Relationship between Attention and Choice

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Abstract
Choice experiments are often used to determine consumers' preferences and willingness to pay for product attributes. The design of choice experiments and its influence on measurement of consumer choices has received considerable attention. This study analyzes the influence of attention on the final choice by combining choice experiments with eye tracking. Furthermore, the role of choice set complexity on choice is investigated. Results show that in less complex designs the total gaze time, i.e., overall attention, influences the choice. In contrast, in more complex designs the time to first fixation, i.e., the first look at an attribute affects the choice.

Key words: Attention, Attributes, Bias, Choice experiments, Perception

1. Introduction

Choice experiments are frequently used in the field of agricultural economics, whether it is to determine preferences for certain product attributes or willingness to pay. Among others research has been conducted on circumstances that bias the estimates. For example, cheap talk (e.g., Tonsor and Shupp, 2011; Cummings and Taylor, 1999) or consequentiality (e.g., Bulte et al., 2005; Vossler et al., 2012) are meant to reduce hypothetical bias (for a meta-analysis see List and Gallet, 2001). Also, the design of choice experiments and its influence on measurement of consumer decision making has received considerable attention. This includes the number of attributes (e.g., Gao and Schroeder, 2009) and the number and range of levels of each attribute (e.g., Caussade et al., 2005). Including a greater amount of attributes versus a small amount of attributes is meant to reduce hypothetical bias because the presented choice is more realistic compared to alternatives with a small number of attributes. In addition, research has also investigated existing cut-off levels in consumer choices (Ding et al., 2012) and attribute non-attendance (Scarpa et al., 2013); if participants violate their cut-off levels or neglect certain attributes when making their decision, what does that mean for estimating utility?

These conceptual issues are important for the validity of choice experiments as a tool for predicting consumer choice and measuring consumer welfare. For instance, Dellaert et al. (2012) investigate the impact of the complexity of the choice situation and show that not only final choice is altered but also consumers' decision making strategy. Complexity of the choice is thereby based on the number of choice attributes and perceived similarity of choice options. In a similar approach Caussade et al. (2005) change the number of choices, choice attributes and the number and range of attribute levels. Consistently it is found that choice complexity has an impact on choice variability and error, but that the impact on willingness to pay is hard to determine. Jacobsen et al. (2012) come to similar conclusions regarding the inclusion of alternative projects in differing numbers when using choice experiments in natural resource evaluation. Hensher (2006) shows that the number of attributes ignored depends on the dimensionality of the choice experiments implemented. Also Greene and Hensher (2010) look at this attribute ignorance impact.

The objective of this paper is to improve our understanding of consumers' decision making strategy in choice experiments by further investigating the relationship between attention and choice making relative to the attributes present. To analyze the impact of attention, we combine data from an eye-tracking study, where subjects' eye movements and gazing time was observed and a choice experiment with two treatments, one with low and one

with high complexity. Complexity was modelled by the number of attributes employed and varying degrees of familiarity with these attributes.

The remainder of the paper is as follows. Section two describes the theoretical background and provides a short overview on previous literature. The third section presents the methodological background of choice experiments and eye tracking. In section four the empirical results are presented. The last section concludes.

2. Theoretical Background and Previous Literature

Theoretical Background

Consumers' choices are based on their perception. Among others perception is influenced by the level of prior knowledge and new information (Bredahl, 2003). If any information is to influence consumers' decision-making, it must be processed by their cognitive systems. This involves interpreting relevant information in the environment to create personal meanings or knowledge by retrieving product knowledge from memory to use in integration and interpretation processes and, integrating new with prior knowledge (Engel et al., 1995). Consumer choices hence are the result of a mixture of memory and stimuli, where some information is available in the choice environment and some in memory (Keller, 1993). In this regard it is important to know which product attributes perform as relevant stimuli and are utilized for the assessment (Trommsdorff, 2003). In this study we aim to analyze which attributes consumers attend to most and whether this attention influences choice. Also, we take into account if the complexity (influenced by the number of attributes as well as varying degrees of familiarity with these attributes) influences both attention and choice. As pointed out by Orquin and Mueller Loose (2013) attention affects perception, in fact, perception is increased by attention through the processing of stimuli.

