

Crying Wolf in the Lab

Arya Gaduh, Peter McGee, Alexander Ugarov*

September 16, 2022

Abstract

Keywords:

1 Introduction

A Tables

Table 1: List of Treatments

Prop. of black balls (p)	Gremlins composition			FP rate	FN rate
	Honest	Black-eyed	White-eyed		
0.1,0.2,0.3,0.5	2	0	0	0	0
0.1,0.2,0.3,0.5	3	1	0	0.333	0
0.1,0.2,0.3,0.5	3	0	1	0	0.333
0.1,0.2,0.3,0.5	3	1	1 0	0.333	0.333
0.1,0.2,0.3,0.5	5	1	0	0.2	0
0.1,0.2,0.3,0.5	5	0	1	0	0.2
0.1,0.2,0.3,0.5	5	1	1	0.2	0.2

Table 2: Demographic Characteristics of Subjects

	All		$p \in \{0.1, 0.3\}$		$p \in \{0.2, 0.5\}$	
	N	%	N	%	N	%
Male	43	41	22	41	21	41
Age>23yrs old	14	13	6	11	8	16
Students	88	84	46	85	42	82
Had statistics classes	63	60	37	69	26	51
Total	105	100	54	100	51	100

Table 3: Risk Aversion Measurement

Switching Probability (π^*)	θ	N
Always protect	>2	1
0.1	2	10
0.15	1.216	13
0.2	0.573	29
0.25	0	16
0.3	-0.539	15
Never protect	<-0.539	14

Table 4: Informed protection response: probit

	(1)	(2)	(3)	(4)	(5)	(6)
				FE	FE	FE
False pos. rate	.245** (2.1)	.244** (2.2)	.657*** (5.4)	.201* (1.7)	.189* (1.7)	.642*** (4.6)
False neg. rate	.342*** (3.3)	.335*** (3.3)	.302*** (3.0)	.365*** (3.3)	.349*** (3.2)	.302*** (2.8)
S=Black		.477*** (58.6)	.219*** (4.1)		.48*** (249.0)	.224*** (4.0)
Posterior prob.			.371*** (5.0)			.365*** (4.5)
Observations	629	629	629	587	587	587
Adjusted R^2						

t statistics in parentheses

Errors are clustered by subject, average marginal treatment effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Informed Protection Response: flexible control for posteriors

	(1)	(2)	(3)	(4)	(5)	(6)
		FE			S=White	S=Black
False pos. rate	.527*** (4.0)	.492*** (3.0)	.462** (2.3)	.613*** (3.6)	.502*** (4.2)	-.128 (-0.2)
False neg. rate	.139 (1.2)	.127 (1.0)	.148 (0.9)	1.02*** (2.9)	.307 (1.0)	.0475 (0.3)
p>0.2			.313*** (8.2)			
FP rate x ($p \geq 0.2$)			.0542 (0.2)			
FN rate x ($p \geq 0.2$)			-.0488 (-0.2)			
S=Black				1.34** (2.3)		
FP rate x (S=Black)				-2.04** (-2.0)		
FN rate x (S=Black)				-1.05*** (-2.8)		
Observations	629	587	587	587	315	314
Adjusted R^2						

t statistics in parentheses

Reporting average marginal effects, errors are clustered by subject.

With flexible controls of posterior probability

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Informed protection response and reported strategy: LPM

	(1)	(2)	(3)
		S=White	S=Black
Seek honest	.244*** (3.2)	.107* (1.8)	.381*** (2.9)
Other	.236*** (3.0)	.135** (2.4)	.338** (2.5)
False neg. rate	.536* (1.7)	1.1*** (3.0)	-.0297 (-0.1)
Seek honest \times False neg. rate	.0615 (0.2)	-.184 (-0.4)	.307 (0.6)
Other \times False neg. rate	-.443 (-1.3)	-.671 (-1.5)	-.23 (-0.5)
False pos. rate	.936*** (4.3)	.801*** (3.4)	1.07*** (2.8)
Seek honest \times False pos. rate	-.725** (-2.4)	-.0519 (-0.1)	-1.4*** (-2.9)
Other \times False pos. rate	-.872*** (-3.3)	-.294 (-1.0)	-1.44*** (-3.1)
Constant	.216*** (3.1)	-.0845* (-1.9)	.515*** (4.2)
Observations	629	315	314
Adjusted R^2	0.03	0.14	0.06

t statistics in parentheses

Reporting average coeffs, errors are clustered by subject.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: WTP for Information (tobit)

