Appendix A Tables and Figures

Table A1: Demographic Characteristics of Subjects

	Priors					
	All		$\{0.1, 0.3\}$		$\{0.2, 0.5\}$	
	N	%	N	%	N	%
	A. All waves					
Male	96	47	49	46	47	47
Age>23yrs old	16	8	8	7	8	8
Students	174	84	90	84	84	85
Had statistics classes	128	62	71	66	57	58
	B. First Wave					
Male	43	21	22	21	21	21
Age>23yrs old	14	7	6	6	8	8
Students	88	43	46	43	42	42
Had statistics classes	63	31	37	35	26	26
	C. Second Wave					
Male	53	26	27	25	26	26
Age>23yrs old	2	1	2	2	0	0
Students	86	42	44	41	42	42
Had statistics classes	65	32	34	32	31	31

Table A2: Average Protection by Signal Type and Prior

Row	**Prior**	**Signal Characteristics**		**Signal**	**Posterior**	**Share Protect**	**Share Optimal**	p
		False Positive	**False Negative**					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Low	No	No	White	0.000	0.034	0.000	0.111
(2)	Low	No	Yes	White	0.055	0.184	0.000	0.001
(3)	Low	Yes	No	White	0.000	0.290	0.000	0.003
(4)	Low	Yes	Yes	White	0.051	0.334	0.000	0.002
(5)	Low	No	No	Black	1.000	0.806	1.000	0.074
(6)	Low	No	Yes	Black	1.000	0.852	1.000	0.003
(7)	Low	Yes	No	Black	0.357	0.778	0.750	0.863
(8)	Low	Yes	Yes	Black	0.387	0.873	0.833	0.812
(9)	High	No	No	White	0.000	0.064	0.000	0.070
(10)	High	No	Yes	White	0.183	0.294	0.125	0.312
(11)	High	Yes	No	White	0.000	0.269	0.000	0.000
(12)	High	Yes	Yes	White	0.169	0.492	0.167	0.079
(13)	High	No	No	Black	1.000	0.844	1.000	0.022
(14)	High	No	Yes	Black	1.000	0.865	1.000	0.001
(15)	High	Yes	No	Black	0.667	0.840	1.000	0.007
(16)	High	Yes	Yes	Black	0.689	0.894	1.000	0.007

Notes: Column (8) reports the p-value for the test of equality between the theoretical prediction (Share Optimal) and the observed share of protection (Share Protect). Priors are grouped as low ($p \in \{0.1, 0.2\}$) v. high ($p \in \{0.3, 0.5\}$).

Table A3: Error Decomposition

	(1) OLS	(2) FE	(3) OLS	(4) FE	(5) OLS	(6) FE
Prior	0.265***	0.170**	0.270***	0.154*	0.281***	0.051
	(6.5)	(2.9)	(5.3)	(2.0)	(3.7)	(0.6)
Signal	0.449***	0.450***	0.307***	0.308***	0.456***	0.456***
	(9.5)	(9.0)	(4.2)	(4.0)	(4.6)	(4.4)
Good quiz × Prior			-0.011	0.033		
			(-0.1)	(0.4)		
Good quiz × Signal			0.289***	0.288**		
			(3.0)	(2.8)		
Stat. class × Prior					-0.023	0.180*
					(-0.3)	(2.1)
Stat. class × Signal					-0.011	-0.010
					(-0.1)	(-0.1)
Observations	473	473	473	473	473	473
Adjusted R^2	0.33	0.30	0.35	0.33	0.33	0.30

Notes: Decomposition works only for imperfect signals, hence the table excludes the responses to certain signals. Standard errors in parentheses (clustered at the subject and treatment level). */**/*** indicates statistical significance at 10/5/1 percent.

Table A4: Average Updating Error by Signal Type and Prior

			Signal Characteristics				
Row	**Prior**	**Signal**	**False Positive**	**False Negative**	**Posterior**	**Updating Error**	p
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	Low	White	No	No	0.000	0.038	0.262
(2)	Low	White	No	Yes	0.055	0.084	0.000
(3)	Low	White	Yes	No	0.000	0.199	0.001
(4)	Low	White	Yes	Yes	0.051	0.230	0.000
(5)	Low	Black	No	No	1.000	-0.148	0.083
(6)	Low	Black	No	Yes	1.000	-0.417	0.000
(7)	Low	Black	Yes	No	0.357	0.316	0.001
(8)	Low	Black	Yes	Yes	0.387	0.169	0.017
(9)	High	White	No	No	0.000	0.058	0.177
(10)	High	White	No	Yes	0.183	0.019	0.518
(11)	High	White	Yes	No	0.000	0.220	0.000
(12)	High	White	Yes	Yes	0.169	0.170	0.000
(13)	High	Black	No	No	1.000	-0.142	0.003
(14)	High	Black	No	Yes	1.000	-0.351	0.000
(15)	High	Black	Yes	No	0.667	0.007	0.860
(16)	High	Black	Yes	Yes	0.689	-0.126	0.024

Notes: The updating error is defined as Belief - Posterior, where Posterior is the Bayesian probability estimate for the treatment based on its information structure. The p-value in column 6 is for the test of the null hypothesis that the updating error in column 5 is equal to 0.

Table A5: Deviations from Signal Value (WTP - Value) and Demographic Determinants

	(1)	(2)	(3)	(4)	(5)	(6)
FP costs	.25	.246**	.423*	.435***	.348	.336***
	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)	(0.1)
FN costs	.267*	.271***	.342**	.321***	.272**	.293***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Male	-.398**	-.26				
	(0.2)	(0.2)				
Male × FP costs	.196	.192				
	(0.1)	(0.1)				
Male × FN costs	.0728	.089**				
	(0.1)	(0.0)				
Stat. class			.218	.306		
			(0.2)	(0.3)		
Stat. class × FP costs			-.122	-.152		
			(0.2)	(0.1)		
Stat. class × FN costs			-.0727	-.0204		
			(0.1)	(0.1)		
>23 yrs					-.377	-.875***
					(0.3)	(0.3)
>23 yrs × FP costs					-.117	.015
					(0.2)	(0.2)
>23 yrs × FN costs					.393**	.257*
					(0.2)	(0.2)
Constant	-.0972	.546***	-.418	.222	-.252	.491***
	(0.3)	(0.2)	(0.3)	(0.2)	(0.3)	(0.2)
Prior dummies	No	Yes	No	Yes	No	Yes
Observations	1230	1230	1230	1230	1230	1230
Adjusted R^2	0.05	0.19	0.04	0.20	0.04	0.19

Notes: Standard errors in parentheses (clustered at subject and treatment levels). */**/*** indicates statistical significance at 10/5/1 percent.

