

## Price information influences the subjective experience of wine: A framed field experiment

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### ABSTRACT

Past experimental laboratory and correlational data from observational research has shown that knowledge of the price of wine influences the consumer's subjective experience. However, there is limited prior research that has explicitly manipulated price information in a realistic wine tasting setting. A total of 140 participants tasted three different low-, mid- and high-priced wines with open, deceptive, or no price information and rated them for taste intensity and pleasantness. In our community sample, intensity of taste ratings for open, deceptive and blind price information reflected retail prices, thus more expensive wines were rated as more intense in taste. However, while pleasantness ratings did not differ for open and no price information, deceptive up-pricing of low-price wine significantly influenced ratings for pleasantness, whereas deceptive down-pricing of high-price wine had no effect on pleasantness ratings. Thus, pricing information differentially influences the consumer's subjective experience of wine, with no effects on intensity of taste ratings and no effects on pleasantness ratings with correct or no price information, but increased pleasantness of low-price wine when provided with a deceptive higher price. Thus, in wine may lay the truth, but its subjective experience may also lie in the price.

### 1. Introduction

When evaluating goods, more expensive products are assumed to have a higher intrinsic quality and should therefore lead to a superior consumer experience compared with cheaper products (Boyle & Lathrop, 2009). The assumption of a positive association between the price and intrinsic qualities of a product is central to consumer behavior and should also be true for wine.

To investigate the impact of different information on consumers evaluation of goods it is often useful, if not necessary to present deceptive information. The use of deception in research is a controversial topic in economics, with pleas to proscribed deception in experiments completely (Friedman & Sunder, 1994) to the acknowledgment of its potential benefits for the validity of data and experimental control (Bonetti, 1998). Contrary to economists, psychological researchers have embraced deception for years and developed ethical guidelines when it is acceptable to use deception. The American Psychological Association's ethical principles of psychologists and code of conduct states that

deception of experimental participants is acceptable when the study's deceptive techniques are justified by the significant prospective scientific, educational, or applied value and that nondeceptive alternative procedures are not feasible (American Psychological Association, 2016).

Besides the price there are many other sources of information that can influence a consumer's expectations about the quality of a wine, like expert ratings, geographic information about the country of origin, and certification of organic production (Lockshin & Corsi, 2012). Experimental studies have demonstrated that consumers generally follow the advice of experts. When exposing wine consumers to expert opinions, Chocarro and Cortiñas (2013) have demonstrated that consumers' ratings of wine improved if exposed to positive reviews and decreased if exposed to negative reviews. Similarly using an experimental approach, Hilger, Rafert, and Villas-Boas (2010) found that demand decreases for wines scoring low according to experts and increases for average or higher scoring wines. Further, multiple studies showed the important association between consumers' wine evaluation and the wine's country or region of origin (Balestrini & Gamble, 2006; Corduas, Cinquanta, &

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Ievoli, 2013; Gil José & Sánchez, 1997; Perrouty, d'Hauteville, & Lockshin, 2006). The Russian wine market for example seems to be segmented with Italian and French wines dominating the high-quality, high-price segment, followed by Spanish wines in the middle segment and many different less-known countries supplying the low-quality segment of cheap wines (Cicia, Cembalo, Del Giudice, & Scarpa, 2013). There has been some research conducted how the information presented on the back label of wine bottles influences consumers' intention to buy wine. Mueller, Lockshin, Saltman, and Blanford (2010) examined different back label statements and found that overall winery history, elaborate taste descriptions and food pairing were highly valued by consumer, while ingredient information exhibited a large negative effect. An online survey study investigating the effects of back label information on consumers' buying intentions replicated the finding about taste descriptions and further found that trust with the winery and statements about environmentally friendly productions were associated with larger buying intentions when consumers had some organic wine knowledge (Kim & Bonn, 2015).

