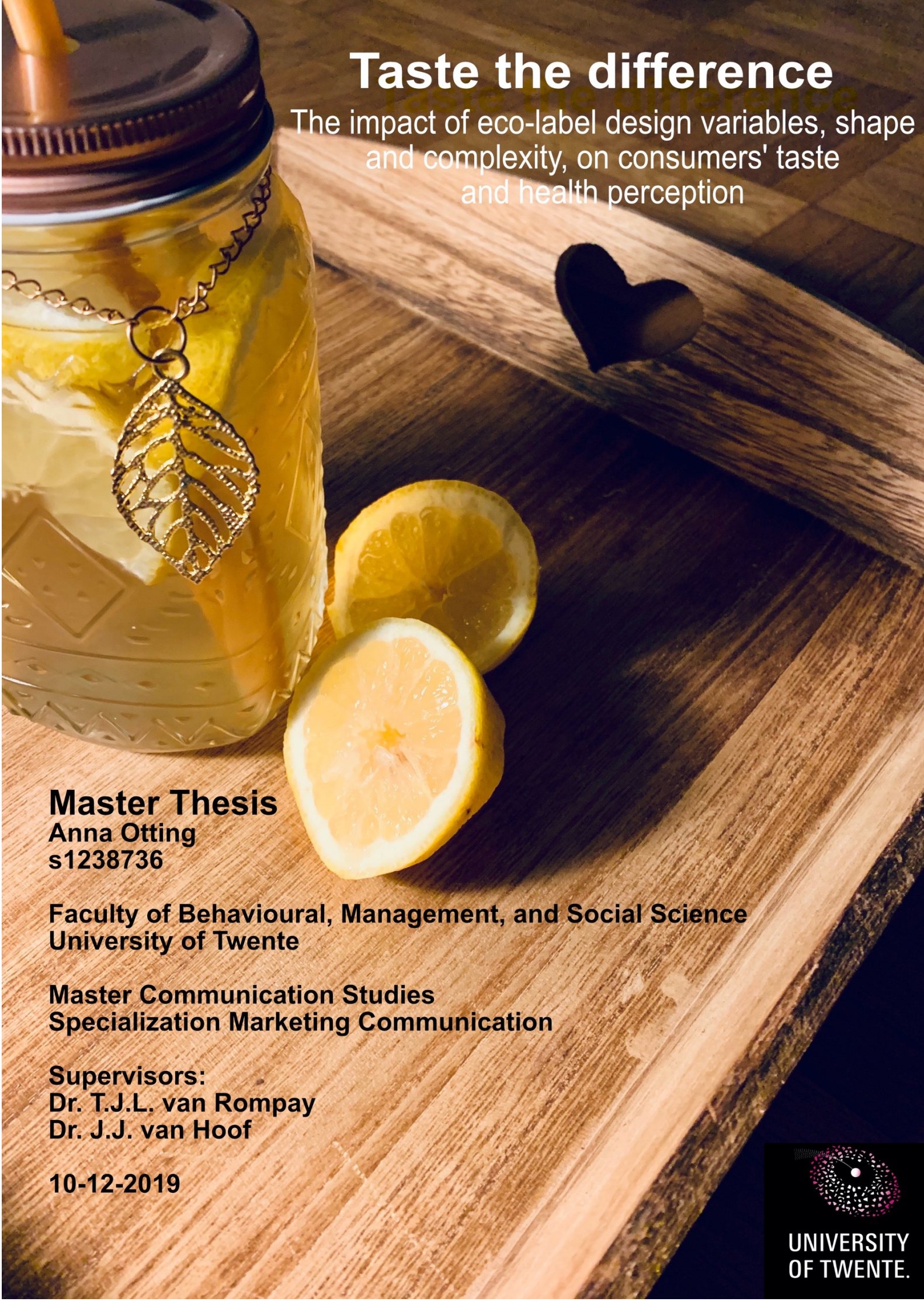

Taste the difference

The impact of eco-label design variables, shape and complexity, on consumers' taste and health perception

Master Thesis

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Abstract

Purpose - Eco-labels are becoming increasingly relevant as design components of food and beverage products to communicate the healthfulness of a product's content and assure its sustainable origin. However, little is known about the impact of the design of labels on consumer responses, although the design of a label or logo can be an expressive marketing tool to appeal to consumers. The present study addresses, thus, two research issues: First, to what extent the eco-label design features of shape and complexity impact consumers' taste perception and health evaluation; second, to what extent the *eco-label effect* occur in taste and health perceptions. The goal of the present study is to gain new insights in the field of eco-label effectiveness and how label design elements may affect taste and health perceptions.

Method - The main study had a 2x2 experimental 'between-subjects' design. It used shape (round versus angular) and complexity (abstract versus naturalistic) as manipulation variables (four experimental conditions). Each of the four experimental conditions contained an eco-label design variant. In addition, a fifth condition, a control condition (absence of eco-label), was added to test the *eco-label effect*. The main study was done in a real-life setting (the entrance of a supermarket). It involved conducting a taste test of iced tea with a poster advertisement about a fictional iced-tea brand (N = 158). The stimulus material was presented during the entire experimental-procedure phase.

Findings – The results indicate a significant main effect on taste intensity when the naturalistic (high complexity) label was shown. A high level of complexity caused a higher taste intensity than versus a low level of complexity. Further findings showed an interaction effect between complexity and shape on the perceived price; thus, it demonstrates a higher price perception when a naturalistic and round eco-label is displayed. The eco-label effect was shown on sustainability perception, taste quality, price perception, and a marginal significance occured on the health perception. Further taste characteristics such as taste liking or purchase intention remained without significant effects, neither with regard to main or interaction effect, nor with regard to differences between the experimental conditions and the control condition.

Conclusion –The results presented here indicate that label design complexity might be a potential indicator of crossmodal corresponding effects on the evaluation of a product. The findings regarding the eco-label effect demonstrate its robustness with respect to judgmental dimensions (e.g., sustainability and price perceptions) but underline a lack of robustness over taste characteristics (expect taste quality). These outcomes support the idea that people shape their expectations of a product and its content based on extrinsic factors. Furthermore, the study underlines the need for further investigations regarding eco-label design on consumer responses to understand how to activate positive taste and health perception.

Keywords – eco-label, complexity, shape, taste perception, health perception, *eco-label effect*, sustainability, crossmodal associations, expectancy effect

1. Introduction

In recent decades, the relevance of healthy diets is increasingly communicated to consumers—especially, with respect to enhanced health issues, but also in the light of environmental compatibility. Nevertheless, consideration of the sustainability of food and beverage consumption is often omitted. Researchers increasingly emphasize the relevance of replacing food-consumption patterns with healthier nutritional behaviours which prepossess sustainability criteria (Fenko, Schifferstein, Hekkert, 2010; Piqueras-Fiszman and Spence, 2015; Fenko, de Vries, and van Rompay, 2018). One increasingly applied, yet widely understudied way of communicating the economic and environmental awareness of food products is by using organic or eco-labels (Gallastegui, 2002). Common already existing eco-labels are e.g., the *Fair-Trade* label, the *Rain Forest Alliance* (a green frog) label, or *EU-organic* logo. These eco-labelling schemes indicate that a company has approved particular ecological, environmental and social standards to facilitate the transparency of food manufacturing and to ensure the environmental and social sustainability of products (Erskine & Collins, 1997; Gallastegui, 2002; Wiedmann, Hennigs, Behrens, & Klarmann, 2012; Grunert, Hieke, & Wills, 2013; Vecchio & Annunziata, 2015). People should feel motivated and positive in their purchase decision when choosing eco-labelled products.

Previous investigations have revealed that various labelling schemes affect consumers' product perceptions. Process-related labels, natural, organic, and eco-labels, ethnic food labels, and, also, nutritional information all shape consumers' product responses (Piqueras-Fiszman & Spence, 2015). For instance, Lee, Shimizu, Kniffin, and Wansink (2013) have shown that the presence of an organic label decreased the calorie perception of yoghurt by 20.1% in comparison to the calorie perception of the non-labelled yoghurt (equal product was used in both conditions). All information experienced with a certain product is produced, stored and recalled in people's brains, whether it is previous experiences with the food or beverage, its visual appearance, or its taste (Piqueras-Fiszman & Spence, 2015). These findings indicate that people form expectations about a food or beverage product and its content (the expectation-effect) on health and taste perceptions (Piqueras-Fiszman & Spence, 2015).

Prior investigations in the field of sensory expectations based on product-extrinsic food-and-beverage cues have revealed that eco-labels and different variants of design features can be relevant when building perceptions about a product, product choices and, in the end, purchase intention (Rihn, Wei, Khachatryan, 2019). In particular, the design variant shape has been considered a crucial influencer with regard to sensory expectations. For instance, Becker, van Rompay, Schifferstein, and Galetzka (2011) have proven that a consumers' taste experience was more intense when the product package was angular. In previous literature, this has been identified as a crossmodal association or crossmodal correspondence (Velasco, Woods, Petit, Cheok, & Spence, 2016). Furthermore, a widely neglected potential influential factor of sensory expectations is visual complexity: e.g., adding certain elements to a design to make it more arousing (high in complexity) (van Grinsven and Das, 2016). Design or logo complexity involves a diversity of dimensions (Pieters, Wedel, & Batra, 2010), thus, the present study concentrates on abstract and naturalistic depiction as a first step in order to generate

low versus high complexity (Henderson and Cote, 1998), to test potential effects on taste evaluation and health perception. This leads to the first research question: *To what extent do the eco-label design features of shape and complexity impact consumers' taste perception and health evaluation?*

Besides from investigating eco-label design variants on consumers' product perception, I consider whether the presence/absence of an eco-label application impacts the overall perception of the designated product. Prior studies of the potential effects of eco-labels on product evaluation have identified an eco-label effect (form of halo-effect) when labels are displayed on food and beverage products (Sörgvist, Haga, Langeborg, Holmgren, Wallinder, Nöstl, Seager, & Marsh, 2015; Schuldt, Muller, & Schwarz, 2011). That means when consumers recognized a healthy claim or eco-label on a product, they, automatically, form expectations about product characteristics, e.g., taste, quality and price. This further underlines the expectation-effect: automatically expecting that ecological food and beverage products differ from regular products (Sörgvist et al., 2015). The second research question is, thus, as follows: *To what extent does the eco-label effect occur in taste and health perceptions?*

The present investigation is relevant insofar as eco-labels have turned into a fundamental component of healthy food and beverage products and their communication of sustainable, environmental-friendly ingredients and origin (Karnal, Machiels, Orth, & Mai, 2016). Eco-label functions multi-dimensionally, they represent a sustainability organization and its environmental goal (Gallastegui, 2002), facilitate and ensure that a product's content is ecologically and sustainably produced and, beyond this, supports relations to healthiness, healthy nutrition and a healthy lifestyle (Fenko, 2019). Hence, new insights into concrete design paradigms may support prior achievements in recognizing and implementing feasible label-design-effect refinements to enhance a healthy product choice.