Table A6: WTP Deviations from Signal Value: Risk Aversion and Sensitivity to Error Costs

	(1)	(2)	(3)	(4) FE	(5) FE
p>0.2	-.513	-.516	-.363	-.516	-.363
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
FN costs	-.181	-.249	-.134	-.249	-.134
	(0.2)	(0.3)	(0.2)	(0.3)	(0.2)
p>0.2 × FN costs	.615**	.743**	.63**	.743**	.63**
	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
FP costs	.462**	.564**	.659***	.564**	.659***
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
p>0.2 × FP costs	-.501	-.504	-.591	-.504	-.591
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Risk-loving × p>0.2 × FN costs		-.0371	-.183	-.0371	-.183
		(0.1)	(0.2)	(0.1)	(0.2)
Risk-averse × p>0.2 × FN costs		-.236***	.241***	-.236***	.241***
		(0.1)	(0.0)	(0.1)	(0.0)
Risk-loving × p>0.2 × FP costs		-.186	.167***	-.186	.167***
		(0.2)	(0.0)	(0.2)	(0.0)
Risk-averse × p>0.2 × FP costs		-.0898	.16	-.0898	.16
		(0.2)	(.)	(0.2)	(.)
Full risk pref interactions	No	No	Yes	No	Yes
Observations	1230	1230	1230	1230	1230
Adjusted R^2	0.08	0.08	0.08	0.08	0.08

Notes: Risk preferences interactions include inconsistent preferences (not shown), interacted with priors, FP, and FN costs. Standard errors in parentheses (clustered at subject and treatment levels). */**/*** indicates statistical significance at 10/5/1 percent.

Table A7: Deviations from Signal Value and Signal Characteristics (Tobit)

	All			Prior	
				{.1, .2}	{.3, .5}
	(1)	(2)	(3)	(4)	(5)
FP costs	0.130	0.315	0.547	0.446	0.204
	(0.122)	(0.187)*	(0.221)**	(0.236)*	(0.406)
FN costs	0.235	0.246	0.295	-0.137	0.309
	(0.065)***	(0.109)**	(0.112)***	(0.282)	(0.106)***
Risk-averse × FP costs		-0.379	-0.462	-0.136	-0.760
		(0.326)	(0.353)	(0.351)	(0.560)
Risk-averse × FN costs		-0.425	-0.416	-0.304	-0.375
		(0.173)**	(0.177)**	(0.373)	(0.160)**
Risk-loving × FP costs		0.087	0.022	0.068	0.330
		(0.262)	(0.297)	(0.362)	(0.561)
Risk-loving × FN costs		0.121	0.154	0.475	0.155
		(0.142)	(0.148)	(0.421)	(0.151)
Constant	-0.291	-10.296	-14.116	-8.177	-11.738
	(0.158)*	(0.417)***	(1.625)***	(0.481)***	(1.872)***
/					
var(e.wtp_diff)	4.473	2.172	2.118	1.009	1.209
	(0.340)***	(0.180)***	(0.173)***	(0.120)***	(0.134)***
*.subject_id	No	Yes	Yes	Yes	Yes
Prob(FP=FN)	0.308	0.648	0.119	0.001	0.750
Obs	1230	1230	1230	615	615
Risk-Averse Subjects:					
False Positive		-0.064	0.085	0.310	-0.556
se		(0.268)	(0.276)	(0.262)	(0.385)
p-value		[0.811]	[0.759]	[0.237]	[0.149]
False Negative		-0.180	-0.121	-0.441	-0.066
se		(0.135)	(0.137)	(0.247)	(0.120)
p-value		[0.184]	[0.377]	[0.074]	[0.582]
Risk-Loving Subjects:					
False Positive		0.402	0.569	0.514	0.534
se		(0.186)	(0.199)	(0.276)	(0.388)
p-value		[0.031]	[0.004]	[0.063]	[0.170]
False Negative		0.367	0.449	0.338	0.463
se		(0.092)	(0.096)	(0.313)	(0.108)
p-value		[0.000]	[0.000]	[0.281]	[0.000]
Subject FE	Yes	Yes	Yes	Yes	Yes
Inconsistent Risk Pref. Interactions	No	Yes	Yes	Yes	Yes
Inaccurate Belief Interactions	No	No	Yes	Yes	Yes
Prior Probability FE	No	No	No	Yes	Yes

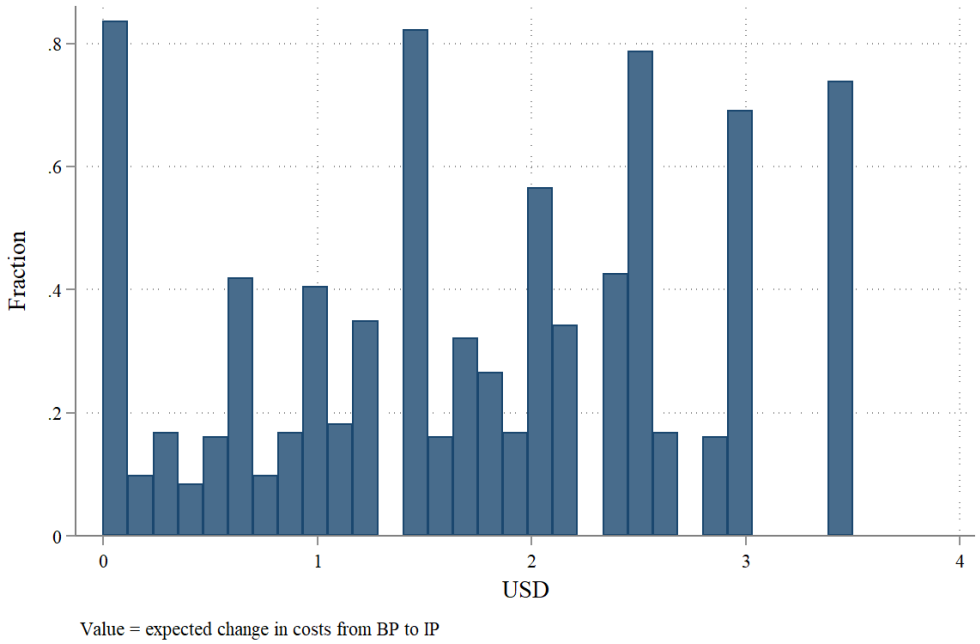
Notes: Standard errors in parentheses (clustered at the subject and treatment levels). */**/*** indicates statistical significance at 10/5/1 percent. The bottom panels include tests of whether the total coefficient values (baseline + interaction) are different from zero.

Table A8: WTP and Signal Characteristics, IP bias

	All			Prior	
				$\{.1, .2\}$	$\{.3, .5\}$
	(1)	(2)	(3)	(4)	(5)
FP costs	0.461	0.503	0.654	0.588	0.298
	(0.234)*	(0.270)*	(0.286)**	(0.177)***	(0.243)
FN costs	0.323	0.361	0.389	0.062	0.348
	(0.109)***	(0.135)**	(0.137)***	(0.185)	(0.073)***
Extra empirical IP protection	-0.127	-0.121	-0.120	-0.133	-0.198
	(0.057)**	(0.056)**	(0.055)**	(0.044)***	(0.061)***
Extra empirical IP loss	-0.018	-0.023	-0.018	-0.053	-0.075
	(0.033)	(0.032)	(0.031)	(0.065)	(0.040)*
Risk-averse × FP costs		-0.275	-0.347	-0.140	-0.640
		(0.182)	(0.256)	(0.245)	(0.380)
Risk-averse × FN costs		-0.297	-0.289	-0.302	-0.304
		(0.124)**	(0.123)**	(0.212)	(0.120)**
Risk-loving × FP costs		0.066	0.009	0.038	0.276
		(0.128)	(0.186)	(0.298)	(0.339)
Risk-loving × FN costs		0.045	0.063	0.317	0.087
		(0.076)	(0.099)	(0.324)	(0.109)
Constant	-0.332	-0.328	-0.440	-0.160	-0.249
	(0.242)	(0.242)	(0.228)*	(0.187)	(0.163)
R^2	0.500	0.507	0.516	0.738	0.753
Prob>F	0.0045	0.0082	0.0045	0.0001	0.0000
Obs	1230	1230	1230	615	615
FP=FN	0.482	0.548	0.266	0.000	0.792
Risk-Averse Subjects:					
False Positive		(0.228)	(0.307)	(0.447)	(-0.343)
se		[0.278]	[0.272]	[0.221]	[0.335]
p-value		0.417	0.265	0.055	0.318
False Negative		(0.064)	(0.100)	(-0.240)	(0.044)
se		[0.134]	[0.129]	[0.220]	[0.125]
p-value		0.635	0.440	0.286	0.729
Risk-Loving Subjects:					
False Positive		(0.569)	(0.663)	(0.625)	(0.573)
se		[0.227]	[0.204]	[0.231]	[0.232]
p-value		0.016	0.002	0.013	0.021
False Negative		(0.406)	(0.452)	(0.379)	(0.435)
se		[0.110]	[0.118]	[0.290]	[0.080]
p-value		0.001	0.000	0.204	0.000
Subject FE	Yes	Yes	Yes	Yes	Yes
Inconsistent Risk Pref. Interactions	No	Yes	Yes	Yes	Yes
Inaccurate Belief Interactions	No	No	Yes	Yes	Yes
Prior Probability FE	No	No	No	Yes	Yes

