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# To be(tween) or not to be(tween)? Combining between- and within-subjects design characteristics in preference elicitation for organic and local apples \*

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**Abstract:** This study examines consumer preferences for organic and local apples by combining between- and within-subject design characteristics in a second price auction. We first ask subjects to bid for 1 Kg of apples without any information. In subsequent rounds we reveal information about the organic or local attributes of apples and then allow subjects to taste the apples. Results show a significant price premium for the organic attribute (but not for the local attribute) once information is provided while tasting does not further increase elicited willingness-to-pay. We also find that the mixed-subject design results in more accurate willingness-to-pay estimates than when we use information from the between-subjects or within-subjects treatments alone. These results highlight the interplay between different quality attributes in consumer decision making and emphasize the gains that can be achieved by combining between- and within-subjects characteristics in experimental auctions.

**Keywords:** experimental auctions, second (2nd) price auction, SPA, between-subjects random incentive scheme, BRIS.

**JEL codes:** C80, C91, D44

**AEA RCT Registry:** #0010823

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# 1 Introduction

Understanding consumer preferences for organic and local foods is essential because it enables producers and retailers to align their offerings with market demand, ensuring the development of products that meet consumer expectations for sustainability, health, and local economic support. This insight guides marketing strategies, product development, and policy-making, ultimately contributing to more efficient and responsive food systems.

Consumers increasingly favor organic products for their perceived health benefits, environmental impact, and quality. However, these products often come at a higher price, leading to trade-offs between quality and cost. Similarly, locally produced foods are valued for their freshness, support of the local economy, and reduced environmental footprint due to shorter supply chains, which can result in lower transportation costs (Denver and Jensen, 2014). Nevertheless, the limited availability of certain local products year-round and potentially higher production costs for small-scale operations present challenges. Balancing these factors requires careful market analysis and consumer education to highlight the benefits of organic and locally produced foods.

Furthermore, the motivation to consume organic foods can sometimes clash with the preference for local produce, necessitating a careful evaluation of the inherent trade-offs (Sackett et al., 2016; Sigrid Denver and Christensen, 2019; Sirieix et al., 2011). Despite consumers' expressed preferences in surveys for local foods, recent studies challenge received wisdom, providing evidence that the price premium for locally labeled foods may not be as large as previously claimed and perhaps this premium does not exist at all (Davidson et al., 2023).

In Croatia, the case study of our experiments, organic agriculture has flourished since joining the EU in 2013, with a notable increase in both the number of organic producers and production volume (Eko-Zadar, 2022). Despite this surge, sales within the domestic market have remained modest (Logatcheva et al., 2018) although previous studies using real economic incentives found that Croatian consumers are WTP a 42% premium for organic apples and 59% for tomatoes (Čagalj et al., 2016). Brečić et al. (2021) investigate the effectiveness of in-store priming with point-of-sale (PoS) materials to boost local food sales over imported alternatives in Croatia, Slovenia, and Serbia. They find that both pictorial and textual PoS materials significantly enhance the likelihood of purchasing local foods, with pictorial materials being more effective.

Our study contributes to the literature using revealed preferences methods to elicit premiums for organic and local attributes. Printezis et al. (2019) found that 80% of studies in their meta-analysis of local foods relied on hypothetical choice experiments while the range of premiums for local foods decreased from a range of \$1.70-\$2.08 per pound to just \$0.29-\$0.40 after correcting for publication bias. Li and Kallas (2021) in their meta-analysis for WTP for sustainable food products find that WTP from hypothetical elicitation methods was higher than non-hypothetical methods. At the same time WTP for the organic attribute

was higher than other sustainable attributes. Similar to [Li and Kallas \(2021\)](#), [Piracci et al. \(2024\)](#) found that consumers are willing to pay on average 27% more for sustainability labels on foods, however, they point out that looking at the overall mean across all sustainability labels can lead to misleading and wrong conclusion because of the multifaceted nature of sustainability labels; not all sustainability facets are equally important among consumers.

Findings from [Printezis et al. \(2019\)](#), [Li and Kallas \(2021\)](#) and [Piracci et al. \(2024\)](#) underscore the importance of utilizing non-hypothetical research methods, such as real choice experiments and experimental auctions, to obtain more accurate estimates of WTP. However, the need to explore a wide range of food attributes could lead to complex and extensive experimental designs requiring large sample sizes for both methods and overextending logistical or financial capacities. This challenge necessitates innovative methodological approaches to manage the complexity and scale of such studies efficiently, ensuring the collection of reliable data while efficiently managing logistical resources.

Our methodological contribution rests in showing that there are gains from a mixed-subjects design that combines between- and within-subjects design characteristics in an experimental auction eliciting consumers' WTP. Typically, in a between-subjects designed experiment, each individual is exposed to only one treatment. Comparisons between the treatment arms provide causal estimates which avoid experimenter demand effects and have greater external validity albeit at the cost that internal validity depends on random assignment. Moreover, although analyses from between-subjects designs requires little statistical sophistication, results inherently have substantial noise.

In a within-subjects designed experiment, each individual is exposed to more than one of the treatments and independence of the multiple exposures has to be evoked for obtaining causal estimates. One big advantage of within-subject designs is that comparisons coming for the same subject, by definition, control for subject heterogeneity. Moreover, within-subject designs are more aligned to economic theory as well as they bring statistical power gains. [Charness et al. \(2012\)](#) provide an in-depth discussion of the pros and cons of between- and within-subjects designs.

In our empirical application, we are eliciting WTP for two attributes at two levels, resulting in a four cell design. Proceeding with a between-subject design requires randomizing subjects in four treatment groups and eliciting WTP for one of the product variants in each treatment arm. We alter this design by auctioning two product variants at the same time, in a way that allows us to elicit both within- and between-subjects WTP for each of the attributes.

We show that this particular feature of our mixed-design, results in econometric estimates of WTP that are less noisy as compared to if we had obtained estimates from between-subjects comparisons only, or within-subjects comparisons only. Our paper proceeds as follows: Section 2 describes our experimental design and methods; analyses and results are described in Section 3. We conclude and discuss the implications of our findings in the last section.

## 2 Methods and Experimental Design

Ethics approval for this study was granted by the Board of Ethics and Deontology of the Agricultural University of Athens (04/18.01.2023) and the study was preregistered at the AEA’s RCT registry (AEARCTR-0010823). Subjects were citizens of the wider area in Zagreb and were initially recruited via phone or email to assess their eligibility and, upon confirmation, to schedule a suitable time. Only adults who buy and consume apples were invited to a session with the understanding that they will participate in a research study of approximately one hour at the university campus. Our study combined a sensory phase where subjects had to taste and evaluate apples, so the number of subjects per session was limited to the physical capacity of the tasting booths in the lab. In all, 206 subjects participated in our experiment over 26 sessions (all but two sessions were conducted with 8 subjects/session). Sample size was guided by sample size calculations and power analysis described in the Electronic Supplementary Material. Sessions were spread over weekdays and throughout the morning and afternoon hours, in order to accommodate respondents with various time schedules; 53.88% of subjects participated in afternoon sessions. The experiment was fully computerized in z-Tree (Fischbacher, 2007) and zBrac served as the text editing tool (Saral and Schröter, 2019).

We offered subjects a €25 fixed reward to participate in the study and they were unaware of additional rewards that were available. Subjects were only informed for these additional rewards once they entered the study. The experimenter first read aloud a welcome note and gave an overview of the structure of the study. All instructions were computerized and subjects could go through instructions at their own pace, with the exception of auction instructions that were given just before the auction started using slides that were shared on every subject’s laptop screen (see Experimental Instructions at the Electronic Supplementary Material). Subjects were also specifically instructed to raise their hand and ask any questions in private and that the experimenter would then share her answer with the group if deemed necessary.

The experiment consisted of three stages. In Stage 1 subjects went through a typical real effort task adopted from (Abeler et al., 2011) where they had to count and report the number of zeros shown in a  $4 \times 4$  matrix. This task was repeated 10 times (the elements of the matrix were random and changed with each period but were the same for all subjects at a given period) and subjects could earn €0.5 every time they correctly solved the task within 20 seconds. The task aimed at mitigating house money effects (e.g., Bailey et al., 2023; Corgnet et al., 2014; Jacquemet et al., 2009) by making subjects earn part of their endowment. It was purposefully made easy (as evident by the fact that potential earned real effort money averaged €4.82 with a standard deviation of 0.38 and that 95.2% of subjects counted the number of zeros correctly at least 9 out of 10 times), so that subjects would start off in Stage 2 of the experiment with approximately equal endowments.

In Stage 2 subjects participated in a series of 2<sup>nd</sup> price Vickrey auctions (Vickrey, 1961)

and the groups always consisted of 4 subjects. The size of the groups was always displayed to subjects. Matching in groups was random and remained the same throughout the session. Subjects were unaware of which other subjects in the session composed their group. The subjects were told that only one subject from each group would be the person for which any decisions would be binding. Thus, payments for this experiment use the Between-Subject Random Incentivized Scheme (BRIS) where only a fraction of subjects realize their choices. The purpose of BRIS is to keep logistics and incentives manageable since our experiment involved having the actual products available for tasting and possible purchase from subjects. The merits of BRIS and a practical application with steaks on a US-wide value elicitation experiment are discussed in [Ahles et al. \(2024\)](#).