The source of information influencing consumers' evaluations of wines that received the most attention is the price (Oczkowski & Doucouliagos, 2015). The general assumption as with most goods is that higher prices would reflect higher quality of wine and in turn result in higher subjective experience ratings (Mastrobuoni, Peracchi, & Tetenov, 2014). Subjective experience can include a plethora of different aspects like taste, smell, colour et cetera when referring to wine. In this experiment we refer to subjective experience of wines as an umbrella term for pleasantness and taste intensity. However, there is evidence that the price of wine does not necessarily reflect the consumer's subjective experience. In a laboratory experimental setting involving subjective ratings of pleasantness and intensity as well as neural activity, Plassmann, O'Doherty, Shiv, and Rangel (2008) reported that price information can modulate the experienced pleasantness, but not taste intensity of wines. This effect was apparent not only for the subjective ratings but also on a neuronal level. In their functional Magnetic Resonance Imaging (fMRI) study, twenty participants received either no, open, or deceptive price information and subsequently tasted three wines, which differed in their actual retail price. When tasted blindly there was no association between retail price and the consumer's pleasantness ratings. Interestingly, however, higher deceptive prices were associated with higher pleasantness ratings, while lower deceptive prices coherently led to lower pleasantness ratings, independent of the actual retail price. These results were corroborated by blood-oxygen-level-dependent activity in medial orbitofrontal cortex, which was higher for the high- than the low-price condition. Contrary to the subjective pleasantness ratings, participant's ratings about the intensity of taste were not influenced by experimentally manipulated prices. Likewise, a more recent fMRI study confirmed these effects of price cues on taste pleasantness ratings (Schmidt, Skvortsova, Kullen, Weber, & Plassmann, 2017).

Employing a more naturalistic design, Goldstein et al. (2008) examined the association between wine ratings and the actual retail prices in a sample of 523 different wines tasted by 506 wine club members in a blinded fashion (i.e. no price information). They found that only wine experts rated more expensive wines as more enjoyable, whereas the relationship between price and subjective ratings of lay people was slightly negative. This absence of a positive association between actual price and enjoyment ratings has been replicated in blind tastings of six different wines in a different group of wine club members (Ashton, 2014). Furthermore, Almenberg and Dreber (2011) evaluated wine ratings when consumers were blind or presented with the actual retail price information presented either before or after tasting. In accordance with the studies mentioned above, they found no relationship between retail price and wine pleasantness ratings during blind tastings. However, they observed that presenting the expensive retail price before testing increased women's, but not men's wine ratings.

Taken together these studies have two important implications. First,

they suggest that for the majority of lay people, when price information is hidden, there is no relationship between the subjective experience and actual retail price of wine. Second, they suggest that when open or deceptive price information is presented, lay-people's subjective ratings are consistent with the price information they receive, i.e., they rate more expensive wines as more pleasant, irrespective of whether the wine is more expensive or not.

The influence of price on consumer's experience ratings is important for both consumer behavior, i.e., on what to base one's own buying decision, as much as for the wine pricing. Considering that the global wine market is valued at approximately USD 300 billion, with an expected increase to USD 420 billion by 2023 (Zion Market, 2018), a better understanding of the influence of pricing on consumer's experience could benefit both consumers and producers of wine.

So far, research on wine and its pricing were based on two methodological approaches. While studies conducted in observational settings are strong regarding their external validity, they only indirectly offer insight into the dynamics of pricing on consumer's experience. This is especially the case since no field experiment so far was conducted that has experimentally manipulated price information. On the other hand, highly controlled laboratory (fMRI) studies can give us an insight into the isolated effects of pricing controlling for confounding variables while measuring the neural mechanisms underlying the subjective experience. However, these studies are limited in their external validity. For instance, in the studies by the Plassmann lab participants received small amounts of wine through a plastic tube to taste the wine while placed in the fMRI (Plassmann et al., 2008; Schmidt et al., 2017).

Consequently, we set out to evaluate how experimentally manipulated pricing of wines affect consumers subjective experience in a more realistic setting using a framed field experimental approach as defined by Harrison and List (2004).

This was done with regards to both pleasantness and intensity of taste to get a more comprehensive understanding of the influence of price on consumer's experience. We chose to combine both advantages of the two approaches and experimentally manipulated price information in a more realistic context and with a large community-based sample. This approach offered the advantage to investigate the effect of price information on wine ratings in the presence of other naturally occurring stimuli and influences on participants but came with the cost that other stimuli might reduce or even cancel the effects of price information when investigated as the only present stimulus. Based on the aforementioned findings we a priori hypothesized that altered prices will lead to different pleasantness ratings in the direction of changed price labels (H1), but not changed intensity of taste ratings (H2), and that wine ratings for blind tasting will reflect the true hierarchy of quality as established by both wine experts and retail prices (H3).

