

Online Appendix

When the Eyes Say Buy: Visual Fixations during
Hypothetical Consumer Choice Improve Prediction of
Actual Purchases

Taisuke Imai

Min Jeong Kang

Colin F. Camerer

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A Methods

A.1 Selection of Items and Their Prices

After completing the WTP reporting part, 60 out of the 120 products were selected for each subject, by the computer, for presentation to the subject during the purchasing blocks. More specifically, the computer ranked products in descending order of the subject’s WTPs, except for the products with WTP of \$50 (to avoid the ceiling effect), and then paired up each two adjacent products (e.g., {1st, 2nd}, {3rd, 4th}, {5th, 6th}, ...). Among these pairs, the 30 pairs with the highest WTP were selected. One product of each adjacent pair was randomly chosen and assigned to the hypothetical trials, and the other product from each pair was assigned to the real trials. This procedure ensured that the distributions of WTPs in both of hypothetical and real blocks were matched (Fig. S2).

Each of the 60 selected products selected in the aforementioned way was presented to the subject three times during the hypothetical and real blocks, with a different offer price each time. The offer prices for each product were determined as follows: (i) Let P_i be the offer price for product i , WTP_i be the WTP for product i , and d be a discounting factor; (ii) Sample d from the set $\{0.6 + \alpha, 0.9 + \alpha, 1.2 + \alpha\}$ without replacement for every repeat of product i , where α is a random variable from a uniform distribution over the range $[-0.05, 0.05]$ (i.e., α is to add jitter); and (iii) Determine the offer price by $P_i = WTP_i \times d$. This procedure ensured that there was a balanced distribution of three different price levels (low, middle, and high) so as to increase statistical power and facilitate detection of a treatment effect, if any, on the purchase behavior. The jitter helps to prevent subjects from noticing any type of pricing rule.

A.2 Gaze Data Acquisition and Processing

Gaze data were collected from subjects using the head-mounted EyeLink 2 system (SR Research, Mississauga, Canada) at 250Hz. Binocular gaze data from both eyes were gathered whenever available (most cases), but when there was a calibration problem with one eye, monocular gaze data were collected from the well calibrated eye. When binocular gaze data were collected, we used the average gaze position between the two eyes for gaze analysis. The system was calibrated at the beginning of each block. Drift correction was performed before each trial to ensure that accuracy of the calibration parameters is maintained. Gaze data acquisition was controlled by MATLAB (MathWorks, Natick, MA), using the Psychophysics and Eyelink Toolbox extensions (Brainard, 1997; Cornelissen et al., 2002; Kleiner et al., 2007; Pelli, 1997).



FIGURE S1: Construction of ROI for products.

Prior to analysis, blinks and saccades were removed using a velocity threshold of 8 pixels/4 ms. That is, any rapid gaze movement whose velocity is greater than 200 pixels/100 ms was considered as blinks or saccades and discarded. It is known that little or no visual processing can be achieved during saccades (Fuchs, 1971).

Any problem related to the calibration was noticed and addressed during the first trial (which was immediately after the calibration procedure). Further, subjects would often ask a question during the first trial. This affected overall trial durations and the integrity of fixations in the first trial. Hence, for eye tracking data analysis, the first trial of each eyetracking part was discarded unless noted otherwise. Gaze data for four trials from three participants were not recorded properly. However, decisions in those trials were recorded.

Regions of interests (ROIs) for the product were defined individually within the boundary of each image padded with a 25-pixel-wide band around the edge (Fig. S1). The padding was added to accommodate noise of the eyetracker and viewing of the product through peripheral vision. ROIs for the price were defined as a rectangular block containing the displayed price. The rest of the area was considered as blank. We defined a fixation as the event when the gaze enters, stays in, and leaves an ROI; in this definition, any continuous eye movement within a given ROI is considered as one fixation. Hence, a fixation time was defined as the time elapsed from the moment when the gaze entered the ROI to the moment when it left the ROI, and a cumulative fixation time was defined as the sum of fixation times within a trial.

A.3 Subject Exclusion Criterion

During the pre-mousetracking part, the initial location of the anchor on the WTP scale (Fig. 1A) was randomized for each trial and recorded. These data were used as a check for subjects' en-

gement in the task and possible anchoring effects. Correlations between participants' WTP responses and anchor positions were calculated for each subject. For two subjects in Experiment M, the reported WTPs were highly correlated with the anchor positions ($p < 0.0001$) and the number of trials in which $|\text{anchor} - \text{WTP}| \leq 5$ was outside two standard deviations of the group average (i.e., greater than 47 trials). Hence, these two subjects were excluded from the analysis.

A.4 Order of the Purchase Blocks

We intentionally did not counter-balance the order of the hypothetical and real conditions, following the considerations described in Kang et al. (2011) and Kang and Camerer (2013). There might be an ordering effect in which thinking about real choices first would spill over to affect hypothetical choices. On the other hand, the spill-over effect is expected to be minimal, if any, in the hypothetical-then-real order since in the real condition participants have a strong incentive to change or adjust any behavior carried over from previous hypothetical block. In addition, previous studies that used a within-subject design found no evidence for ordering (Cummings et al., 1995; Johannesson et al., 1998). Notice also that hypothetical decision followed by real decision is a natural order for forecasting purposes since, in most applications, hypothetical decision data are gathered in advance of real decisions.

B Additional Results

B.1 Monotonicity of Preferences

In each condition, participants faced the same item three times with three different prices, low, medium, and high. If a participant has a monotonic preference and she chooses to purchase an item at price P , she should also purchase at any lower prices $P' < P$. We count the number of monotonicity violations at item level for each subject in each condition. In Experiment **M**, average number of monotonicity violations is 0.857 in the Hypothetical condition and 0.357 in the Real condition. In Experiment **E**, those numbers are 1.471 and 0.294.

When we aggregate responses across items at each price level, we observe monotonically decreasing purchase rates as in Fig. S3.

B.2 Estimating the Size of Hypothetical Bias

Following Kang et al. (2011), we define the *adjusted consumer surplus* from item i by $CS_i^\theta = \theta \times WTP_i - P_i$, where θ is a discount factor. We then estimate θ for each condition as follows: (i) Let $\Pr[x]$ denote a probability of Yes decision at x ; (ii) Estimate logistic regression $\Pr[CS^\theta] = 1/(1 + \exp(-(\alpha + \beta \cdot CS^\theta)))$; (iii) Find θ at which $\Pr[0] = 0.5$. Median θ^{Hyp} (0.98 in Experiment **M**; 0.98 in Experiment **E**) is not significantly different from one (signed-rank tests, p 's > 0.05), median θ^{Real} (0.61 in Experiment **M**; 0.51 in Experiment **E**) is significantly less than one (signed-rank tests, p 's < 0.001), and median difference between θ^{Hyp} and θ^{Real} (0.36 in Experiment **M**; 0.49 in Experiment **E**) is significantly larger than zero (signed-rank tests, p 's < 0.001) in both experiments. Consistent with the previous finding (Kang et al., 2011), the observed pattern suggests that subjects behaved as if they used their (hypothetically) stated WTPs in the hypothetical condition, but that the values subjects placed on the objects were about 35% to 50% lower in the real condition. It is not surprising that θ^{Hyp} is close to one, since subjects stated “hypothetical” willingness-to-pays during the first part of the experiment.

B.3 Gaze Distribution Map

We constructed spatial gaze distribution maps for each condition and further for each decision, using iMap (Caldara and Mielliet, 2011; Chauvin et al., 2005), that reflect the frequency of the gaze at any coordinate on the screen. Gaze distribution maps allow for statistical testing of differences between conditions in viewing any part of the stimuli. They are free of subjectivity— and potential error— in defining regions of interest (ROIs) a priori, and allow differences on a fine spatial scale.

For the construction of group heat maps, we took two subsets of the screen pixel space: one area of 370×370 (width by height) in size that includes the product image and the other of 370×150 in size that includes the price. We then placed the product image area above the price area to reconcile the counter-balanced display with the product-top/price-bottom display; this resulted in the 370×520 pixel space for gaze distribution. For each subject, a gaze distribution map was computed by summing the duration of gaze at each pixel within a trial and averaging it across all relevant trials, and then smoothing it with a 2D Gaussian kernel ($\sigma = 10$ pixels). The smoothed individual maps were then averaged across subjects for each condition. We also performed statistical comparisons of gaze distributions between the hypothetical and real conditions (and further for Yes and No decisions), applying a procedure adapted from [Caldara and Mielliet \(2011\)](#). Specifically, we took the difference of individual heat maps between conditions of interest, averaged across subjects, and then converted all pixel values into Z-scores relative to the mean and standard deviation of the group difference heat map. Significance was established with the statistical threshold provided by a two-tailed Pixel test ($|Z| > 4.3125$ for $p < 0.05$; [Chauvin et al., 2005](#)), which corrects for multiple comparisons in the heat map pixel space.

Fig. S8 shows the gaze distribution maps (panel A), along with a map measuring gaze differences across condition (panel B) and decision (panel and B). Panel B shows that subjects fixated more frequently on the price as well as the image in the real condition than in the hypothetical condition before making a Yes decision, while that pattern was reversed before making a No decision. Similarly, Panel B shows that subjects fixated longer on both product and price when they made Yes decisions than No decisions. In the hypothetical condition, however, Yes-dominant areas (red) and No-dominant areas (blue) were both present. We obtain qualitatively similar results in the comparison between hypothetical and surprise real conditions (Fig. S9).

B.4 Classification Analysis

We used the following procedure. Prior to classification analysis, viewing times, including latency and other viewing time, were standardized within subject, across different purchase conditions. For each condition, any subjects who made fewer than five Yes or No decisions were excluded from this classification analysis, because classification requires enough observations in both response categories. In Experiment M, this criterion left a total of 23 subjects for each of the real and surprise real conditions, and 28 for the hypothetical condition. In Experiment E, no subjects were excluded for hypothetical classification, one subject was excluded from real classification, and three subjects were excluded from surprise real classification.

We performed a linear discriminant analysis (LDA) for each subject with viewing times, la-

tency, and price as independent variables (i.e., features) to predict purchase decisions (Yes = 1, No = 0). The detailed classification procedure was as follows. First, for each subject, we divided 90 observations into a training sample to estimate a classification model, and a hold-out sample to evaluate predictions based on the estimated model. Specifically, exactly two observations, one Yes decision and one No decision, were randomly selected out of 90 observations and set aside. By construction, one could classify 50% of the decisions correctly by chance. This 50% prediction level serves as the baseline success rate against which our classification results are compared. A classification model was then estimated based on the rest of the 88 samples, and used to predict binary choices associated with the hold-out samples. This procedure was repeated 10,000 times per subject. We called a correct prediction a “success”. For classification of decisions in real (hypothetical) trials, viewing times and latency collected from real (hypothetical) trials were used. However, for classification of decisions in surprise real trials (i.e., real, binding purchase decisions), viewing times and latency from matching *hypothetical* trials were used.

In this analysis, we apply the same model (“price only” or “price and viewing times”) to all subjects’ data to measure prediction success rates. To examine individual heterogeneity, we also perform a kind of feature selection. Since we have small number of predictors, we can exhaustively examine all possible combinations of predictors and compare the performance of linear classifiers in terms of their resulting success rates. For each subject, we select a subset of viewing times that achieves the highest success rate when added to price information. We call this set of viewing times the *best subset*. Figs. S12 and S13 show empirical cumulative distribution functions (CDFs) for prediction success rates in each condition, using (i) price only, (ii) price and all viewing times, and (iii) price and (individual-specific) best subset of viewing times. The figure revealed that for many subjects, including some subset of viewing time information actually works better than including all of them.

