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Do Expectations about Organic Matter?

Analysis of Taste Perception and Purchase Intention

at the Example of Wine

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PREFACE

In front of you is my master thesis "Do Expectations about Organic Matter? Analysis of Taste Perception and Purchase Intention at the Example of Wine". This thesis serves to achieve the double degree in the Master programs "Agricultural and Food Economics" at the University of Bonn and "Management, Economics and Consumer Studies" at Wageningen University.

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Finally, I am grateful to all the people who helped me conducting the wine tasting experiment and who supported me during the whole process.

ABSTRACT

Prior research has shown that organic labelling can positively impact consumers' sensory perception of food products. Expectations seem to play a large role in this process. The product category wine is rather complex and only few and contrasting studies exist with respect to the influence of organic labelling on consumers' liking and their willingness to pay (WTP) for wine. Hence, the purpose of this study is to investigate consumers' taste perception of organic wine compared to conventional wine and their willingness to pay for it. Additionally, it is aimed for getting deeper insight into the role of expectations and possible moderating effects. An experimental approach was chosen combining a tasting session using a within-subjects design with a questionnaire asking for consumers' attitudes towards organic wine, environmental concern, purchase frequency of organic products, subjective knowledge and socio-demographics. A sample of 214 participants took part and tasted two objectively identical Riesling wines, but one wine was labelled organic while the other one was not. The results suggest that there is no overall positive effect of organic labelling on taste perception of wine. However, consumers already having a positive attitude towards organic wine are indeed likely to prefer the taste of the organic wine to the taste of the conventional alternative. Consumers' liking expectations are positively influenced by their purchase frequency of organic wine and negatively by consumers' subjective wine knowledge and age. Furthermore, people are generally willing to pay a premium for organic wine. With the proposed model, no relationship between consumers' expectations and their actual liking was detected. Providing insight into how organic labelling can impact consumers' perception of taste and WTP can help producers and distributors in developing effective marketing strategies. For future studies it is recommended to use a more realistic setting, like in a supermarket, in order to explore people's real WTP for organic wine.

Keywords: Organic Labelling, Wine Tasting Experiment, Expectations, Liking, WTP

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EU	European Union
Kurtos.	Kurtosis
M	Mean
SD	Standard Deviation
SE	Standard Error
Skew.	Skewness
Sig.	Significance
VIF	Variance Inflation Factor
WTP	Willingness to Pay

1. INTRODUCTION

Rising demand for sustainable food products has led to an enormous increase in food labels covering different aspects of sustainability. Organic food labels are the most common labels in the EU-food market. Consumers believe that organic agriculture induces a cleaner environment, safer food and more animal welfare (Hughner et al., 2007, pp. 101-102). Furthermore, they often associate organic products with positive health effects (Hughner et al., 2007, p. 106).

When it comes to food purchase, taste seems to be the preferred quality cue over price, nutritional value or environmental safety (Magnusson et al., 2001, p. 222). Usually, a better taste leads to a higher willingness to pay for the product, where “better” is subjectively defined (Sörqvist et al., 2013, p. 2; Yiridoe et al., 2005, p. 199). Taste even appears to distinguish sustainably produced and conventional food. There is a debate whether organic products taste better or worse than conventional products. Most prior research has shown no significant differences for a range of products like fruits, vegetables and yoghurt. However, taste perception is sensitive to contextual factors such as informational framing, labels and expectations. Thus, consumers expect a certain taste from an organic labelled product. While the study of Schuldt & Hannahan (2013, p. 78) shows that consumers perceive organic foods to taste worse than conventionally produced foods, there is empirical evidence that labels such as the organic label can have a positive influence on taste perception as well as on willingness to pay (WTP) (Apaolaza et al., 2017, p. 7; Sörqvist et al., 2013, p. 3). This label effect is an example for the so-called halo-effect (Thorndike, 1920), a perceptual bias. It is a form of glorification because a relation between the product label and the evaluated attribute (taste) is missing. The direction of the label effect depends on consumers’ commitment to sustainability and the product category being judged (Piqueras-Fiszman & Spence, 2015, p. 171).

This study focuses on wine as an area of application. Wine is one of the most differentiated products on the market. This is because its quality is associated with its region of origin and differs strongly within not only wine producers but also vintages. Consumers are facing the challenge to deal with several intrinsic and extrinsic cues on wine labels in order to make a choice. Furthermore, wine is regarded as a lifestyle product (Bruwer & Alant, 2009, p. 235) which is used in social contexts for its hedonic experience. Germany is the world’s largest importer of organic wine and achieves the largest sales volumes of organic wine in Europe (IFOAM EU Group, 2013, p. 36).

Organic wines still face some problems in terms of sensory perception. While some say that organic wines benefit from a positive image regarding grape production, wine processing,

and healthiness (Lockshin & Corsi, 2012, p. 15), others associate organic wine with a positive health effect but less tastiness (Schuldt & Hannahan, 2013, p. 78) or even with a poor quality image (Delmas & Grant, 2008, pp. 22-23) compared to other product categories. Consequently, there is still the need to better understand the effects of the organic label and the underlying reasons for differences. In order to promote the purchase of organic products, it is critical to understand consumers' expectations and preferences for those products. It is relevant to know how consumers perceive the organic label on wine and how this influences their quality and taste perception.

Therefore, the relationship between the organic labelling and consumers' expectations will be explored in detail. The aim is to contribute to the literature regarding the effect of label information on consumers' taste perception and willingness to pay (WTP) for wine. With this master thesis the influence of organic labelling on the liking of organic wine as well as on WTP is analysed by exploring consumers' expectations and the halo-effect for a typical German white wine: Riesling. The underlying process, which is not completely understood yet, will be explained in detail using the theoretical framework of expectation theories. A second aim is to create further understanding about important moderators influencing the halo-effect.

The fact that the organic label may induce a more intense experience of sensory properties and a higher intention to purchase - at least for certain consumer groups - shows that there are also significant practical implications for consumer policy on the one hand and distributors of wine on the other hand. Therefore, it is interesting to gain further insights into which consumer groups are prone to the halo-effect and what the underlying mechanism is, as well as to find out if and when there could be even a negative effect. Following these objectives, the main research question can be formulated as follows:

How do expectations about organic-labelled wine influence consumers' liking compared to non-labelled wine?

This thesis is structured as follows: First of all, relevant theories are explained. Subsequently, the underlying research hypotheses are derived on the basis of findings in the literature about consumers' perception of organic food and about moderating influences. Next, the methodology is presented explaining how the experiment is designed, how data is collected and how data is analysed. The fourth part puts forward the results of descriptive and advanced analysis and provides an overview of accepted and rejected hypotheses. In the last chapter, the empirical findings are discussed, practical implications are derived and limitations of the study are addressed before finally, a conclusion is drawn and an outlook for future research is given.

2. THEORETICAL BACKGROUND

This chapter is divided into three parts building up on each other. First, the theoretical foundations are outlined, followed by a presentation of relevant research hypotheses that are derived based on findings from a literature review. The third part comprises a conceptual model that links the research hypotheses to the theoretical foundations.

2.1 Theoretical Foundations

Before the theory of expectations and the halo-effect will be explained in detail, it is useful to take a look at the role of organic labelling and its implications for both producers and consumers.

2.1.1 Organic Labelling

Labelling can be defined as “any policy instrument of a government or other third party that somehow regulates the presentation of product-specific information to consumers” (Roe & Teisl, 1998, p. 140). Product-specific information can be information about nutrition, price or taste as well as about non-use characteristics like sustainable production. Food labels are important and help consumers to make better purchase decisions according to their preferences. Based on information economics a market is properly functioning when consumers are able to purchase the product that best matches their preferences. However, information about a product’s characteristics is often asymmetric. I.e. producers know about the product’s origin but consumers cannot verify whether the product is organic indeed (Giannakas, 2002, p. 2). Hence, information asymmetry leads to market failure since consumers cannot make optimal choices (Verbeke, 2005, p. 350). This is especially the case for credence goods. Credence attributes are quality attributes that can cannot be proven even after purchase (Darby & Karni, 1973, p. 69). Another type of quality attributes are experience quality attributes, which can be experienced before or during consumption. Examples for credence attributes are healthiness, or ethical aspects like “organic”. Labelling is hence a method for communicating credence attributes to consumers (Roe & Teisl, 1998, p. 141).

Figure 1: EU Organic Label and German Organic Label

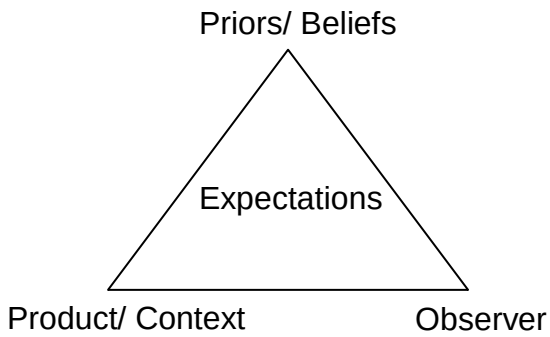
Source: https://www.oekolandbau.de/bio-siegel/

As a consequence, the EU Organic Logo shown in Figure 1 was introduced in 2010 in order to make it easier for consumers to identify organic products and to enhance fair competition in the market. All organic pre-packed food that is produced within the EU requires displaying the EU Organic Logo on the package. In addition, the logo informs consumers about the region where the used raw material is produced and a code number of the respective control authority must be provided. It is not possible to guarantee that a product is 100 % organic, but at least 95 % of the product's agricultural ingredients need to be organic in order to meet the requirements (European Commission, 2019). The German „Bio-Siegel" has already been introduced by the German Federal Ministry for Food, Agriculture and Consumer Protection in 2001. It is granted to all agricultural products manufactured according to the requirements outlined in the EU Regulation on Organic Farming. In contrast to the EU label, it is not mandatory (BMEL, 2016).

2.1.2 Expectations

Expectations have a strong influence on whether people like food or not, even more than for other products, because food is digested and may be poisonous (Piqueras-Fiszman & Spence, 2015, p. 166). When making a food product choice, consumers compare information from previous experiences and knowledge stored in memory with the presented cues of the actual product. Expectations may improve or degrade the perception of a product even before tasted and thus, affect the purchase intention. Further, adjustments of consumer expectations may be made after the product has been tasted (Deliza & MacFie, 1996, p. 106). This influences the repurchase. Expectations are not only grounded on previous experiences with a certain product. They are also influenced by factors related to the consumer's or observer's personality as well as observer's prior beliefs and attitudes. This can be shown in a triangle pattern (see Figure 2) (Piqueras-Fiszman & Spence, 2015, p. 176).

Figure 2: Origin of Expectations



Source: Piqueras-Fiszman & Spence (2015)

Citing an example, there is a well-known study by Morrot, Brochet & Dubourdieu (2001) about how expectations can affect the sensory experience. White wine was coloured red and participants, even experts, did not recognize they tasted white wine, because they expected to taste red wine. Therefore they described the coloured white wine with typical red wine descriptors. This example shows important consequences of expectations. They can further lead to halo effects (Caivano & del Pilar Buera, 2012, p. 5).

2.1.3 Halo-Effect

A halo-effect is a perceptual bias that was first described by Thorndike (1920). It means that one salient attribute strongly influences the overall perception of a person or an object. Halo-effects can arise with regard to labels even if there is no reasonable relation between the product label and the specific attribute of the product being evaluated. These effects have been shown for diverse food products (e.g. Lee et al*.,* 2013, Sörqvist et al*.*, 2015). Two different effects of the organic label on food products can be distinguished. First, organic products are frequently perceived as having fewer calories (Schuldt & Schwarz, 2010, p. 146) or as being healthier in general (Hughner et al., 2007, p. 106). This effect is often referred to as the "health-halo-effect". Second, the organic label can affect the taste perception of a food product (for a review see Piqueras-Fiszman & Spence, 2015), overall liking as well as specific sensory characteristics (Apaolaza et al., 2017, p. 3; Poelman et al., 2008, p. 115).

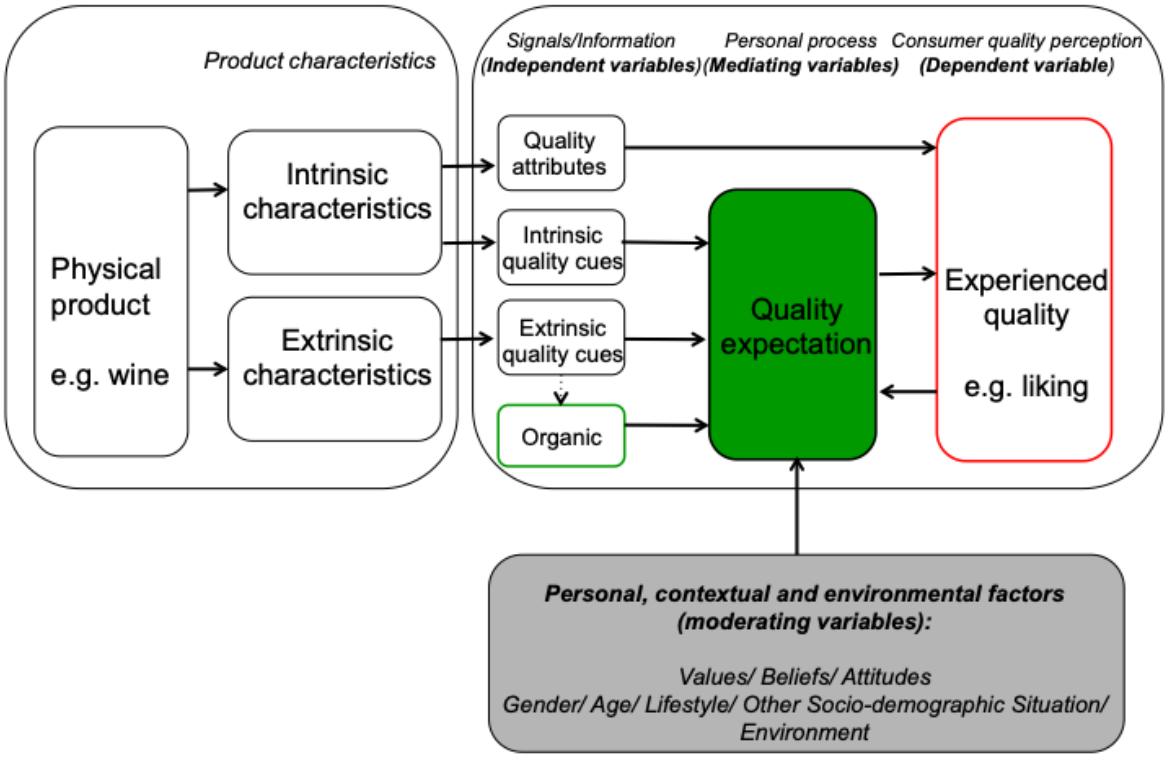
This study focuses on the halo-effect with respect to liking. Halo-effects occur, because inferences made by consumers are not always logical. Inferences resulting from the halo-effect are defined to be nonanalytic. I.e. consumers mix two non-related concepts like health and organic for their judgement (Alba & Hutchinson, 1987). For the case of organic labelled wine, the halo-effect might be a key factor explaining differences between organic-labelled and non-organic labelled wine with respect to ratings of the actual liking.

2.1.4 Consumers' Quality Perception of Food

In order to understand how the organic label on wine influences liking and WTP, the role of expectations in the consumers' quality perception process needs to be explained first. Afterwards, previous research on consumers' perception of organic food and of organic wine in specific is reviewed, and findings regarding important moderators are presented. Hypotheses are formulated on the basis of both literature findings and the theoretical background.

A physical product, for example a bottle of wine, consists of intrinsic and extrinsic product characteristics. The experienced quality, e.g. liking, is influenced by intrinsic quality attributes like taste, which can be only ascertained through consumption and quality expectations that have a central role as a mediating variable. This process is shown in Figure 3. Quality expectations are formed by quality cues that are either part of the product (intrinsic) like colour or size and extrinsic cues related to the product like labels, brand or price. Extrinsic cues can be more important for consumers because often they do not have enough information about characteristics like taste (Zeithaml, 1988, p. 9). At the point of purchase consumers can just rely on quality cues to form beliefs about the product's taste (Steenkamp, 1990, p. 313).

Figure 3: Consumers' Quality Perception Process



Source: own illustration based on Fernqvist and Ekelund (2014)

According to Ajzen and Fishbein (1973), beliefs about credence attributes can be formed through informational and inferential belief formation. With informational belief formation, quality inferences are formed through accepting information from others like family and friends or through labels and claims on the packaging. Inferential belief formation happens through using own rules of thumb depending on prior beliefs about the relationship between quality cues and attributes (Grunert & van Trijp, 2014, p. 380). For instance the label "organic" may trigger inferences regarding the credence attribute "healthiness". People infer that organic wine is healthier compared to conventionally produced wine. When the expected benefits of a product are not known or when previous experiences do not help, consumers

rely more frequently on inferential belief formation. In the end, the experienced quality, e.g. liking of organic wine, also leads to expectations. Consumers that have already tried organic wine and liked the taste may probably create positive expectations about organic wine. As already explained, personal and contextual factors like attitudes and gender also have an impact on quality perceptions (Steenkamp, 1990, p. 325).

2.2 Derivation of Hypotheses

In the following the findings from an extended literature review are presented serving as a foundation for deriving research hypotheses. In a first step, literature on consumers' perception of organic food in general is reviewed. Subsequently, relevant findings from studies on consumers' perception of organic wine are presented. In a third step, possible moderators are suggested based on findings from the literature.

2.2.1 Consumers' Perception of Organic food

Factors often named as main reasons for purchasing organic food are taste, environmental concern, and health. Regarding taste several studies exist comparing taste perception of conventional food products with organic foods (Annett et al., 2008; Bernard & Liu, 2017; Poelman et al., 2008; Sörqvist et al., 2015). Despite the frequently found results that organic products are perceived as being superior in quality compared to conventional ones, there are conflicting results concerning taste perception. Whereas some researchers reported that organic food is perceived as less tasty (Prada et al., 2017; Schuldt & Hannahan, 2013), others could not find any differences regarding the expected taste or revealed even a better taste perception (Ellison et al., 2016, p. 146). An overview on relevant studies about the impact of organic labels on taste perception can be found in Table A.1. It appears to be important to distinguish between product categories. Such a distinction has recently been made by Prada, Garrido & Rodrigues (2017), stating that possible advantages of organic claims on liking of food products are stronger for whole foods compared to processed foods (Prada et al., 2017, p. 183). While organic strawberries and other whole foods were expected to taste better than their conventional alternative (Ellison et al., 2016, p. 144; Prada et al., 2017, p. 183), no differences in expectations were found for chocolate cookies (Ellison et al., 2016, p. 144).

Conducting actual taste experiments instead of just asking for expectations shows organic labels have an impact on actual liking. Several findings also indicate that the positive effect of the organic claim on product liking depends on the product category. For example, Poelman et al. (2008) revealed that the taste of organic pineapple was perceived as either better or worse compared to conventional pineapple, depending on consumers' attitudes about organic products. The same results were observed for the fair trade label, but not when

information about the two labels was given together (Poelman et al., 2008, p. 119). This effect on taste and willingness to pay is also called “eco-label effect” and could be further revealed for coffee arbitrarily labelled as eco-friendly (Sörqvist et al., 2013, p. 7). Similarly, the halo-effect could be proven for bread. An experiment in a Swedish supermarket revealed that the information about the farming system had a significant positive impact on liking of bread (Kihlberg et al., 2005, p. 32). In another study, the taste of bread was rated better after Canadian participants had received positive information either about its healthiness or organic production (Annett et al., 2008, p. H54). Lee et al. (2013) reported that American consumers preferred yoghurt labelled as organic compared to the conventional one, but for cookies the contrary was the case. Additionally, Fillion & Arazi (2002) indicated that British consumers perceived organic juice as more flavourful than the conventional juice, whereas no difference could be found for whole milk (Fillion & Arazi, 2002, pp. 156–157).

Another distinction between virtue and vice products could be made. Whereas virtue products like vegetables seem to benefit from being labelled with an organic claim, organic vice products like cookies may be judged worse since it may reduce the feeling of pleasure (van Doorn & Verhoef, 2011, p. 169). The product category wine belongs to the vice category because it may lead to negative health consequences in the long term, while giving immediate short-term pleasure to the consumer (van Doorn & Verhoef, 2015, p. 438).

Only few studies exist regarding the taste of organic labelled food compared to conventional labelled food taking into account both expected as well as actual taste evaluations. Italian consumers that evaluated the taste of organic and conventional beef had higher taste expectations for the organic beef than for the conventional one (Napolitano et al., 2010, p. 210). With respect to the actual liking, only the organic beef was tasted, where taste evaluations did not significantly differ from expectations. In another study conducted among Italian students, different organic and conventional strawberry yoghurt samples were tasted. Depending on students’ sustainability awareness the expectations and actual likings differed. For people with a high awareness, expectations were higher for the organic samples compared to the conventional ones while the actual liking was almost the same. People low in sustainability concern both expected to like and actually liked the conventional yoghurts more than the organic ones (Laureati et al., 2013, p. 6).

2.2.2 Consumers’ Perception of Organic Wine

Considering the effect of the organic label on **liking** of wine, only two studies exist to the best of the author’s knowledge. In the study by Wiedmann et al. (2014) all respondents evaluated red wine labelled with “organic” compared to “non-organic” as tasting better and indicated a higher purchase intention, showing that the eco-label effect might be a more general phenomenon as it is already suggested by Sörqvist et al. (2013, p. 6). This strong effect is

partially explained by Wiedmann et al. (2014) citing the fact that consumers in Germany are quite interested in organic products and belong to the heaviest organic product consumers (Wiedmann et al., 2014, p. 205). The pilot study by Apaolaza et al. (2017) adds new insights to Wiedmann et al. (2014) by showing that there is also a positive effect of the organic label on specific sensory descriptors such as colour and limpidity and not only on the overall actual liking.

Despite these stated positive findings, it is known that organic wine does not always have a positive image and it belongs to the vice category. Expectations that consumers have regarding organic wine may also be negative, i.e. that organic wine tastes worse than conventionally produced wine (Delmas & Grant, 2008, pp. 22-23). Therefore it is more complex to form hypotheses regarding the effect of organic labelling on wine.

Based on the theoretical background, the first hypotheses are proposed showing the general relationship between the independent variable “organic-/non-organic labelled wine” and the dependent variable “actual liking” and “WTP” mediated by consumers’ quality expectations.

H1a: *The organic label on wine positively influences consumers’ expected liking.*

H1b: *The organic label on wine positively influences consumers’ actual liking (halo-effect).*

H1c: *Positive taste expectations regarding organic labelled wine positively influence consumers’ liking of organic labelled wine compared to non-organic labelled wine.*

With regard to the effect of the organic label on consumers’ **WTP,** research also demonstrates that there are contrasting results, that may vary due to country effects and the use of different research methods (Schäufele & Hamm, 2017, p. 387). Collecting longitudinal market data in the Californian wine market revealed that the prices of eco-labelled wines are lower than the prices for certified but not labelled wines (Delmas & Grant, 2008, p. 18). The eco-label variable was utilized to measure consumers’ change in WTP. In contrast, other studies have shown that wine consumers are willing to pay more for sustainable wine than for conventional wine. Applying an auction method revealed that most consumers are willing to pay more for sustainable wine in the Spanish market (Sellers, 2016, p. 12). Also for the Italian market the results of an auction confirmed that consumers’ WTP is higher for different kinds of sustainable wines compared to conventional wine (Vecchio, 2013, p. 90). In general, it is hypothesized that there is a positive relationship between the organic label on wine and WTP.

H2a: *The organic label on wine positively influences consumers’ WTP before tasting.*

H2b: *The organic label on wine positively influences consumers’ WTP after tasting.*

Since the aim is to explore the effect of expectations on WTP, it is asked for both the WTP before actually tasting the wine and the WTP afterwards. Therefore **H2c** is formulated.

H2c: *Positive WTP expectations regarding organic labelled wine before tasting positively influence consumers' WTP for organic labelled wine after tasting compared to non-organic labelled wine.*

Findings from different studies also indicate a positive association of taste and willingness to pay (e.g. Yiridoe, Bonti-Ankomah & Martin, 2005, p. 199). Furthermore, people may even elicit a higher WTP for sustainably produced food although they preferred the taste of the conventional alternative (Sörqvist et al., 2013, p. 2).

With regard to wine, it can be drawn from the literature that consumers, who perceived organic wine to taste better, were also willing to pay more for the organic wine (e.g. Wiedmann et al., 2014). Hence, the organic label appears to have a positive influence on the WTP when the wine is not tasted (expected WTP) as well as after the wine has been tasted (actual WTP). The following hypotheses are proposed:

H3: *The expected liking of organic labelled wine positively influences consumers' WTP for organic labelled wine before tasting compared to non-organic labelled wine.*

H4: *The actual liking (after tasting) of organic labelled wine positively influences the WTP after tasting (actual WTP) for organic labelled wine compared to non-organic labelled wine.*

2.2.3 Moderating Variables

Coming back to the triangle pattern shown Figure 2, Piqueras-Fiszman & Spence (2015) have shown that quality perception depends on the match/mismatch of prior expectations and actual sensory stimuli, but also on several factors regarding the consumer's personality. The theoretical background of the following moderating factors will be described in detail: Attitudes, knowledge and purchase frequency as well as demographics.

2.2.3.1 Attitudes

Quality perceptions are further influenced by personal and situational factors (Steenkamp, 1990, p. 325) like attitudes. According to Perloff (2017, p. 87) an attitude can be defined as "*a learned, global evaluation of an object (person, place, or issue) that influences thought and action".*

In several studies attitudes have been found to be important for the decision-making process concerning organic food. Early researches already demonstrated the importance of environmental concern serving as an attitude (e.g. Grunert & Juhl, 1995, p. 40). Environmental concern is seen as a main predictor of buying organic food (Magnusson et al., 2003, p. 115). Gil et al. (2000, p. 222) investigated the importance of **attitudes towards environmental issues** and **organic products** in general on **willingness to pay** for organic

products. They found out that both factors are key and need to be considered when explaining organic food consumption. Other studies came to the conclusion that these two attitudes are critical for consumers' decision-making process regarding organic products (Perloff, 2017, p. 87). In addition to this, many studies have shown that attitudes play an important role for influencing consumers' liking (Fernqvist & Ekelund, 2014, p. 342). In consequence, these two factors are chosen as adequate moderators in the conceptual model.