## 2. Method

This study was conducted at a public event at the University of Basel called "Uni Nacht". During this event, all buildings of the university are open to the interested public. All departments across faculties organize events to entertain and inform visitors, ranging from public readings for children, the display of theatre plays, food stands, demonstrations of scientific experiments, and a large area with information stands introducing people to the various ongoing scientific project. The experiment took place in the large open area with all the food and information stands. Our information stand was kept neutrally looking and only displayed that the team was part of the Faculty of Psychology and that we were conducting a wine tasting. Six small tables were placed next to the information stand so participants could individually participate in the experiment. All instructions given to participants as well as the experiment's technical procedure followed a standardized experimental protocol. The study, including the use of deception was approved by the Institutional Review Board of the Faculty of Psychology of the University of Basel. The only inclusion criterion was the legal age requirement for

wine consumption in Switzerland, so participants had to be at least 16 years of age. Exclusion criteria were any mental disorders, somatic illness, or condition which prohibited the consumption of alcohol by self-report. Participants did not receive any financial reimbursement and could participate free of any charges for the consumed wines. Because participants were deceived about the real purpose of the study they were debriefed immediately after the last data collection about the nature of the study and asked to provide delayed consent for their tasting data to be used upon finishing participation.

### 2.1. Wines

The three red wines used in our experiment originated in Italy and were produced in 2013. Wine A (Montepulciano d'Abruzzo DOC, 2013, Bisanzio, Citra) had not been evaluated by wine experts and had a retail price of 10 CHF (approximately USD 10) per bottle. Wine B (Bolgheri DOC, 2013, Villa Donoratico, Tenuta Argentiera) achieved 94 out of 100 points, according to the wine expert James Suckling and had a retail price of CHF 32 (approximately USD 32). Wine C (Toscana IGT, 2013, Saffredi, Fattoria Le Pupille) achieved a score of 98 out of 100 points, according to expert James Suckling and had a retail price of CHF 65 (approximately USD 65) per bottle. Following Suckling's wine rating scale (ranging from 0 to 100), Wine B falls within the category of medium quality wines, whereas Wine C is regarded as outstanding, as he recommends buying wines scoring <88 points with caution (Suckling, 2019).

### 2.2. Procedure and experimental wine labelling

The experiment consisted of a 15-minute session with a maximum of six participants tasting wines in parallel at any given time. After interested participants approached the information stand, they were greeted by one of the experimenters. After the experimenter had introduced the participant to the purpose and procedures of the wine tasting they were guided to their individual table and instructed not to communicate or interact with other participants during the wine tasting so social

influences or interactions would not confound the tastings. Each participant completed informed consent and provided demographic data. Then experimenters placed six small glasses of wine (10 ml) and a glass of water in front of the participant. Participants were instructed to taste the wines in a specific sequence that was fully randomized between participants and rated each wine for pleasantness and taste intensity. Between tasting each of the six wines, volunteers were instructed to rinse their mouth with water. After participants were finished with the wine tasting they were debriefed about the real purpose of the experiment and asked to give delayed consent.

Three of the six glasses contained the three different wines without price information (blind). Of the remaining three glasses, one glass always contained wine B labelled with the open retail price (32 CHF), one glass contained wine A either labelled with the open retail price (10 CHF) or with deceptive fourfold increased price (40 CHF) and one glass contained wine C either with the open retail price (65 CHF) or with deceptive fourfold decreased price (16 CHF). These combinations resulted in a total of four different conditions, to which participants were randomly allocated by an online survey system (LimeSurvey Project, 2015). Please see Fig. 1 for an illustration of the four experimental price labelling conditions participants were randomized to.

### 2.3. Participants

Participants were recruited during an event for the general public at the University of Basel. Interested participants were recruited and informed under the guise that the aim of the study was to evaluate the quality of different wines. In total, 140 participants (77 women and 63 men) were enrolled in the study. Participant's age ranged from 16 years, the legal age for the consumption of wine in Switzerland to 78 years ( $M = 30.3$ ,  $SD = 11.7$ ). All 140 participants agreed to the use of their data after having received the information about the real purpose of the study during the delayed informed consent process. The participant flow is included in Fig. 1.