C Supplementary Figures

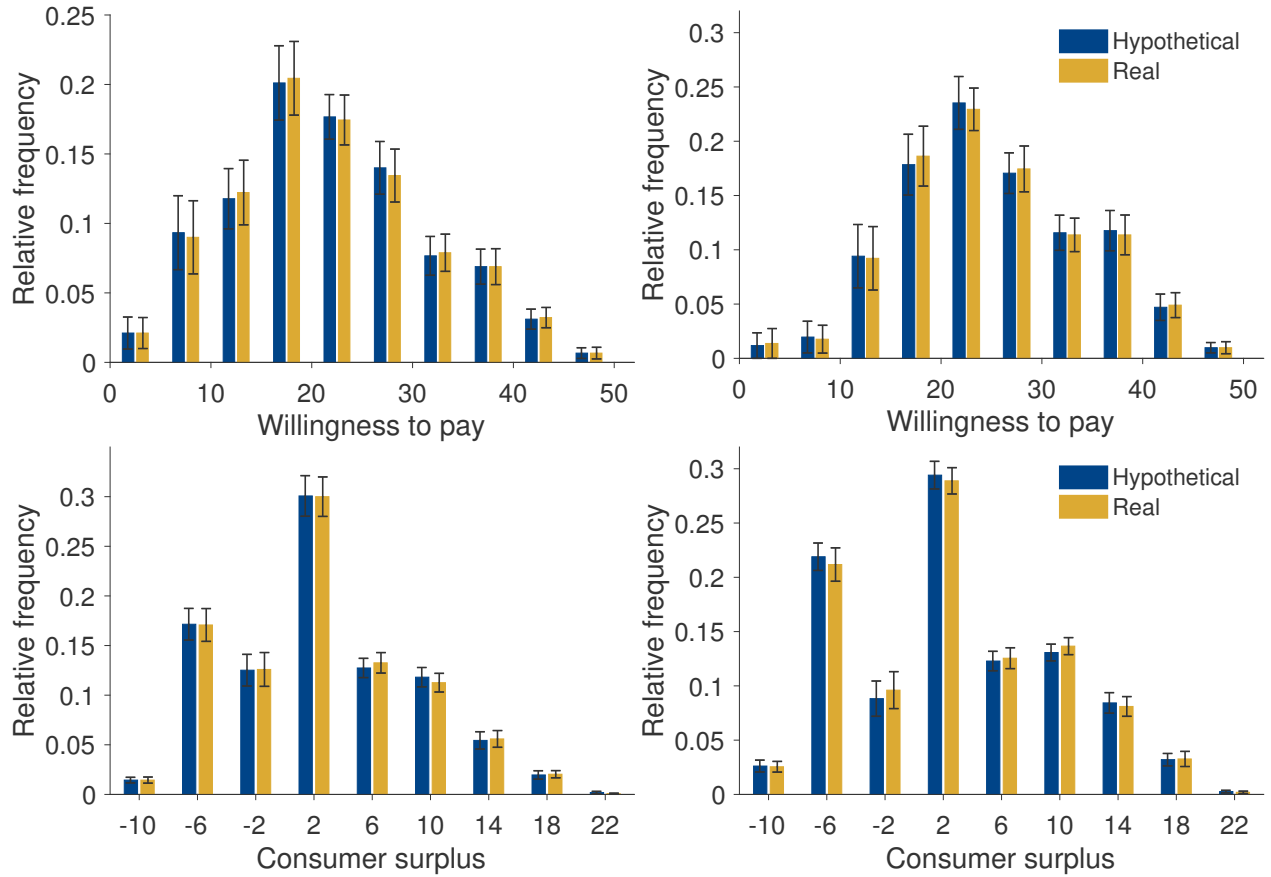


FIGURE S2: Distribution of WTP and CS ($= \text{WTP} - \text{price}$) in the hypothetical and real conditions. (Top) Distribution of WTP (left: Experiment **M**; right: Experiment **E**). Bin size = 5, bin center = $[2.5, 7.5, \dots, 47.5]$. (Bottom) Distribution of CS (left: Experiment **M**; right: Experiment **E**). Bin size = 4, bin center = $[-10, -6, \dots, 22]$. First trial of each condition in Experiment **E** is included.

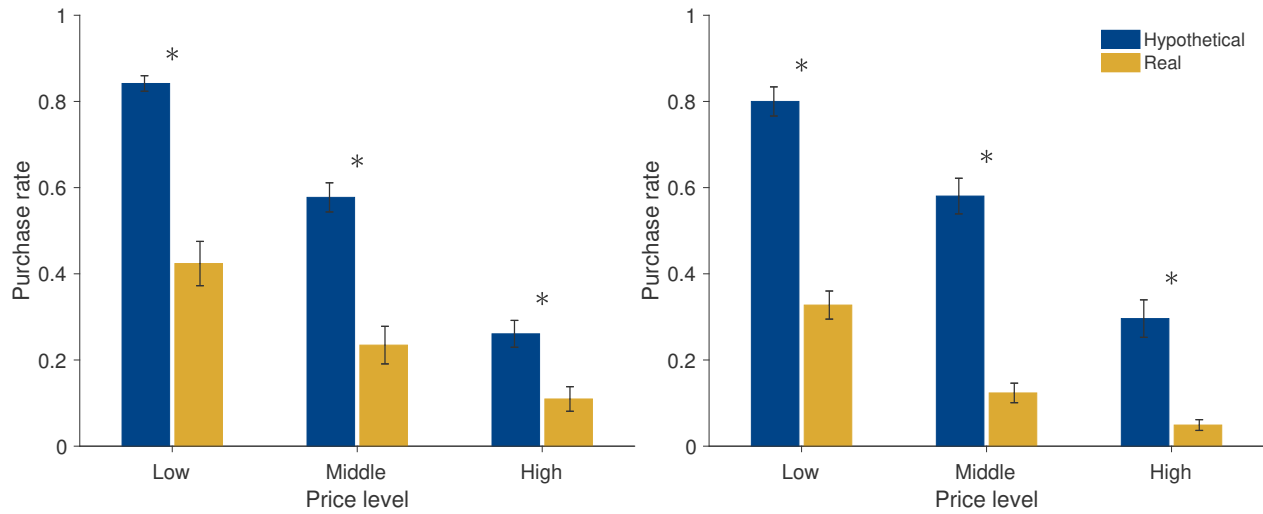


FIGURE S3: Average purchase rate by condition and price level in Experiment **M** (left) and Experiment **E** (right). All comparisons of means between hypothetical and real conditions are significant at $p < 0.0001$, two-sided t -test. First trial of each condition in Experiment **E** is included.

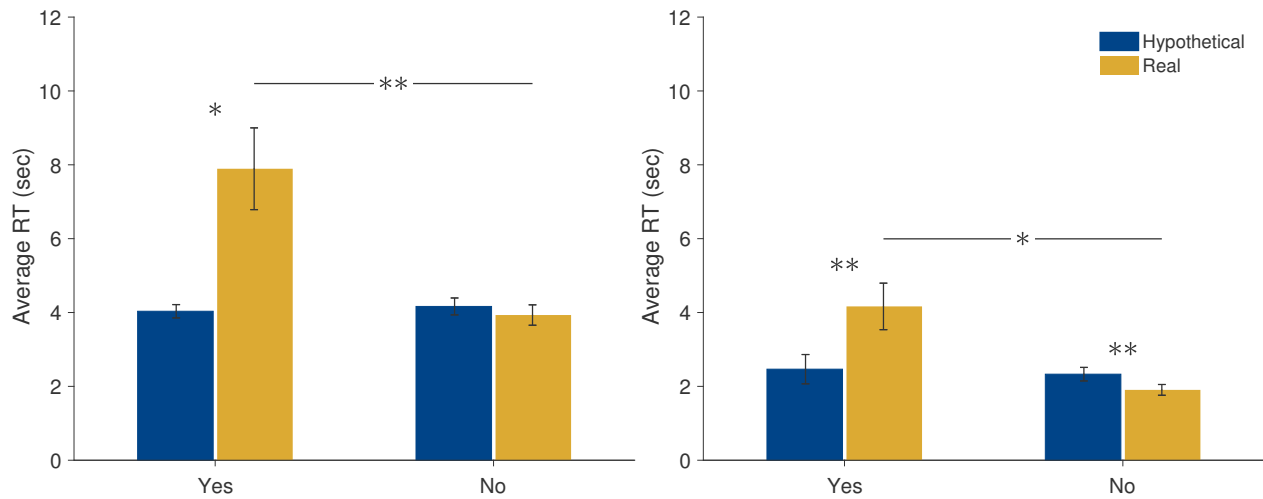


FIGURE S4: Average RT by Condition and Decision in Experiment **M** (left) and Experiment **E** (right). Error bars indicate standard errors. ** : $p < 0.001$, * : $p < 0.01$, two-sided t -test.

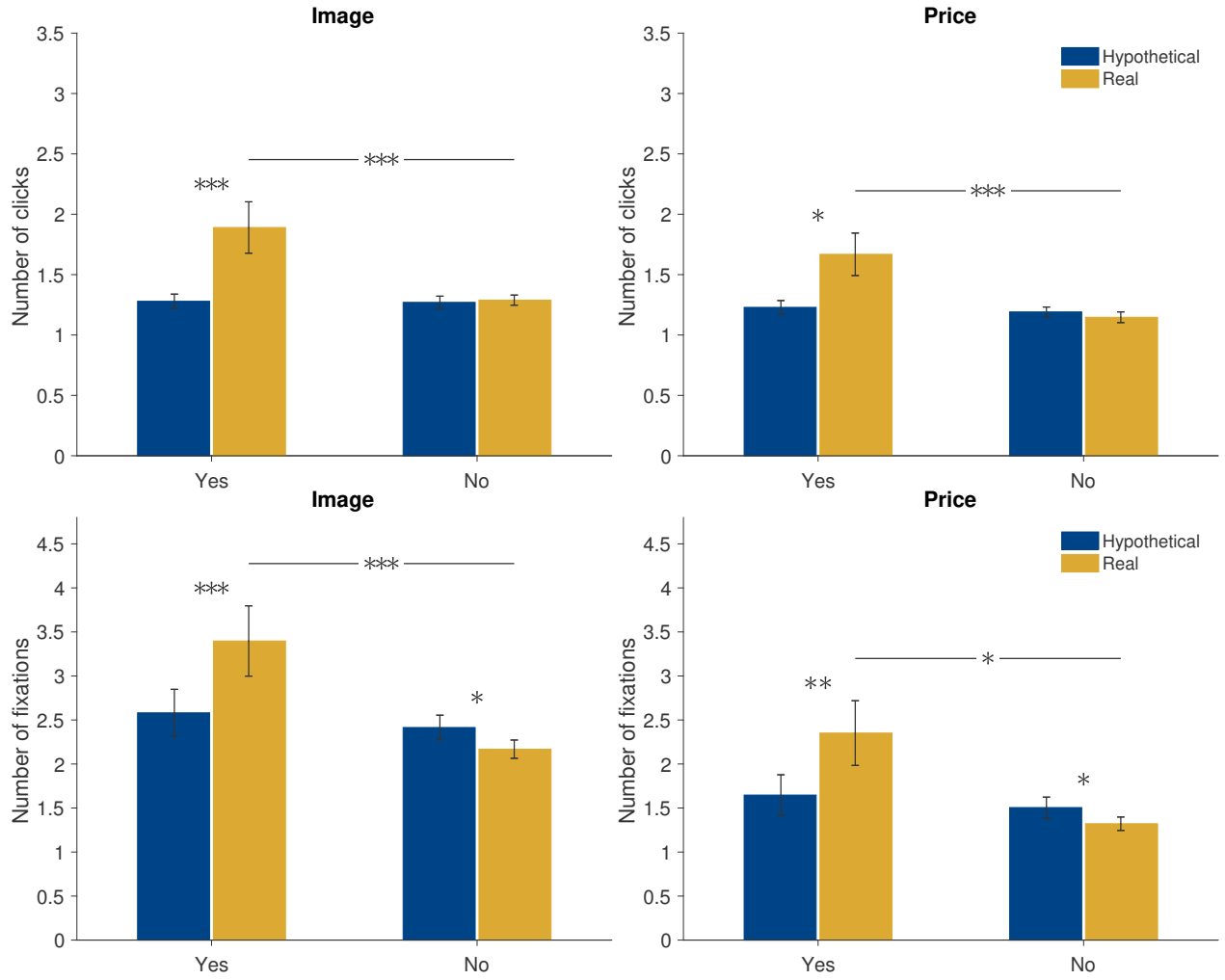


FIGURE S5: The average number of clicks/fixations on the occluded areas by condition and decision. Clicks on the image and on the price in Experiment **M** (top panels) and Fixations on the image and the price in Experiment **E** (bottom panels). Error bars indicate standard errors. *** : $p < 0.005$, ** : $p < 0.01$, * : $p < 0.05$, two-sided t -test.

