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DOES THE FRAMING AFFECT THE WTP FOR CONSUMPTION GOODS IN REALISTIC SHOPPING SETTINGS?

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Does the framing affect the WTP for consumption goods in realistic shopping settings?

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Abstract: In this study, I examined the influence of the framing effect on the valuation of consumption goods in realistic shopping settings. In four field experiments comprising 1602 shopping center customers as participants, I elicited willingness to pay (WTP) for consumer products by manipulating framing conditions (positive vs. negative framing). Although my four experiments involved two different types of products (durable vs. fast-moving), two different types of framing (attribute vs. goal) and two different valuation procedures (hypothetical vs. consequential), their results were remarkably consistent. I observed that the framing effect had no impact on WTP for the presented products. In the light of both this study and the existing literature, I suspect that the framing effect is more likely to appear in solely hypothetical judgement and assessment tasks than in the context of eliciting consumer WTP

Keywords: framing effect, field experiment, willingness to pay, WTP

JEL codes: D91, C93, M31

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1. Introduction

Framing effect is a cognitive bias where the way in which information is presented affects the decision made (see Piñon and Gambara, 2005 for a review). An early account of the effect was proposed by Tversky and Kahneman (1981) in relation to their prospect theory (involving differentiated perception of gains vs. losses).

Subsequent studies examined the framing effect in various contexts, e.g., in medical decision-making (Marteau, 1989; Krishnamurthy, et al., 2001), time allocation decisions (Wiseman and Levin 1996; Paese 1995), performance evaluation (Duchon et al., 1989; Leong et al., 2017; Kreiner and Gamliel, 2018), mate choice (Saad and Gill, 2014), gambling (Wiseman and Levin 1996; Levin et al. 1988; Kuhberger et al. 1992), and environmental decisions (Yang et al., 2018; Homar and Cvelbar, 2021). However, the results of studies seem to be inconsistent: different studies demonstrated different directions of the framing effect (Gong et al., 2013). This hints at the possibility that the effect is fragile and that its representation in scholarly literature may be tainted by conceptual difficulties, procedural differences, and publication bias.

This is unfortunate as the framing effect, alongside other behavioural effects, is often used in advertisements, slogans, and marketing communication. Understanding the framing phenomenon should be important to both researchers and business practitioners, as it can influence consumers' decisions, perception of prices, and valuations of various products and services. In particular, examining the behavioural determinants of the valuation of various consumer goods seems to be crucial in improving research and marketing methods to establish market prices. However, relatively few existing studies focus on the (highly important in practice) willingness to pay for consumer products; few of them explicitly manipulate such fundamental dimensions as the presence of incentives; finally, few of them investigate large and diverse samples. I address these limitations in the current field experiments.

Considering sample diversity first, some studies have indicated that respondents' individual characteristics moderated the strength of the framing effect. In manipulating the framing of nutrition facts labels (a chocolate being 20% fat vs. 80% fat-free), Braun et al. (1997) found women to be more susceptible to framing than men. Similarly, Hardisty et al. (2010) framed carbon fee as either a tax (negative framing) or a cost offset (positive framing) and showed that framing had a greater influence on Independents and Republicans than on Democrats. Okada and Mais (2010), in their series of experiments with green products,

demonstrated that the positive framing influenced environmentally conscious consumers while the negative framing influenced consumers who are less environmentally conscious.

Levin et al. (1998) distinguished between three main types of framing effect: risky choice, goal, and attribute framing. In this study, we focus on the attribute and goal framing effects. The attribute framing effect refers to differentiating the decisions of the respondents depending on the way in which the attributes of the good are presented. Goal framing is related to the presentation of a product, service, or issue in the light of its potential to provide a gain (positive framing) or its potential to prevent a loss (negative framing).

The classic attribute framing experiment of Levin and Gaeth (1988) showed that the 75% lean beef product label (positive framing) led to a higher taste rating compared to the same beef described as 25% fat (negative framing). This study has been replicated several times in many different contexts (Donovan and Jalleh, 1999; Seta et al., 2010; Kim et al., 2014), although some of them did not confirm the original results (Ganzach and Karsahi, 1995).

Previous research related to goal framing demonstrated that negative framing is usually more powerful than positive goal framing, especially in the health decision-making context (Meyerowitz and Chaiken, 1987, Robberson and Rogers, 1988), but, again, some scholars obtained reversed results (Rothman et al, 1993; Gamliel and Herstein, 2012).

It should be stressed that only a small part of the rich literature on attribute and goal framing refers to private consumer goods. Moreover, numerous studies concerning consumer products examine only purchase intentions or participants' attitude toward the product (Burbock et al., 2019; Tu et al., 2013) rather than actual purchase decisions. In Buda and Zhang (2000), respondents who were exposed to a positive framing message had more positive attitudes towards the product than those who were exposed to a negatively framed message. Similarly, G&B (2006) observed that consumers exposed to a message about the social benefits of organic agriculture reported a greater likelihood of purchasing organic foods than those exposed to a message about the social costs of conventional agriculture. Gamliel and Herstein (2007), however, presented the opposite results. They examined consumers' willingness to buy a number of private brand products; willingness to buy the presented products was higher under negative framing compared to positive framing. Nam et al. (2021) administered a survey designed to identify if the attribute framing effect is driven by the favourable evaluation of a positively framed message or by the unfavourable evaluation of negatively framed information. Participants in the study were placed in a hypothetical online shopping situation and rated several products (e.g. steam iron and digital calculator). Their results demonstrated

a statistically significant main effect of framing, as well as a cultural variation in the mechanism of the framing effect (for North American respondents, the studied effect was due to unfavourable evaluations of negative framing compared to a neutral control treatment, but for South Korean participants it was due to favourable evaluations of positive framing).

Generally, the majority of studies measuring the effect of framing on product attitudes or buying intentions demonstrated more favourable attitudes when the information, message, or advertisement was framed positively than when it was framed negatively (e.g., Putrevu, 2014; Burbock et al., 2019; Jin et al., 2017); still, however, some studies have demonstrated opposing (e.g., Shan et al., 2020 in a study related to organic food) or null results (e.g. Gamliel and Herstein, 2011).

Only a small fraction of the literature on the framing effect is directly related to eliciting willingness to pay (WTP) instead of judgements or assessments; these typically involve solely hypothetical choices (e.g., Wallach et al., 2019). Moreover, many of them examine the framing effect in the context of medical or environmental decision-making, rather than the valuation of consumer goods. For example, Howard, and Salkeld (2009) examined the impact of attribute framing of three attributes related to the detection of cancer on WTP values. They used a discrete choice experiment and obtained a statistically significant effect of framing. Yang et al. (2018), using the contingent valuation method, obtained a statistically significant effect of framing on WTP for green electricity in Denmark. Li et al. (2019) conducted a field experiment in which participants revealed their WTP for landscape products that reduce runoff pollution; WTP values were significantly higher in the positive framing condition compared to the neutral framing, while the effect of the negative frame was also positive, but not statistically significant.

Only a few studies on framing effects have verified the impact of positive or negative framing on WTP for private consumer goods and, moreover, they demonstrated mixed results. Levin et al. (2002) investigated the WTP for a package of ground beef; responses received were significantly higher in the positive framing condition than in the negative framing condition. Wu and Cheng (2011) examined Internet shoppers' attitudes, purchase intention, and WTP for electronic appliances using an experimental website; they found framing effects in participants' product attitude and their purchase intention, but not in their declared WTP values. Similarly, Liu et al. (2020) obtained significant framing effects only for judgments of health qualities of presented meat, but not for their WTP for the product. Likewise, laboratory experiments

conducted by Brzozowicz (2019) showed no framing effects in WTP for a mascara, either elicited in the hypothetical condition or in the condition with real transactions.

