

What Counts Most?

How Price, Country of Origin and Nationality Dynamically Affect Consumer Preference

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Background

Framing is a well-established research method in neuroeconomics and consumer neuroscience. Framing effects of price, country of origin (CoO), and brands have all been demonstrated in many different conditions. Neuroimaging studies have shown that market information is associated with rapid and specific neural changes that participants are unaware of (Plassmann et al., 2008; Kirk et al., 2009; Erk et al., 2002). Studies of brain responses to culturally familiar brands have shown the engagement of neural structures involved in mnemonic processing (McClure et al., 2004). Pricing research demonstrated that price is used as a primary factor to evaluate the quality of products such as wine (Szybillo & Jacoby, 1974), and that price cues as high price can enhance both the product preference and willingness to pay (WTP) (Doods, Monroe, & Grewal, 1991). Research on the country of origin (CoO) effects on preference has shown that belief in where a product comes from can have a substantial effect on the product quality perception (Ehmke, Lusk, & Tyner, 2007). Price and branding are well known to produce effects of expectancy, preference and ultimately choice, however, there is still a lack of neurobiological and neurophysiological understanding of the relative strength of these effects, and how they may dynamically interact.

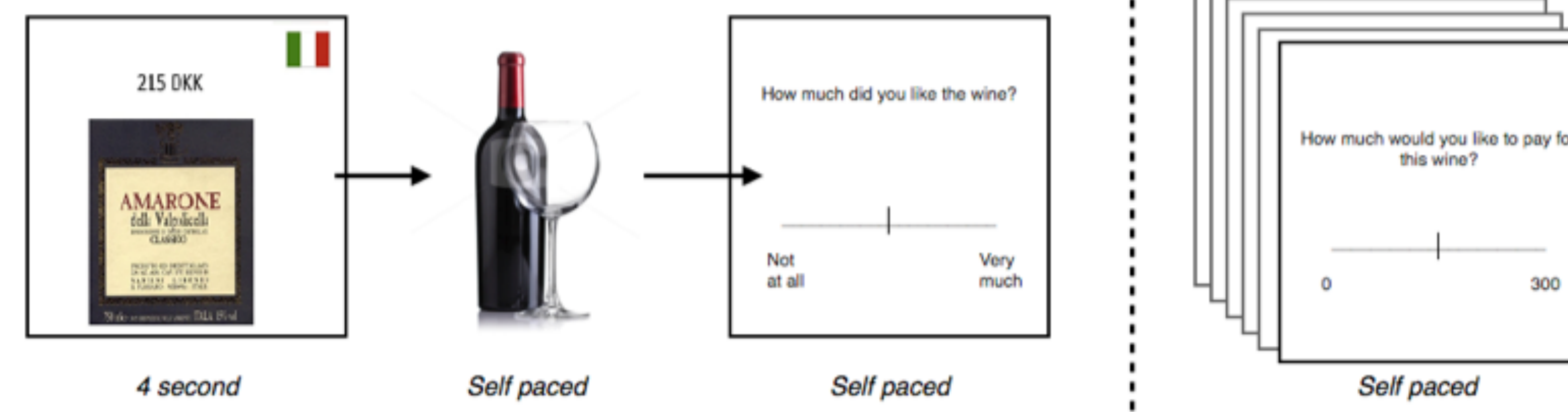
Motivation

The aim of this study was to:

- ...test the individual price and CoO information effects on product preference and WTP,
- ...study the dynamic interaction effects of price, CoO on taste experience,
- ...investigate the the individual and combined effects of price, CoO, and different nationalities on WTP,
- ...study whether framing effects were different during framing and product evaluation time points.