Environmental Attitudes

Pro-environmentalism has been suggested as a possible moderator for the so-called halo-effect. Regarding the effects of pro-environmental orientation, different results exist in the literature. It was found that consumers' expectations about organic products differ with their environmental attitudes. In fact, those who reported to be concerned about the environment expected to like organic yoghurt more than conventional yoghurt (Laureati et al., 2013, p. 6). Whereas Fernqvist & Ekelund (2014, p. 342) found that participants engaging in pro-environmental behaviour are less likely to be prone to the health-halo effect, in contrast, most others observed that consumers having a pro-environmental orientation are more likely to show the halo-effect on taste perception (e.g. Laureati et al., 2013, p. 6). Citing an example for the case of apples, it was shown that very positive beliefs about environmental benefits lead to a significant better taste evaluation of organic claimed apples than unlabelled slices (Bernard & Liu, 2017, p. 59). According to Apaolaza et al. (2017), however, consumers' pro-environmental orientation did not act as a moderator at all.

These contrasting findings underline the need for further research regarding environmental attitudes. It seems to be that one needs to be careful in determining "pro-environmental orientation" or "environmental concern". Whereas Lee et al. (2013, p. 34) and Apaolaza et al. (2017, p. 5) used an adjusted 4-items scale based on Dunlap et al. (2000) that was more behaviour related, most others used the more attitude related, original 15-items scale by Dunlap et al. (2000). It seems to be useful to further ask for attitudes about organic products in general and for organic wine in specific to get a more precise picture, since it is assumed that the product category plays a crucial role. In this study both environmental attitudes and environmental behaviour are integrated.

Since there is large evidence in the literature that environmental concern positively moderates the taste perception, the fifth hypothesis to be tested is the following:

H5a: *Environmental concern creates a positive taste expectation of organic labelled wine compared to non-organic labelled wine.*

H5b: *Environmental concern creates a positive WTP expectation for organic labelled wine compared to non-organic labelled wine.*

Attitudes towards Organic Products

Attitudes towards organic food appear to be a critical determinant for organic food consumption (de Magistris & Gracia, 2008, p. 942). According to Barber et al. (2009) attitudes have a great impact on the purchase intention of organic wine. Others however investigated the effect of attitudes towards organic products on taste perception, but could not find a significant difference (Wiedmann et al. 2014, p. 205). In this study, the moderating effect of attitudes towards organic products is tested again, taking into account several limitations of the study by Wiedmann et al. (2014, p. 208).

H6a: *Positive attitudes towards organic wine increase the expected liking of organic labelled wine compared to non-organic labelled wine.*

H6b: *Positive attitudes towards organic wine increase the expected WTP for organic labelled wine compared to non-organic labelled wine.*

2.2.3.2 Consumer Knowledge

The level of the participant's knowledge and competence (expertise) about the particular product has a large impact on the ability to make inferences (Alba & Hutchinson, 1987, p. 421) and is therefore a possible moderator. Several studies have found that consumer product knowledge plays a great role in consumer decision-making, also for wine (Sáenz-Navajas, Ballester, Peyron, & Valentin, 2014). The concept of knowledge can be defined by two constructs, **expertise** and **familiarity** (Alba & Hutchinson, 1987). Expertise can be measured by **objective** or **subjective** knowledge. Whereas objective knowledge represents what information people have actually stored in their memory, subjective knowledge is consumers perceived amount of information (Park et al., 1994, p. 71). Since it has been shown that subjective knowledge (perceived expertise), compared to objective knowledge, is a stronger motivator of consumer purchase behaviour (Pieniak et al., 2010, p. 586) the focus on this study lies on **subjective knowledge.** Therefore, in this study, subjective knowledge regarding the product category wine will be measured.

Most consumers are no experts on a certain product category. Even if they know which information is suitable to predict for instance the taste, consumers frequently are not confident in using it and rather use the more "shallow" (Selnes & Troye, 1989, p. 415) extrinsic cues they feel confident with (Grunert & van Trijp, 2014, p. 381). Consumers who are high in expertise should be less prone to halo-effects because they evaluate a product in detail and more analytically (Alba & Hutchinson, 1987, p. 421). Thus, they can distinguish more easily between important and irrelevant product quality cues.

Consumers' **subjective wine knowledge** may moderate the effect of the organic label. Wiedmann et al. (2014) revealed that if consumers have less knowledge about wine,

extrinsic cues like labels are frequently used for the quality judgement (Pieniak et al., 2010, p. 586). They use simplified heuristics (Alba & Hutchinson, 1987, p. 421). In contrast, consumers with higher expertise are usually more familiar with the product category and focus more on the taste itself whereas non-experts use other cues like sustainability labels to infer the wine quality. Hence, it is expected that perceived expertise in wine reduces the halo-effect.

H7a: *Subjective wine knowledge negatively influences the expected liking of organic labelled wine compared to non-organic labelled wine.*

There is further evidence in the literature that consumers' WTP varies with their knowledge about wine (Sellers, 2016, p. 13).

H7b: *Subjective wine knowledge negatively influences the expected WTP for organic labelled wine compared to non-organic labelled wine.*

2.2.3.3 Purchase Frequency

Purchase or **consumption frequency** can be regarded as an indicator for **familiarity** with a product category (Chocarro et al., 2009, p. 181). Familiarity is further related to the importance consumers give to extrinsic cues. According to Banovic et al. (2012, p. 169) consumers who are less familiar with wine base their evaluations more on extrinsic cues, while high-familiarity consumers use more intrinsic cues. There is an interrelation between the two constructs **expertise** and **familiarity**, because being familiar with a product generally leads to an increase in consumers' expertise (Alba & Hutchinson, 1987, p. 411). Hence, familiarity is seen as a precondition of product knowledge. Since in this study participants are asked for their purchase frequency of organic products and organic wine, the focus lies not on the category "wine" but on the attribute "organic". Evidence from the literature suggests that purchase frequency is associated with liking. People that reported to frequently buy organic products liked the organic bread better than the conventional one after having received information about the production method (Kihlberg et al., 2005, p. 33). Although this result only tended towards significance the authors considered the effect as important. Moreover, a positive association of consumption frequency of organic products and taste ratings was detected with regard to different whole and processed foods (Prada et al., 2017, p. 181). Hence, it is investigated whether a positive influence of purchase frequency can be found on consumers' liking of organic wine.

H8a: *A higher purchase frequency of organic wine creates a positive influence on taste expectation of organic labelled wine compared to non-organic labelled wine.*

Several studies have pointed out that the purchase frequency of organic products has a positive influence on the WTP for organic products. In a choice experiment, it was found that consumers that regularly buy organic chicken are willing to pay a higher premium than non-

buyers (van Loo et al., 2011, p. 608). Since it is suggested that higher purchase frequency of organic products leads to higher WTP, **H8b** is proposed:

H8b: *A higher purchase frequency of organic wine creates a positive influence on expected WTP for organic labelled wine compared to non-organic labelled wine.*

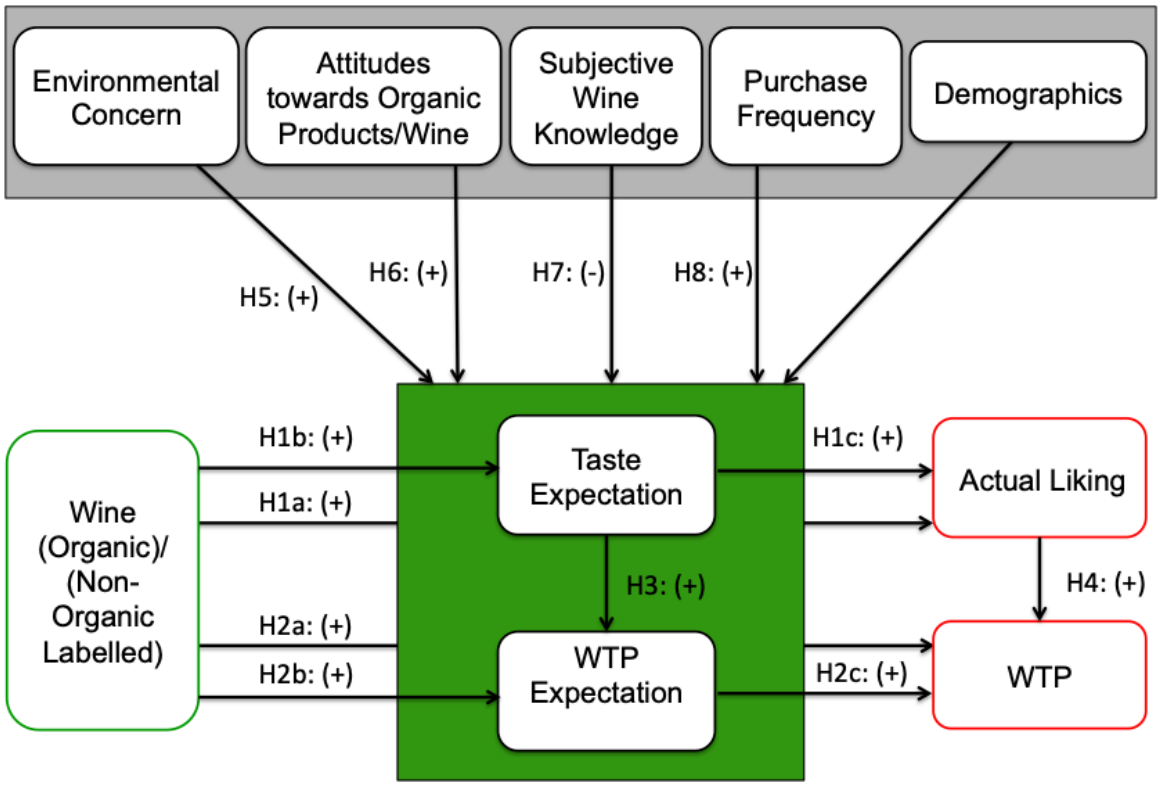
2.2.3.4 Demographics

Socio-demographics appear to have an impact on the purchase behaviour of organic foods. **Gender**, **age**, level of **education** and **income** are reported as main drivers. However, results have been mixed (Kihlberg et al., 2005, p. 33). Concerning **gender** a large consistency could be observed. In specific, women are more likely to buy organic products than men (Padel & Foster, 2005, p. 118) and they also buy a higher amount (Hughner et al., 2007, p. 104). This was also found for the case of organic wine (Padel & Foster, 2005, p. 118). Women's attitudes towards organic products are reported to be more positive in general (Davies et al., 2013, p. 20). Results for **age** are ambiguous. While there was evidence found that younger people rather tend to buy organic products compared to older people, several other researches did not detect any influence of age on the WTP (Mann et al., 2012, p. 230). Again other studies found that older people are more likely to pay a premium for sustainable wine (Magnusson et al., 2001, p. 216) With regard to the education level, people having a higher **education** degree seem to have a more positive attitude towards organic products and they are also likely to be willing to pay more for organic foods (Fotopoulos & Krystallis, 2002, p. 738). The same holds for household **income**. People with a higher income are more likely to express a positive attitude towards organic products (Sellers, 2016, p. 14). In addition to this, they tend to purchase a higher amount of organic products (Magnusson et al., 2001, p. 216). Further it is suggested that liking ratings are influenced by gender (Tsakiridou et al., 2008, p. 164). While women tended to prefer the taste of organic cucumbers, men liked the conventional ones better.

2.3 Conceptual Model

The conceptual model is shown to get an overview on the relationship of the variables already introduced in the theoretical background.

Figure 4: Conceptual Model



The conceptual model presented in Figure 4 combines the main variables that are important for the consumers' quality perception process. The **organic label** is the independent variable affecting both **actual liking** and **WTP**, which are dependent variables. Consumers' quality expectations are the mediating variables that explain the mechanism through which the independent variable influences the dependent variables (Baron & Kenny, 1986, p. 1176). The quality expectations consist of **taste expectation** and **expected WTP** for the organic wine compared to the conventional wine. Actual liking is linked to WTP since it is assumed that a positive taste evaluation further leads to a higher WTP. Expected liking is assumed to have a positive influence on expected WTP. Moderators in this process are **environmental concern**, **attitudes towards organic products/wine**, **subjective wine knowledge** and **purchase intention**. Furthermore **demographics** like gender, age, education and income are integrated into the model. For the demographics no specific hypotheses are formulated because the focus does not lie not on their influence, but they should be further examined due to the possible effects on expectations, liking and WTP as found in the literature.

3. METHODOLOGY

An experiment is designed to test whether participants prefer the taste of organic wine over conventional wine[1] and whether they are willing to pay a higher price for it. More specifically, it will be analysed if participants' expectations have an influence on their actual liking and if they tend to prefer organic wine depending on their attitudes, knowledge and purchase frequency. At first, the approach of taste experiments is presented, followed by an introduction of the study design including participants, materials and measures. Subsequently, the process of data collection is explained and finally, a summary about data analysis is given.

3.1 Taste Experiments

In order to assess consumers' actual liking of organic labelled wine compared to non-labelled wine, a taste experiment is done. A wide range of studies has used taste experiments for diverse applications. For example Lee et al. (2006) examined how expectations, consumption and revelation influenced consumers' taste preferences for beer. They let people in a pub taste two kinds of beer, regular beer and beer plus balsamic vinegar, while assigning participants to three different conditions. One group tasted both samples blind; one group was informed about the vinegar before tasting, and one group after tasting. Citing another example, a study examined the impact of reduced-fat labelling on taste expectations and actual liking of chocolate (Norton et al., 2013). Participants were recruited via advertisement and they had to attend individually to two sessions in a quiet room. In one session participants tasted chocolate labelled as reduced-fat milk chocolate and in the other session chocolate labelled as milk chocolate.

On the one hand, those experiments can be done in a laboratory setting like in the latter example. An example for a laboratory taste experiment that analyses the effect of organic labelling on taste is provided by the study by Laureati et al. (2013). On the other hand, more natural field settings like the pub or the supermarket (Kihlberg et al., 2005) where people usually buy food products, can be chosen. While laboratory settings might have the advantage that the experimenter can exert more control over the experiment (Falk & Heckman, 2009, pp. 535-537), in a field setting the sampling pool might be larger and participants might feel less observed. Harrison & List (2004, p. 1010) see field experiments as "methodologically complementary to traditional laboratory experiments".

[1] For the sake of simplicity, the word „conventional" is used throughout this thesis. Keep in mind that the participants were given organic wine with a conventional label instead.

When at least two different conditions are applied, two possible designs can be distinguished. There are between-subjects designs (BSD) where participants were assigned to different conditions like it was the case in the study by Lee et al. (2006), and within-subjects designs (WSD). An example for WSD was presented with the study by Norton, Fryer, & Parkinson (2013). It means that each participant takes part in more than one condition (Charness et al., 2012, p. 1). While BSDs have the advantage that possible order effects and fatigue problems are circumvented using different samples, BSDs could lead to obtaining confusing data. Order effects and fatigue in WSDs can be prevented using randomization for example. It can be concluded that within-subject designs are more economical because a smaller sample size is needed compared to a BSD. Furthermore WSDs are seen as being more powerful and the resulting data is less noisy (Charness et al., 2012, p. 2; Mullet & Chasseigne, 2018, p. 1986).

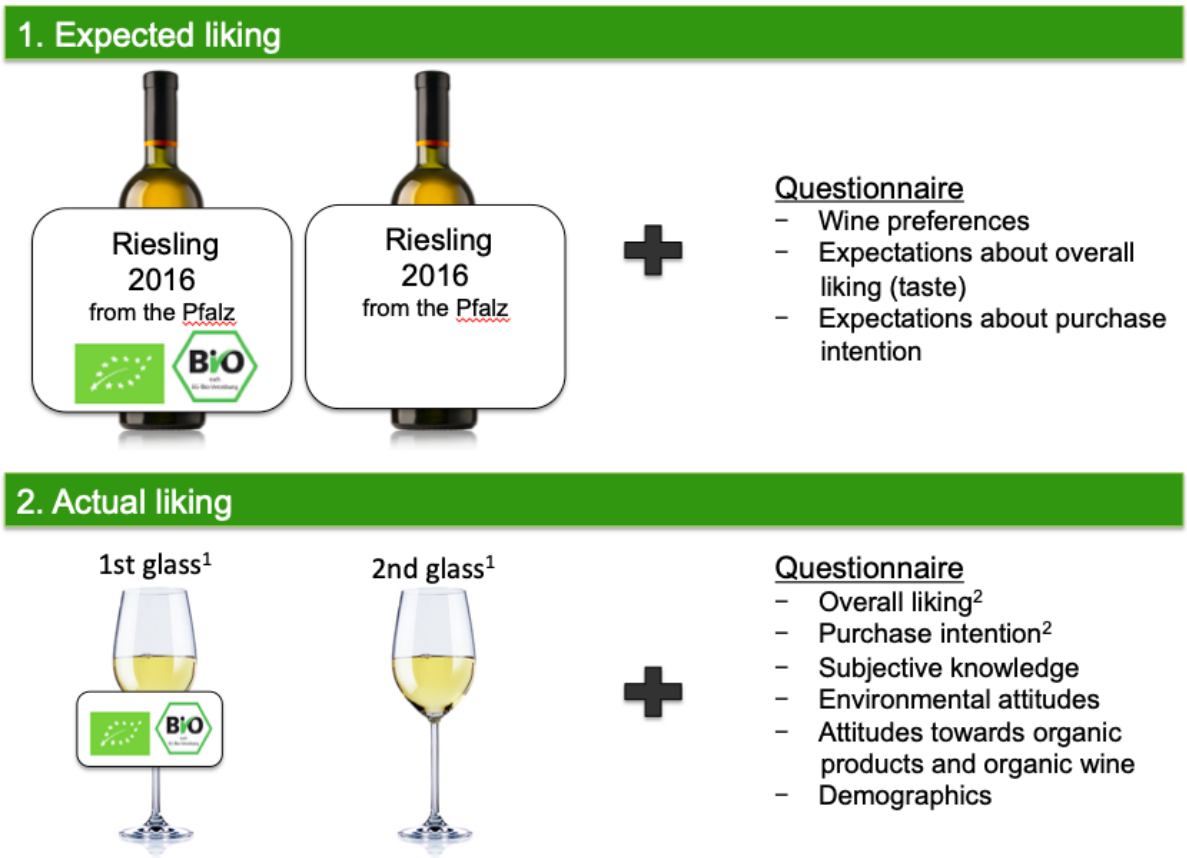
3.2 Study Design

First, the experimental setup of this study is explained to gain an overview on how the experiment was designed. Afterwards, participants, place, and time are described followed by a description of the required materials. Finally, the measures that were used in the questionnaire are shown.

3.2.1 Experimental Setup

The experimental design was similar to the approach of the majority of reviewed studies (see Table A.1) in that a within-subjects study was carried out to avoid potential differences resulting from different panels (e.g. Schouteten et al., 2017, p. 183). The experimental setup was similar to Sörqvist et al. (2013) to the extent that participants had to taste and evaluate the same product twice while being told that one is organic (or eco-friendly) and the other one is not. In the experiment by Sörqvist et al. (2013) participants first had to taste both cups of coffee, chose the one that tastes best and give a rating on a 7-point Likert scale afterwards. Hence, participants had to decide, and there was no option to indicate indifference, which could have led to a bias. Accordingly, for this study the experimental design was adjusted in the sense that participants were not forced to choose between the wines, they only had to give an overall rating regarding their liking and indicate their willingness to pay. Inspired by Norton et al. (2013, p. 102) the experiment was divided into 2 stages so that the role of expectations could be integrated: An **expected taste stage** and an **informed (actual taste) stage**. In the first stage, participants were presented two bottles of wine, both labelled with “Riesling from the Pfalz region, 2016” but one label included the German and EU organic label like it is shown in Figure 5. Objectively it was the same organic wine because only the pure label effect should be analysed.

Figure 5: Experimental Setup



1= Sequence is counterbalanced; 2= Liking and WTP are directly asked for after tasting each glass of wine

In order to gain insights into the participants' expectations about organic and conventional wine, participants had to indicate their **expected liking** on a 7-point scale anchored with "I expect to not like at all" and "I expect to like very much". Afterwards, in the **actual taste stage**, participants were asked to taste both wines one after the other with the result that the wines cannot be compared directly. To avoid possible order effects, which were the case in the study by Wiedmann et al. (2014, p. 201), the sequence was counterbalanced so that around 50 % of the participants tasted the organic wine first and vice versa. In the questionnaire (see Appendix 4: Questionnaire in English and German), participants further had to answer a few questions about their wine preferences, expectations, actual liking, subjective knowledge, purchase frequency, attitudes regarding organic products and towards the environment, as well as indicate their age, gender, education, and income.

3.2.2 Participants, Place, and Time

Participants have been recruited in the field in order to get a more diverse pool of participants and to enhance external validity. Since this experimental setting requires a certain space and participants that are willing to take 10 to 15 minutes of their time, there were not many locations suitable. In the end, the Poppelsdorfer Allee was chosen. The Poppelsdorfer Allee

connects the castle Poppelsdorfer Schloss with the main University building in the city centre of Bonn. Especially during the weekend, a variety of people go there for a walk. Furthermore, the whole street belongs to the University, so it was possible to get a permission to carry out the experiment. Authorization was obtained for two consecutive weekends (last September (28-30) and first October weekend (5-7), due to the risk of bad weather. The exact location was close to the Poppelsdorfer Schloss at the bend of the road and next to a coffee stand, because there was enough space and it could be expected that many people like to stop there due to the coffee stand.

The aim was to get at least 150 people in three days so that the sample size was large enough for calculating a regression analysis considering possible invalid cases. In the end, more than 200 people took part in the experiment. The first experimental day was September 29th. The second day was Sunday, September 30th and as the third day, October 6th was chosen.

Participants needed to be at least 18 and be regular consumers of wine, at least once a month. Since it is allowed to drink wine at the age of 16 in Germany, it is assumed that at the age of 18, people already have experience with wine consumption and it is credible that they are regular consumers of wine. In addition to this, they should be regular wine drinkers (at least once a month) and they should like dry white wine. These criteria are important because especially people that drink and like dry white wine are able to assess the taste and are potential buyers.

3.2.3 Materials

The object under investigation was a dry Riesling from the Pfalz region (2016). Riesling has been chosen, because Riesling is a typical German white wine. With more than one third of the whole vine acreage with vines of white grape varieties, Riesling obtains the largest area (Statistisches Bundesamt, 2018). Four different Rieslings with the same vintage and from the same region were tasted in a private session with 10 people. The wines had a similar taste and the wine that tasted best was chosen (due to ethical reasons, it also had to be an organic wine). The wine was served in standardized glasses; around 130 glasses were available. Presenting the same wine twice in one session bears the risk that consumers might recognise the wine, which would result in a bias of the results. Therefore, crackers and water were offered to neutralize in between the experimental sessions.

The experiment took up to 12 minutes. To gain people’s attention, posters have been designed and attached to the tables (see Appendix 5) Further material that was used can also be seen in the material list (see Appendix 5).

3.2.4 Measures

In the questionnaire, 7-point Likert scales were used because greater differences in judgments can be made compared with only 5-point scales. Hence, more information is gained. If more scale points are used, it may be difficult for participants to differentiate between the meanings of the scale points resulting in a decreasing reliability and validity of the measurement (Krosnick et al., 2005, pp. 36-37). These scales were also used in order to measure the latent constructs “subjective wine knowledge”, “environmental concern” and “attitudes towards organic products/wine”. The applied scales were obtained from the literature and were slightly adjusted if necessary.

Wine Preferences

In order to control whether participants like dry white wine, participants’ wine preferences were assessed. It is asked “Which taste of wine do you prefer?” Participants can choose from four options: “dry”, “semi-dry”, “semi-sweet” and “sweet”. Furthermore, the liking of white wine and “Riesling”-wine are measured using a 7-point Likert scale with the endpoints “I don’t like at all” and “I like very much”.

Expectations

Expected liking, a dependent and independent variable and possible mediator, is measured by letting participants indicate their expected liking of each wine on a 7-point scale where the endpoints are “I expect to not like at all” and “I expect to like very much”. Furthermore, the WTP before tasting the wines, also a possible mediator, is measured by asking participants “Please indicate how much you would be willing to spend for the organic wine compared to the conventional wine...” On a 7-point scale participants can indicate from “I would be willing to spend 3 € less for the organic wine compared to the conventional wine.” to “I would be willing to spend 3 € more for the organic wine compared to the conventional wine.”

Actual Liking

The actual liking of the two wines, which is a dependent variable, is measured on a 7-point scale with the end-points “I don’t like at all” and “I like very much”.

Willingness to Pay

The WTP is measured by asking for the willingness to pay for a 0.75 L bottle of each wine. Both indicated prices considered together, the price for the organic wine and the price for the conventional wine, demonstrate for which wine the participant`s WTP is higher. Adding the question “How confident are you that you would have paid the above mentioned price for this conventional wine in your daily life?“ should help to assess if the indicated prices are realistic for a real purchase situation like in a supermarket. In addition to this, there are two final questions about how much the participants usually pay for a bottle of wine, once if they

would buy it for own use, and once if they would buy it as a present. Comparing the price consumers usually spend for wine with the indicated WTPs for the two tasted wines further demonstrates if the indicated prices are realistic or overrated.

Environmental Attitudes

According to the literature, the most frequently used scale for measuring environmental attitudes, is Dunlap and Van Liere`s New Environmental Paradigm (NEP) Scale. This scale was initially developed in 1978 consisting of 12 items (Dunlap & van Liere, 1978, p. 22) and later on, in 2000, a revised and extended version with 15 items was published (Dunlap et al., 2000, p. 425).

Citing an example, Prada et al. (2017, p. 178) and Schuldt & Hannahan (2013, p. 78) used the complete 15 items scale in their questionnaires, but comprising 15 items, the NEP scale is not handy in a field recruitment setting. Lee et al. (2013, p. 35) conceptionally adapted the NEP-Scale so that the focus lied more on behaviours instead of attitudes. It was asked for example whether participants "like to recycle" or "enjoy going on nature hikes or leisurely walks". Contrasting the author's hypothesis, they found that people engaging in pro-environmental activities are less prone to the halo-effect. However, the interaction effects were only marginally significant for one product (chips) and only observed for calorie estimation and not for WTP (Lee et al. 2013, p. 38). As it has already been discussed in chapter 2, it seems to be appropriate to use a scale, which integrates environmental attitudes and consumption behaviour.

Finally, the **GREEN-Scale** by Haws et al. (2014) that includes both, environmental attitudes and behaviour, was used in the questionnaire. This scale was developed to get a reliable measure for green consumption values. Green consumption values are defined as "*the tendency to express the value of environmental protection through one's purchases and consumption behaviours*" (Haws et al., 2014, p. 337). The GREEN-Scale consists of the following six items:

1) "It is important to me that the products I use do not harm the environment"
2) "I consider the potential environmental impact of my actions when making many of my decisions"
3) "My purchase habits are affected by my concern for our environment"
4) "I am concerned about wasting the resources of our planet"
5) "I would describe myself as environmentally responsible"
6) "I am willing to be inconvenienced in order to take actions that are more environmentally friendly".

A higher score on the GREEN-Scale indicates a higher value of environmental protection in consumption settings. Haws et al. (2014) show that this scale is a good predictor for consumers' preference for environmentally friendly products, like organic products. They

discovered that stronger green consumption values lead to a more positive evaluation of non-environmental product attributes.