In my study, I verify the effect of framing on WTP for private consumer goods. Consequently, because we observe an inconsistency in the results of subsequent studies, I re-examine the robustness of the framing effect, particularly in the declared preferences context. To investigate the effect of framing on both hypothetical and actual purchasing behaviour, I conducted four field experiments at a shopping centre, with a diversified sample and various product groups. I am not aware of any field experiments, particularly those conducted at the point of purchase, examining the influence of the framing effect on the valuation of private consumer goods both hypothetically and with real transactions. What should be stressed is that realistic purchase settings are vital for the validity of the results, because the decision-making process at the point of purchase differs from the process that occurs in the laboratory (Harrison and List, 2004).

2. Design and procedures: the elements common to all the experiments

I carried out four field experiments within a shopping centre in various circumstances and conditions (see Appendix A for instructions). All experiments were conducted in one of the most popular Warsaw shopping centres - Galeria Wileńska – in August 2020. In each of them, participants were asked to reveal their WTP for a presented product.

I presented products at a professionally prepared stand in a place with very high customer traffic. The stand operated during the opening hours of the shopping mall. Customers were encouraged to approach the stand due to its display of selected products, the university logo, and a banner with a slogan promising them a chance to win a prize (a 100 PLN Galeria Wileńska gift card). After approaching the stand, customers interested in participating in the study were informed about the basic principles of the experiment.

In each experiment, two different treatments were used: Ne (negative framing) and Po (positive framing). Each customer was randomly assigned to one experimental treatment.

3. Experiment 1 - Valuation of mugs: real transactions

The participants of Experiment 1 were asked to state their WTP for a hand-painted ceramic mug. It is a durable, useful, familiar good, but as a handicraft product is varied in terms of the

price, pattern, or technique used; thus, I expected that participants would not know the market price of the selected product (30 PLN). Before the experiment, I conducted an online survey (sample size N=52, the sample was diversified in terms of age and sex) to choose the most desirable patterns from 11 mugs presented by the artist. After analysing the results of the survey, I selected three cups (see Figure C.1 in Appendix C); about 80% of participants in the pilot study chose at least one of the three. During the experiment, participants selected which of the three mugs they liked best and then I elicited their WTP for it.

At the beginning, in each treatment, participants were orally informed about the rules of the experiment. Then, I showed them the evaluated products and presented additional information about them. In the next part, I asked participants to choose which of the three mugs they liked the most. Subsequently, they partook in a Becker-DeGroot-Marschak procedure (BDM); this is considered to be correct in terms of incentive compatibility (Kagel 1995), operationally efficient, and suitable for eliciting consumers' WTP in purchase settings in the field (Wertenbroch and Skiera 2002). Participants were informed in detail about the rules of this procedure. They were subsequently asked to reveal the maximum price they would be willing to pay for the selected mug. Thereafter, the experimenter drew the transaction price (in the form of small cards placed in a box) from a pre-specified distribution. The range of the price distribution was not revealed to participants to avoid the anchoring effect (Bohm et al. 1997). If the participant's WTP was higher than or equal to the drawn price, the participant was required to buy the presented product at the transaction price (with their own money). If the WTP was lower than the transaction price, the purchasing process was not executed.

In the end, the participants in both treatments were asked to fill in the post-experimental questionnaire concerning their preferences, as well as sociodemographic characteristics (see Appendix B for the questionnaire) and thereafter took part in a short contest with prizes (100 PLN gift cards).

To verify the framing effect, I compared the impact of positive and negative attribute framing on valuations. To formulate a framing sentence, I used the results of the aforementioned online survey. In the Po treatment, the positive framing was formulated as follows: "As many as 84% of respondents (more or less 5 in 6) assess the artist's mugs as nice or very nice." On the other hand, the negative framing in the Ne treatment was: "Only 16% of respondents (more or less 1 in 6) assess the artist's mugs as ugly or so-so". The framing message was presented to the participants together with information about the product (in writing). To verify whether the

order of the experimental procedure matters, participants were exposed to the framing either before or after the information about the BDM procedure.

It took about ten minutes for a single experiment to be conducted. In total, 442 shopping centre customers (aged 16 and over) took part. Their mean age was 37 years and the research sample was naturally diversified by age, sex, education, and job. About 67% of participants were female.

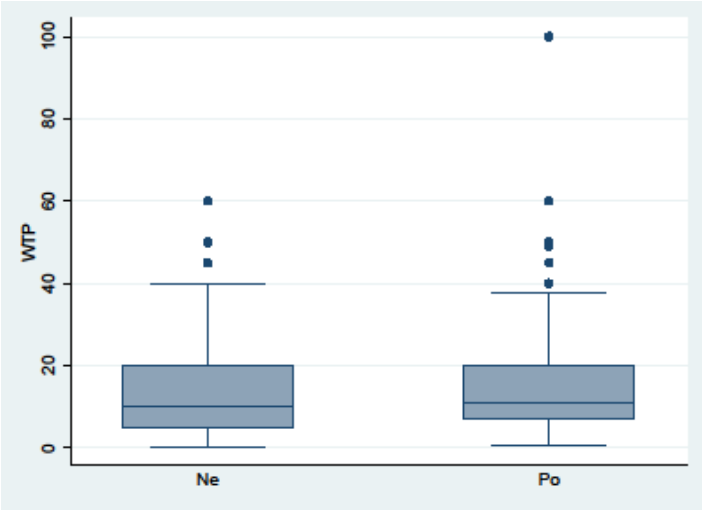
3.1. Results of Experiment 1

The mean value of WTP for the mug across the sample as a whole was equal to 15.06 PLN (3.36 EUR), the median was 10 PLN, and a standard deviation was 16.15 PLN (for histogram, see Figure C.2 in Appendix C). I first plotted the leverage and squared normalised residuals (see Figure C.3 in Appendix C) and removed one outlier (observation no 177). Dropping this observation had no bearing on the Mann-Whitney tests, which will subsequently be presented. I started my analysis by comparing WTP values in each treatment, see Table 1 and Figure 1.

Table 1 Experiment 1: WTPs by treatment (in PLN)

	Ne	**Po**
Mean	13.47	15.58
Median	10	11
Standard dev.	10.04	13.00
N	220	221

Figure 1 Experiment 1: WTPs by treatment (in PLN)



Notes: The blue rectangle represents the middle 50% of the data (from the first quartile to the third), the line inside the box shows the median (the second quartile). The whiskers represent the top and bottom 25% values, excluding outliers, which are represented by dots.

I noticed the mean WTP was slightly lower in the Ne condition than in the Po condition. To verify this observation, I performed a non-parametric Mann-Whitney U test (because of the non-normal distribution of WTP values). I compared treatments with negative vs. positive framing to test for the framing effect. The difference between the WTP values in the Ne and Po treatments was not statistically significant ($z = -1.438$, $p = 0.1506$). In the light of this result, I can conclude that the framing effect had no impact on the valuation of mugs.

In the next step, to examine the robustness of this result and the impact of socio-demographic variables on WTP, I conducted a regression analysis (see Appendix G for the variable labels). I estimated the Ordinary Least Squares regression models with the WTP value as the dependent variable. The dependent variable was logarithmised; I obtained the correct functional form of the presented models. All of the models included the experimental condition (*positive_framing).* In model (2), I additionally controlled for certain sociodemographic characteristics such as sex, age, or education. Model (3) additionally included the variable informing the study how much the participants liked the presented mugs, as well as whether participants intended to give the mug as a gift. Finally, in model (4), I also included the experimenter who carried out the particular experiment and which mug was selected. Table 2 illustrates the regression results.