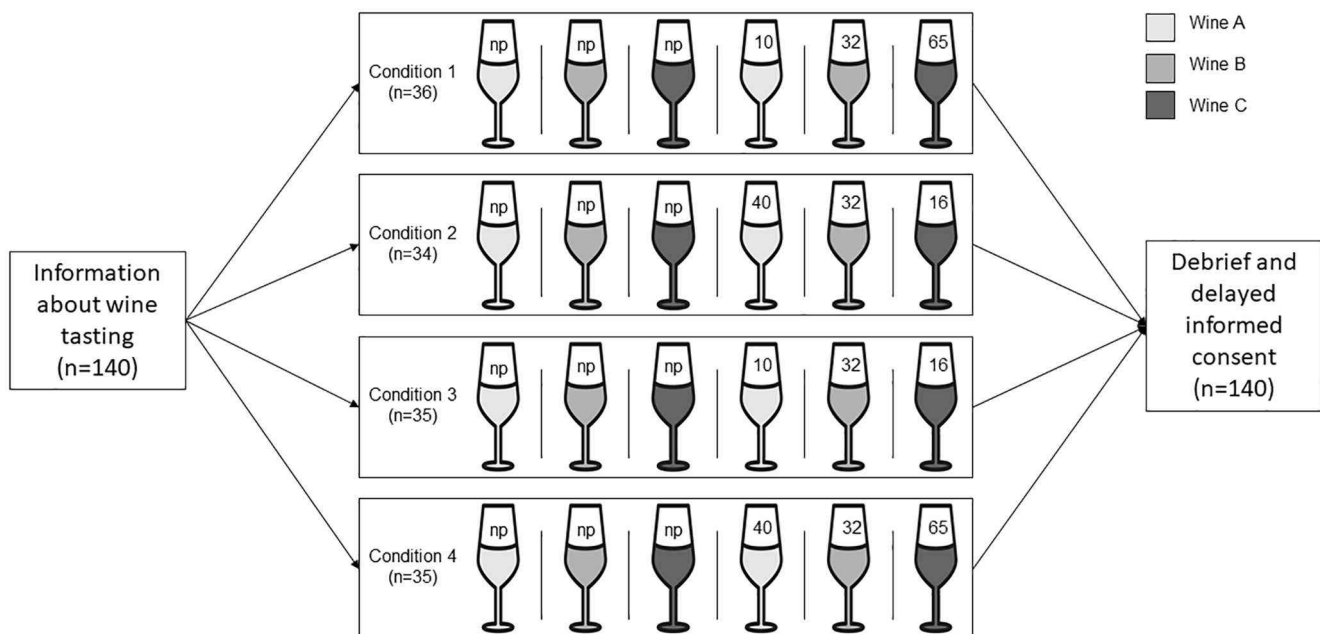


Fig. 1. Experimental Design and Participant Flow.

Note. Participants were randomly allocated to one of the four experimental labelling conditions. The tasting order of the six wine glasses each participant received was again completely randomized to avoid any order effects. Each participant received each wine without price information (np), Wine B with the open retail price (32 CHF), Wine A with the open retail price (10 CHF) or the deceptively increased price (40 CHF), and Wine C with the open retail price (65 CHF) or the deceptively decreased price (16 CHF).

## 2.4. Variables

The dependent variables were experienced pleasantness and intensity of taste of the wine. Similarly to Plassmann et al. (2008) we used visual analogue scales (VAS) to assess pleasantness and taste intensity of wines as this is a long standing and convenient method to assess psychometric measures, with its first documented use in 1921 (Yeung & Wong, 2019). Further, VAS like we used with extreme endpoints ranging from 1 (“I do not like it at all”/“The wine is not intense at all”) to 6 (“I like it very much”/“The wine is very intense”) generally have demonstrated good reliability, especially when used in repeated measure designs (Bartoshuk et al., 2003). As control variables we assessed participants sex and age. Additionally, we wanted to gain some insights into the prior exposure and experience of the overall sample with wine and asked participants “Do you like wine?” and “Do you sometimes drink wine?” using yes/no questions. All variables were assessed using iPads running Lime Survey (LimeSurvey Project, 2015).