The mechanics of the auction were explained by the experimenter using several examples. In order to ensure that the procedure was fully understood, a hypothetical training round for two non-focal products was conducted and then subjects went through a series of review questions. Subjects answered correctly on average 6.3 out of 7 questions (S.D.=0.96) and 95.6% of subjects answered correctly at least 5 questions. Bids were entered simultaneously for the two goods. The purpose of the training rounds was to closely mimic the real auctions rounds that followed.

Right after the training rounds, subjects went through three rounds of bidding and each round corresponded to one of the following three within-subjects treatments: the Visual, the Information and the Sensory treatment. In the first treatment, no information were provided for the apples and subjects would only be shown pictures of the apples when they bid (Visual treatment). Apples were of the same variety (Fuji), approximately the same size/maturity and subjects were asked to observe the apples and evaluate them based on their expectations before they bid to buy one kilo of each. In the second round, subjects received information about whether the apples were local/non-local or organic/conventional (Information treatment) before they bid again. In the final round subjects tasted samples of the apples, then evaluated each apple and then bid to purchase one kilo of it (Sensory treatment).<sup>1</sup> Each of the within-subjects treatments involved bidding for two apples with different attributes, so that subjects submitted 6 bids in total; two bids in round 1, two bids in round 2 and two bids in round 3. Just before each auction round, subjects completed hedonic evaluations for both apples on a 9-point Likert scale anchored from ‘extremely dislike’ to ‘extremely like’ as well as paired comparisons (see also [Drichoutis et al., 2017](#), for a discussion of hedonic valuations in the context of auctions). After submitting their bids, subjects also had to indicate their level of certainty regarding their submitted bid on a 11-point Likert scale anchored by ‘extremely uncertain’ to ‘extremely certain’.

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<sup>1</sup>The structure of the rounds in our study is designed to replicate a real-world market scenario where a product is bought for the first time. Typically, consumers buy a product before they have the opportunity to try it. Although the reverse can happen, often as a goal of promotional activities in supermarkets to encourage sampling before purchase, we chose to simplify our design. This approach allows us to focus on the primary question of our study and ensure we have sufficient power to conclusively answer it, acknowledging that more complex designs would require more data to achieve the same level of statistical power.

More importantly our design choice of auctioning two different apples at the same time in any given round, allows us to elicit premiums for the organic and local attributes which are either based on between-subjects comparisons, or based on within-subjects comparisons, or as we show momentarily, are based on the mixed design. Table 1 shows how we achieve these types of comparisons. Each row shows a within-subjects treatment. For example, in Treatment 1 bids for organic-local apples and conventional-local apples were elicited. Thus, by comparing the within-subjects bids for the two apples for Treatment 1, we derive the within-subject treatment effect shown in the last column, colored in purple: the premium of organic apples, conditional on the apples being local.<sup>2</sup> We can derive the same treatment effect by performing between-subjects comparisons for Treatments 2 and 3 (i.e., comparing bids for the organic-local apples from Treatment 2 with the Conventional-local apples from Treatment 3), also colored in purple. Colors shown in the last column of Table 1 indicate the within-subject effect that can be matched to a between-subject effect by comparing the second and third columns of the same color.

Table 1: Number of subjects per treatment

	Bid for ...	Bid for ...	N	Within subject effect
Treatment 1	Organic - Local	Conventional - Local	56	{Organic   Local}
Treatment 2	Organic - Nonlocal	Organic - Local	48	{Local   Organic}
Treatment 3	Conventional - Local	Conventional - Nonlocal	55	{Local   Conventional}
Treatment 4	Conventional - Nonlocal	Organic - Nonlocal	47	{Organic   Non-local}
<b>Total</b>			<b>206</b>	

Notes: Colors indicate between-subjects comparisons that elicit the same within-subject treatment effect shown in last column.

### 3 Results

Before presenting the results of our experiment, it is useful to check the balance of subject’s observable characteristics across treatments. While many researchers use statistical tests to check for balance of observable characteristics between treatments, the literature points to some pitfalls of this practice (e.g., [Briz et al., 2017](#); [Deaton and Cartwright, 2018](#); [Ho et al., 2007](#); [Moher et al., 2010](#); [Mutz and Pemantle, 2015](#)). Following this literature, we report in Table 2 standardized differences across treatments ([Imbens and Rubin, 2016](#); [Imbens and Wooldridge, 2009](#)). [Cochran and Rubin’s \(1973\)](#) rule of thumb is that the standardized difference should be less than 0.25. Most of the values are below this threshold but since some comparisons show some imbalance, we control for observable characteristics in all our subsequent regressions which is the general advice even with randomisation to treatment ([Senn, 1994, 2013](#)).<sup>3</sup>

<sup>2</sup>Similarly, Treatment 2 elicits the within-subject treatment effect of local apples given they are organic; Treatment 3 elicits the within-subject treatment effect of local apples given they are conventional; and Treatment 4 elicits the within-subject treatment effect of organic apples given they are non-local.

<sup>3</sup>See also discussion about balance between treatments in [Canavari et al. \(2019\)](#).



Table 2: Pairwise normalized differences between the treatments for observable characteristics

	Treatment 1 vs.			Treatment 2 vs.		Treatment 3 vs.
	2	3	4	3	4	4
Age	0.120	0.275	0.294	0.175	0.191	0.003
Gender	-0.128	-0.414	-0.140	-0.284	-0.012	0.271
Education	-0.358	0.197	-0.212	0.552	0.185	-0.430
Income	-0.035	0.228	-0.035	0.282	-0.001	-0.269
Occupation	0.183	-0.391	-0.004	-0.548	-0.179	0.370
Residence	0.191	0.057	0.154	-0.126	-0.040	0.090

### 3.1 Descriptive analysis

We first start our analysis by examining how subjects evaluated the apples over the different treatments. Figure 1 shows histograms on the hedonic scores Likert scales by apple attribute and over the bidding rounds (Visual, Information, Sensory treatments). Figure 1a shows that in the visual treatment, where subjects do not receive any information about the apples, conventional apples are not evaluated better than organic apples ( $\chi^2 = 9.94$ , p-value= 0.269) but the distribution for organic apples is shifted to the right once they receive information that the apples are organic and is statistically different than the conventional ( $\chi^2 = 52.28$ , p-value< 0.001). Sensory tasting of the apples shifts the distribution even further and overall organic apples are ranked higher than conventional apples ( $\chi^2 = 30.50$ , p-value< 0.001).

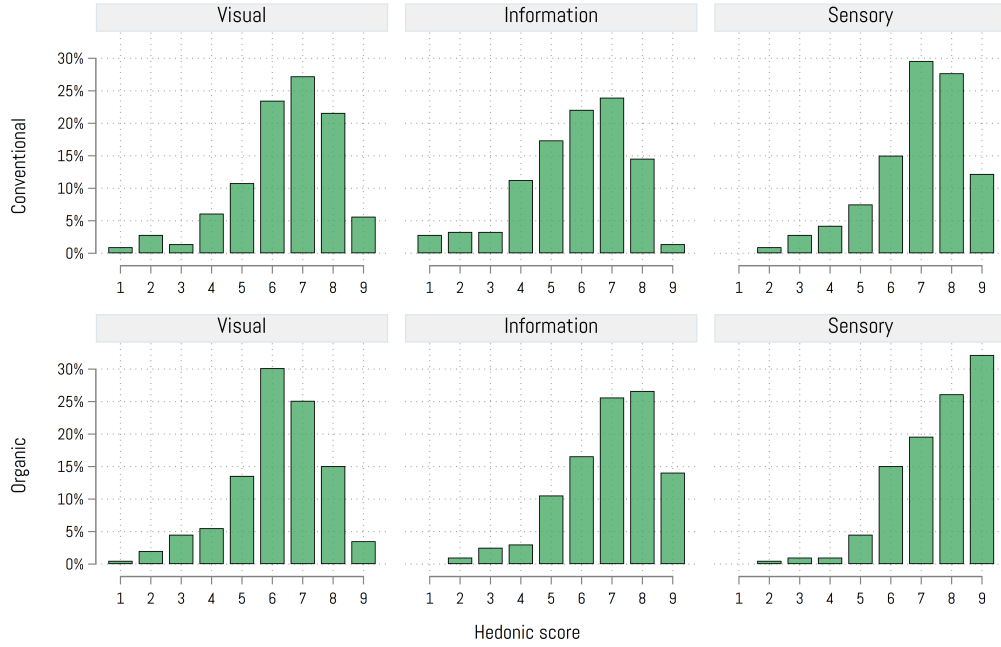
The lower panel of Figure 1 depicts a similar pattern for the local attribute. At the visual stage, both apples are evaluated almost the same ( $\chi^2 = 7.99$ , p-value= 0.435) but when information is revealed in the Information stage the whole distribution is shifted more to the right for the local apples as compared to the non-local apples ( $\chi^2 = 33.79$ , p-value< 0.001). After tasting apples at the Sensory stage, differences in hedonic scores between local and non-local apples vanish ( $\chi^2 = 10.15$ , p-value= 0.180). This suggests that any perceived advantage of local apples may be offset by the lack of significant differences in taste.

