5 (16.6)	42.6
Household members (n=188)	Average (SD)	2.0 (1.3)	1.9
Monthly disposable household income (n=181)	Average (SD)	1735.79€ (1325.88)[b]	1699.33€

Note: SD=standard deviation, [a] Source: Stadt Kassel – Fachstelle Statistik (2017), disposable household income: Hessisches Statistisches Landesamt (2016), [b] respondents were asked to indicate their income class of six classes, disposable household income calculated based on class means excluding the upper class ('6000€ or more' per month). Different sample sizes for gender, age, household members and household income arose from missing and invalid values in the data set.

prices overall than conventional consumers since they are less price-sensitive (Aschemann-Witzel & Zielke, 2017).

H3: The comparison phase is composed of a higher amount of information intake than the other phases because it is the point in the decision process in which information is compared most extensively since a relevant subset of the products offered is compared by consumers.

H4: In the comparison phase, conventional consumers take in more information on prices in total than organic consumers, as they are assumed to be more price-sensitive.

H5: In the evaluation phase, organic consumers take in most information on organic products followed by organic prices since Krajbich et al. (2010) found that the last pieces of information taken in were often related to the final choice.

H6: In the evaluation phase, conventional consumers take in most information on conventional package information followed by conventional price information.

Materials and Methods

Study design

To investigate the information intake of consumers, an eye-tracking study was conducted in a mock-up shop in a laboratory. The idea was to provide the study participants an experience which was as close as possible to a real shopping experience. The general procedure of the study was that participants first went shopping in the laboratory shop with the eye-tracking glasses recording their eye movements, and afterwards completed a self-administered computer-assisted questionnaire. At the end, participants were granted a 10€ allowance.

Three red markers on products not related to the shopping experiment on a shelf were used to calibrate the eye-tracking glasses to each participants' eyes. After calibration, the participants were asked to imagine they were going shopping for strawberry jam in a normal supermarket. The participants were further instructed to choose the product they would normally choose and to take as much time as they usually took (no time limit).

Sampling

Participants for the study were sampled on the main shopping street of a medium-sized German city with an average purchase power of its inhabitants. Quota sampling was applied with quotas on gender and age according to the German population (51% females, 49% males, in each gender group 50% in the age groups 18-44 and 45 or older, respectively). Eligible participants were at least partially responsible for household shopping and bought at least sometimes jams. Of the 255 participants that took part in the study, the data of 189 participants could be used. Five participants were excluded because they did not complete the shopping task or the questionnaire. 52 participants had to be excluded due to the low quality of their eye-tracking data. Nine participants were excluded because they stated that they did notice

Table 2: Brands of strawberry jam used as product stimuli and their prices

	Brands					
	Grandessa	**NaturAktiv (organic)**	**Meinl**	**MigrosBio (organic)**	**Sonngut**	**Grandessa Naturrein**
Price	0.79€	1.99€	2.99€	1.29€	1.39€	1.99€
Unit price (100g)	0.18€	0.40€	0.60€	0.26€	0.31€	0.44€

Note: The order of the brands in the table is equivalent to the order on the shelf. Both price and unit price were given on the price tags.

the organic products on the shelves, yet they purchased an organic product. In Table 1, the sample size for variables differs due to missing or erroneous values. For the variables gender, mean age, mean number of household members, and mean monthly disposable household income, the sample resembles the population of the city under investigation quite well (Table 1).

Product stimulus

Strawberry jam was selected as product stimulus in the laboratory shop because it is bought by many German consumers making it possible to find enough study participants. The use of a seasonal product was avoided since such products are not sold throughout the year and represent a speciality. Moreover, it was important that the product did not require cooling. Jam met all the demands. Strawberry is at the top of the list of popular jam flavours in Germany, thus, strawberry jam was chosen as a product stimulus.

Swiss and Austrian brands not sold in German supermarkets were used to avoid habitual purchases and to ensure that each participant had the same level of knowledge about the items. The unfamiliar brands also minimized the possible internal information search in the memory. Two organic and four conventional product variants were placed on the shelf (see Figure 1). Prices for the test items were set according to a realistic price range and price difference between organic and conventional products. To this end, information on the price of strawberry jams was gathered at two hypermarkets, two discount stores and one supermarket in the study region (see Table 2).