## 2.5. Statistical analysis

For all statistical tests, the significance level was set to 5% and we did not control for the familywise error rate across the reported statistical analyses. Statistical analyses were performed using the software environment R version 3.5.1 (R Core Team, 2019). For the categorical control variables, we calculated within-subject analysis of variance (ANOVA) using the aov() function, to account for the fact that all participants submitted multiple ratings. For the continuous variable age and alcohol content, we calculated a linear regression analysis using the lme() function from the nlme package to assess a possible association with wine ratings (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2019). To analyze blind wine ratings, we performed within-subject ANOVA to see if the three wines differ in taste intensity and pleasantness. Mixed-effect ANOVAs were performed to analyze the main effects of type of wine (wine A vs. wine C) and price manipulation (open retail price vs. manipulated price) and the interaction between type of wine and price manipulation on the experienced taste intensity and pleasantness. Two sample t-tests were calculated for pairwise comparisons.

## 3. Results

Of the 140 total participants 135 (96%) reported drinking wine on a

regular basis and 9 (6%) reported that they did not particularly like wine. Subjective wine ratings were not influenced by gender ( $F(1,139) = 0.00, p = 0.98$ , women  $M = 2.93, SD = 1.52$ ; men  $M = 2.92, SD = 1.52$ ), whether participants reported to like wine or not ( $M = 2.93, SD = 1.50$ ;  $M = 2.80, SD = 1.79$ ;  $F(1,139) = 0.27, p = 0.60$ ) or whether participants reported to drink wine on a regular basis or not ( $M = 2.93, SD = 1.51$ ;  $M = 2.76, SD = 1.69$ ;  $F(1,139) = 0.28, p = 0.60$ ). The continuous control variable age had a small, but statistically significant association with subjective wine ratings  $F(1,139) = 5.61, p = 0.02$ . Participants' overall predicted wine ratings were equal to  $3.27 - 0.01$  (years) age when liking and taste intensity are measured on the VAS. This means that for an increase in participant's age of one year the mean wine rating decreases by 0.01. Alcohol content of the wines was not associated with participants wine ratings  $F(2,139) = 0.70, p = 0.40$ .

Subjective ratings for wines labelled with open retail prices differed for intensity of taste ratings  $F(2,278) = 10.34, p < 0.001$ , again with ratings following real retail prices (wine A ( $M = 2.78, SD = 1.25$ ) < wine B ( $M = 3.29, SD = 1.47$ ) < wine C ( $M = 3.76, SD = 1.44$ ); pairwise t-tests were significant for the comparison between the wines A and B ( $p = 0.04$ ) and C ( $p < 0.001$ ), but the difference between the wines B and C did not reach statistical significance ( $p = 0.06$ ); see Fig. 2). Pleasantness ratings for open retail prices did not differ between the three wines ( $F(2,278) = 0.82, p = 0.44$ , with wine A ( $M = 2.53, SD = 1.49$ ), wine B ( $M = 2.66, SD = 1.43$ ), wine C ( $M = 2.60, SD = 1.47$ ); see Fig. 3).

Pleasantness ratings (H1) showed no significant main effect of type of wine ( $F(2,278) = 3.10, p = 0.08$ ) and no significant main effect of price manipulation ( $F(1,139) = 0.65, p = 0.42$ ). The interaction was significant ( $F(1,139) = 4.89, p = 0.03$ ) demonstrating an overall effect of deceptively increasing the price of wine A and decreasing the price of wine C. The pairwise comparisons of deceptive up-pricing significantly increased ratings of pleasantness of wine A ( $t(139) = -2.00, p = 0.02$ , with open retail price “CHF10” ( $M = 2.53, SD = 1.49$ ) and deceptive high price “CHF40” ( $M = 3.04, SD = 1.55$ ); see Fig. 3). It is noteworthy that deceptively increasing the price for wine A to “CHF40” above the open retail price of wine B “CHF32” lead to higher pleasantness ratings for wine A ( $M = 3.04, SD = 1.55$ ) compared to wine B ( $M = 2.66, SD = 1.43$ )  $t(139) = 1.73, p = 0.04$ . On the other hand, deceptive down-pricing had no influence on subjective pleasantness ratings for wine C ( $t(139) = 0.94, p = 0.18$ , with open retail price “CHF65” ( $M = 2.60, SD = 1.47$ ) and deceptive low price “CHF16” ( $M = 2.36, SD = 1.52$ ); see Fig. 3).