The GREEN-scale has been applied in several different contexts. For example, two recent papers deal with recycling and disposal behaviour in the broadest sense (Cruz-Cárdenas et al., 2016, p. 1767; Sun & Trudel, 2017, p. 298). While another paper investigates how green consumption and eco-labels contribute to the negative footprint illusion (Gorissen & Weijters, 2016, p. 52), still others use this scale in their study about behavioural targeting and how digital ads can act as a social label to consumers (Summers et al., 2016, p. 165). Thus, it seems to be applicable in diverse areas concerning green consumption. In this research, the GREEN-Scale was applied for measuring the moderating variable environmental attitude, which is expected to influence consumers' (expected) liking and WTP.

Attitudes Regarding Organic Products

For the measurement of the moderating variable **attitude towards organic products**, five items were chosen. They are measured on a 7-point scale anchored "Totally disagree" (1) and "Totally agree" (7). The three items "Products grown organically are better for the environment", "I believe that organic products are healthier than non-organic products" and "I believe that the use of pesticides in food are necessary" are taken from Wiedmann et al. (2014, p. 203). The latter item is slightly adjusted to a positively phrased statement. Two further statements "Organic products are too expensive" and "Organic products are a fraud" are taken from Gil et al. (2000, p. 225). The same five items are used for measuring the variable **attitude towards organic wine** and just completed with the word "wine"

Subjective Wine Knowledge

Subjective wine knowledge, a moderating variable, is measured using five items based on a scale developed by Flynn & Goldsmith (1999) that has been approved to be a valid and reliable measure for several product categories. The items of the original scale are "I know pretty much about healthy eating", "I do not feel very knowledgeable about healthy eating" (reverse scored), "Among my circle of friends, I'm one of the "experts" on healthy eating", "Compared to most other people, I know less about healthy eating" (reverse scored) and "When it comes to healthy eating, I really don't know a lot" (reverse scored). This scale was already adjusted to wine by Johnson & Bastian (2007). The items were rated on a 7-point scale ranging from "Totally disagree" (1) to "Totally agree" (7). Positively as well as negatively worded statements were included to control for wording errors due to a certain direction. For further analysis, the mean scores of the items were calculated (higher scores mean higher subjective wine knowledge.

Purchase Frequency

The moderating variable purchase frequency is measured on a 7-point scale by asking *"Do you regularly buy organic products?"* and *"Do you regularly buy organic wine?*" anchored "Totally disagree" (1) and "Totally agree" (7).

Demographics

Age was measured using an open-ended question formulated as "How old are you?". The age could be noted down in a text box below. **Gender** was measured using the multiple-choice question "Are you?" and participants could choose out of three options: "Female", „Male" and "Other". **Education level** was measured using a multiple-choice question that was formulated as "What is your highest educational degree? The eleven options that could be ticked are the following: "Hauptschulabschluss", "Realschulabschluss", "Abschluss der polytechnischen Oberschule", "Allgemeine Hochschulreife (Abitur)", "Ausbildung, Lehre", "Bachelorstudium", "Masterstudium", "Diplom", "Staatsexamen", "Promotion", "Ohne beruflichen Bildungsabschluss". **Employment status** was measured using the multiple choice question "Which of the following categories best describes your employment status?" The categories were "Employed", "Self-employed", "Student", "Apprentice", "Not employed (looking for work)", "Not employed (not looking for work", "Retired". **Monthly net household income** was measured using the multiple-choice question "What is the average monthly net income of your household? This refers to the sum made up of all household income and expenses after the deduction of taxes and social insurance. A flat share is only a household when grocery shopping is done together. The **number of persons living in a household** was measured using the multiple-choice question: „How many people, including yourself, live in your household? Respondents could write down their answer in a text box below that question.

3.3 Data Collection

The data collection is divided into a pre-test, which was carried out to test the whole process, and the final execution of the wine tasting.

3.3.1 Pretest

A pretest was carried out to ensure the comprehensibility of the questionnaire and to practice the whole construction of the setting and the conduction of the experiment. The pretest was conducted in front of the institute, at Nussallee 19, and passing people, especially students and lecturers, but also other people were asked to taste the wine and fill in the questionnaire. In total, 22 people took part. A few organizational things were changed afterwards to facilitate the whole experimental setting. Citing an example, it became obvious that at least two people are needed to guide the participants through the experiment instead of only one

person since people tend to come intermittently. Further, the wording of the survey was adjusted according to participants' comments.

3.3.2 Experimental Procedure

Participants were recruited by asking them if they drink wine on a regular basis, at least once a month, and if they also like dry white wine. Before starting the experiment, participants were asked to sign an informed consent concerning allergen information and the protection of personal data (see Appendix 5: Informed Consent). People were reminded not to talk with each other and neutralize before the first glass of wine and also before the second glass of wine. As a reward for the participation, everybody could take a piece of home-baked cake. Three supporters helped with conducting the experiment on each of the three days. Whereas one person had the task to manage the wine glasses and bottles, i.e. fill in new glasses when needed and clear away used glasses, two other people helped with recruiting, welcoming and guiding participants. All people had read the script (see Appendix 5) before and knew what to do. Despite this, an example round has been done first so that all supporters could practice.

After signing the informed consent, people were explained that they have to fill in a questionnaire that consists of two parts and that they should hand in the first part before they can start with the wine tasting. The questionnaire was split up into two parts so that participants could not compare their ratings for the expected liking with their actual liking. A randomly assigned code on both parts helped to sort the questionnaires in the end. When participants have filled in the first part, they got one glass of wine for tasting, which they had to evaluate subsequently. Afterwards the second glass of wine could be tasted and the ensuing questionnaire was filled in.

3.4 Data Analysis

The collected data were analysed using both descriptive and advanced methods. First, the sequence of analysis steps is presented and the methods are briefly explained. Subsequently, requirements and assumptions for applying these methods are outlined.

3.4.1 Steps and Methods

After the data collection, the data was coded and entered into Excel to get an overview. All 224 questionnaires were entered twice with the aim to ensure that all data is entered correctly. In a second step, the data was prepared and analysed with IBM SPSS Statistics 25. In order to be able to calculate mean scores, the reversely coded items were recoded, so that a high score corresponds to a high characteristic value. This was the case for the second, fourth and fifth item of the subjective knowledge scale and for the fourth, fifth and sixth item of the attitude towards organic products and towards organic wine construct. Moreover, individual difference scores (organic – conventional) were calculated for expected

liking, liking and WTP because not only the ratings of organic and conventional wine should be compared, but also it was aimed to analyse how the magnitude of differences in (expected) liking translates to WTP.

Afterwards, the assumptions for parametric tests were checked in order to decide for adequate tests. Usually *t*-tests are performed to test if two means significantly differ from each other. One can distinguish between independent-samples *t*-tests, that are used when different participants are assigned to two conditions, and dependent-samples *t*-tests, which are useful when the same people participate in both conditions (Field, 2009, p. 325). When the data do not meet the assumptions, non-parametric tests should be used. An equivalent for the dependent *t*-test is the Wilcoxon signed-rank test that is based on the test-statistic *T.* Therefore differences between the conditions are calculated and ranked. The sign of difference is taken into account in that positive ranked differences are added up to obtain the sum of positive ranks and vice versa (Field, 2009, pp. 552–554). The independent *t*-test can be substituted by the Mann-Whitney test, which uses the test statistic *U* and works by ranking the data and computing a sum of ranks for each group (Field, 2009, pp. 542-544).

After having the data prepared, descriptive statistics were used to summarize basic features of the sample like distribution, central tendency and dispersion of the variables. Additionally, Cronbach's alphas of the different scales were calculated to assess for internal consistency. The first step of the descriptive analysis was the description of the sample's characteristics and the comparison with the population's characteristics to check for representativeness. Data was further split by sequence to evaluate the influence of the tasting sequence on the results. For determining whether mean scores differ with respect to socio-demographics, dummies were calculated and adequate tests were performed. For gender a dummy variable was created comparing women (0) to men (1). The dummy variable for age was created by splitting age by its rounded mean comparing people younger than 40 to people aged 40 or more. Regarding educational level, a dummy variable was created comparing people with a university degree to people without. The net household income was also split by its rounded mean into people getting a maximum income of 2000 € per month and people getting an income of more than 2000 € per month. This analysis can be found in Appendix 3: Additional Analyses since it does not contribute to understanding the common influence of socio-demographics on (expected) liking and WTP.

In the next step, an exploratory factor analysis was performed to check specifically for the adequacy of the two not validated scales that measure the latent constructs "attitudes towards organic products" and "attitudes towards organic wine". Factor analysis is a method to reduce a data set and a way to find the smallest number of observed variables (factors) that explain the maximum variance in the data (Field, 2009, pp. 628–629). Furthermore, a

contingency analysis was used to find out how these scales are correlated and how they deviate from each other. A contingency analysis is based on a cross-table that displays the frequency distribution of two variables (Backhaus et al., 2016, p. 18). For example, the Contingency Coefficients which is based on chi-square distribution and demonstrates whether there exists a link between row and column variable, can be interpreted.

In order to get a first impression of the data, the relationship between all relevant variables has been explored and described using correlation analysis. This is useful to get an overview on the data. Results of the analysis are presented in Appendix 3: Additional Analyses.

For testing hypotheses **H1a**, **H1b**, **H2a** and **H2b** corresponding significance tests were used and for testing **H1c**, **H2c**, **H3** and **H4** simple linear regressions were calculated. Regression analysis is the most frequently used method for explaining the relationship between dependent and independent variables and is useful for testing hypotheses (Backhaus et al., 2016, p. 16). Performing regression analysis does not prove causality - only correlation - but provides more information than correlation analysis. The moderating influences of environmental concern, attitude towards organic products/wine, subjective knowledge, purchase frequency and demographics have been explored by calculating multiple regression models to get a comprehensive understanding of which variables can indeed predict the outcome and how much each variable contributes to the model as well as how strong the overall model is. Finally, all accepted and rejected hypotheses were summarized in a conclusive evaluation.

For the analyses, a level of $p<0.05$ was used to indicate statistical significance. Additional interesting effects having a p-value between 0.05 and 0.06 are referred to as a trend. In general, one-tailed tests were used because the hypotheses to be tested are directional.

3.4.2 Requirements and Assumptions

Assumptions of Parametric Tests

In order to decide which statistical tests are appropriate, it needs to be checked whether parametric tests can be applied or if non-parametric tests should be used. For parametric tests, the following assumptions need to be fulfilled (Field, 2009, p. 133). First, data is normally distributed. Second, the variances are homogeneous. Third, data can be measured at interval level. And fourth, independence is given. The assumption of normal distribution can refer to different things depending on the context. For example, the application of a *t*-test assumes that the sample distribution is normal. To make sure that the distribution of variables is approximately normal, skewness and kurtosis were checked. Since a large sample is used in this study ($n > 200$), which enhances the likelihood that significance tests are significant even when skewness and kurtosis are close to normal (Field, 2009, pp. 138-

139), significance tests like the Kolmogorov-Smirnov test were performed, but histograms and corresponding P-P-plots were interpreted as well. These tests indicate that the distribution is significantly not normal when its significance is less than 0.05.

Requirements for Factor Analysis

To get reliable results, the sample size should be adequate. Frequently, the Kaiser-Meyer-Olkin measure (KMO) is used to determine if the sample size is sufficient. This measure indicates the variables' proportion of variance. A value between 0.7 and 0.8 is regarded as being good and above 0.9 is perfect. Furthermore, the correlation of variables should not be correlated too high or too low. Correlations above 0.8 raise concern for extreme multicollinearity, i.e. independent variables are closely related and can be linearly predicted from each other. With the Bartlett's test of sphericity it can be checked if correlations are large enough by measuring if the correlations are significantly different from zero (Field, 2009, pp. 645-648). With respect to the distribution of data, variables should be measured at an interval level and roughly be normally distributed (Field, 2009, p. 650).

Assumptions and Requirements for Regression Models

Before the results of a regression model can be interpreted, the respective assumptions must be checked. Therefore, two general questions needed to be answered: Does the model fit the sample data, and can it be generalized for other samples?

The first question refers to whether the data is influenced by certain cases. As a consequence, a look was taken for outliers and influential cases. In order to identify outliers, standardized residuals were examined. I.e. it was checked how many cases had absolute values above 2. Assuming normally distributed residuals, one would expect that this should only account for 5 % of the cases and only 1 % should have a value above 2.5 (Field, 2009, p. 216). With regard to the influential cases, several statistics can be interpreted. Especially Cook's distance was used, which measures the effect of a single case on the regression. Here, the distance needs to be below 1 for a case not to be regarded as influential.

To generalize the model for the whole population, the following nine assumptions must be met (see Berry (1993)):

- *Variables are quantitative or categorical*
- *Non-zero variance*
- *No perfect multicollinearity*
- *Predictors are uncorrelated with external variables*
- *Homoscedasticity*
- *Independent errors*
- *Normally distributed errors*
- *Independence*
- *Linearity*

Furthermore, a regression model requires a certain acceptable sample size depending on the number of predictors. There are two rules of thumb by Green (1991) that help to assess the acceptable sample size:

- For testing the overall fit: $50 + 8k$
- For testing the individual predictors: $104 + k$

For these rules, k represents the number of predictors included in the model. Since both should be tested, the larger size is used for the minimum acceptable sample size (Field, 2009, p. 222).

4. RESULTS

In this chapter the empirical results will be presented. First, data preparation is explained, followed by a presentation of the sample characteristics and descriptive summary of the variables. Afterwards a factor analysis is performed and regression models are calculated.

4.1 Data Preparation

Preparation

A total amount of 224 participants took part in the study. Two questionnaires have been directly excluded from the analysis because participants did not understand it correctly. For instance, one person already filled in the whole questionnaire before tasting the wine reporting that she already knows how Riesling tastes. Furthermore, participants that did not answer more than three questions, in this case eight people, were excluded. In addition, all people that did not read the questionnaire carefully and gave inconsistent answers were excluded. This refers to the question about participants' subjective knowledge. Item 1 and item 5 have the same meaning, but item 5 is phrased the opposite way in order to reduce response bias. Hence, 32 out of 224 participants were removed.

To prove the first assumption for parametric-tests, normality tests were performed. Both standard tests of normality, Kolmogorov-Smirnov and Shapiro-Wilk, indicated that almost all variables are not normally distributed (see Table A.3). The descriptive statistics for each variable are summarized in Table A.4, Table A.5, and Table A.7. The values of skewness and kurtosis confirmed that at least some variables are not normally distributed. Citing an example, the variable "WTP for conventional wine" is positively skewed with 1.58 and shows a heavy-tailed distribution with a kurtosis of 5.78 (see Figure A.1). Since the assumption of normality cannot be confirmed for all variables, non-parametric tests are used. To figure out significant differences for paired samples, the Wilcoxon-test is used. For significant differences between independent samples, the Mann-Whitney U-test is used. For correlation analysis Spearman's rank coefficient (r_s) is interpreted instead of Pearson's r.

Scale-Reliability

Cronbach's alpha was calculated to assess scale-reliability. For the subjective knowledge scale a Cronbach's alpha of 0.9 was calculated, indicating high scale reliability. Also for the GREEN-Scale the reliability was high showing a Cronbach's alpha of 0.91. With regard to the construct "Attitude towards organic products" a Cronbach's alpha of 0.70 and regarding "Attitude towards organic wine" a Cronbach's alpha of 0.69 were calculated reflecting that the underlying scales were not validated in the literature before. Therefore the scales' dimensionality was investigated further by applying a factor analysis.

4.2 Descriptive Analysis

The descriptive analysis contains a description of the sample's socio-demographics as well as consumers' wine consumption behaviour. Additionally, consumers' ratings of their expected liking, actual liking and their WTP are summarized.

4.2.1 Sample Structure

First of all, the tasting sequence of organic and conventional wine was well counterbalanced, so that 49.5 % of the participants received the conventional wine first and 50.5 % the organic wine. The final sample consisted of 192 people.

Socio-Demographic Structure

With respect to **gender**, 49.5 % women (95) and 50.5 % men (97) took part, which is representative for the German population. All relevant figures concerning the socio-demographic sample structure are represented in Table 1. Based on the last census, which took place in 2011, 48.8 % of the German population are male and 51.2 % female (Statistische Ämter des Bundes und der Länder, 2015, p. 8). Participants' **ages** ranged from 18 to 87 with an average age of 39. Compared to the last German census of 2011 (average age of 43.3) this sample is slightly skewed towards younger participants (Statistische Ämter des Bundes und der Länder, 2015, p. 9). While most people had a university's degree or even doctorate (78.1 %) as the highest **educational degree**, 9.9 % had a general qualification for university entrance, 7.8 % did an apprenticeship and 4.2 % had a highschool diploma (Realschulabschluss) or a Hauptschulabschluss. This distribution does not reflect the German population. Based on the German census (Statistische Ämter des Bundes und der Länder, 2015, p.19) only 15.6 % have a university of applied sciences- or university degree including a doctorate. The majority, with 57 % was employed, 8 % self-employed, 19.4 % students, 10.5 % retired and 5.3 % not employed (70 % are looking for work and 30 % not). Comparing the sample's **household size** with the micro census of 2017 shows that single households were underrepresented (census: 41.8 %, sample: 29.7 %), while two person households were slightly overrepresented (census: 33.5 %, sample: 46.4 %) (Statistisches Bundesamt, 2017a, p. 34). Regarding the monthly net **household income**, 18 participants did not want to answer the question. While a third (33.7 %) of the respondents indicated to have a household income between 2601 € and 3600 €, almost a quarter (22.8 %) had a monthly net income of more than 5000 €, which is overrepresented. About 15 % had an income below 900 €, which is also slightly overrepresented according to the micro census of 2017 (Statistisches Bundesamt, 2017a, p. 34). The continuous household budget surveys show that the average income of German households was 3399 € in 2017 (Statistisches Bundesamt, 2017b, p. 26). This corresponds to the mean of the sample's income (2601 € to 3600). When the sample was split by sequence, no significant differences

in demographics could be found (see Table A.4). Thus, it can be concluded that the sample is representative in terms of gender, close to being representative in terms of household size and income, while skewed towards younger and higher educated people.

Table 1: Socio-Demographic Characteristics of the Sample

Category	Characteristic	Frequency	Valid Percent	Census
Gender N=192	Female	95	49.5 %	51.2 %
	Male	97	50.5 %	48.8 %
Age N=192 Mean: 39.3	18 to 27	52	27.1 %	Mean: 43.3
	28 to 37	62	32.3 %	
	38 to 47	20	10.4 %	
	48 to 57	25	13.0 %	
	58 to 67	20	10.4 %	
	68 to 77	12	6.3 %	
	78 to 87	1	0.5 %	
Education N=192	Hauptschulabschluss	2	1.0 %	36.6 %
	High School diploma	6	3.1 %	
	General qualification for university entrance	19	9.9 %	
	Apprenticeship	15	7.8 %	
	Bachelor's degree	27	14.1 %	
	Master's degree	54	28.1 %	
	Diploma	35	18.2 %	15.6 %
	State examination	19	9.9 %	
	Doctorate	15	7.8 %	
Employment Status N=191	Employed	109	57.1 %	
	Self-employed	15	7.9 %	
	Student	37	19.4 %	
	Not employed (looking for work)	7	3.7 %	
	Not employed (not looking for work)	3	1.6 %	
	Retired	20	10.5 %	
HH size N=192	One	57	29.7 %	41.8 %
	Two	89	46.4 %	33.5 %
	Three	23	12.0 %	12.0 %
	Four	18	9.4 %	9.3 %
	More than four	4	2.1 %	3.4 %
HH income N=189 *21 participants did not want to answer (10 %)	Below 900€	25	13.2 %	Average: 3399 €
	900€ to 1300€	14	7.4 %	
	1301€ to 1500€	4	2.1 %	
	1501€ to 2000€	10	5.3 %	
	2001€ to 2600€	20	10.6 %	
	2601€ to 3600€	38	20.1 %	
	3601€ to 5000€	21	11.1 %	
	More than 5000€	39	20.6 %	

Wine Consumption Structure

Since participants were recruited by asking them if they like white wine and if they drink dry white wine, it was expected that participants mainly indicate to like white wine and to prefer dry wine. Results show that 56.3 % of the participants indeed preferred dry wine and 32.3 %

preferred semi-dry wine. Only a few people reported to prefer semi-sweet (6.3 %) or sweet wine (5.2 %) (see Table 2). Regarding the liking of white wine, Table 2 demonstrates that the majority of the participants (77 %) either like white wine or like it very much. However, four persons (2.1 %) indicated to (somewhat) not like white wine. This result could have happened due to several reasons. The instructors could have forgotten to ask participants, participants could have lied, or participants have convinced their partners or friends to take part even if they do not like white wine. Comparing the liking of white wine (M=6.1) with the liking of Riesling demonstrates that the liking ratings for Riesling (M=5.6) were less positive.

Table 2: Wine Consumption Characteristics of the Sample

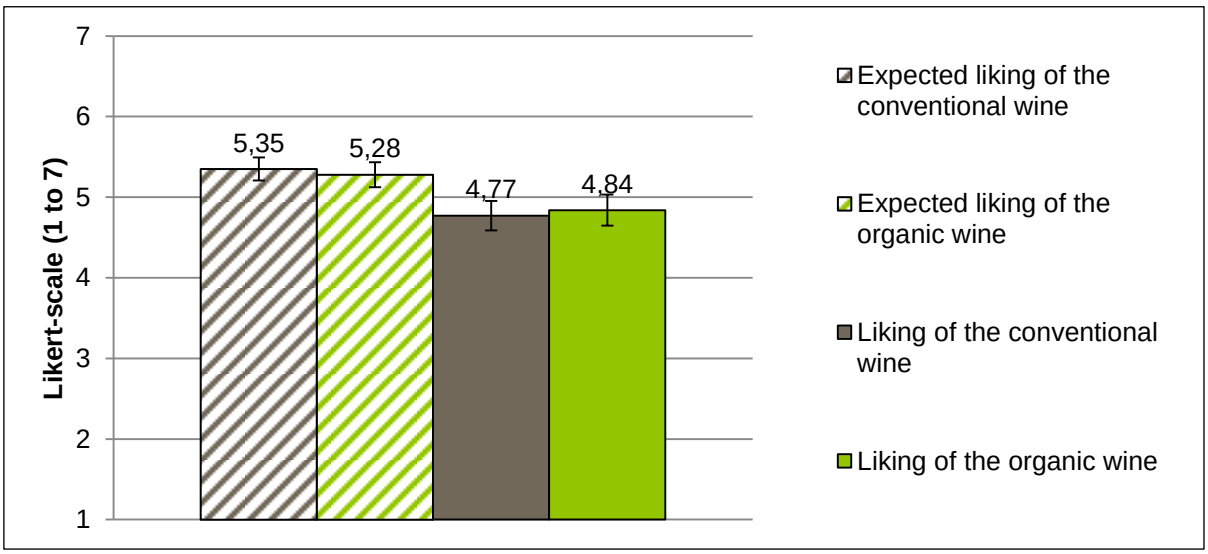
Category	Characteristic	Frequency	Valid Percent
Preferred type of wine taste N= 192 Mean: 1.61	Dry	108	56.3 %
	Semi-dry	62	32.3 %
	Semi-sweet	12	6.3 %
	Sweet	10	5.2 %
Liking of white wine N= 192 Mean: 6.11	1= White wine I don't like at all	4	2.1 %
	2= White wine I don't like	4	2.1 %
	3= White wine I somewhat don't like	36	18.8 %
	4= White wine I neither like nor dislike	72	37.5 %
	5= White wine I somewhat like	76	39.6 %
	6= White wine I like	4	2.1 %
	7= White wine I like very much	4	2.1 %
Liking of Riesling N= 192 Mean: 5.64	1= "Riesling"- wine I don't like at all	0	0 %
	2= "Riesling"- wine I don't like	1	0.5 %
	3= "Riesling"- wine I somewhat don't like	5	2.6 %
	4= "Riesling"- wine I neither like nor dislike	17	8.9 %
	5= "Riesling"- wine I somewhat like	66	34.4 %
	6= "Riesling"- wine I like	60	31.3 %
	7= "Riesling"- wine I like very much	43	22.4 %
WTP for a 0.75L bottle of wine – For own use N= 187	Below 5 €	49	26.2 %
	5 € to 7 €	94	50.3 %
	8 € to 10 €	34	18.2 %
	11 € to 15 €	8	4.3 %
	More than 15 €	2	1.1 %
WTP for a 0.75L bottle of wine – As a gift N= 187	Below 5 €	4	2.1 %
	5 € to 7 €	54	28.9 %
	8 € to 10 €	92	49.2 %
	11 € to 15 €	28	15.0 %
	More than 15 €	9	4.8 %

4.2.2 Description of Participants' Liking and WTP

Liking

Considering the **expected liking**, it could be found that on average people expected to like both wines the same, showing a very small tendency towards the conventional wine. In Figure 6 the mean scores of expected liking and actual liking are presented. A Wilcoxon Signed Ranks-test showed that there is no significant difference between the expected liking of the conventional wine (M=5.35, SD=1.00) and the expected liking of the organic wine (M=5.28, SD=1.08), *T*=665, *p*=0.09. A descriptive summary of expected liking, liking and WTP is shown in Table A.5. The frequency distribution, which is depicted in Figure 7, gives a clearer picture. While around 70 % of the participants did not expect to taste a difference, 13.5 % expected to like the organic wine best and around 16 % expected to like the conventional wine best. With regard to the tasting sequence (see Figure A.2) participants who tasted the conventional wine first, mostly expected to be indifferent between the two wines, and those who expected a difference slightly preferred the organic wine. In the other group, participants that expected a difference, expected to like the conventional wine more (see Figure A.3). Performing a Wilcoxon Signed Ranks-test demonstrated that there is a significant mean difference for group 2 (*T*=164, *p*=0.04). Taking the total sample into account, there is evidence that **H1a** "*The organic label on wine positively influences consumers' taste expectations"* cannot be confirmed.