	(1)	(2)	(3)	(4)	(5)	(6)
	All	p=0.1	p=0.2	All	All	All
model						
FN costs	-.562** (0.2)	-1.22** (0.6)	-.682*** (0.3)	-.791*** (0.2)	-.68*** (0.3)	-.674** (0.3)
FP costs	-.631*** (0.2)	-.624** (0.2)	-.519** (0.3)	-.581*** (0.2)	-.485** (0.2)	-.463** (0.2)
BP costs				.397*** (0.1)	.386*** (0.1)	.393*** (0.1)
Belief change					.368 (0.3)	
Certainty						.799 (0.8)
Constant	1.94*** (0.2)	1.72*** (0.2)	2.33*** (0.2)	.816** (0.3)	.573 (0.4)	.0873 (0.8)
sigma						
Constant	1.82*** (0.1)	1.86*** (0.1)	1.7*** (0.1)	1.78*** (0.1)	1.78*** (0.1)	1.78*** (0.1)
Observations	315	162	153	315	315	315
Adjusted R^2						

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: WTP minus Value of Information (OLS)

	(1)	(2)	(3)	(4)	(5)
FP costs	.564*** (0.1)	.473*** (0.1)	.403 (0.3)	.502*** (0.2)	.435*** (0.1)
FN costs	-.22* (0.1)	.0351 (0.1)	-.495 (0.5)	.0816 (0.1)	-.62*** (0.2)
Risk-loving			0 (.)		
Risk-averse			0 (.)		
No risk av. measure			0 (.)		
Risk-loving \times FP costs			.12 (0.4)		
Risk-averse \times FP costs			.104 (0.3)		
No risk av. measure \times FP costs			-.142 (0.4)		
Risk-loving \times FN costs			.744 (0.5)		
Risk-averse \times FN costs			.552 (0.5)		
No risk av. measure \times FN costs			.492 (0.5)		
Inaccurate beliefs				.0678 (0.2)	
Inaccurate beliefs \times FP costs				.636 (0.8)	
Inaccurate beliefs \times FN costs				.00218 (0.3)	
plevel=200					0 (.)
plevel=200 \times FP costs					.141 (0.2)
plevel=200 \times FN costs					.816*** (0.2)
Constant	-.108 (0.2)	-.152* (0.1)	-.149* (0.1)	-.211 (0.2)	-.123 (0.1)
Observations	315	315	315	315	315
Adjusted R^2	0.05	0.59	0.59	0.59	0.60

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: WTP minus Value of Information, connection to self-reported protection strategy

	(1) All	(2) p=0.1	(3) p=0.2	(4) All	(5) All	(6) All
Seek honest	.916*** (0.3)	1.16*** (0.4)		1.18** (0.5)		1.4** (0.6)
Other	.292 (0.2)	.351 (0.4)		.255 (0.5)		.594 (0.5)
FP rate	2.19*** (0.6)	2.67* (1.6)	-1.84** (0.8)	2.6 (1.9)	-1.66** (0.8)	2.52 (2.4)
FN rate	-.243 (0.6)	.296 (1.6)	-2.18*** (0.8)	-1.13 (1.9)	-2.23*** (0.8)	2.41 (2.4)
Seek honest \times FP rate		-.713 (1.8)		-.998 (2.3)		-.621 (2.7)
Other \times FP rate		-.424 (1.8)		-.535 (2.2)		.205 (2.6)
Seek honest \times FN rate		-1.34 (1.8)		-.778 (2.3)		-2.46 (2.7)
Other \times FN rate		-.0627 (1.8)		.512 (2.2)		-1.42 (2.6)
Constant	-.617*** (0.2)	-.739** (0.3)	1.84*** (0.2)	-.123 (0.4)	2.28*** (0.2)	-1.56*** (0.5)
Observations	315	315	162	162	153	153
Adjusted R^2	0.09	0.08	0.08	0.09	0.07	0.08