Eye-tracking data collection

Eye-tracking is a mechanical observation technique of the participants' eye-movements permitting the monitoring of visual information intake. It is generally agreed that eye-tracking is a measure for cognitive information processing (Feiereisen, Wong, & Broderick, 2008; Feng, 2003). The technique is regarded as an unbiased and objective measure (Feiereisen et al., 2008; Graham, Orquin, & Visschers, 2012; Helmert, Symmank, Pannasch, & Rohm, 2017). Eye-tracking measures all information intake, including unconscious intake, because the level of control over eye-movements is low. Furthermore, it can be used in realistic or close to realistic settings.

Throughout the shopping task in the present study, the participants wore a set of mobile eye-tracking glasses from SensoMotoric Instruments. The eye-tracking glasses sampled both eyes at a rate of 60 Hertz. The device records the locus of vision of the participants during the shopping experiment, indicating which information was looked at, when during the shopping task it was looked at, and for how long. The mobile eye-tracking device has a main camera which records the scene in front of the participant, and two auxiliary cameras which record the eyes. Its similarity to a normal pair of glasses, including its light weight, enables a much more realistic setting than eye-trackers attached to monitors with a head and/or chin rest. The eye-tracking glasses of SensoMotoric Instruments use the reflection of infrared light on the pupil to calculate the position of the gaze in the scene.

The video-based gaze information of the participants was manually mapped on a photo of the product with the SensoMotoric Instruments' software BeGaze™. Areas of interests (AOI's) were created to get quantitative information on the participants' gaze behaviour (see Figure 1). To capture all gaze information, even if there was a small drift in the data, the AOI's were slightly larger than the product packages, and for the price tags the AOI's reached further downwards due to a tendency in the data for a larger drift at the bottom of the scene.

Nowadays, eye-tracking devices are quite accurate, although some data was deemed unworthy of further

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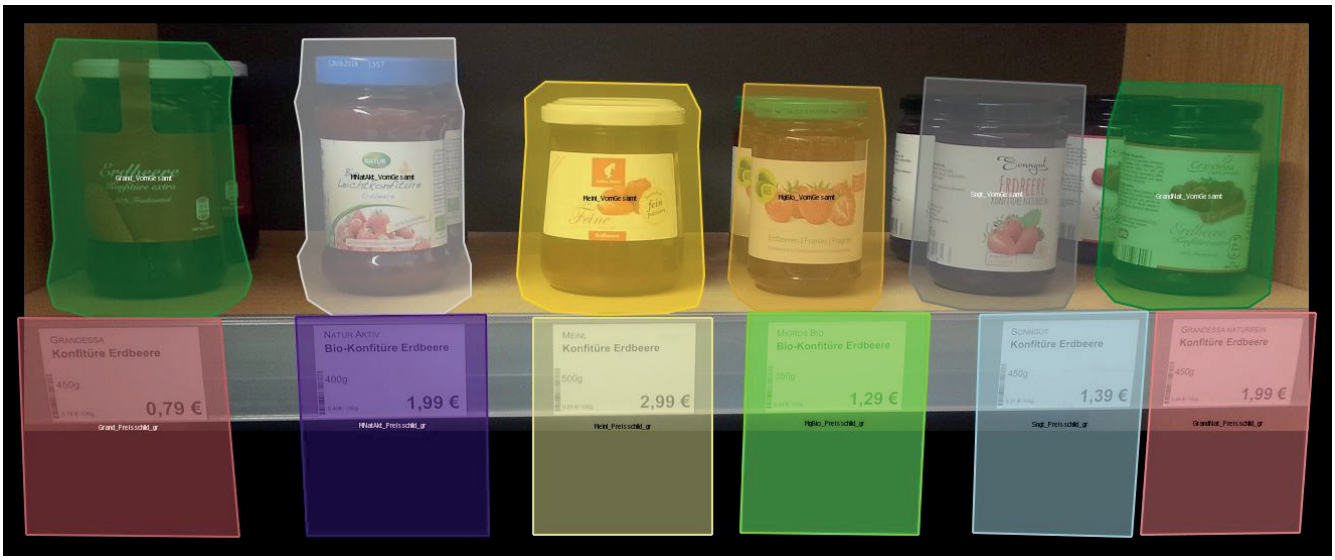

Figure 1: Areas of interest for the front view of the strawberry jams

consideration and was removed from the final data sample under analysis. To judge the data quality, the videos of all participants were checked for drift, i.e. imprecise gaze locations, and for gaps between gaze points indicating erroneous recording of the eye movements or faulty aggregation of gaze points by the inbuilt algorithm. Two researchers each independently judged the quality for one half of the participants. 20 videos were checked by both researchers with an intercoder reliability of Kappa 0.82 (SE 0.071) which is a very good result (McHugh, 2012).