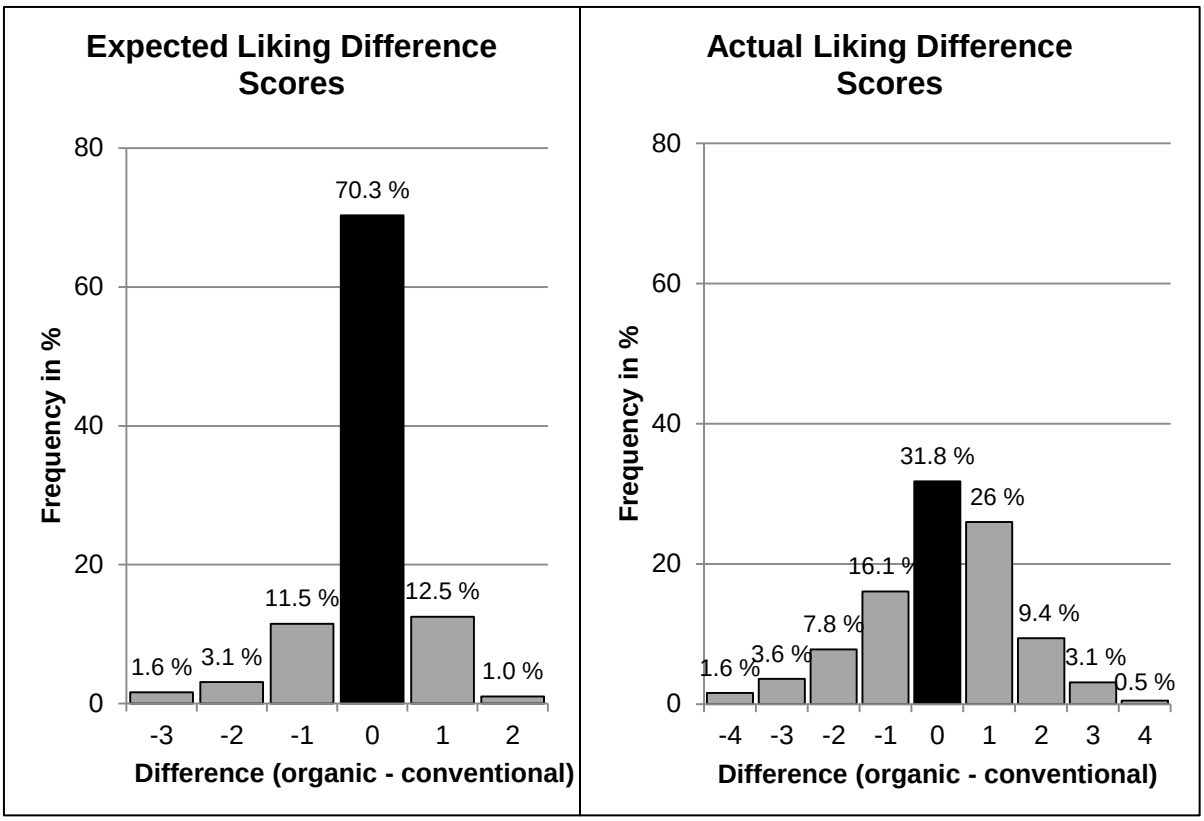
Figure 6: Mean Scores of Expected and Actual Liking



By comparing the mean scores of the **actual liking** of the two wines, only a small preference for the organic wine could be found (see Figure 6). The frequency distribution of actual liking gives further insights. While 31.8 % of the participants gave the same rating for both wines, with 39 %, most people evaluated the taste of the organic wine more positively than the taste

of the conventional wine. Nevertheless, 29 % rated the conventional wine higher than the organic wine (see Figure 7). Wilcoxon Signed Ranks-test showed that there is no significant difference between liking of the conventional wine (M=4.77, SD=1.30) and liking of the organic wine (M=4.84, SD=1.36), *T*=3976.5, *p*=0.21. Taking the tasting sequence into account reveals additional findings. Figure A.3 shows that the amount of participants that preferred the organic wine was much higher when they tasted the conventional wine first. Here 43.5 % preferred the organic wine in contrast to the group that tasted the organic wine first (35 %). However, the mean differences were not significant in both groups, *T*=960.5, *p*=0.29 and *T*=1035.5, *p*=0.25. Hence, **H1b** "*The organic label on wine positively influences consumers' actual taste evaluation (halo-effect)"* cannot be confirmed.

Figure 7: Frequency Distribution of Difference Scores (Expected and Actual Liking)



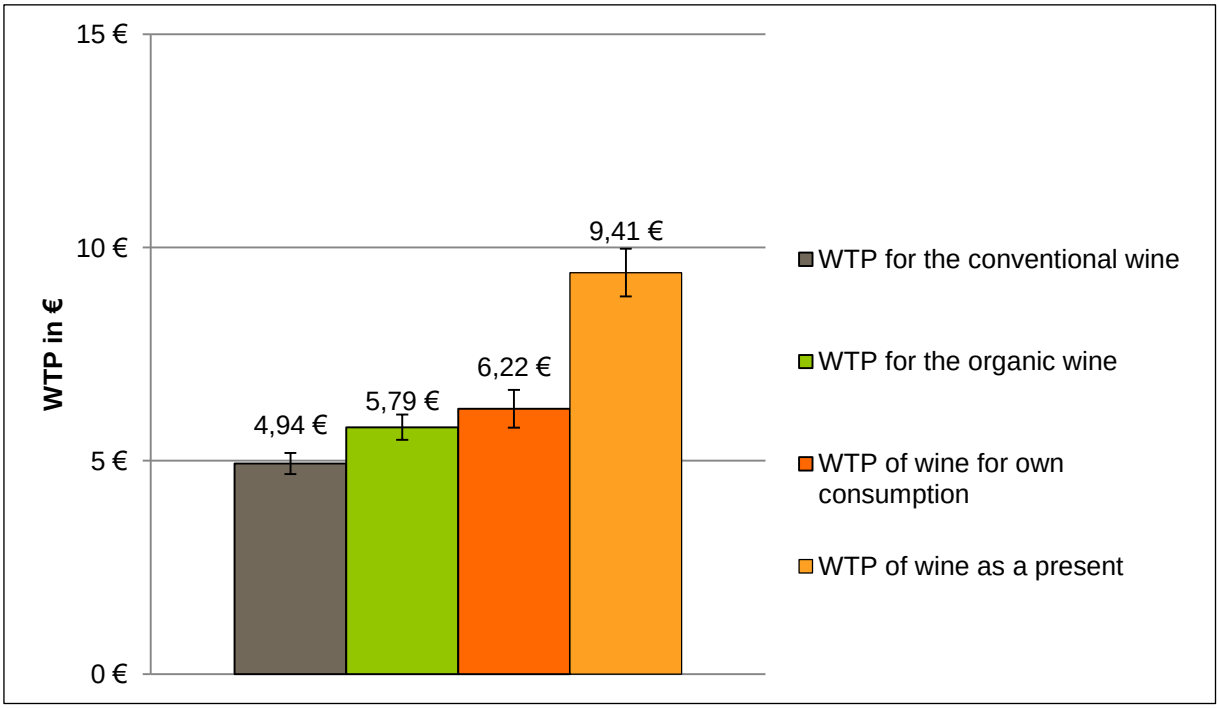
Comparing participants' ratings of their expected liking with their actual liking revealed that people gave higher ratings for the expected liking than for the actual liking (see Figure 7). With a Wilcoxon Signed Ranks-test it could be confirmed that the actual liking of the organic wine was significantly lower than the expected liking of the organic wine, *T*=2938, *p*=0.002. The same holds for the conventional wine *T*=2333, *p*=0.015.

WTP

The mean of the **expected WTP** for organic wine relative to the conventional wine is 1.42; i.e. participants were on average willing to pay 1 to 2 € more for the organic wine (see Appendix 4: Questionnaire in English and German). This result gives evidence for accepting **H2b "***The organic label on wine positively influences consumers' WTP expectations*".

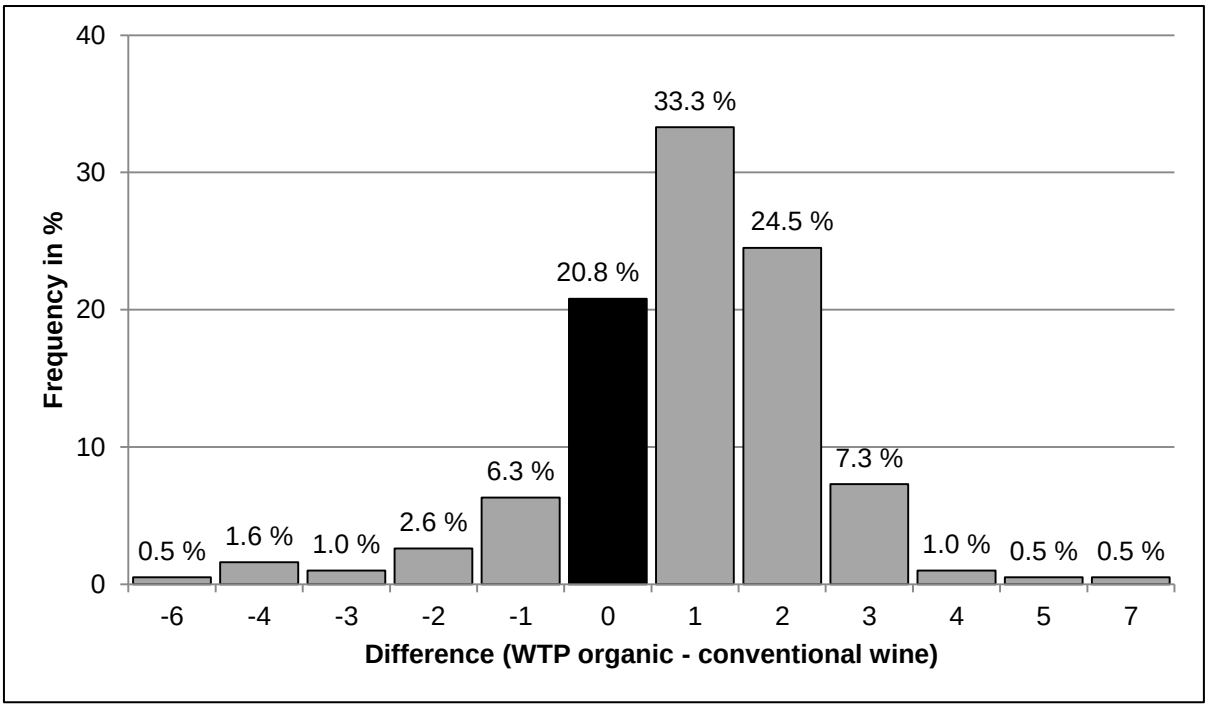
Figure 8 demonstrates that after participants have tasted the two wines, they were willing to pay significantly more for the organic wine (M=4.94, SD=2.08) than for the conventional wine (M=5.79, SD=1.74) *T*=1814, *p*=0.00, providing evidence for accepting **H2a "***The organic label on wine positively influences consumers' WTP.* The indicated **actual WTP** shows that not only the taste affects willingness to pay. Even if people liked the conventional wine best, they were often willing to spend more for the organic wine. While 39 % rated the organic wine higher, 67.1 % were willing to spend more for the organic wine (see Figure 9).

Figure 8: Mean Scores of WTPs for Organic and Conventional Wine



Nevertheless, the expressed price difference after tasting was less than reported in part 1 of the questionnaire (0.85 € vs. 1-2 €). In Figure 9 the frequency distribution of the WTP difference score is also shown for sequence.

Figure 9: Frequency Distribution of Difference Scores of WTP (after Tasting)



On average, people indicated to spend 3.2 € more for a 0.75 L bottle of wine they purchase as a present (9.41 €), than for a 0.75 L bottle of wine they purchase for own consumption (6.22 €). The means are depicted in Figure 8. It can be concluded that, in general, people are willing to spend more money for a bottle of wine than they would have spent for a bottle of the two tasted Riesling-wines (on average 4.94 € for the conventional wine and 5.79 € for the organic wine). This could be explained by the result that participants' taste expectations were higher than their actual liking of the wines. Summarizing these findings, the indicated amounts of WTP appear to be realistic.

4.3 Advanced Analyses

In a first step, the results of the exploratory factor analysis are presented. In a second step, these findings are integrated in the calculation of regression models.

4.3.1 Factor Analysis

A factor analysis was conducted with 21 items including all items from the GREEN-scale, the subjective knowledge scale, and from the two scales regarding attitudes towards organic products/wine. Since the items “I buy organic products on a regular basis” and “I buy organic wine on a regular basis” theoretically do not measure the concept of attitude but the concept of purchase frequency, which in fact is a consequence of the attitude towards organic products/wine, they were excluded from the exploratory factor analyses and treated separately.

The orthogonal rotation (Varimax) was used. Rotating the initial matrix facilitates the interpretation. With the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy it can be shown if the sample size is adequate for factor analysis. The KMO-value of 0.8 fell in the range between 0.8 and 0.9, which is great according to Field (2011, p. 659). By just scanning the correlation matrix, it became clear that all variables were correlated with other variables and no variable correlates very highly (r>0.9). Bartlett’s test of sphericity $x^2(210)=2179.09$, $p<0.001$, demonstrated that the overall correlations between the items were significantly different from zero, and hence, sufficiently large for factor analysis.

Table A.10 shows the rotated factor loadings. Six components that had eigenvalues over 1 (Kaiser’s criterion) could be extracted. Also the Scree plot suggested a six-factor solution. All items had significant loadings; i.e. factor loadings larger than 0.4 are considered significant (Field, 2011, p. 644f). Together the factors explained a variance of 73 %. While the items of the GREEN-scale and the subjective knowledge-scale loaded on their original scales, building component 1 and component 2, the remaining items loaded on four different factors instead of the original two. This was the case because the items of the scale “attitude towards organic products” were highly correlated with the corresponding items from the scale “attitudes towards organic wine”.

With a contingency analysis of these two scales it was further explored that although the items were significantly correlated (see Table A.8), the ratings for the attitude toward “organic products” were in general more positive than towards “organic wine”, providing evidence for the assumption that wine is a special case as it has already been suggested in the literature. For example, the item “Organic products are better for the environment” (M=5.52) correlated with “Organic wine is better for the environment” (M=5.03, r_s=0.74, $p<0.01$). While about 80 % of the participants considered organic products to be better for the environment, two thirds

stated this with regard to organic wine. The contingency table for “Organic products and organic wine are/is better for the environment” is shown in Table A.9.

Consequently, the factor analysis was rerun (16 items) without the items of the construct “attitude towards organic products”. For the construct “attitudes towards organic wine”, still a two-factor solution was suggested. The first factor emphasizes sustainability and healthiness comprising the items “I believe that organic wine is healthier than non-organic wine” and “Organic wine is better for the environment”. The second factor consists of the items “Organic wine is too expensive”, “Organic wine is a fraud” and “I think that the use of plant protection products is necessary for a good wine quality”. The resulting rotated factor loadings are presented in Table A.11. Obtaining two dimensions instead of one raises the question if all items indeed explain the same theoretical concept “Attitude towards organic wine”. Finally, only the factor consisting of the two items “Organic wine is better for the environment” and “I believe that organic wine is healthier than non-organic wine” was chosen because the item “I think that the use of plant protection products is necessary for a good wine quality” has a relatively low factor loading with 0.5 and it appears to be appropriate to integrate sustainability and health aspects as they are the main driving purchase motives for organic products. The final factor loadings for the third factor analysis (13 items) are summarized in Table A.12. For factor 1, representing the GREEN-scale, a Cronbach’s alpha of 0.91 was calculated indicating high scale reliability. Also for the subjective knowledge scale reliability was very high (0.90) With regard to the construct “Attitude towards organic products” measured by two items, a Cronbach’s alpha of 0.69 was calculated. Usually the cut-off of 0.8 is accepted in the literature. There is only one paper that referred to values of 0.6 or 0.7 as being acceptable, especially when few items are used (van Griethuijsen et al. 2015, p. 588).

4.3.2 Regression Analysis

First of all, simple linear regressions have been performed in order to prove:

- **H1c: “***Positive taste expectations regarding organic labelled wine positively influence consumers’ actual liking of organic labelled wine compared to non-organic labelled wine”*
- **H2c: “***Positive WTP expectations regarding organic labelled wine positively influence consumers’ WTP for organic labelled wine compared to non-organic labelled wine”*
- **H3:** “*The expected liking of organic labelled wine positively influences the expected WTP for organic labelled wine compared to non-organic labelled wine”*
- **H4: “***The actual liking of organic labelled wine positively influences the WTP for organic labelled wine compared to non-organic labelled wine”*

Afterwards multiple regression models were calculated integrating all relevant variables to explore the moderating roles in detail.

Model Descriptions

In the following, the four simple regression equations are shown.

H1c:

$$\text{Actual liking diff} = \beta_0 + \beta_1 \text{ Expected Liking diff} + \varepsilon \quad (1)$$

H2c:

$$\text{Actual WTP diff} = \beta_0 + \beta_1 \text{ Expected WTP} + \varepsilon \quad (2)$$

H3:

$$\text{Expected WTP} = \beta_0 + \beta_1 \text{ Expected Liking diff} + \varepsilon \quad (3)$$

H4:

$$\text{Actual WTP diff} = \beta_0 + \beta_1 \text{ Actual Liking diff} + \varepsilon \quad (4)$$

For the multiple regression models in a first step a regression model was calculated for the **quality expectations** (both expected WTP and expected liking) as dependent variables because in the conceptual model it was assumed that the moderators primarily impact consumers' expectations, which in turn influence their actual liking and their WTP. The parameters (independent variables) were selected based on findings in the literature and theoretical considerations.

Model 1:

$$\text{Expected WTP} = \beta_0 + \beta_1 \text{ Expected Liking diff} + \beta_2 \text{ Environmental Concern} + \beta_3 \text{ Subjective Knowledge} + \beta_4 \text{ Attitudes towards Organic Wine} + \beta_5 \text{ Purchase Frequency} + \beta_6 \text{ Gender} + \beta_7 \text{ Age} + \beta_8 \text{ Income} + \varepsilon \quad (5)$$

Model 2:

$$\text{Expected liking diff} = \beta_0 + \beta_1 \text{ Environmental Concern} + \beta_2 \text{ Subjective Knowledge} + \beta_3 \text{ Attitudes towards Organic Wine} + \beta_4 \text{ Purchase Frequency} + \beta_5 \text{ Gender} + \beta_6 \text{ Age} + \varepsilon \quad (6)$$

In a second step also for **actual liking** and **actual WTP** a multiple regression model was calculated because no evidence could be found for accepting **H1c "***Positive taste expectations regarding organic labelled wine positively influence consumers' liking of organic labelled wine compared to non-organic labelled wine".* According to this, the whole conceptual model can be put into question and it appears useful to further examine **actual liking** and **actual WTP** as dependent variables. Since the aim was to explore if expected liking, expected WTP, actual liking and actual WTP for organic wine differ from conventional wine, the difference scores were used as dependent variables. The variable *education* was excluded from all models because the sample was highly biased towards well-educated

people and thus there is not much variability in the variable that could explain differences. For the moderators **environmental concern**, **attitudes towards organic wine,** and **subjective wine knowledge**, the factor loadings were integrated into the regression models.

Model 3:

$$\text{WTP diff} = \beta_0 + \beta_1 \text{ Liking diff} + \beta_2 \text{ Expected WTP} + \beta_3 \text{ Environmental Concern} + \beta_4 \text{ Subjective Knowledge} + \beta_5 \text{ Attitudes towards Organic Wine} + \beta_6 \text{ Purchase Frequency} + \beta_7 \text{ Gender} + \beta_8 \text{ Age} + \beta_9 \text{ Income} + \varepsilon \quad (7)$$

Model 4:

$$\text{Liking diff} = \beta_0 + \beta_1 \text{ Expected Liking diff} + \beta_2 \text{ Environmental Concern} + \beta_3 \text{ Subjective Knowledge} + \beta_4 \text{ Attitudes towards Organic Wine} + \beta_5 \text{ Purchase Frequency} + \beta_6 \text{ Gender} + \beta_7 \text{ Age} + \varepsilon \quad (8)$$

Checking Assumptions and Requirements

Applying the aforementioned rules of thumb by Green (1991) confirms that the sample size is adequate for the four simple regressions as well as for all four multiple regression models.

- Model 1-4: 50 + 8*1=58 and 104+1=105
- Model 5: 50 + 8*8=114 and 104+8=112
- Model 6: 50 + 8*6=98 and 104+6=110
- Model 7: 50 + 8*9=122 and 104+9=113
- Model 8: 50 + 8*7=106 and 104+7=111

An analysis of **outliers and influential cases** has shown that for model 1 no case lied outside the range of ±2 and for model 2 only one case. Since it can be expected that 95 % of the residuals lie within the range of -2 and +2, about a maximum of 9 from 192 cases were expected to lie outside. Considering model 3, five cases had standard residuals greater than ±2.5, which is more than 1 % of the cases. However, taking into account that these participants expected to taste a significant difference between the organic and conventional wine, which was assumed in the theoretical concept, they cannot be considered as outliers that have to be removed from the model. Cook's distance (below 1) further indicates that these cases are not influential. The same holds for model 4 where four cases had standardized residuals greater than ±2.5 but Cook's distance was below 1 for all cases. For model 5 there were six cases (3 %) with standardized residuals greater than ±2. The output of case wise diagnostics further showed that only 1 case (<1 %) lied outside the limit of ±2.5, which fits with what was expected for an accurate model. Cook's distance is below 1 for all cases indicating that none of the cases exerts a large influence on the model. With regard to model 6, 12 outliers could be detected and seven cases even lied outside the limit

of ±2.5. Here the same explanation holds as was given for model 3. For model 7 all cases lied within the limits as well. Nevertheless one participant had a standardized residual of -5.78, which appears interesting to investigate further: The large difference of WTP (-6) can be explained by the fact that the person did not like the organic wine and thus did not want to purchase the wine at all. Taking Cook's distance into consideration confirms that this case is not influential. Regarding model 8 more than 1 % of the cases lied outside the limit of ±2.5. These 3 cases had a liking difference of ±4; this large deviation is unusual since both wines should taste objectively the same. However, the perception may vary largely and this is the aim of investigation. In addition to this, Cook's distance is still below 1, so there should not be a large effect on the regression analysis.

To sum up, it appeared that these models are reliable and not influenced by specific cases.

The assumption about **variable types** can easily be accepted since all variables are quantitative or categorical (coded as dummies) and the outcome variable is unbounded. Likert-type variables are not per se quantitative but in the literature it is frequently accepted to treat them as interval scaled variables (Boone Jr. & Boone, 2012). Furthermore, all predictors have variances different from zero and there is no high correlation (**perfect multicollinearity)** between them indicated by VIF values below 10 and average VIFs close to 1. The highest VIF is 7.9 in model 6 since an interaction term was included into the model. Moreover no autocorrelation could be found. The Durbin-Watson test, which tests the assumption of **independent errors**, showed a value close to 2 and between 1 and 3 for all variables in all models; i.e. the residuals were also not correlated. The assumption that predictors are uncorrelated with other variables that have not been included in the model was met since the predictor variables have been carefully chosen based on theoretical considerations and correlation analysis. The highest correlation for two predictors was r_s=0.54, p=0.00 for income and age. By checking the partial correlation plots no funnel pattern could be detected which would have been an evidence for **heteroscedasticity**. In order to check if errors are **normally distributed**, histograms and normal probability plots were assessed. While the errors of the models 1, 3 and 4 seem to be normally distributed, for model 2 it is questionable if the assumption of normally distributed errors is valid. Further, **independence** and **linearity** can be assumed because all of the normal probability plots of the residuals did not show a curve or a pattern.

Most models appear to meet the assumptions and can be interpreted, but there is concern over whether model 6 violated the assumption of normally distributed errors.

Results of Simple Regressions

The results of all four simple regressions are summarized below in Table 3.

Table 3: Results of Simple Linear Regressions

Dependent variables	Predictors	R^2	β	SE B	Sig.	VIF
Actual liking	Expected liking	0.02	0.13	0.14	0.06	1.00
Actual WTP	Expected WTP	0.06	0.24	0.11	**0.001***	1.00
Expected WTP	Expected liking	0.07	0.26	0.10	**0.00***	1.00
Actual WTP	Actual liking	0.35	0.59	0.06	**0.00***	1.00

*p<0.05, **p<0.01

Performing a simple linear regression shows that the difference in **expected liking** does not predict the difference in **actual liking**. The overall model is not significant (R^2=0.02, F(1,190)=3.48, p=0.064). Therefore, it is evident that **H1c "***Positive taste expectations regarding organic labelled wine positively influence consumers' actual liking of organic labelled wine compared to non-organic labelled wine"* cannot be accepted.

Hypothesis **H2c "***Positive WTP expectations regarding organic labelled wine positively influence consumers' WTP for organic labelled wine compared to non-organic labelled wine***"** was also tested calculating a simple linear regression. Results indicate that the **expected WTP** predicts the **actual WTP** for organic wine compared to conventional wine explaining 5.9 % of the variance (R^2=0.06, F(1,190)=11.9, p=0.001).

Findings of a simple regression that was calculated to prove **H3 "***The expected liking of organic labelled wine positively influences the expected WTP for organic labelled wine compared to non-organic labelled wine*", indicate that 6.6 % of the variance in **expected WTP** difference can be explained by the **expected liking difference** (R^2=0.07, F(1,190)=13.4, p=0.000) and, hence, **H3** is accepted.

Furthermore, the difference in **actual liking** predicts the difference in **actual WTP** explaining 35.2 % of the variance (R^2=0.35, F(1,190)=103.3, p=0.000). This suggests that the participants took their taste evaluation into account when they decided for a price and therefore, **H4** "*The actual liking of organic labelled wine positively influences the WTP for organic labelled wine compared to non-organic labelled wine"* is accepted.

Results of Multiple Regressions

In the following step, the multiple regression models' results are interpreted.

The results of regression model 5 (see Table 4) indicate that 28.9 % of the variance in the **expected WTP** (organic wine compared to conventional wine) can be explained by the 8 predictors (R^2=0.289, F(8, 156) = 7.9, *p*=0.00).

Table 4: Regression Model 5

Dependent variable: Expected WTP				
R^2=0.29				
Model	β	SE B	Sig.	VIF
(Constant)		0.25	0.00	
Expected liking difference	0.17	0.09	**0.02 ***	1.08
Green-scale	0.14	0.07	0.05 (*)	1.15
Subjective knowledge	-0.11	0.07	0.14	1.16
Attitude organic wine	0.25	0.07	**0.00 ****	1.33
Purchase frequency	0.20	0.04	**0.02 ***	1.42
Age	0.09	0.01	0.25	1.45
Gender	0.08	0.14	0.28	1.12
Income	-0.17	0.16	**0.03 ***	1.26

*p<0.05, **p<0.01

It was found that expected liking difference (*β*=0.17, *p*=0.02), attitude towards organic wine (*β*=0.25, *p*=0.00), and purchase frequency of organic wine (*β*=0.20, *p*=0.02) are significant predictors, all having a positive influence on the expected WTP. Further, income is a significant predictor (*β*=-0.17, *p*=0.03). The influence is negative which means that people having a higher income (>2000) expect to pay less. While the attitude towards organic wine appears to be the best predictor, people's environmental concern, measured by the GREEN-scale is not significant (*β*=0.17, *p*=0.05). As a consequence **H6b "***Positive attitudes towards organic wine enhance the expected WTP for organic labelled wine compared to non-organic labelled wine*" and **H8b** *"A higher purchase frequency of organic wine creates a positive influence on expected WTP for organic labelled wine compared to non-organic labelled wine*" cannot be rejected. For accepting **H5b "***Environmental concern creates a positive WTP expectation for organic labelled wine compared to non-organic labelled wine*," and **H7b "***Subjective wine knowledge negatively influences the expected WTP for organic labelled wine compared to non-organic labelled wine*" not sufficient evidence was found.