Table 2. Experiment 1: Regression table: WTP values

	(1)	(2)	(3)	(4)
positive_framing	0.126 (0.163)	0.159* (0.080)	0.148* (0.099)	0.154* (0.090)
Male		-0.141 (0.144)	-0.140 (0.149)	-0.149 (0.130)
Age		-0.008*** (0.002)	-0.009*** (0.001)	-0.009*** (0.001)
higher_edu		-0.226** (0.015)	-0.202** (0.030)	-0.215** (0.024)
unemployed		-0.230** (0.018)	-0.206** (0.033)	-0.197** (0.045)
Gift			0.088 (0.355)	0.092 (0.343)
very_nice			0.259*** (0.007)	0.259*** (0.008)
experimenter				-0.098 (0.282)
mug_elephant				0.026 (0.823)
mug_cat				0.075 (0.529)
information				0.114 (0.234)
Cons	2.290*** (0.000)	2.822*** (0.000)	2.699*** (0.000)	2.683*** (0.000)
N	438	425	425	424
R-sqr	0.0045	0.0605	0.0783	0.0845
F	1.95	5.40	5.06	3.46
Prob>F	0.1631	0.0001	0.0000	0.0001

* p<.10, ** p<.05, *** p<.01

The effect of framing was not statistically significant (at the 5% significance level). I also identified that older participants reported lower WTPs than younger ones, participants with

higher education reported lower WTP values than other participants, and employed participants reported higher WTP values than unemployed participants; besides these findings, WTP was higher in those who liked the presented mugs very much.

As previously noted, the majority of studies on the framing effect have used hypothetical questions. To verify if the null results obtained were caused by the usage of a procedure with real transactions, in Experiment 2 I used a hypothetical method of eliciting consumers' WTP values.

4. Experiment 2: Valuation of mugs: hypothetical conditions

In Experiment 2, the scheme was similar to that of Experiment 1, but the direct method of eliciting participants' WTP was used instead of the BDM procedure. Participants were informed that their valuation was purely declarative. I simply asked them a question: *Give the maximum price that you would be willing to pay for the selected mug (in PLN).*

I used the same framing manipulation, treatments, and products as in Experiment 1.

A single experiment took approximately five minutes. In total, 436 customers from the shopping centre took part; 66% of them were female; their mean age was 38 years.

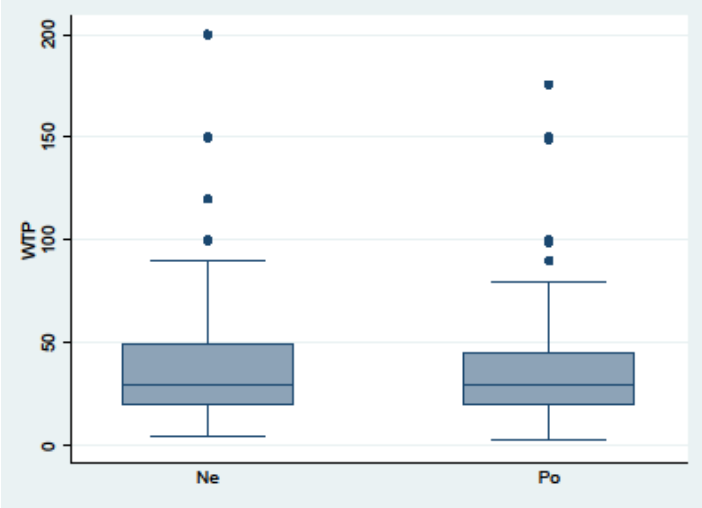
4.1. Results of Experiment 2

The mean value of WTP for the mug across the whole sample was equal to 38.48 PLN (8.58 EUR), with a median of 30 PLN and standard deviation of 41.03 PLN (see Figure D.1 in Appendix D for histogram). I removed two outliers (observation no. 300 and no. 430) using the same procedure as in Experiment 1 (see Figure D.2 in Appendix D). Table 3 and Figure 2 show the comparison in WTP values by treatment.

Table 3. Experiment 2: Descriptive statistics (monetary values in PLN)

	Ne	**Po**
Mean	36.12	36.80
Median	30	30
Standard dev.	26.09	28.16
N	216	218

Fig. 2 Experiment 2: WTPs by treatment (in PLN)



I observed that the difference between the WTP values in the Ne and Po treatments was barely noticeable. I once again confirmed my observations using the Mann-Whitney test. I compared treatments with positive and negative framing to verify the framing effect and found that the difference was not statistically significant ($z = 0.053$ $p = 0.9574$).

In the next step, I estimated the OLS model. I used the logarithmised WTP as a dependent variable (to obtain a correct functional form), and the same independent variables and analogous specifications of the model as in Experiment 1 (see Table 4).

Table 4. Experiment 2: Regression table: WTP values

	(1)	(2)	(3)	(4)
positive_framing	0.002 (0.980)	0.026 (0.647)	0.008 (0.882)	0.017 (0.766)
male		-0.092 (0.125)	-0.079 (0.190)	-0.061 (0.317)
age		-0.017*** (0.000)	-0.017*** (0.000)	-0.018*** (0.000)
higher_edu		0.071 (0.221)	0.089 (0.125)	0.080 (0.169)
unemployed		0.023 (0.723)	0.028 (0.668)	0.020 (0.764)
gift			0.017 (0.773)	-0.002 (0.976)
very_nice			0.166*** (0.004)	0.162*** (0.005)
experimenter				-0.071 (0.213)
mug_elephant				-0.082 (0.243)
mug_cat				0.068 (0.350)
information				-0.091 (0.127)
cons	3.386*** (0.000)	4.004*** (0.000)	3.923*** (0.000)	4.026*** (0.000)
N	434	430	430	426
R-sqr	0.0000	0.1939	0.2097	0.2255
F	0.00	20.40	16.00	10.96
Prob>F	0.9796	0.0000	0.0000	0.0000

* p<.10, ** p<.05, *** p<.01

The output of the regression was in line with the Mann-Whitney tests previously presented; I observed that the framing effect did not affect the valuation of mugs. I also noticed that older participants reported lower WTP than younger ones and, unsurprisingly, WTP values were

higher in participants who very much liked the presented mugs. The order of the experimental procedure had no impact on the valuation.

To verify the robustness of our findings, I conducted further experiments using another consumer product.

5. Experiment 3: Valuation of honey - real transactions

Experiment 3 was also conducted in the Galeria Wileńska shopping centre in August 2020, but it started two weeks after Experiments 1 and 2. The experimental procedure used in Experiment 3 was very similar to that of Experiment 1. However, the subject of valuation was the product from the fast-moving consumer goods category - a jar of flavoured honey. This product is rarely found in brick-and-mortar stores, so we expected that most participants would not know the market price of the offered product (26 PLN). After analysing the information about the popularity of particular types of the products, I selected three types: honey with cocoa, honey with garlic and ginger, and honey with raspberry (see Figure E.1 in Appendix E). The participants were asked to reveal their WTP for the type of honey they were most interested in.

The same stand and location was used as in Experiment 1, and the same BDM procedure was followed. However, in this case all participants were presented with the framing sentence before information about the valuation procedure.

The positive framing was formulated as follows: “Regular consumption of honey helps you stay healthy and in good shape.” Instead, the negative framing was: “Regular consumption of honey helps to prevent diseases.” Such formulation of framing may be categorised as a type of goal framing related to Higgins’ (1997) regulatory focus theory (promotion and prevention behaviour).

The experiment took approximately five minutes per person. A sample of 356 shopping centre customers took part. The mean age was approximately 36 years and about 56% of participants were female.