Information on time stamps for each AOI in the sequence, indicating at which moment the participants focused their vision on the corresponding AOI, and which moment they moved their eyes away from the AOI was retrieved. The moments during which each participant's eyes are relatively fixed on an AOI are called fixations. If several consecutive fixations happen to occur in the same AOI, the entire time span during which eyes are focused on the same AOI is called dwell time (Holmqvist et al., 2011). Thus, for each participant, a sequence of fixations and a sequence of dwells are available. The difference between the two is that several consecutive fixations on the same AOI correspond to one single dwell on that AOI. In the analyses, sequences of dwells and dwell counts are used because the research interest of this paper pertains to the order of information intake from different products and price tags rather than the information intake of different pieces of information from each package.

Questionnaire

A structured questionnaire was used to collect information on respondents' attitudes and socio-demographic characteristics. Fifteen questions were asked, starting with the frequency of the purchase of strawberry jam and the reasons for the product choice in the test market, followed by a rating of statements on food purchasing involvement, price of food, organic food and purchase of organic products. It was also asked if the participants had noticed the organic variants and how much of their food budget they usually spend on organic food. The questionnaire ended with socio-demographic questions.

Methods of data analysis

The hypotheses on the amount of information collected on organic and conventional prices and packages in the different phases were analysed by calculating the average dwell counts and using descriptive and bivariate statistics (t-tests). To tackle the research question, the orientation, comparison and evaluation phase had to be identified.

In this study, the definition of the phases was made using the same criteria as Russo and Leclerc (1994), i.e. the first phase (screening or orientation/overview) is characterized by a lack of dwells back on an AOI that was previously looked at, meaning that in this phase no item is looked at twice. With the first repeated dwell (re-dwell) the comparison phase begins ('evaluation phase' in Russo and Leclerc, 1994). The third phase, evaluation phase, is again characterized by a lack of re-dwells, counted from the end of the dwell sequence to the beginning ('verification phase' in Russo and Leclerc, 1994).

Several studies found that in the first and last phase, the fixations are shorter than in the middle phase (Clement, 2007; Glöckner and Herbold, 2011; Krajbich et al., 2010; Russo and Leclerc, 1994). Glöckner and Herbold (2011) defined the different phases based on the fixation durations. However, Reutskaja, Nagel, Camerer and Rangel

(2011) found that the average fixation duration decreases with increasing numbers of items in a set which could lead to different durations of fixations in the three phases in different studies. Therefore, in this study the phases are defined by re-dwells, as described above.

Results

The most frequently 'purchased' product was the cheapest jam which was a conventional product (29.1%). The most expensive jam which was also conventional was chosen the least. In total, 39.7% of participants chose an organic jam and 60.3% chose a conventional jam. The number of dwells needed before finishing the shopping task was on average 36.5 dwells.

Gaze behaviour in different attention phases

In figures 2a) to 2c), the average dwell counts of organic and conventional consumers in the orientation phase (OP), comparison phase (CP), and evaluation phase (EP) are depicted in response to the hypotheses. The orientation phase was relatively short with, on average, 4.8 dwells, considering that there were six jam brands on the shelf and, on average, only about 3.4 packages were looked at before looking back to packages that had been previously noticed. It is also noteworthy that price information was already acquired in the orientation phase. As expected (H1), less price than package information was acquired in the orientation phase by both organic (OC) and conventional consumers (CC) ($T_{OC}(74)=-11.3$, $p<0.01$; $T_{CC}(113)=-7.4$, $p<0.01$).

The comparison phase consisted of the most dwells of all phases, with on average 25.5 dwells (H3 confirmed). The evaluation phase was shortest with 3.9 dwells on average. Overall, there were significantly more dwells on prices in the comparison than in the orientation and evaluation phases ($T_{OP\text{-}CP}(188)=-11.9$, $p<0.01$; $T_{CP\text{-}EP}(188)=12.0$, $p<0.01$). The dwell counts on packages differed significantly between the three phases - the comparison phase with the most and the evaluation phase with the least dwells ($T_{OP\text{-}CP}(188)=-14.1$, $p<0.01$; $T_{CP\text{-}EP}(188)=15.3$, $p<0.01$; $T_{OP\text{-}EP}(188)=5.9$, $p<0.01$).