Notes: Standard errors in parentheses (clustered at the subject and treatment levels). */**/*** indicates statistical significance at 10/5/1 percent. The bottom panels include tests of whether the total coefficient values (baseline + interaction) are different from zero.

Figure A1: Distribution of theoretical values for experimental treatments



Appendix B Proofs

B.1 Proposition 1

Proof. If protection costs are low enough $c < \pi L$ then a risk-neutral decision-maker should always protect without a signal:

$$U = \max[\pi(Y - L) + (1 - \pi)Y, Y - c] = Y - c$$

It means that a strictly risk-averse decision-maker with a utility function $u()$ should also protect:

$$\pi u(Y - L) + (1 - \pi)u(Y) < u(\pi(Y - L) + (1 - \pi)Y) \leq u(Y - c)$$

Then denote stochastic payoff with a signal as X so that expected utility with a signal is $Eu(X-b)$ where b is the willingness-to-pay solving:

$$Eu(X - b) = u(Y - c)$$

Let b_0 be the willingness-to-pay for a risk-neutral decision-maker. By (strict) Jensen's inequality:

$$Eu(X - b_0) < u(EX - b_0) = u(Y - c) = Eu(X - b)$$

Because $u\dot{()}$ is an increasing function we obtain $b < b_0$. □

B.2 Proposition 2

Proof. Use the mean value theorem to rewrite the sensitivity as:

$$\frac{db}{dP_{01}} = -\frac{\pi u'(\zeta)(L - c)}{E[MU]}, \zeta \in (Y - L - b, Y - c - b)$$

Now let X denote a (random) payoff of the agent with a signal. A risk-averse decision-maker puts a positive value on the signal only if its expected payoff is higher than the certain payoff with full protection: $EX > Y - c - b$. If an agent is imprudent ($u''' < 0$) then $u'(\cdot)$ is a strictly concave function and hence $E[MU] \equiv E[u'(X)] < u'(EX)$ by Jensen inequality. Next, u' being a strictly decreasing function due to strict risk aversion and $EX > Y - c - b$: $u'(\zeta) > u'(Y - c - b) > u'(EX)$. Hence $\frac{u'(\zeta)}{E[MU]} > 1$ and $\frac{db}{dP_{01}} < -\pi(L - c)$. □

However, risk aversion can both increase and decrease subject's sensitivity to false-positive rates depending on the utility function curvature and signal's characteristics. Intuitively, an expected marginal utility of a strongly risk-averse subject with an imperfect signal can be lower than the average slope of the utility function between $(Y - c - b)$ and $(Y - b)$ which reduces sensitivity to false-positive rates. It can also be higher if either the signal is good or the curvature is small.

B.3 Proposition 3

Proof. Sensitivities to FP and FN rates are given as:

$$\frac{db}{dP_{10}} = -\frac{(1-\pi)(u(Y-b)-u(Y-c-b))}{D(\pi, P_{01}, P_{10}, b)} \tag{10}$$

$$\frac{db}{dP_{01}} = -\frac{\pi(u(Y-c-b)-u(Y-L-b))}{D(\pi, P_{01}, P_{10}, b)} \tag{11}$$

Hence the ratio of sensitivities is:

$$\frac{db/dP_{01}}{db/dP_{10}} = \frac{\pi}{(1-\pi)} \frac{(u(Y-c-b)-u(Y-L-b))}{(u(Y-b)-u(Y-c-b))} \tag{12}$$

Based on the mean value theorem, there exist such $\zeta_1 \in (Y-L-b, Y-c-b)$, $\zeta_2 \in (Y-c-b, Y-b)$ that $u(Y-c-b)-u(Y-L-b) = u'(\zeta_1)(L-c)$ and $u(Y-b)-u(Y-c-b) = u'(\zeta_2)c$. Hence we can write:

$$\frac{db/dP_{01}}{db/dP_{10}} = \frac{\pi}{(1-\pi)} \frac{u'(\zeta_1)(L-c)}{u'(\zeta_2)c} = \frac{\pi(L-c)}{(1-\pi)L} \frac{u'(\zeta_1)}{u'(\zeta_2)} \tag{13}$$

Because $\zeta_1 < Y-c-b < \zeta_2$ and $u'' < 0$, $u'(\zeta_2) < u'(\zeta_1)$ and hence:

$$\frac{db/dP_{01}}{db/dP_{10}} = \frac{\pi}{(1-\pi)} \frac{u'(\zeta_1)(L-c)}{u'(\zeta_2)c} > \frac{\pi(L-c)}{(1-\pi)L} \tag{14}$$

Because the last expression on the right describes a ratio of sensitivities for a risk-neutral agent, we obtain that strictly risk averse subjects exhibit higher relative sensitivity to FN rates.

□

Appendix C Subjects' Explanations

The list of responses to the question *"Please explain the strategy you used for Task 2 (Informed Protection)? This is the task in which you see a hint and when decide to protect or not."*:

1. if the hint was favorable not protection and vice versa
2. I always bought protection unless I was certain that I didn't need it (i.e. both gremlins were honest or it wasn't possible to get the black/white gremlin)
3. I trusted honest golems fully, and did not put much stock in the swamp golems.
4. my strategy was to just look at what the odds were
5. I looked at the percentages of white and black balls and made my guess off of that. Also, there was no big harm in buying protection, and there was a lot of harm if you did not buy protection and got a black ball.
6. I trusted my instinct.
7. If the entire panel of gremlins was honest and they told me that the selection was white, I did not buy protection, since I could be certain that I would not lose money. In any other scenario, I bought protection. In my case, better to guarantee a $25 return every time than risk $20 for a $5 reward.
8. if it is an honest one, i don't need to buy informed protection cuz i can't trust its hint.
9. I think the gremlins were confusing, but if you see how many gremlins were. Then from that how many of each type where and what they say, after that you based that to the actual percentage of balls you get close to the answer.
10. I am a little bit more risky so I chose to not get protection if any of the monsters said it was white because I felt the probability of one of the honest ones getting picked was higher and if they said it was black I bough protection.
11. i used probablity and if the odds were more in favor i would mae a decision based on that and the ball probabilty color
12. If the hint was from one of the honest gremlins then I didn't choose to protect because they could only tell the truth. If there were any just black or just white gremlins then I decided to protect because the information they give isn't helpful
13. See the quantity of hints and the percentage of drawing the colors of the balls.
14. I would calculate the probability that the gremlins were right. So in task two, I already did task 3. Like if there were two black/white gremlins, I would add the probability that they were right to the certainly that the honest gremlin was right.
15. I would see what the probability that they are telling the truth is and then see if they were saying black. if no one was the black swamp monster then I knew it was black and therefore it would be 100%
16. I looked at the box of balls and the box of gremlins. If the gremlins were honest or white, I would not use protection for a white ball. If the ball was black I would sometimes take my chances depending on the amount of white and black balls. If they were honest or black, I would use protection for a black ball. If the ball was white, I would not use protection since there were mostly honest gremlins.
17. I weighed the cost of loosing money and percentage difference with that chances of getting a white ball.
18. I weighed my odds. I knew they were in my favor.
19. When I paid attention to the composition of the box and saw the gremlins, that helped to inform my decision on whether to buy protection. For example, if I saw the box had equal numbers of both black and white ball and two honest gremlins were there, I did not buy protection. When I saw a box with

a larger amount of black than white balls and had a white-swamp gremlin with four honest gremlins, I opted to buy protection.

20. I would the probability of one of the balls being picked. If the chances were not likely than I would not protect it.
21. I looked at what percentage of gremlins were honest and used that info in my decisions.
22. Instinct and possibility of either white or black being picked
23. I took protection when there was a higher chance of drawing out black balls.
24. If all glimpses are honest, then choose not to protect on each color. If most are honest and one is black, then choose not to protect white color. If the one is white, then choose not to protect black because we know white one always say white, so black color should be the truth.
25. I based my decision on the probability of the honest gremlin being chosen.
26. I would base my answers off of how many honest goblins there were.
27. I chose the best odds
28. If it was more than approximately a 70% chance of drawing a black ball, I decided to protect. The cost to protect outweighed the potential loss of not protecting.
29. If the gremlin was honest then I did not buy protection because they were accurate in telling me the color of the ball.
30. If there were only honest gremlins then I never protected but even if there was one white-swamp gremlin or one black-swamp gremlin then I payed for protection.
31. If the gremlins were honest, I didn't buy protection. If there were swap gremlins, I calculated the chance of getting a hint from a swap gremlin and considered that along with the chance of getting a black ball. If the total chance of getting a black ball was more than 15% I get protection.
32. I determined what the probability was that the gremlin would tell the truth. The more honest gremlins in the lineup, the less likely I was to buy protection. However, I'm risk-averse, so I was more likely to buy protection than not because the risk was too high and the cost of protection was low.
33. I just used probability in my head
34. **I took into consideration how many honest there were and looked at the chances of picking a ball**
35. I was able to calculate the odds from the hints. It was not a measurement requiring me to calculate the chance of balls, but of variance between the hints. This made it easier to calculate the probability of what the chances the gremlins would give regardless of the actual odds (14/6 white-black balls)
36. I just took into note the goblins that were listed, and then the probability of which the information could be truthful or not.
37. I just relied on the number of honest gremlins to inform my decisions
38. If there were a white swamped gremlin, I would buy the protection if it said white ball. If it said black on a white swamped I would always not buy the protection. This is vice versa if there was a black swamped gremlin.
39. I used the strategy of using the "honest gremlin" to my advantage to know when I could get away with not paying for protection
40. I relied on understanding which type of gremlin was presented and then based my decision on their bias/lack of bias. Honest gremlin were a simple binary decision (white -¿ no protection, black -¿ protection). The white gremlin would default to no protection unless the probability of black was greater than 25%. The black gremlin defaulted to protection.

41. I considered the probability of the computer selecting a white ball and a honest gremlin. If that probability was high (>70%), then I decided not to buy protection. When there were only honest and black gremlins and the hint was that the ball was white, then it was easier since that hint could only come from an honest gremlin.
42. I took into consideration which of the gremlins I got. If it were two honest ones, I would not buy protection if they said white because they were right. If they were two honest ones and a black one, and they said it was white, I would do the same thing because the black one would never say the ball is white. If any of the gremlins said the ball was black, I would buy protection because there would always be a chance that the ball was black.
43. It was really just similar to math and common sense.
44. I went with the odds. I didn't buy protection if the probability of picking a ball was really high in a situation
45. I would look at how many honest gremlins there were to see if i could trust it or not. ex: if there were only honest and white gremlins, and they said the ball was white, i would trust that.
46. If it was all honest then I 100% percent trusted it and went for no protection but if there was even a chance of dishonest gremlin then I went with protection
47. My strategy depended on the gremlins. I was willing to pay a higher price for more honest gremlins, while I was not willing to pay as much when there were not as many honest gremlins.
48. The higher the % of black balls the more likely I was to buy protection.
49. I based it off of the amount of different colored balls mainly. Because, if there was only 2 black balls and one black gremlin, then I would most likely have a white ball chose if the other two were honest.
50. I looked at the percentage and the chance of drawing which ball, and I compared it to the grimlin options/hints and made my decision based off of the numbers I was provided.
51. I am broke and I was willing to take risks to make more money.
52. I just hoped for the best and picked one
53. **If it was all honest gremlins I did not buy protection. Even if there was one un honest gremlin I was skeptical to buy protection. If there was more than one un honest gremlin I definitely bought protection.**
54. If there were more black balls I would decide to protect it because there was a higher chance it needed to be and if there were more white balls I didn't protect it because I assumed the chance of a black ball being chosen was lower.
55. My strategy in task two was primarily based on the gremlins. For example, if they were all honest then I would not buy protection if they said white but would if they said black. Furthermore, if four were honest and one was a white-choosing gremlin, then if the gremlins said the ball was black I would buy protection; Considering that the white gremlin could only say the ball would be white, then it is known that an honest gremlin said that the ball would be black and vise versa. I did not really consider the probability of the balls being chosen and rather focused on the likely hood that the hint given by the gremlins is correct.
56. I would first take into account how many white and how many black balls were in a box, and the chance of drawing each. With the gremlins then telling a hint I would not buy protection if the gremlin said white and the percent of drawing white was more than 75%. I used this kind of method for the whole task.
57. my strategy for this task was to only buy protection if there was a white or black gremlin and not if there was a truth gremlin