Figure 2 shows Kernel density estimates of bids, for the local and organic attributes over the bidding rounds (Visual, Information, Sensory treatments). The patterns roughly reflect the distribution of hedonic scores in Figure 1. For example, at the Visual treatment (first round of bidding) the distribution of bids for the organic and conventional apples are roughly the same (Kolmogorov-Smirnov tests fail to reject the null of the equality of the distributions; values are shown in the graph) and there is a clear shift of bids to the right for the organic apples under the Information and Sensory treatments (Kolmogorov-Smirnov tests reject the null of the equality of distributions; shown in the graphs). There is a similar pattern for the local attribute shown in Figure 2b but it is not as clear. The smaller peak of the distribution of the bids for the local apples under the Information treatment indicates a (small) shift to the right albeit smaller than the clear shift to the right for the organic apples

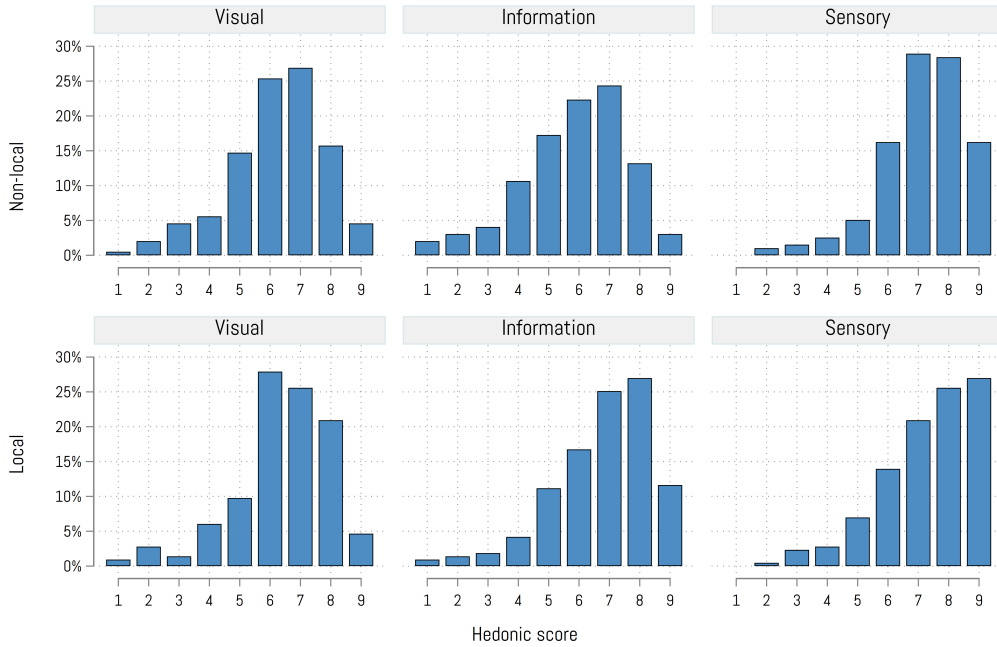


Figure 1: Histograms of hedonic scores

(a) Organic vs. Conventional



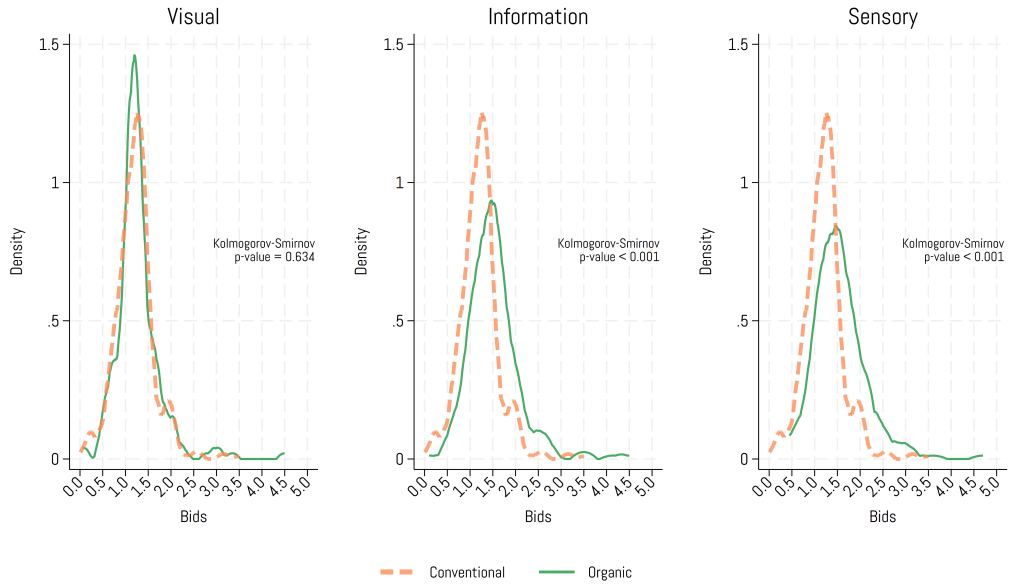
(b) Local vs. Nonlocal



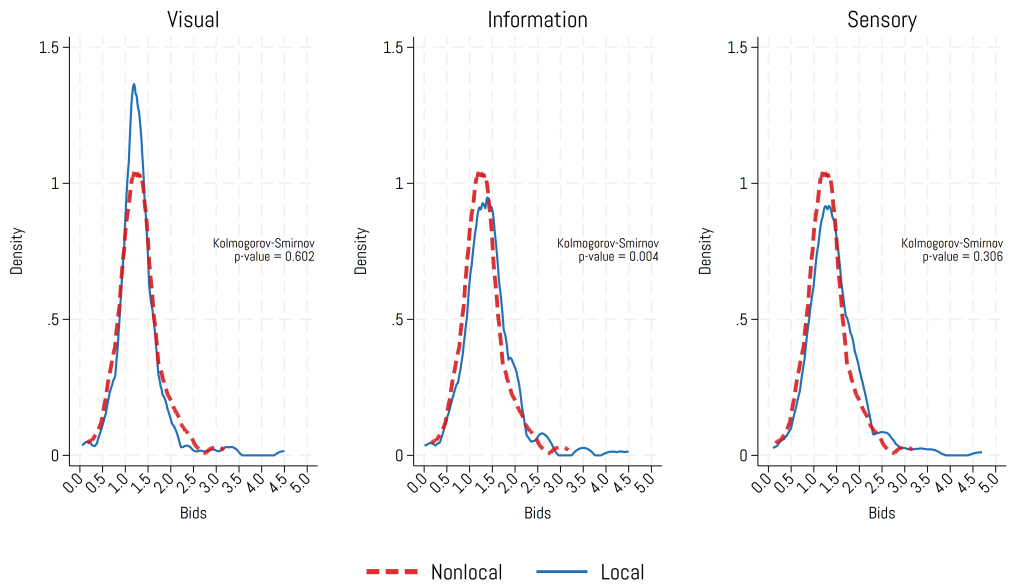
in Figure 2a. Even though the shift is small, it is big enough to lead us to reject the null of the equality of the two distributions (Kolmogorov-Smirnov p-value= 0.004). In the Sensory treatment, the distribution of bids for the local and non-local apples are similar (we fail to reject the null according to a Kolmogorov-Smirnov test) which indicates that after tasting the apples, consumers do not perceive that differences are that large to deserve a premium price.

Figure 2: Kernel density estimates of bids

(a) Organic vs. Conventional



(b) Local vs. Nonlocal



## 3.2 Econometric analysis

To quantify the treatment effects (premiums for organic and local apples), we next run regressions analysis with clustered standard errors to account for the possible correlation between the multiple bids provided by subjects. We first run separate regressions to estimate the within-subjects effects shown in Table 3 where each column shows results from separate estimations for each row of Table 1. All regression models include interaction terms of the apple attribute dummies (organic, local) with rounds in order to capture the differential effect of the organic and local attributes across rounds (rounds are equivalent to the Visual, Information and Sensory treatments). Table 4 shows regressions by selectively using the bids for between subjects comparisons, as indicated in columns 2 and 3 of Table 1. Finally, Table 5 shows a pooled regression that uses all bids elicited with our design, where treatment effects are a mix of within and between-subjects comparisons.

To facilitate interpretation, Figure 3 graphically shows marginal effects of the estimated treatment effects from Tables 3, 4 and 5. As a general remark, the organic attribute commands a higher premium than the local attribute; the latter is often (close to) zero. Consumers value the organic attribute more for local apples (vs. non-local apples) when they are provided with information in Round 2 while after tasting the apples in Round 3, the organic premium is approximately similar in magnitude for local and non-local apples (compare Figures 3a and 3c). The premium for local apples is statistically significant for organic apples (but not for conventional apples) in Round 2 and almost vanishes when subjects taste the apples in Round 3.