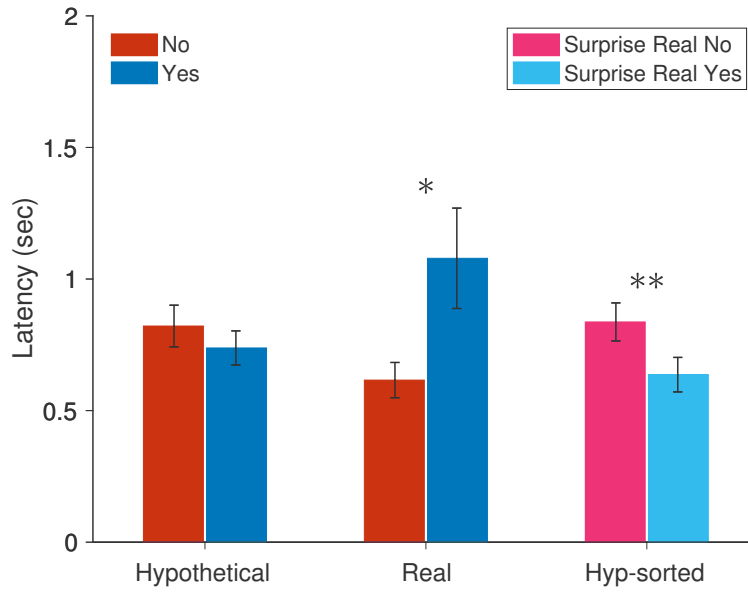


FIGURE S6: Pre-choice latency by condition and decision in Experiment **M**. For “Hyp-sorted” bars, average latencies in hypothetical condition sorted by decisions in matching surprise real trials are plotted. Two additional subjects are dropped, since they did not make any Yes decisions in surprise real trials. Asterisks indicate statistical significance: ** : $p < 0.001$, * : $p < 0.01$, two-sided t -test.

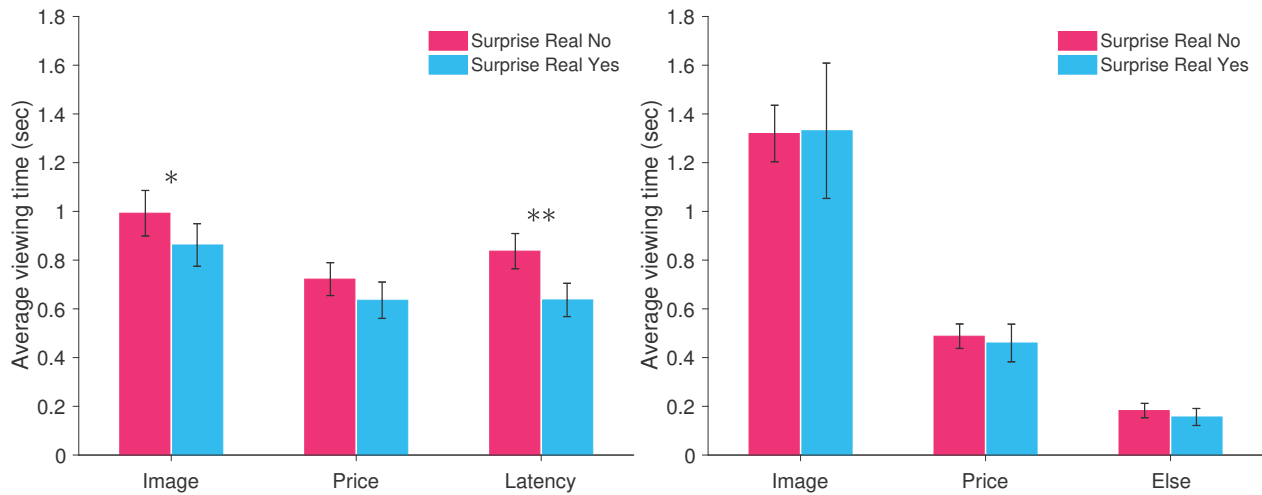


FIGURE S7: Average viewing time and latency/other (sec) in hypothetical trials, sorted by decision in the matching surprise real trials. Image and price viewing times in Experiment **M** (top) and in Experiment **M** (bottom). Error bars indicate standard errors. *** : $p < 0.001$, ** : $p < 0.005$, * : $p < 0.05$, two-sided t -test. Comparison between hypothetical Yes and No is not significant.

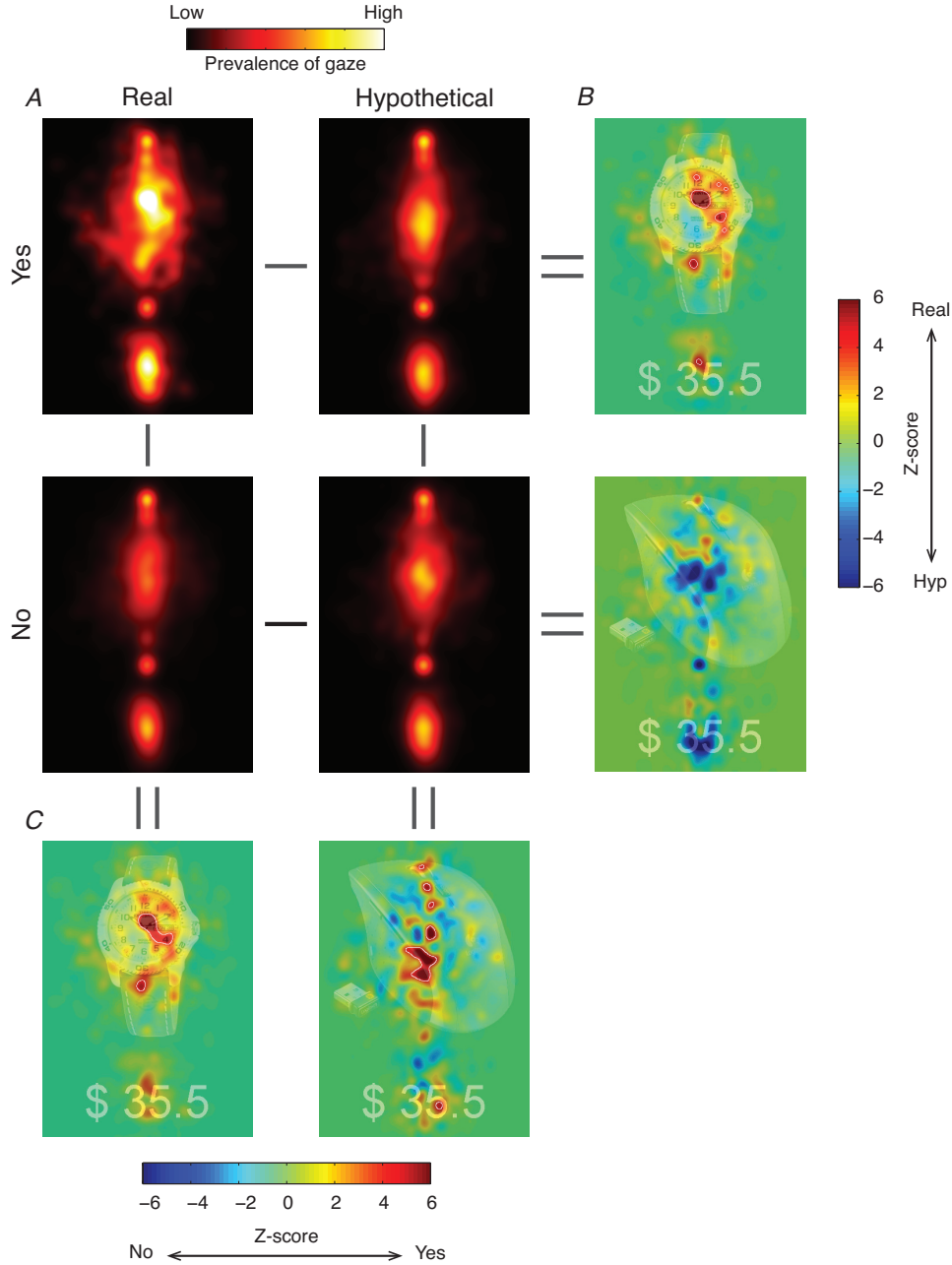
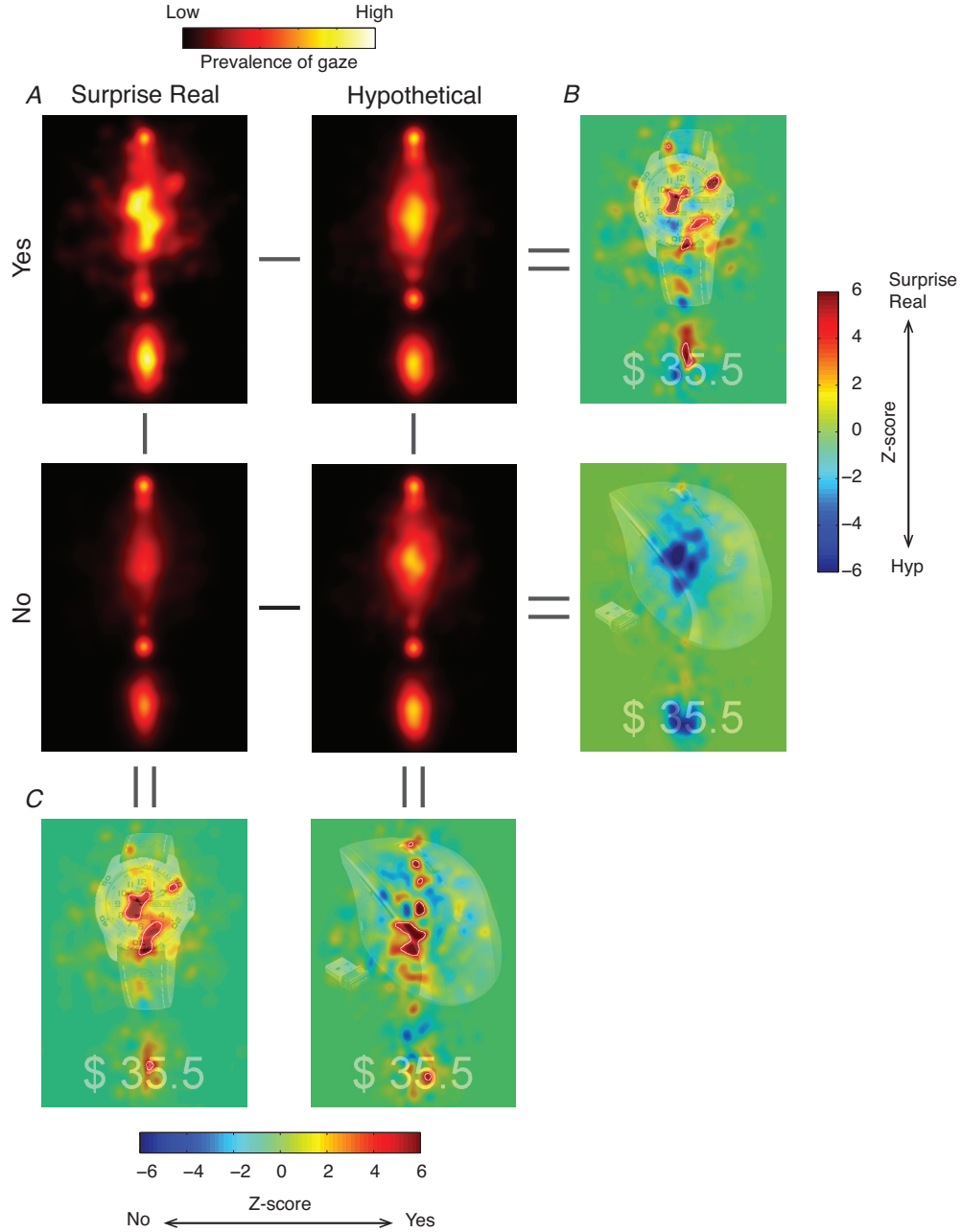
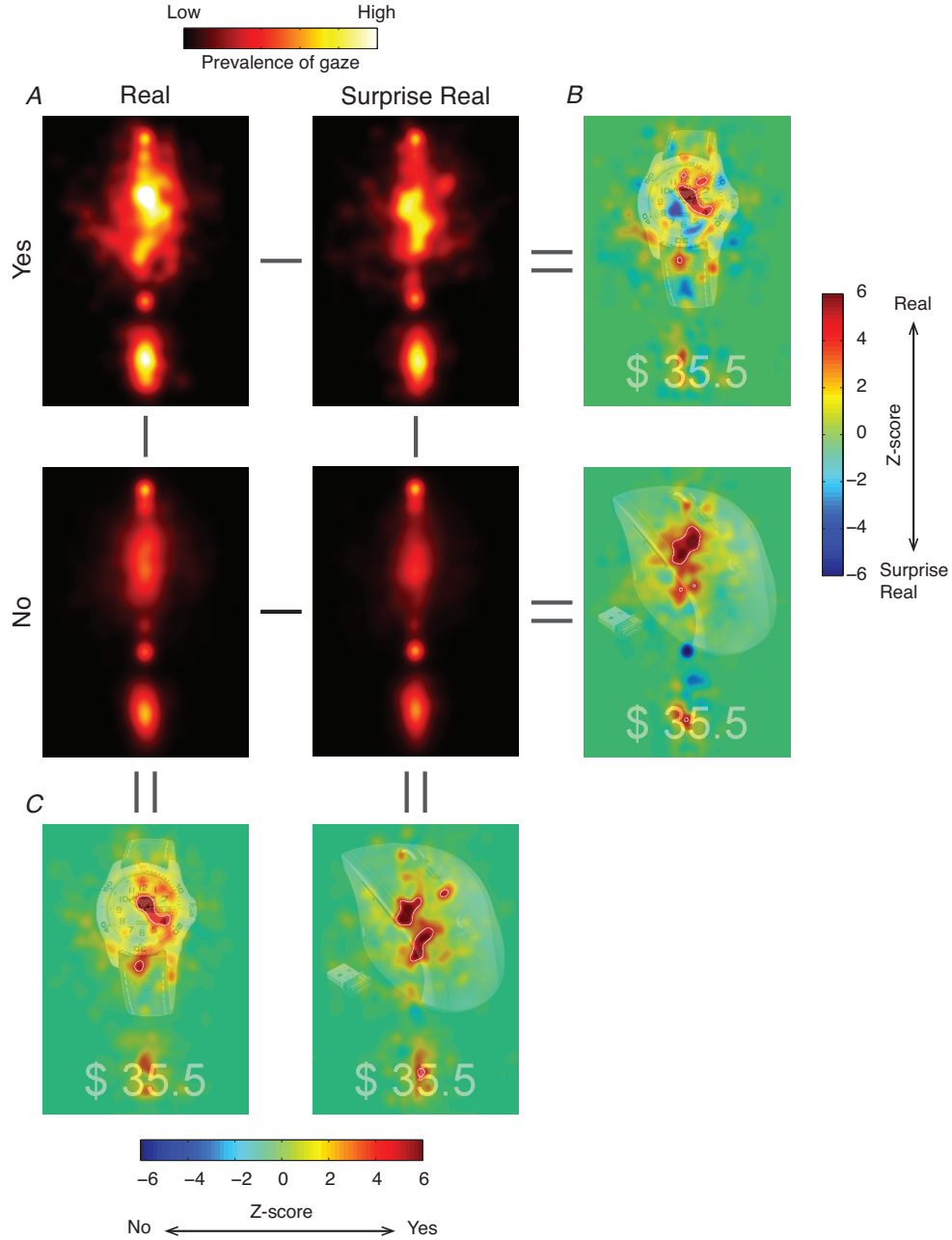