58. the percentages of black and white balls and which gremlins I would get to give a hint.
59. I took my chances that the gremlins telling the truth would be selected
60. If the goblins were all honest I would buy protection if they say the black was the ball chosen and not if the ball was white. If 1 of the goblins was saying the ball was black or white exclusively I would buy protection if they say it was black and not if the ball was white. If 2 of the goblins was saying the ball was black or white exclusively I would buy protection no matter what they said
61. How likely it was that it would be white
62. I mainly looked at the probability percentage of the computer choosing a white ball. If it was greater than or equal to 70%, then I would not choose protection.
63. It was pretty simple, actually. I basically based my decision off of the amount of honest gremlins there were. If there were 4/5 honest, then there was an 80% chance the hint was correct. On a situation with 50% white and 50% black, this strategy proved to be helpful.
64. I based my decision off of the makeup of the gremlins if they were all honest and said the ball was white I would not buy protection and if they said it was black I would buy protection. If there was a 1/3 chance of an honest gremlin being picked for the hint I would just buy protection because I did not like the odds of the hint being true. If the chance of an honest gremlin being picked was 2/3 I would look at the probability of a white/black ball being chosen and then make my decision to protect or not off of that.
65. I based my chances solely on the honest Gremlins.
66. I mostly would buy protection if there was an over 50 percent chance to get a black ball.
67. I thought of how many un honest gremlins there were and tried to guess the percent of accuracy I would be given based on the colors.
68. If it was mostly Honest Grimlins I took the hint
69. I looked at the different types of gremlins in each group to make my decision. If it was all of the honest gremlins, I would go from there, but even if it were 2 honest and 1 black or white swamp gremlin that would inform my decision better than if it was an equal mix of all three types
70. I looked at the % of white vs black balls then looked at how many honest grimlins there were. If there were a majority of white balls and honest grimlins I would do no protection for a white ball but buy protection for black.
71. Always went with the honest ones. When there was one white or one black, I would know it was an honest one when they said the opposite of the color. For example, two honest and one white, when it said the ball was black, I knew it would be black because the white can't say that.
72. I compared the number of balls to the gremlins hints and if the chances were higher than 50% ish I wouldn't get protection
73. I would always take the hints from honest and be skeptical of non-honest
74. I looked at the gremlins and then looked at their hint. depending on what gremlins I had, i looked at the combination of balls to see if I should risk it or not. If I had a lot of white balls and quite a few honest gremlins, I did not buy the protection plan
75. I decided weather or not to buy protection based on the gremlins
76. I am basically gambling so I would not pay attention to the Gremlins and look at the percentages
77. Sorry. My strategy was same through-out, except the very first question of task1. Risk-averse, not worried about losing $5. Also, not trusting even honest gremlins or perhaps myself if I had mis-read.
78. Just went with my gut guess. I didn't really use a strategy for any of them tbh

79. there was no need to protect if the hint were made by all honest gremlins. also no need to protect if i had a combination of honest and black gremlin and the prediciton said it's white cos a black gremlin will never give a white answer
80. I had two honest gremlins, so the hint was 100% accurate.
81. I measured my decision based off of the type of gremlin giving the hint. If I felt that the gremlin or group was highly trustworthy, I would follow the advice.
82. If it was highly likely that the gremlin was going to be correct, I chose no protection. I aimed for the highest payout each round based on the amount of black to white balls there were.
83. If there were all honest ones I would not buy protection if it was white. I bought protection on all the others so that I would not lose more money.
84. I just created a pattern in my head and looked at the percentage of the likeliness of a black ball being drawn or not.
85. I based it off the amount of honest gremlins presented
86. If the color said was the opposite of black or white eyed gremlin then I knew it was true because the rest were honest gremlins
87. Based off how many white ball there was
88. I decided what to do based on both probability of selecting a ball of off composition of colors, and the used the gremlins to add an extra level of certainty.
89. Simply used the projection of likelihood for how much risk I was willing to take.
90. If i was feeling lucky or not
91. Based off of the number of gremlins would help me determine to use protection or not
92. I used the gremlins as my strategy, i took more risks if it was the honest gremlins
93. I payed attention to the honest gremlins and I used my answers based off how many there were.
94. I would observe which of the gremlins informing me were honest and make my decision there.
95. I just tried not to risk it. I prefer getting a little bit less than the total amount than actually reducing $20
96. I figured out what the gremlins were saying and used that to calculate the probability
97. I just guessed.
98. I thought about which option would make me the most amount of money based on protection or not.
99. I just decided which ones wanted protection and not.
100. Basically if the white balls had a higher rate than the black balls I wouldn't buy protection
101. I looked mostly to whether or not I had an honest gremlin in my group. If I had gremlins which could be dishonest, I then evaluated my chances based on the percentage of black vs. white balls in the box.
102. If I knew the ball would be white then I would not protect, everything else I protected
103. I was a little more clueless about it, I tried to make sense of the question first and then see the number of balls that were black and if they were less, then I would not buy protection.
104. If the goblins were guaranteed to be honest, I followed their hint. If there was a white goblin at all, I ignored the hint completely. If there was only a black goblin, I wouldn't buy protection if the hint was white since that couldn't be correct.
105. I took a chance each time
106. If there was all honest gremlins, I would not protect unless they said the ball is black. If there were white or black gremlins in the mix, I generally chose to protect unless the chances the ball was white were greater than 90%.

107. If there was ever a question I always bought protection because I would rather have 25 dollars than 10.
108. It really depended on how many balls were in the box
109. anything under 80%. I know what my time is worth and don't want to waste it for $5 unless my return was greater then the odds I would be given.
110. I would try to think back to what the amount were if i choose protected v.s unprotected.
111. I would calculate the possibility in my head each task.
112. I decided whether to trust my informed protected based on how many gremlins were present divided by how many gremlins were honest/would say if the ball was white or black. I was more likely to trust the honest gremlins or buy protection for the dishonest gremlins.
113. If I new the odds of the hint gremlin is honest then I would protect baes on the hint they made
114. if it was mainly honest ones and the probability was an 80/20 split i just took my chances
115. Seeing the probabilities and protentional outcomes were what played a role in decision making.
116. if it is white never by protection, if it is black always buy protection. There is a higher chance that 1 a ball is white, and 2 that the gremlin is honest so it makes sense
117. examine the beasts, then make a decision
118. if all the gremlins were honest and said white i would not protect. If all the gremlins were honest and said black i would protect. If the gremlins were honest, honest, black and the hint was white, i knew it was one of the honest gremlins that was giving me the correct answer of white, so i didnt protect.
119. Odds based on the original sample times the odds of the gremlins giving bad info
120. I just thought there would no way the black ball would be chosen if there was only 1 or 2 of them. I was just trusting my guts.
121. mainly it was for the 70/30 i reled on the hits if it was black to think what are the changes it is realy black and if do then buy the protection. often it was more favored of the white being true to dont need the protection
122. If all the Grimmlies where honest I did not use protection, if they weren't I used protection.
123. I first looked at the chance and if it was 90% white 10% black, I probably didn't buy protection or 50 cents at most. Then, I looked at the gremlin and if they were only honest ones I was willing to pay up to $2. If there were white/black gremlins and there was a high chance of black balls I figured I would pay up to 1$ just incase.
124. GAMBLING
125. So the strategy that I used are to look at the box and see how many honest gremlin there were and decide if I wanted to protect or not.
126. I didn't realize it told me my odds of the balls at the top of the screen so i went based off of the gremlins i had again. I got a lot of honest gremlins so anytime i had a white or black one because i never had both in on grouping it was normally 2 honest or like 4 honest and 1 black or white gremlin so then i would go off of the answer that was opposite of what the white or black gremlin was cause how could it tell me if the answer was a color it couldn't see.
127. I just guessed based on probability.
128. every time it was all honest gremlins I never used protection, but after that I based my answers off the percentage of the white ball being drawn.
129. not needed unless over 50%
130. always buy protection for guranteed money