With respect to what we learn from the within and between-subjects comparisons, we observe that the between-subjects comparisons always result in estimates of marginal effects with higher imprecision as indicated by the wider confidence intervals. In most cases, the within-subjects effect is smaller than the between-subjects effect in terms of magnitude but has smaller confidence intervals. Treatment effects estimated from the model where we combine within and between-subjects information are somewhat in the middle in terms of magnitude and also have smaller confidence intervals. In a few cases, as in Figures 3b and 3d, both the within and the between-subjects effects point to a null effect while the mixed effect is statistically significant.

Table 3: Regressions of bids (within-subjects comparisons)

	Treatment 1 (Organic   Local) (1)		Treatment 4 (Organic   Nonlocal) (2)		Treatment 2 (Local   Organic) (3)		Treatment 3 (Local   Conventional) (4)	
Constant	0.212	(0.596)	-1.345*	(0.685)	1.330	(1.112)	1.118*	(0.575)
Local					0.052	(0.037)	-0.079***	(0.029)
Organic	0.017	(0.038)	-0.071**	(0.031)				
R2: Information	-0.113	(0.075)	-0.055	(0.055)	0.144*	(0.081)	-0.063	(0.066)
R3: Taste	-0.037	(0.083)	-0.136**	(0.054)	0.110	(0.101)	-0.103	(0.065)
Organic × R2	0.303***	(0.072)	0.213***	(0.065)				
Organic × R3	0.199***	(0.067)	0.269***	(0.062)				
Local × R2					0.068	(0.060)	0.137***	(0.046)
Local × R3					0.011	(0.050)	0.129***	(0.048)
Certainty	0.024	(0.018)	0.040***	(0.013)	0.054	(0.033)	0.012	(0.012)
Order	0.153*	(0.089)	-0.049	(0.066)	-0.341***	(0.093)	-0.191***	(0.064)
Hedonic score	0.054***	(0.015)	0.094***	(0.013)	0.110***	(0.017)	0.075***	(0.014)
House money	-0.059	(0.075)	-0.036	(0.091)	-0.263	(0.224)	-0.131	(0.105)
Auction Qs score	0.033	(0.039)	0.176***	(0.031)	-0.087**	(0.038)	0.045	(0.041)
New Environmental Paradigm scale	-0.012	(0.009)	0.018***	(0.006)	0.003	(0.007)	-0.001	(0.004)
Social Responsibility Scale	0.006	(0.005)	-0.010***	(0.003)	0.010**	(0.005)	-0.001	(0.003)
Age	0.010*	(0.005)	0.003	(0.002)	-0.016**	(0.006)	0.001	(0.004)
Male	0.123	(0.105)	0.035	(0.063)	-0.037	(0.131)	0.052	(0.060)
<i>Education</i>								
Bachelor's degree	-0.086	(0.081)	0.161*	(0.093)	0.171	(0.158)	0.305***	(0.087)
Master's degree	0.094	(0.072)	0.060	(0.073)	0.177*	(0.102)	-0.000	(0.075)
Doctorate	0.244*	(0.126)	-0.292*	(0.157)	0.410***	(0.119)	-0.494***	(0.092)
<i>Income</i>								
Good	0.215***	(0.078)	0.247***	(0.075)	0.356***	(0.126)	0.057	(0.072)
Very good	-0.018	(0.096)	0.190**	(0.082)	0.448***	(0.096)	0.401***	(0.111)
<i>Occupation</i>								
Employed part-time	0.211*	(0.118)	1.868***	(0.128)			-0.445***	(0.157)
Unemployed	-0.357***	(0.066)	0.460***	(0.096)	-0.561***	(0.180)	0.041	(0.074)
Student	0.877***	(0.195)	0.212**	(0.107)	0.646***	(0.220)	-0.122	(0.113)
Retired	-0.306*	(0.176)	-0.072	(0.093)	0.708***	(0.153)	-0.005	(0.099)
Self-employed			0.055	(0.148)	-0.091	(0.169)	0.066	(0.104)
<i>Residence</i>								
Zagreb county	0.385***	(0.104)	0.185***	(0.066)	-0.034	(0.131)	0.118	(0.116)
Other	-0.112	(0.163)	-0.061	(0.082)	-0.450***	(0.105)	0.086	(0.115)
Observations	336		282		288		330	
$R^2$	0.342		0.577		0.449		0.350	
Adj. $R^2$	0.288		0.534		0.397		0.295	
F-stat. (p-value)	12.594	(< 0.0001)	133.273	(< 0.0001)	10.809	(< 0.0001)	6.326	(< 0.0001)

Notes: Standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table 4: Regressions of bids (between-subjects comparisons)

	Treatment 2 vs. 3 (Organic   local)		Treatment 2 vs. 3 (Organic   Nonlocal)		Treatment 1 vs. 4 (Local   Organic)		Treatment 1 vs. 4 (Local   Conventional)	
	(1)		(2)		(3)		(4)	
Constant	0.693	(0.576)	0.562	(0.522)	-0.547	(0.536)	0.126	(0.482)
Local					0.162*	(0.092)	0.029	(0.077)
Organic	0.128	(0.085)	0.007	(0.093)				
R2: Information	0.056	(0.071)	-0.059	(0.070)	0.190**	(0.081)	-0.109	(0.069)
R3: Taste	-0.033	(0.073)	-0.102	(0.072)	0.210**	(0.086)	-0.136**	(0.068)
Organic × R2	0.156	(0.131)	0.209*	(0.114)				
Organic × R3	0.172	(0.120)	0.292**	(0.122)				
Local × R2					-0.003	(0.130)	-0.002	(0.100)
Local × R3					-0.050	(0.131)	0.100	(0.110)
Certainty	0.011	(0.015)	0.002	(0.013)	0.006	(0.017)	0.013	(0.015)
Order	-0.158**	(0.067)	-0.163***	(0.058)	0.140**	(0.062)	0.120**	(0.049)
Hedonic score	0.125***	(0.019)	0.081***	(0.014)	0.061***	(0.020)	0.057***	(0.012)
House money	-0.010	(0.110)	0.023	(0.087)	0.021	(0.075)	-0.044	(0.065)
Auction Qs score	0.011	(0.027)	0.010	(0.027)	0.063**	(0.030)	0.083***	(0.024)
New Environmental Paradigm scale	-0.005	(0.005)	-0.003	(0.005)	0.003	(0.006)	0.005	(0.004)
Social Responsibility Scale	0.003	(0.003)	0.003	(0.002)	0.000	(0.003)	-0.005**	(0.002)
Age	-0.010**	(0.004)	-0.005	(0.004)	0.004	(0.003)	0.004	(0.003)
Male	0.047	(0.065)	0.061	(0.063)	0.099	(0.102)	0.148**	(0.069)
<i>Education</i>								
Bachelor's degree	0.223***	(0.081)	0.189**	(0.073)	-0.042	(0.073)	-0.130*	(0.069)
Master's degree	0.024	(0.063)	0.020	(0.060)	0.012	(0.065)	0.030	(0.054)
Doctorate	-0.028	(0.078)	0.033	(0.076)	0.088	(0.093)	-0.041	(0.069)
<i>Income</i>								
Good	0.137*	(0.072)	0.143**	(0.060)	0.222***	(0.063)	0.174***	(0.056)
Very good	0.392***	(0.086)	0.364***	(0.074)	0.180***	(0.066)	0.068	(0.057)
<i>Occupation</i>								
Employed part-time	-0.530***	(0.155)	-0.364***	(0.129)	0.468***	(0.154)	0.412***	(0.136)
Unemployed	-0.073	(0.108)	0.006	(0.089)	-0.220**	(0.106)	-0.255***	(0.081)
Student	0.016	(0.113)	0.112	(0.092)	0.594***	(0.123)	0.498***	(0.097)
Retired	0.179**	(0.080)	0.201**	(0.083)	-0.187*	(0.095)	-0.024	(0.082)
Self-employed	-0.045	(0.108)	-0.171	(0.115)	0.054	(0.169)	0.145	(0.157)
<i>Residence</i>								
Zagreb county	-0.170	(0.109)	-0.094	(0.091)	0.254***	(0.063)	0.270***	(0.061)
Other	-0.256**	(0.099)	-0.207**	(0.084)	-0.120	(0.107)	-0.074	(0.077)
Observations	309		309		309		309	
$R^2$	0.358		0.272		0.291		0.277	
Adj. $R^2$	0.299		0.205		0.226		0.211	
F-stat. (p-value)	6.282	(< 0.0001)	5.766	(< 0.0001)	6.761	(< 0.0001)	5.828	(< 0.0001)

Notes: Standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table 5: Regressions of bids (between- and within-subjects)