FIGURE S8: Gaze distribution maps by condition and decision from Experiment E. (A) Average gaze prevalence. (B) Statistical significance of the difference between real and hypothetical conditions. Red indicates gaze bias toward real choice (i.e., longer viewing time in the real than the hypothetical condition) and blue indicates gaze bias toward hypothetical choice. (C) Statistical significance of the difference between Yes and No decisions within each condition. In Panels B and C product images are shown in the background for illustration. Red indicates gaze bias toward Yes and blue indicates bias toward No. The threshold for two-tailed Pixel test $p < 0.05$ is $|Z| > 4.3125$, corrected for multiple comparisons.





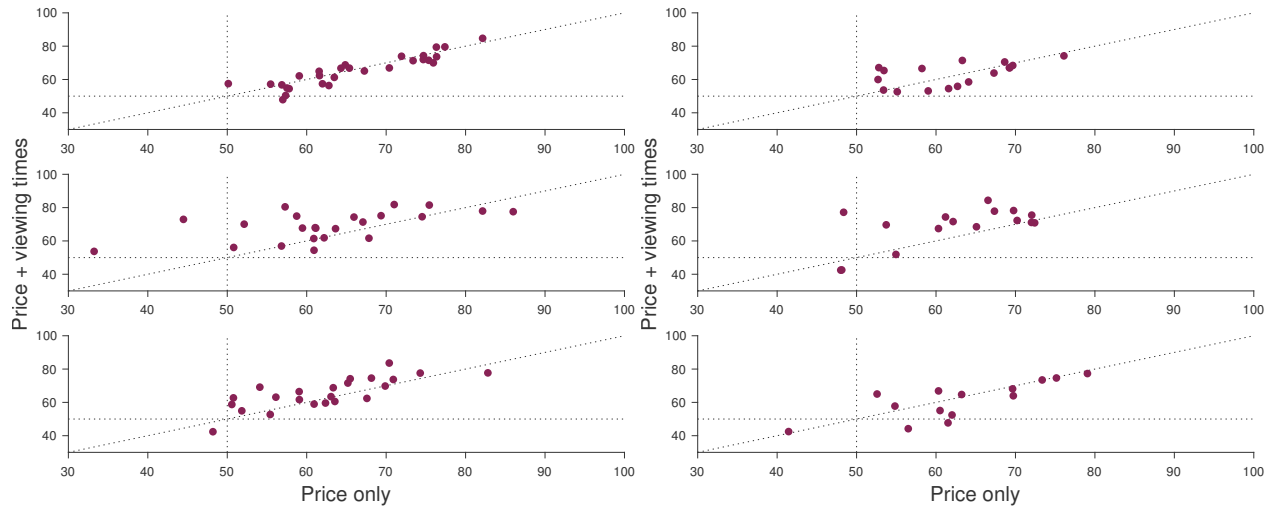


FIGURE S11: Individual heterogeneity in improvement of prediction success rates in Experiment **M** (left panels) and Experiment **E** (right panels). Each panel compares prediction success rates using price only (x -axis) and using both price and viewing times (y -axis). Each dot represents one subject. Top panel: prediction of hypothetical choices; Middle panel: prediction of real choices; Bottom panel: prediction of surprise real choices (with viewing times recorded during matching hypothetical trials).

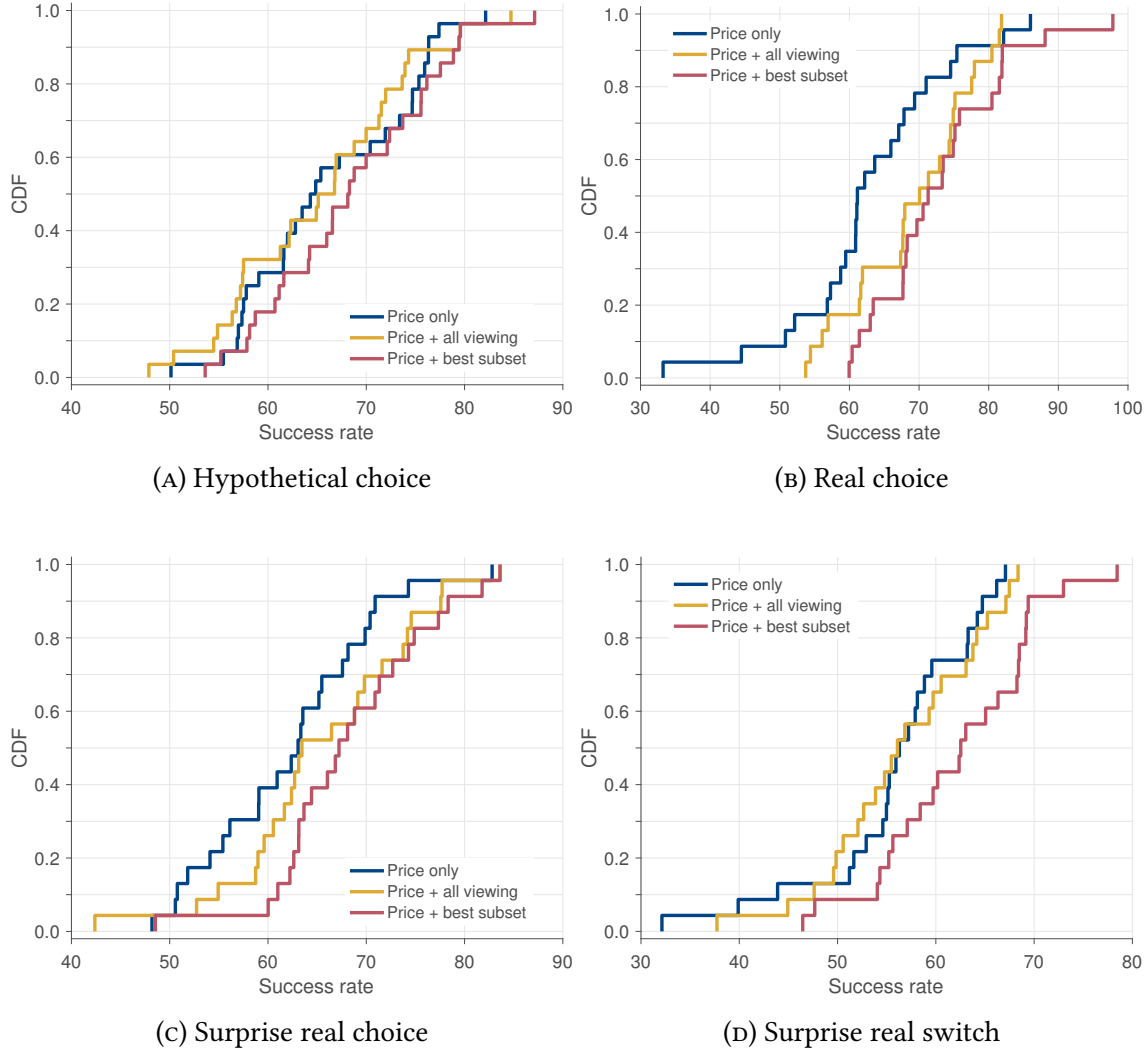


FIGURE S12: Empirical CDFs for prediction success rates using price only, price and all viewing times, and price and the best subset of viewing times (individual-specific). Data: Experiment **M**. P -values from pairwise Kolmogorov-Smirnov tests are presented in Table S5.