Methods

- Subjects:** 98 participants (age 22.6±1.5, 52 males) with no self-reported neurological or psychiatric disorder, were recruited from three nationality groups (Italy, France and rest of world). At enrollment, subjects read and signed an informed consent, and were initially informed and trained with the experimental procedure.
- Stimuli:** six branded red wine labels were presented twice in a fixed pseudorandom order, but unknown to the subject together with its price (high or low) and CoO (Italian, Mexican or French) on the computer screen for two groups in counterbalanced manner.
- Data collection** was performed using a high-resolution Tobii T60 XL eye tracker running at 60 Hz with a 1920x1200 pixel screen resolution and an approximate viewing distance of 60 cm, where stimulus presentation and data collection was done using Attention Tool version 4.5 (iMotions Inc., www.imotionsglobal.com). Confounding variables were controlled by seating the participants in the fixed chair position and going through the 9-point eye calibration procedure before starting each study.
- Data analysis** was done by running the statistical data analysis in JMP version 9.0 (SAS Inc.).



Wine tasting task. Pupil dilation responses were recorded during the entire sequence

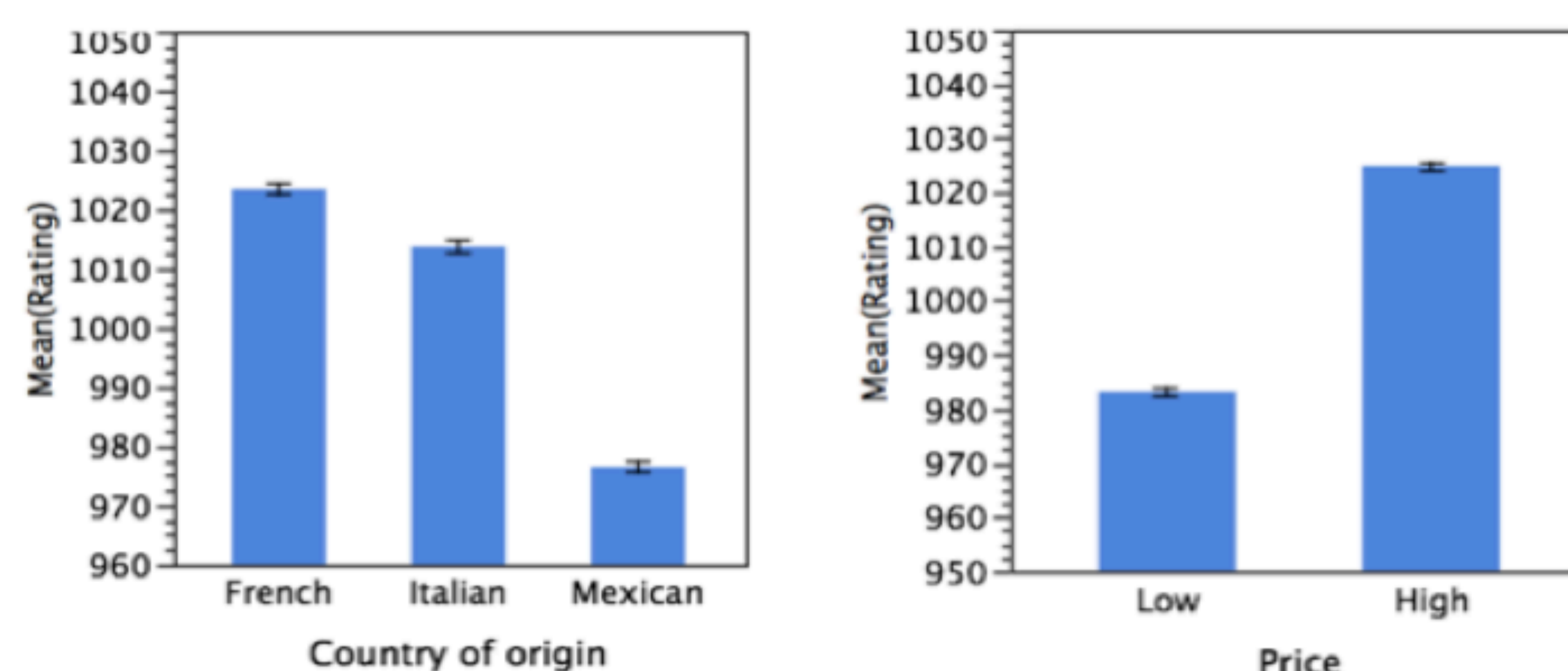
Experiment task

- ✳ **Prior to the experiment**, subjects were endowed with 200 Danish Kroner (DKK, approximately US\$36) to be used in the experiment, or saved for cash payment.
- ✳ Experiment consisted of three phases,
 - ✳ **Branding phase:** participants saw a label of an existing wine brand together with its price and country of origin for 4 seconds.