Stimuli, i.e., attributes are product and environmental information. Product information is perceived physical-technical characteristics of the product such as color and other characteristics such as price and packaging. Product environment refers to the perceived situation at the point of sale such as cleanliness in the shop. Additionally, other factors such as shopping companions influence the perceived situation. During the decision-making process prior knowledge and new information are combined (Kuß and Tomczack, 2000). Prior knowledge is formed by past decisions. New information is that provided at the point of sale (Kuß and Tomczack, 2000). Each person actively processes and interprets information in a unique way. Hence, it is important to analyze consumers' perception individually (Engel et al., 1995). Relevant information that an individual is exposed to is organized in memory through schemata to give meaning to stimuli and to enable interpretation and comprehension of any situation such as new, familiar or unique (Jonassen et al., 1993; Cowley and Mitchell, 2003; Dacin and Mitchell, 1986). In this study we focus on the attention paid to new information, i.e., the attributes provided by means of choice sets. It is understood that there is a relationship between attention and eye movement (for an overview on studies see Orquin and Mueller Loose, 2013). "With regard to decision making, if a stimulus receives no fixations and is outside the perceptual span of the nearest fixation, then it seems plausible that it cannot be identified and is, therefore, unavailable to the decision maker" (Orquin and Mueller Loose, 2013). This project aims to clarify the role that attributes plays in the decision-making. Among others it needs to be analyzed how much of the offered information is perceived and in how far that affects the decisions.

In this regard, the theory of the adaptive toolbox gives important implications regarding consumers' decision-making (Gigerenzer and Todd, 1999). This idea starts from consumers' bounded rationality and tries to identify decision rules under the constraints of limited computational capacities, knowledge and time (Klein, 2001). If consumers have limited or no

specific information about certain product attributes they will make assumptions (Gigerenzer and Selten, 2001). For instance, consumers infer experience and credence quality attributes (e.g. taste, sustainability) from search quality attributes (country of origin label, biodegradable packaging label). In doing so, consumers use a collection of individual-specific rules or heuristics (Gigerenzer, 2007). In this project we take this into account by using attributes that are more familiar to consumers (e.g., country of origin) and less familiar to consumers (e.g., biodegradable package).

The standard theory of individual choice in economics, Expected Utility Theory, deals with decision-making under risk and uncertainty (e.g., von Neumann & Morgenstern, 1944). It is assumed that the consumers choose a product out of a set of alternatives (choice set) which provides them with the highest utility level. Besides, it is postulated that a product's utility varies with different product attributes and consumer characteristics (Lancaster, 1966).

Previous Literature

With regard to prior knowledge, most research has been done in the field of brands (e.g., Henderson et al., 2002; Keller and Aaker, 1992; Aaker and Keller, 1990; Tybout et al., 1981). For example, Henderson et al. (1998) used associative networks in marketing research to detect branding effects and strategies. Product image and product knowledge are built upon product association and consumer perceptions (Henderson et al., 1998). Consumers' associations are perceptions, evaluations and preferences in memory linked to the product. These associations can rely on physical product attributes and to everything else evoked in conjunction with the product (Aaker and Shansby, 1982). Referring to Aaker and Shansby (1982) the challenge is to identify these product associations. They provide, for example, information about perception and evaluation of competitors as well as a basis for innovations and brand extensions (Henderson et al., 1998). Furthermore, to develop marketing strategies it is easier to use existing schemas than to build new ones (Kroeber-Riel & Weinberg, 2003). Associations help the consumer to process information and provide purchase motivation. The semantic networks structure product information in a way that it can be used in the future to determine which product attributes and characteristics will be more satisfying (e.g., Tybout et al., 1981). Less research has been conducted in the field of actual perception and use of new information to make choices. Only few studies have analyzed the impact of cognitive structures on perception and purchase decisions (e.g., Grunert and Valli, 2001). Recent technological advancement now makes such research more feasible to conduct (e.g., Reutskaja et al., 2011).

The overview shows that well-grounded theories on perception, attention and choice-making exist. However, there is a lack of research that tests the actual links between perception, attention and choice. This study aims to close this gap. The contribution lies in the measurement of actual attention and choice making.