5.1. Results of Experiment 3

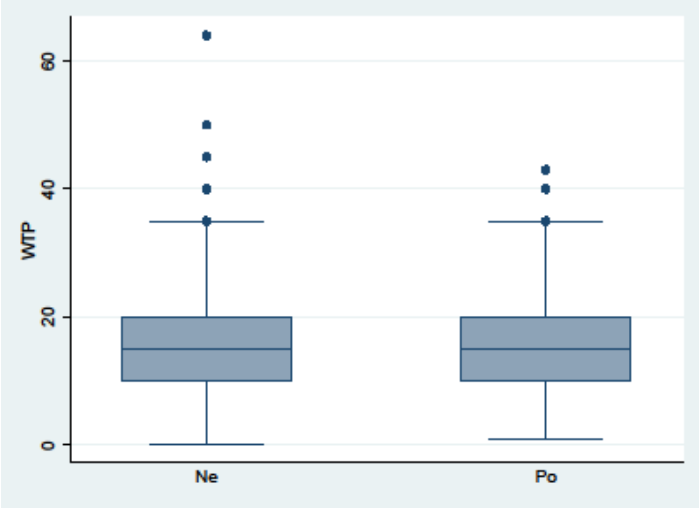
The mean value of WTP for the honey across the sample was equal to 16.16 PLN (3.59 EUR), with a median value of 15 PLN and a standard deviation of 10.37 PLN (for histogram, see Figure E.2 in Appendix E). I removed one outlier (observation no. 178) using the same

procedure as in previous experiments (see Figure E.3 in Appendix E). Again, I began my investigation by comparing WTPs in each treatment, see Table 5 and Figure 3.

Table 5 Experiment 3: WTPs by treatment (in PLN)

	Ne	**Po**
Mean	16.79	15.52
Median	15	15
Standard dev.	12.21	8.05
N	180	176

Fig. 3 Experiment 3: WTPs by treatment (in PLN)



From a visual inspection alone, the mean WTP is slightly higher in the negative framing than in the positive framing condition. As in previous experiments, I verified this observation using non-parametric Mann-Whitney U tests. Again, I compared treatments with positive and negative framing to verify the framing effect. The difference between the WTP values in the Ne and Po treatments was not statistically significant ($z = 0.104$, $p=0.9170$) implying no framing was in effect.

I once more verified these findings using OLS regression models; see Table 6. Again, the WTP value (dependent variable) was logarithmised; the RESET test evidenced that the functional form of all presented models was correct. Models 1 and 2 were analogous to the specifications

in Experiments 1 and 2. Model (3) additionally included the extent to which the participants liked the presented honey and whether they intended to give the honey as a gift. Finally, in model (4), I also included the dummy for the experimenter who conducted the particular experiment and which type of honey was selected by the participant.

Table 6. Experiment 3: Regression table: WTP values

	(1)	**(2)**	**(3)**	**(4)**
positive_framing	0.023 (0.765)	0.028 (0.725)	0.030 (0.708)	0.015 (0.856)
male		-0.093 (0.247)	-0.091 (0.258)	-0.102 (0.207)
age		0.002 (0.334)	0.002 (0.339)	0.002 (0.494)
education		-0.166 (0.154)	-0.160 (0.179)	-0.150 (0.205)
unemployed		-0.253*** (0.004)	-0.254*** (0.004)	-0.234*** (0.009)
gift			0.018 (0.848)	0.005 (0.957)
attractive			0.025 (0.818)	0.045 (0.691)
experimenter				-0.118 (0.148)
honey_ginger				0.155 (0.106)
honey_cocoa				0.086 (0.402)
Cons	2.549*** (0.000)	2.732*** (0.000)	2.716*** (0.000)	2.756*** (0.000)
N	354	348	348	346
R-sqr	0.0003	0.0275	0.0278	0.0390
F	0.09	1.94	1.39	1.36
Prob>F	0.7648	0.0877	0.2088	0.1970

* p<.10, ** p<.05, *** p<.01

In all specifications of the model, the framing effect was not statistically significant. Among the remaining variables, only *work* matters; unemployed participants reported lower WTPs than their employed counterparts.

6. Experiment 4: Valuation of honey - hypothetical conditions

The scheme of Experiment 4 was similar to that of Experiment 2 (using the declarative method to elicit consumer WTP), but participants were asked to report their WTP for the selected honey (we used the same varieties as in Experiment 3) instead of mugs. I used the same design, product, and framing manipulation as in Experiment 3.

It took approximately five minutes for a single experiment to be conducted. In total, 368 shopping centre customers took part. Approximately 58% of them were female, with a mean age of 36.

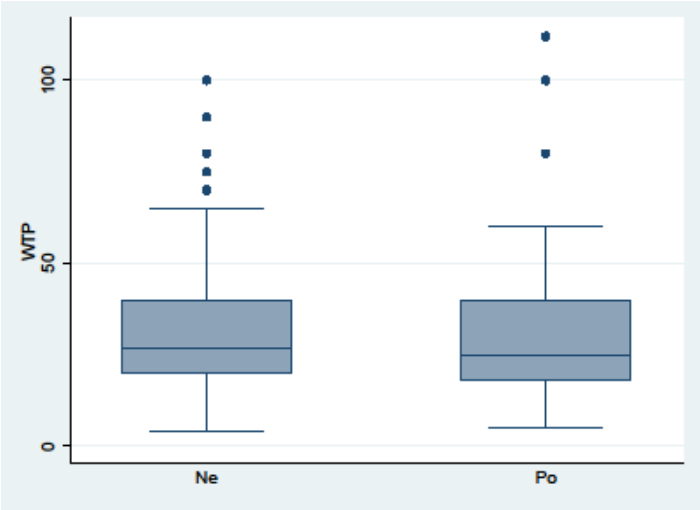
6.1. Results of Experiment 4

The mean value of WTP for the product across the whole sample equalled 31.10 PLN, with a median of 25.5 PLN and standard deviation of 19.84 PLN (for histogram, see Figure F.1 in Appendix F). I removed one outlier (observation no. 368); see Figure F.2 in Appendix F. Table 7 and Figure 4 show WTP by treatment.

Table 7 Experiment 4: WTPs by treatment (in PLN)

	Ne	**Po**
Mean	30.26	31.04
Median	26.5	25
Standard dev.	16.02	19.44
N	184	183

Fig. 4 Experiment 4: WTPs by treatment (in PLN)



Again, we compared treatments with positive vs. negative framing using the Mann-Whitney test. The difference between the WTP values in the Ne vs. Po treatments was unnoticeable and not statistically significant (z = 0.192, p=0.8477). Thus, we can state that the framing effect did not affect the valuation of the offered honey.

As previously observed, we verified these results using a regression model with the logarithmised WTP as the dependent variable. Table 8 reveals the results.

Table 8. Experiment 4: Regression table: WTP values

	(1)	**(2)**	**(3)**	**(4)**
positive_framing	-0.018 (0.764)	-0.015 (0.792)	-0.002 (0.968)	-0.019 (0.747)
male		-0.182*** (0.002)	-0.178*** (0.002)	-0.181*** (0.002)
age		-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)
education		-0.048 (0.543)	-0.047 (0.554)	-0.041 (0.610)
unemployed		-0.002 (0.976)	-0.012 (0.853)	-0.021 (0.756)
gift			0.094	0.092

			(0.204)	(0.218)
attractive			0.174*** (0.010)	0.176*** (0.009)
experimenter				-0.066 (0.268)
honey_ginger				0.098 (0.172)
honey_cocoa				0.071 (0.324)
Cons	3.277*** (0.000)	3.703*** (0.000)	3.634*** (0.000)	3.643*** (0.000)
N	367	362	362	361
R-sqr	0.0002	0.0857	0.1087	0.1172
F	0.09	6.67	6.17	4.65
Prob>F	0.7637	0.0000	0.0000	0.0000

* p<.10, ** p<.05, *** p<.01

As before, no framing effect was observed. Women reported higher WTPs than men, older participants had lower WTP values than younger ones, and, again, participants who perceived the presented product as very attractive valued it more than the rest.

7. Conclusions

I examined the influence of the framing effect on the valuation of private consumer goods (measured by WTP) in four field experiments in a shopping centre. The experiments conducted involved two different types of consumer products (durable and fast-moving); I also used two different types of framing and two different valuation procedures; nevertheless, I obtained notably consistent results. I observed that the framing effect had no impact on participants' WTP for the presented goods. I am not aware of another framing study conducted at the point of purchase, thus my study seems to be the first to examine the effect of framing on both hypothetical and actual purchasing behaviour in realistic shopping settings.