1.1 Taste, healthiness, and intervening factors

Labelling a product as *ecological-friendly* has the potential to influence taste expectations about the designated product; generally, health information on a product not only impacts consumers' health evaluation, but particular information can also effect taste perception (Jo & Lusk; Fenko, 2019), i.e., while labelling products with healthy information can have a positive effect on health perception, it has the potential to lower taste evaluation. As, however, the main purchase intention of food and beverage products is taste (Fenko, 2019), overcoming stereotyped perception of 'healthy = not tasty' is crucial in order to positively influence people to buy healthy products.

Feasible ways to enhance positive taste perception was found in the field of *multi-sensory-product-experiences* with food and beverage products, i.e., stimulating more than one sense in order to enhance consumers' attention and positive product impression (Spence, 2016; Velasco & Spence, 2019). Thus, combinations of sensory (taste) and informational extrinsic product cues (eco-labelling) may affect positive evaluation of healthy food and overcome 'stereotyped perception' of the 'healthy = not tasty' perception. Stereotyped perception refers to *expectancy effect* (Piqueras-Fiszman & Spence), i.e., people possess particular expectations prior to testing or purchasing a product (especially about unknown products) based on opinions about related, similar products, prior

experiences, or personal impressions. As Fenko (2019) underlines, using multisensory cues seems to be more effective in order to facilitate healthier food and beverage choices through '*nudge'-type* interventions, i.e., boosting an extrinsic product feature (e.g., enhancing color intensity of a label or product package), increases sensory expectations and perceptions, so potentially leading to a more appealing impression of consumers.

These interventions are also referred to as crossmodal associations (Velasco, Woods, Petit, Cheok, & Spence, 2016); where certain associations rest on dimensions which are not necessarily related to each other but stimulate intensity perceptions of each other (e.g., color intensity and taste intensity perceptions). This correspondence shows that perceptions of food and beverage products contain a multisensory nature. Extrinsic features of products can impact food and beverage experiences (Fenko, 2019). Shape dimensions are widely considered to be an effective extrinsic cue in order to enhance sensory evaluations (e.g., taste perception) (Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014; Salgado-Montejo, Alvarado, Velasco, Salgado, Hasse, & Spence, 2015; Spence, 2016; Velasco, Spence, & Cheok, 2016). Nevertheless, other potential dimensions, such as high visual complexity (e.g., elaborating a label illustration) may possess also crossmodal associations on taste perception; as high complexity is related to high-involvement, respectively higher arousal (Henderson & Cote, 1998; Grinsven & Das, 2016) These potential relations are discussed next.

1.2 Complexity on taste and health perception

Design complexity can be composed of a multitude of design components (Donderi, 2003). For instance, complexity can be enhanced by producing objects that are more detailed, by increasing the numbers of elements, by how ornamented a design is, also by adding multiple colors, to name just a few options (Pieters, Wedel, & Batra, 2010; Grinsven & Das, 2016). The present study will focus on abstract (features of an object that are narrowed to the most basic illustration) and naturalistic (capturing the degree of realism of an object by detailed and elaborated illustration) dimensions in order to define low or high complexity (Pieters, Wedel, and Batra, 2010; Grinsven & Das, 2016).

However, little previous empirical data is available on specific (eco-) label designs and consumer responses. Regarding perceived healthiness, most research focuses on the impact of verbal versus visual communication, understandability and purchase intention of nutrition labels (Acton, Vanderlee, Roberto, & Hammond, 2018) or eco-labels (Tang, Fryxell, & Chow, 2014). Therefore, the assumptions made in the present context are predominantly based on prior investigations of logo design (Henderson & Cote, 1998; Machado, Carvalho, Torres, & Costa, 2015; Grinsven & Das, 2016) and advertisement design (Pieters, Wedel, & Bara, 2010) and how design characteristics may affect consumers' taste and health perceptions of products.

According to Finn (1988) and Robertson (1989), basic and simple factors require less attentional and processing capacity and facilitate easier encoding of, for example, a pictorial message of an advertisement in the brain's memory system. Thus, adding more elements to a design claims greater attentional and processing capacity and requires stronger engagement (Henderson and Cote, 1998).

This indicates that complex stimuli have greater arousal potential (Grinsven & Das, 2016). This can be related to the optimal arousal theory that suggested that complexity has a shaped relationship with affect, hence, consumers experience a higher involvement level (van Loo, Caputo, Nayga, Seo, Zhang, & Verbeke, 2015). Comparing these prior findings to the present study, I note that, on the one hand, the simplicity (abstract illustration) of an eco-label design could mean that consumers are less engaged when exposed to the label and associated product (Donderi, 2003). On the other hand, a more complex (naturalistic) label design may generate a greater engagement in the overall perception process. Thus, relating prior findings to the present study and considering prior results of crossmodal associations, high complexity (higher arousal) may provoke a higher taste intensity perception when subjects are exposed to more naturalistic (more complex) label illustrations (Velasco, Woods, Petit, Cheok, & Spence (2016).

In addition, Henderson and Cote (1998) have created concrete guidelines for designing and modifying logos. They orientated on Gestalt psychology, experimental aesthetics and focused on the principle of simplicity and complexity. The researchers have concluded that abstract logo designs evoked poor consumer responses with regard to recognizing and liking the logo. Conversely Henderson and Cote (1998) found that design characteristics such as elaborateness and naturalness influence the affective responses of consumers. These findings are supported by Machado, Carvalho, Torres, & Costa (2015) who tested abstract and natural labels on consumer responses with regard to affect. Labels more related to a naturalistic design were favoured over abstract labels and evoke most pleasing affect. Relating these findings to health perception, people's preference for naturalistic (high complex) label designs may lead to more positive impression of the designated product. Therefore, a complex (naturalistic) label design may shape the perceived healthfulness of a product.

Building on Henderson and Cote's (1998) logo-complexity findings, Pieters, Wedel, and Batra (2010) have shown that advertising complexity helps to gain attention for advertisements and to create favorable attitudes towards the advert. They achieved these very findings by splitting design complexity into six dimensions; *quantity of objects, irregularity of objects, dissimilarity of objects, detail of objects, asymmetry of objects, irregularity of arrangement of objects.* Each of the dimensions had a simple and complex side. Design complexity positively affected advertising comprehensibility and liking. Van Grinsven and Das (2016) have concretized the findings of Pieters, Wedel, and Batra (2010) and Henderson and Cote (1998) by translating the six dimensions on an existing brand logo, and could support that complex logos are more preferred over simple logo designs. Hence, relating these results on the present study, more complex label designs may evoke a greater liking on the part of the participants. Preference of a naturalistic (more complex) eco-label design (evoking positive affect) may lead to a greater taste liking perception. After pointing out relevant components that facilitate applications of simple and complex impressions of designs, the following hypotheses have been formulated:

H1a: A high level of complexity (naturalistic) will, compared to low level of complexity (abstract), result in higher taste-intensity perception.

H1b: A high level of complexity (naturalistic) will, compared to low level of complexity (abstract), result in higher health perception.

H1c: A low level of complexity (abstract) will, compared to high level of complexity (naturalistic), result in higher taste liking perception.

1.3 Shape on taste and health perception

As previously noted, round and angular products can function as an indicator for a diversity of taste perceptions. Prior investigations of shape-taste effects underline the robustness of this association under a variety of experimental conditions. With respect to the connection between angular shapes and higher taste-intensity ratings, Becker, van Rompay, Schifferstein, and Galetzka (2011) have found that yoghurt presented in an angular-shaped package was perceived as more intense than yoghurt presented in a rounded package. Furthermore, Rompay and Fennis (2019) emphasized, in their review of product perception and sensory evaluation, a relation between angularity and taste-intensity evaluation. The researchers stated that consumers tend to associate angularity with taste characteristics such as tough, powerful, and intense. These findings indicate relevance to the present study insofar as it can be suggested that angular labels may enhance the taste-intensity perception of consumers.

Furthermore, Salgado, et al. (2015) have pointed out that round illustrations were rated as more pleasant than angular illustrations. Generally, research on favoritism for shape formats has indicated a preference for round shapes over angular ones (Bar & Neta, 2006; Velasco, Spence, & Cheok, 2016; Westerman, Gardner, Sutherland, White, Jordan, Watts & Wells, 2012;). One potential explanation refers to fundamental behavioral patterns, i.e., the perception of angularity is perceived as more harmful and frightening than roundness based on experiences from the environment (Bar & Neta, 2006; Cotter, Silvia, Bertamini, Palumbo, & Vartanian, 2017). Round shapes are connected to attributes such as approachableness, naturalness and harmoniousness (Zhang, Feick, & Price, 2006; Westerman, Gardner, Sutherland, White, Jordan, Watts, & Wells, 2012). As harmonious and natural might be associate to greater health impressions, rounded as opposed to angular-shaped labels may enhance the effectiveness of the eco-label to create a greater health perception of a designated product. Moreover, the overall positive impression of round shapes potential leads to the assumption that rounded label portrayals may facilitate a greater taste liking, as it may shape a pleasant impression of a product (Salgado-Montejo, Alvarado, Velasco, Salgado, Hasse, & Spence, 2015; Walsh, Winterich, & Mittal, 2011).

In addition, several previous studies have shown that round shapes can influence the perception that a product is sweeter, and angularity can have the result that a product is perceived as bitter and sour (Spence & Ngo, 2012). With respect to rounded objects, existing research clarifies corresponding effects between roundness and a greater perception of sweetness (Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014; Velasco, Spence, & Cheok, 2016; Velasco, Woods, Petit, Cheok, & Spence, 2016). Velasco, Spence, and Cheok (2016) have found a crossmodal correspondence between shape and taste which is based on a rather affective basis. The researchers' experiment

underlines the consumers' tendency to choose sweet over bitter taste and roundness over angularity and to underline interconnections between sweetness and roundness. These findings could add insights regarding the way eco-labels could be designed to activate positive and healthy associations with the product. Considering the results of the studies mentioned above, the following hypotheses have been formulated regarding shape differences:

H2a: An angular eco-label design will, compared to a rounded eco-label design, result in higher taste-intensity perception and in a rather sour and bitter taste perception.
H2b: A rounded eco-label design will, compared to an angular-shaped eco-label design, result in sweeter taste perception.
H2c: A rounded eco-label design will, compared to an angular-shaped eco-label design, result in higher taste liking.
H2d: A rounded eco-label design will, compared to an angular-shaped eco-label design, result in greater health evaluation.