3. Methodological Background

Data collection took place in fall 2013 in the U.S. 130 participants were randomly recruited. The sample is evenly distributed in terms of gender but characterized by a higher share of younger participants. The sample is also better educated and has on average a higher income. The household size ranges on average between 2 and 3. 20% of the sample have children in the household. During the study participants started with general questions. Afterwards, they participated in choice experiments using an eye-tracking device. Then a second questionnaire had to be filled out.

3.1 Choice Experiments

Main objective of this research project is to measure the relationship between perception of attributes presented in choice experiments and actual choices. In addition, we test the effect of choice set complexity on attention and choice making. Choice experiments are a well-used methodology to isolate individual product characteristics and their specific influence on price, and provide insight into consumers' choices. In general, choice experiments measure consumers' subsequent product purchase decisions. Expected Utility Theory is the underlying theory of choice experiments, which are adequate to simulate decision-making by prompting the respondents to choose a product out of a choice set. Based on this decision and further individual-specific features, the relevance of different attributes for consumers can be revealed (Batsell and Louviere, 1991).

In choice experiments, respondents are asked to make repeated choices between different consumption bundles which include different attributes and the respective levels of these attributes. The participants' utility depends on attribute levels of the choices made from these sets. This procedure enables us to determine the attributes which influence the choice significantly. Participants have to make repeated choices between the alternatives and a "none of these" option. The inclusion of the "none of these" option is standard practice in marketing and economic research using choice experiments (e.g., Louviere et al., 2000).

The set-up of the study included two treatments. In treatment 1 subjects made choices on 1lb of cheddar cheese characterized by three attributes. In treatment 2 subjects made choices on 1lb of cheddar cheese characterized by five attributes. Table 1 provides an overview on the attributes used in the choice experiment.

Table 1. Attributes and levels of attributes for 1lb of cheddar cheese

Price	\$3.33	\$7.88	\$12.43	
Hormone label	No artificial growth hormones	No label		
Country of origin (COOL)	Product of USA	Product of Ireland	Product of England	
Region of origin (ROOL)	Wisconsin, Cork, or Somerset (depending on COO)	No label		5 attribute design only
Packaging label	Packaging Biodegradable	No label		

The choice experiments consisted of 12 choice sets. Each choice set consisted of 2 alternatives and a "none-of-these" option. The experimental design included the price, a hormone free label and a country of origin (COO) label in the three attribute design. In the five attribute design a region of origin (ROO) label and a label on biodegradable packaging were added. The price and the COO/ROO labels had three levels each. All other attributes had two levels. The choice sets were displayed on a computer screen using the software Qualtrics. The order of the choice sets was randomized. Figure 1 shows a choice set example.

Alternative A	**Alternative B**	
Product of Ireland	Product of USA No Artificial Growth Hormones	None-of-these
\$7.88	\$12.43	
□	□	□

Figure 1. Example of choice set for 3 attribute design

3.2 Eye Tracking

To elicit consumers' use of new information to make choices, eye tracking is a valuable tool. Eye tracking is known to be an unobtrusive and nonreactive process tracing method and a reliable measure for attention (Lohse & Johnson, 1996; Russo, 2011). Eye tracking has been used since the 1970s based on the understanding that people have to move their eyes in order to perceive something (Wedel & Pieters, 2007). Eye tracking measures saccades (no actual vision occurs), fixations (objects are processed in detail) (Wedel & Pieters, 2007) and the actual scanpath (Noton & Stark, 1971) where the eye moves based on saccadic movement between interest areas and related fixations.

Figure 2 gives an example of heat maps which show the number of fixations that occur in certain areas. Also the duration of the fixation in an area is displayed. Using different colors allows making the number of fixations visible. In figure 2 red displays the highest number of fixations and green the lowest number of fixations. The example provides information for a sample of 10 participants and shows how the fixations evolved over time.