My findings speak against the relevance of the framing effect, especially in valuation tasks. Based on the existing literature and the current study, I suspect that the framing effect is

more likely to show up in solely hypothetical judgement and assessment tasks than in the context of eliciting consumer WTP. In valuation tasks, respondents may concentrate more on their preferences and the utility of the presented goods (Yoon et al., 2019) and, therefore, be less susceptible to any additional "hints", such as framing information. I also noticed that the difference between the mean WTP for the mugs in the positive and negative framing conditions was much bigger in the experiment with the hypothetical valuation than in the experiment with the BDM procedure (16% vs. 2%) and similarly in the case of honey (8% vs. 2%; although these interactions were not significant). Thus, I suspect that participants in hypothetical conditions are more susceptible to the framing effect compared to situations with their own money at stake.

I failed to discover the existence of a significant framing effect using either a declarative method of eliciting consumer WTP or procedure with real transactions. However, mean WTP for the presented products was higher in experiments involving hypothetical valuations (Experiments 2 and 4) than in experiments using the BDM procedure (Experiments 1 and 3), which indicates the presence of *hypothetical bias (*see Foster and Burrows (2017) for a meta-analysis). In my study, the mean *bias ratio* (ratio of the mean WTP from the hypothetical treatment to the mean WTP from the real treatment) was equal to 2.24, thus very close to that of the meta-analysis (2.33).

The results of this study have both theoretical and practical implications. Firstly, they contribute to the literature on framing effect and broaden the knowledge of the behavioural determinants of the valuation of consumer goods. As using the framing is common in marketing activities and advertising (e.g. in public health campaigns, cosmetic slogans), this study also has implications within marketing sciences. My findings imply that framing as a marketing tool may be not effective, especially when used in realistic shopping settings.

In conclusion, in the current study I demonstrated that the framing effect did not affect the WTP for consumer products from different categories. My findings seem to be strong and robust because of a large and diversified sample (over 1600 participants in total) and realistic purchase settings.

References

Bohm, P., Lindén, J., & Sonnegård, J. (1997). Eliciting Reservation Prices: Becker–DeGroot–Marschak Mechanisms vs. Markets, *The Economic Journal*, *107*(443),1079–1089.

Braun, K.A., Gaeth, G.J., Levin, I.P. (1997). Framing effects with differential impact: The role of attribute salience. *Advances in Consumer Research, 24, 40*5-411.

Brzozowicz, M. (2019). Hypothetical bias and framing effect in the valuation of private consumer goods. *Central European Economic Journal*, *5*(52), 260-269.

Buda, R., & Zhang, Y. (2000). Consumer product evaluation: the interactive effect of message framing, presentation order, and source credibility. *Journal of Product & Brand Management*.

Burböck, B., Kubli, V., Maček, A., & Bobek, V. (2019). Effects of different types of framing in advertising messages on human decision behaviour. *International Journal of Diplomacy and Economy*, *5*(1), 27-41.

Donovan, R. J., & Jalleh, G. (1999). Positively versus negatively framed product attributes: The influence of involvement. *Psychology & Marketing*, *16*(7), 613-630.

Duchon, D., Dunegan, K. J., & Barton, S. L. (1989). Framing the problem and making decisions: The facts are not enough. *IEEE transactions on engineering management*, *36*(1), 25-27.

Foster, H., Burrows J. (2017), "Hypothetical bias: a new meta-analysis," McFadden, D., Train, K (red.), *Contingent Valuation of Environmental Goods: A Comprehensive Critique*, 270–91.

Gamliel, E., & Herstein, R. (2007). The effect of framing on willingness to buy private brands. *Journal of Consumer Marketing*.

Gamliel, E., & Herstein, R. (2011). To save or to lose: does framing price promotion affect consumers' purchase intentions?. *Journal of Consumer Marketing*.

Gamliel, E., & Herstein, R. (2012). Effects of message framing and involvement on price deal effectiveness. *European journal of marketing*.

Ganzach, Y., & Karsahi, N. (1995). Message framing and buying behavior: A field experiment. Journal Business Research, 32, 11–17

Gong, J., Zhang, Y., Yang, Z., Huang, Y., Feng, J., & Zhang, W. (2013). The framing effect in medical decision-making: a review of the literature. *Psychology, health & medicine*, *18*(6), 645-653.

Hardisty, D.J., Johnson, E.J., Weber, E.U. 2010. A dirty word or a dirty world? Attribute framing, political affiliation, and query theory. *Psychological Science 21* (1), 86−92

Harrison, G. W., & List, J. A. (2004). Field experiments. *Journal of Economic literature*, *42*(4), 1009-1055.

Higgins, E. T. (1997). Beyond pleasure and pain. American Psychologist, 52(12), 1280-1300

Homar, A. R., & Cvelbar, L. K. (2021). The effects of framing on environmental decisions: Asystematic literature review. *Ecological Economics*, *183*, 106950.

Howard, K., & Salkeld, G. (2009). Does attribute framing in discrete choice experiments influence willingness to pay? Results from a discrete choice experiment in screening for colorectal cancer. *Value in health*, *12*(2), 354-363.

Jin, J., Zhang, W., & Chen, M. (2017). How consumers are affected by product descriptions in online shopping: event-related potentials evidence of the attribute framing effect. *Neuroscience research*, *125*, 21-28.

Kagel, J. (1995). Auctions: A Survey of Experimental Research. In J. Kagel, and A.E. Roth (Eds.), *Handbook of Experimental Economics*, 501–85.

Kim, J., Kim, J. E., & Marshall, R. (2014). Search for the underlying mechanism of framing effects in multi-alternative and multi-attribute decision situations. *Journal of Business Research*, *67*(3), 378-385. attitudes, intentions, and behavior. *Journal of personality and social psychology*, *52*(3), 500.

Kreiner, H., & Gamliel, E. (2018). The role of attention in attribute framing. *Journal of Behavioral Decision Making*, *31*(3), 392-401.

Krishnamurthy, P., Carter, P., & Blair, E. (2001). Attribute framing and goal framing effects in health decisions. *Organizational behavior and human decision processes*, *85*(2), 382-399.

Kuhberger, A., Schulte-Mecklenbeck, M., Perner, J. 1999. The effects of framing, reflection, probability, and payoff on risk preference in choice tasks. *Organizational Behavior and Human Decision Processes* 78, 204–231.

Leong, L. M., McKenzie, C. R., Sher, S., & Müller-Trede, J. (2017). The role of inference in attribute framing effects. *Journal of Behavioral Decision Making*, *30*(5), 1147-1156.

Levin, I. P., & Gaeth, G. J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of consumer research*, *15*(3), 374-378.

Levin, I. P., Gaeth, G. J., Schreiber, J., & Lauriola, M. (2002). A new look at framing effects: Distribution of effect sizes, individual differences, and independence of types of effects. *Organizational behavior and human decision processes*, *88*(1), 411-429.

Levin, I.P., Schneider, S.L., Gaeth, G.J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes 76*, 149−18

Li, T., Fooks, J. R., Messer, K. D., & Ferraro, P. J. (2019). A field experiment to estimate the effects of anchoring and framing on residents' willingness to purchase water runoff management technologies. *Resource and Energy Economics*, 101107.

Liu, D., Juanchich, M., & Sirota, M. (2020). Focus to an attribute with verbal or numerical quantifiers affects the attribute framing effect. *Acta Psychologica*, *208*, 103088.

Marteau, T. M. (1989). Framing of information: Its influence upon decisions of doctors and patients. *British Journal of Social Psychology*, *28*(1), 89-94.

Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination

Nam, Y., Park, H. G., & Kim, Y. H. (2021). Do you favor positive information or dislike negative information? Cultural variations in the derivation of the framing effect. *Current Psychology*, 1-7.

Okada, E. M., & Mais, E. L. (2010). Framing the "Green" alternative for environmentally conscious consumers. *Sustainability Accounting, Management and Policy Journal*.