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B Figures

Figure 1: Average Blind Protection Response

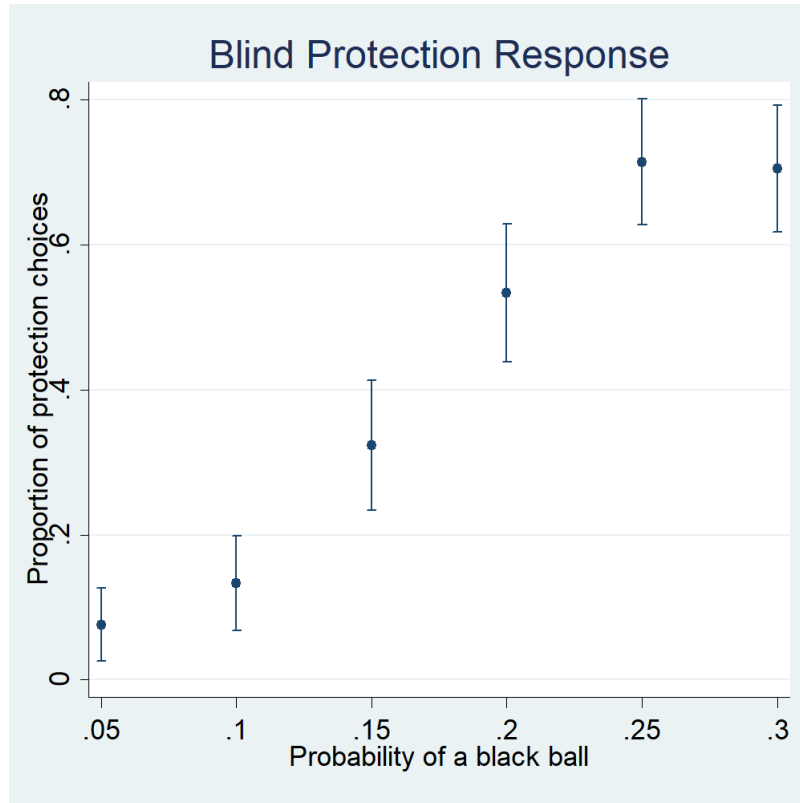


Figure 2: Average Informed Protection Response

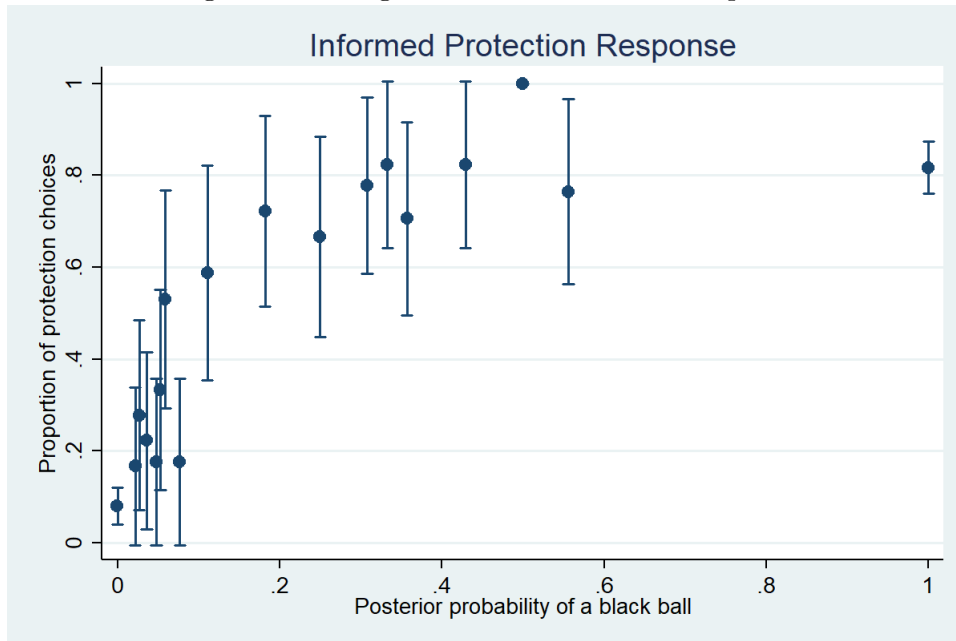


Figure 3: Average Informed Protection Response

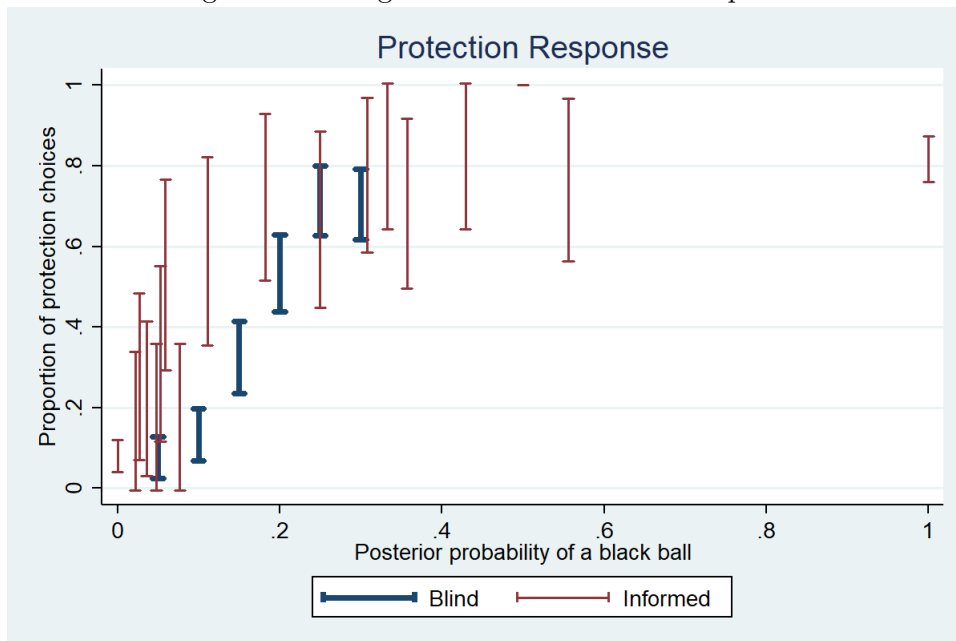


Figure 4: Average Informed Protection Response (Smoothed)