 - ✳ **Product tasting phase:** they tasted the wine from a small, numbered cup with 10 cl of wine. In all trials participants were served the same wine, which was neither of the branded wines.
 - ✳ A self-paced **wine taste preference phase**, in which subjects were asked to report how much they liked the taste of wine indicating their experience on the open-scale self-paced Visual Analogue Scale (VAS) (ranging from “Not at all” to “Very much”).
 - ✳ After each trial, participants were asked to rinse their mouth with water, to vanish the wine taste effects.
- ✳ **After the experiment**, participants were asked to report their WTP for that particular wine.
 - ✳ Participants were informed that their score on WTP would be effectuated through a lottery randomly selecting their choices, and the wine receiving the highest bid would be realized. Should the highest bid not amount to 200 DKK, they would be paid the remaining amount through bank transfer.
 - ✳ For each trial we as well collected pupillometry data during the entire sequence. To obtain the parametric distribution of WTP data, they were log transformed ($\log WTP$), and all subsequent analyses were made on this value.

Results

Effects of CoO and price on preference

- ✳ Price and CoO has shown the overall positive effects on wine taste preference ($R^2=0.11$, $p<0.0001$), where price and CoO individually have demonstrated the relative significant effects ($F=5660.2$, $p<0.0001$) and ($F=2687.6$, $p<0.0001$).



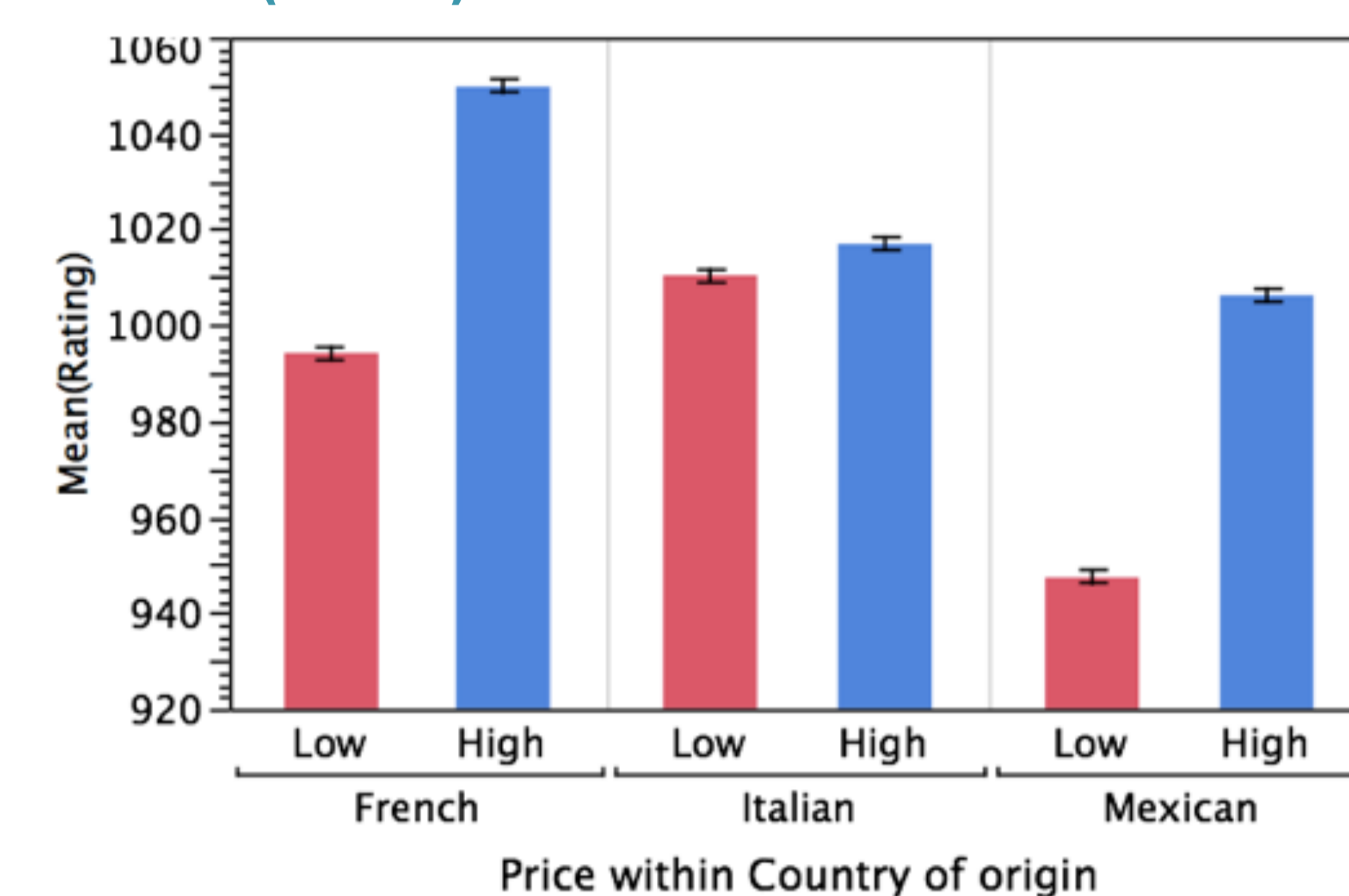
CoO and price effects on preference
Bars show taste rating mean values, whiskers show standard error