1.4 Eco-label effect

As an additional factor, the recently found 'halo effect' for organic or eco-labelled products will be considered. This is also called eco-label effect (Sörgvist, Haga, Langeborg, Holmgren, Wallinder, Nöstl, Seager, & Marsh, 2015) or the fair-traded effect (Schuldt, Muller, & Schwarz, 2011). Prior research has found that people exhibit unconscious preferences (in both taste and health perception) for organic-labelled products over non-labelled products and, additionally, people were biased in their overall product perception and evaluation (Wansink & Chandon, 2006). Potential explanation is that words like *organic* or *eco-friendly* appear to evoke associations of products that differ from those of 'conventional' products with regard to specific sensory and judgmental dimensions such as sustainability, quality, or taste perception (Wiedmann, Hennings, Behrens, & Klarmann, 2012; Sörgvist, Haga, Langeborg, Holmgren, Wallinder, Nöstl, Seager, & Marsh, 2015). A number of previous studies have documented this very effect over different experimental conditions, food products and labels that communicate a product as organic or sustainable. These studies have demonstrated the effect's robustness (Wansink & Chandon, 2006; Wiedmann, Hennings, Behrens, & Klarmann, 2012; Sörqvist et al., 2013; Sörgvist, et al., 2015; Schouteten & Slabbinck, 2019).

To demonstrate the impact of eco-labelling, prior studies of product taste evaluation under blind conditions (i.e., participants were asked to evaluate product experience of two product without knowing which product was produced under organic and which under regular conditions) have found no significant differences in evaluating taste or other particular product characteristics such as quality perception (Sörqvist, Marsh, Holmgren, Hulme, Haga, & Seager, 2016). However, results of test conditions where participants had to evaluate two labelled products, one labelled as 'organic' and one as 'regular', showed clear differences. These labelling schemes bias consumers to evaluate the ecological product as better in e.g., taste perception (Sörqvist, et al. 2013; Sörqvist, 2015; Wiedmann, Hennings, Behrens, & Klarmann, 2012). Furthermore, overall health perception was evaluated in favor

of the eco-labelled products. For example, calorie judgement was rated higher on products labelled as 'regular' and lower on products labelled as 'organic' (Lee, Shimizu, Kniffin, & Wansink, 2013; Fenko, 2019). Benefits to health and mental performance were regarded more favourably with the eco-labelled product (Sörqvist, 2015), and sustainability perception was higher in eco-labelled product conditions (Wiedmann, et al. 2012). Moreover, the willingness to pay premium prices for eco-labelled products was higher when the product was labelled 'organic' (Lee, Shimizu, Kniffin, & Wansink, 2013; Schouteten & Slabbinck, 2019).

1.4.1 Organic shoppers

Another factor to consider with regard to the eco-label effect is consumers who are 'organic shoppers'. Organic shoppers are consumers who attach importance to organic and sustainable nutrition in their grocery shopping (Wiedmann, Hennings, Behrens, & Klarmann, 2012). Hence, they show a higher level of involvement (top-down attention) with regard to organic products during the buying process (van Lee et al., 2015). In addition to the fact that product labelling can bias evaluations of conventional/organic food or beverage products (discussed above), highly involved consumers have also been shown to exhibit differences in the respective evaluation schemes. For example, organic shoppers tended to rate the taste of an organic-labelled product as more tasty (Vecchio & Annunziata, 2015), had higher price perceptions regarding willingness-to-pay (Vecchio & Annunziata, 2015; van Loo, Caputo, Nayga, Seo, Zhang, & Verbeke, 2015), and exhibited a greater willingness to pay premium prices than conventional buyers for eco-labelled products (Sörqvist et al., 2013). These findings indicate that organic shoppers may vary widely from conventional buyers in their perceptions of taste, price, health, and sustainability when an eco-label is present. The hypotheses for the eco-label effect are as follows:

H3a: The effects of eco-label presence are stronger than eco-label absence with regard to taste perception, health perception, sustainability, and price.

H3b: The effects of an eco-label presence are stronger for organic shoppers than for non-organic shoppers.

2. Pretest

A pre-test was conducted to determine whether design variations on a fictional eco-label achieve the expected design impressions on two independent variables: complexity and shape. In addition, the results indicate which four eco-label types apply to shape conditions (round versus angular) and complexity conditions (abstract and naturalistic) for the main study. The pretest was conducted as follows: 12 different eco-labels versions (see *Figure 1*) were evaluated by an online sample. All eco-label designs differ regarding complexity and shape. The participants were asked to rate the different types of eco-labels (using a 7-point Likert scale) on the following four main factors: simplicity, complexity, angularity, and roundness.

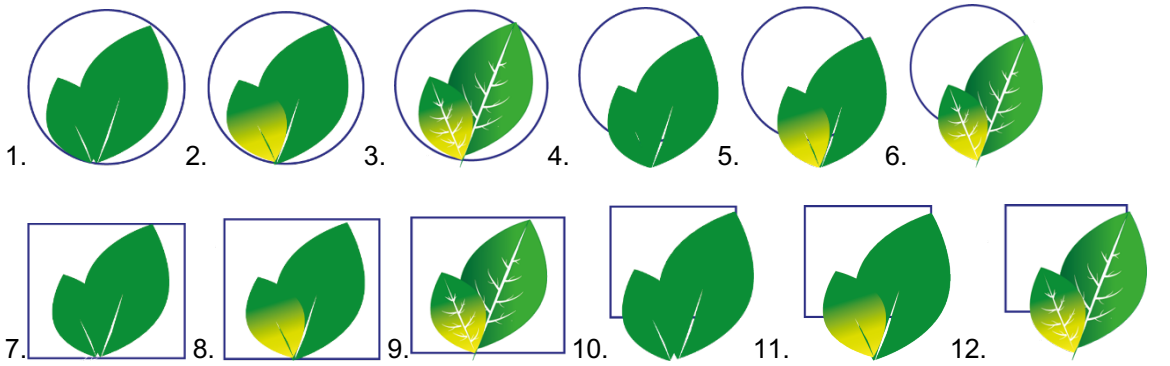

Figure 1. The 12 eco-label design variations used in the pretest.

21 participants filled in the online survey for this pre-test. The subjects had an average age of 39 *(M* = 38.57*, SD* = 17.87*)*. 11 tests were conducted by females *(= 52.4%)* and 10 by male participants *(= 47.6%).* In Table 1, the results of the means and standard deviations of the complexity and shape variables are displayed. In addition, the scores for each item of shape and complexity are represented in Table 2, with a Cronbach's Alpha of *a* = 0.84 for the complexity items and *a* = 0.88 for the shape items. The complete survey which was used for the pre-test can be found in Appendix A.

Table 1
Pre-test design variations: design scores on complexity and shape

Design	Complexity[a)]		Shape[a)]	
	Mean	Std. Dev.	Mean	Std. Dev.
1	5.56	0.86	5.50	1.03
2	5.73	1.08	2.83	1.26
3	4.76	1.35	3.08	1.34
4	3.58	1.23	2.88	1.36
5	4.68	1.29	5.43	0.69
6	3.36	1.28	4.74	1.55
7	5.71	1.21	4.71	1.22
8	4.94	1.15	4.88	1.05
9	3.68	1.47	4.33	1.48
10	5.29	0.98	2.61	1.11
11	5.16	0.90	3.11	1.35
12	3.46	1.34	2.70	1.15

a) Measured on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree'

Comparing the mean scores of the 12 tested label variations under consideration of the scores of complexity and shape as single variables plus the scores of every item for complexity and shape (see Table 2), there is a clear tendency toward Label 1 for the combination round shape and low complexity (*M* = 5.56, *SD* = 0.86 and *M* = 5.50, *SD*= 1.03) and toward Label 3 for round shape and high complexity (*M* = 3.08, *SD* = 1.34 and *M* = 4.76, *SD* = 1.35). Label 10 is evaluated most strongly for angular shape and low complexity (*M* = 2.61, *SD* = 1.11 and *M* = 5.29, *SD* = 0.98) and Label 12 has the highest scores for angular shape and high complexity (*M* = 2.70, *SD* = 1.15 and *M* = 3.46, *SD* = 1.34.

Furthermore, ANOVA analysis and Bonferroni have revealed the significance of the round and angular labels, and of each label. For example, Label 12 is significantly different from Label 10 with regard to complexity. Regarding shape, a significant difference was found between labels 1 and 2: Label 1 was perceived as most round and soft.

Table 2
Pre-test design variations: design scores on every item

Design	Simple[a)]		Complex[a)]		Basic[a)]		Sophisticated[a)]		Rounded[a)]		Angular[a)]		Hard[a)]		Smooth[a)]	
	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.
1	6.00	1.00	2.00	1.23	5.67	1.28	3.43	1.57	5.38	1.53	1.95	1.16	2.29	1.35	4.86	1.20
2	4.57	1.99	2.96	1.43	5.00	1.52	3.90	1.34	5.48	1.21	2.29	1.45	2.29	1.10	4.81	0.98
3	2.81	1.44	4.24	1.90	3.24	1.73	4.38	1.40	4.57	2.23	2.38	1.53	3.38	1.83	4.14	1.68
4	5.48	1.66	2.10	1.34	5.67	1.59	2.19	1.25	4.05	2.04	1.95	1.02	3.24	1.61	4.00	1.87
5	4.57	1.60	2.38	1.12	4.67	1.46	3.10	1.61	4.48	1.72	2.57	1.17	2.86	1.28	4.48	1.69
6	3.24	2.12	4.19	1.91	3.38	1.80	3.71	1.95	4.14	1.98	2.62	1.47	3.62	2.11	3.43	1.86
7	5.43	1.36	2.86	1.53	5.67	1.20	3.10	1.30	2.29	1.38	5.57	1.21	5.10	1.30	2.81	1.12
8	4.95	1.36	2.62	1.12	5.19	1.03	2.90	1.04	2.81	1.86	5.10	1.73	4.52	1.63	3.24	1.58
9	3.14	1.65	4.48	1.44	3.29	1.65	4.10	1.55	2.29	1.38	5.67	1.02	4.76	1.67	2.95	1.60
10	5.91	1.14	2.14	1.42	5.29	1.77	2.14	1.28	2.29	1.27	5.14	1.74	4.67	1.71	2.86	1.42
11	4.43	1.91	2.95	1.72	4.38	1.99	2.81	1.47	2.71	1.74	5.00	1.74	4.43	1.60	3.05	1.50
12	3.10	1.87	4.48	1.72	3.62	1.72	3.90	1.34	2.43	1.33	5.19	1.40	4.76	1.79	3.05	1.56

[a)]Measured on a 7-point Likert Scale ranging from 'strongly disagree' to 'strongly agree'

After evaluating the results of the comparison means, ANOVA, and Bonferroni analyses, these four labels are chosen as stimulus material for the main study:

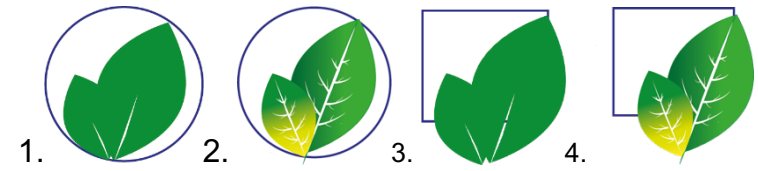

Figure 2. The four chosen eco-label designs for the main study

2.1 Stimuli

Based on the results of the pretest, four iced-tea advertisement variations were created for the experimental conditions, in which the four different eco-label designs are displayed. Furthermore, an additional condition (a control condition) was created which is absent an eco-label.