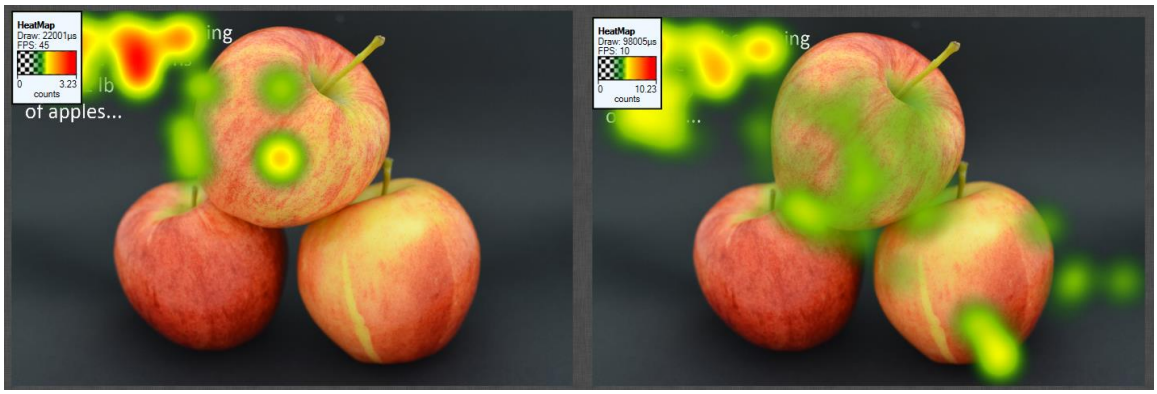

Figure 2. Example of two heat maps displaying the gaze after 1 second (left) and after 11seconds (right) (sample size 10)

Figure 3 provides an example of the actual scanpath, i.e., gaze plots. Gaze plots inform the researcher on the sequence and position of fixations of an image. The dots display where a fixation occurred and for how long it occurred. The longer the duration the bigger the dot. In the example in figure 3 again several participants are pooled. Also, it is shown how the gazes evolved over time.

Figure 3. Example of two gaze plots displaying the fixations after 3 seconds (left) and after 11seconds (right) (sample size 10)

Through the use of eye tracking devices, the researcher is able to measure consumers' attention, i.e., use of new information, such as whether the price or other attributes are actually

perceived and included in the choice-making process. Eye tracking monitors information attention. It allows examination of the kind of information consumers are seeking, the amount and order in which information is acquired and how much time consumers need to consider the particular information (Payne et al, 1993). By this, important product characteristics and their comparative relevance when making choices can be identified. Eye tracking considers that consumers' preferences may change, depending on the amount of information provided. In this project choice experiments and eye tracking are combined to empirically test the relationship between attention and consumer choice. In this regard participants' choices were monitored using an eye-tracker.

The eye tracking device used in this study is a Tobii® T60 XL table mounted device accompanied with Tobii StudioTM 2.2 software. In the analysis we focus specifically on two measures: (1) time to first fixation, which measures how long the participant needed to perceive the attribute for the first time and (2) total gaze time, which provides information on how long the attribute in question was attended to until the participant made a choice. In order to measure time to first fixation and total gaze time areas of interest (AOI) have to be defined. Once an AOI is defined only those fixations that occurred within the AOI are measured. Figure 4 shows an example for an AOI (orange ellipse). If this was used to define measures, only the time of first fixation and total gaze time for the apple on top of the other two would be reported. It is possible to define multiple AOIs. This allows determining exactly which attributes participants attended to.