Intensity of taste ratings (H2) showed a significant main effect of

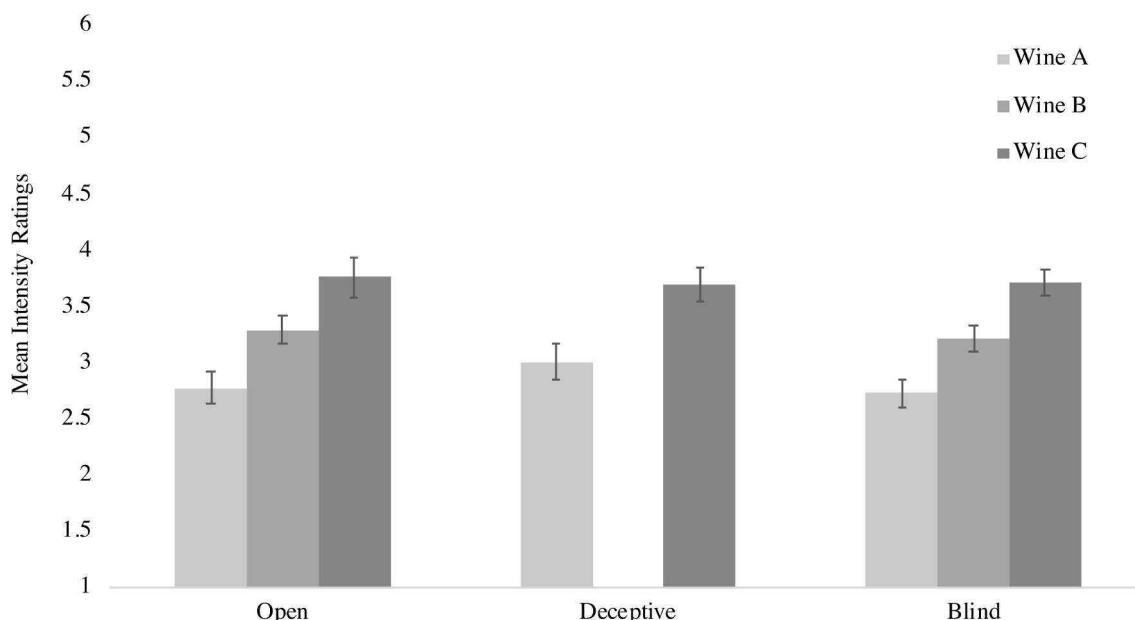


Fig. 2. Mean Intensity of Taste Ratings for the three Wines and Label Conditions. Note. Error bars depict standard errors of the mean.