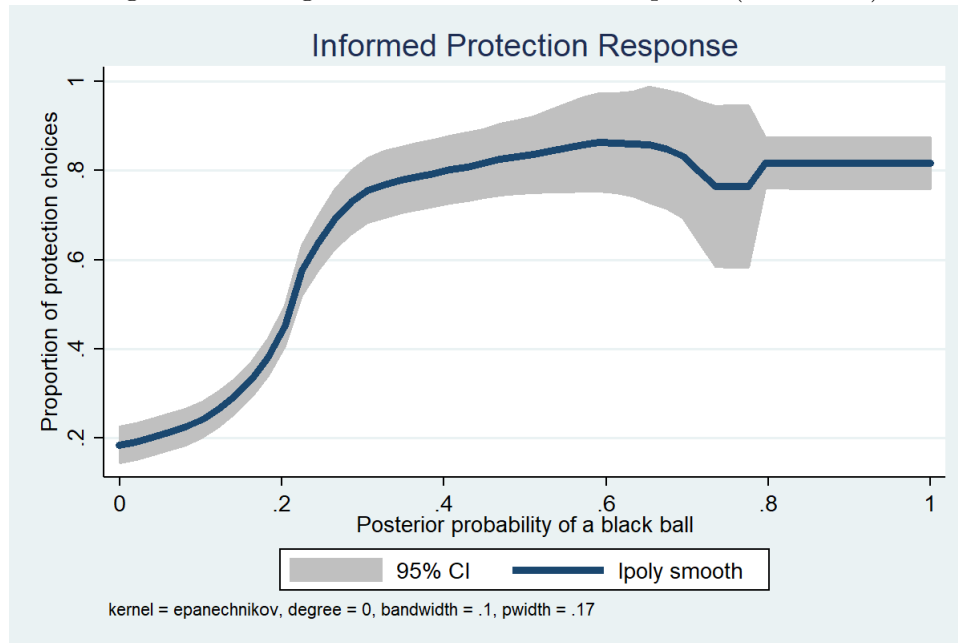


Figure 5: Belief Updating

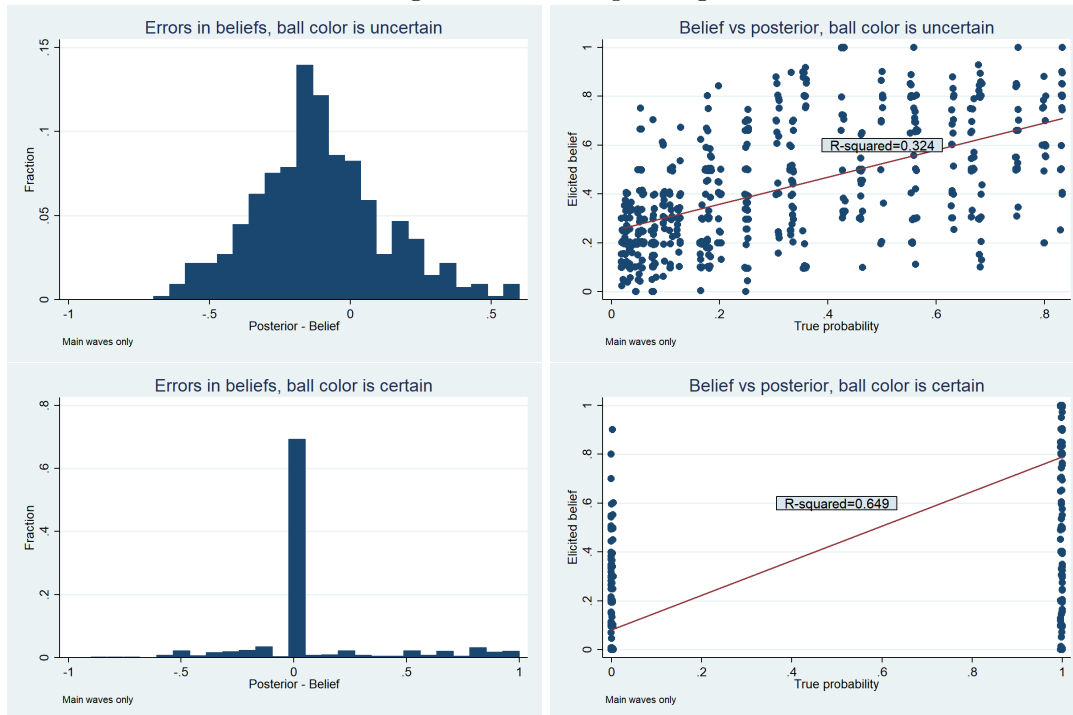