Paese, P.W. 1995. Effect of framing on actual time allocation decisions. Organizational Behavior and Human Decision Processes 61, 67–76.

Piñon, A., Gambara, H. 2005. A meta-analytic review of framing effect: Risky, attribute, and goal framing. *Psicothema 17*, 325−331

Putrevu, S. (2014) 'The influence of mood and attribute framing on consumer response toward persuasive appeals', Journal of Current Issues and Research in Advertising, Vol. 35, No. 2, pp.107–125.

Robberson, M. R., & Rogers, R. W. (1988). Beyond fear appeals: Negative and positive appeals to health and self-esteem. Journal of Applied Social Psychology, 18, 277–287.

Rothman, A. J., Salovey, P., Antone, C., Keough, K., & Martin, C. D. (1993). The influence of message framing on intentions to perform health behaviors. *Journal of experimental social psychology*, *29*(5), 408-433.

Saad, G., & Gill, T. (2014). The framing effect when evaluating prospective mates: An adaptationist perspective. *Evolution and Human Behavior*, *35*(3), 184-192.

Seta, J. J., McCormick, M., Gallagher, P., McElroy, T., & Seta, C. E. (2010). Voice frequency impacts hemispheric processing of attribute frames. *Journal of Experimental Social Psychology*, *46*(6), 1089-1092.

Shan, L., Diao, H., & Wu, L. (2020). Influence of the Framing Effect, Anchoring Effect, and Knowledge on Consumers' Attitude and Purchase Intention of Organic Food. *Frontiers in Psychology*, *11*, 2022.

Tu, J., Kao, T., & Tu, Y. (2013). Influences of framing effect and green message on advertising effect. *Social Behavior and Personality: An International Journal*, 41(7), 1083-1098. doi:10.2224/sbp.2013.41.7.1083

Tversky, A., Kahneman, D. 1981. The framing of decisions and the psychology of choice. *Science, 211* (4481), 453−458.

Wallach, K., Hamilton, R., & K Ward, M. (2019). This Paper Is Not For Everyone: Message Framing and Perceived Preferences. *ACR North American Advances*.

Wertenbroch, K., & Skiera, B. (2002). Measuring consumers' willingness to pay at the point of purchase. *Journal of Marketing Research, 39,* 228-241.

Wiseman, D., Levin, I. 1996. Comparing risky decision making under conditions of real and hypothetical consequences. Organizational Behavior and Human Decision Processes 66, 241–250.

Wu, C-S. and Cheng, F-F. (2011) 'The joint effect of framing and anchoring on internet buyers' decision-making', Electronic Commerce Research and Applications, Vol. 10, No. 1, pp.358–368

Yang, Y., Solgaard, H. S., & Ren, J. (2018). Does positive framing matter? An investigation of how framing affects consumers' willingness to buy green electricity in Denmark. *Energy research & social science*, *46*, 40-47.

Yoon, S., Fong, N. M., & Dimoka, A. (2019). The robustness of anchoring effects on preferential judgments. *Judgment & Decision Making, 14*(4).

APPENDICES

Appendix A. Transcription of instructions

1.Experiment 1

Part 1: Introduction [all treatments, presented orally]

Welcome!

We are researchers from the University of Warsaw. We are conducting a survey, which will only take a few minutes. I am wondering if you would like to participate. At the end of this survey, you will play a game in which you can win a Galeria Wileńska Gift Card, worth 100 PLN. If you have any questions during the survey, do not hesitate to ask.

We would like to inform you that the study is anonymous and all data collected will be used solely for scientific purposes.

Part 2: Rules: [all treatments]

In a moment, you will have the opportunity to buy the presented product. You will receive a valuation questionnaire in which you will be asked to specify the maximum price you would be willing to pay for this product.

Your choice will be binding; it will determine whether you buy the product. After you state your amount, a transaction price will be drawn for you. If it is lower than or equal to the amount you specified, **you will be required to buy the product at the drawn price;** however, if the drawn transaction price is higher than the amount you provided, no transaction will take place.

The best thing you can do in this situation is to give your actual valuation, which is the maximum price you are willing to pay for the presented product. If you give an amount

higher than your actual valuation, you may have to pay more than you are willing to. If, on the other hand, you give a lower valuation than your actual one, you may be disappointed with your inability to purchase the product offered at an acceptable price.

Example: The participant declares that the maximum price they are willing to pay for the product is 15 000 PLN; a price of 10 000 PLN is drawn. The participant buys the product for 10 000 PLN; however, if the price was 20 000 PLN, they would not be able to buy the product. Of course, this is just an example; the amounts involved in the experiment will be significantly lower.

Part 3: Information about the product and valuation questionnaire [Ne]

A hand-painted mug, made by a Gdańsk artist, a graduate of the Academy of Fine Arts, with over 20 years of experience in acquiring ceramics. Capacity: 350 ml.

Only 16% of respondents (more or less 1 in 6) assess the artist's mugs as ugly or so-so.

Remembering that your answers are binding and whether you buy the product will depend on them, give the maximum price that you are willing to pay for the presented mug. (Please enter a specific amount in PLN.)

…….

Part 3: Information about the product and valuation questionnaire [Po]

A hand-painted mug, made by a Gdańsk artist, a graduate of the Academy of Fine Arts, with over 20 years of experience in acquiring ceramics. Capacity: 350 ml.

As many as 84% of respondents (more or less 5 in 6) assess the artist's mugs as nice or very nice.

Remembering that your answers are binding and whether you buy the product will depend on them, give the maximum price that you are willing to pay for the presented mug. (Please enter a specific amount in PLN.)

……...

2. Experiment 2

Part 1:Introduction [all treatments, presented orally]

The same as in Experiment 1.

Part 2: Rules [all treatments]

In a moment, you will receive a questionnaire in which you will be asked to value the presented product. In the questionnaire, you will have to specify the maximum price you would be willing to pay for this product. It will be purely declarative and no real transactions will be made on this basis.

Part 3: Information about the product and valuation questionnaire [Ne]

A hand-painted mug, made by a Gdańsk artist, a graduate of the Academy of Fine Arts, with over 20 years of experience in acquiring ceramics. Capacity: 350 ml.

Only 16% of respondents (more or less 1 in 6) assess the artist's mugs as ugly or so-so.

Give the maximum price that, **hypothetically**, you would be willing to pay for the selected mug. (Please enter a specific amount in PLN.)

…….

Part 3: Information about the product and valuation questionnaire [Po]

A hand-painted mug, made by a Gdańsk artist, a graduate of the Academy of Fine Arts, with over 20 years of experience in acquiring ceramics. Capacity: 350 ml.

As many as 84% of respondents (more or less 5 in 6) assess the artist's mugs as nice or very nice.

Give the maximum price that, **hypothetically**, you would be willing to pay for the selected mug. (Please enter a specific amount in PLN.

……

3. Experiment 3

Part 1: Introduction [all treatments, presented orally]

The same as in Experiment 1.

Part 2: Rules: [all treatments]

The same as in Experiment 1.

Part 3: Information about the product and valuation questionnaire [Ne]

Creamy multiflower honey with the addition of freeze-dried raspberry / real cocoa / dried ginger and garlic. Polish product. No artificial syrups or dyes. Net mass 430 grams. **Regular consumption of honey helps to prevent diseases.**

Remembering that your answers are binding and whether you buy the product will depend on them, give the maximum price that you are willing to pay for the presented honey. (Please enter a specific amount in PLN.)

…….

Part 3: Information about the product and valuation questionnaire [Po]

Creamy multiflower honey with the addition of freeze-dried raspberry / real cocoa / dried ginger and garlic. Polish product. No artificial syrups or dyes. Net mass: 430 grams. **Regular consumption of honey helps you stay healthy and in good shape.**

Remembering that your answers are binding and whether you buy the product will depend on them, give the maximum price that you are willing to pay for the presented honey. (Please enter a specific amount in PLN.)