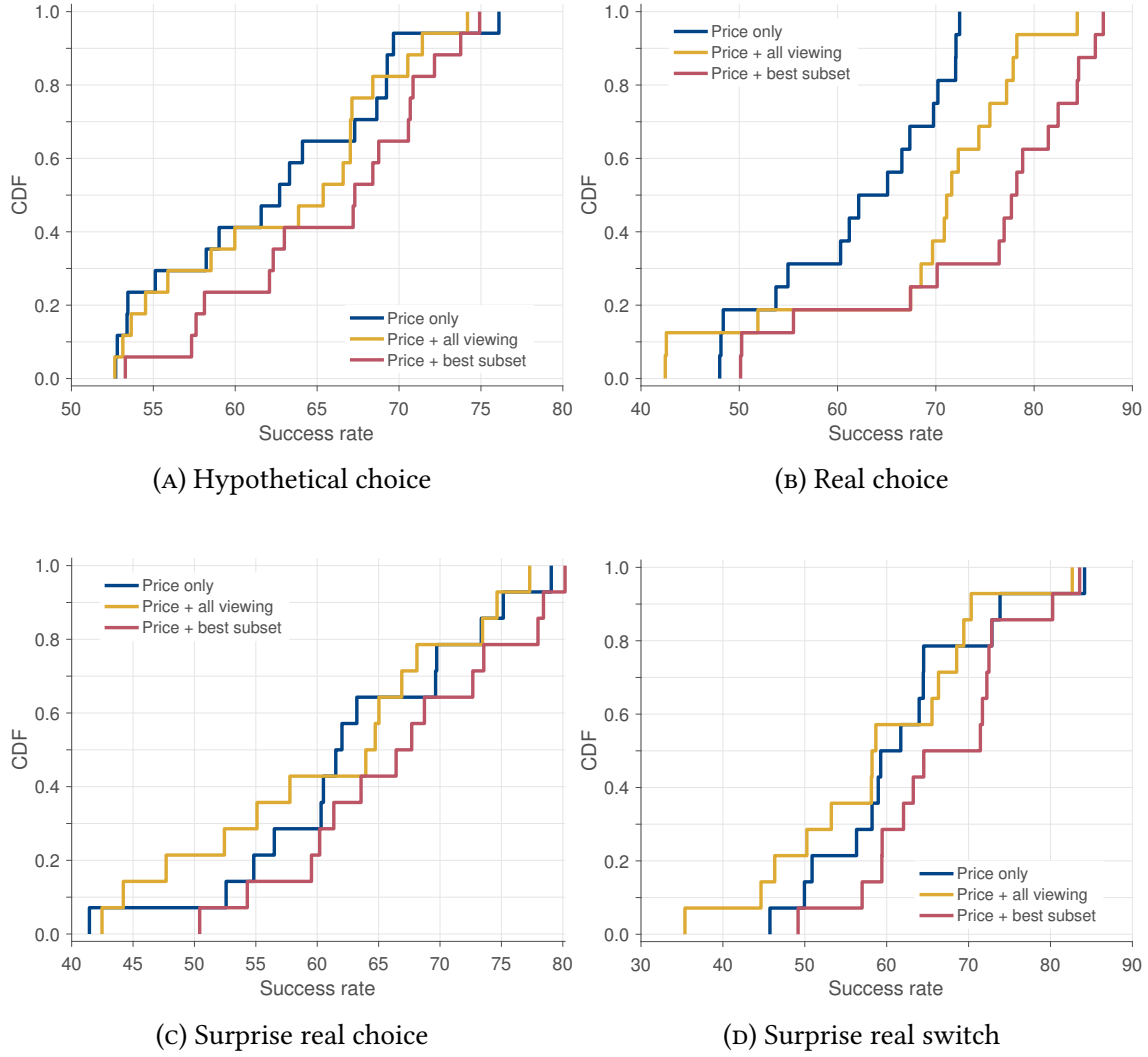


FIGURE S13: Empirical CDFs for prediction success rates using price only, price and all viewing times, and price and the best subset of viewing times (individual-specific). Data: Experiment E. *P*-values from pairwise Kolmogorov-Smirnov tests are presented in Table S6.

D Supplementary Tables

TABLE S1: Summary statistics.

Average	Experiment M		Experiment E	
	Hyp	S-Real	Hyp	S-Real
Purchase percentage (%) M ^{***} , E ^{***}	55.99	27.14	55.88	18.69
Response time (sec) M ^{***} , E ^{***}	4.01	3.09	2.30	1.74
Cumulative image viewing time (sec) E ^{***}	0.95	0.87	1.32	0.99
Cumulative price viewing time (sec) M ^{***} , E ^{***}	0.70	0.51	0.49	0.40
# of image clicks/fixations E ^{***}	1.27	1.23	2.44	2.12
# of price clicks/fixations E ^{**}	1.21	1.12	1.54	1.31
Image viewing time per click/fixation (sec) M ^{**} , E ^{***}	0.72	0.60	0.53	0.43
Price viewing time per click/fixation (sec) M ^{***} , E ^{**}	0.60	0.45	0.32	0.29

Notes: Asterisks indicate statistical significance between hypothetical and real condition. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.10$, for Experiment **M** and **E**. In Experiment **E**, average for *purchase percentage* is calculated including first trial of each condition.

TABLE S2: The percentage of decision switches from hypothetical to surprise real decisions.

Experiment M		Surprise Real			Experiment E		Surprise Real		
		Yes	No	Total			Yes	No	Total
Hyp	Yes	24.9	31.1	56.0	Hyp	Yes	17.1	38.8	55.9
	No	2.3	41.7	44.0		No	1.6	42.5	44.1
Total		27.2	72.8	100.0	Total		18.7	81.3	100.0

Notes: The total number of observations: 2,520 (Experiment **M**); 1,530 (Experiment **E**). Numbers appear in the right panel are slightly different from those in Tables 1 and S1 since in this table first trial in each condition and four trials in which eyetracking data were not recorded (but choices were recorded) are included.

TABLE S3: Summary statistics in the hypothetical condition in Experiment **M** and Experiment **E**. First trials are excluded from data in Experiment **E**. “Stick” indicates hypothetical Yes trial for which participants stick to Yes decision in later surprise real block, while “switch” indicates hypothetical Yes trials for which they later change their mind to no in the surprise real block. Two participants who never “switched” are excluded in Experiment **M**.

Average	Experiment M		Experiment E	
	Stick	Switch	Stick	Switch
WTP (\$) M **	24.55	22.64	26.73	27.96
Price (\$) M **, E ***	17.00	19.10	18.53	23.66
Response time (sec) M ***	3.65	4.51	2.27	2.44
Cumulative image viewing time (sec) M ***	0.87	1.03	1.35	1.39
Cumulative price viewing time (sec) M ***, E *	0.63	0.77	0.47	0.51
Latency/other (sec) M ***	0.62	0.86	0.18	0.20
Standardized response time M ***, E **	-0.06	0.21	0.00	0.18
Standardized image viewing time M **	-0.10	0.00	-0.00	0.13
Standardized price viewing time M ***, E ***	0.03	0.30	0.04	0.21
Standardized latency/other M ***	-0.02	0.32	0.05	0.18
Number of observations	627	676	253	580

Notes: In the bottom four rows, RT and viewing times are standardized within subject across conditions. Asterisks indicate statistical significance between hypothetical and real condition. *** : $p < 0.01$, ** : $p < 0.05$, * : $p < 0.10$, for Experiment **M** and **E**.

TABLE S4: Marginal effects from random-effects logistic regression of purchase decision (Yes = 1, No = 0).

	Experiment M			Experiment E		
	(1)	(2)	(3)	(4)	(5)	(6)
Price		−0.011 *** (0.002)	−0.011 *** (0.002)		−0.010 *** (0.002)	−0.010 *** (0.002)
Image viewing	−0.007 (0.017)	−0.008 (0.016)	−0.007 (0.016)	−0.017 (0.015)	−0.014 (0.014)	−0.014 (0.013)
Price viewing	0.001 (0.010)	0.006 (0.008)	0.007 (0.008)	0.001 (0.017)	0.001 (0.017)	0.000 (0.018)
Latency/other			−0.011 (0.009)			0.005 (0.011)
Trial	−0.001 ** (0.000)	−0.001 ** (0.000)	−0.001 ** (0.000)	−0.001 * (0.000)	−0.001 * (0.000)	−0.001 * (0.000)
Real	−0.355 *** (0.047)	−0.236 *** (0.068)	−0.243 *** (0.068)	−0.460 *** (0.045)	−0.442 *** (0.070)	−0.442 *** (0.071)
Real × Price		−0.006 * (0.003)	−0.006 * (0.003)		−0.000 (0.002)	−0.000 (0.002)
Real × Image viewing	0.050 ** (0.018)	0.050 ** (0.018)	0.048 ** (0.018)	0.090 *** (0.022)	0.073 *** (0.018)	0.074 *** (0.018)
Real × Price viewing	0.055 ** (0.017)	0.057 *** (0.016)	0.055 *** (0.016)	0.042 (0.025)	0.047 * (0.023)	0.049 * (0.024)
Real × Latency/other			0.021 * (0.010)			−0.011 (0.022)
Real × Trial	0.001 * (0.001)	0.001 * (0.001)	0.001 * (0.001)	0.002 ** (0.001)	0.002 * (0.001)	0.002 * (0.001)
# Observations	5,040	5,040	5,040	3,023	3,023	3,023

Notes: *** : $p < 0.001$, ** : $p < 0.01$, * : $p < 0.05$. Viewing times (image, price, latency/other) are standardized within subject, across conditions. Standard errors clustered at subject level are reported in parentheses.

TABLE S5: *P*-values from pairwise Kolmogorov-Smirnov tests for Fig. S12.

	P vs. P+V	P vs. Best	P+V vs. Best
Hypothetical	1.0000	0.4903	0.4903
Real	0.0428	0.0064	0.8420
Surprise real	0.5930	0.0958	0.5930
Switch	0.8420	0.0958	0.0958

Notes. P: Price only; P+V: Price and viewing times; Best: Price and the best subset of viewing times.

TABLE S6: *P*-values from pairwise Kolmogorov-Smirnov tests for Fig. S13.

	P vs. P+V	P vs. Best	P+V vs. Best
Hypothetical	1.0000	0.6725	0.3874
Real	0.0657	0.0004	0.0657
Surprise real	0.8622	0.5407	0.5407
Switch	0.5407	0.2672	0.1106

Notes. P: Price only; P+V: Price and viewing times; Best: Price and the best subset of viewing times.

E Consumer Products Used in the Experiments

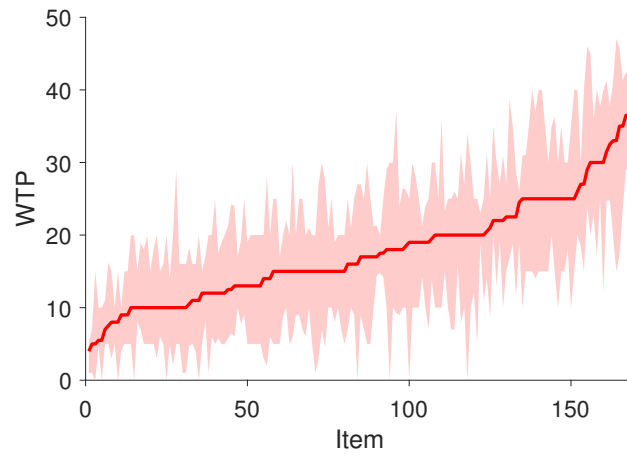


FIGURE S14: Summary statistics of reported WTP. The solid line indicates the median. The band indicates the interquartile range.