Figure 6: Theoretical vs actual WTP

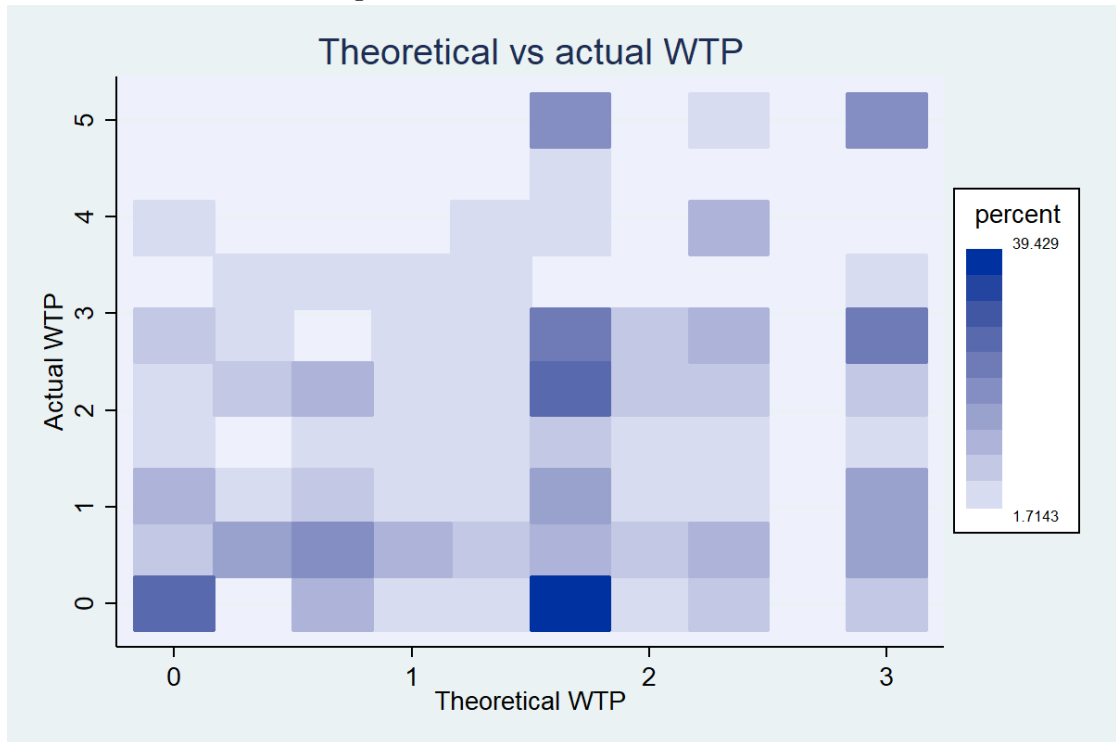