Another multiple linear regression model was calculated to predict the difference of expected liking (organic – conventional). The results are summarized in Table 5.

Table 5: Regression Model 6

Dependent variable: Expected Liking difference								
Parameters	Model 2a				Model 2b			
	R^2=0.076				R^2=0.097			
	β	SE	Sig.	VIF	β	SE	Sig.	VIF
(Constant)		0.20	0.85			0.20	0.69	
Green-scale	0.08	0.06	0.29	1.15	0.08	0.06	0.30	1.15
Subjective knowledge	-0.13	0.06	0.10	1.15	-0.49	0.15	**0.01 ***	7.55
Attitude organic wine	0.06	0.06	0.50	1.32	0.05	0.06	0.52 (*)	1.32
Purchase frequency	0.19	0.04	0.03 *	1.34	0.18	0.04	**0.04 ***	1.39
Age	-0.15	0.00	0.06	1.39	-0.19	0.00	**0.02 ***	1.32
Gender	-0.07	0.12	0.38	1.26	-0.06	0.00	0.42	1.13
Interaction Age*Knowledge					0.40	0.11	0.05 (*)	7.91

*p<0.05, **p<0.01

The overall model 2a was found to be highly significant where 7.6 % of the variance in **expected liking difference** could be accounted for by the six predictors (R^2=0.076, F(6,177)=2.44, p=0.03). In particular, only the purchase frequency of organic wine is a significant predictor (β=0.19, p=0.03). Subjective knowledge and age are almost significant. Since age and knowledge are moderately correlated (r_s=0.26, p=0.00) and it is reasonable that knowledge increases with age, the interaction variable of knowledge and age was computed and integrated in model 2b. The results show that the explained variances increased to 9.7 %, F(7,176)=2.7, p=0.02. Now, not only the purchase frequency is a significant predictor (β=0.18, p=0.04), but also a main effect of subjective knowledge (β=-0.49, p=0.01) and age (β=-0.19, p=0.02) was found. Consequently, the hypotheses **H7a "***Subjective wine knowledge negatively influences the expected liking of organic labelled wine compared to non-organic labelled wine*" and **H8a "***A higher purchase frequency of organic wine creates a positive influence on taste expectation of organic labelled wine compared to non-organic labelled wine*" cannot be rejected. In contrast, no evidence was found for accepting **H5a "***Environmental concern creates a positive taste expectation of organic labelled wine compared to non-organic labelled wine"* and **H6a "***Positive attitudes towards organic wine increase the expected liking of organic labelled wine compared to non-organic labelled wine*". Nevertheless, the results for hypothesis **H5a** tended to be significant with p=0.052. Hence, a trend could be observed.

The results of regression model 3 (see Table 6) indicated that the predictors explain 49.5 % of the variance in the **WTP difference** after tasting (R^2=0.495, F(9, 155)=16.9, p=0.00). In specific, the liking difference (β=0.64, p<0.00) and the expected WTP (β=0.26, p<0.00) are

significant predictors. I.e. when the liking difference increases by 1 unit, the difference in WTP increases by 0.64 units.

Table 6: Regression Model 7

Dependent variable: WTP difference				
R^2=0.50				
Model	β	SE B	Sig.	VIF
(Constant)		0.57	0.05	
Liking difference	0.64	0.06	**0.00 ****	1.10
Expected WTP	0.26	0.10	**0.00 ****	1.35
Green-scale	-0.01	0.09	0.84	1.19
Subjective knowledge	0.01	0.09	0.83	1.16
Attitude organic wine	-0.06	0.09	0.41	1.47
Purchase frequency	0.03	0.05	0.66	1.47
Age	0.03	0.01	0.70	1.43
Gender	-0.07	0.17	0.22	1.13
Income	-0.13	0.19	0.06	1.31

*p<0.05, **p<0.01

Considering the effects on **actual liking difference**, the results of model 4 (see Table 7) show that only 8.7 % of the variance can be explained by the seven predictors (R^2=0.087, F(7,176)=2.38, p=0.02). The *attitude towards organic wine* is the only significant predictor (β=0.21, p=0.01).

Table 7: Regression Model 8

Dependent variable: Liking difference				
R^2=0.087				
Model	β	SE B	Sig.	VIF
(Constant)		0.38	0.65	
Expected liking difference	0.11	0.14	0.13	1.08
Green-scale	-0.08	0.11	0.29	1.16
Subjective knowledge	0.02	0.11	0.80	1.16
Attitude organic wine	0.21	0.12	**0.01 ***	1.32
Purchase frequency	0.09	0.07	0.29	1.43
Age	-0.05	0.01	0.52	1.28
Gender	-0.07	0.22	0.39	1.13

*p<0.05,**p<0.01

4.4 Accepted and Rejected Hypotheses

With simple statistical tests, **H1a** and **H1b** were tested with the result that they cannot be accepted. Neither did the organic label on wine positively affect participants' expectations nor was an overall positive halo-effect detected. Furthermore, no significant relationship between expected liking and actual liking was found (**H1c**).

What could be confirmed is the effect of the organic label on consumers' willingness to pay. Consumers were willing to pay more for the organic wine compared to the conventional wine. This is the case for the expected WTP, i.e. what people reported without tasting the wine (**H2a**), and for the actual WTP, what people indicated after tasting the wine (**H2b**). Simple regression analysis has further shown that the expectations about WTP consumers have had before tasting the wine predict their reported WTP after tasting the wine (**H2c**). In other words, the more a person indicated to be willing to pay for the organic wine compared to the conventional wine, the more he/she reported to be willing to spend for a bottle of the organic wine compared to the conventional wine after tasting. Moreover, taste expectations predict WTP expectations (**H3**) as well as actual taste predicts the WTP (**H4**). With regard to the moderators, the results of a multiple regression analysis rejected **H5a** and **H5b.** Environmental concern can neither be considered as a predictor for the expected WTP, nor for the expected taste of organic wine compared to conventional wine. Having a positive attitude towards organic wine positively influenced consumers' expected WTP (**H6b**), but it did not affect their expectations about taste (**H6a)**. Considering subjective wine knowledge as a moderator, it was assumed that consumers' subjective knowledge is negatively associated with their expected liking of organic compared to conventional wine (**H7a**). While consumers with high subjective knowledge indeed expected to like the organic wine less than the conventional wine, their WTP for organic compared to conventional wine before tasting the wines was not affected (**H7b**). The hypotheses concerning purchase frequency of organic wine could both be confirmed. Buying organic wine on a regular basis has a positive effect of consumers' taste expectations (**H8a**) and on consumers' expected WTP (**H8b**).

An overview of all hypotheses, accepted and rejected, can be found in Table 8.

Table 8: Overview on Accepted and Rejected Hypotheses

Hypotheses	Accepted	Rejected
H1a: The organic label on wine positively influences consumers' *taste expectations*.		x
H1b: The organic label on wine positively influences consumers' *actual liking* (halo-effect).		x
H1c: Positive taste expectations regarding organic labelled wine positively influence consumers' actual liking of organic labelled wine compared to non-organic labelled wine.		x
H2a: The organic label on wine positively influences consumers' WTP before tasting.	x	
H2b: The organic label on wine positively influences consumers' WTP after tasting.	x	
H2c: Positive WTP expectations regarding organic labelled wine positively influence consumers' WTP for organic labelled wine compared to non-organic labelled wine.	x	
H3: The expected liking of organic labelled wine positively influences the expected WTP for organic labelled wine compared to non-organic labelled wine.	x	
H4: The actual liking of organic labelled wine positively influences the WTP for organic labelled wine compared to non-organic labelled wine.	x	
H5a: Environmental concern creates a positive taste expectation of organic labelled wine compared to non-organic labelled wine.		x
H5b: Environmental concern creates a positive WTP expectation for organic labelled wine compared to non-organic labelled wine.		(x)
H6a: Positive attitudes towards organic wine increase the expected liking of organic labelled wine compared to non-organic labelled wine.		x
H6b: Positive attitudes towards organic wine increase the expected WTP for organic labelled wine compared to non-organic labelled wine.	x	
H7a: Subjective wine knowledge negatively influences the expected liking of organic labelled wine compared to non-organic labelled wine.	x	
H7b: Subjective wine knowledge negatively influences the expected WTP for organic labelled wine compared to non-organic labelled wine.		x
H8a: A higher purchase frequency of organic wine creates a positive influence on taste expectation of organic labelled wine compared to non-organic labelled wine.	x	
H8b: A higher purchase frequency of organic wine creates a positive influence on expected WTP for organic labelled wine compared to non-organic labelled wine.	x	

5. DISCUSSION

The aim of this study was to investigate whether organic labelling of wine has an influence on taste perception and WTP. The so-called “halo-effect” that has already been demonstrated for several product categories was explored for white wine using the variety “Riesling”. More specifically, the role of expectations has been explored. Additionally, the moderating effects of subjective wine knowledge, environmental concern, attitudes towards organic wine, and purchase frequency have been studied. This chapter is meant to discuss the empirical results and potential limitations. Further, it points out practical implications for distributors. Finally, a conclusion and an outlook will be given.

5.1 Discussion of the Results

Liking

With respect to the expectations about liking, no significant overall differences were found between organic and conventional wine. Most people were rather indifferent. Nevertheless, regression analysis could demonstrate that consumers’ difference in expected liking varies with their subjective wine knowledge, their purchase frequency of organic products and with age. While purchase frequency had a positive effect on the expected liking difference, subjective wine knowledge and age were negatively associated with expectations for the organic wine compared to the conventional wine, like it was hypothesized previously. Contrary to findings in the literature, the influence of environmental concern has shown to be insignificant in this study. Citing an example, Schuldt & Hannahan (2013), who did not find an overall effect of the organic label on expected liking, concluded that people low in environmental concern expected organic foods to taste worse than conventional foods, while for people high in concern the opposite was the case. The insignificant association between environmental concern and expected liking could be explained by the fact that participants tend to overestimate their environmental concern. This is further discussed in chapter 5.3.

With respect to the influence of subjective wine knowledge, only the study by Wiedmann et al. (2014) explored the variable objective wine knowledge and could not confirm a moderating effect. Nevertheless, they concluded that there is still evidence that consumers having low product knowledge are more influenced by the organic label. Therefore, the present finding adds new insights to the literature. The fact that younger people had higher taste expectations for the organic wine, might be related to a larger openness for sustainable consumption and a higher willingness to take action towards it (Kanchanapibul et al., 2014, p. 533).

Despite this, consulting other recent studies shows that for beef (Napolitano et al., 2010) and strawberries (Ellison et al., 2016, p. 144) overall positive expectations were found for the

organic alternatives, while for chocolate cookies no differences were detected (Ellison et al., 2016). In addition, Prada et al. (2017) indicated an overall positive effect of the organic label on liking expectations. However, analyzing the effect for a range of whole and processed foods revealed that the labelling-effect is much stronger for whole foods. Furthermore, environmental concern and purchase frequency of organic products increased the effect. It appears to be evident that people's taste expectations for organic food differ between product categories. Many consumers frequently buy organic fruits and vegetables, but no other organic food (Stolz et al., 2010, p. 9). While those products are especially perceived as having a better taste, group discussions could reveal that there are product groups for which consumers do not have a different taste perception with regard to the organic alternative. The so-called "semi-luxury food" (Stolz et al., 2010, pp. 89–90) like chocolate and wine falls in this category. A possible explanation could be that organic is associated with healthiness, which does not fit to "semi-luxury food" that should primarily provide joy. This refers to the implicit unhealthy=tasty intuition that explains why people prefer food that they perceive as being less healthy (Raghunathan et al., 2006, pp. 172–173). Moreover, it is worthwhile to consider that organic product categories vary with their requirements and for some products it might be easier for consumers to infer the benefits of organic production. For instance, for organic meat the concern for animal welfare plays a large role (Stolz et al., 2010, p. 40). With regard to wine, people are confused about the definition of organic wine, especially since the certification rules differ among countries (Rojas-Méndez et al., 2015, p. 377). Therefore, they might not directly see the benefits of an organic label or even suspect a loss of quality (Delmas & Grant, 2008, pp. 22-23).

In contrast to many other studies, an overall halo-effect on actual liking could also not be detected in this thesis. On the one hand, for a wide range of food products like coffee (Sörqvist et al., 2013), bread (Annett et al., 2008; Kihlberg et al., 2005), bananas (Sörqvist et al., 2015), grapes (Sörqvist et al., 2016), orange juice (Fillion & Arazi, 2002), and red wine (Apaolaza et al., 2017; Wiedmann et al., 2014) a positive overall effect of the organic label on liking was found. On the other hand, several studies could not show an overall label effect, but concluded that depending on participants' general attitudes towards organic products (Poelman et al., 2008), a general positive attitude regarding the taste of sustainable food (Sörqvist et al., 2013), sustainable awareness/concern (Laureati et al., 2013), or beliefs about environmental benefits (Bernard & Liu, 2017), people were more or less prone to the halo-effect. Interestingly, in the study by Laureati et al. (2013) high sustainable participants judged the yoghurt samples as equally good, while uncertain and non-sustainable consumers rated the conventional yoghurt better.

These findings are partly consistent with the results of this study. Regression analysis revealed that the attitude towards organic wine best predicts the difference in liking ratings

between organic and conventional wine. Hence, having a positive attitude is a strong predictor for preferring the taste of the organic wine compared to the conventional wine. Environmental concern in contrast did not have any significant influence on the actual liking difference.

Despite the fact that eco-label effects may vary between product categories, studies having shown an overall positive halo-effect may face some limitations with respect to the sample representativeness, number of participants and their experimental design. Citing an example, the studies by Sörqvist et al. (see Table A.1) mainly used students. Consequently, their samples were highly skewed towards younger participants. Annett et al. (2008) and Wiedmann et al. (2014) provide detailed information about organic production, which may have biased participants towards more positive ratings of organic products.

It was hypothesized that consumers' expectations play a crucial role in that positive taste expectations will lead to a positive evaluation of the actual liking and vice versa. Nevertheless, the suggested relationship between expected and actual liking could not be confirmed. This result puts the whole model into question. One potential explanation is that wine is a rather special case where people are not familiar with the organic characteristics and therefore a vast majority did not expect any differences in taste. For the case of whole foods like strawberries for example the organic alternative received significantly higher ratings in expected liking (Ellison et al., 2016, p. 144). This thesis also detected that consumers hold a less positive attitude towards organic wine in contrast to organic products in general. While about 80 % of the participants considered organic products to be better for the environment, only two thirds stated this with regard to organic wine. When it comes to people's beliefs about healthiness, 67.7 % believed that organic products are healthier, while only about 40 % considered organic wine to be healthier than conventional wine. Another reason why no significant relationship between expectations and liking was detected could be that some participants realized that they were tasting the same wine twice. A third factor could be that external influences like wine temperature, which was not controlled for well, led to actual liking ratings contradictory to the expected ratings.

WTP

Similar to findings by Sellers (2016) and Vecchio (2013), a significant positive relationship was found for expected and actual WTP. On average, participants indicated to be willing to pay 1-2 € more for the organic wine compared to the conventional wine before actually tasting the wines. Consistent with de Magistris & Gracia (2008, p. 942), in this study attitudes towards organic products had a greater influence on the WTP for organic foods than had concern for the environment. Furthermore, purchase frequency of organic wine was a significant predictor for a positive WTP for organic compared to conventional wine. This

finding is in line with van Loo et al. (2011, p. 608) who analyzed WTP for organic chicken. Income was found to be another influencing factor. Interestingly, income had a negative influence on WTP before tasting, which does not seem to be reasonable since usually it is assumed that people's demand for organic foods rather increases with income (Ngobo, 2011, p. 98). Therefore, the measurement of the variable income will be discussed in chapter 5.3. Further, after the wine tasting, people indicated a higher WTP for the organic wine - on average an extra amount of 0.85 €. The conclusion that people were willing to pay more for the organic wine compared to the conventional wine was also supported by Wiedmann et al. (2014). Like it was hypothesized, consumers' expectations and their actual liking indeed play a decisive role. Both participants' reported WTP before tasting and their actual liking strongly influenced their willingness to pay after tasting the two wines. Even people that preferred the conventional wine frequently indicated a higher WTP for the organic wine. Hence, it is evident that not only the taste leads to a difference in WTPs. These findings are supported by Sörqvist et al. (2013, p. 7) who demonstrated that especially people high in environmental concern were willing to pay a higher price for eco-labelled coffee even when they preferred the taste of the conventional alternative. This observation could implicate that also altruistic and not only egoistic values seem to play a role. The underlying reason for a higher WTP might also be the rather egoistic motive of health concern, which is seen as a major reason for buying organic food. Magnusson et al. (2003, p. 115) even see health concern as a better predictor than environmental concern. Indeed, about 40 % in of the participants of this study reported to believe that organic wine is healthier than non-organic wine.

Further findings

Another finding that should be highlighted is the effect of tasting sequence. Noticeably, participants in the group that rated the conventional wine first, indicated a higher WTP for the organic wine compared to the conventional wine. Furthermore, a larger amount of people in this group expected to like (and actually liked) the organic wine better in contrast to the other group. As an explanation, the occurrence of a habituation effect could be cited that led to preferring the second wine. I.e. the second glass might taste differently since people have adjusted to the taste of wine.

5.2 Practical Implications

To successfully position organic wine, producers and distributors need to understand consumers' expectations towards organic wine and their underlying reasons for preferring organic over conventional wine. The results of this study shed light on possible marketing strategies to enforce the repurchase of existing consumers and to gain new consumer segments. Since no positive overall perception of the organic label was found, producers and marketers have to think critically about the consumer segment they would like to reach.

People who already possess a positive attitude towards organic wine should be addressed primarily because consumers' attitude was found to be a good predictor of consumers liking preference for organic wine. For those customers organic wine tastings could be a promotional strategy enhancing their positive image of organic wine and leading to repurchase.

Furthermore, although no overall halo-effect on liking could be found, consumers were willing to pay a premium for organic wine. This indicates that people see a certain value of the attribute "organic" and, therefore, the label should be displayed prominently.

In addition to this, it is assumed that people lack information about the benefits of organic wine compared to other organic products. Conducting in general more in-store trials combined with providing further information about the organic production method of wine could positively shape people's attitudes towards organic wine and affect their taste experience. As a consequence, consumers that were rather indifferent may become more familiar with organic wine and might be more open for buying organic wine. However, distributors need to take into account that for people already having a negative impression, a tasting could also lead to a negative experience reinforcing the negative image of organic wine.

5.3 Limitations

This study exhibits several limitations. In the following, shortcomings about sample representativeness, measures, data quality, and experimental procedure will be addressed.

A first limitation of this study is the sample representativeness. The sample was slightly skewed towards younger and highly skewed towards better-educated people (78 % had at least a university degree). In this study, education did not have an effect on the results. However, education may be a moderator when more participants with a lower education would be included. Fotopoulos & Krystallis (2002, p. 738) have identified that higher educated people are willing to pay a higher price for organic products. Hence, the generalizability of the results for the total German population is limited and it is advised to repeat the experiment at another location where also people with a lower educational qualification participate. Further, it could be helpful to conduct the experiment at three distinct locations to increase external validity by sampling from a variety of participants like it was the case in Bernard & Liu (2017, p. 61).

Considering the measures, another shortcoming should be highlighted. Income was not measured adequately since many people understood it wrong and reported only their own income and not the total household income. As a consequence, results suggested that participants with a high income were less willing to pay more for the organic compared to the

conventional wine. Additionally, it was not accounted for the number of persons including children living in a household. This affects the judgment of household income since it makes a difference if a household with two people or a household with four people receives an income above the average. Further, children seem to be an important demographic factor regarding the buying behaviour (Davies et al., 2013, p. 22).

In addition to this, the adequacy of the applied scales should be discussed. For instance, the GREEN-scale does not appear to be appropriate. The high mean (M=5.38) reflects that a majority of the participants consider themselves as consumers high in environmental concern. The overestimation of sustainable consumers has already been identified as a problem (Schäufele & Hamm, 2018, p. 7). Since people who claim to be interested in environmental issues do not necessarily buy organic products (Davies et al., 2013, p. 22), it is quite difficult to develop an appropriate scale. The result crucially depends on the obtained measuring scale. As Lee et al. (2013, p. 34) and Apaolaza et al. (2017, p. 5) have already suggested, to not only integrate the attitude towards sustainable issues, but also environmental behavior in the scale. People may indicate to behave in a sustainable way in order to seek approval. Nevertheless, Sörqvist et al. (2016, p. 87) could not find evidence that the social desirability bias plays a role. Following from this, the variable environmental concern appears to be tricky and one should rather ask for attitudes towards organic food like the results by de Magistris & Gracia (2008, p. 942) suggest. This construct in turn was finally measured with only two items reflecting environmental and health concern. Despite the significant associations that were found, it is recommended to include further aspects like the quality image of wine to measure the latent construct more accurately. A new validated scale measuring consumers' attitudes about organic wine could be developed considering all the important facets of the product category wine that are perceived differently for organic wine.

Taking the data quality into consideration, a violation of the assumption of normal distributed errors was detected for model 2, which predicts the change in the expected liking of organic compared to conventional wine. This violation raises concern about the generalizability of the results.

With respect to the experimental procedure, the following aspects could have caused the final result. The weather was sunny and warm on all three experimental days, but equally cooling the wine bottles did not work out well. Especially white wine is usually served cooled. Differences in wine temperature could have led to a bias in taste perception (Zellner et al., 1988, p. 62). Furthermore, although filling in the glasses was mainly done by one person, it could not be eliminated that the two wines varied in quantity. This should be optimized for the next time using a portion spout. A third aspect concerns the neutralization phase between

glass 1 and glass 2. People were reminded to neutralize, i.e. to drink some water and/or eat a cracker before and between the sessions. Nevertheless, it could not been checked if all people indeed followed the instruction. If people only ate a cracker before or in between, this could have led to a different taste perception. Another unknown effect could be the time that people spend between tasting glass 1 and glass 2. While some people were quite fast with tasting the first glass and answering the questions concerning taste and WTP of the first glass, others took much time. Finally, some participants might have noticed, or at least suspected that they were served the same wine twice.

The experimental design could be improved by conducting a between-subjects design like in Apaolaza et al. (2017). This would completely eliminate the effect of participants accidentally recognizing the nature of the experiment and at the same time help reduce some of the other observed limitations.

6. CONCLUSION AND OUTLOOK

This study contributes to the growing body of research showing that sustainability labels have an effect on consumers' product expectation, their actual liking, as well as their WTP.

This impact, however, is rather small for the product category wine. Most people do not expect any liking differences between organic and conventional wine. While especially consumers with younger age and people that already purchase organic wine possess positive expectations about the taste of organic wine compared to conventional wine, consumers with high subjective wine knowledge rather tend to expect that conventional wine tastes better. Only consumers with a more positive attitude towards organic wine are more likely to be prone to the halo-effect; i.e. their overall positive impression of organic wine translates into the taste preference of organic labelled wine compared to conventional wine. Consumers' taste expectations do not seem to always translate into actual liking, especially when there is evidence that people are not familiar with the product category. However, an explanation for the insignificant role of taste expectations on liking could be that the ratings of actual liking were biased due to differences in wine quantity or temperature. As a consequence, the role of consumers' taste expectations on actual liking should be analysed in another study in which external influences are minimized. Organic labelling of wine further leads to an overall positive effect on consumers' WTP. In specific, people high in environmental concern, people with positive attitudes towards organic wine, and people that already buy organic wine on a regular basis are more likely to express a positive WTP for organic wine compared to conventional wine. Consumers' liking after a wine tasting contributes enormously to the willingness to spend more money for the preferred wine. Nevertheless, not only taste plays a role, but there are also other motives why consumers are willing to pay a premium for the organic wine although they preferred the taste of the conventional alternative. Thus, an avenue for future research should be to explore possible underlying altruistic and egoistic motives that shape consumers WTP for organic wine.

Despite holding positive attitudes towards organic products, consumers frequently do not act accordingly when confronted with a purchase situation (Moser, 2016, p. 395). This is known as the attitude-behaviour gap (e.g. Schäufele & Hamm, 2018). Therefore, future research should use real purchase situations, like in a supermarket, where people have to make a purchase decision, to get better insights into consumers' real willingness to pay for organic wine.

Taking the special role of wine into account, communicating organic wine's benefits in specific, and not only of the advantages of organic products in general, is further crucial for shaping consumers' attitudes and influencing their consumption behaviour (Schäufele & Hamm, 2018). It is recommended to communicate the advantages of organic wine to

consumers and to familiarize them with the organic wine by organizing tasting sessions in supermarkets. Finally, apart from the production method, context factors like region of origin, vintage, type of wine, and price play a decisive role for wine choice and should be considered as well for future research in order to understand consumers' preferences for organic wine as well as their purchase behaviour (Schäufele & Hamm, 2017, p. 388).