- ✳ While testing the effects of price (high and low) on WTP, significant results ($R^2=0.42$, $p<0.0001$), demonstrating participants' willingness to pay more for high priced wine were found.

Dynamic effects of price and CoO

- ✳ Two-way regression analysis showed the individual price effects based on the CoO. The weakest price effect was shown for Italian wine, but stronger effects were demonstrated for wines presented as French and Mexican. This hints that price might not have a strong persuasion power in Italian wine branding strategy, but stronger in French and Mexican ones.

Results (cont.)



Dynamic price and CoO effects on preference
Bars show mean values, whiskers show standard error of the mean

Effects of price and CoO on different nationalities' WTP

- ✳ Three-way regression analysis showed significant combined relation of price, CoO and nationality effects on WTP ($F= 917.8$, $R^2=0.52$, $p<0.0001$), underlining different WTP effects of nationality groups according to CoO and perceived prices.

Price and CoO effects on different nationalities' WTP

Source	Npam	DF	DFDen	F Ratio	Prob > F
Brand_country		2	2 5.00E+05	11774.67	<.0001*
Price		1	1 5.00E+05	101063.3	<.0001*
Brand_country*		2	2 5.00E+05	2865.756	<.0001*
Nationality groups		2	2 95.01	1.6752	0.1928
Brand_country*		4	4 5.00E+05	3547.420	<.0001*
Price*		2	2 5.00E+05	2433.989	<.0001*
Brand_country*		4	4 5.00E+05	7615.227	<.0001*
Price*Nationality groups					

Relationship between emotional reactions and WTP

- ✳ During framing, arousal and WTP showed a significantly positive relationship ($R^2=0.28$, $\beta=0.168$, $p<0.0001$), but during wine rating it was significantly negative ($R^2=0.29$, $\beta=-0.148$, $p<0.0001$). Arousal was also significantly affected by CoO both during the framing ($R^2=0.67$, $F=36.1$, $p<0.05$) and during the rating stage ($R^2=0.12$, $F=4.5$, $p<0.05$). Besides, arousal and WTP have shown a positive relationship ($R^2=0.26$, $\beta=2.7$, $p<0.0001$).

Conclusion

- ✳ Different marketing factors and their combination can differently affect the product perception, experience and the actual choice.
- ✳ The strength and these parameters may strongly vary depending on the recipient's nationality.
- ✳ The pupillometry data demonstrate a dynamic frames relationship to preference and choice.
- ✳ Finding that pupil dilation was negatively related to WTP during taste evaluation may suggest that framing effects are strongest when the actual framing information is presented, and lesser when product is at stake. However, this calls for further study.