Figure 7: WTP discrepancy

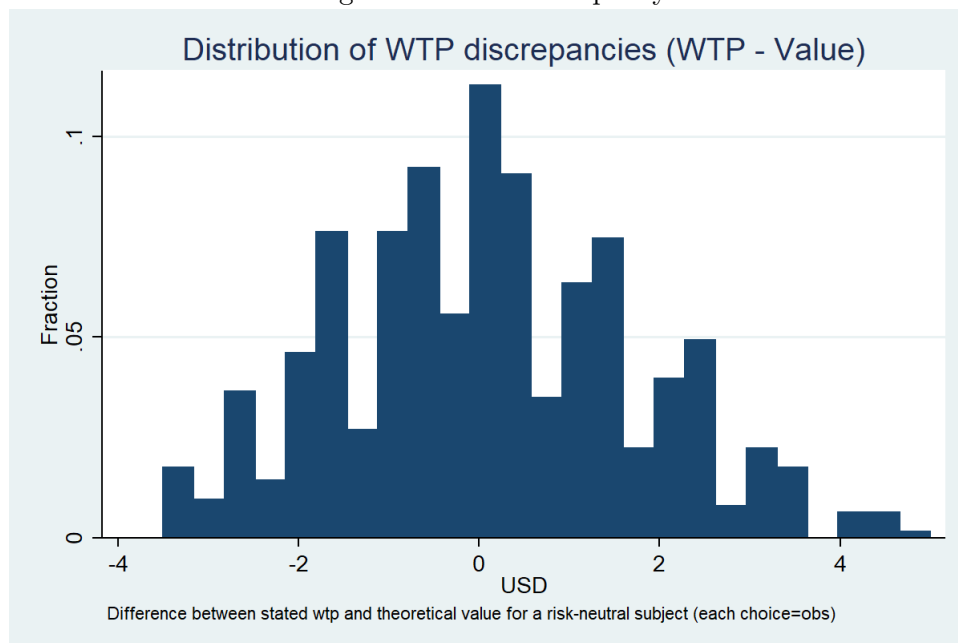
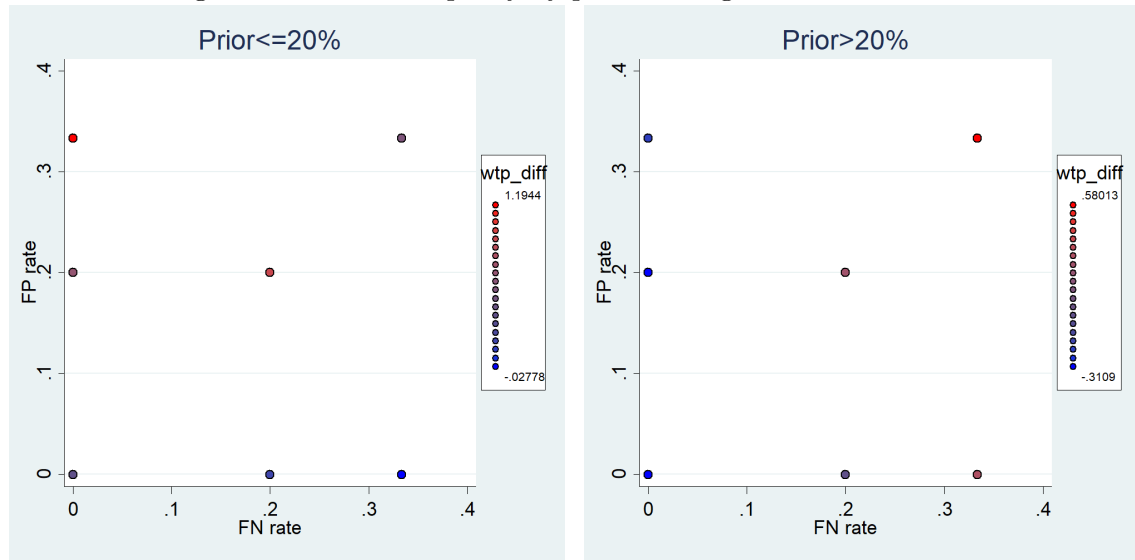