Figure 3. Final stimuli conditions for main study

3. Main study

To measure the dependent variables, the independent variables in this study were shape variations and complexity variations. By using these factors, an experimental 2 (shape: round versus angular) x 2 (level of complexity: abstract versus naturalistic), between-subjects design was developed, adding a control condition without stimulus application (see Table 3).

Table 3
Stimuli Conditions in 2x2 between subjects-design and control group

Condition	Shape variation	Level of complexity
1	Round	Low
2	Round	High
3	Angular	Low
4	Angular	High
Control condition	Not present	Not present

3.1 Participants

Both women and men were consulted for the main study. The age of participants varied between 18 to 80. The minimum age of this study was 18 years. Table 4 represents the total distribution of respondents over each condition. The total valid number of participants for this study is 158. 36 additional people were asked to participate but needed to be excluded; they, either, refuse to attend a taste test with iced-tea, or their questionnaire was incomplete. Considering these factors, these 36 people can be counted as non-responders. People with a high potential for nutrition allergy reactions were also excluded, as were people under the age of 18. The average age of participants is 45.61, and 104 (65.8%) women and 54 (34.2%) men were willing to participate in the taste test. Further, Table 4 presents the gender and age distributions of each condition. There is no significant difference between the five conditions considering age distribution ($F(4, 153) = 0.54$, $p = 0.7$); however, ANOVA revealed a significance under the gender distribution ($F(4, 153)$ 2.68, $p = 0.03$. A Bonferroni test revealed no explicit significance between the groups, but it did show that Condition 5 differs from Condition 4 ($p = 0.07$). However, additional analysis with gender as a fixed factor showed no different outcomes. Hence, this factor will not be considered further. In addition, frequency of iced-tea consumption was used as a covariate in this study; however, it did not show particularly relevant outcomes for the present study.

Condition	N	Age		Gender	
		M	SD	Male	Female
1	25	43.04	18.40	20%	80%
2	36	44.14	17.59	41.7%	58.3%
3	30	48.80	15.88	33.3%	66.7%
4	34	46.56	14.10	20.6%	79.4%
Control condition	33	45.30	15.87	51.5%	48.5%
Total	158	45.61	16.25	34.2%	65.8%

Table 4. Demographic characteristics of participants per condition

3.2 Procedure

To make the main study more related to the daily life, a taste test was conducted within a German shopping centre in front of a supermarket entrance. People were randomly approached in this area and, before tasting iced tea, they were asked if they have any specific nutrition allergies. People with the potential to have allergic reactions towards the iced tea being used were excluded. The original iced-tea package was not presented to the participants. The iced tea was filled in a neutral thermos bottle to keep the temperature constant. The original iced-tea bottle was stored in a (always the same) refrigerator. The iced tea was served in a small, clear cup. Before participants tasted the iced tea and were about to fill in the questionnaire, one of the advertisement conditions was presented and positioned on the table where the participants were filling in the survey (an illustration of the taste experimental condition is attached in Appendix B). No information was communicated to the participants about the content and ingredients of the iced tea. After they finished the survey, they were thanked for taking part in the taste test and dismissed.

3.3 Measurement

3.3.1 Health perception

To measure health perception, the items *natural/unnatural, healthy/unhealthy and high in calories/ low in calories* were used on a bi-polar (semantic differential) seven-point scale. The Cronbach's Alpha was 0.69, which is under the threshold of stable reliability. However, upon removing the item *high/low in calories* and using solely *natural* and *healthy* as measurement items, the Cronbach's Alpha increases to 0.85. Hence, the decision was made to exclude *high/low in calories* from the analysis set so as to enhance the reliability score for this item scale.

3.3.2 Taste perception

Taste perception was measured with various taste characteristics such as *taste intensity*, *taste quality*, *perceived sweetness, bitterness, and sourness*. The four items mentioned last were measured by using a one-item measurement; no Cronbach's Alpha can be determined in this case.
Taste intensity was measured by using four items—*strong, intense, powerful* and *full* (van Rompay, et al., 2016; Becker et al., 2011; Mead & Richerson, 2018)—and their contraries: *weak, light, powerless and mild*. The Cronbach's Alpha for these items is a = 0.91. Taste quality was measured using the following items: *high quality, premium, exclusive* and *unique* (a = 0.90).

3.3.3 Taste liking

To measure taste liking, the items *tasty/tasteless, good/bad, and pleasant/unpleasant* were used based on previous research by Mead and Richerson (2018) and van Rompay et al. (2019). The item was presented on a bi-polar (semantic differential) seven-point scale. The Cronbach's Alpha is a = 0.96.

3.3.4 Sustainability perception

To determine whether the participants had the impression (the experimental conditions against the control conditions) that the iced tea was sustainable, one item was used: '*In my opinion, the iced tea is produced in a sustainable manner*'.

3.3.5 Purchase intention

To measure the purchase intention of the presented product (iced tea), two items were used with a Cronbach's Alpha of 0.97: *'I would consider buying this product in a grocery store'* and *'If this product was available in a grocery store, I would buy it'* (Teng & Wang, 2014; van Rompay et al., 2019). Furthermore, three additional items about purchase intention were included (*a* = 0.83): '*I would consider paying this iced tea for myself*', '*I would consider buying this iced for my partner*' and *'I would consider buying this product for my children'*.

3.3.6 Organic shopper (Attitude towards organic food)

To determine whether a participant is an organic or regular shopper, the attitude towards organic food was measured by using the following six items (*a* = 0.93) based on previous studies of Chryssohoidis and Krystallis (2005) and Teng and Wang (2014): *'I believe organic food is better than conventional food'*, *'I prefer organic food over conventional food'*, *'Organic food is healthier than conventional food*', and *'Organic food tastes better than conventional food'.* Further, to include actual buying actions, the following statements were included: *'While grocery shopping, I mind that the food I buy is organic'* and *'I buy organic food regularly'*.

3.3.7 Additional variables

To measure some potential additional effects, the survey included a quantitative question about the participants' price perception of the iced tea. The formulation of this question was as follows: '*After testing the iced tea and observing the advertisement, what do you think a 0.5 l bottle of iced tea costs?*' Second, a manipulation check about the true purpose of the taste test was made with the following quantitative question: '*What do you think is the goal of this taste test?'.* Third, to assure that experimental conditions 2 and 4 (naturalistic label designs) are indeed perceived as high in complexity, a manipulation check was made with the question: '*In how far do you perceive the taste as complex?'.*

4. Results

4.1 Manipulation check

An ANOVA test executed between experimental and control conditions with 'complexity' as a dependent variable indicated a statistical significance ($F(4, 153) = 2.64$, $p = 0.04$). A multiple-comparisons analysis revealed that the mean of Label Condition 2 is significantly different from the control condition ($M = 4.75$, $SD = 1.76$ versus $M = 3.42$, $SD = 2.09$; $p = 0.03$) and that the mean of

Label Condition 4 is marginally significantly different from the control condition (M = 4.62, SD = 1.91, p = 0.09). These findings suggest that the high level of complexity was perceived as more complex than the low level of complexity.

4.2 Main and interaction effects on the dependent variables

An overview of the results for the main and interaction effects of complexity and shape are summarized in Table 5.

Table 5
Main and interaction effects

Independent variables	**Dependent variables**	**F**	***p***	***n²***
Shape	Taste intensity	0.81	0.37	0.01
Complexity	Taste intensity	6.10	**0.02***	0.05
Shape*Complexity	Taste intensity	2.31	0.13	0.02
Shape	Taste quality	0.55	0.46	0.01
Complexity	Taste quality	0.29	0.59	0.00
Shape*Complexity	Taste quality	1.66	0.20	0.01
Shape	Taste liking	0.25	0.62	0.00
Complexity	Taste liking	0.10	0.76	0.00
Shape*Complexity	Taste liking	0.78	0.38	0.01
Shape	Health perception	0.00	0.98	0.00
Complexity	Health perception	0.01	0.93	0.00
Shape*Complexity	Health perception	0.24	0.63	0.00
Shape	Bitterness	2.00	0.16	0.16
Complexity	Bitterness	2.40	0.13	0.92
Shape*Complexity	Bitterness	0.06	0.81	0.42
Shape	Sweetness	2.14	0.15	0.02
Complexity	Sweetness	2.40	0.13	0.02
Shape*Complexity	Sweetness	0.06	0.81	0.00
Shape	Sourness	0.00	1.00	0.00
Complexity	Sourness	0.40	0.57	0.00
Shape*Complexity	Sourness	0.58	0.45	0.10
Shape	Purchase intention	0.82	0.37	0.01
Complexity	Purchase intention	0.72	0.40	0.01
Shape*Complexity	Purchase intention	0.14	0.71	0.00
Shape	Sustainability	0.00	0.98	0.00
Complexity	Sustainability	0.04	0.85	0.00
Shape*Complexity	Sustainability	1.84	0.18	0.02
Shape	Price perception	1.81	0.18	0.02
Complexity	Price perception	3.01	*0.09***	0.02
Shape*Complexity	Price perception	3.23	*0.08***	0.03

*significance
**marginal significance

Table 6
Descriptive statistics of dependent variables for shape and complexity

	Shape				Complexity			
	round (n=61)		angular (n=64)		abstract (n=55)		naturalistic (n=70)	
	M	SD	M	SD	M	SD	M	SD
Taste intensity	3.83	1.32	3.90	1.32	3.59[a]	1.33	4.14[a]	1.28
Taste quality	4.84	1.10	4.66	1.25	4.81	1.00	4.70	1.30
Taste liking	5.38	1.31	5.51	1.18	5.41	1.25	5.48	1.25
Sweetness	4.36	1.48	4.72	1.47	4.33	1.45	4.71	1.50
Bitterness	2.16	1.38	1.81	1.17	1.96	1.15	2.00	1.38
Sourness	1.96	1.13	2.00	1.05	2.08	1.12	1.81	1.06
Health perception	3.38	1.42	3.40	1.52	3.37	1.29	3.40	1.60
Purchase intention	4.60	1.97	4.29	2.13	4.60	1.92	4.31	2.15
Organic attitude (Organic shopper)	4.49	1.51	4.90	1.45	4.45	1.30	4.89	1.61
Sustainability	5.15	1.38	5.20	1.65	5.20	1.52	5.16	1.53

4.2.1 Taste intensity

To determine whether the independent variables, shape and complexity, have a significant effect on taste intensity, an ANOVA analysis was executed. The analysis revealed no significant main effect on shape (F<1, ns), but it did reveal a statistically significant effect that can be reported regarding complexity: (F(1, 121) = 6.06, p = 0.02; n^2 = 0.04). This finding demonstrates that the high-complexity label variant induced higher taste-intensity perception than the low-complexity variant (M = 4.14, SD = 1.28 versus M = 3.59, SD = 1.33). Further, there is no statistically significant interaction effect between on taste intensity (F(1,121) = 2.31, p = 0.13). An overview of the Means and Standard Deviations for shape and complexity are illustrated in Table 6.