131. if they were honest gremlins i said what they said, if there was a smaller amount of gremlins i would pay for protection but iuf there was a larger amount of gremlins i would put both as not paying for protectin
132. I would measure the chances that the hint would be useful in addition to the actual percentage that the ball would be a certain color
133. If I had majority of honest gremlins, I would most likely follow the hint. The more swamp gremlins I had the less I would follow the hint.
134. High risk, high reward
135. If the odds were favorable to me without the hint i wouldnt take it. If i got bad gremlin luck i would not take hint. If the honest gremlin said white and the white gremlin was there I would take the hint
136. If they were honest gremblins then I trusted that whatever they said was correct, but if there was one of each I added protection because it then wasn't as sure, especially if it was 90% to 10%.
137. If the gremlins were honest, then I would take the hint. If they were not, then I did not want to take that chance.
138. If they are all truth then you don't have to worry. If they are all truth and then 1 black but it says white, you dont have to worry. After that i did mental math to see what was the likelihood one of the liers get drawn and then what percentage of the remaining data would be effected.
139. Well for a white ball there's really no penalty to protect it so you would be wasting money to protect it. For a black ball it depends, because if there's a black eyed gremlin paired with a honest gremlin then take you chances with the protection, but if there's a white eyed one paired with a honest gremlin then its false because that would never happen.
140. I just used math and assigned a value to how much the hints provided help and went from there
141. Counting the ratio of white to black dots
142. I always took the hint from honest gremlins or white only gremlins
143. I would always choose protection because the risk was too high if i did not choose it. But, if i had to honest gremlins i knew what they said was correct so i would not protect.
144. I pretty much just kept a basis of what I was willing to lose. If you purchase the informed protection but at too high of a cost, you lose out on key dollars over time.
145. If it was 5 honest gremlins + 2 white gremlins and they were saying it was black, I would protect because the only option would be for the honest gremlins to be saying the truth about the ball. If it was 5 honest gremlins and 2 black gremlins and they claimed the ball was black, I would have less of a certainty getting protection, and would see the actual proportion of the balls.
146. I decided to not take the risk for most parts because 25 is a lot better than 10, even if it means you're losing $5
147. I mostly used my chances of the balls (10% black 90% white) to make my decision and would only accept the hint if it dipped below 90% and have that influence me.
148. I looked at the balls in the drawing pit and used those odds to determine my decisions.
149. All or nothing
150. I used deductive reasoning
151. Well I knew if it was all honest gremlins they were always correct, if it was all honest and like 1 or 2 black gremlins and i knew if the gremlin said white it had to be white and vice versa because that means the honest gremlin said the color as the other gremlins cannot say each others opposite colors.
152. I decided to look at the number of white vs black balls to make my main decision.
153. Kinda looking at the eye balls because if it says white then the black gremling cant say that

154. if they were both honest, i did not protect if they said white because it was white and i did protect if they said black so that i would only lose 5$opposedto$20. with the white and black eyed, i then weighed my likelihood and decided based on the percentage of pulling and the percentage of them telling the truth
155. If 2 of the three swamp gremlins were honest, and the other was white, i knew that if a random 1 said white, my chances were 66 percent, but if they said black, my chances were 100 percent
156. I took into account the probability that I got an honest hint and then also the probability of the ball being black. If there was a 90% chance of the ball being white, it was a waste of money to buy a hint regardless of the probability of it being honest or not.
157. The hints don't matter, the question was asking about % likelihood and those numbers were provided.
158. I saw the gremlins and figured out what they would tell me, the truth, only white, or only black. I decided mostly based on the percentage of the ball actually being black. Because if the ball is most likely going to be white I won't need protection.
159. I mostly paid attention to how many black and white swamp monster things there were compared to the honest ones. If there was only one possible liar in the line up then the chances of not choosing correctly felt lower.
160. Played it very risky and it paid off
161. I almost always decided to buy protection because it only cost $5.
162. I used statistics to calculate whether it was worth it or not.
163. I used the given probability to decide if a paycut was statistically worth it
164. based on the chances of drawing a black ball and the hint recieved i made my decision
165. Using both the chances of the ball being white and what monsters I had
166. If there were enough truths, i would bet more on it being truthful
167. I would assume that based off of probability i would get a truthfully dude, the odds were always 5:1 of them not lying so you play the odds
168. more white balls then black
169. This one was interesting
170. i usually chose to protect if there was 70% chance or less
171. I looked at how many honest ones and non honest ones were accounted for.
172. I used percentage of balls in given box.
173. If there were more truth grimlins i tended to trust my decision more
174. If both gremlins were truth gremlins I listened, but if one was lying I bought protection for both.
175. If there were two honest gremlins then I would protect when given a hint that it was a black ball. With the others there was a 5/7 chance that I would get an honest gremlin, I should have protected when it said "black ball" in the case with 2 white gremlins. If there was a white and black gremlin I tried to base it off of the probability of actually drawing a white ball.
176. I looked to see which gremlin was diplayed to determine my answers. If there were more honest gremlins then I would protect or not confidently. But if there were more dishonest gremlines then I would protect or not with doubt.
177. I looked at the probability of the balls colors as well as the types of things giving the hints. I would protect if there was a high chance of the ball being a certain color and if the hint could be false.
178. I was just looking at what the odds of the black and white balls where and then which kind of gremlins I had then made my decision off that.

179. i decided to use a back and forth decision by buying and not buying protection
180. I kind of just used my best judgement and guessed a little bit.
181. If the Gremlins were both good hint ones I would not protect. If there was a good hint one and a white one I would protect on the white ball and the black, since the white gremlin can't say black, it would have to be the hint one. I did the same thing but opposite for the black and hint gremlins.
182. I didn't have much of a strategy honestly I just looked at the goblins and guessed.
183. My strategy for informed protection was fairly simple. I would take the hint because in my opinion 25 dollars is better than 10, or the risk of winning 30. I am a bit of a gambling man, but when the white and black eyed gremlins could have been lying about something they said I figured better to take the confirmed money than risk it for more.
184. I did not get protection if it was likely that I would get a white ball.
185. Hints that are given from two truthful monsters are valuable so no protection is needed, because I know what they are telling be is the truth (if the ball is white). In all other cases I bought protection no matter what because I didn't want to risk losing a free $25 by simply not buying protection.
186. If the gremlins were honest, I never protected, but if there were black or white-eyed gremlins at all, I would protect.
187. I played it safe and bought protection unless I liked the odds of getting a white dot or if I had two truth gremlins.
188. i just went off of the gremlins for each round
189. Just used what are the odds and logical thinking.
190. I looked at the probabilities, then made my decision based on the gremlins presented.
191. If I saw the trust swamp monster I didn't pay for protection.

D Experiment Instructions (for Online Appendix)

Introduction

Welcome! This is a study of individual decision-making and behavior. The money you earn will be paid to you in cash at the end of this experiment.

This experiment has 4 parts. For each part, we will give you instructions just before it begins. Your choices in one part of the experiment will not affect what happens in any other part. Each part proceeds in rounds. There will be 10 rounds in total. We expect that most participants would be able to complete the experiment in about 30 minutes. The experiment will end with a short questionnaire.

At the end of the experiment, we will draw one of the rounds at random as the **Payment Round.** Each round of the experiment is equally likely to be drawn. Only the decision that you made in that Payment Round will determine your final payoff. Hence you should make every decision as if it is the one that counts, because it might be!

At the start of the experiment, you will be given $25, so with the show up fee included you will have $30 in total. The choices you make within the experiment will determine how much of this amount you may lose. It is impossible to lose more than $25, so your earnings in the worst-case scenario will be exactly your show-up fee of $5.