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APPENDIX 1: SUMMARY OF PREVIOUS STUDIES

Table A.1 Impact of Organic Labelling on Taste Perception

Title & Journal	Product	Country	Research Design/Methods	Most Relevant Results
Expected Taste				
Schuldt & Hannahan, 2013 *Appetite*	No specific product	**USA** 215 students took part in a laboratory study	30 minutes questionnaire about perceived healthfulness and taste of presented foods, attitudes about org. food, socio-demographics	• Organic food is perceived as more healthy but less tasty • People low in environmental concern expected organics to taste worse than conventional food
Ellison et al., 2016 *Food Quality and Preference*	**Strawberries & chocolate cookies**	**USA** 605 consumers	Online experiment with 8 study blocks, each consisting of approx. 75 participants 2 (product type) by 2 (organic label) by 2 (retail outlet) design Questionnaire included attitude towards brands, frequency of org. food purchase, shopping location, socio-demographics	• Organic strawberries had higher ratings of expected liking than conventional strawberries, no differences for cookies were found
Prada et al., 2017 *Appetite*	**Whole foods** (fruits and vegetables) **&** **Processed foods** (sweets and meals)	**Portugal** 182 participants	Qualtrics web survey (10 min) Whole organic foods and processed organic foods are evaluated Questionnaire included knowledge about org. food, frequency of org. consumption, environmental concern	• For both product categories whole and processed foods, organics are rated better, but the effect is much larger in whole foods • The following moderators have a positive influence: Knowledge, consumption frequency of org. food, environmental concern
Actual Taste				
Kihlberg et al., 2005 *Food Quality and Preference*	**Bread**	**Sweden** 480 consumers	Experiment in a supermarket 4 bread samples (C (Conventional), C with Amaranth (CA), O (Organic), OA) were tasted and subsequent questionnaire answered about production system, health effect and neophobic effects	• Information about farming system had a significant positive effect on liking • Evidence that purchase frequency of org. products positively influences liking of organic bread (but not significant)

Table A.1 Impact of Organic Labelling on Taste Perception (Continued)

Title & Journal	Product	Country	Research Design/Methods	Most Relevant Results
Lee et al., 2013 *Food Quality and Preference*	**Cookies, Potato-chips** and **yoghurt**	**USA** 115 Recruited in shopping mall	Within-subjects design: People tasted 6 products, each variety twice (one labelled organic and one regular) and answered a questionnaire about taste, nutrition, calories, shopping habits, environmental behaviour, demographics	• Organic labelled yogurt was considered more flavourful than the conventional one, but the opposite was found for cookies
Sörqvist et al., 2013 *PLoS ONE*	**Coffee**	**Sweden** 3 experiments: 1) 44 students from university 2) 87 students 3) 40 students	Within-subjects design: People tasted 2 cups of coffee, one labelled eco-friendly one not and answered a questionnaire about taste, environmental concern, WTP, demographics	• Eco-label effect for taste and WTP • No social desirability bias • People were willing to pay a premium even when they preferred the not eco-friendly coffee • Eco-label effect depends on attitudes
Sörqvist et al., 2015 *Food Quality and Preference*	**Bananas**	**Sweden** 48 mainly students	Within-subjects design: People tasted conventionally grown and eco- friendly bananas; bananas were labelled ‘‘conventional’’ or ‘‘eco-friendly’’, for half of the samples the label did not fit to the original production method; Questionnaire asked for taste, healthiness, WTP, environmental behaviour, social desirability	• Bananas labelled organic were rated as tasting better irrespective of the original production method
Sörqvist et al., 2016 *Food Quality and Preference*	**Grapes**	**Sweden** 105 students	Within-subjects design: People tasted both conventionally grown and eco- friendly grapes in a laboratory session at university; Questionnaire asked for taste, healthiness, WTP, environmental behaviour, social desirability	• Eco-label effect was found for all analysed dimensions: Taste, calorie judgment, health benefits, vitamin contents • No social desirability bias found
Several Taste Stages				
Fillion & Arazi, 2002 *Nutrition and Food Science*	**Orange juice** and **whole milk**	**UK** 301 consumers from 2 different locations	8 orange juices and 12 milks were tasted Between-subjects design with 2 stages: 50 % tasted juices/milk with information (organic, not organic), 50 % without (blind); Questionnaire asked for liking and sensory characteristics	• Organic juice is perceived to have a better taste than the conventional one, but for whole milk no significant difference could be detected

Table A.1 Impact of Organic Labelling on Taste Perception (Continued)

Title & Journal	Product	Country	Research Design/Methods	Most Relevant Results
Annett et al., 2008 *Journal of Food Science*	**Bread**	**Canada** 384 participants recruited at 3 locations	Within-subjects design with 2 stages: Blind tasting and tasting after receiving detailed info (informed) about environmental and health issues Questionnaire including taste evaluation, WTP, purchase habits for org. food/bread	• Organic bread tasted better in a blind taste and even better after info was given about healthiness and production method • Positive information on organic production positively influence liking of organic bread
Poelman et al., 2008 *Food Quality and Preference*	**Pineapples** (3 different varieties)	**Netherlands** (44 participants) **& UK** (52 participants)	Within-subjects design with 2 stages: 3 varieties A,B,C were presented 4 times: 1) with info on organic production 2) with info on fair trade 3) with info on both 4) with no info at all (blind) No questionnaire	• A single message about organic or fair trade is preferred over multiple messages • Organic logo influences samples less liked more than samples well-liked • Liking varies with attitude towards organic/fair trade products
Napolitano et al., 2010 *Food Quality and Preference*	**Beef**	**Italy** 95 consumers from 3 locations	Within-subjects design with 3 stages: 1) Blind tasting 2) Expected liking with info about farming system 3) Actual liking with info Information contains a description of organic and conventional beef, no questionnaire	• Expected liking as well as actual liking was higher for organic beef compared to conventional beef • Perceived liking (blind tasting) was lower than the actual liking for organic beef → assimilation towards expectations
Laureati et al., 2013 *Food Quality and Preference*	**Strawberry yoghurt**	**Italy** 157 students	8 strawberry yoghurts (3 organic, 5 conventional) were tasted 2 tasting sessions in laboratory (each 30 min.) Within-subjects design with 3 stages: (blind, expected, informed) Questionnaire about knowledge, attitudes, sustainable behaviour, taste	• People with high sustainability awareness had higher expectations regarding organic yoghurts • People scored low on sustainability had comparable liking ratings in all the three conditions (blind, expected and informed), the organic logo seems not to be influential for them
Bernard & Liu, 2017 *Food Quality and Preference*	**Apples (Gala)**	**USA** 122 participants, recruited in the field at 3 different locations	5 slices of apples are tasted (A,B,C, one labelled organic and one labelled local) Within-subjects design with 2 stages: (blind and informed) Questions about taste, health and environmental beliefs, WTP	• People have different opinions and beliefs about health and environmental benefits as well as taste • Believes positively influence taste

Table A.2: Impact of Organic Labelling on Taste Perception of Wine

Name and Journal	Product	Country	Research Design/Methods	Most Relevant Results
Wiedmann et al., 2014 *British Food Journal*	**Red Wine**	**Germany** 66 participants	Within-subjects design: 3 steps: 1) Blind tasting of a wine presented as conventional 2) Storytelling approach 3) Tasting of the same wine presented as organic Questionnaire included WTP, wine preference, wine knowledge, intention to recommend, environmental orientation,	• The organic wine was rated higher irrespective of consumers' knowledge and attitude towards organic foods • It appears that people with low wine knowledge rather use extrinsic cues like label information for quality evaluation • Positive taste perception of organic wine leads to higher WTP compared to conventional wine
Apaolaza et al., 2017 *Journal of Sensory Studies*	**Red Wine**	**Spain** 90 participants recruited in a shopping mall over the course of 1 week	Between-subjects design with experimental and control group: Setup was switched after each 2h Questionnaire comprised perception of sensory attributes, overall liking, purchase intention, pro-environmental orientation, health concern	• For the organic labelled wine higher overall liking ratings as well as specific sensory properties ratings and purchase intention were found • No moderating influence of pro-environmental orientation was found • Health concerned people may be less prone to the halo-effect of the organic label

APPENDIX 2: ADDITIONAL FIGURES AND TABLES

Table A.3: Normality Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Expected liking of the conventional wine	0.19	186	0.00	0.90	186	0.00
Expected liking of the organic wine	0.23	186	0.00	0.90	186	0.00
Difference expected liking	0.38	186	0.00	0.73	186	0.00
WTP for the organic wine compared to the conventional wine	0.29	186	0.00	0.86	186	0.00
Liking of the conventional wine	0.22	186	0.00	0.91	186	0.00
WTP for the conventional wine	0.16	186	0.00	0.93	186	0.00
Liking of the organic wine	0.25	186	0.00	0.90	186	0.00
WTP for the organic wine	0.12	186	0.00	0.94	186	0.00
Difference liking	0.19	186	0.00	0.95	186	0.00
Difference WTP for the organic wine and WTP for the conventional wine	0.17	186	0.00	0.91	186	0.00
Environmental attitude (GREEN-scale)	0.09	186	0.00	0.95	186	0.00
Age	0.17	186	0.00	0.90	186	0.00
Education	0.18	186	0.00	0.94	186	0.00
Employment Status	0.31	186	0.00	0.69	186	0.00
Monthly net household income	0.18	186	0.00	0.89	186	0.00
WTP for wine for self	0.17	186	0.00	0.75	186	0.00
WTP for wine as a present	0.24	186	0.00	0.83	186	0.00
Subjective knowledge scale	0.07	186	0.02	0.98	186	0.01
Attitude towards organic wine scale	0.08	186	0.01	0.99	186	0.05

a. Lilliefors Significance Correction

Figure A.1: Histogram and Corresponding QQ-Plot for WTP of the Conventional Wine

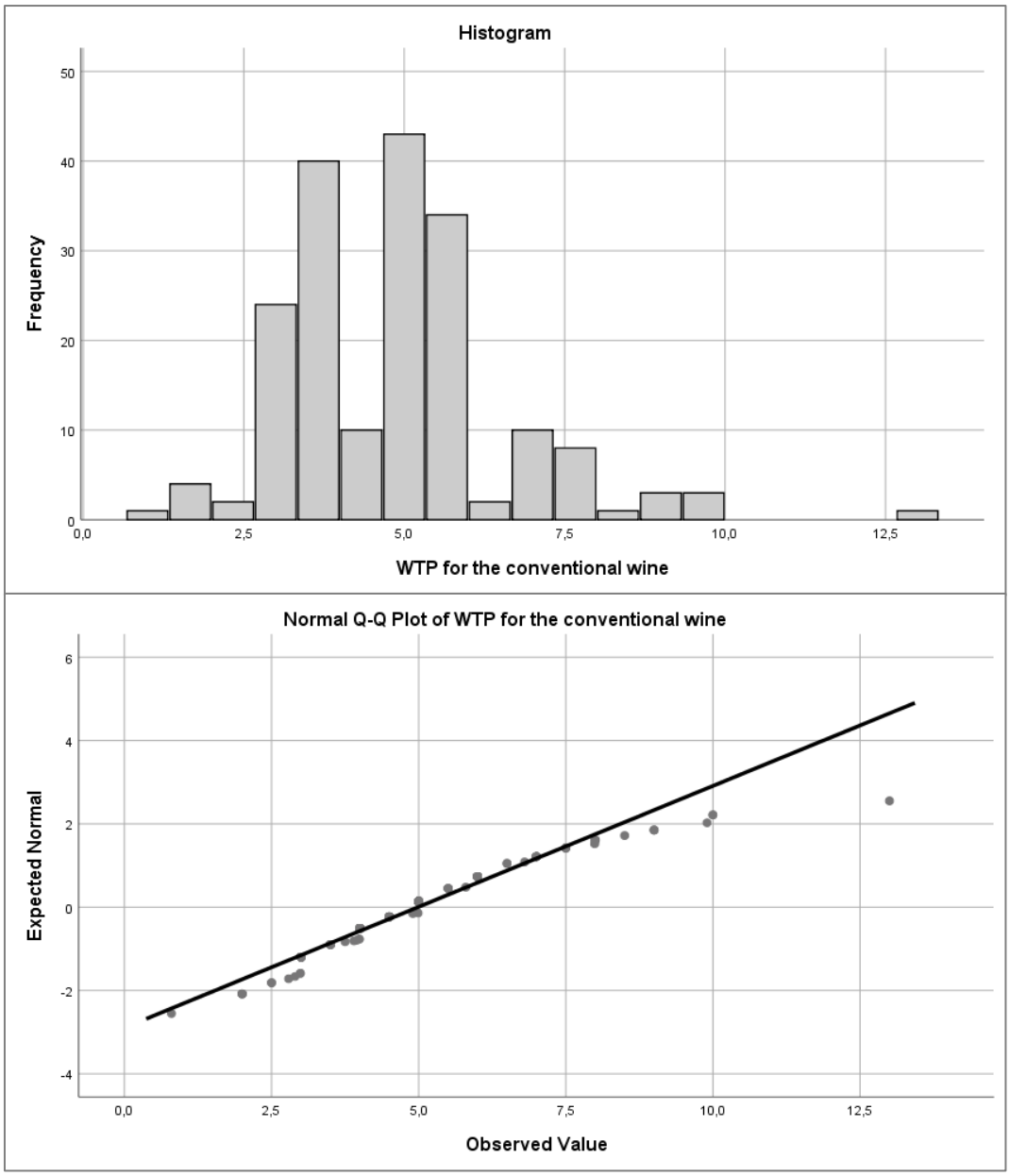


Table A.4: Descriptive Summary of Socio-Demographics

	Mean	Median	Std. Dev.	Min	Max	Range	Skew.	Kurtos.
Gender	1.51 (1.54[a]; 1.47[b])	2	0.5	1	2	1	-0.02	-2.02
Age	39.31 (39.03[a]; 39.56[b])	33	15.67	18	87	69	0.81	-0.39
Education	6.8 (6.95 [a]; 6.67[b])	7	1.94	1	10	9	-0.6	0.34
Employment Status N=191	2.32 (2.22[a]; 2.41[b])	1	1.97	1	7	6	1.46	0.86
HH Size	2.09 (2.05[a]; 2.13[b])	2	1.03	1	6	5	1.09	1.06
HH Income N=171	5.22 (5.58[a]; 4.86[b])	6	2.44	1	8	7	-0.58	-1

Table A.5: Descriptive Summary of Expected Liking, Actual Liking and WTP (N=192)

	Mean	Median	Std. Dev.	Min	Max	Skew.	Kurtos.
Expected liking of the conventional wine	5.35	5	1	3	7	-0.18	-0.44
Expected liking of the organic wine	5.28	5	1.08	2	7	-0.39	-0.39
Expected liking difference	-0.08	0	0.74	-3	2	-1.14	4.01
Expected WTP for organic compared to conventional wine	5.42	6	1	2	7	-0.51	-0.37
Liking of the conventional wine	4.77	5	1.3	1	7	-0.61	-0.16
WTP for the conventional wine	4.94	5	1.74	0	13	0.91	2,.55
Liking of the organic wine	4.84	5	1.36	1	7	-0.66	-0.32
WTP for the organic wine	5.79	6	2.08	0	15	0.61	3.5
Liking difference	0.07	0	1.43	-4	4	-0.36	0.44
Difference between WTP organic and WTP conventional	0.85	1	1.5	-6	7	-0.62	4.11

Table A.6: Results of Wilcoxon-Tests

		Condition	Mean	*T*	Z	*p* (1-tailed)
Total sample (n=192)						
Expected liking organic –		Organic	5.28	665	-1.38	0.09
Expected liking conventional		Conventional	5.35			
Actual liking of the organic wine –		Organic	4.84	3976.5	-0.82	0.21
Actual liking of the conventional wine		Conventional	4.77			
Actual liking of the organic wine –		Organic	4.84	2938	-3.54	**0.00****
Expected liking of the organic wine		Organic	5.28			
Actual liking of the conventional wine –		Conventional	4.77	2333	-5.01	**0.00****
Expected liking of the conventional wine		Conventional	5.35			
WTP for the organic wine –		Organic	5.79	1814	-7.43	**0.00****
WTP for the conventional wine		Conventional	4.94			
Sequence (conventional – organic, n=92; organic – conventional, n=100)						
Expected liking of the organic wine –	Conventional - Organic	Organic	5.41	174	-0.04	0.45
		Conventional	5.41			
Expected liking of the conventional wine	Organic - Conventional	Organic	5.15	164	-1.75	**0.04***
		Conventional	5.30			
Actual liking of the organic wine –	Conventional - Organic	Organic	4.85	960.5	-0.55	0.29
		Conventional	4.79			
Actual liking of the conventional wine	Organic - Conventional	Organic	4.83	1035.5	-0.67	0.25
		Conventional	4.74			
Actual liking of the organic wine –	Conventional - Organic	Organic	4.85	561.5	-2.83	**0.002****
		Organic	5.41			
Expected liking of the organic wine	Organic - Conventional	Organic	4.83	948	-2.16	**0.015***
		Organic	5.15			
Actual liking of the conventional wine –	Conventional - Organic	Conventional	4.79	499.5	-3.46	**0.00****
		Conventional	5.41			
Expected liking of the conventional wine	Organic - Conventional	Conventional	4.74	690	-3.60	**0.00****
		Conventional	5.30			
WTP for the organic wine –	Conventional - Organic	Organic	5.71	370	-5.36	**0.00****
		Conventional	4.90			
WTP for the conventional wine	Organic - Conventional	Organic	5.86	547.5	-5.18	**0.00****
		Conventional	4.97			

Table A.7: Descriptive Summary of Moderator Variables

	Mean	Median	Std. Dev.	Min	Max	Skew.	Kurtosis
Environmental Attitude Scale	5.38	5.5	1.05	2	7	-0.84	0.85
Subjective Knowledge Scale	4.01	4	1.45	1	7	-0.06	-0.76
Attitudes towards Organic Wine Scale	4.4	4.5	1.48	1	7	-0.36	-0.45
Purchase Frequency of Organic Products	4.77	5	1.76	1	7	-0.52	-0.64
Purchase Frequency of Organic Wine	2.94	3	1.785	1	7	0.61	-0.61

Table A.8: Relevant Coefficients for Contingency Analysis of Attitudes towards Organic Products and Attitudes towards Organic Wine

	Pearson Correlation	Spearman Correlation	Contingency Coefficient
Organic products are better for the environment. * Organic wine is better for the environment.	0.73**	0.74**	0.76**
I believe that organic products are healthier than non-organic products. * I believe that organic wine is healthier than non-organic products.	0.63**	0.63**	0.69**
Organic products are too expensive. * Organic wine is too expensive	0.67**	0.66**	0.75**
I think that the use of plant protection products is necessary for a good food quality. * I think that the use of plant protection products is necessary for a good wine quality.	0.69**	0.71**	0.78**
Organic products are a fraud. * Organic wine is a fraud.	0.70**	0.74**	0.76**

Table A.9: Example of a Contingency Table

			Organic wine is better for the environment.							
			strongly disagree	disagree	somehow disagree	neither agree nor disagree	somehow agree	agree	strongly agree	**Total**
Organic products are better for the environment.	strongly disagree	Count	2	0	0	0	0	0	0	**2**
		% within Organic products are better for the	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**100.0%**
		% within Organic wine is better for the environment.	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**1.1%**
		% of Total	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.1%**
	disagree	Count	0	2	1	0	0	0	0	**3**
		% within Organic products are better for the	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%	0.0%	**100.0%**
		% within Organic wine is better for the environment.	0.0%	16.7%	14.3%	0.0%	0.0%	0.0%	0.0%	**1.6%**
		% of Total	**0.0%**	**1.1%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**
	somehow disagree	Count	0	2	1	1	1	1	0	**6**
		% within Organic products are better for the	0.0%	33.3%	16.7%	16.7%	16.7%	16.7%	0.0%	**100.0%**
		% within Organic wine is better for the environment.	0.0%	16.7%	14.3%	2.5%	2.0%	2.7%	0.0%	**3.2%**
		% of Total	**0.0%**	**1.1%**	**0.5%**	**0.5%**	**0.5%**	**0.5%**	**0.0%**	**3.2%**
	neither agree nor disagree	Count	2	4	2	13	4	0	0	**25**
		% within Organic products are better for the	8.0%	16.0%	8.0%	52.0%	16.0%	0.0%	0.0%	**100.0%**
		% within Organic wine is better for the environment.	40.0%	33.3%	28.6%	32.5%	8.0%	0.0%	0.0%	**13.2%**
		% of Total	**1.1%**	**2.1%**	**1.1%**	**6.8%**	**2.1%**	**0.0%**	**0.0%**	**13.2%**
	somehow agree	Count	1	3	2	18	21	1	2	**48**
		% within Organic products are better for the	2.1%	6.3%	4.2%	37.5%	43.8%	2.1%	4.2%	**100.0%**
		% within Organic wine is better for the environment.	20.0%	25.0%	28.6%	45.0%	42.0%	2.7%	5.1%	**25.3%**
		% of Total	**0.5%**	**1.6%**	**1.1%**	**9.5%**	**11.1%**	**0.5%**	**1.1%**	**25.3%**
	agree	Count	0	1	1	4	20	24	6	**56**
		% within Organic products are better for the	0.0%	1.8%	1.8%	7.1%	35.7%	42.9%	10.7%	**100.0%**
		% within Organic wine is better for the environment.	0.0%	8.3%	14.3%	10.0%	40.0%	64.9%	15.4%	**29.5%**
		% of Total	**0.0%**	**0.5%**	**0.5%**	**2.1%**	**10.5%**	**12.6%**	**3.2%**	**29.5%**
	strongly agree	Count	0	0	0	4	4	11	31	**50**
		% within Organic products are better for the	0.0%	0.0%	0.0%	8.0%	8.0%	22.0%	62.0%	**100.0%**
		% within Organic wine is better for the environment.	0.0%	0.0%	0.0%	10.0%	8.0%	29.7%	79.5%	**26.3%**
		% of Total	**0.0%**	**0.0%**	**0.0%**	**2.1%**	**2.1%**	**5.8%**	**16.3%**	**26.3%**
Total		Count	**5**	**12**	**7**	**40**	**50**	**37**	**39**	**190**
		% within Organic products are better for the	**2.6%**	**6.3%**	**3.7%**	**21.1%**	**26.3%**	**19.5%**	**20.5%**	**100.0%**
		% within Organic wine is better for the environment.	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
		% of Total	**2.6%**	**6.3%**	**3.7%**	**21.1%**	**26.3%**	**19.5%**	**20.5%**	**100.0%**

Table A.10: Summary of Exploratory Factor Analysis Results for the Moderating Variables (N=183)

Items	Rotated Factor Loadings					
	1	2	3	4	5	6
My purchase habits are affected by my concern for our environment.	**0.86**	0.04	0.09	0.08	0.19	0.06
I consider the potential environmental impact of my actions when making many of my decisions.	**0.85**	0.04	0.01	0.01	0.19	0.02
I am willing to be inconvenienced in order to take actions that are more environmentally friendly.	**0.81**	0.06	0.09	-0.02	-0.04	0.04
I would describe myself as environmentally responsible.	**0.80**	-0.08	0.06	0.06	0.12	-0.02
I am concerned about wasting the resources of our planet.	**0.76**	-0.05	0.17	0.01	-0.02	0.17
It is important to me that the products I use do not harm the environment.	**0.76**	0.03	0.13	0.18	0.03	0.06
When it comes to wine, I really don`t know a lot. (reversed)	0.01	**0.92**	-0.01	0.07	0.01	0.00
I know pretty much about wine.	0.01	**0.90**	0.08	0.02	0.04	-0.01
Compared to most other people, I know less about wine. (reversed)	-0.04	**0.86**	-0.02	0.15	0.09	-0.01
Among my circle of friends, I`m one of the "experts" on wine.	0.09	**0.78**	0.00	0.01	0.17	-0.06
I do not feel very knowledgeable about wine. (reversed)	-0.04	**0.75**	-0.10	0.07	-0.14	-0.06
I believe that organic wine is healthier than non-organic wine.	0.02	-0.09	**0.84**	-0.14	0.01	0.13
I believe that organic products are healthier than non-organic products.	0.12	0.04	**0.83**	0.06	0.02	0.05
Organic wine is better for the environment.	0.21	-0.02	**0.76**	0.27	0.08	0.14
Organic products are better for the environment.	0.17	0.01	**0.74**	0.36	0.04	0.03
Organic products are a fraud. (reversed)	0.09	0.12	0.12	**0.86**	0.15	0.10
Organic wine is a fraud. (reversed)	0.10	0.17	0.18	**0.85**	0.13	0.11
Organic products are too expensive. (reversed)	0.22	0.04	-0.02	0.07	**0.89**	0.06
Organic wine is too expensive. (reversed)	0.11	0.08	0.13	0.22	**0.87**	0.07
I think that the use of plant protection products is necessary for a good wine quality. (reversed)	0.07	-0.05	0.08	0.10	0.09	**0.91**
I think that the use of plant protection products is necessary for a good food quality. (reversed)	0.16	-0.07	0.21	0.11	0.03	**0.88**
Eigenvalues	5.34	3.79	2.54	1.68	1.34	1.09
% of variance	25.4	18.0	12.1	8.0	6.4	5.2
α	0.91	0.90	0.83	0.83	0.80	0.82

Table A.11: Summary of 2nd Exploratory Factor Analysis Results for the Moderating Variables

Items	Rotated Factor Loadings			
	1	2	3	4
My purchase habits are affected by my concern for our environment.	**0.87**	0.04	0.19	0.02
I consider the potential environmental impact of my actions when making many of my decisions.	**0.86**	0.03	0.14	-0.07
I am willing to be inconvenienced in order to take actions that are more environmentally friendly.	**0.81**	0.07	-0.08	0.14
I would describe myself as environmentally responsible.	**0.81**	-0.07	0.08	0.02
I am concerned about wasting the resources of our planet.	**0.77**	-0.06	0.07	0.14
It is important to me that the products I use do not harm the environment.	**0.76**	0.04	0.15	0.12
When it comes to wine, I really don`t know a lot. (reversed)	0.01	**0.92**	0.05	-0.03
I know pretty much about wine.	0.02	**0.90**	0.02	0.07
Compared to most other people, I know less about wine. (reversed)	-0.04	**0.87**	0.17	-0.03
Among my circle of friends, I'm one of the "experts" on wine.	0.10	**0.78**	0.07	-0.07
I do not feel very knowledgeable about wine. (reversed)	-0.05	**0.76**	-0.10	-0.07
Organic wine is too expensive.(reversed)	0.16	0.08	**0.79**	-0.07
Organic wine is a fraud. (reversed)	0.09	0.23	**0.72**	0.15
I think that the use of plant protection products is necessary for a good wine quality. (reversed)	0.08	-0.12	**0.50**	0.22
I believe that organic wine is healthier than non-organic wine.	0.05	-0.09	0.03	**0.90**
Organic wine is better for the environment.	0.23	0.01	0.38	**0.75**
Eigenvalues	4.47	3.71	1.72	1.05
% of Variance	27.9	23.2	10.7	6.6
α	0.91	0.90	0.48	0.69

Table A.12: Summary of 3rd Exploratory Factor Analysis Results for the Moderating Variables

Items	Rotated Factor Loadings		
	GREEN-Scale	Subjective Knowledge	Attitude towards Organic Wine
My purchase habits are affected by my concern for our environment.	**0.89**	0.04	0.07
I consider the potential environmental impact of my actions when making many of my decisions.	**0.87**	0.04	-0.03
I would describe myself as environmentally responsible.	**0.81**	-0.07	0.05
I am willing to be inconvenienced in order to take actions that are more environmentally friendly.	**0.79**	0.05	0.09
It is important to me that the products I use do not harm the environment.	**0.77**	0.04	0.14
I am concerned about wasting the resources of our planet.	**0.77**	-0.07	0.13
When it comes to wine, I really don`t know a lot. (reversed)	0.00	**0.92**	-0.02
I know pretty much about wine.	0.00	**0.91**	0.06
Compared to most other people, I know less about wine. (reversed)	-0.04	**0.88**	0.00
I do not feel very knowledgeable about wine. (reversed)	-0.07	**0.75**	-0.12
Among my circle of friends, I'm one of the "experts" on wine.	0.13	**0.75**	-0.03
I believe that organic wine is healthier than non-organic wine.	0.03	-0.10	**0.89**
Organic wine is better for the environment.	0.26	0.02	**0.83**
Eigenvalues	4.25	3.60	1.41
% of Variance	32.7	27.7	10.8
α	0.91	0.90	0.69