……...

4. Experiment 4

Part 1: Introduction [all treatments, presented orally]

The same as in Experiment 1.

Part 2: Rules [all treatments]

In a moment, you will receive a questionnaire in which you will be asked to value the presented product. In the questionnaire, you will have to specify the maximum price you would be willing to pay for this product. It will be purely declarative and no real transactions will be made on this basis.

Part 3: Information about the product and valuation questionnaire [Ne]

Creamy multiflower honey with the addition of freeze-dried raspberry / real cocoa / dried ginger and garlic. Polish product. No artificial syrups or dyes. Net mass 430 grams. **Regular consumption of honey helps to prevent diseases.**

Give the maximum price that, **hypothetically**, you would be willing to pay for the selected mug. (Please enter a specific amount in PLN.)

…….

Part 3: Information about the product and valuation questionnaire [Po]

Creamy multiflower honey with the addition of freeze-dried raspberry / real cocoa / dried ginger and garlic. Polish product. No artificial syrups or dyes. Net mass: 430 grams. **Regular consumption of honey helps you stay healthy and in good shape.**

Give the maximum price that, **hypothetically**, you would be willing to pay for the selected mug. (Please enter a specific amount in PLN.

……

Appendix B: Transcript of questionnaires [all Experiments]

1. How would you use the presented product?

- For myself
- As a gift
- I don’t know

2. Do you like this product?

- Definitely yes
- Yes
- So-so
- No
- Definitely not

3. Gender

- Female
- Male

4. Age

……

5. Education level:

- Primary
- Vocational
- Secondary
- Higher

6. Do you work currently?

- Yes
- No

Appendix C. Experiment 1: Figures

Figure C.1 Experiment 1: selected products.

Figure C.2 Experiment 1: histogram of WTP values across the sample

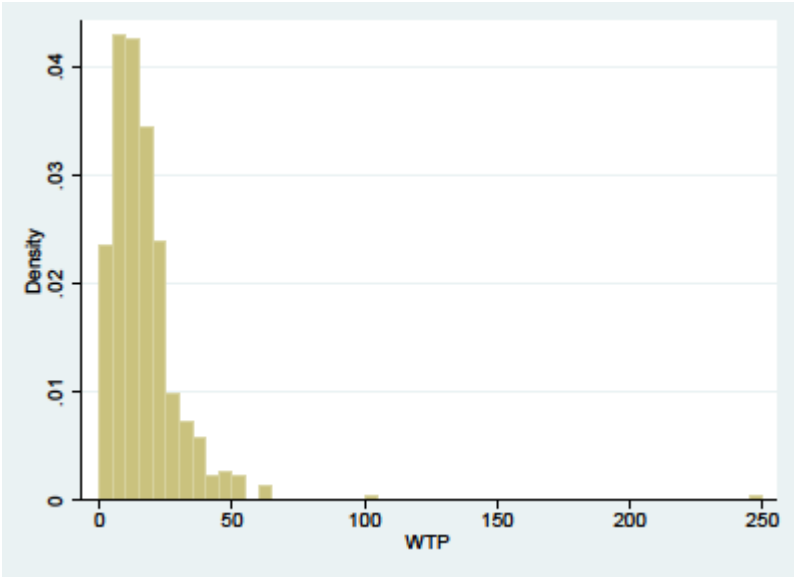
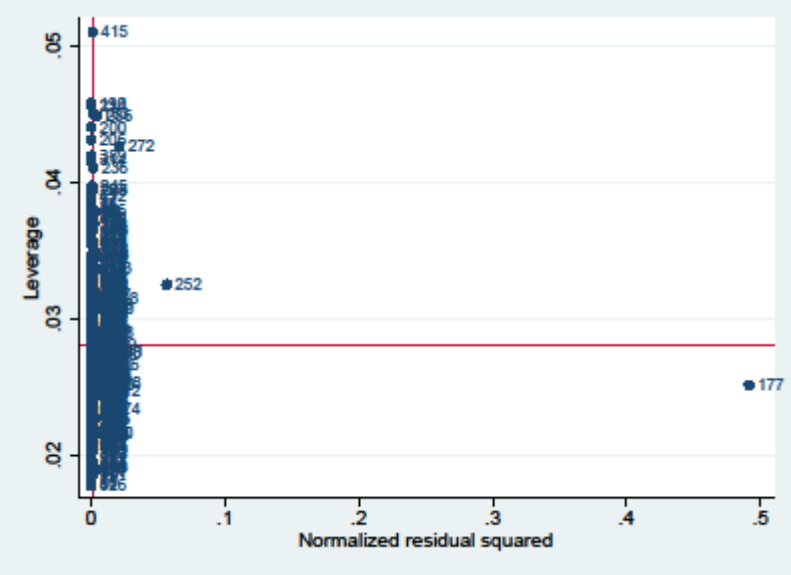


Figure C.3 Experiment 1: The leverage and squared normalised residuals



Appendix D. Experiment 2: Figures

Figure D.1 Experiment 2: Histogram of WTP values across the sample

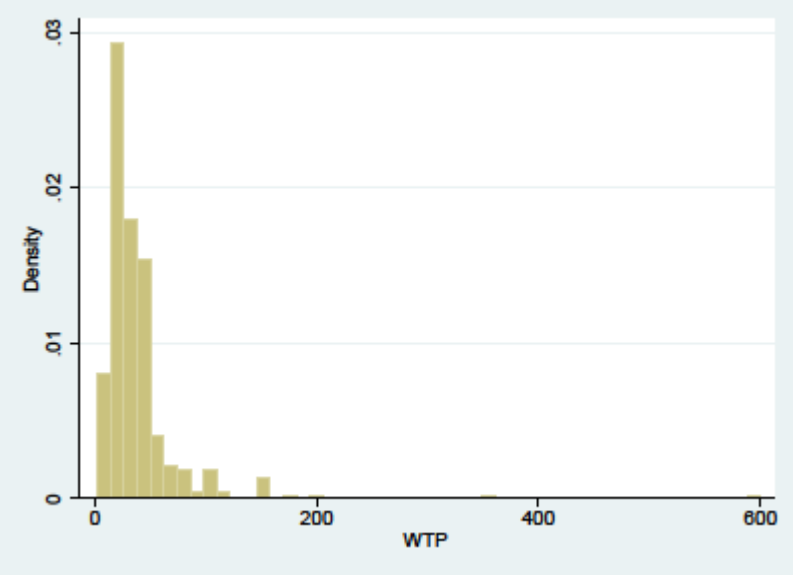
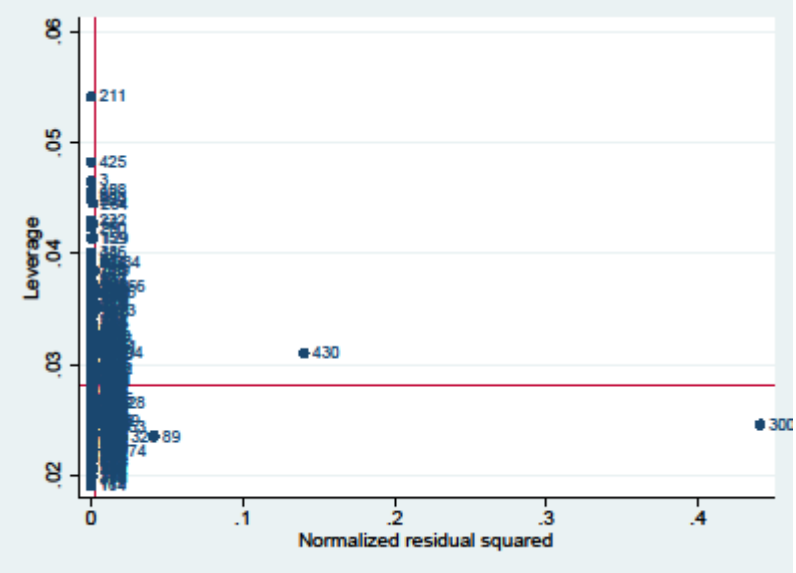