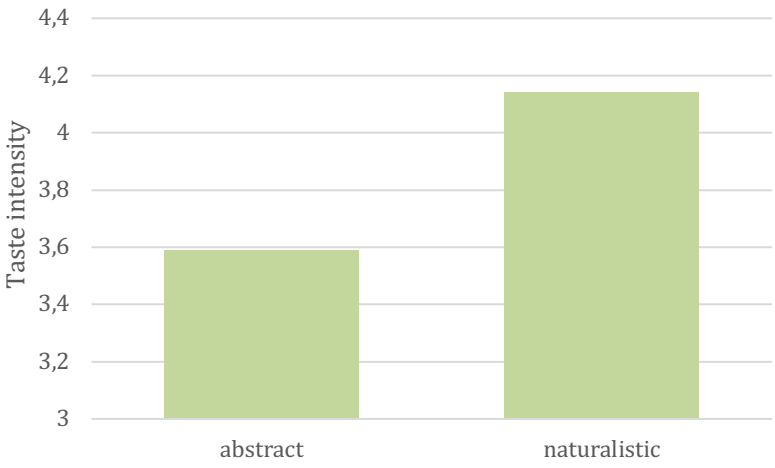

Figure 4. Main effect of complexity on taste intensity

4.2.2 Taste quality

An ANOVA analysis was executed to determine whether the independent variables—round/angular shape and low versus high level of complexity—reveal a statistically significant main or interaction effect. However, the ANOVA analysis revealed no statistically significant main effect of either shape (F<1, ns) or level of complexity (F<1, ns). Further, no interaction effect was obtained (F(1, 121) = 1.66, p = 0.20).

4.2.3 Taste liking

To determine whether the independent variables, shape and complexity, have a statistically significant effect on taste liking, an ANOVA analysis was executed. No statistically significant main effect was revealed for round versus angular shape (F<1, ns) or low versus high level of complexity. Furthermore, no interaction effect was found between shape x complexity (F<1, ns).

4.2.4 Sweetness, sourness, and bitterness

The perceived sweetness was measured by using an ANOVA analysis; however, no statistically significant effect was found on the shape (F(1, 121) = 2,14, p = 0.15) and complexity (F(1, 121) = 2.4, p = 0.13. The interaction effect of shape x complexity was not statistically significant (F<1, ns). Bitterness exhibited no statistically significant main or interaction effects: (shape: F(1, 121) = 2.00, p = 0.16; complexity: F(1, 121) = 2.40, p = 0.13; shape x complexity: (F<1, *ns*)). An ANOVA analysis of sourness indicated no statistically significant main or interaction effects (all Fs > 1, *ns*).

4.2.5 Health perception

An ANOVA analysis was conducted to determine whether the independent variables have a statistically significant effect on health perception. No statistically significant main effects were revealed for shape (F<1, ns) or complexity (F<1, *ns*). In addition, there was no interaction effect of shape x complexity on health perception (F<1, *ns*).

4.2.6 Purchase intention

The dependent variable purchase intention was measured via ANOVA analysis; however, there is no statistically significant main effects on shape (F<1, *ns*) and complexity (F<1, *ns*). Furthermore, the interaction effect of shape x complexity revealed no statistically significant effect as well.

4.2.7 Additional measurements

Considering additional measurements, an univariate analysis-of-variance test of the dependent variable price perception revealed no main effect with regard to shape (F(1, 121) = 1.81, p = 0.18). However, the results indicated a marginal effect within the complexity conditions (F(1, 121) = 3.01, p = 0.09). Here, the price perception was higher for the high-complexity label variant than for the low-complexity label variant (M = 2.09, SD = 0.99 versus M = 1.80, SD = 0.80). In addition, a marginal interaction effect between shape x complexity on price perception can be noted (F(1, 121) = 3.23, p = 0.08). It shows the most significant effect within the round-label conditions between low complexity and high complexity. This means that, when level of complexity was high within the round-label variants, the price perception was evaluated higher in contrast to low complexity (M = 2.33, SD = 0.89 versus M = 1.76, SD = 0.72) (see Figure 5).

Finally, there seem to be no statistically significant differences between gender and the various manipulations. However, analysis has revealed a significance between women and men on the sustainability perception (F(1, 156) = 10.00, p = 0.002). Women tended to evaluate the iced tea as being more sustainable than men (M = 5.13, SD = 1.60 versus M = 4.22, SD = 1.93).

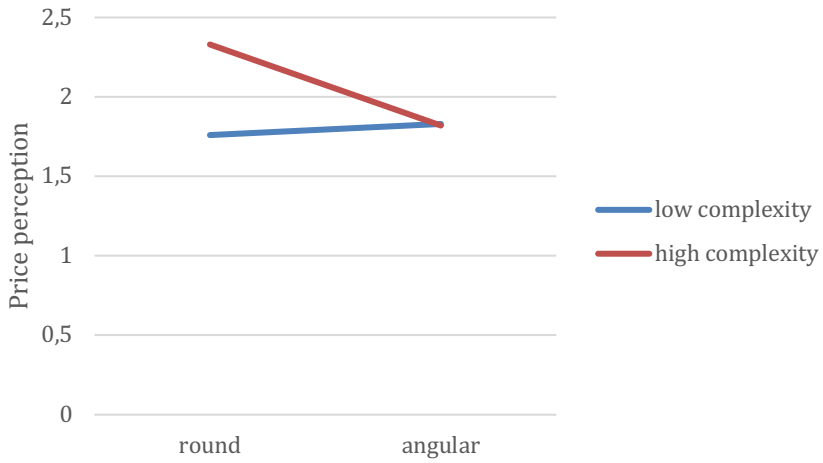

Figure 5. Trends towards main and interaction effects on price perception

4.3 Differences between control condition against experimental conditions

To determine whether the *eco-label effect* can be approved in this study; an ANOVA analysis was executed with all four experimental conditions versus the control condition (absence of eco-label). Table 7 shows all Means and Standard Deviations of the dependent variables.

Table 7. Descriptive statistics of dependent variables per condition

	1 round/low complexity		**2 round/high complexity**		**3 angular/low complexity**		**4 angular/high complexity**		**Control condition no label**	
	M	SD	M	SD	M	SD	M	SD	M	SD
Sustainability perception	5.40[a]	1.00	4.97[a]	1.58	3.48[a]	2.02	5.03[a]	1.85	5.35[a]	1.48
Taste quality	4.75[b]	1.01	4.91[b]	1.17	3.83[b]	1.42	4.87	1.01	4.48	1.41
Taste liking	5.45	1.06	5.32	1.47	4.94	1.50	5.37	1.40	5.64	0.95
Price perception	1.76	0.72	2.33	0.89	1.48	0.71	1.83	0.87	1.82	1.03
Health perception	4.56	1.21	4.67[c]	1.56	4.68	1.82	4.53	1.37	3.71[c]	1.66
Attitude towards organic food (organic shopper)	4.31	1.20	4.62	1.69	4.41	1.89	4.58	1.38	5.18	1.48
Purchase intention	4.86	1.71	4.40	2.14	4.06	2.03	4.38	2.09	4.21	2.19

Using sustainability perception as a dependent variable, ANOVA analysis revealed statistical significance ($F(4, 153) = 7.34$, $p = 0.00$, $n^2 = 0.16$)). Using Bonferroni to see which conditions differ significantly from each other, the measurements revealed that all means of the experimental conditions are statistically significant different from the control condition (Experimental Condition 1 ($M = 5.40$, $SD = 1.00$), from Experimental Condition 2 ($M = 4.97$, $SD = 1.58$), from Experimental Condition 3 ($M = 5.03$, $SD = 1.85$) and from Experimental Condition 4 ($M = 5.35$, $SD = 1.48$) versus the control condition ($M = 3.48$, $SD = 2.02$), with all Cronbach's Alpha $p = 0.00$. Hence, the presence of an eco-

label led to a greater sustainability perception of the iced tea against the absence of eco-label (see Figure 5).

Further, ANOVA analysis with taste quality as a dependent variable illustrated a statistical significance ($F(4, 153) = 4.24$, $p = .003$, $n^2 = .10$). A multiple-comparisons analysis revealed a marginally significant difference between the control condition ($M = 3.83$, $SD = 1.42$) and Experimental Condition 1 ($M = 4.75$, $SD = 1.01$; $p = 0.06$), a significant difference with respect to Experimental Condition 2 ($M = 4.91$, $SD = 1.17$; $p = .004$), and a significant difference with respect to Experimental Condition 3 ($M = 4.87$, $SD = 1.01$; $p = 0.01$). Experimental Condition 4 ($M = 4.48$, $SD = 1.42$; $p = 0.34$) showed no statistically significant difference from the control condition. Hence, three out of four experimental conditions demonstrated a difference in taste-quality perception compared to the control condition.

Moreover, an ANOVA analysis was performed between the experimental conditions and control condition with perceived price as the dependent variable. A statistically significant difference was found between the conditions (F (4, 153) = 3.51, $p = 0.01$). Bonferroni analysis revealed that there a significant difference exists between Experimental Condition 2 (round/high level of complexity) and the control condition ($M = 2.33$, $SD = 0.89$ versus $M = 1.48$, $SD = 0.71$, $p = 0.001$).

Last, a marginally significant difference was noted when health perception was used as dependent variable ($F(4, 153) = 2.24$, $p = 0.07$, $n^2 = 0.06$). However, a multiple-comparisons analysis showed no significant differences between the experimental conditions versus the control condition.