Figure A.2: Mean Scores of Expected and Actual Liking by Sequence

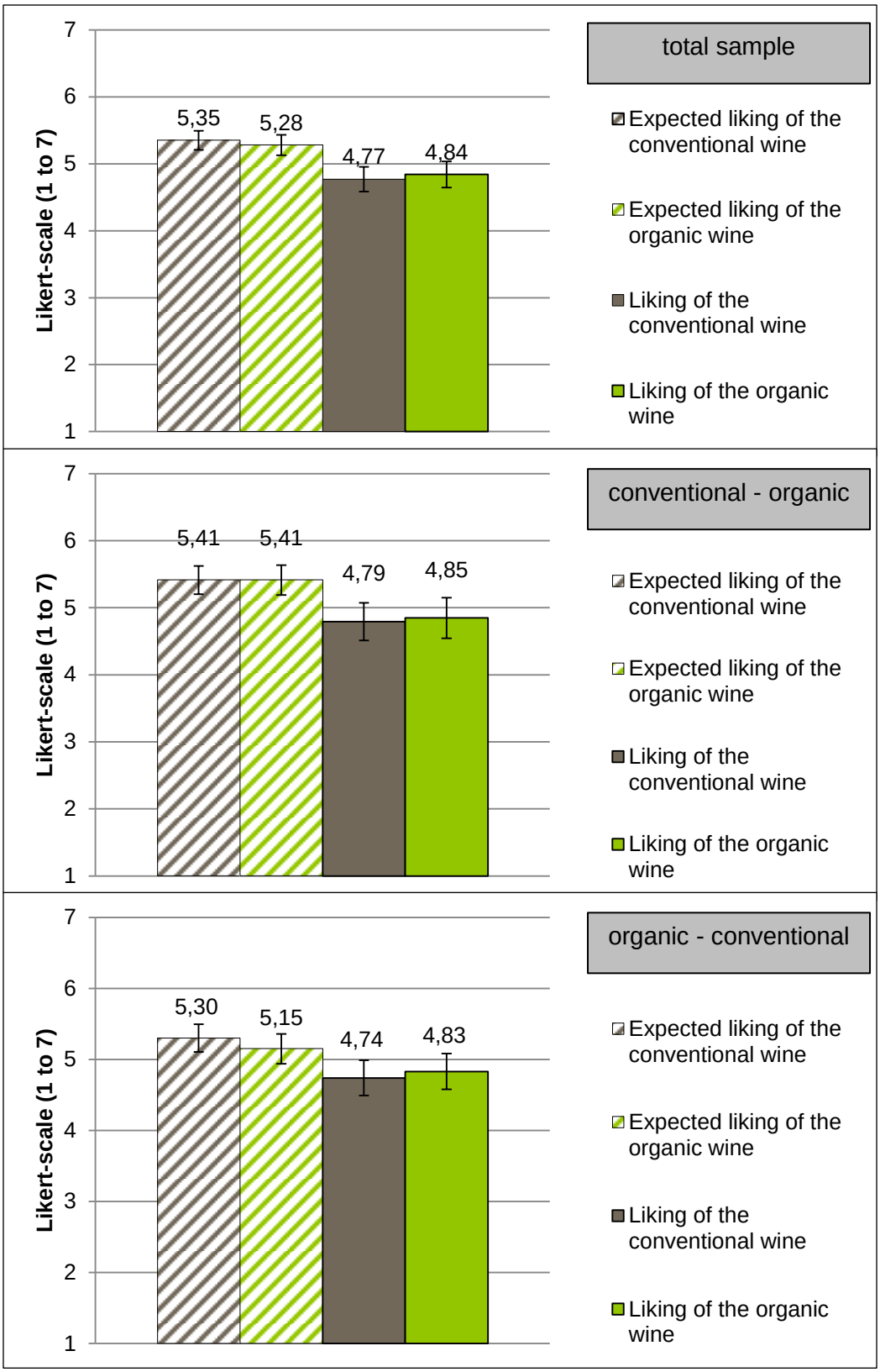


Figure A.3: Difference Scores of Expected and Actual Liking by Sequence (in %)

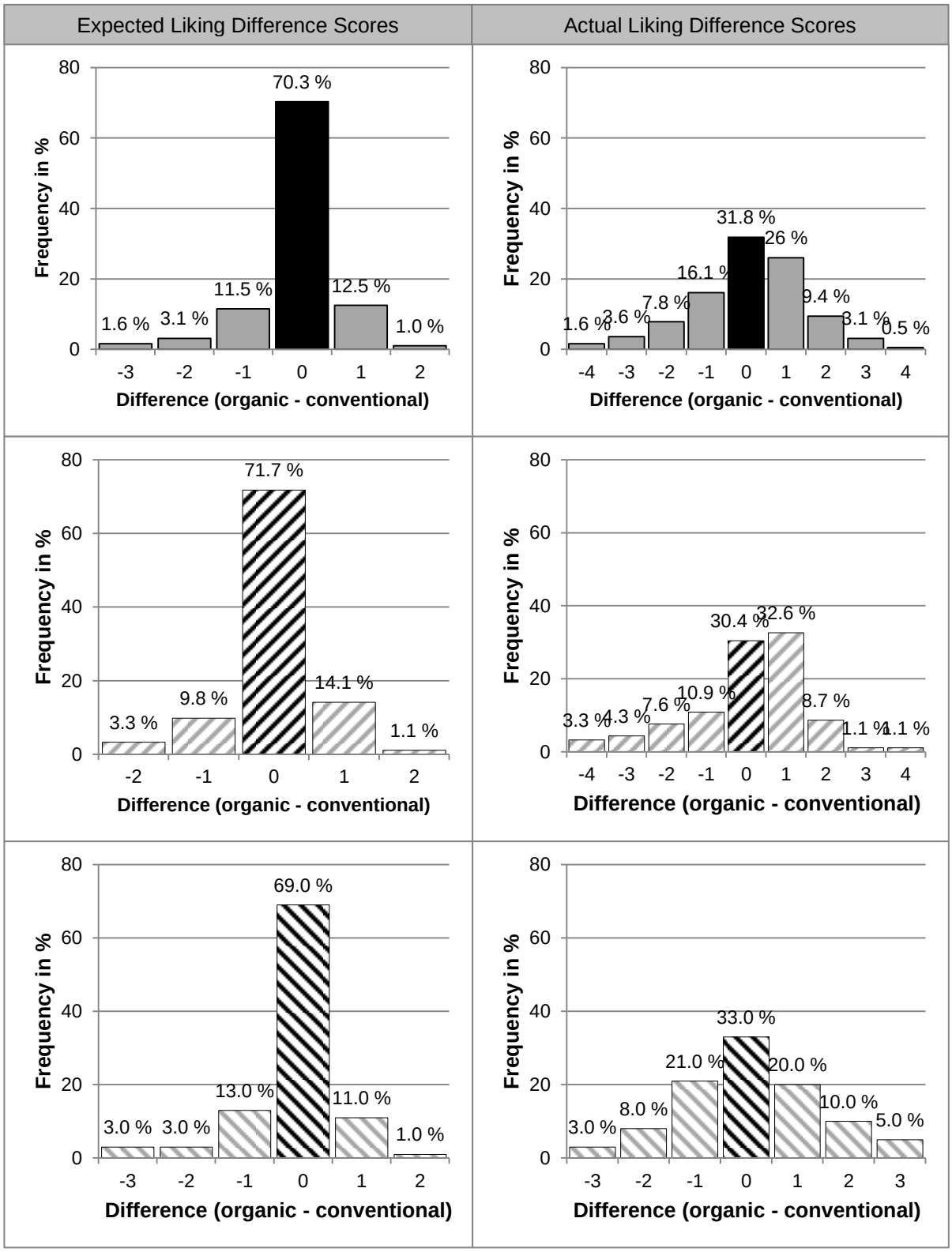
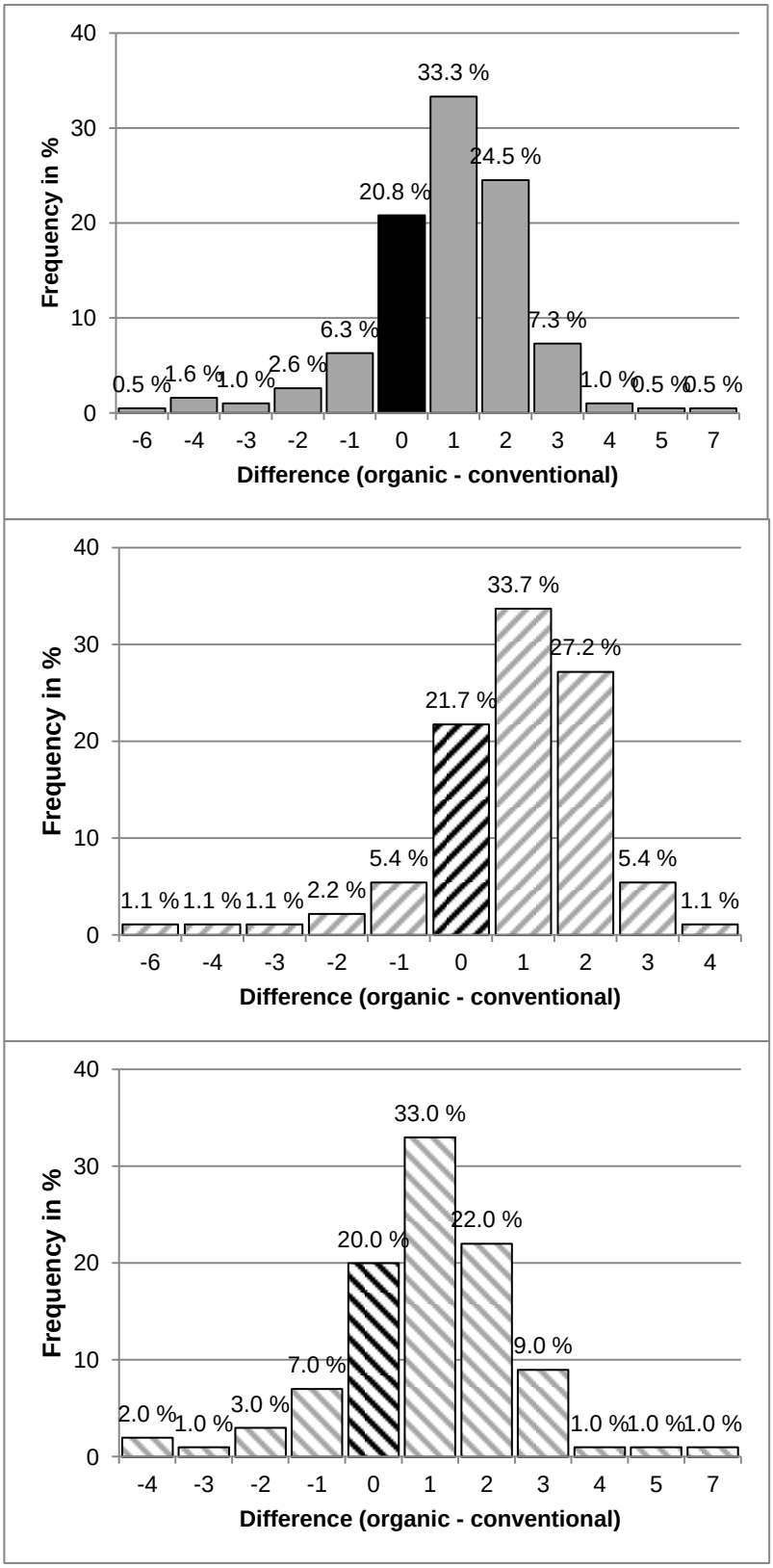


Figure A.4: Difference Scores of WTP by Sequence (in %)



APPENDIX 3: ADDITIONAL ANALYSES

Correlation Analysis

Performing a correlation analysis did not reveal a significant relationship between the **expected liking** difference (organic – conventional) and the **actual liking difference** (organic – conventional). At least a highly significant relationship between expected liking of the organic wine and actual liking of the organic wine (r_s=0.25) and expected liking of the conventional wine and actual liking of the conventional wine (r_s=0.17, all p_s<0.01) could be detected. An overview on all relevant correlations can be found in Table A.13, Table A.14, and Table A.15. Taking the effect of sequence into account reveals the following: When participants tasted the organic wine first, the expected liking difference was significantly correlated with the actual liking of the organic wine (r_s=0.2, p<0.05) and with the actual liking difference (r_s=0.22, p<0.05) (see Table A.15.). Nevertheless, this relationship was only significant for this group. Correlation analysis for **expected liking** and **WTP** has further shown that expected liking difference is significantly correlated with expected WTP difference (r_s=0.21, p<0.01) which gives evidence for **H3 "***The expected liking of organic labelled wine positively influences the expected WTP for organic labelled wine compared to non-organic labelled wine*". However, with regard to this relationship, there are significant differences between the groups split by sequence. Whereas a highly significant correlation could be found for participants that tasted the organic wine first (r_s=0.25, p<0.01), no significant correlation could be found for the other group (see Table A.14).

Furthermore, a positive correlation between the magnitude of **actual liking difference** and the magnitude of **WTP difference** (r_s=0.64, p<0.01) could be revealed supporting evidence for the acceptance of **H4** "*The actual liking of organic labelled wine positively influences the WTP for organic labelled wine compared to non-organic labelled wine".*

In order to assess the effect of participants' **environmental concern** measured by the GREEN-Scale the following correlations were found. There is a significant positive correlation between environmental concern and expected liking of the organic wine (r_s=0.14, p<0.05), the expected liking difference (r_s=0.13, p<0.05) as well as expected WTP (r_s=0.21, p<0.01). Following from this, there is evidence that **H5a: "***Environmental concern creates a positive taste expectation for organic labelled wine compared to non-organic labelled wine"* and **H5b: "***Environmental concern creates a positive WTP expectation for organic labelled wine compared to non-organic labelled wine"* could be confirmed. However, splitting the data by sequence shows that for the group that tasted the conventional wine first, an association between environmental concern and expected liking of the organic wine (r_s=0.2, p<0.05) as

well as between expected WTP (r_S=0.33, p<0.01) exists, while for the other group no correlations could be found.

In contrast to the GREEN-Scale, the scale measuring **attitudes towards organic wine** is correlated with the expected WTP difference (r_S=0.35, p<0.01) which gives no evidence for hypothesis **H6a: "***Positive attitudes toward organic wine increase the expected liking of organic labelled wine compared to non-organic labelled wine"* but for **H6b: "***Positive attitudes toward organic wine increase the expected WTP for organic labelled wine compared to non-organic labelled wine".* Moreover, it seems to exist a positive relationship between attitudes towards organic wine and actual liking and actual WTP, indicated by a positive significant correlation for liking difference (r_S=0.19, p<0.01) and WTP difference (r_S=0.20, p<0.01).

Performing a correlation analysis revealed that **subjective knowledge** is significantly negatively associated with expected liking difference (r_S=-0.12) and expected WTP (r_S=-0.14, p<0.05) and positively associated with WTP for the conventional wine (r_S=0.13, p<0.05). Hence, providing evidence for **H7a: "***Subjective wine knowledge negatively influences the expected liking of organic labelled wine compared to non-organic labelled wine"* and for **H7b: "***Subjective wine knowledge negatively influences the expected WTP for organic labelled wine compared to non-organic labelled wine".* In addition to this, a noticeable difference could be found for the two groups split by sequence. While significant positive correlations could be observed for WTP for the organic wine (r_S=0.21, p<0.05) as well as for the conventional wine (r_S=0.21, p<0.05) when people tasted the conventional wine first, for the other group only negative associations could be found for the expected liking difference (r_S=-0.19, p<0.05), liking of the organic wine (r_S=-0.2, p<0.05) and for the expected WTP (r_S=-0.19, p<0.05).

With regard to the **purchase frequency of organic wine** several correlations could be found. First of all a significant positive association for expected liking (r_S=-0.14, p<0.05) and a highly significant positive correlation with expected WTP (r_S=-0.33, p<0.01) was detected. Therefore there is evidence that both hypotheses **H8a "***A higher purchase frequency of organic wine creates a positive influence on taste expectation of organic labelled wine compared to non-organic labelled wine"* and **H8b "***A higher purchase* frequency of organic wine creates a positive influence on expected WTP for organic labelled wine compared to non-organic labelled wine" can be confirmed. Furthermore, there is a positive correlation with liking of the organic wine (r_S=0.17, p<0.01), liking difference (r_S=0.16, p<0.05), WTP for the organic wine (r_S=0.19, p<0.05) and actual WTP difference (r_S=0.24, p<0.01). Splitting the sample by sequence revealed interesting differences: No correlation for the expected liking difference and also no correlation for the actual liking difference was found for the group that tasted the conventional wine first.

Table A.13: Correlations for the Total Sample (N=192)

	1 Expected liking of the organic wine	2 Expected liking of the convention al wine	3 Expected Liking difference	4 Liking of the organic wine	5 Liking of the convention -nal wine	6 Liking difference	7 WTP for the organic wine	8 WTP for the convention -nal wine	9 Expected WTP for organic vs. convention al wine	10 Difference between WTP organic wine and WTP convention al wine	11 Subjective knowledge	12 Environ-mental attitude	13 Attitude towards organic wine	14 Purchase frequency
1	**1**	**0.76****	**0.4****	**0.25****	**0.18****	0.07	-0.05	-0.09	**0.13***	0.08	-0.01	**0.14***	0.02	0.06
2		**1**	**-0.25****	**0.19****	**0.17****	-0.01	0.01	0.05	-0.02	-0.01	0.06	0.05	-0.06	-0.05
3			**1**	0.06	0.03	0.07	-0.07	**-0.19****	**0.2****	**0.12***	**-0.12***	**0.13***	0.11	**0.14***
4				**1**	**0.40****	**0.55****	**0.44****	**0.21****	0.06	**0.39****	-0.07	-0.05	0.10	**0.17****
5					**1**	**-0.50****	**0.23****	**0.48****	0.01	**-0.25****	-0.08	-0.01	-0.05	0.04
6						**1**	**0.25****	**-0.23****	0.09	**0.64****	0.04	-0.04	**0.19****	**0.16***
7							**1**	**0.70****	**0.16****	**0.49****	0.12	-0.04	0.10	**0.19***
8								**1**	-0.02	**-0.21****	**0.13***	-0.09	-0.04	0.05
9									**1**	**0.34****	**-0.14***	**0.21****	**0.35****	**0.33****
10										**1**	0.00	0.08	**0.20****	**0.24****
11											**1**	0.03	-0.08	**0.12***
12												**1**	**0.29****	**0.28****
13													**1**	**0.41****
14														**1**

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table A.14: Correlations by Sequence (Conventional – Organic) with N=92

	1 Expected liking of the organic wine	2 Expected liking of the conventional wine	3 Expected Liking difference	4 Liking of the organic wine	5 Liking of the conventional wine	6 Liking difference	7 WTP for the organic wine	8 WTP for the conventional wine	9 Expected WTP for organic vs. conventional wine	10 Difference between WTP organic wine and WTP conventional wine	11 Subjective knowledge	12 Environ-mental attitude	13 Attitude towards organic wine	14 Purchase frequency
1	**1**	**0.78****	**0.39****	0.13	0.14	0.00	-0.13	-0.15	0.02	0.01	-0.01	**0.20***	0.08	-0.09
2		**1**	**-0.24***	**0.19***	0.13	0.03	0.03	0.03	-0.09	0.00	-0.01	0.11	-0.02	**-0.18***
3			**1**	-0.09	0.06	-0.08	**-0.22***	**-0.25****	0.15	0.00	-0.03	0.15	0.14	0.11
4				**1**	**0.42****	**0.52****	**0.48****	**0.36****	0.13	**0.38****	0.07	-0.13	0.16	**0.18***
5					**1**	**-0.48****	**0.24***	**0.48****	0.05	**-0.19***	0.00	-0.06	-0.3	0.08
6						**1**	**0.27****	-0.10	0.15	**0.62****	0.12	-0.06	**0.22***	0.14
7							**1**	**0.74****	0.14	**0.59****	**0.21***	-0.07	0.12	**0.22***
8								**1**	-0.02	-0.01	**0.21***	-0.12	-0.03	**0.17***
9									**1**	**0.34****	-0.08	**0.33****	**0.44****	**0.41****
10										**1**	0.11	0.06	**0.31****	**0.18***
11											**1**	0.05	-0.17	**0.18***
12												**1**	**0.37****	**0.20***
13													**1**	**0.36****
14														1

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table A.15: Correlations by Sequence (Organic – Conventional) with N=100

	1 Expected liking of the organic wine	2 Expected liking of the conventional wine	3 Expected Liking difference	4 Liking of the organic wine	5 Liking of the conventional wine	6 Liking difference	7 WTP for the organic wine	8 WTP for the conventional wine	9 Expected WTP for organic vs. conventional wine	10 Difference between WTP organic wine and WTP conventional wine	11 Subjective knowledge	12 Environ-mental attitude	13 Attitude towards organic wine	14 Purchase frequency
1	**1**	**0.72****	**0.42****	**0.38****	**0.22***	0.15	0.04	-0.05	**0.22***	0.15	-0.01	0.08	-0.03	**0.22***
2		**1**	**-0.28****	**0.19***	**0.22***	-0.05	-0.01	0.07	0.04	-0.02	0.14	-0.01	-0.09	0.06
3			**1**	**0.20***	0.00	**0.21***	0.07	-0.14	**0.25****	**0.22***	**-0.19***	0.13	0.07	**0.19***
4				**1**	**0.37****	**0.58****	**0.40****	0.07	-0.02	**0.40****	**-0.20***	0.02	0.05	**0.18***
5					**1**	**-0.51****	**0.21***	**0.49****	-0.04	**-0.30****	-0.15	0.05	-0.08	0.02
6						1	**0.20***	**-0.37****	0.05	**0.65****	-0.04	-0.03	**0.17***	**0.19***
7							1	**0.65****	**0.18***	**0.39****	0.03	0.02	0.10	**0.18***
8								1	-0.1	**-0.37****	0.06	-0.07	-0.06	-0.07
9									1	**0.35****	**-0.19***	0.12	**0.27****	**0.27****
10										1	-0.15	0.09	0.12	**0.29****
11											1	-0.02	0.02	0.03
12												1	**0.22***	**0.35****
13													1	**0.46****
14														1

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Effects of Socio-Demographics

In order to determine whether mean scores differ with respect to socio-demographics Mann-Whitney U-tests were performed. **Gender**, **age**, **education** and **income** were obtained. Age, education and income were recoded into dummy variables first. This is shown in Table A.16. For categorizing age, the mean was used as an orientation and 39 taken as the critical value. The same was done for income and 2000 € (category 6) was chosen as the critical value. With respect to education, participants were split by whether they have a university degree or not.

Table A.16: Dummy Coding Socio-Demographics

	Dummy coded 0	Dummy coded 1
Gender	Male (n=97)	Female (n=95)
Age	> 39 (n=73)	≤ 39 (n=119)
Education	At least university degree (n=150)	Below university degree (n=42)
Income	Income ≤ 2000 (n=118)	Income > 2000 (n=53)

All significant results are summarized in Table A.17. An interesting significance was detected for **gender** regarding the expected liking of organic wine, U=3776.5, z=-2.25, p=0.01 and conventional wine, U=3725.5, z=-2.40, p=0.01 as well as the expected WTP for organic compared to conventional wine, U=3790.5, z=-2.30, p=0.01. The values of mean ranks indicate that women tended to have higher expectations regarding the taste of both wines, and indicated to be willing to spend more for the organic wine compared to the conventional wine in contrast to men. Also a significant effect of **age** on expected liking could be detected. People below 40 seem to have higher expectations regarding the organic wine U=3725, z=-1.73, p=0.047, and therefore the expected liking difference is more positive U=3830.5, z=-1.7, p=0.04. Taking the actual liking into account reveals that male participants gave higher ratings in total and they also liked the organic wine slightly more while women slightly preferred the conventional wine. Nevertheless, this finding was not statistically significant. With regard to the WTP for the organic and the conventional wine, significant results for gender, age and income could be detected. Men, U=3366.5, z=-3.25, p=0.00 and U=3309, z=-2.27, p=0.00 and people aged 40 or more U=3042.5, z=-3.5, p=0.00 and U=3080, z=-3.4, p=0.00 tended to indicate a higher WTP for both wines. For people with a higher **income** the expected WTP was significantly higher, U=2657, z=-1.69, p=0.04 and the WTP for the conventional wine was significantly lower compared to people with a lower income, U=2372, z=-2.55, p=0.0006. Significant effects for **education** could not be detected.

Table A.17: Significant Results of the Mann-Whitney U-Tests

	Group	Mean	*U*	z	*p (1-tailed)*
Gender					
Expected liking for the organic wine	Men Women	5.09 5.46	3776.5	-2.25	**0.01***
Expected liking for the conventional wine	Men Women	5.19 5.53	3725.5	-2.40	**0.01***
Expected WTP	Men Women	5.27 5.57	3790.5	-2.30	**0.01***
WTP for the organic wine	Men Women	6.21 5.35	3042.5	-3.5	**0.00****
WTP for the conventional wine	Men Women	5.33 4.53	3080	-3.4	**0.00****
Age					
Expected liking for the organic wine	> 39 ≤ 39	5.11 5.38	3725	-1.73	**0.047***
Expected liking difference	> 39 ≤ 39	-0.19 -0.01	3830.5	-1.7	**0.04***
WTP for the organic wine	> 39 ≤ 39	6.33 5.46	3042.5	-3.5	**0.00****
WTP for the conventional wine	> 39 ≤ 39	5.40 4.65	3080	-3.4	**0.00****
Income					
Expected WTP	Income > 2000 Income ≤ 2000	5.66 5.34	2657	-1.69	**0.04***
WTP for the conventional wine	Income > 2000 Income ≤ 2000	4.41 5.02	2372	-2.55	**0.006****

APPENDIX 4: QUESTIONNAIRE IN ENGLISH AND GERMAN

QUESTIONNAIRE REGARDING TASTE PERCEPTION

Dear participants,

Welcome and many thanks for your interest in this survey. The aim of this experiment is to explore the taste perception of wine.

Your answers will be processed anonymously and the collected information will be only used for scientific purpose at the University of Bonn and Wageningen University. Taking part in this study will take around 10 minutes in total.

By participating, you contribute to the success of my master's thesis.

Thank you very much for taking the time.

If you have any questions or comments, please feel free to contact me at the following e-mail address: s7jamach@uni-bonn.de

With kind regards

Janine Macht

First, I would like to ask you to answer a few **general questions about wine.**

1. Which **taste of wine** do you prefer?

☐ Dry

☐ Semi-dry

☐ Semi-sweet

☐ Sweet

2. How much do you like **white wine**? Please express how much you like **white wine** on a scale from 1 to 7. **"1"** means **"I like not at all" and "7" means "I like very much".**

White wine...

I don't like at all			**neither nor**			**I like very much**
1	**2**	**3**	**4**	**5**	**6**	**7**

3. How much do you like „**Riesling"-wine**? Please express how much you like **"Riesling"-wine** on a scale from 1 to 7. **"1"** means **"I like not at all" and "7" means "I like very much".**

„Riesling"-wine...