Figure 8: WTP discrepancy by prior and signal characteristics



C Appendix Tables

Table 10: Informed Protection Response: flexible control for posteriors and beliefs

	(1)	(2)	(3)	(4)	(5)	(6)
		FE			S=White	S=Black
False pos. rate	.325** (2.3)	.285* (1.7)	.28 (1.4)	.37** (2.2)	.326*** (2.6)	-.0709 (-0.1)
False neg. rate	.0294 (0.2)	-.0119 (-0.1)	-.0737 (-0.4)	.493 (1.5)	-.0882 (-0.3)	.0845 (0.5)
p>0.2			.29*** (5.3)			
FP rate x ($p \geq 0.2$)			.0208 (0.1)			
FN rate x ($p \geq 0.2$)			.123 (0.6)			
S=Black				.757 (1.5)		
FP rate x (S=Black)				-1.13 (-1.3)		
FN rate x (S=Black)				-.553 (-1.5)		
Observations	629	587	587	587	313	314
Adjusted R^2						

t statistics in parentheses

With flexible controls of posterior probability and beliefs

Errors are clustered by subject, average marginal treatment effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Informed protection response: semiparametric control for posteriors

	(1)	(2)	(3)	(4)
False pos. rate	.547*** (3.6)	.439** (2.2)	.527*** (3.3)	.361* (1.8)
False neg. rate	-.186 (-1.0)	-.197 (-0.9)	-.643 (-1.6)	.00259 (0.0)
p>0.2		.0377 (0.8)		
FP rate x (p \geq 0.2)		.225 (0.9)		
FN rate x (p \geq 0.2)		.0451 (0.2)		
S=Black			-6.21 (-0.6)	
FP rate x (S=Black)			.00529 (0.0)	
FN rate x (S=Black)			.516 (1.3)	
Stat. class				-.0199 (-0.4)
FP rate x Stat. class				.326 (1.5)
FN rate x Stat. class				-.298 (-1.4)
Observations	629	629	629	629
Adjusted R^2	0.02	0.02	0.02	0.02

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: WTP - Value of Information, by prior with order effects

	(1)	(2)	(3)	(4)	(5)	(6)
	p=0.1,0.2	p=0.3,0.5	p=0.1,0.2			
FP rate	2.23*** (0.5)	-.249 (0.7)	2.12*** (0.7)	1.21* (0.7)	-.249 (0.7)	-.325 (0.8)
FN rate	-.254 (0.4)	2.64*** (0.5)	-1.22** (0.5)	.169 (0.5)	2.64*** (0.5)	1.33*** (0.5)
Starts with p=0.2			-1.13*** (0.3)	.256 (0.3)		
Starts with p=0.2 \times FP rate			.215 (1.0)	-.444 (1.0)		.157 (0.7)
Starts with p=0.2 \times FN rate			1.99*** (0.7)	2.11*** (0.8)		2.71*** (0.6)
First prior					.0367 (0.2)	.0367 (0.2)
First prior \times FP rate					2.48*** (0.7)	2.48*** (0.7)
First prior \times FN rate					-2.9*** (0.3)	-2.9*** (0.3)
Constant	-.135 (0.2)	-.172 (0.2)	.412* (0.2)	-.278 (0.2)	-.172 (0.2)	-.172 (0.2)
Observations	315	315	315	630	630	630
Adjusted R^2	0.04	0.04	0.12	0.04	0.04	0.06