Figure D.2. Experiment 2: The leverage and squared normalised residuals



Appendix E. Experiment 3: Figures

Figure E.1 Experiment 3: Selected products

Figure E.2 Experiment 3: Histogram of WTP values across the sample

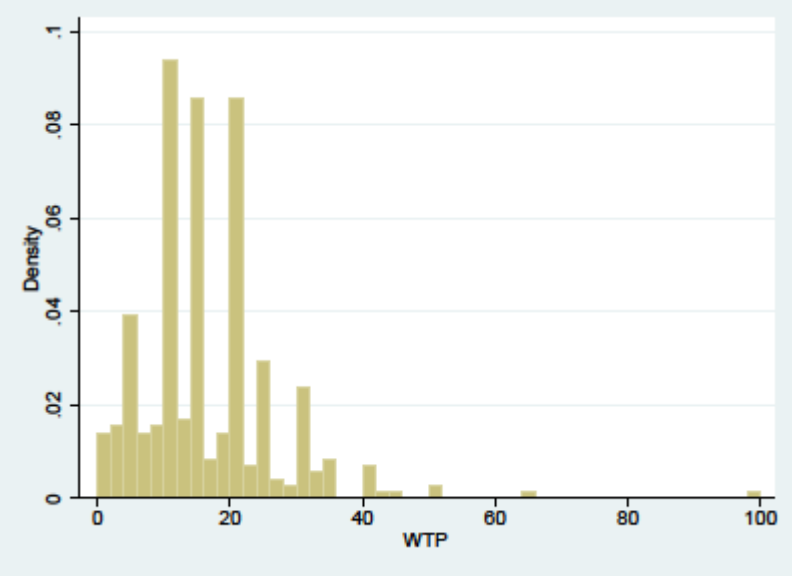
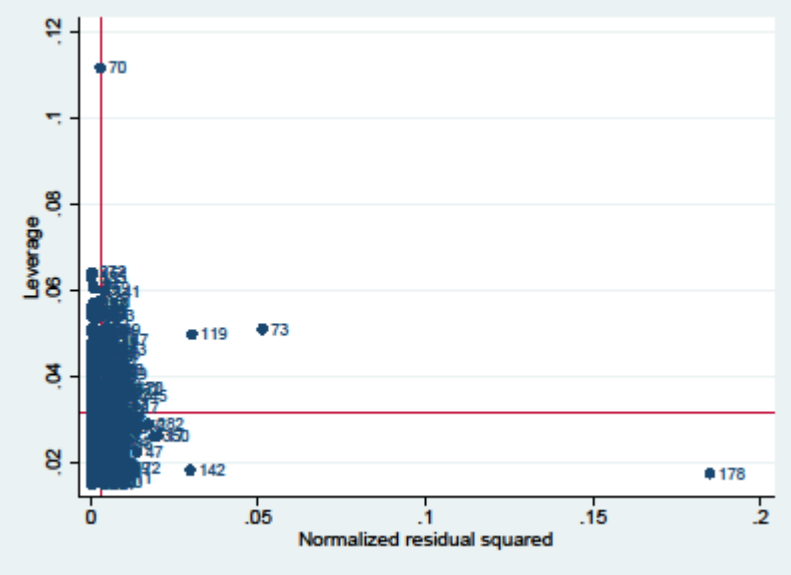


Figure E.3 Experiment 3: The leverage and squared normalised residuals



Appendix F. Experiment 4: Figures

Figure F.1 Experiment 4: Histogram of WTP values across the sample

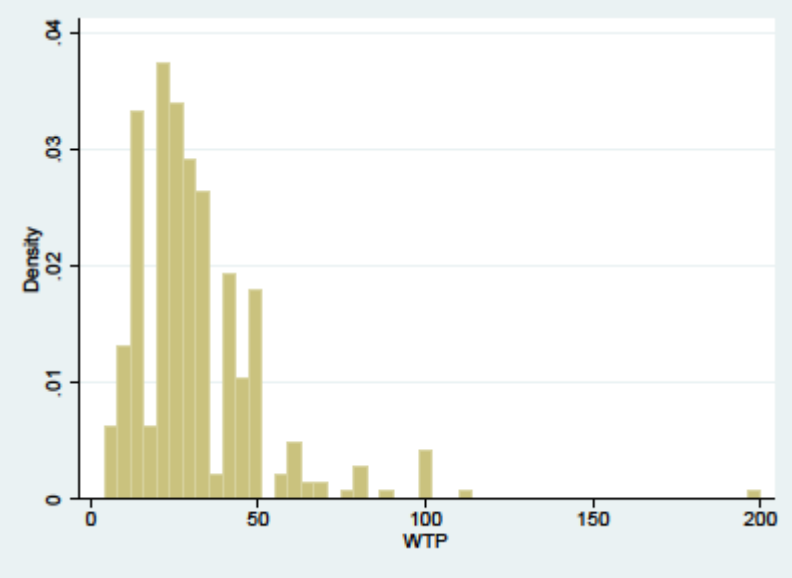
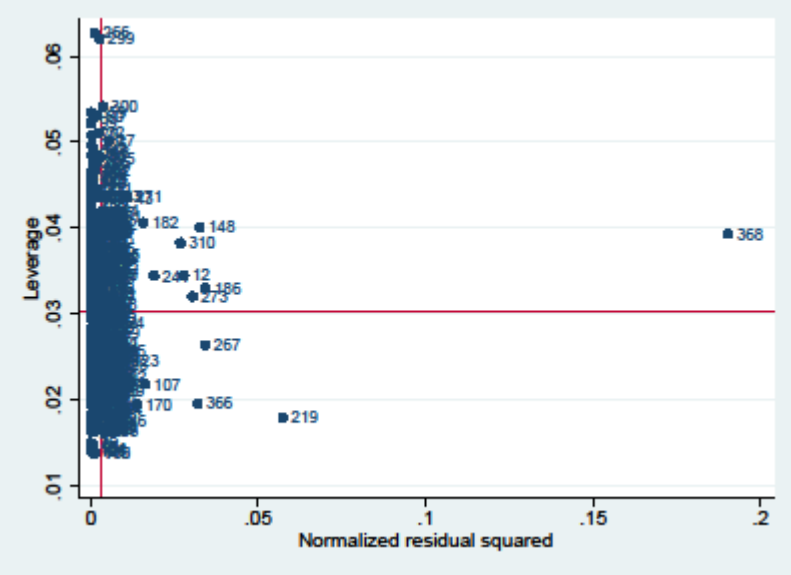


Figure F.2 Experiment 4: The leverage and squared normalised residuals



Appendix G. Variable labels

positive_framing: 1 - for positive framing, 0 - for negative framing

male: 1 - male, 0 - female

age

higher_edu: 1 - if the participant has higher education, 0 - in all other cases

education: 1 - if the participant has higher or secondary education, 0 - if the participant has primary or vocational education

unemployed: 1- if the participant is unemployed, 0 - otherwise

gift: 1 - if the participant would like to use the mug/honey as a gift, 0 - in all other cases

very_nice: 1- if the participant assesses the presented mugs as very nice, 0 - in all other cases

attractive: 1- if the selected honey is attractive or very attractive to the participant, 0 - in all other cases

experimenter: 1 - if the experiment was conducted by experimenter no. 1, 0 - if the experiment was conducted by experimenter no. 2

mug_elephant: 1- if the participant selected the mug with an elephant; 0 - otherwise

mug_cat: 1- if the participant selected the mug with a cat, 0 - otherwise

honey_ginger: 1- if the participant selected the honey with garlic and ginger; 0 - otherwise

honey_cocoa: 1- if the participant selected the honey with cocoa, 0 - otherwise

information:1- if the participant was exposed to framing before information about the valuation procedure, 0 - otherwise

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