TABLE S7: List of consumer products.

#	Product name	WTP percentile		
		25%	50%	75%
1	Accudart Classic Bristle Dartboard	3.00	8.00	15.00
2	Ace Bayou X-Rocker Audio Gamer Chair	0.00	19.00	25.00
3	Allied 180-pc. Household Tool Set	10.00	25.00	31.00
4	Angry Birds Speaker	5.75	12.50	21.25
5	Apple 2 GB iPod Shuffle	10.00	20.00	30.00
6	AUDIO TECHNICA Noise-Canceling Headphones	29.00	36.50	42.50
7	Austin Bazaar Full Size Acoustic Guitar with Carrying Bag and Accessories	20.00	30.00	45.00
8	Banner American Desktop Work Station	5.00	10.00	20.00
9	Black & Decker Toast-R-Oven 4-Slice Toaster Oven	10.00	18.00	29.00
10	Black and Decker 12 cup SmartBrew plus Coffeemaker	0.00	10.00	20.00
11	Boss Fabric Deluxe Posture Chair	5.00	15.00	25.00
12	Braun Free Control Men's Shaver	10.00	20.00	25.00
13	Brookstone Laptop Essentials Kit	6.00	13.00	24.00
14	Bushnell ImageView 10x25 VGA Digital Camera Binocular	20.00	22.00	35.00
15	Bushnell Perma Focus 10 x 50 Wide Angle Binocular	10.00	18.50	26.25
16	Canon Color Image Scanner	15.00	25.00	31.00
17	Canon PIXMA Wireless Inkjet Photo All-In-One	29.25	36.50	41.25
18	Casio Mens G-Shock Classic Watch	5.00	15.00	25.00
19	Celestron 60mm PowerSeeker Telescope	15.00	25.00	35.00
20	Celestron Handheld Digital Microscope Camera	15.00	25.00	40.00

#	Product name	WTP percentile		
		25%	50%	75%
21	Cisco-Linksys Dual-Band Wireless-N Gigabit Router	10.00	19.00	30.00
22	Classic Pillow by Tempur Pedic	8.00	10.00	15.00
23	Coby 1.8 Digital TFT LCD Photo Keychain	1.00	5.00	7.25
24	Coca-Cola Personal 6-Can Mini Fridge	3.00	14.00	20.00
25	Coleman Crescent Mummy Bag	23.75	29.00	46.00
26	Columbia Sportswear Men's Northbend Wide Hiking Boot	19.00	36.50	40.00
27	Columbia Sportswear Men's Steens Mountain Sweater	13.00	22.00	30.00
28	Columbia Sportswear Men's Trail Hiking Boot	14.00	25.00	37.00
29	Columbia The Zone 0 Mummy Sleeping Bag	15.00	25.00	40.00
30	Cooler Master Notepad U2 Notebook Cooler with Two Fans	5.00	7.50	16.25
31	Corsair 32 GB USB 3.0 Flash Voyager	15.00	22.50	27.00
32	Crane 2.3 Gallon COOL Mist humidifier	5.00	12.00	15.00
33	Energizer Rechargeable 15 Minute Charger with 4 AA Batteries	7.00	10.00	19.00
34	Eureka Hand-Held Vacuum	10.00	19.00	28.00
35	Febreze Odor Removal Appliance	4.00	9.00	10.00
36	Fossil Men's AM4369 Stainless Steel Analog with Blue Dial Watch	20.00	33.00	41.00
37	Fossil Men's Multifunction Watch	10.00	20.00	36.00
38	Garmin eTrex Handheld GPS Navigator	9.00	17.00	27.00
39	GODIVA Chocoiste Solid Milk Chocolate Bars (24 pc)	8.00	12.00	17.00
40	GODIVA Thankyou Ballotin (36pc)	5.00	15.00	17.00

#	Product name	WTP percentile		
		25%	50%	75%
41	GODIVA Thankyou Ballotin (70pc)	10.00	13.00	17.00
42	Green Laser Pointer (5 mW Class IIIa Laser Product)	7.00	17.00	25.00
43	GSM Quadband Voice Dialing Watch Cell Phone Unlocked	16.75	22.50	38.75
44	Haier 7-Inch Handheld LCD TV	2.00	14.00	28.00
45	Hamilton Beach Pump Espresso/Cappuccino maker	0.00	18.00	30.00
46	Homedics Shiatsu Massage Cushion	15.00	20.00	23.25
47	HoMedics Shiatsu Neck Massager with Vibration and Heat	7.00	16.00	25.00
48	HoMedics Therapist Select Shiatsu Back Massager	10.00	20.00	25.00
49	Honeywell Compact Air Purifier with Permanent HEPA Filter	7.00	20.00	25.00
50	Hoover Tempo Widepath Bagged Upright Vacuum	5.00	17.00	30.00
51	HP 16 GB USB 2.0 Flash Drive	10.00	16.00	21.00
52	HP Photosmart All-in-One Printer	15.00	25.00	40.00
53	iPROV Electronics 8.5 Boogie Board Tablet	8.75	15.00	20.00
54	iNeed Lumbar Massage Cushion	7.75	13.00	19.25
55	iNeed Lumbar Massage Pillow	5.00	11.00	16.00
56	Intex Raised Downy Queen Airbed with Built-in Electric Pump	18.75	22.50	35.00
57	James Bond Ultimate Edition - Vol. 1	5.00	10.00	18.00
58	Kenneth Cole REACTION Men's Resin Sunglasses	5.00	10.00	20.00
59	Kensington DomeHub 7-port USB 2.0 Hub with FlyLight	5.00	10.00	15.00
60	Kingston DataTraveler Gen2 with urDrive 16 GB USB 2.0	10.00	15.00	22.00

#	Product name	WTP percentile		
		25%	50%	75%
61	Kodak Easyshare 12 MP Digital Camera with 5x Digital Zoom	17.25	35.00	45.75
62	Kodak EasyShare 7-inch Digital Frame	1.00	12.00	20.00
63	Kodak PlayFull Waterproof Video Camera	24.75	31.50	41.25
64	Koolatron Kool Fridge- 1.7 Cu. Ft.	15.00	25.00	35.00
65	La Crosse Technology Projection Alarm Clock with Outdoor Temperature	6.00	12.00	20.00
66	LAVA 20-oz. Motion Lamp	5.00	9.00	15.00
67	Levi's Relaxed Straight 559 Jeans	15.00	25.00	30.00
68	Levitating Desktop Globes	5.00	15.00	20.00
69	Logitech 2 MP Portable Webcam	6.00	14.00	20.00
70	Logitech G-15 Gaming Keyboard	6.00	15.00	30.00
71	Logitech Gaming Keyboard G110	20.00	25.00	35.00
72	Logitech Laser Cordless Mouse	5.00	10.00	18.00
73	Logitech Wireless Marathon Mouse M705 with 3-Year Battery Life	19.00	22.00	27.00
74	Logitech Wireless Presenter R400 with Red Laser Pointer	9.00	15.00	20.00
75	Lumian Design LED Desk Light (built-in night light)	9.00	13.00	25.00
76	M-51 Engineers Field Bag - Military Style	9.00	15.00	25.00
77	M-Audio E-Keys 37 MIDI Keyboard	5.00	17.00	25.00
78	Memory Foam Travel Pillow	5.00	7.00	11.00
79	Microsoft Natural Ergo Keyboard	5.00	13.00	19.00
80	Monopoly The Mega Edition	3.00	10.00	20.00

#	Product name	WTP percentile		
		25%	50%	75%
81	Monoprice 10x6.25 Inches Graphic Drawing Tablet with 8 Hot Key	22.75	30.00	36.00
82	Mr. Coffee Espresso/Cappuccino Maker	23.50	35.00	41.25
83	New Plantronics Bluetooth Headset- Volume Control/Hands Free/ Wind Noise Reduction	7.00	15.00	25.00
84	Nike Brasilia Duffel	4.00	11.00	16.00
85	Nike Team Training Duffel Bag	14.75	17.50	20.00
86	Nike Tear-away II Mens Pants	6.50	12.50	24.25
87	Nike Tear-away Mens Basketball Pants	6.00	10.00	15.00
88	Nikon Action 8x40 Binocular	7.00	20.00	26.00
89	Northface Campus Backpack	10.00	19.00	25.00
90	Northface Jester Backpack	18.50	27.00	30.00
91	Northface M Amp Hybrid Jacket	17.00	30.00	40.00
92	Northface Men 's Divide Jacket	14.75	25.00	36.25
93	Northface Utility Waist Sport Hiker	5.00	8.00	10.00
94	Oral B Professional Care Power Toothbrush	6.00	15.00	20.00
95	Oral B Pulsonic Sonic Electric Rechargeable Power Toothbrush	18.75	24.50	26.00
96	Oregon Scientific Weather Forecaster with Projection Clock	10.00	15.00	21.00
97	Oster Stainless-Steel 1 -2/3-Liter Electric Water Kettle	5.00	15.00	20.00
98	Pail of Treats - Mrs. Fields 48 bite-sizes cookies and 36 brownie bites	5.00	9.00	15.00
99	Panasonic Upper Arm Blood Pressure Monitor	5.00	10.00	16.00
100	Perpetual Calendar	10.00	18.00	30.00

#	Product name	WTP percentile		
		25%	50%	75%
101	Philips 7-Inch LCD Portable TV/DVD Player	9.25	18.00	37.25
102	Philips Keychain Digital Camera	0.00	11.00	20.00
103	Philips MP3 Portable Speaker Universal	15.75	20.00	25.00
104	Philips Norelco 7340 Cordless Men's Shaving System	25.00	30.00	37.75
105	Philips Norelco Cordless Rechargeable Razor	10.00	25.00	30.00
106	Planet Earth - The Complete BBC Series (DVD)	5.00	13.00	20.00
107	Post-it Desktop Organizer	4.75	5.50	10.00
108	Premium Diamond Suited Poker Chip Set	1.00	15.00	20.00
109	Ray Ban RB 4115 Sunglasses - Smoky Black/Green	8.00	20.00	31.25
110	Raytek MiniTemp No-Contact Thermometer with Laser Sighting	9.00	18.00	24.00
111	RCA Small Wonder Digital Camcorder with 2 Hour Recording and 1GB Included Memory	10.00	20.00	27.00
112	Roll-Up Keyboard	0.00	10.00	20.00
113	Samsung 10MP Digital Camera with 3x Optical Zoom and 2.5 inch LCD	20.00	26.00	40.00
114	Samsung Blu-Ray Combo Internal 12XReadable and DVD-Writable Drive with Lightscribe	24.75	32.50	37.75
115	Samsung Blu-Ray Internal SATA Drive with Lightscribe	12.00	30.00	40.00
116	SanDisk Sansa Fuze 8GB Video MP3 Player	3.00	15.00	27.00
117	Scosche Flexible Bluetooth Mini Keyboard	10.00	17.00	21.25
118	Scrabble Premier Wood Edition	5.00	13.00	20.00
119	Seagate FreeAgent Go 250 GB USB 2.0 Portable External Hard Drive	15.00	27.00	40.00
120	SentrySafe Security Safe 0.5 Cubic Feet	7.00	15.00	30.00