It stands out that in the orientation phase, conventional consumers have, on average, more dwells in total than organic consumers, while in the comparison phase, organic consumers have more. In the orientation phase, organic consumers acquired significantly more information on organic packages than conventional consumers who searched significantly more for conventional price information. Also, considering the sum of dwells on organic and conventional prices in the orientation phase, organic consumers had significantly less dwells on prices than conventional consumers ($T(175.4)=2.9$, $p<0.01$). This confirms the previously formed assumption that organic consumers search less for price information in the orientation phase than conventional consumers.

In the comparison phase, it was the organic consumers who searched more for organic price, organic package, and conventional package information, and less for conventional price information than conventional consumers. The differences were, however, only statistically significant for the dwell count on organic packages. The assumption (H2) that conventional consumers take in more information on prices (sum or organic and conventional) cannot be confirmed ($T(187)=0.5$, $p=0.63$).

In the evaluation phase, a significant difference between the groups became apparent in the number of dwells on conventional prices and on organic packages, with organic consumers taking in less conventional price and more organic package information. Regarding the hypothesis (H5) on the gaze behaviour of organic consumers in the evaluation phase, it cannot be confirmed that this group acquired the most information from organic packages because their gaze dwelt significantly more on conventional packages ($T(74)=-3.7$, $p<0.01$). Organic and conventional prices were, without a significant difference in the number of dwells on them ($T(74)=-0.6$, $p=0.55$), looked at least by organic consumers.

For conventional consumers, on the other hand, the hypothesized gaze behaviour could be confirmed (H6). This group looked the most at conventional packages, second most at conventional prices, followed by organic packages, and finally, the least at organic prices. These differences were significant ($T_{conv.pack.\text{-}conv.price}(113)=3.6$, $p<0.01$; $T_{conv.price\text{-}org.pack.}(113)=-8.8$, $p<0.01$; $T_{org.pack.\text{-}org.price}(113)=2.7$, $p<0.01$).

Importance of product characteristics for choice

In the questionnaire, consumers rated the importance of several product characteristics to their choice of jam. The price of jam was significantly more important for consumers picking a conventional jam in the test shop than for those choosing an organic jam (see Table 3). This is reflected in the dwell sequence patterns, as organic consumers searched less for price information in the orientation and evaluation phases. Another significant difference between the two groups was their interest in the country of origin of the product and its indication. This characteristic was more important to organic consumers than to conventional consumers. The package size, referring to the amount of content for a given price, was significantly more important for conventional consumers.
The results of the analysis of dwells in the three defined

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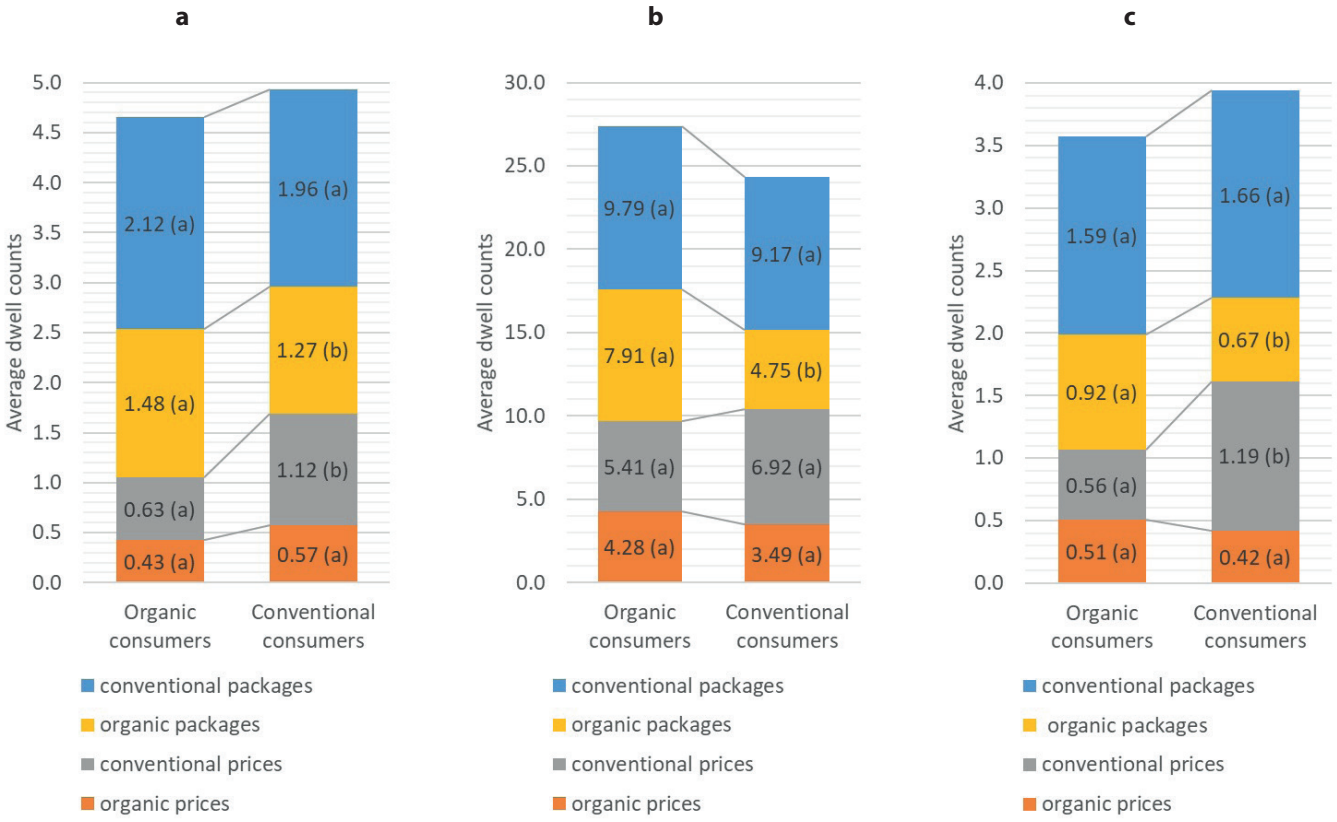