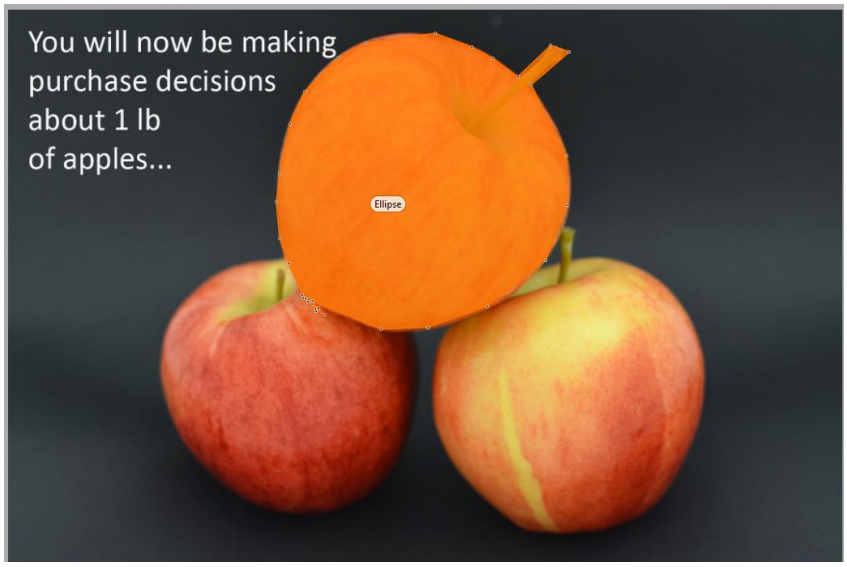

Figure 4. Example of Area of Interest

3.3 Data Modeling

Consumers' choices are modeled utilizing multinomial logit models. Each of the study participants, *i*, faces 12 choice situations *t*. In each choice situation, the consumer is presented with a set of alternatives. Each set contained three elements: two products and the "none of these" alternative. The total number of alternatives is indexed by *j*, including the number of products and the "none of these" option. Let J_t represent the set of alternatives at choice situation *t.* The utility of person *i* from alternative *j*, in choice situation *t* is specified as $U_{ijt} = V_{ijt} + \varepsilon_{ijt}$ Measures from choice experiments are often used to determine preferences and willingness to pay for product quality and process standards (e.g., Roosen et al., 2003; Loureiro & Umberger, 2007). The choices serve as the dependent variable and the data collected via eye tracking serve as independent variables, in the sense that the time to first fixation and total gaze

time determine the choices in addition to the attributes themselves. We measure for example whether attributes more or less familiar to participants negatively or positively affect the choices. We are also able to account for differences in choice based on choice set complexity, i.e., in how far affects the number of attributes the time to first fixation and total gaze time and subsequently the choice. As the multinomial logit model is a standard model the interested reader is referred to Greene (2003) for further information.

4. Empirical Results

4.1 Descriptive Results

To start with, we describe the descriptive results from the eye tracking using the measures time to first fixation and total gaze time. The time to first fixation provides information on how long it took the participant to look for the respective attribute for the first time. In a more general marketing context this information is especially relevant when it comes to brands. Companies are trying to minimize their time to first fixation to make sure that consumers pay attention to their product. Results in table 2 show first of all that there is quite a bit of variation in the time respondents needed to look at the attributes for the first time. Also, there is a considerable difference in the time to first fixation when comparing the 3 attribute design to the 5 attribute design.

Table 2: Time to first fixation and Total gaze time

	3 attribute design				**5 attribute design**			
	First fixation		**Gaze time**		**First fixation**		**Gaze time**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Price	1.29	1.93	0.40	0.42	1.65	2.96	0.12	0.20
Hormone free	1.29	1.70	0.98	1.20	1.63	2.45	0.39	0.55
USA	0.95	1.42	0.49	0.56	1.28	2.54	0.30	0.53
UK	1.20	1.99	0.51	0.48	1.20	1.76	0.35	0.44
Ireland	0.88	1.29	0.51	0.48	1.26	1.82	0.37	0.50
COOL total	1.01	1.60	0.50	0.51	1.25	2.07	0.34	0.49
Somerset					0.99	2.60	0.09	0.20
Cork					1.19	1.86	0.13	0.21
Wisconsin					1.14	1.92	0.16	0.29
ROOL total					1.09	2.21	0.13	0.24
Biodegradable packaging					1.79	2.30	0.26	0.41

More specifically, in the 3 attribute design consumers took the least time to look at Ireland and the USA, followed by the UK. They needed more time to look at the price and the hormone free label. This shows that on average consumers attend to country of origin labeling before looking at other attributes. In comparison in the 5 attribute design they looked first at the region of Somerset (UK), followed by Wisconsin (USA) and Cork (Ireland). They then attended to the UK, Ireland and the USA. Hormone free labeling, price and a label indicating biodegradable packaging were fixated last. This indicates a shift in attention from COOL being fixated first to ROOL being fixated first. Also, the overall time to first fixation was shorter in the 3 attribute design (0.88) versus the 5 attribute design (0.99).

Looking at the total gaze time, which regards how long individuals look at a certain attribute there are substantial differences between the 3 and 5 attribute design. In the 3 attribute design participants spent the least time looking at the price followed by USA, UK and Ireland. The looked the longest at the hormone free label. In the 5 attribute design Somerset was the

least attended to attribute followed by price, Cork and Wisconsin. Subjects looked considerably longer at biodegradable packaging, USA, UK and Ireland. The hormone free label was again attended to the longest amount of time. In general, total gaze time was shorter in the 5 attribute design than in the 3 attribute design which means, people rather divide their time up than spending more time to make the decision.