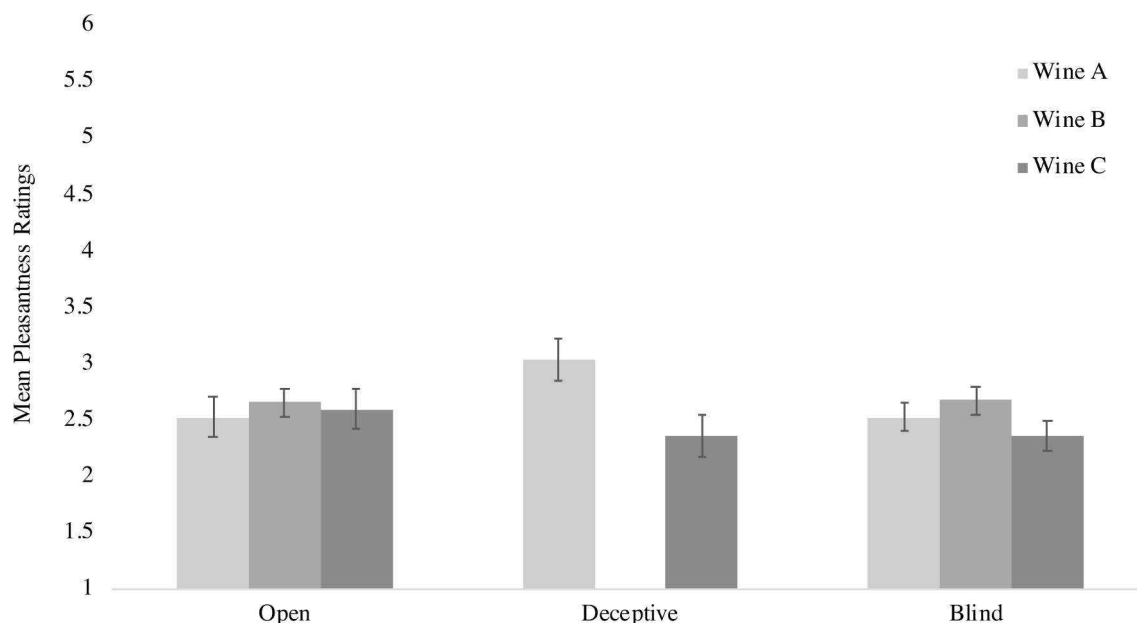


Fig. 3. Mean Pleasantness Ratings for the three Wines and Label Conditions. Note. Error bars depict standard errors of the mean.

type of wine ( $F(2,278) = 30.84, p < 0.001$ ) but no significant main effect of price manipulation ( $F(1,139) = 0.03, p = 0.86$ ). The interaction was not significant ( $F(1,139) = 2.16, p = 0.14$ ) demonstrating no overall effect of deceptively increasing the price of wine A and decreasing the price of wine C. The pairwise comparison of deceptive pricing as well showed no influence on taste intensity ratings of wine A  $t(139) = -1.04, p = 0.15$ , with open retail price “CHF10” ( $M = 2.78, SD = 1.25$ ) and deceptive high price “CHF40” ( $M = 3.01, SD = 1.36$ ), and wine C  $t(139) = 0.30, p = 0.38$ , with open retail price “CHF65” ( $M = 3.76, SD = 1.44$ ) and deceptive low price “CHF16” ( $M = 3.69, SD = 1.26$ ), see Fig. 2.

When presented blindly (H3), the three wines differed significantly in subjective intensity ratings  $F(2,278) = 26.54, p < 0.001$ , with intensity ratings following real retail prices (wine A ( $M = 2.73, SD = 1.47$ ) < wine B ( $M = 3.22, SD = 1.37$ ) < wine C ( $M = 3.72, SD = 1.39$ ); all pairwise t-tests were significant for the comparison between the wines A and B ( $p = 0.002$ ), A and C ( $p < 0.001$ ), and B and C ( $p = 0.001$ ); see Fig. 2). However, subjective pleasantness ratings did not differ between the three different wines when tasted blindly ( $F(2,278) = 1.91, p = 0.15$ , wine A ( $M = 2.53, SD = 1.56$ ), wine B ( $M = 2.68, SD = 1.49$ ), and wine C ( $M = 2.36, SD = 1.59$ ); all pairwise t-tests were non-significant with  $ps > 0.20$ ; see Fig. 3).

#### 4. Discussion & conclusion

We set out to assess the impact of experimental price manipulation on subjective experience of wines using a framed field experiment. Therefore, lay-people tasted three different wines provided with real, no, or deceptive prices during a public university event and rated them on subjective intensity of taste and pleasantness.

Regarding the influence of experimentally manipulated price information, ratings for subjective intensity of taste followed the actual retail price but were not influenced by the deceptive price information. Thus, the taste intensity of the wine experience was rated as more intense with increasing actual retail prices (and expert ratings, when available), regardless of whether the real, no, or deceptive price information was given. In contrast, while subjective ratings of pleasantness did not differ between wines when provided with real retail or no prices, subjective pleasantness was differentially influenced by deceptive pricing as the cheapest wine was rated as more pleasant when presented as fourfold of its actual retail price. No effect was found when decreasing the price label of the expensive wine by a fourfold. Age was the only control

variable that had an effect on overall wine ratings, with older people generally giving lower ratings. Although, this effect was significant we would like to acknowledge that this was a small effect and that other researchers did not find significantly different wine ratings when comparing a young participant group aged 25 to 40 years old to an old participant group aged above 50 years (Bazala, Knoll, & Derndorfer, 2015).