Figure 2: Dwell counts on organic and conventional prices and packages in the a) orientation, b) comparison, and c) evaluation phase

Note: Different letters mean significant differences at α=0.05 between organic and conventional consumers. Na,b=189, Nc=175. There were two organic and four conventional variants on the shelf.

Table 3: Importance of product characteristics for choice of organic and conventional consumers

Importance of … for 'purchase' decision	Consumer group	Mean rating[1]	Test statistic (T)[2]	Effect size (Cohen's d)
Price	Conventional	5.4	3.5**	0.52*
	Organic	4.5		
Country of origin	Conventional	3.6	-2.8**	-0.42
	Organic	4.5		
Package size	Conventional	4.5	2.7**	0.40
		3.8		

Note: [1]scale from 1=not at all important to 7=very important, [2]degrees freedom=186, * significant at a=0.05/intermediate effect, ** significant at a=0.01/large effect.

attention phases shows that the country of origin and organic production are characteristics that need more search on the package, which might explain the longer time organic consumers needed to decide. On the other hand, price and package size are features that are more directly visible which might explain the shorter decision-making of conventional consumers.

Discussion

Based on theoretical considerations, the comparison phase was expected to yield the most interesting differences between participants who decided for an organic and those who decided for a conventional jam, since it was assumed that it constitutes an evaluation of the subset of jams considered for choice (H3, see Orquin & Mueller Loose, 2013). However, the only significant difference between consumers who chose an organic and those who chose a conventional jam was that the former had more dwell counts on organic packages. This indicates that participants who decided for an organic jam had conventional brands in their consideration set, too. The expected difference in the information intake of prices (H4) was not found.

In the evaluation phase, consumers 'buying' organic had on average 0.92 dwells on organic and 1.59 on conventional packages. From these numbers, it can be inferred that a large share of participants who decided for an organic jam did not fixate an organic jam last. This contradicts H5. Instead, most seemed to have looked at a conventional jam before finishing their purchase. In contrast, Krajbich et al. (2010), who conducted an eye-tracking experiment in which the stimuli were shown on a screen, found a relationship between the last fixation and product choice. The deviation between Krajbich et al.'s (2010) findings and the gaze behaviour of participants in this study could be the result of this study's rather realistic conditions in which participants walked through a simulated supermarket aisle instead of sitting in front of a computer screen. It was observed that some participants let their gaze roam along the shelf when they walked out of the test shop, and due to the higher number of conventional jams on offer the probability was higher that the gaze landed last on a conventional alternative.