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: WTP - Value of Information, by prior

	(1)	(2)	(3)	(4)	(5)
	All	0.1	0.2	0.3	0.5
FP rate	.822* (0.5)	1.96*** (0.7)	2.3*** (0.7)	-.121 (0.9)	-.865 (0.9)
FN rate	1.2*** (0.4)	-1.24*** (0.4)	.783 (0.5)	1.57*** (0.6)	3.79*** (0.7)
Constant	-.134 (0.1)	.435*** (0.1)	-.713*** (0.1)	-.921*** (0.1)	.677*** (0.2)
Observations	630	162	153	162	153
Adjusted R^2	0.36	0.64	0.49	0.42	0.48

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Belief Elicitation: Discrepancy

	(1)	(2)	(3)	(4)	(5)	(6)
False neg. rate	-.016 (0.1)	-.016 (0.1)	.014 (0.1)	.014 (0.1)	.0562 (0.1)	.0554 (0.1)
False pos. rate	-.919*** (0.1)	-.919*** (0.1)	-1.07*** (0.1)	-1.07*** (0.1)	-1.05*** (0.1)	-1.05*** (0.1)
Good quiz			-.0469 (0.0)	-.0673 (0.0)		
Good quiz \times False neg. rate			-.0463 (0.1)	-.0464 (0.1)		
Good quiz \times False pos. rate			.286* (0.2)	.284* (0.2)		
Stat. class					.00193 (0.0)	.0127 (0.0)
Stat. class \times False neg. rate					-.127 (0.1)	-.126 (0.1)
Stat. class \times False pos. rate					.229 (0.2)	.226 (0.2)
Constant	.076*** (0.0)	.0656*** (0.0)	.101*** (0.0)	.102*** (0.0)	.0751*** (0.0)	.0563 (0.0)
Prior prob dummies	No	Yes	No	Yes	No	Yes
Observations	630	630	630	630	630	630
Adjusted R^2	0.17	0.17	0.17	0.17	0.17	0.17

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: WTP minus Value of Information: demographic determinants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FP costs	.564*** (0.1)	.602*** (0.2)	.548*** (0.2)	.475** (0.2)	.416** (0.2)	.546*** (0.1)	.496*** (0.1)	.66*** (0.2)	.591*** (0.2)
FN costs	-.22* (0.1)	-.317* (0.2)	-.0684 (0.2)	-.242 (0.2)	-.0701 (0.2)	-.285* (0.2)	-.0318 (0.1)	-.037 (0.2)	.223 (0.2)
Male		-.23 (0.4)	-.27 (0.4)						
Male \times FP costs		-.126 (0.2)	-.131 (0.2)						
Male \times FN costs		.244 (0.3)	.251 (0.2)						
Stat. class				-.186 (0.4)	-.226 (0.4)				
Stat. class \times FP costs				.146 (0.2)	.141 (0.2)				
Stat. class \times FN costs				.0344 (0.3)	.201 (0.2)				
>23 yrs						-.807** (0.4)	-.747** (0.3)		
>23 yrs \times FP costs						.187 (0.3)	.148 (0.3)		
>23 yrs \times FN costs						.454** (0.2)	.387 (0.3)		
Good quiz								.316 (0.4)	.346 (0.4)
Good quiz \times FP costs								-.184 (0.2)	-.159 (0.2)
Good quiz \times FN costs								-.337 (0.3)	-.35 (0.2)
Constant	-.108 (0.2)	-.0115 (0.2)	.356 (0.3)	.00585 (0.3)	.387 (0.4)	-.00545 (0.2)	.324 (0.2)	-.279 (0.3)	.0568 (0.3)
Prior dummies	No	No	Yes	No	Yes	No	Yes	No	Yes
Observations	315	315	315	315	315	315	315	315	315
Adjusted R^2	0.05	0.04	0.11	0.04	0.12	0.06	0.12	0.04	0.11

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$