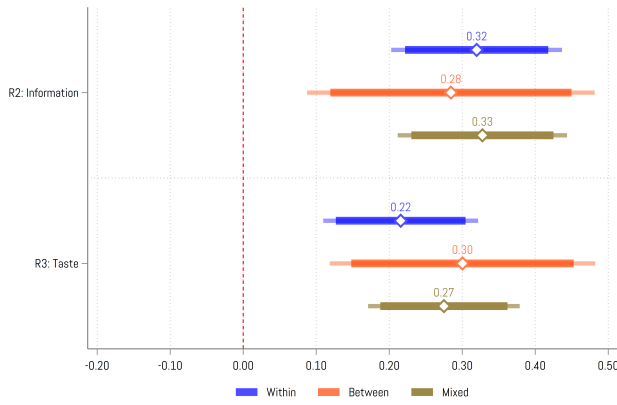
Constant	-0.078	(0.369)
Local	-0.009	(0.042)
Organic	-0.018	(0.048)
R2: Information	-0.069	(0.051)
R3: Taste	-0.117**	(0.050)
Organic $\times$ R2	0.229***	(0.069)
Organic $\times$ R3	0.296***	(0.073)
Local $\times$ R2	0.056	(0.056)
Local $\times$ R3	0.108*	(0.062)
Organic $\times$ Local	0.125***	(0.035)
Organic $\times$ Local $\times$ R2	-0.008	(0.057)
Organic $\times$ Local $\times$ R3	-0.129**	(0.056)
Certainty	0.005	(0.010)
Order of apples	-0.008	(0.038)
Hedonic score	0.080***	(0.009)
House money	0.033	(0.057)
Auction Qs score	0.041**	(0.018)
New Environmental Paradigm scale	0.002	(0.003)
Social Responsibility Scale	0.001	(0.002)
Age	-0.001	(0.002)
Male	0.108**	(0.046)
<i>Education</i>		
Bachelor's degree	0.100*	(0.051)
Master's degree	0.029	(0.040)
Doctorate	-0.013	(0.054)
<i>Income</i>		
Good	0.141***	(0.039)
Very good	0.189***	(0.043)
<i>Occupation</i>		
Employed part-time	0.260**	(0.114)
Unemployed	-0.066	(0.059)
Student	0.226***	(0.074)
Retired	0.014	(0.054)
Self-employed	-0.034	(0.070)
<i>Residence</i>		
Zagreb county	0.100**	(0.048)
Other	-0.110*	(0.062)
Observations	1236	
$R^2$	0.234	
Adj. $R^2$	0.214	
F-stat. (p-value)	13.964	(< 0.0001)

Notes: Standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

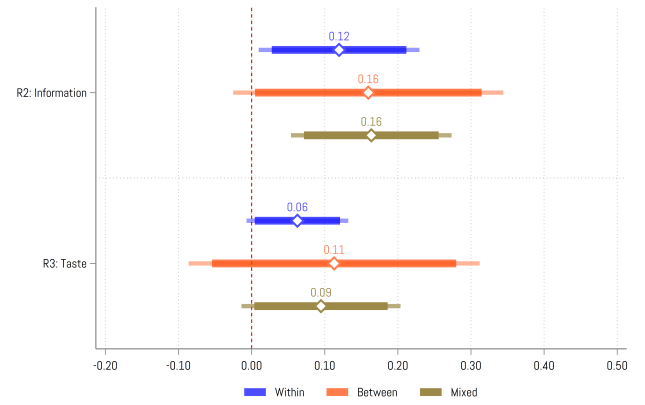


Figure 3: Within- and between-subjects effects of local and organic attributes

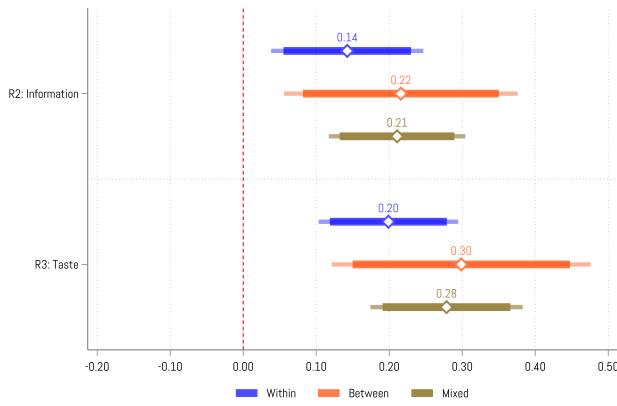
(a) Effect of Organic (given local)



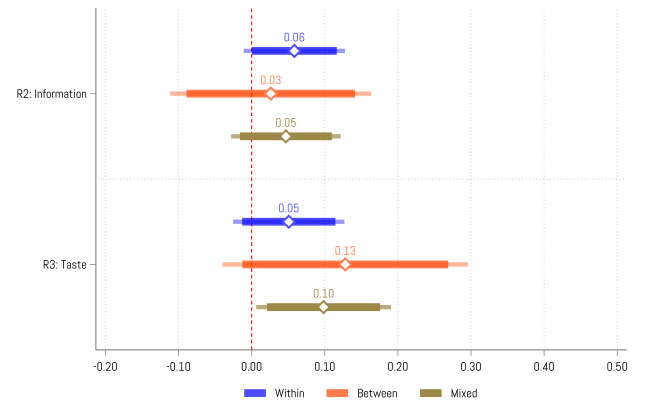
(b) Effect of Local (given organic)



(c) Effect of Organic (given non-local)



(d) Effect of Local (given conventional)



## 4 Discussion and conclusions

In this study, we used a second price auction to elicit Croatian consumers' willingness to pay for organic and local apple attributes. This method, known for its incentive compatibility, effectively reduces hypothetical bias, offering a more reliable alternative to hypothetical choice experiments and contingent valuation methods.

The literature suggests that consumers associate some similar benefits with local and organic food, such as environmental friendliness and natural quality, but studies have also shown that the two attributes are not always perceived in the same way (Denver and Jensen, 2014). Our study is consistent with these findings. While consumers showed a higher hedonic evaluation and WTP for both organic and local apples in the information treatment than in the visual treatment, a further shift was found for the organic attribute in the sensory treatment, which was not the case for the local attribute. Therefore, our results underscore organic attributes' significant premium over the local attribute.

Our results also have implications from a marketing strategy standpoint since we show that emphasis on the organic attribute of fresh produce can have a greater impact on consumers than strategies that emphasise the local attribute. This information may be useful for producers and retailers who want to appeal to consumers who are willing to pay more for organic produce. Our study also shows limitations of product promotion through tasting since in our case the sensory experience did not significantly increase consumers' willingness to pay. Thøgersen (2023) resonates with our insights, suggesting origin becomes less important when trade-offs have to be made and in the presence of other quality cues on the product, such as organic, eco-, or quality assurance labels. This highlights the interplay between various quality cues in consumer decision-making.

Previous research has shown that beliefs about the taste of organic and local foods can have a stronger influence on taste perception than the actual taste itself (Bernard and Liu, 2017). Our study confirms this phenomenon, especially for local apples. The mere information that the apple was local increased hedonic ratings, while after tasting, both local and non-local apples received similar hedonic ratings.

Overall, we show that there are gains using a mixed-subjects design that combines between- and within-subjects characteristics in an experimental auction eliciting consumers' WTP in that estimates of treatment effects become less noisy. Our study not only advances our understanding for organic and local food preferences but also sets a new benchmark for methodological choices in preference elicitation research, particularly in the context of experimental auctions.

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# Electronic Supplementary Material of

## To be(tween) or not to be(tween)? Combining between- and within-subjects design characteristics in preference elicitation for organic and local apples

Andreas C. Drichoutis<sup>\*</sup>, Marija Cerjak<sup>†</sup>, Damir Kovačić<sup>‡</sup> and Josip Juračak<sup>§</sup>

### Sample size calculations

Our per treatment sample size was decided based on sample size calculations and served as a stopping rule for this experiment when we achieved the minimum necessary per treatment sample. Assuming  $\alpha = 0.05$  (Type I error) and  $\beta = 0.20$  (Type II error), the per group (treatment) minimum sample size required to compare two means  $\mu_0$  and  $\mu_1$ , with common variance of  $\sigma^2$  in order to achieve a power of at least  $1 - \beta$  is given by Diggle et al. (2002) pp. 30; Liu and Wu (2005); Kupper and Hafner (1989):

$$n = \frac{2(z_{1-\alpha/2} + z_{1-\beta})^2(1 + (M - 1)\rho)}{M\left(\frac{\mu_0 - \mu_1}{\sigma}\right)^2} \quad (1)$$

To take into account the repeated measurement, the formula includes the number of repeated measurements  $M$  (in our case it is  $M = 3$ ) as well as a value for the correlation  $\rho$  between observations for the same subject. For  $\alpha = 0.05$  and  $\beta = 0.20$  the values of  $z_{1-\alpha/2}$  and  $z_{1-\beta}$  are 1.96 and 0.84, respectively. To calculate a minimum sample size, one needs to feed the above formula with values for  $\sigma$  and the minimum meaningful difference  $d = \mu_0 - \mu_1$ . To specify the necessary parameters to feed the above formula, we extracted information from the study of Čagalj et al. (2016), which also elicits valuations for organic apples from a sample of Croatian consumers using the BDM mechanism. The value of  $\sigma$  for the organic apples is on average 0.7 across their treatments, and given a value of  $\rho = 0.3$  we can detect differences as small as  $d = 0.3$  with roughly 45 subjects per treatment. In Čagalj et al. (2016), differences in bids between organic and conventional apples are much larger (at least 0.7), so our per treatment sample size calculation stands even for much larger values of  $\sigma$ .