The rating of the importance of product attributes for the choice of participants picking a conventional or organic jam allowed for the interpretation that the utility effect is reflected in the sequence of dwells. First, consumers 'purchasing' a conventional jam searched for significantly more conventional price information in the orientation and evaluation phases of the choice decision. This is in line with the great importance these consumers placed on price. Moreover, this agrees with previous findings showing that for consumers of organic food, price is less important than for conventional consumers (Aschemann-Witzel & Zielke, 2017; Bezawada & Pauwels, 2013; van Herpen, van Nierop, & Sloot, 2012). Second, organic consumers' significantly higher number of dwells on organic packages but also relatively high amount of acquisition of conventional package information can be interpreted as an indicator of their search for products from organic farming or from a certain country, based on their importance ratings.

Regarding the validity of the orientation, comparison, and evaluation phases, this study's results are in line with those of Glöckner and Herbold (2011) who found no effect of an initial screening, indicating that there was no screening of all information before a comparison. Glöckner and Herbold (2011), however, defined screening based on the duration of fixations. In this study, a lack of a total screening before changing to the comparison phase is suspected, since all except for three participants looked at some information in the comparison phase that they had not seen previously in the orientation phase. This was also found by Russo and Leclerc (1994) who pointed out that brands that had not been noticed in the first phase are examined in the second phase. Also, in Russo and Leclerc's (1994) study not all phases were present for all participants. In this study, the first two phases could be identified for all participants while in 14 cases the third (evaluation) phase was lacking.

This study confirmed the finding of Balcombe et al. (2015) and van Loo et al. (2014) of less visual attention being allocated to prices than to packages. The mentioned studies, however, gained this insight from choice experiments combined with eye-tracking where participants were sitting in front of a computer screen. This study confirmed the finding from a close to realistic shopping situation with mobile eye-tracking glasses.

Conclusions

This paper presents findings from a sequential analysis of eye-tracking data yielded from a shopping task that participants conducted in a laboratory mock-up shop. Participants had to choose between unfamiliar organic and conventional strawberry jam brands. The analysis of the data revealed that consumers who buy organic food look less at price than consumers purchasing conventional food in the orientation and evaluation phases, but do seem to compare organic and conventional prices for their decision. Moreover, organic consumers searched significantly more than conventional consumers for information from organic packages in the orientation,

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comparison, and evaluation phases.

Considering the utility effect apparent in gaze behaviour (see Orquin and Mueller Loose, 2013), it is concluded that characteristics inherent to the product core, such as process characteristics, are more important to organic consumers, since they first searched package information before they started weighing up the costs.

Conventional consumers, on the other hand, searched significantly more than organic consumers for information on conventional prices in the orientation and evaluation phases. Based on the utility effect in gaze behaviour and this groups' importance ratings for price and package size, it is concluded that information on price-performance-related product characteristics is more relevant to them.

The hypotheses on the gaze behaviour of consumers choosing organic products presented in section 2.2 was partly confirmed. While the results showed that all consumers search less for price information in the orientation phase compared with in the comparison and evaluation phases, it was not found that consumers of organic food gaze overall less at prices than buyers of conventional food. It was confirmed that information intake is highest in the comparison phase, while it could not be confirmed that conventional consumers take in more price information in this phase. The results confirmed the hypothesised gaze behaviour of conventional consumers in the evaluation phase, while organic consumers' gaze behaviour deviated from expectations by not looking mostly at organic packages.

The study has several limitations. First, it was conducted in just one German city and cannot therefore be considered representative of the German population. Second, the results of this study cannot be translated to normal shopping situations since the study participants faced unfamiliar brands in the test shop and could not select the jams that they usually purchase. Furthermore, the range of products offered is much larger in normal supermarkets, which is presumed to influence decision-making and gaze behaviour. Third, the study relies on one product only. It is possible that there is an effect from the chosen product category on the choice and gaze behaviour. Fourth, since all products had only one facing and the package sizes were similar, no saliency bias is expected from these factors. Products were, however, not tested regarding the saliency of their package designs, which might have biased the participants' gaze behaviour (see Milosavljevic, Navalpakkam, Koch, & Rangel, 2012).

It is suggested that in a future study, the phases could be defined based on the fixation duration and then be compared to this study's results to provide insight on the effect the method of defining the phases has. Since German consumers are assumed to be more price conscious than consumers of other nationalities, it is suggested to replicate this study in other countries. It is furthermore suggested that future studies investigate whether different products would lead to different results.

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Conflict of Interests

The authors hereby declare that there is no conflict of interest.

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