I don't like at all			**neither like nor dislike**			**I like very much**
1	**2**	**3**	**4**	**5**	**6**	**7**

In front of you there are **2 "Riesling"-wines** with the **same vintage (2016),** the **same alcoholic content** and the **same production area (Pfalz)**, but they are **produced differently**. One wine is organic wine and the other one is conventional wine.

4. Before tasting the two wines, please express how much you expect to like the respective wine on a **scale from 1 to 7. "1"** means **"I expect to like not at all"** and **"7"** means **"I expect to like very much".**

4.1 The conventional wine…

I expect to not like at all			**neither like nor dislike**			**I expect to like very much**
1	**2**	**3**	**4**	**5**	**6**	**7**

4.2 The organic wine…

I expect to not like at all			**neither like nor dislike**			**I expect to like very much**
1	**2**	**3**	**4**	**5**	**6**	**7**

5. Please indicate how much you would be willing to spend for the organic wine compared to the conventional wine...

I would be willing to spend… for the organic wine compared to the conventional wine.

less			**as much as**			**more**
less than 3 €	**2 €**	**1 €**	**0**	**1 €**	**2 €**	**more than 3 €**

Thank you!

Please hand in this part of the questionnaire. Afterwards you can continue with the wine tasting!

6. Now we ask you to taste the conventional wine. Please express how much you like it on a **scale from 1 to 7. "1"** means **"I don't like at all"** and **"7"** means **"I like very much"**

6.1 The conventional wine…

I don't like at all			neither nor			I like very much
1	2	3	4	5	6	7

6.2. How much would you be willing to pay for a 0.75L bottle of this conventional wine?

☐ €

6.3. How confident are you that you would have paid the above mentioned price for this conventional wine in **your daily life**?

Not confident at all			neither nor			Very confident
1	2	3	4	5	6	7

7. Now we ask you to taste the organic wine. Please express how much you like it on a scale from **1 to 7. "1"** means **"I don't like at all"** and **"7"** means **"I like very much".**

7.1 The organic wine…

I don't like at all			neither nor			I like very much
1	2	3	4	5	6	7

7.2. How much would you be willing to pay for a 0.75L bottle of this organic wine?

☐ €

7.3. How confident are you that you would have paid the above mentioned price for this organic wine in **your daily life**?

I don't like at all			neither nor			I like very much
1	2	3	4	5	6	7

In the following, you see a number of **statements**. Some of these statements **might sound similar,** but they concern **various aspects**.

8. Please express how much you agree with these statements on a scale from **1 to 7. "1"** means **"strongly disagree"** and **"7"** means **"strongly agree".**

	Strongly disagree			**Neither nor**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
I know pretty much about wine.							
I do not feel very knowledgeable about wine.							
Among my circle of friends, I'm one of the "experts" on wine.							
Compared to most other people, I know less about wine.							
When it comes to wine, I really don`t know a lot.							

9. Please express how much you agree with these statements on a scale from **1 to 7. "1"** means **"strongly disagree"** and **"7"** means **"strongly agree".**

	Strongly disagree			**Neither nor**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Organic products are better for the environment.							
I believe that organic products are healthier than non-organic products.							
I buy organic products on a regular basis.							
Organic products are too expensive.							
I think that the use of plant protection products is necessary for a good food quality.							
Organic products are a fraud.							

10. Please express how much you agree with these statements on a scale from **1 to 7. "1"** means **"strongly disagree"** and **"7"** means **"strongly agree".**

	Strongly disagree			**Neither nor**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Organic wine is better for the environment.							
I believe that organic wine is healthier than non-organic wine.							
I buy organic wine on a regular basis.							
Organic wine is too expensive.							
I think that the use of plant protection products is necessary for a good wine quality.							
Organic wine is a fraud.							

11. Please express how much you agree with these statements on a scale from **1 to 7. "1"** means **"strongly disagree"** and **"7"** means **"strongly agree".**

	Strongly disagree						**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
It is important to me that the products I use do not harm the environment.							
I consider the potential environmental impact of my actions when making many of my decisions.							
My purchase habits are affected by my concern for our environment.							
I am concerned about wasting the resources of our planet.							
I would describe myself as environmentally responsible.							
I am willing to be inconvenienced in order to take actions that are more environmentally friendly.							

12. How **old** are you?

☐ years old.

13. What is your **gender**?

- ☐ Female
- ☐ Male
- ☐ Other _____

14. What is your highest **educational degree**?

- ☐ Hauptschulabschluss
- ☐ High school diploma
- ☐ Polytechnic secondary school
- ☐ General qualification for university entrance
- ☐ Apprenticeship
- ☐ Bachelor’s degree
- ☐ Master’s degree
- ☐ Diploma
- ☐ State examination
- ☐ Doctorate
- ☐ Without educational degree

15. Which of the following categories best describes your **employment status**?

- ☐ Employed
- ☐ Self-employed
- ☐ Student
- ☐ Apprentice
- ☐ Not employed (looking for work)
- ☐ Not employed (not looking for work)
- ☐ Retired

16. How many **people**, including yourself, **live in your household**? (A flat share is only a household, when grocery shopping is done together.)

☐ person/s

17. What is the **average monthly net income** of your **household**? This refers to the sum made up of all household income and expenses after the deduction of taxes and social insurance. A flat share is only a household when grocery shopping is done together.

- ☐ Below € 900
- ☐ € 900 - € 1300
- ☐ € 1301 - € 1500
- ☐ € 1501 - € 2000
- ☐ € 2001 - € 2600
- ☐ € 2601 - € 3600
- ☐ € 3601 - € 5000
- ☐ Mehr als € 5000
- ☐ I don't want to answer

18. What is the **price** you would usually pay for a 0.75L bottle of wine, if you buy wine for **own consumption**?

☐ €

19. What is the **price** you would usually pay for a 0.75L bottle of wine, if you buy wine **as a gift?**

☐ €

Thank you for your participation!

FRAGEBOGEN ZUR GESCHMACKSWAHRNEHMUNG

Liebe Teilnehmerinnen und Teilnehmer,

herzlich willkommen und vielen Dank für Ihr Interesse an unserer Umfrage. Ziel der Studie ist es, die Geschmackswahrnehmung von Wein zu untersuchen.

Ihre Antworten werden anonym ausgewertet und ausschließlich für wissenschaftliche Zwecke der Universität Bonn und der Universität Wageningen verwendet. Die Teilnahme an der Umfrage dauert insgesamt etwa 10 Minuten.

Mit Ihrer Teilnahme tragen Sie zum Erfolg meiner Masterarbeit bei.

Vielen lieben Dank, dass Sie sich die Zeit nehmen.

Bei Fragen oder Anmerkungen können Sie sich gerne unter folgender E-Mail-Adresse an mich wenden: s7jamach@uni-bonn.de

Mit freundlichen Grüßen,

Janine Macht

Zunächst möchte ich Ihnen ein paar **allgemeine Fragen zu Wein** stellen.

1. Welche **Geschmacksrichtung** bevorzugen Sie bei Wein?

☐ Trocken

☐ Halbtrocken

☐ Lieblich

☐ Süß

2. Wie gerne mögen Sie **Weißwein**? Bitte geben Sie auf einer Skala von 1 bis 7 an, wie sehr Sie **Weißwein** mögen. „**1**“ bedeutet „**mag ich überhaupt nicht**“ und „**7**“ bedeutet „**mag ich sehr**“.

Weißwein...

mag ich überhaupt nicht			**weder noch**			**mag ich sehr**
1	**2**	**3**	**4**	**5**	**6**	**7**

3. Wie gerne mögen Sie „**Riesling“-Wein**? Bitte geben Sie auf einer Skala von 1 bis 7 an, wie sehr Sie **„Riesling“-Wein** mögen. „**1**“ bedeutet „**mag ich überhaupt nicht**“ und „**7**“ bedeutet „**mag ich sehr**“.

„Riesling“-Wein...

mag ich überhaupt nicht			**weder noch**			**mag ich sehr**
1	**2**	**3**	**4**	**5**	**6**	**7**

Vor Ihnen stehen **zwei "Riesling"-Weine** aus dem **gleichen Jahr (2016),** mit dem **gleichen Alkoholgehalt** und der **gleichen Herkunft (Pfalz)**, allerdings unterscheiden sie sich in der **Herstellungsweise**. Der eine Wein ist ein Bio-Wein und der andere ein konventioneller Wein.

4. Bevor Sie die beiden Weine probieren, geben Sie bitte zunächst auf einer **Skala von 1 bis 7** an, wie sehr Sie erwarten, den jeweiligen Wein zu mögen. „**1**" bedeutet „**erwarte ich überhaupt nicht zu mögen**" und „**7**" bedeutet „**erwarte ich sehr zu mögen**".

4.1 Den konventionellen Wein...

erwarte ich überhaupt nicht zu mögen			**weder noch**			**erwarte ich sehr zu mögen**
1	**2**	**3**	**4**	**5**	**6**	**7**

4.2 Den Bio-Wein...

erwarte ich überhaupt nicht zu mögen			**weder noch**			**erwarte ich sehr zu mögen**
1	**2**	**3**	**4**	**5**	**6**	**7**

5. Geben Sie bitte an, wie viel Sie bereit wären für den Bio-Wein im Vergleich zum konventionellen Wein auszugeben**.**

Ich wäre bereit für den Bio-Wein im Vergleich zum konventionellen Wein...

weniger auszugeben			**gleich viel auszugeben**			**mehr auszugeben**
weniger als 3 €	**2 €**	**1 €**	**0**	**1 €**	**2 €**	**mehr als 3 €**

Vielen Dank!

Bitte geben Sie diesen Teil des Fragebogens ab. Sie können anschließend mit der Weinprobe beginnen!

6. **Nun bitten wir Sie, den konventionellen Wein zu probieren.** Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den konventionellen Wein mögen. „**1**“ bedeutet „**mag ich überhaupt nicht**“ und „**7**“ bedeutet „**mag ich sehr**“.

6.1 Den konventionellen Wein…

mag ich überhaupt nicht			**weder noch**			**mag ich sehr**
1	**2**	**3**	**4**	**5**	**6**	**7**

6.2 Wie viel wären Sie bereit, für eine 0,75L Flasche von diesem konventionellen Wein zu bezahlen?

[ ] €

6.3 Wie sicher sind Sie sich, dass Sie **in Ihrem Alltag** den oben genannten Preis für diesen konventionellen Wein gezahlt hätten?

überhaupt nicht sicher			**weder noch**			**sehr sicher**
1	**2**	**3**	**4**	**5**	**6**	**7**

7. **Nun bitten wir Sie den Bio-Wein zu probieren.** Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den Bio-Wein mögen. „**1**“ bedeutet „**mag ich überhaupt nicht**“ und „**7**“ bedeutet „**mag ich sehr**“.

7.1 Den Bio-Wein...

mag ich überhaupt nicht			**weder noch**			**mag ich sehr**
1	**2**	**3**	**4**	**5**	**6**	**7**

7.2 Wie viel wären Sie bereit, für eine 0,75L Flasche von diesem Bio-Wein zu bezahlen?

[ ] €

7.3 Wie sicher sind Sie sich, dass Sie **in Ihrem Alltag** den oben genannten Preis für diesen Bio-Wein gezahlt hätten?

überhaupt nicht sicher			**weder noch**			**sehr sicher**
1	**2**	**3**	**4**	**5**	**6**	**7**

Im Folgenden sehen Sie eine Reihe von **Aussagen**. Einige dieser Aussagen **mögen ähnlich klingen**, aber sie betreffen **verschiedene Aspekte**.

8. Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den Aussagen zustimmen. „**1**“ bedeutet “**stimme überhaupt nicht zu**” und „**7**“ bedeutet “**stimme voll zu**“.

	stimme überhaupt nicht zu			**weder noch**			**stimme voll zu**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Ich weiß sehr viel über Wein.							
Ich fühle mich nicht sachkundig was Wein anbelangt.							
Innerhalb meines Freundeskreises bin ich einer der Wein-„Experten“.							
Im Vergleich zu den meisten anderen Leuten weiß ich wenig über Wein.							
Wenn es um Wein geht, weiß ich wirklich nicht viel.							

9. Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den Aussagen zustimmen. „**1**“ bedeutet “**stimme überhaupt nicht zu**” und „**7**“ bedeutet “**stimme voll zu**“.

	stimme überhaupt nicht zu			**weder noch**			**stimme voll zu**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Bio-Produkte sind besser für die Umwelt.							
Ich glaube, dass Bio-Produkte gesünder sind als konventionelle Produkte.							
Ich kaufe regelmäßig Bio-Produkte.							
Bio-Produkte sind zu teuer.							
Ich denke, dass der Einsatz von Pflanzenschutzmitteln notwendig ist für eine hohe Lebensmittelqualität.							
Bio-Produkte sind Betrug.							

10. Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den Aussagen zustimmen. „**1**“ bedeutet “**stimme überhaupt nicht zu**” und „**7**“ bedeutet “**stimme voll zu**“.

	stimme überhaupt nicht zu			**weder noch**			**stimme voll zu**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Bio-Wein ist besser für die Umwelt.							
Bio-Wein ist gesünder als konventioneller Wein.							
Ich kaufe regelmäßig Bio-Wein.							
Bio-Wein ist zu teuer.							
Ich denke, dass der Einsatz von Pflanzenschutzmitteln notwendig ist, um eine hohe Weinqualität zu gewährleisten.							
Bio-Wein ist Betrug.							

11. Bitte geben Sie auf einer **Skala von 1 bis 7** an, wie sehr Sie den Aussagen zustimmen. „**1**“ bedeutet “**stimme überhaupt nicht zu**” und „**7**“ bedeutet “**stimme voll zu**“.

	stimme überhaupt nicht zu			**weder noch**			**stimme voll zu**
	1	**2**	**3**	**4**	**5**	**6**	**7**
Es ist mir wichtig, dass die Produkte, die ich verwende, nicht schädlich für die Umwelt sind.							
Ich betrachte die möglichen Auswirkungen meiner Handlungen auf die Umwelt beim Treffen vieler meiner Entscheidungen.							
Meine Kaufgewohnheiten werden durch meine Sorge um unsere Umwelt beeinflusst.							
Ich bin besorgt über die Verschwendung der Ressourcen unseres Planeten.							
Ich würde mich selbst als umweltbewusst beschreiben.							
Ich bin bereit, Unannehmlichkeiten hinzunehmen, um umweltfreundlichere Maßnahmen zu ergreifen.							

12. Wie **alt** sind Sie?

[ ] Jahre alt.

13. Sind Sie?

- ☐ Weiblich
- ☐ Männlich
- ☐ Sonstiges _____

14. Was ist Ihr höchster **Schul- bzw. Bildungsabschluss**?

- ☐ Hauptschulabschluss
- ☐ Realschulabschluss, Handelsschule (Mittlere Reife)
- ☐ Abschluss der polytechnischen Oberschule
- ☐ Allgemeine Hochschulreife (Abitur)
- ☐ Ausbildung, Lehre
- ☐ Bachelorstudium
- ☐ Masterstudium
- ☐ Diplom
- ☐ Staatsexamen
- ☐ Promotion
- ☐ Ohne beruflichen Bildungsabschluss

15. Welche der folgenden Kategorien beschreibt ihren **Beschäftigungsstatus** am besten?

- ☐ Arbeitnehmer/in
- ☐ Selbstständig/e
- ☐ Studierende/r
- ☐ Auszubildende/r
- ☐ Nicht beschäftigt (arbeitssuchend)
- ☐ Nicht beschäftigt (nicht arbeitssuchend)
- ☐ Rentner/in

16. Wie viele **Personen**, Sie selbst inbegriffen, **leben in Ihrem Haushalt**? (Eine Wohngemeinschaft (WG) gilt nur dann als Haushalt, wenn gemeinsam eingekauft wird.)

☐ Person/en

17. Was ist Ihr **monatliches Nettohaushaltseinkommen**? Gemeint ist der Betrag, der sich aus allen Einkünften und Bezügen des Haushalts zusammensetzt, und nach Abzug von Steuern und Sozialversicherungen übrig bleibt. Eine Wohngemeinschaft (WG) gilt nur dann als Haushalt, wenn gemeinsam eingekauft wird.

☐ Unter 900 €

☐ 900 € - 1300 €

☐ 1301 € - 1500 €

☐ 1501 € - 2000 €

☐ 2001 € - 2600 €

☐ 2601 € - 3600 €

☐ 3601 € - 5000 €

☐ Mehr als 5000 €

☐ Ich möchte nicht antworten

18. **Wie viel** geben Sie normalerweise für eine 0,75L Flasche Wein aus, wenn Sie Wein für den **Eigenkonsum** kaufen?

☐ €

19. **Wie viel** geben Sie normalerweise für eine 0,75L Flasche Wein aus, wenn Sie Wein als **Geschenk** kaufen?

☐

Vielen Dank für Ihre Teilnahme!

APPENDIX 5: FURTHER MATERIAL FOR THE EXPERIMENT

Informed Consent

Einverständniserklärung – Teilnahme an der Studie

Bevor Sie an der Weinstudie teilnehmen, bitten wir Sie die folgenden Informationen zu lesen und soweit Sie einverstanden sind, die Einverständniserklärung zu unterzeichnen.

Der Genuss von Wein kann allergische Reaktionen bei prädisponierten Personen hervorrufen, das heißt bei Personen, die eine Allergie gegen Eier, Milch oder Milchderivate aufweisen. Wein enthält außerdem Sulfite, die nicht von allen Personen vertragen werden.

Die/der Unterzeichnende hat die oben aufgeführten Informationen gelesen und sie/er erklärt dass sie/er sich zum Zeitpunkt der Befragung keiner allergischen Reaktionen auf Wein und auf Gluten bewusst ist. Sie/er trinkt mindestens einmal im Monat Wein und hatte bisher niemals eine allergische Reaktion als Folge des Konsums von Wein. Der/dem Unterzeichnenden ist bewusst, dass die Universität Bonn für irgendwelche Schäden verantwortlich gemacht werden kann, die aufgrund von nicht korrekten Angaben zu Nahrungsmittelallergien verursacht wurden. Frauen sollten während der Schwangerschaft aufgrund der Gefahr von Geburtsfehlern keine alkoholischen Getränke konsumieren.

Die/der Unterzeichnende nimmt zur Kenntnis, dass alle von ihr/ihm übermittelten Informationen vertraulich behandelt werden und dass keine Informationen die offengelegt werden, weder durch die Forscher noch durch andere Parteien zu einer Identifizierung der Person in Veröffentlichungen führen.

Die/der Unterzeichnende stimmt der Verarbeitung ihrer/seiner persönlichen Daten für den Zweck dieser Studie zu. Sie/er versteht, dass diese Informationen streng vertraulich und gemäß der EU-Datenschutz-Grundverordnung behandelt werden. Die Teilnahme an der Studie erfolgt freiwillig. Es besteht die Möglichkeit, die Teilnahme an dieser Studie jederzeit und ohne Angabe von Gründen abzubrechen, ohne dass ihr/ihm daraus Nachteile entstehen.

Für eventuelle Rückfragen und weitere Informationen stehen wir Ihnen jederzeit per E-Mail unter s7jamach@uni-bonn.de zur Verfügung.

Ich habe die Angaben gelesen, verstanden, akzeptiert und erkläre hiermit, dass

- **ich an der Weinprobe und der entsprechenden Befragung teilnehmen möchte.**
- **ich damit einverstanden bin, dass die von mir erhobenen Daten für den oben angegebenen Zweck verwendet werden.**

_____ _____

(Ort, Datum) **(Unterschrift)**

Posters

UNIVERSITÄT BONN

WAGENINGEN
UNIVERSITY & RESEARCH

Sie trinken gerne **Wein**?

Sie sind mindestens **18 Jahre** alt?

Sie haben **10 Minuten** Zeit?

Dann machen Sie mit bei unserer Weinstudie!

UNIVERSITÄT BONN

WAGENINGEN
UNIVERSITY & RESEARCH

Probieren Sie Wein!

Welcher Wein schmeckt Ihnen besser?

Material List

Material	Number
Bottles of white wine	Approx. 22 bottles; 0.75L*22=16.5L, 2-4cl per glass= 412 - 206 persons
Glasses	Approx. 120
Crackers	1-2 per person= 300
Napkins	3 packs
Cakes	2 sheet cakes per day
Water without gas	0.2L per person= 32L (160 persons)= ca. 22 1.5L bottles
Cups for water	160 pieces
Spit cup	2
Garbage bags	6
Table for welcoming participants and organization of wine glasses --> foldable tables	2
Bistro tables for filling in the questionnaires and tasting the wine	2
White tablecloths (paper)	2 for high tables und 4 for foldable tables
Posters	4 (2 for foldable tables in A2 and 1 per high table in A3)
Cooling box for approx. 6 bottles of wine	1
Questionnaires a. first organic, then conventional b. first conventional, than organic	Approx.110 Approx.110
Informed consent	220 sheets
Pens	min. 15, 5 per bistro table, 5 for informed consent
Folders to organize the completed questionnaires and the informed consent sheets	4
White tape for preparation of wine bottles, so that the brand is not visible	1 roll
Label with “Riesling from the Pfalz region, 2016” on it and with and without organic labels	Each label 4 times per day
Stickers with organic labels for glasses	Reusable, around 100 to 200
Supporters and name badges for all supporters	2-3 per day (Jan Schultes, Julia & Pascal Reichwald, Lisa Petry, Leoni Voß, Anne Kaps, Patrick Raulff)

Script for Recruitment and Guiding Participants

Recruitment

Guten Tag!/ Hallo!

Trinken Sie regelmäßig (mindestens 1mal pro Monat Wein) und mögen und trinken Sie trockenen Weißwein? Dann nehmen Sie doch an unserer kostenlosen Weinverkostung teil! Wir führen diese im Rahmen einer Masterarbeit durch und würden uns sehr freuen wenn Sie uns dabei unterstützen!

Das Ganze dauert etwa 10 Minuten und zur Belohnung dürfen Sie sich gerne ein Stück Kuchen nehmen!

Guiding Participants

Herzlich willkommen bei unserer Weinstudie. Schön, dass Sie teilnehmen möchten!

Die Umfrage dauert ca. 10 Minuten. Sie dürfen 2 Weine probieren und füllen einen Fragebogen aus. Als Dankeschön können Sie sich im Anschluss gerne ein Stück Kuchen nehmen.

Zunächst muss ich Sie allerdings bitten sich die Einverständniserklärung durchzulesen und bei Zustimmung zu unterschreiben. Es geht darum, dass Allergene in Wein enthalten sind und dass Ihre Daten anonymisiert verwendet werden.

Nun können wir beginnen. Der Fragebogen ist in 2 Teile aufgeteilt und wir bitten Sie den ersten Teil abzugeben, bevor Sie mit dem zweiten Teil fortfahren.

Haben Sie soweit noch Fragen?

Gut, dann zeige ich Ihnen jetzt diese 2 Weine. Beide stammen aus der Region Pfalz und haben den gleichen Alkoholgehalt sowie den gleichen Jahrgang. Allerdings ist der eine ein konventioneller Wein und der andere ein Bio-Wein. (Wir haben die Etiketten entfernt und Marken verdeckt, damit Sie nicht durch zusätzliche Informationen beeinflusst werden.)

Füllen Sie nun bitte den ersten Teil des Fragebogens aus. Falls Sie Fragen haben, können Sie sich gerne bei mir melden. Wenn Sie fertig sind, geben Sie den ersten Teil bitte bei mir ab.

(Nach Abgabe des Fragbogens)

Jetzt dürfen Sie die Weine probieren! Es steht auch ein Spuckbecher bereit, falls Sie den Wein nicht trinken möchten. Außerdem gibt es Wasser und Cracker zum Neutralisieren. Wenn Sie möchten, nehmen Sie gerne auch schon vor der Probe einen Cracker und Wasser zum Neutralisieren. Dann muss ich Sie allerdings bitten auch vor dem zweiten Wein einen Cracker zu essen.

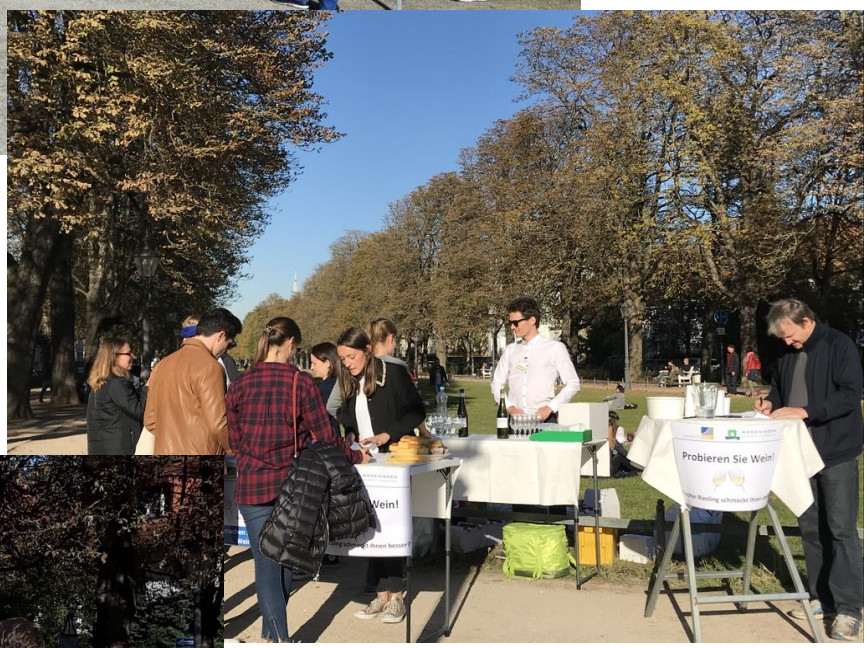
Hier haben Sie zunächst den Bio-Riesling. Bitte probieren Sie ihn und bewerten ihn anschließend. Geben Sie auch an, wie viel Sie bereit wären für diesen Wein (0,75L Flasche) zu bezahlen. --> Ausfüllen der ersten 3 Fragen (6.1 bis 6.3)

Dies ist der konventionelle Wein. Nach der Bewertung füllen Sie bitte einfach den restlichen Fragbogen aus und geben ihn am Ende bei mir ab.

Bei Fragen oder Unklarheiten können Sie sich gerne bei mir melden.

Vielen Dank für Ihre Teilnahme! Nehmen Sie sich gerne ein Stück Kuchen!

Photo Impressions



APPENDIX 6: PERSONAL DECLARATION

Personal Declaration

I hereby affirm that I have prepared the present thesis self-dependently, and without the use of any other tools than the ones indicated. All parts of the text, having been taken over verbatim or analogously from published or not published scripts, are indicated as such. The thesis has not yet been submitted in the same or similar form, or in extracts within the context of another examination.

Bonn, 15th of April 2019

Student's signature