#	Product name	WTP percentile		
		25%	50%	75%
121	Sigma PC 15 Heart Rate Monitor	5.00	12.00	25.00
122	Sketchers Men's Alley Cats	4.50	15.00	27.50
123	SolidTek DigiMemo Digital Notepad with Memory	15.00	25.00	35.00
124	Sony CD/Cassette Portable Boombox	0.00	5.00	15.00
125	Sony Digital 2 GB Flash Voice Recorder	5.75	12.00	17.50
126	Sony Digital Voice Recorder	5.00	10.00	14.00
127	Sony DJ Style Monitor Series Headphones	15.00	25.00	30.00
128	Sony Stereo CD Clock Radio with Dual Alarm	0.00	8.00	15.00
129	Sony Walkman 8 GB Video MP3 Player	10.00	15.00	21.00
130	Sony Water-Resistant Weather Band Shower Radio	2.00	10.00	20.00
131	Sony Wireless Headphone System	18.00	25.00	30.00
132	Spinmaster Air Hogs Battling Havoc R/C Helicopters	5.00	10.00	29.00
133	Star Wars: The Original Trilogy (Episodes IV - VI) [Blu-ray] (2011)	14.00	20.50	31.25
134	Stellanova Series 4 Magnetically Levitating Globe	8.75	21.00	25.00
135	SuperPen Graphics Tablet	9.00	16.00	25.00
136	Swiss Gear 7x7-Foot 3-Person Sport Dome Cheval Tent	15.00	33.00	47.00
137	Syma S107G 3 Channel RC Radio Remote Control Helicopter with Gyro	13.75	19.50	30.00
138	T-Fal Avante Deluxe 4-Slice Toaster	5.00	10.00	16.00
139	Tangle DNA Speakers	5.00	13.00	20.00
140	Tanita Duo Scale with Body Fat/Water Monitor	10.00	15.00	25.00

#	Product name	WTP percentile		
		25%	50%	75%
141	TAO 1.5 Digital Keychain Photo Frame	0.00	5.50	10.00
142	TAO 1.5 Digital Keychain Photo Frame	1.00	4.00	5.00
143	Tempur-Pedic Neck Pillow	8.00	15.00	19.00
144	Texas Instruments TI-83 Plus Graphing Calculator	0.00	20.00	34.00
145	The Lord of the Rings - The Motion Picture Trilogy (Blu-ray)	10.00	20.00	30.00
146	The Simpsons - The Complete Tenth Season (1998)	1.00	10.00	16.00
147	Three Classic Games All in One Convenient Box- Deluxe Wooden Chess Checker & Backgammon	12.00	20.00	25.00
148	Three-Way Use Desktop Organizer Medium Oak	5.00	12.00	19.00
149	Timberland Earthkeepers Campus Quad Messenger Bag	14.25	17.50	25.00
150	Timberland Laptop Messenger Bag	5.00	12.00	20.00
151	Timberland Men's Essential Full Zip Hoodie	10.00	15.00	20.00
152	Timberland Men's Full-Zip Thick Stripe N.H. Hoodie	10.00	18.00	26.50
153	Timberland Men's Metro Oxford	5.00	20.00	25.00
154	Timex Men's Expedition Premium Collection Chrono Alarm Watch	10.00	25.00	35.00
155	Timex Men's Expedition Watch with Leather Strap	11.50	22.50	28.75
156	Toshiba Canvio 500 GB USB 3.0 Portable Hard Drive	28.75	37.50	45.00
157	Transcend 16 GB JetFlash 700 Super Speed USB 3.0 Flash Drive	14.50	17.00	21.25
158	Tripod Speaker for iPod MP3 Player	1.00	10.00	16.00
159	Vantec NexStar 2.5 /3.5 SATA to USB 2.0 and eSATA Hard Drive Dock	14.25	19.00	21.25
160	Veho MUVI Micro digital camcorder with 2GB Memory	10.00	22.00	31.00

#	Product name	WTP percentile		
		25%	50%	75%
161	Victorinox Hanging Toiletry Kit by Swiss Army	4.75	10.50	18.25
162	Victorinox Swiss Army Credit Card-Size Multi-Tools with LED Light	7.00	15.00	20.00
163	Victorinox Swiss Army Explorer Multi-Tool Knife	10.00	19.00	24.00
164	Video Watch with OLED Screen	0.00	16.00	27.00
165	Viewsonic 8-Inch Digital Photo Frame with 800x600 High Resolution	18.75	20.00	23.00
166	VIOLight Ultraviolet Travel Toothbrush Sanitizers	5.00	13.00	20.00
167	WearEver Deluxe Aluminum Hi-Back Backpack Chair	7.00	19.00	25.00
168	Wenzel Twin Size Insta-Bed Airbed with Built-In Pump	11.00	20.00	25.00
169	X Rocker V-Rocker SE Wireless Game Chair	15.00	25.00	40.00
170	Zalman Notebook Cooler Silver	5.00	15.00	20.00

F Review of Procedural Approaches in Forecasting

Many studies have explored different experimental or statistical procedures that might reduce the bias. Statistical procedures (“calibration”) search for a predictable measurable relations between the hypothetical and real choices, then test how well that relation can be used to forecast actual choices from hypothetical ones within-sample, or in a new case (Blackburn et al., 1994; Fox et al., 1998; Kurz, 1974; List and Shogren, 1998, 2002; Shogren, 1993). For example, in our study we observe that about 55% of subjects choose to purchase consumer goods hypothetically, but only 23% do when choices are real. So one could take a hypothetical purchase rate in a new sample, and multiply it by $0.23/0.55 = 0.40$, to crudely estimate a real purchase rate.

Calibration methods like these have been extended to account for socio-demographic variables in hypothetical bias. They are useful for many purposes. However, calibration has not been well-tuned to adjust for likely vagaries of specific goods and choice contexts, as flagged by List and Shogren (1998, 2002).

A more ambitious procedure is to search for a way of asking hypothetical questions that gives answers which are closer to real-choice answers. Champ et al. (1997) ask respondents how “certain” they are (on a 10-point scale) about whether they would actually donate the stated amount to a project if asked to do so. Cummings and Taylor (1999) use the “cheap talk” protocol: the design includes an explicit discussion of the hypothetical bias problem (what it is and why it might occur) at the beginning of the experiment.¹ Following findings in social psychology, Jacquemet et al. (2013) use a “solemn oath”, asking participants to swear on their honor to give honest answers, as a truth-telling commitment device. Finally, the “dissonance-minimizing format” of Blamey et al. (1999) and Loomis et al. (1999) includes additional response categories that permit respondents to express support for a project or policy without having to commit dollars.²

Several meta-analyses have been conducted to evaluate effects of diverse experimental methods on hypothetical bias to find variables that account for the variation in bias across goods and contexts (Carson et al., 1996; List and Gallet, 2001; Little and Berrens, 2004; Murphy et al., 2005). Hypothetical bias is influenced by the distinction between willingness-to-pay or willingness-to-accept, public goods and private goods, and elicitation methods.

All calibration methods also rely on extrapolating from a past hypothetical-actual relation to the future. An example of where this can backfire is politics. Historically, polls asking people whom they intend to vote for overestimated the actual vote for black candidates on election

¹Blumenschein et al. (2008) argue that the “cheap talk” protocol is not as effective as the “certainty” protocol.

²Other procedures, such as asking respondents to consider budget constraints and budgetary substitutes, are shown to be ineffective (Loomis et al., 1994; Neill, 1995).

day (Keeter and Samaranayake, 2007). However, this so-called “Bradley effect” (also known as “Wilder effect”) has gradually eroded over time (Hopkins, 2009).

Further search for ideal procedures to pose hypothetical questions that yield responses that predict real answers is surely worthwhile. However, there is no current consensus on a single method that works effectively across choice contexts. We therefore turn to measuring more variables.

G Instructions

G.1 Experiment M: Mousetracking

Part 1

Thank you for participating in this study of consumer preferences for various products. Please follow these instructions carefully and do not hesitate to ask the experimenter if you have a question. This task will take up to 15 minutes and you will be paid \$15 for completion of this task, including a \$5 show-up fee. Upon completion of this task, we may invite you to participate in another experiment.

This experiment consists of 120 trials, during which time we will show you 120 images of difference consumer products. In each trial, one product is shown and you will be asked to state the maximum amount of money that you would be willing to pay to buy this one item; this amount is referred to as your willingness-to-pay. Please determine this amount under the restriction that, whatever you buy, IT MUST BE FOR YOURSELF (i.e., it cannot be purchased as a gift for someone else or for resale).

Note that there will be no actual purchase involved. Whatever amount you state, it is not binding; that is, you will not actually have to buy any of the items shown to you.

Although this is a purely hypothetical task, please keep in mind the following points when reporting your maximum willingness to pay.

- You should rate the value of each item independently from the others, assuming during each trial that the product shown is the only purchase you would make.
- The products should be evaluated from your perspective, not that of someone else. In other words, your willingness-to-pay should reflect how much you would like to keep an item for yourself, not for your friends or family, etc.
- Your current ownership of a particular item might affect your willingness to pay for the item—this is perfectly appropriate. For example, if you already own item A, your willingness to pay for item A might be high or low depending on whether you want a second one for yourself or not.

In each trial you will be allowed to enter an amount between \$0 and \$50 using a sliding scale. You can change the dollar amount by pressing the UP, DOWN, LEFT and RIGHT arrows keys on the keyboard. The effect of each key upon the willingness-to-pay value is described below:

RIGHT	+\$1
LEFT	-\$1
UP	+\$5
DOWN	-\$5

Amounts are entered by pressing the SPACE BAR. Other keys will not work. If you have any questions, please ask the experimenter.

Part 2

You are invited to take part in an experiment on decision making. This experiment consists of three different parts and will generally take up to 45 minutes. We will describe the details of each part of the experiment as it comes up. Upon finishing the entire experiment, you will be paid \$50, including the \$15 that you have earned from the previous task.

In the first part, we will show you different consumer products, one at a time, each with its own sale price. Your task is to make a hypothetical purchase decision. Assume that you are being offered the chance to buy the product (only one unit) from us at the end of the experiment with the \$50 given to you, and that if you bought the product, you had to keep it only for yourself (i.e., you cannot give or sell it to someone else). This is a hypothetical exercise as in the previous task—you are not actually being offered the chance to buy anything. However, please take every decision seriously—when evaluating products for this hypothetical purchase, please assume that the product is only for yourself and treat every decision as if it were the only one. This last point is important—even though you are going to be presented many different products and making a decision for each, please make each decision as if that product was the only one you were thinking about buying at this time.

How the product image and the offer price are displayed At the beginning of each trial, you will see two gray boxes (Figure 1). A product image and the offered price are hidden behind the gray boxes. Click the bigger gray box with the left mouse-button and hold to see the product image (Figure 2 on the next page). If you release the button or the cursor leaves the boxed area, the image will disappear. Click the smaller gray box with the left mouse-button and hold to see the offered price (Figure 3 on the next page). There is no time limit on this task. You can take as much time as you wish to click and make a decision.



FIGURE 1

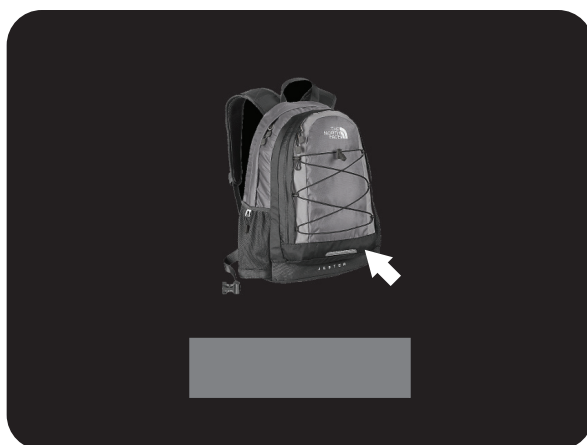


FIGURE 2



FIGURE 3

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

You might find it easy to respond if you place your left ring finger on the 'z' key and your left index finger on the 'c' key. The key press will terminate the trial and a fixation cross at the center of the screen will appear briefly before a new trial begins. If you are left-handed and use your left-hand to hold a mouse, please let the experimenter know.