4.2 Econometric Results

After looking at the descriptive results, tables 3 and 4 depict the results of the econometric modeling for both the 3 and 5 attribute design, respectively. In each table three models are displayed. The base model only includes the attributes of the choice sets and a variable to account for choosing the none-of-these alternative as explanatory variables. Two extended models include additionally variables for either the time to first fixation or total gaze time for the attributes.

In all six models, the price is significant and negative as expected. This means that the higher the price the lower the probability to choose the alternative. Also, in all six models the none-of-these variable is significant and negative meaning that consumers rather choose something over nothing.

In the 3 attribute design (table 3) the only other significant variable is the hormone free label, which has a positive sign. This means that participants base their decision on this label but not on the country of origin. This is an interesting result considering that they attended to the price and the hormone free label after looking at the country of origin. Looking at the model that includes variables regarding the time to first fixation we can note that the log likelihood value increases but none of the additional variables is significant. This means that whether an individual takes more time to look at an attribute or not does not influence the choice with only three attributes present. Finally, looking at the third model in table 3 results suggest that the gaze time for price and COOL have a significant and positive effect on choice. Hence, the findings lead to the conclusion that not the time to first fixation but indeed how much time is spent overall on perceiving the attribute influences the choice. Also, even though the gaze time for price was less than for other attributes it seems that even by glancing at it this influences the decision. The longer they gaze at the price the more likely to choose that option.

The results for the 5 attribute models (table 4) differ from those for the 3 attribute models. Again the hormone free label is significant and positive indicating that products with such a label are preferred. However, in this case if a product is labeled as being produced in the USA or the UK (Ireland is dropped due to multicollinearity) has a significant and negative effect. This can be interpreted as a product from the USA or the UK being less preferred compared to a product from Ireland. However, in all three models in table 4 a product from Wisconsin is preferred. Looking at the size of the coefficient leads to the conclusion that the significant and negative effect for USA products might be outdone by the region of Wisconsin, i.e., US products are actually preferred over foreign (English/Irish) products. Having biodegradable packaging has no effect on the choice. Contrary to the results for the 3 attribute design, findings lead to the conclusion that time to first fixation affects choice when more attributes are present, while gaze time has no effect anymore. The shorter the time to fixation for price the more likely to choose the respective product. This makes intuitively sense, considering that when being overwhelmed with information the price is the most important cue to make a decision. This also corresponds with the short gaze times for price. Individuals do not need to look at the price for a long time to be able to make a choice.

Table 3: Empirical results for cheese with three attributes

	Base model				Time to first fixation				Total gaze time			
	Coeff.	SE	z-value		Coeff.	SE	z-value		Coeff.	SE	z-value	
Price	-0.300	0.027	-11.044	***	-0.299	0.027	-11.010	***	-0.298	0.027	-10.870	***
Hormone free	1.457	0.206	7.072	***	1.425	0.209	6.820	***	1.374	0.222	6.200	***
USA	0.302	0.191	1.581		0.286	0.192	1.490		0.309	0.193	1.610	
UK	-0.009	0.288	-0.030		-0.024	0.289	-0.080		0.032	0.291	0.110	
Price fixation/gaze					0.015	0.045	0.340		0.495	0.226	2.190	**
Hormone free fixation/gaze					0.046	0.045	1.010		0.051	0.090	0.560	
COOL fixation/gaze					0.068	0.053	1.280		0.349	0.176	1.980	**
NONE	-2.543	0.263	-9.674	***	-2.435	0.270	-9.010	***	-2.161	0.283	-7.640	***
LL value	-456.103				-454.367				-449.441			