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# Experimental Instructions

[This is the (translated from Croatian) script that was delivered orally by the experimenter to subjects, once they were seated in the lab.]

## Welcome and introduction

Welcome to the sensory laboratory of the Center for Experimental Economics at the University of Zagreb Faculty of Agriculture.

You will participate in the survey of consumers' preferences and willingness to pay for different types of apples in the form of an experimental auction on the computer. To participate, you only need basic keyboard and mouse skills to navigate through the survey and provide your answers.

When we start the program, the screen will give you introductory information about the survey. This is followed by a note about the protection and use of your data. There you will enter your contact information and once again confirm your consent to participate by clicking on the appropriate box.

Then follows the main part of the survey, which consists of three parts:

1. Introductory task on counting zeros (0) in matrices with zeros and ones.
2. Series of three auctions with evaluation of two types of apples.
3. Demographic questions and scales.

In the task from the first part, you can earn extra money in addition to the participation fee. The task is to correctly count zeros in tables or matrices with zeros and ones. If you enter the correct number of zeros in the box provided, you can earn 50 cents per die, which you will receive when you are randomly selected. There are 10 matrices and there is a possibility to win an additional prize of maximum 5.00 euros.

Before the auctions in the second part of the research, the program stops and you will receive detailed instructions on how to participate in the auction. After that there is a short quiz to check if you have understood the instructions correctly.

In the third part of the survey there are general questions and questions about how much you agree with certain statements.

The program is divided into phases, and each phase can only begin when all participants have completed the previous phase. As long as you see the "Next" or "Continue" button on the screen, you can move to the next screen. If the message "Wait to continue" appears, you must wait until all participants have completed the previous phase. So do not rush: if you are too fast, you will often have to wait for others.

Do not communicate with other participants during the study as this may lead to research error. If you have questions, hold your hand up to the window or call the moderator so that you disturb the other participants as little as possible.

Today's survey will take about 60 minutes to complete. At the end of the survey you will receive a voucher for 20 euros from the store DM for your participation.

For the auctions, you will be randomly divided into two groups of four, and you will not know who you are in the group with. One person from each group will be randomly selected and given the right to earn by counting zeros and possibly buy apples.

Now please take out a slip of paper with a three digit number on it. This is your code (ID) to which the data you entered will be linked - to ensure anonymity.

Finally, please turn off your cell phones and other electronic devices and we can begin. If the mouse is idle, just click and move it to wake it up.



[These are screen captures from zTree.]

---

**\*\*Introduction and Informed Consent form\*\***

Welcome to the sensory lab of the **Faculty of Agriculture University of Zagreb!**

Before we start, it is very important **NOT to communicate** with other participants during the survey. Any attempt to communicate will result in the failure of this survey. The session today will last approximately **60 minutes**.

In some parts of the survey you will interact with other participants. However, you will never know which participant you will be interacting with. In this sense, this survey will be anonymous. **If you have any questions** during the session, please raise your hand and the researcher in charge will answer your question. All questions should be addressed to the researcher in private, not in public.

The researcher in charge will answer all questions except questions that concern the way you should behave during the survey. The reason is that no one, including us, can tell you how you should behave. If we knew that we wouldn't have to conduct this survey today.

Next >>

**There are no "right" or "wrong" decisions or answers** in this survey. Nevertheless, your actual income at the end will depend on your decisions and the decisions of other participants. Our advice is to pay attention to the instructions.

Before we start, I will ask each one of you to draw a three digit number from this cup. This number is unique for each one of you, as well as for all sessions we will be conducting. That is, this number is your ID since no other participant in this survey will have the same number as you. This is the number we will use to pay you at the end.

**Every participant receives a coupon of 20 EUR value** for their presence here. For practical reasons, you will receive the coupon at the end of the session and will be added to your additional income based on your decisions. It is very important to understand the instructions because you may earn or lose money depending on your decisions.

Next >>

### INFORMED CONSENT

Please read carefully the following information concerning the present study. You have to agree to continue.

**Description:** The present study will last around 60 minutes. You will be asked to make decisions that will help us understand how people bid in a certain type of auction.

**Aim of the study:** This study explores how people make decisions regarding apple choice.

**Funding for this research:** This research is supervised by Marija Cerjak and is funded by a European H2020 project.

**Risks and Benefits:** There are no anticipated risks to participating in the study. There are no other benefits than monetary earnings. You will receive a fixed amount of 20€ as your participation fees and you can make up to 5€ on top to that. The amount of money you earn will depend on your decisions during the study and more details will be given with the instructions.

**Voluntary participation:** Your participation is voluntary.

**Right to Withdraw:** You are free to refuse to participate in the research and to withdraw from this study at any time. Your decision to withdraw will bring no negative consequences to you.

**Right to ask questions:** You are free to ask questions about the study without any negative consequences to you.

Continue >>

### INFORMED CONSENT

Please read carefully the following information concerning the present study. You have to agree to continue.

**Confidentiality:** We will ask you to provide us with your name, surname, your telephone number and email address that we need in order to make payments and print receipts. All information will be held in the strictest of confidence and according to national law and personal data protection laws. Results from the research will be reported as aggregate data and will be used for publications in international peer reviewed journals. At the end of the research period, data will be retained by the researcher and will not be sold to a third party. Identifying information will be removed from the data and therefore only anonymized data can be shared with other researchers for reasons related to replication, re-analysis, or additional analysis.

**Informed Consent:** I have read the description, including the purpose of the study, the procedures to be used, the potential risks and benefits, the confidentiality, as well as the option to withdraw from the study at any time. Any queries I had, were answered by the investigator and I understand what is involved. My signature below indicates that I freely agree to participate in this study. I will receive a copy of this agreement from the investigator.

If you have any other questions about this study, you can contact Dr. Marija Cerjak at mcerjak@agr.hr

<< Back

Continue >>

### INFORMED CONSENT

Please read carefully the following information concerning the present study. You have to agree to continue.

Please type your **first** name:

Please type your **surname** :

Please type your **email address** :

By clicking the button on the right, I AGREE and CONSENT in participating in this study:

<< Back

Continue ...

Please type the code you were given in the beginning of the session.

Next >>

The code you entered is:

333

Please double check. Is this code correct?

No, it is not correct. I'd like to edit it.

Yes, it is correct

---

## \*\*Instructions and practice with the zero counting task\*\*

This survey consists of three different stages:

1. In stage one you will be asked to give the correct answer in a task.
2. In stage two you will participate in a series of auctions. In this stage you will also be asked to do sensory evaluations of two types of apples.
3. In stage three questionnaires will follow consisting of simple questions and scales.

After completing stage three, you will only receive the coupon of 20 EUR. However, **we will randomly select only one person from each group and only that one person will be paid any additional earnings.** If you are not selected, then you will only receive the coupon of 20 EUR.

After payment you will be free to leave the lab.

Next >>

In the **next stage**, all participants have to complete a **zero counting task**. The task consists of determining the correct number of zeros in a matrix of 0's and 1's. **The matrix will show up 10 times**. Its size (that is, the number of rows and columns) will be the same each time for all participants albeit with different counts for 0's. Every time you give the correct answer, you accumulate 0.50€ . If you are randomly selected from your group, you will be paid these additional earnings.

By clicking on "Next" you will start the trial matrix for practicing counting zeros. After that, there will be 10 matrices from which you can make additional earnings.

Next >>

Remaining time [sec]: 18

### PRACTICE Round

0	1	1	1
1	0	0	1
0	0	0	0
0	1	1	0

Please count the number of zeros in the matrix:

Next >>

ATTENTION: The zero-counting task is about to start!

**\*\*The zero counting task\*\***

Round 3 of 10

0	0	1	1
1	0	0	1
1	0	0	1
1	1	1	1

Please count the number of zeros in the matrix:

Next >>

Remaining time [sec]: 0

Round 5 of 10

Your answer was: 8

The correct answer was: 9

Continue >>

Remaining time [sec]: 10

Round 10 of 10

Your answer was: 6

The correct answer was: 6

Continue >>

In total, your (potential) earnings from this task are: 4.50



Please wait. Now the Researcher will explain some details about the task you are about to perform, i.e. auction rounds.

Please DON'T click on the Next button unless you are instructed to do so.

Next >>

[This is the (translated from Croatian) presentation that was delivered both orally and to subjects' screen, right before the auction starts.]