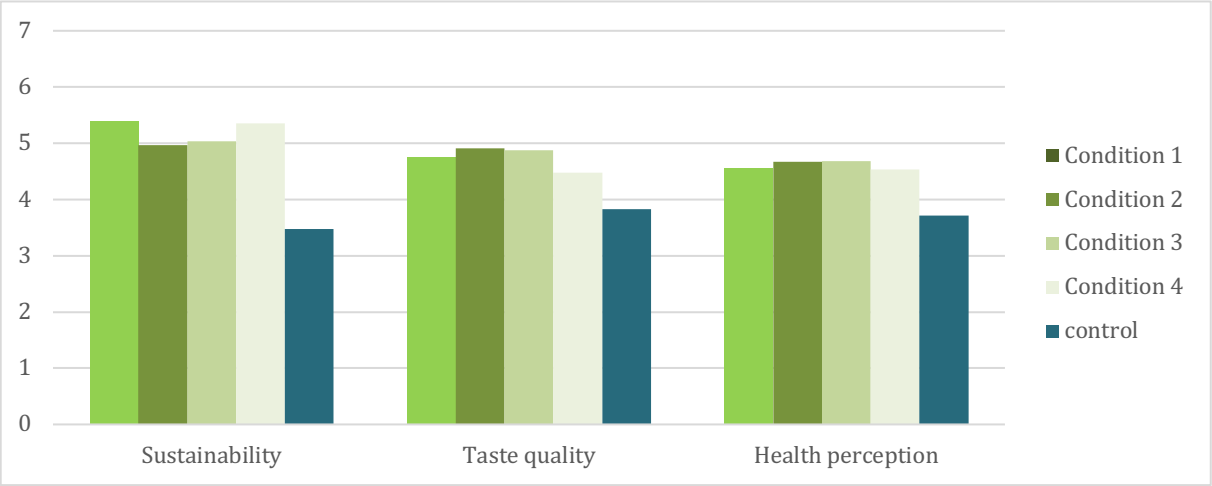

Figure 6. Significant differences between experimental conditions and control condition

5. General discussion

The aim of this study is, first, to measure consumer responses regarding their perceptions of the healthiness and tastiness of a designated product (iced tea) when a fictional eco-label was varied with respect to the design dimensions of shape (round versus angular) and complexity (abstract versus naturalistic). Second, this study has attempted to test whether the *eco-label effect* occurs over several dependent variables or so-called *judgemental variables* such as price, sustainability (Sörqvist et al., 2015) and taste (Wiedmann, Hennings, Behrens, & Klarmann, 2012). With respect to the *eco-label effect*, I considered whether the results vary between organic or non-organic (regular) shoppers. Although the formulated hypotheses could not be approved completely, some results are noteworthy.

5.1 Complexity and shape

Considering the results of this study, it seems that an eco-label with high complexity (naturalistic illustration) positively affects taste-intensity perception. These effects are consistent with the first hypothesis (H1a). The results support the idea that complexity might be an additional dimension in the field of crossmodal associations (Salgado-Montejo, Alvarado, Velasco, Salgado, Hasse, & Spence, 2015; Velasco et al., 2016). Moreover, it could be that being exposed to high-involvement stimuli (here meaning complex eco-label design) (Grinsyen & Das, 2016) could affect other response processes. For example, feeling more engaged in a product experience may lead to positive associations with the designated product and trigger a greater taste experience. This can be supported by the prior research of Henderson and Cote (1998), which suggests that, according to the optimal arousal theory, the visual complexity of a logo can stimulate affect (feeling more engaged). However, when relating visual complexity of a label design to taste and health perceptions as dimensions in the multi-sensory research field, this very effect needs further investigation. Especially on other dependent variables, such as additional taste characteristics like taste liking and taste quality or health perception and purchase intention as they did not exhibit any significant effects in this study.

The results for shape showed no significant effect in taste or health perception and, therefore, the formulated hypotheses (H2a, H2b, H2c and H2d) cannot be supported. As suggested, angular shapes can enhance sensory experiences: e.g., taste intensity, sourness or bitterness (Becker et al., 2011; Velasco, Spence, & Cheok, 2016), whereas round shapes may enhance sweetness and health perception. These extrinsic cues, however, have had no impact in the present study. These results are consistent with the previous findings of Salgado-Montejo et al. (2015), who did not obtain any significant effect of roundness on taste perception upon showing different shape forms to participants. The reasons for this can be found in Becker et al. (2011): Eventually, the shape factor stood out less clearly in contrast to complexity or was biased by other features included in the iced-tea advertisement.

Conducting additional analyses to look for unexpected or unnoticed effects, the analysis revealed a marginal effect of complexity on price perception (high complexity led to a higher price perception). The marginal interaction effect between shape and complexity indicate that round and high complexity

eco-labels were perceived to be associated with higher price evaluations. Potential reason could be that the naturalistic eco-label illustration affected participants more than the abstract eco-label illustration and triggers the stereotyped associations that organic products are considered to have higher prices (Didier & Lucie, 2008; Sörqvist, et al., 2013; Sörqvist, 2013).

Finally, additional analysis has revealed a significant difference between women and men regarding perceived sustainability. The results indicate that women rated the iced tea as higher in their sustainability perception than men. As Cairns & Johnston (2015) explained, women are still mostly responsible for grocery shopping and as the authors found, are more emotionally involved in the shopping process. Consequently, this higher involvement may mean that women are more interested and more sensitive to notice individual elements on products. Therefore, they are more likely to connect the eco-label with higher sustainability perception.

5.1.1 Theoretical and practical implications for eco-label design

The present study represents an attempt to determine whether eco-label design dimensions may influence sensory perception of a (healthy) product. For theoretical implications, it may add relevance to the theory of crossmodal associations (Spence et al., 2015; Velasco et al., 2016). Complexity might be an additional dimension to consider in future research, as it seems to activate greater taste experiences and may possess the potential to shape product experiences in a more intense way. The present study used the definitions of *abstrac*t and *naturalistic* in order to change the complexity dimension to low or high complexity. However, the general term of design or logo complexity can be composed of many other variables, as Henderson & Cote (1998) and their guidelines for developing logos or Pieters, Wedel, & Batra (2010) and their six dimensions of design complexity have illustrated. This shows that complexity can be multi-layered and, therefore, be customizable and flexible. This may mean that considering another complexity dimension (e.g., symmetry/asymmetry) could have a different impact on taste perception. These findings provide options that might be useful for designing eco-labels or logos in a more customized way and which appeal more arousing, more positive to the consumers. This, however, requires further investigations.

Regarding the practical implications of eco-label design, first, the findings of the present study could be considered when introducing a product that should communicate strength or power. For example, when launching a healthy protein drink, a moderate high complex visual design (Henderson & Cote, 1998) could support the intended impression of greater energy.

Second, the findings of the present study have shown that visual complexity might enhance the arousal level of a label (or other extrinsic product features) and stimulate its recognition and positive evaluation (van Grinsven & Das, 2016). This is in so far relevant as prior studies have communicated that eco-labels stay often neglected in the buying process (Fenko, 2019). Therefore, enhancing the arousal level of an eco-label through complexity and rethinking certain design elements might lead to higher recognition.

5.2 Eco-label effect

In addition to the findings of eco-label design on taste and health perception, the eco-label effect was tested. To find significant differences between the absence and presence of an eco-label, the experimental conditions (presence of an eco-label) were tested versus the control condition (absence of an eco-label). Although the eco-label effect did not show its robustness over all expected dependent variables, several significant findings were shown. The eco-label effect influenced sustainability perception, taste quality, price perception and (marginally) health perception.

Primarily, the sustainability perception exhibited the most significant differences between the experimental groups versus the control group. That is, depicting an eco-label on an advertisement led people assume that the iced tea used in this study was produced in a sustainable manner. This finding partly supports hypothesis H3a. The findings can be supported by prior research of Wiedmann, Hennings, Behrens, and Klarmann (2012); they stated that people are biased to connect eco-labels or indicators for healthiness (healthy claims) with sustainable expectations.

Second, the taste-quality perception of the iced tea differs between the experimental conditions versus the control condition. These findings can be related to the expectancy effect (Piqueras-Fiszman & Spence, 2015); the aspect of quality perception is, thus, influenced by certain expectations. It shows that people seem to connect eco-labelled products with higher quality (Wiedmann, Hennings, Behrens, & Klarmann, 2012). The results indicate that the quality perception of eco-labelled products seems to be connected to one's general opinion of ecological products. Further taste characteristics (e.g., taste liking) exhibited no significant differences. One explanation might be that the presence, respectively the absence of an eco-label does not impact consumers' taste liking.

Third, there was a significance exhibit with regard to price perception between experimental group 2 and the control group. The expectation that ecological products are higher in price was the most robust variable in prior studies when participants were asked whether they would pay premium prices for organic products (Didier & Lucie, 2008; Sörqvist, et al., 2013; Sörqvist, 2013). However, price perception in favour of the experimental group was vague in the outcomes of the present study. Potentially, participants of the control group were biased by other factors in the stimuli (e.g., the healthy claim on the lower part of the advertisement). As a consequence, price perception did not show consistent differences between experimental and control conditions.

Fourth, health perception showed no clear statistical significance between experimental versus control conditions (only a general marginal significance). A potential reason could be that people are biased toward thinking of iced tea as rather unhealthy. People divide products into specific groups (Fenko, 2019) and, depending on consumers' associations (stereotyped thinking) with certain products, it showed more obstacles and needs other marketing tools to change this very perception. For instance, showing the ingrediencies of the iced-tea or adding a healthy claim that illustrates that the iced-tea has 'zero sugar' (Jo & Lusk, 2018).

With regard to the findings for the eco-label effect discussed above, it is relevant to mention that the stimuli material in the control condition still contains an ecological text claim. The application of an eco-label apparently had a more significant effect on people's overall evaluation, but the additional text

may have biased the effectiveness of a more precise outcome. That the eco-label illustration, however, showed significances could be explained with the picture-superiority effect, which concerns people's orientation preferences to pictures over text (Tang, Fryxell, & Chow, 2004).

In addition, organic shoppers exhibited no significant differences with non-organic shoppers regarding. This is in contrast to the formulated hypothesis (H3b) and most prior research (Schuld, Muller, & Schwarz, 2011); however, the results could also indicate that stereotypical associations regarding ecological food and beverage products occur in both group segments (organic and non-organic shoppers), especially when the product seems to be unknown or new (Wiedmann, Hennings, Behrens, & Klarmann, 2012). These impacts need further empirical research to reveal consumers' stereotyped thinking about eco-labelled products and how far particular group segments (i.e., organic shoppers and non-organic shoppers) differ with regard to health and taste associations.