Table 4: Empirical results for cheese with five attributes

	Base model				Time to first fixation				Total gaze time			
	Coeff.	SE	z-value		Coeff.	SE	z-value		Coeff.	SE	z-value	
Price	-0.234	0.040	-5.891	***	-0.238	0.040	-5.930	***	-0.232	0.040	-5.800	***
Hormone free	2.374	0.286	8.296	***	2.532	0.297	8.510	***	2.434	0.305	7.970	***
USA	-1.446	0.489	-2.958	***	-1.465	0.494	-2.960	***	-1.463	0.494	-2.960	***
UK	-0.946	0.429	-2.206	**	-1.012	0.433	-2.340	**	-0.952	0.431	-2.210	**
Somerset	-0.126	0.426	-0.296		-0.180	0.439	-0.410		-0.177	0.432	-0.410	
Wisconsin	2.181	0.463	4.711	***	2.163	0.473	4.570	***	2.100	0.470	4.470	***
Biodegradable packaging	-0.103	0.218	-0.474		-0.075	0.228	-0.330		-0.027	0.242	-0.110	
Price fixation/gaze					-0.092	0.046	-2.010	**	-0.364	0.538	-0.680	
Hormone free fixation/gaze					-0.067	0.045	-1.500		-0.046	0.251	-0.180	
COOL fixation/gaze					0.007	0.060	0.120		-0.007	0.215	-0.030	
ROOL fixation/gaze					0.063	0.056	1.120		-0.137	0.345	-0.400	
Biodegradable packaging fixation/gaze					0.021	0.049	0.420		0.723	0.688	1.050	
NONE	-2.288	0.300	-7.628	***	-2.428	0.326	-7.440	***	-2.268	0.319	-7.110	***
LL value	-304.399				-299.674				-303.148			

5. Conclusion

Studies from fields such as economics, marketing and transportation use choice experiments to determine consumer preferences for products. Results from choice experiments are compromised through hypothetical bias which means that the estimated results differ from the "true" value. Manifold research exists to reduce hypothetical bias using cheap talk scripts or consequentiality. Another reason of biased results is the design of the choice experiments itself. The level of complexity of the choice sets due to number of attributes and the familiarity with the attributes used in the choice sets can also bias the decision making strategies and hence the results.

This study investigated how attention influences the choice. To do so, eye tracking was combined with choice experiments. It was tested how complexity of the choice sets (varied by number of choice attributes as well as familiarity with the attributes) influences the decision-making. Two measures were used to analyze attention; time to first fixation and total gaze time determine the relationship between attention and choice.

Results show that the time participants needed to look at the attributes for the first time varied considerably. In the less complex design consumers looked faster at the country of origin than at the price and the hormone free label. In the more complex design they looked the fastest at the region of origin followed by the country of origin. The time to first fixation was longer for hormone free labeling, price and biodegradable packaging,

Findings for total gaze time show that in the less complex design participants spent most time looking at the hormone free label, followed by the price. The country of origin labeling was gazed at the least in total. On the contrary, in the more complex design participants looked most at the hormone free label and country of origin labeling, followed by packaging, region of origin and price. The overall gaze time was shorter in the more complex design compared to the less complex design. For marketing recommendations this means the more information on a product the less attention is spent on the single information. More information does not mean that consumers will increase their level of attention, they will rather withdraw from certain cues faster. Also, the importance of cues used to make decisions changes when more information is provided.

The econometric results reveal that in the less complex design the time to first fixation does not significantly influence choice. However, the amount of time spent on perceiving the attribute does influence the choice. Furthermore, even though the gaze time for price was lower than for other attributes it significantly influences the decision making.

In the more complex design the time to first fixation affects choice but contrary to the findings from treatment 1 gaze time has no effect anymore. Also, the shorter the time to first fixation for price the more likely to choose the respective product. From a managerial point of view this means that information overload, i.e., too much information on the product leads to the price being used as main cue.

Looking at the results with regard to applicability in the agribusiness sector it becomes evident that displaying a hormone free label has a significant and positive effect. This means that U.S. consumers prefer cheese products with such a label. Labeling cheese with the region of origin also has a significant and positive effect if the region is domestic. For food marketing in the U.S. this means food producers and retailers can expect a premium for domestic products, such as cheese from Wisconsin, USA. Having a biodegradable packaging has no effect on the choice. This leads to the conclusion that educational efforts are needed when it comes to favorable sustainable choice making.

Overall, this study provides insight into both methodological and managerial issues of experimental economics. Choice experiments are a frequently used tool and paying attention to conceptual issues is important considering the impact that results may have on decisions in industry and policy.

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