# INSTRUCTIONS FOR THE 2<sup>ND</sup> PRICE AUCTION

## 2<sup>nd</sup> price auction procedure IN GENERAL

- A second price auction usually has four steps:
  1. presentation of the product that is the subject of the auction (physically or on the computer)
  2. auction participants make bids for the subject of the auction
  3. ranking of bids from the highest to the lowest
  4. decision on purchase: the participant whose offer is the highest buys the product at the price of the second highest bid.

## Second price auction procedure

- Example of an auction:

- 4 people participate in the second price auction for  $\frac{1}{2}$  l beer in a can.
- Each participant makes his offer independently of the others.

- Let the offers be as follows:

Participant	Offer, EUR
Ana	1.50
Božo	1.20
Maja	1.60
Tin	1.30

## Second price auction procedure (cont.)

- Auction result:

- the highest bid is €1.60 for a  $\frac{1}{2}$  l can of beer,
- participant Maja buys the product,
- the price she pays is €1.50 for a can of beer  $\frac{1}{2}$  l (the second highest bid).

- Bids ranked from highest to lowest:

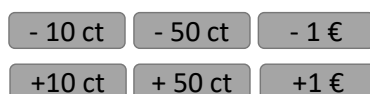
Participant	Offer, EUR
Maja	1.60
Ana	1.50
Tin	1.30
Božo	1.20

## Today's Second Price Auction

- We will have three auction rounds for two types of apples
- Auctions will take place in groups of 4 people
- In addition to placing bids for apples, you will rate how much you like each apple in each round.
- One person will be randomly selected from each group to receive earnings from counting zeros.

## Today's Second Price Auction (cont.)

- You will enter your bids by clicking on the buttons of different monetary amounts that you combine to get the amount you want.
- Examples of buttons for selecting the bid amount:



- If you want to offer € 3.5, you should click 3 times on +1 € and once on +50 ct.
- To reduce the bid from € 3.5 to €3.3, double-click - 10 ct.
- When you have entered the desired amount, you will be asked to confirm it.

## Today's Second Price Auction (cont.)

- In each round of the auction, you will bid for two types of apples in **EUR per kg**
- You will receive the following information on the screen:
  - about products, i.e. apples
  - about the ongoing auction round
- Be as realistic as possible: offer as much as the apples worth for you based on the available information!

## Why to be realistic?

- Bid for the apples as much as they are really worth to you:
  - If you give more than you really want to give, you may have to buy an apple at a higher price than you would like,
  - If you offer less than they would really like to pay, you will not be able to buy the apple you like at an acceptable price.

## The result of today's auction

- After the third auction, the computer will randomly determine:
  1. one of the three auctions as a binding auction
  2. one of the two types of apples as binding.
- As already explained, one participant from each group of 4 will be randomly selected:
  - He/she gets the earning from the zero counting task.
  - He/she buys apples only if he/she is the highest bidder in the binding auction for the binding apple.
- The others do not get earning from zero counting and do not buy apples.

## Examples of possible outcomes of today's auction

- Example 1:
  - the participant was randomly selected from the group and made the highest bid in the 2nd auction for apple B,
  - by random selection, the binding auction is the 2nd auction, and the binding product is apple A.
- Outcome:
  - The participant receives compensation for participation and zero counting money.
  - Does not buy apple because he/she did not make the highest bid for apple A (the binding apple).

## Examples of possible outcomes of today's auction (cont.)

- Example 1:
  - the participant was randomly selected from the group and made the highest bid in the 1st auction round for apple B,
  - by random selection, the binding auction is the 1st round, and the binding product is apple A.
- Outcome:
  - The participant receives compensation for participation and zero counting money.
  - He/she buys apple A because he/she did make the highest bid for apple A (the binding apple).

## Final remarks:

- Only one, randomly selected, person from an auction group of four have a chance to buy apples.
- The price that person pays is the second highest price in the binding auction round for the binding type of apple.
- Other participants have no chance to buy apples, that is, they do not spend money on apples.







## Auctions phase



- A test auction follows for practice (for toothpaste) and then three rounds of auctions, each for two types of apples.
- The test auction does not affect the final result of the auction.
- Read the instructions on the screen carefully, answer and place your bids as you really mean it!

[These are screen captures from zTree.]

\*\*Practice auction and review questions\*\*

<p>This toothpaste is made with Cannabis</p>	<p>This toothpaste is made with Cannabis</p>																								
																									
<p><b>Trial Round</b></p> <p>Please submit your offer using the buttons below:</p>	<p><b>Trial Round</b></p> <p>Please submit your offer using the buttons below:</p>																								
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<p>This toothpaste is made with Cannabis</p>	<p>This toothpaste is made with Cannabis</p>																								
	 <div data-bbox="849 1146 1136 1361"><p>Dialog</p><p>Are you sure you want to finalize your bid?</p><p><input type="button" value="Yes"/> <input type="button" value="No"/></p></div>																								
<p><b>Trial Round</b></p> <p>Your current bid is (in Euros): 1.50 Your current bid is (in Kn): 11.31</p> <p><input data-bbox="587 1585 699 1608" type="button" value=" &lt;&lt; Revise bid "/> <input data-bbox="705 1585 810 1608" type="button" value=" Finalize my bid &gt;&gt; "/></p>	<p><b>Trial Round</b></p> <p>Your current bid is (in Euros): 1.60 Your current bid is (in Kn): 12.06</p> <p><input data-bbox="1209 1585 1321 1608" type="button" value=" &lt;&lt; Revise bid "/> <input data-bbox="1327 1585 1433 1608" type="button" value=" Finalize my bid &gt;&gt; "/></p>																								
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+1 ct	+5 ct	+10 ct	+50 ct	+1€	+5€																				

This toothpaste is made with Cannabis	This toothpaste is made with Cannabis
	
<input type="button" value="Continue &gt;&gt;"/>	

We now would like you to answer some questions that are meant to review the rules of the auctions.

1. How many people can obtain the product in an auction round?

2. Suppose you bid 2.30 and the other participants bid 1.20, 1.80, 1.75.

2a. Who is the highest bidder in the auction?  Me  
 The other bidder

2b. What is the price the highest bidder pays in the auction?  1.20  
 1.75  
 1.80  
 2.30

3. Suppose you bid 1.50 and the other participants bid 1.60, 2.30, 1.95.

3a. Who is the highest bidder in the auction?  Me  
 The other bidder

3b. What is the price the highest bidder pays in the auction?  1.50  
 1.60  
 1.95  
 2.30

We now would like you to answer some questions that are meant to review the rules of the auctions.

4a. How many persons can potentially purchase Apple A in an auction group?

4b. If you are not the highest bidder, how much money are you expected to pay for Apples?

<< Back

Continue >>

---

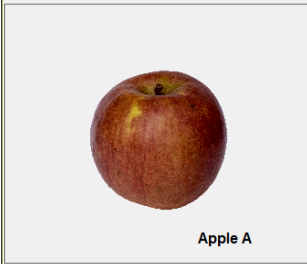
**\*\*Apple evaluation and Auction Round 1 (no information)\*\***

In the next screen you will see pictures of apples. You will be asked to evaluate the apples based on your expectations built on the pictures alone.

After you complete evaluation of the apples, you will participate in an auction to purchase a kilo of each of the apples. Click 'Continue' to proceed.

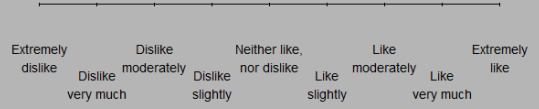
Continue >>

You can now see pictures of two different apples. Please carefully look at the pictures and answer the following questions.



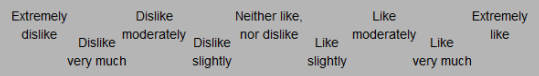
Just judging from appearance, what is your evaluation for Apple A? (choose from the horizontal bar)

I choose:



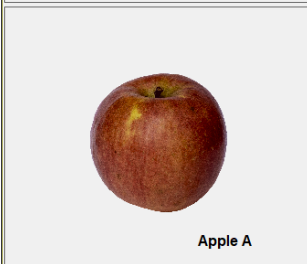
Just judging from appearance, what is your evaluation for Apple B? (choose from the horizontal bar)

I choose:



Continue >>



You can now see pictures of two different apples. Please carefully look at the pictures and answer the following questions.



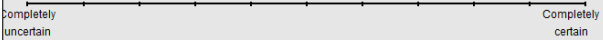
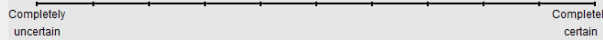


Judging only by appearance, which one do you prefer?