5.2.1 Theoretical and Practical implications for the eco-label effect

Eco-labels are increasingly used to communicate ecological and healthy product content. Eco-labels further represent particular stereotypes and expectations about a product's content (Piqueras-Fiszman & Spence, 2015). This can be related to research by Fenko (2019), which emphasises that consumers have a tendency to sort food into pre-existing categories. The current study can offer several complementary insights regarding the eco-label effect on theoretical and practical implications.

With regard to theoretical implications, the present study has shown that the eco-label effect is based on expectations about a (healthy) product based on extrinsic characteristics (Wansink & Chandon, 2006; Piqueras-Fiszman & Spence, 2015). Thus, in contrast to prior studies that have focused mainly on *within-subject experimental designs* (Didier & Lucie, 2008; Lee, Shimizu, Kniffin, & Wansink, 2013; Sörqvist, et al., 2013; Sörqvist, 2013), the present study has revealed that the eco-label effect also occurs in *between-subject experimental designs*. More precisely, in within-subject experimental designs, participants are exposed to all stimuli (Charness, Gneezy, & Kuhn, 2012). In between-subject experimental designs, however, each participant is exposed to only one stimulus. The differences between these experimental groups is relevant insofar as it signifies how deeply the expectations of (healthy) products are anchored in consumers' mind.

Relating these findings to practical implications, the aspects of 'stereotyped associations' provide information relevant to marketing-design-strategy tools for knowing people's beliefs about products and adjusting factors that may change these strong associations (Fenko et al., 2018). Thus, though prior studies have claimed that people barely recognize and engage with labelling schemes in their product decisions (except organic shoppers), label applications tend to bias people in their judgements about eco-labelled products anyway (Schuldt, Muller, & Schwarz, 2011). However, the findings also support the idea of 'Green-washing', i.e., companies are using specific stimuli in order to lead people to believe that their products are 'greener' (more sustainable) than other products (Dahl, 2010). The results of the eco-label effect demonstrate that, although people are critical towards healthy claims (Fenko, 2019), they are unconsciously tempted to evaluate these products differently.

5.3. Limitations and Recommendations for Future Research

First, the present research has attempted to generate supplementary insights into the design effect on eco-labels by manipulating complexity and shape to measure consumers' responses. However, this study has some limitations. For instance, this study concentrates on only one complexity-dimension factor (abstract versus naturalistic). However, given the positive results of this study regarding high complexity and taste-intensity perception, there is great potential for future studies to compare label/logo design to further visual complexity variables. This might be done on the basis of, e.g., the logo guidelines of Henderson and Cote (1998) or the six principles of advertisement design complexity by Pieters, Wedel, and Batra, 2010 to gain more insights into effects on affective consumer responses and corresponding associations, thereby to facilitate more practical ways to create strong label or logo designs (Grinsven & Das, 2016).

Second, only one eco-label (with differences in shape and complexity) has been used for this study. It was integrated into an advertisement about iced tea. This is a limitation insofar as it provides results about only one type of design-application motive. This study used a leaf application as a pictorial symbol for an eco-label. However, existing eco-labels represent a particular area of sustainability or ecological statement; hence, it could be relevant to determine which motive matches with which type of sustainability organization (Didier & Lucie, 2008; Zepada, Sirieix, Pizarro, Corderre, & Rodier, 2013). To enhance the effectiveness of eco-label design and product-package design, they could be tested directly on products with more variations of complexity characteristics (e.g. asymmetry/ symmetry) (Pieters, Wedel, & Batra, 2010), to extend and improve the measurement of complexity on taste and health perception.

Third, with regard to testing the impacts of label design and the eco-label effect, it should be noted that the present study did not find any clear impacts on health perception. Although healthiness has been considered a relevant variable in previous research (as it should signal the main message of healthy products) (Fenko, 2019), the outcomes of the present study reveal no significant consumer responses. Therefore, future investigations could pursue this variable and seek for specific label-design varieties to optimize the health perception of a product and to assure that the message communicated by, e.g., sustainability organizations and their labels, is decoded correctly. Additionally, these further investigations might be relevant to find a strong label design to enhance recognition (Bossel, Geyskens, and Goukens, 2018).

Fourth, the present study used a specific (neutrally presented) iced tea to test the taste perception of participants exposed to the advertisement. However, the robustness of the complexity-intensity correspondence could be tested with other food or beverage products, and with different extrinsic product features. Future research could, for example, generate different complexity levels in advertisements (Pieters, Wedel, & Batra, 2010) and test their impact on intensity experiences to determine whether high-involvement illustrations (high complexity level) correspond with sensory attributes (Van Loo, Caputo, Nayga, Seo, Zhang, and Verbeke (2015).

Finally, future research could perform additional field studies to test the robustness of the eco-label effect in terms of other locations or regions. It might even include more countries in one study to test

feasible variations of expectations (stereotyped thinking) about eco-labels, i.e., to determine differences of lay beliefs and interpretations across countries (Jo & Lusk, 2018). Especially, when considering that food and its tastiness, intensity or health perception can strongly vary between different cultures (Fenko, 2019). These insights could guide global or international management and marketing fields to orientate on accurate and country-suitable visual (label) design dimensions.

5.4 Conclusion

- Two study goals: To determine the complexity and shape design of eco-labels impact the sensory attributes of a (healthy) product based on the assumption that consumers are using symbolic information in extrinsic product features (in this case, the eco-label) to draw inferences about product characteristics. Second goal: To determine the robustness of the eco-label effect, i.e., how strongly people are stereotyped by eco-labels in their opinions about product perception, e.g., taste, quality, price and health perception.
- Main result: A high level of complexity (naturalistic illustration) seems to be an indicational factor which leads to intense taste perception and supports corresponding associations, thereby underlining the need to consider visual complexity as a yet understudied crucial factor in achieving greater insights into suitable label/ logo design guidelines.
- The eco-label effect showed its robustness over the judgemental dimensions of an eco-labelled product, and it underlines the role of stereotyped thinking about (healthy) products on a rather intrinsic basis. Such thinking occurred with all participants, not just organic shoppers. Furthermore, it may support the pictorial-priority effect, as the effects were stronger in the experimental conditions with eco-label (pictorial design) than in the control group (which consisted of a small text about ecological production of the iced-tea).
- The results of the present study add new insights to inspire further empirical studies and practical areas in the field of organic and healthy food choices. There occur to exist various extrinsic attributes that have not been considered yet but may influence implicit and affective evaluation of (healthy) products. Visual complexity with its variety of dimensions may possess such attributes. Thus, reconsidering the multitude of complexity could be relevant insofar as it, when accurately applied, activate more positive consumer responses towards organic and healthy food choices.

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7. Appendix

Appendix A Pre-test questionnaire

Taste evaluation based on eco-labelling

University of Twente
Master These
Anna Otting

Im Folgenden werden Ihnen einige Fragen über verschiedene Nachhaltigkeitssiegel und deren Design gestellt. Bitte beantworten Sie diese Fragen nach persönlichem Eindruck und besten Gewissen. Vergessen Sie nicht, dass keine Antwort falsch ist. Das Ausfüllen der Online Survey wird nur 10 Minuten dauern.

Ihre Angaben sind anonym und werden vertrauensvoll behandelt.

Vielen Dank für Ihre Hilfe bei meiner Master These!

Zuerst ein paar demographische Fragen.

Welches Geschlecht haben Sie?

- ○ weiblich
- ○ männlich

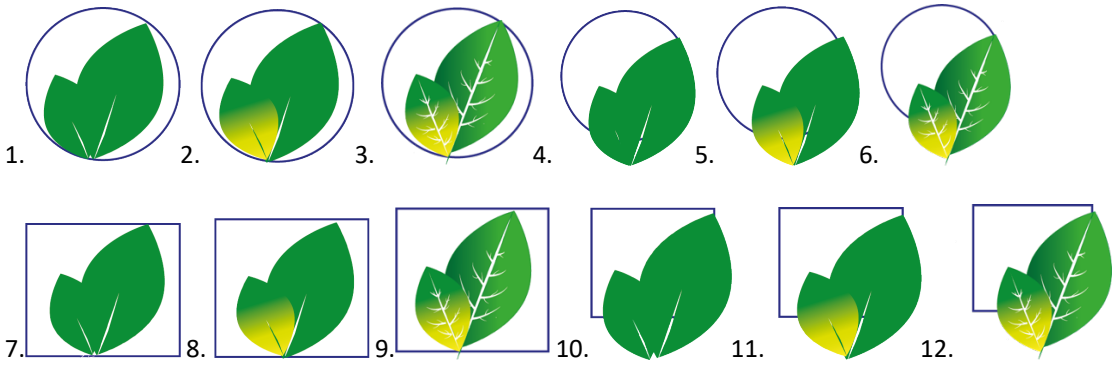
Wie alt sind Sie?

_____

Nun beginnt die Hauptbefragung. Im Folgenden werden Ihnen einige Varianten von Nachhaltigkeitssiegeln vorgestellt, bitte bewerten Sie Ihren persönlichen Eindruck bei einem Bewertungsbogen von

1= "Stimme überhaupt nicht zu" bis 7="Stimme völlig zu".

Wie vorher bereits erwähnt ist keine Antwort falsch, es geht um Ihren eigenen Eindruck.



Dieses Nachhaltigkeitssiegel wirkt auf mich...

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Weder noch	Stimme eher zu	Stimme zu	Stimme völlig zu
simpel	○	○	○	○	○	○	○
komplex	○	○	○	○	○	○	○
einfach	○	○	○	○	○	○	○
fortgeschritten	○	○	○	○	○	○	○
elegant	○	○	○	○	○	○	○
rund	○	○	○	○	○	○	○
eckig	○	○	○	○	○	○	○
hart	○	○	○	○	○	○	○
weich	○	○	○	○	○	○	○
organisch	○	○	○	○	○	○	○
gleichmäßig	○	○	○	○	○	○	○
natürlich	○	○	○	○	○	○	○

Um die Nachhaltigkeit von Eistee zu demonstrieren, ist das Siegel...

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Weder noch	Stimme eher zu	Stimme zu	Stimme völlig zu
passend	○	○	○	○	○	○	○
realistisch	○	○	○	○	○	○	○
glaubhaft	○	○	○	○	○	○	○
vertrauenswürdig	○	○	○	○	○	○	○
unpassend	○	○	○	○	○	○	○
unrealistisch	○	○	○	○	○	○	○
unglaubhaft	○	○	○	○	○	○	○
nicht vertrauenswürdig	○	○	○	○	○	○	○

Jetzt nur noch den letzten roten Button unten rechts drücken und die Umfrage ist beendet.