There will be 90 trials in this part and the same product might appear more than once with a different price each time.

All decisions are hypothetical and will not be implemented. However, please take each decision seriously.

In order to familiarize you with the software used in this task, we will present you with 5 practice trials.

Part 3

In this part, we will show you different consumer products one at a time with a different offer price. The procedure of this part is almost the same as in the previous decision making part. However, the most significant difference is that in this part we ask you to make a real purchase decision. It is real in the sense that any decision made in this part can count as real at the end of the experiment and you may actually be purchasing the product—more on this follows herein.

During the next 90 trials in this part, you will see various consumer products, which are different from those presented in the earlier hypothetical purchase decision making part of the experiment. In each trial, you are offered the chance to buy a product (only one unit) from us at the end of this experiment at the price listed below the product image. So in each trial, your task is to decide whether or not you want to buy the product from us at the stated price. At the end of the entire experiment, exactly one of the 90 trials will be chosen at random, and whatever decision you made in the chosen trial (to buy or not at the offered price) will be *carried out for real by us at the end of this experiment!*

When you make an actual purchase decision, note the following points:

- Since only one decision will count, you do not have to spread out your funds among the different purchase decisions. Therefore, you should treat each choice as if it is the only one that you are making. Indeed, only one trial will be chosen at the end of the experiment to be carried out for real.
- If in the selected trial you chose to purchase the item, the cost will be deducted from your \$50 earnings; you get the item and the remaining cash. If in the selected trial you did not choose to purchase the item, you keep your \$50 in earnings in cash and do not receive any product.
- If you buy an item from us, we will ship it to you and pay the shipping costs.

We would like to stress that honesty is the best policy here. Any of the 90 trials has an equal chance of being chosen, whether or not you expressed an interest in purchasing the item—*that is, your decision about purchasing DOES NOT affect the chance of a particular trial being chosen.* For example, if you were to decline purchasing every item presented to you, except for the one item you really want, you do not increase your chances of getting that item—you have only increased the chance that you will not get any item and you may miss out on other deals you would have liked. In each trial, you should make a purchase decision, independent of anything you have seen in any other trial.

Another important note is that any item you buy here must be for personal use. You should not buy the product in order to resell it or to give it to someone else—only consider whether or not you want to purchase the item for your own personal use. Your participation in this experiment is covered by the Caltech Honor Code, including your agreement to follow these instructions honestly and in particular, to evaluate items only for your personal use. Thinking about the value of the product in terms of its resale or gift value impairs our ability to understand the scientific basis of personal valuation.

As before, at the beginning of each trial you will see two gray boxes, behind which a product image and the offered price are hidden. Click the gray boxes with the left mouse-button to see the product image and the offer price. There is no time limit on this task. You can take as much time as you wish to click and make a decision.

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

Again, keep in mind that you are asked to make real purchase decisions in this part. One of the decisions you make will be actually implemented.

If you have any questions or if anything is unclear, please read the instructions again or ask the experimenter.

Part 4

This is the last part of the experiment and consists of 90 trials. In this part, we will ask you again to make real purchase decisions on the same items you have already seen in the previous hypothetical purchase decision making part of the experiment. This task is identical to the previous purchase decision making tasks.

Note that at the end of the experiment, exactly one of the 180 real trials (90 from the real purchase decision making part that you have just finished and 90 from this part) will be randomly selected and the decision you made in the chosen trial will be implemented for real (i.e., based on your choice in the selected trial, you might buy that item at the suggested price).

As before, at the beginning of each trial you will see two gray boxes, behind which a product image and the offered price are hidden. Click the gray boxes with the left mouse-button to see the product image and the offer price. There is no time limit on this task. You can take as much time as you wish to click and make a decision.

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

Keep in mind that you are asked to make real purchase decisions in this part. One of the decisions you make or have already made will be actually implemented.

G.2 Experiment E: Eyetracking

Part 1

Thank you for participating in this study of consumer preferences for various products. Please follow these instructions carefully and do not hesitate to ask the experimenter if you have a question. This task will take up to 15 minutes and you will be paid \$15 for completion of this task, including a \$5 show-up fee. Upon completion of this task, we may invite you to participate in another experiment.

This experiment consists of 120 trials, during which time we will show you 120 images of difference consumer products. In each trial, one product is shown and you will be asked to state the maximum amount of money that you would be willing to pay to buy this one item; this amount is referred to as your willingness-to-pay. Please determine this amount under the restriction that, whatever you buy, IT MUST BE FOR YOURSELF (i.e., it cannot be purchased as a gift for someone else or for resale).

Note that there will be no actual purchase involved. Whatever amount you state, it is not binding; that is, you will not actually have to buy any of the items shown to you.

Although this is a purely hypothetical task, please keep in mind the following points when reporting your maximum willingness to pay.

- You should rate the value of each item independently from the others, assuming during each trial that the product shown is the only purchase you would make.
- The products should be evaluated from your perspective, not that of someone else. In other words, your willingness-to-pay should reflect how much you would like to keep an item for yourself, not for your friends or family, etc.
- Your current ownership of a particular item might affect your willingness to pay for the item—this is perfectly appropriate. For example, if you already own item A, your willingness to pay for item A might be high or low depending on whether you want a second one for yourself or not.

In each trial you will be allowed to enter an amount between \$0 and \$50 using a sliding scale. You can change the dollar amount by pressing the UP, DOWN, LEFT and RIGHT arrows keys on the keyboard. The effect of each key upon the willingness-to-pay value is described below:

RIGHT	+\$1
LEFT	-\$1
UP	+\$5
DOWN	-\$5

Amounts are entered by pressing the SPACE BAR. Other keys will not work. If you have any questions, please ask the experimenter.

Part 2

You are invited to take part in an experiment on decision making. This experiment consists of three different parts and will generally take up to 45 minutes. We will describe the details of each part of the experiment as it comes up. Upon finishing the entire experiment, you will be paid \$50, including the \$15 that you have earned from the previous task.

In the first part, we will show you different consumer products, one at a time, each with its own sale price (see Figure below). Your task is to make a hypothetical purchase decision. Assume that you are being offered the chance to buy the product (only one unit) from us at the end of the experiment with the \$50 given to you, and that if you bought the product, you had to keep it only for yourself (i.e., you cannot give or sell it to someone else). This is a hypothetical exercise as in the previous task—you are not actually being offered the chance to buy anything. However, please take every decision seriously—when evaluating products for this hypothetical purchase, please assume that the product is only for yourself and treat every decision as if it were the only one. This last point is important—even though you are going to be presented many different products and making a decision for each, please make each decision as if that product was the only one you were thinking about buying at this time.

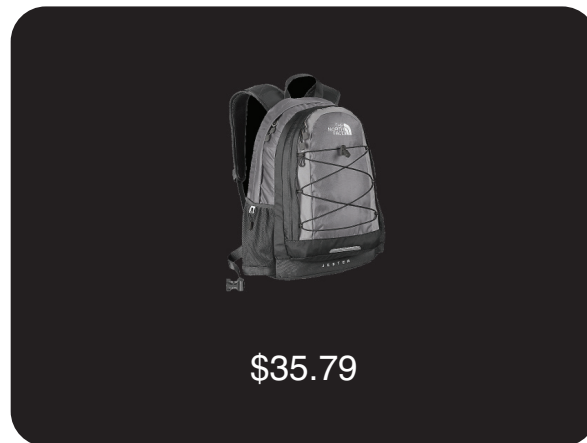


FIGURE 1

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

You might find it easy to respond if you place your left ring finger on the ‘z’ key and your left index finger on the ‘c’ key. The key press will terminate the trial and a fixation cross at the center of the screen will appear briefly before a new trial begins. There is no time limit on this task. You can take as much time as you wish to make a decision.

At the beginning of each trial, you will see a blank screen with a fixation marker at the center. Please fixate on this central marker before proceeding—this is performed so the eyetracker can adjust to small head movements. Then press the space bar to begin the task.

There will be 90 trials in this part and the same product might appear more than once with a different price each time.

All decisions are hypothetical and will not be implemented. However, please take each decision seriously.

In order to familiarize you with the software used in this task, we will present you with 5 practice trials.

Part 3

In this part, we will show you different consumer products one at a time with a different offer price. The procedure of this part is almost the same as in the previous decision making part. However, the most significant difference is that in this part we ask you to make a real purchase decision. It is real in the sense that any decision made in this part can count as real at the end of the experiment and you may actually be purchasing the product—more on this follows herein.

During the next 90 trials in this part, you will see various consumer products, which are different from those presented in the earlier hypothetical purchase decision making part of the experiment. In each trial, you are offered the chance to buy a product (only one unit) from us at the end of this experiment at the price listed on the screen. So in each trial, your task is to decide whether or not you want to buy the product from us at the stated price. At the end of the entire experiment, exactly one of the 90 trials will be chosen at random, and whatever decision you made in the chosen trial (to buy or not at the offered price) will be *carried out for real by us at the end of this experiment!*

When you make an actual purchase decision, note the following points:

- Since only one decision will count, you do not have to spread out your funds among the different purchase decisions. Therefore, you should treat each choice as if it is the only one that you are making. Indeed, only one trial will be chosen at the end of the experiment to be carried out for real.
- If in the selected trial you chose to purchase the item, the cost will be deducted from your \$50 earnings; you get the item and the remaining cash. If in the selected trial you did not choose to purchase the item, you keep your \$50 in earnings in cash and do not receive any product.
- If you buy an item from us, we will ship it to you and pay the shipping costs.

We would like to stress that honesty is the best policy here. Any of the 90 trials has an equal chance of being chosen, whether or not you expressed an interest in purchasing the item—that is, your decision about purchasing DOES NOT affect the chance of a particular trial being chosen. For example, if you were to decline purchasing every item presented to you, except for the one item you really want, you do not increase your chances of getting that item—you have only increased the chance that you will not get any item and you may miss out on other deals you would have liked. In each trial, you should make a purchase decision, independent of anything you have seen in any other trial.

Another important note is that any item you buy here must be for personal use. You should not buy the product in order to resell it or to give it to someone else—only consider whether or not you want to purchase the item for your own personal use. Your participation in this experiment is covered by the Caltech Honor Code, including your agreement to follow these instructions honestly and in particular, to evaluate items only for your personal use. Thinking about the value of the product in terms of its resale or gift value impairs our ability to understand the scientific basis of personal valuation.

As before, at the beginning of each trial you will see a blank screen with a fixation circle at the center. Please fixate on this central marker before proceeding. After fixating on the marker for a moment, you can proceed by pressing the space bar. There is no time limit on this task. You can take as much time as you wish to click and make a decision.

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

Again, keep in mind that you are asked to make real purchase decisions in this part. One of the decisions you make will be actually implemented.

If you have any questions or if anything is unclear, please read the instructions again or ask the experimenter.

Part 4

This is the last part of the experiment and consists of 90 trials. In this part, we will ask you again to make real purchase decisions on the same items you have already seen in the previous hypothetical purchase decision making part of the experiment. This task is identical to the previous purchase decision making tasks.

Note that at the end of the experiment, exactly one of the 180 real trials (90 from the real purchase decision making part that you have just finished and 90 from this part) will be randomly selected and the decision you made in the chosen trial will be implemented for real (i.e., based on your choice in the selected trial, you might buy that item at the suggested price).

As before, there is no time limit on this task. You can take as much time as you wish to click and make a decision.

Once you decide whether to buy or not, your decision can be entered by pressing one of the two keys on the keyboard as described below:

No	Yes
z	c

Keep in mind that you are asked to make real purchase decisions in this part. One of the decisions you make or have already made will be actually implemented.

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