- Apple A
- Apple B
- Both are equally nice
- I don't like any of these

Continue >>

 <p style="text-align: right;"><b>Apple A</b></p>	 <p style="text-align: right;"><b>Apple B</b></p>																								
<p style="text-align: center;"><b>Round 1</b></p> <p style="text-align: center;">Number of people in your auction group      4</p> <p style="text-align: center;">Your current bid is (in Euros):      1.00</p> <p style="text-align: center;">Your current bid is (in Kn):      7.54</p> <p style="text-align: center;"> <input style="background-color: #f00; color: white;" type="button" value=" &lt;&lt; Revise bid "/> <input style="background-color: #f00; color: white;" type="button" value=" Finalize my bid &gt;&gt; "/> </p>	<p style="text-align: center;"><b>Round 1</b></p> <p style="text-align: center;">Number of people in your auction group      4</p> <p style="text-align: center;">Please submit your offer using the buttons below:</p>																								
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 <p style="text-align: right;"><b>Apple A</b></p>	 <p style="text-align: right;"><b>Apple B</b></p>
<p style="text-align: center;"><b>How certain are you for your bid for Apple A?</b></p> <p style="text-align: center;">  </p>	<p style="text-align: center;"><b>How certain are you for your bid for Apple B?</b></p> <p style="text-align: center;">  </p>

**\*\*Apple evaluation and Auction Round 2 (information provided)\*\***

We will now provide you with some information about the apples.

Apple A is **Organic** and is **produced Locally**


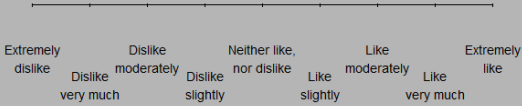

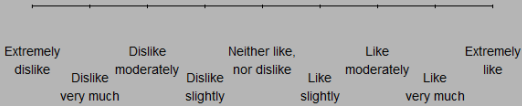
Apple B is **Organic** and is **NOT produced Locally**

In the next screen, you will be asked to evaluate the apples.

After you complete evaluation of the apples, you will participate in an auction to purchase a kilo of each of the apples. Click 'Continue' to proceed.

[Continue >>](#)

Apple A is **Organic** and is **produced Locally**. Apple B is **Organic** and is **NOT produced Locally**

<p><b>EKOLOŠKA LOKALNA</b></p>  <p><b>Apple A</b></p>	<p>What is your evaluation for Apple A? (choose from the horizontal bar)</p> 
<p><b>EKOLOŠKA NIJE LOKALNA</b></p>  <p><b>Apple B</b></p>	<p>What is your evaluation for Apple B? (choose from the horizontal bar)</p> 

[Continue >>](#)

Apple A is **Organic** and is **produced Locally**. Apple B is **Organic** and is **NOT produced Locally**

EKOLOŠKA  
LOKALNA



Apple A

EKOLOŠKA  
NIJE LOKALNA



Apple B

Which one do you prefer?  Apple A  
 Apple B  
 Both are equally nice  
 I don't like any of these

Continue >>

This apple is **Organic** and is **produced Locally**

EKOLOŠKA  
LOKALNA



Apple A

This apple is **Organic** and is **NOT produced Locally**

EKOLOŠKA  
NIJE LOKALNA



Apple B

### Round 2

Number of people in your auction group 4

Please submit your offer using the buttons below:

-1 ct

-5 ct

-10 ct

-50 ct

-1€

-5€

+1 ct

+5 ct

+10 ct

+50 ct

+1€

+5€

### Round 2

Number of people in your auction group 4

Your current bid is: 1.00

Your current bid is (in Kn): 7.54

<< Revise bid

Finalize my bid >>

-1 ct

-5 ct

-10 ct

-50 ct

-1€

-5€

+1 ct

+5 ct





+10 ct

+50 ct

+1€

+5€



This apple is Organic and is produced Locally	This apple is Organic and is NOT produced Locally
<p data-bbox="429 255 507 293">EKOLOŠKA LOKALNA</p>  <p data-bbox="699 472 756 495">Apple A</p>	<p data-bbox="1054 255 1155 293">EKOLOŠKA NIJE LOKALNA</p>  <p data-bbox="1326 472 1383 495">Apple B</p>
<p data-bbox="293 562 707 584">How certain are you for your bid for Apple A?</p> 	<p data-bbox="924 562 1337 584">How certain are you for your bid for Apple B?</p> 

\*\*Apple evaluation and Auction Round 3 (taste apples)\*\*

In the next screen you will be asked to taste the apples.  
You will have to taste them in sequence: FIRST to taste **Apple A** and THEN to taste **Apple B**.

Apple A is **Organic** and is **produced Locally**

Apple B is **Organic** and is **NOT produced Locally**

After tasting the apples, you will be asked to evaluate the apples.

After you complete evaluation of the apples, you will participate in an auction to purchase a kilo of each of the apples. Click 'Continue' to proceed and taste the apples.

[Continue >>](#)

In front of you there are sample of two apples. You can now taste the apples.

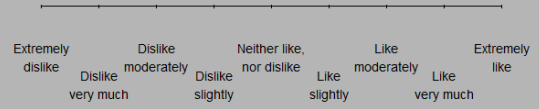
**FIRST** taste Apple A. Apple A is **Organic** and is **produced Locally**. **THEN** taste Apple B. Apple B is **Organic** and is **NOT produced Locally**

EKOLOŠKA  
LOKALNA



Apple A

What is your evaluation for Apple A? (choose from the horizontal bar)

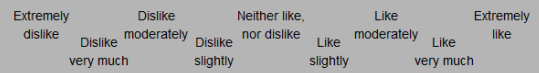


EKOLOŠKA  
NIJE LOKALNA



Apple B

What is your evaluation for Apple B? (choose from the horizontal bar)



Continue >>

In front of you there are sample of two apples. You can now taste the apples.

**FIRST** taste Apple A. Apple A is **Organic** and is **produced Locally**. **THEN** taste Apple B. Apple B is **Organic** and is **NOT produced Locally**

EKOLOŠKA  
LOKALNA



Apple A

EKOLOŠKA  
NIJE LOKALNA







Apple B

Which one do you prefer?

- Apple A
- Apple B
- Both are equally nice
- I don't like any of these

Continue >>

<b>This apple is Organic and is produced Locally</b>	<b>This apple is Organic and is NOT produced Locally</b>																								
<p>EKOLOŠKA LOKALNA</p>  <p>Apple A</p>	<p>EKOLOŠKA NIJE LOKALNA</p>  <p>Apple B</p>																								
<p><b>Round 3</b></p> <p>Number of people in your auction group: 4</p> <p>Your current bid is (in Euros): 1.00 Your current bid is (in Kn): 7.54</p> <p style="text-align: right;"> <input style="background-color: red; color: white;" type="button" value=" &lt;&lt; Revise bid "/> <input style="background-color: red; color: white;" type="button" value=" Finalize my bid &gt;&gt; "/> </p>	<p><b>Round 3</b></p> <p>Number of people in your auction group: 4</p> <p>Please submit your offer using the buttons below:</p>																								
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-1 ct	-5 ct	-10 ct	-50 ct	-1€	-5€																				
+1 ct	+5 ct	+10 ct	+50 ct	+1€	+5€																				

<b>This apple is Organic and is produced Locally</b>	<b>This apple is Organic and is NOT produced Locally</b>
<p>EKOLOŠKA LOKALNA</p>  <p>Apple A</p>	<p>EKOLOŠKA NIJE LOKALNA</p>  <p>Apple B</p>
<p><b>How certain are you for your bid for Apple A?</b></p> <p>Completely uncertain <span style="display: inline-block; width: 80%; border-bottom: 1px solid black; margin: 0 10px;"></span> Completely certain</p>	<p><b>How certain are you for your bid for Apple B?</b></p> <p>Completely uncertain <span style="display: inline-block; width: 80%; border-bottom: 1px solid black; margin: 0 10px;"></span> Completely certain</p>

**\*\*Final screens\***

**Congratulations, you completed the auction phase of the study!**

Our of the three auction rounds, the computer selected round number: **2**

Our of the two apples, the computer selected **Apple: A**

You **were** one of the selected subjects for receiving the money from the Matrix task and purchasing the Apples.

You will receive 2.00€ on top to your endowment of 20.00€ of a coupon from the Matrix counting task.

You will receive one kilo of Apple A and the price of 1.50€ will be deducted from your additional earnings.

**Your final payoff is a fee of 2.00€ on top to the coupon .**

**Continue >>**

Please type your birth year (e.g., 1978).

Please type your gender.

- Male
- Female
- Other

What is the highest degree or level of school you have completed?

- Less than a high school diploma
- High school degree or equivalent
- Bachelor's degree
- Master's degree
- Doctorate

How would you evaluate the income position of your household?

- Very bad
- Bad
- Neither good, nor bad
- Good
- Very good

What is your current working status?

- Employed full-time
- Employed part-time
- Unemployed
- Student
- Retired
- Self-employed
- Unable to work

Where is your residence?

- Urban
- Rural

**Next >>**

Please type your birth year (e.g., 1978).

Please type your gender.

- Male
- Female
- Other

What is the highest degree or level of school you have completed?

- Primary school
- Secondary school degree or equivalent
- Bachelor's degree
- Master's degree
- Doctorate

How would you evaluate the income position of your household?

- Very bad
- Bad
- Neither good, nor bad
- Good
- Very good

What is your current working status?

- Employed full-time
- Employed part-time
- Unemployed
- Student
- Retired
- Self-employed
- Unable to work

Where is your residence?

- City of Zagreb
- Zagreb county
- Other

Next >>