Nochmals vielen Dank für Ihr Mitwirken und Ihre Hilfe!

Anna Otting

Appendix B Demonstration of taste test setting

Appendix C Main study questionnaire

Taste test

Geschmackstest Eistee

Herzlich Willkommen und vielen Dank, dass Sie an diesem Geschmackstest teilnehmen. Im Zusammenhang mit dem Absolvieren meiner Master These im Fachbereich Communication Studies an der University of Twente, erhebe ich eine Studie über den Geschmack von Eistee. Im Folgenden dürfen Sie den Eistee, der sich vor Ihnen befindet, probieren und anschließend ein paar Fragen beantworten. Während Sie den Fragebogen ausfüllen, schauen Sie sich die Werbemittel dazu an. Bitte beantworten Sie die Fragen so schnell wie möglich, es ist wichtig, dass es um Ihren tatsächlichen ersten Eindruck geht. Vergessen Sie nicht, es gibt bei diesem Test keine richtigen oder falschen Antwortmöglichkeiten. Es geht um Ihren persönlichen Eindruck. Das Ausfüllen des Fragebogens wird lediglich 5 Minuten Ihrer Zeit in Anspruch nehmen und Ihre Teilnahme ist anonym.

Anna Otting

Jetzt probieren Sie den Eistee.

Meiner persönlichen Meinung nach schmeckt der Eistee...

	Stimme überhaupt nicht zu	Stimme nicht zu	Stimme eher nicht zu	Weder noch	Stimme eher zu	Stimme zu	Stimme völlig zu
...stark	○	○	○	○	○	○	○
...intensiv	○	○	○	○	○	○	○
...kräftig	○	○	○	○	○	○	○
...vollmundig	○	○	○	○	○	○	○
...schwach	○	○	○	○	○	○	○
...leicht	○	○	○	○	○	○	○
...kraftlos	○	○	○	○	○	○	○
...mild	○	○	○	○	○	○	○
...bitter	○	○	○	○	○	○	○
...süß	○	○	○	○	○	○	○
...sauer	○	○	○	○	○	○	○
...salzig	○	○	○	○	○	○	○
...von hoher Qualität	○	○	○	○	○	○	○
...hochwertig	○	○	○	○	○	○	○
...exklusiv	○	○	○	○	○	○	○
...einzigartig	○	○	○	○	○	○	○

Der Eistee schmeckt meiner Meinung nach...

	1	2	3	4	5	6	7	
lecker	○	○	○	○	○	○	○	nicht lecker
gut	○	○	○	○	○	○	○	schlecht
angenehm	○	○	○	○	○	○	○	unangenehm
natürlich	○	○	○	○	○	○	○	unnatürlich
gesund	○	○	○	○	○	○	○	ungesund
kalorienreich	○	○	○	○	○	○	○	kalorienarm

Bitte wägen Sie ab, in wie fern, die folgenden Aussagen auf Sie zutreffen. Nochmal als kurze Erinnerung, es gibt keine richtigen oder falschen Antworten. Es geht um Ihre persönliche Meinung.

Ich ziehe biologisch angebaute Lebensmittel regulären Lebensmittel vor.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich bin der Meinung, dass biologisch angebaute Lebensmittel besser sind als reguläre Lebensmittel.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich achte beim Einkaufen darauf, dass die Lebensmittel biologisch angebaut sind.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich kaufe regelmäßig biologisch angebaute Lebensmittel.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Biologisch angebaute Lebensmittel sind gesünder als reguläre Lebensmittel.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Biologisch angebaute Lebensmittel schmecken besser als reguläre Lebensmittel.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Bitte wägen Sie ab, in wie fern die folgenden Aussagen auf Sie zutreffen.

Ich würde es in Erwägung ziehen, diesen Eistee in einem Supermarkt zu kaufen.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Wenn dieser Eistee in einem Supermarkt erhältlich wäre, würde ich ihn kaufen.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich würde es in Erwägung ziehen, diesen Eistee für mich selbst zu kaufen.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich würde es in Erwägung ziehen, diesen Eistee für mich selbst zu kaufen.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich würde es in Erwägung ziehen, diesen Eistee für meine Kinder zu kaufen.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Nachdem Sie nun den Eistee probiert haben und die Werbung gesehen haben, wie viel, würden Sie sagen, kostet eine 0,5 l Flasche davon?

_____

Meiner Meinung nach, hat der Eistee einen komplexen Geschmack.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Ich denke, dass der Eistee nachhaltig hergestellt wurde.

	1	2	3	4	5	6	7	
Stimme überhaupt nicht zu	○	○	○	○	○	○	○	Stimme völlig zu

Was denken Sie war das Ziel dieses Geschmackstests?

_____

_____

_____

_____

_____

Was für ein Geschlecht haben Sie?

- ○ weiblich
- ○ männlich

Wie alt sind Sie?

Wie regelmäßig trinken Sie Eistee?

- ○ Nie
- ○ Saisonal
- ○ Ab und an
- ○ Regelmäßig

Sie haben nun das Ende dieser Umfrage erreicht. Ich hoffe, es hat Ihnen gefallen, daran teilzunehmen und ich bedanke mich, dass Sie sich die Zeit genommen haben!

Anna Otting

Appendix D English Version Main study questionnaire

Introduction text:

Welcome and thank you for participating at this taste test.

In connection with the the Master program Communication Studies at the University of Twente, I conduct research about the taste of iced tea. In the following, you will be asked to try the iced tea which is in front of you. In the next step, there are a few questions which I am asking you to fill in as a help there will be an advertisement of the iced tea that you just tried.

It is important to answer the questions as fast as possible, the first impression of you is relevant. No answer is right or wrong, it's purely about your own impressions. Filling in the questionnaire will take only around 5 minutes and your participation will be handled under complete anonymity.

Thank's again for your participation,

Anna Otting

You see an advertisement about an iced tea. Please have a look on this poster while you are filling out the questionnaire.

Now you can start to taste the iced tea in front of you.

I think the taste of the iced tea is…

	Strongly disagree	disagree	Rather Disagree	Neither disagree nor agree	Rather agree	Agree	Strongly agree	
…strong								
…intense								
…full								
…powerful								
…weak								
…light								
…mild								
…powerless								
…bitter								
…sweet								
…of high quality								
…premium								
…exclusive								
…unique								
…mild								
…powerless								
…bitter								
…sweet								
…of high quality								
…premium								
…exclusive								
…unique								

I think, the iced-tea is…

	Strongly disagree	disagree	Rather Disagree	Neither disagree nor agree	Rather agree	Agree	Strongly agree	
tasty								tasteless
good								bad
pleasant								unpleasant
natural								unnatural
healthy								unhealthy
High in calories								Low in calories

Please, indicate to what extent you relay to the following statements below. Again your answers are not right or wrong, it's about your personal impressions.
When I go grocery shopping…

I believe organic food is better than conventional food

Strongly disagree								Strongly agree

I prefer organic food over conventional food

Strongly disagree								Strongly agree

Organic food is healthier than conventional food

Strongly disagree								Strongly agree

Organic food tastes better than conventional food'

Strongly disagree								Strongly agree

While grocery shopping, I mind that the food I buy is organic

Strongly disagree								Strongly agree

I buy organic food regularly

Strongly disagree								Strongly agree

I would consider paying this iced tea for myself

Strongly disagree								Strongly agree

I would consider buying this iced for my partner

Strongly disagree								Strongly agree

I would consider buying this product for my children

Strongly disagree								Strongly agree

After testing the iced tea and observing the advertisement, what do you think a 0.5 l bottle of iced tea costs?

_____

In my opinion, the iced tea has a complex taste.

Strongly disagree								Strongly agree

In how far do you perceive the taste as complex?

Strongly disagree								Strongly agree

What do you think is the goal of this taste test?

_____

Demographic information

What is your gender?

- female
- male

What is your age?

_____

How frequently do you consume iced-tea?

- Never
- Seasonal (summer times)
- Unregularly
- Regularly

Appendix E 2.Pretest

Pre-test complexity and shape within stimulus material

A second pre-test has been conducted to assure that the 4 chosen eco-label designs still have the same effect with regard to the items of complexity and shape when they are included in the advertisement material which should function as stimuli material for the main study (see Figure 3). In the main study, there will be a fifth group, in this group no eco-label will be pictured (function as a control group).

Figure 3. the 4 eco-labels within the stimulus material (iced-tea ad)

The second pre-test was a small test to assure the effects of the four eco-label designs guarantee the same outcome as in the first pre-test. The participants (M = 37. 17, SD = 14.02) were asked to evaluate the iced-tea advertisements with the four different eco-labels. The rating has been on a 7-point Likert scale with the ranging from 1 = 'strongly disagree' to 7 = 'strongly agree'. The items of this pre-test are the same items as used in pre-test 1; for complexity, the items simple, complex, basic and sophisticated (α = .84) and for shape, the items rounded, angular, soft, and hard (α = .88).

Table 3

Pre-test of scores on complexity and shape

Labels	**Complexity**[a)]	
	Mean	Std. dev.
1	4.88	1.77
2	2.17	1.26
3	4.92	1.35
4	2.08	1.25
Labels	**Shape**[a)]	
	Mean	Std. dev.
1	6.13	0.70
2	5.33	1.08
3	3.04	0.81
4	2.75	1.80

[a)] Measured on a 7-point Likert Scale ranging from 'strongly disagree' to 'strongly agree'

The results of the second pre-test underline the first pre-test's outcome and assure that Label 1 still occurs to be evaluated as low in complexity (M = 4.88, SD = 1.77) and rounded (M = 6.13, SD = .70), Label 2 as high in complexity (M = 2.17, SD = 1.26) and rounded (M = 5.33, SD = 1.08), Label 3 as low in complexity (M = 4.92, SD = 1.35) and angular (M = 3.04, SD= .81), Label 4 as high in complexity (M = 2.08, SD = 1.25) and angular (M = 2.75, SD = 1,80). These findings are presented in Table 3 Pre-test of scores on complexity and shape.

Table 4
Mean suitability for iced tea

Labels	Suitability [a)]	
	Mean	Std. dev.
1	5.71	0.88
2	5.80	1.42
3	3.92	2.07
4	5.67	0.98

[a)] Measured on a 7-point Likert Scale ranging from 'strongly disagree' to 'strongly agree'

Furthermore, the participants were asked about the suitability of the eco-labels for an iced tea ad. In order to measure this variable, the items suitable, realistic, believable, trustworthy, and the reversed items (α = 0.98) have been used. The results demonstrated a rather positive tendency towards the suitability of the eco-labels for an advertisement about iced tea.