Our results regarding price manipulations confirmed our hypotheses and are in line with Plassmann’s prior research demonstrating that manipulations in prices lead to differently experienced pleasantness rating (H1) and that changes in price information do not influence intensity of taste ratings (H2) (Plassmann et al., 2008; Schmidt et al., 2017). In contrast to the two studies from the Plassmann lab our high-price wine was not significantly influenced by a deceptively lowered price, which is partially in line with Almenberg and Dreber (2011) who reported that a high price did increase the overall wine ratings in women. As an explanation for this finding, it can be speculated that the realistic setting of the field experiment and slightly altered methods in our experiment could have diminished the effect of price information on subjective wine ratings. Compared to the two prior studies from the Plassmann lab (Plassmann et al., 2008; Schmidt et al., 2017), where price information was the only available cue in their highly controlled laboratory setting, our experiment was situated in a lively public university event, with multiple naturally occurring environmental cues like smell, color, and noise. These cues could have potentially lowered the impact of the price information on wine ratings, as participants did not only pay attention to the price information presented. This might explain why we have observed diminished effects of the price information on wine ratings, compared to the earlier highly controlled laboratory studies where the only stimulus participants had to pay attention to was the price information. In line with our results, most experiments employing blind wine ratings did not find a relationship between subjective pleasantness and retail prices (H3) (Almenberg & Dreber, 2011; Ashton, 2014; Plassmann et al., 2008; Schmidt et al., 2017). Only Goldstein et al. (2008) found a positive association between retail price and blind liking when analysing a subgroup of his study comprising wine experts. On the other hand, our results for blind taste intensity ratings show a clear hierarchy, which reflects the actual retail prices. No other study so far has assessed or reported blind taste intensity ratings.

This study does not come without limitations. Our price manipulation was restricted to the cheap and the expensive wine and was

manipulated in only one direction, thus not for each wine as for example in the study by Schmidt et al. (2017). We decided against this approach, because presenting participants with all possible combinations using normal wine glasses as usual in realistic wine tastings would result in a total amount of 12 glasses of wine, possible overwhelming our lay participants. Also, other factors, as for instance the color of the wine, might have influenced the rating except from price information because the glasses were transparent. Since we did not control for these factors, we cannot make any assumption about their influence. Therefore, further studies might be necessary. For the purpose of this study, we have used deception and presented participants with manipulated price information. Because we did not ask participants what they thought the study was about we cannot rule out that some participants realized that they tasted the exact same wine twice, but with different price labelling. Also, we would like to acknowledge that we did not assess participant's prior knowledge of wine, which could have influenced their ratings. Further, pleasantness and taste intensity are not the only possible criteria to evaluate wines. Lastly, we want to mention that the three wines did not originate from the same winery and differed in their denomination, which might have confounded the between wine analysis we have presented. Based on our findings and the fact that most prior studies only focused on pleasantness we argue that future research about subjective ratings of goods should not only focus on the pleasantness domain, but include more diverse measures including intensity of taste, color, and smell. Another possible limitation associated with this study is that the increase in familywise error rate across the statistical analyses was not controlled and we therefore encourage replication. Based on our results, there seems to be some truth in wines, at least with respect to subjective ratings of taste intensity. This gives credibility to the ancient term "in vino veritas", but with regard to subjective pleasantness, price matters. Our finding that lay-people can be tricked to find budget wines more pleasant by deceptive higher pricing could be considered a two-edged sword as this could both be used to enhance consumers experience as well as wine-sellers profit. Therefore, it is important to educate the general public about this effect so consumers can be aware of this potentially implicit influence when buying and evaluating their wines.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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#### Authors' contribution

CW, JB, CL, HG, JG contributed to the study conceptualization and design. CW, JB, CL, HG, NH, collected data. CW, BC, JG conducted the analysis and drafted the manuscript. All authors provided critical revision on the draft, approved the analyses and the final version of the manuscript for submission.

#### Data availability

The full dataset and analysis syntax for this study are available on Christoph Patrick Werner's Open Data Science repository, [www.osf.io/](http://www.osf.io/)

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