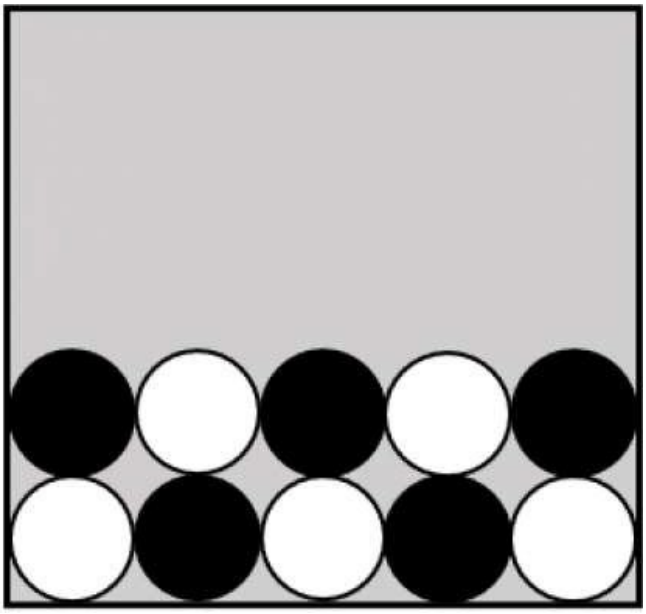
You are not allowed to talk during the study. If you have any questions, please raise your hand and we will come and answer your questions privately. Please do not use cell phones or other electronic devices until after the study is over. If we do find you using your cell phone or other electronic devices, the rules of the study require us to withhold your completion payment.

Often during this study, you will be shown information or asked to make decisions. After doing so, remember to click the button that says "Continue". The experiment will not proceed until you click that button.

Task 1: Protection Decision

The first part of the experiment has 6 rounds. In each round, you will make the Protection Decision as described below. Please note that after the instruction screen, there will be a short quiz to make sure you understand the experiment. Please read the instructions carefully.

At the beginning of each round, the computer will randomly draw a ball from the box, which contains white and black balls. The number of balls of each color can vary between rounds. We will not tell you which ball has been selected by the computer, but you will know the number of balls of each color as in the picture below.



In each round you must decide whether to buy ***Protection.*** ***Protection*** costs $5. If you do not buy ***Protection,*** you lose $20 of your starting money if the Ball is Black, but you do not lose anything if the Ball is White. This means that your earnings will be:

- $30-$5=$25 if you buy protection and the ball is White
- $30-$5=$25 if you buy protection and the ball is Black
- $30-$0=$30 if you do not buy protection and the ball is White
- $30-$20=$10 if you do not buy protection and the ball is Black

We would like to ask you a few questions to check your understanding of this task. Please feel free to go back to the instructions if needed.

Task 2: Informed Protection Task

The second part of the experiment has 6 rounds. Please note that after the instruction screen, there will be a short quiz to make sure you understand the experiment before you can continue to the first round. Please read the instructions carefully.

As in the first part, the computer is going to randomly select one ball from the Box with white and black balls. The computer will show you the contents of the Box but will not tell you the color of the selected ball.

Within each round, you would receive a hint about the ball's color from a gremlin. There are three types of gremlins: an honest gremlin always tells the true color of the Ball, a black-swamp gremlin always says that the Ball is black and a white-swamp gremlin always says that the Ball is white. This is how they look:

	**Honest gremlin:** • always tells the true color of the Ball • has regular eyes
	**White-swamp gremlin:** • always tells that the Ball is white (even when it is not!) • has completely white eyes
	**Black-swamp gremlin:** • always tells that the Ball is black (even when it is not!) • has completely black eyes

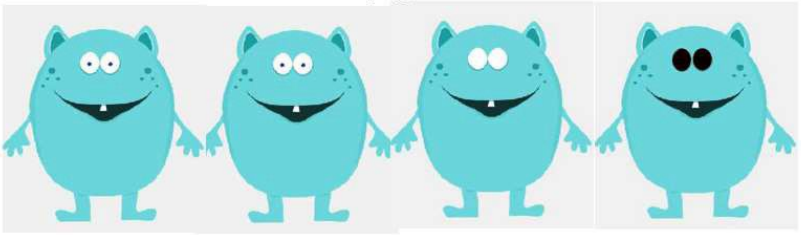
The hints of white-swamp and black-swamp gremlins do not depend on the color of the selected ball. A white-swamp gremlin always says that the Ball is white and would never say that the Ball is black; a black-swamp gremlin always says that the Ball is black and would never say that the Ball is white. Their hints can be correct only by accident.

Suppose, for example, that the Ball is black. Then an honest gremlin would say that the Ball is black. A white-swamp gremlin would say that the Ball is white. A black-swamp gremlin would say that the Ball is black.

On the other hand, if the Ball is white, then an honest gremlin would say that it is white. A white-swamp gremlin would say that it is white. A black-swamp gremlin would say that it is black. Remember that gremlins are just pre-coded computer algorithms and do not intentionally try to help or harm you.

The computer picks the hinting gremlin randomly from a group of gremlins of different types, where each individual gremlin is equally likely to be selected. You will be informed of the mixture of gremlins in this group (similar to the figure below), but you do not know which gremlin is giving the hint.

There are 2 honest gremlins, 1 white-swamp gremlin and 1 black-swamp gremlin in this round.



One of these gremlins would give you a hint,
but you won't know which one. All gremlins are equally likely.

The group of gremlins from which the computer selects the hinting gremlin can change from round to round. For example, in one round, you might have two honest gremlins and one white-swamp gremlin in the group. In another round, you might have three honest gremlins and two black-swamp gremlins. You will see the group's composition before making your decisions.

There are two possible hints: either the gremlin says "The Ball is white!" or it says "The Ball is black!". We would like to know whether or not you would buy protection for each of these possible hints. That is, if the hint you receive from a gremlin randomly selected from that group says the Ball is white, would you buy protection? If the hint you receive says that the Ball is black, would you buy protection?

You will need to figure out on your own how likely it is that the hint is true given the group's composition. For example, if all the gremlins are honest, any hint from a randomly drawn gremlin is true. If all the gremlins are white-swamp or all are black-swamp, then their hints give no information. Most often though, your group will include both honest and dishonest gremlins.

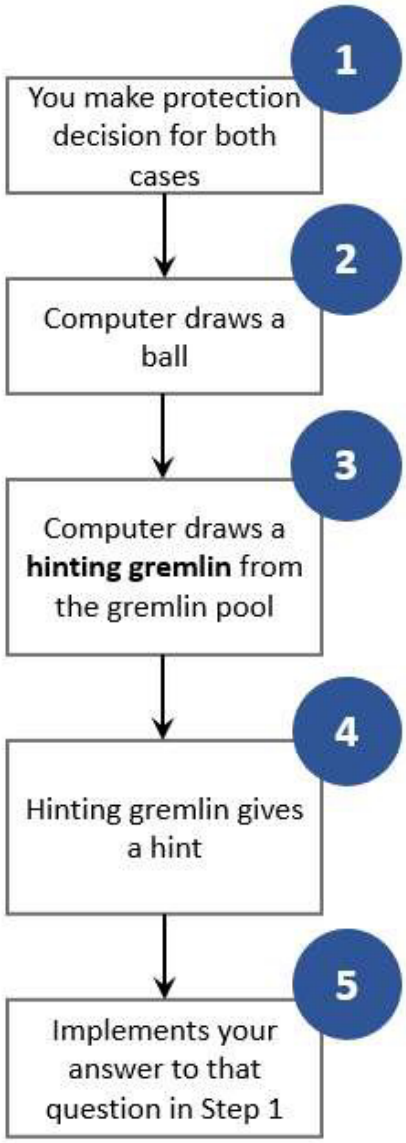
As before, protection costs $5. If you do not buy Protection, you lose $20 of your starting money if the Ball is Black, but you would not lose anything if the Ball is White. This means your earnings will be:

- $30-$5=$25 if you buy protection and the Ball is White
- $30-$5=$25 if you buy protection and the Ball is Black
- $30-$0=$30 if you do not buy protection and the Ball is White
- $30-$20=$10 if you do not buy protection and the Ball is Black

After you tell us your decision for each possible hint, the computer will draw a ball. Then it will record a hint from one randomly chosen gremlin from the group. If the gremlin says that the Ball is white, the computer will implement the choice you made for that hint. If the gremlin says that the Ball is black, the computer will implement the choice you made for that hint. The flow chart below illustrates what happens in each round. You should make your choice for each of two possible hints carefully because either one may determine your payoff if this round is chosen for payment.

Will you protect if a gremlin says the ball is **black**?

Will you protect if a gremlin says the ball is **white**?



The hinting gremlin can be:

- always honest
- always saying black
- always saying white

Payoff when:

You decide to	Selected ball is	
	Black	White
Protect	$25	$25
Not protect	$10	$30

Task 3: Measuring Chances

In this part of the experiment, you will estimate the chance that the Ball is black based on gremlin's hints. We will first show you: 1) the box with white and black balls and 2) the group of gremlins. Imagine that the computer then randomly picks one ball from the box and one gremlin out of this group who will give you a hint. We will ask you two questions:

1. If this gremlin says that the Ball is white, what do you think are the chances that the Ball is white?
2. If this gremlin says that the Ball is black, what do you think are the chances that the Ball is black?

Your estimate each time will be a percentage between 0 and 100. To illustrate how this works, suppose that all the gremlins in the group are honest. It means that their hints are always true: if a gremlin says that the Ball is white, there is exactly 0% chance of it being black. If a gremlin says that the Ball is black, there is exactly 100% chance that the Ball is black. And the chance that the gremlin says it is Black is exactly the chance that is is Black or the proportion of black balls in the box. This case is very easy, but in most cases, the group of gremlins will include some white-swamp and/or black-swamp gremlins. You should take into account the number of white and black balls and the proportions of each type of gremlin in your group when estimating the chances.

Your payoff depends on the accuracy of your answers. All you have to understand in this task is that you make more money if your guess is closer to the actual probability of the event given your information. You make the most money if your guess is exactly equal to the actual probability of the event. For example, you want to predict the chances that the ball is black if the gremlin says that it is black. If the actual probability is 10% and you choose 20%, you payoff will be $30 with probability 90% and $10 with probability 10%. If you choose 50% instead, your payoff will be $30 with the probability of about 60%>. As you can see, you can win if your estimate is very imprecise, but chances are higher for a more accurate estimate. The next two paragraphs lay out the details of how the payoff is calculated, and you are welcome to read these details.

If any round of this task is chosen as the Payment Round, the computer would, first, draw a ball at random from the Box. Then it would record a hint from one randomly chosen

gremlin from the group. Finally, it will draw one random lottery with chances between 0 and 100.

This computer will then calculate your payment based both on the hint, the actual ball color and this random lottery. This is easier to understand through an example. Suppose, that the gremlin hints that the Ball is white and you estimate that the Ball is indeed white with probability 85%. If a computer draws a lottery with chances of 85% and above, then you lose $20 if the Ball is white. If the computer draws a lottery with chances lower than 85%, then you would lose $20 with the chance specified in the lottery.

Belief Elicitation: rounds

Suppose that one of the gremlins says that the Ball is white. What do you think is the chance that the Ball is actually **white?** Please estimate to the best of your ability and make your selection on the slider below:

Impossible Completely certain

0 10 20 30 40 50 60 70 80 90 100

Chance (%) that the Ball is white

Suppose that one of the gremlins says that the Ball is black. What do you think is the chance that the Ball is actually **black?** Please estimate to the best of your ability and make your selection on the slider below:

Impossible Completely certain

0 10 20 30 40 50 60 70 80 90 100

Chance (%) that the Ball is black

This concludes the round. You will see the outcome only if this round is selected as the Payment Round in the end of the experiment.

Task 4: Value

Were gremlins helpful for you? How much would you pay for their hints if given an opportunity?

In this task, you can buy a hint before making a protection decision. As before, the hint will come from a gremlin which is randomly selected from a group of gremlins of different types. We will show you the group composition, but not the type of the hinting gremlin.

After seeing the group of gremlins, please think about the prices you are willing to pay for the hint. You will then select all acceptable prices by filling a table such as this:

In this table, you select all the prices which you are willing to pay to receive a hint. For example, if you are willing to pay no more than $0.5, then the first and the second rows in the table should be selected as shown in the example above. If you are willing to pay no more than $3, all the rows from the first to the seventh one should be selected. For your convenience, you just need to select the maximum price you are willing to pay for the hint

and the system will automatically select all prices lower than that chosen price. You can always unselect the prices by clicking on their checkboxes.

In each round, you will have a different group of gremlins. There are also six rounds in this part of the experiment. You will also have to answer a short quiz before proceeding to the rounds to make sure you understand the experiment. Please read the instructions carefully.

Payoff Calculation. If this the Payment Round, the computer will randomly select one of the prices from the Table. If you chose to buy a hint at this price, you would go through one round of the Informed Protection Task. You will make a Protection decision after receiving a hint from the gremlin. We will subtract the selected price from your payoff in that round. Note, that the price you are paying does not affect the hint's quality.

If you opted not to buy a hint at this price, you would go through one round of the Blind Protection task. In other words, you would make a Protection decision without a hint.

For example, suppose that you fill the table as shown above and this round is the Payment Round. If the computer randomly selects price $0.5 (the second line), you will pay $0.5 and go through one round of the **Informed Protection:** you will receive a hint from one of the gremlins and then choose to protect or not. Your payoff would be equal to what you would have received from the Informed Protection round minus the price of the hint. In this example, if you do not protect, then your payoff will be $30-$0.5=$29.5 if the Ball is white and ($30-$20)-$0.5=$9.5 if the Ball is black. If you decide to protect, your payoff will be ($30-$5)-$0.5=$24.5 for any color of the Selected Ball.

If, for example, the computer randomly selects $1 (line 3) instead of $0.5, you will go through one Blind Protection round and this round would determine your payoff. You will neither pay $1 nor receive a hint, because you did not want to pay this price for a hint based on your selections in the Table. The computer would calculate your payoff in the same way as in the Part 1 of the experiment (Blind Protection).

Suggestions. You should consider the composition of gremlins when selecting the prices to pay. For example, you might have only white-swamp gremlins in the group. Because white-swamp gremlins always say that the Ball is white, their hints are worthless, and most people would not pay anything for them. On another hand, a hint from a group of honest gremlins is more valuable because it tells you the Ball's color with certainty.

It is always in your best interest to select all the prices below or equal to your maximum price. Suppose, for example, that you want to pay any price up to $3 for a hint from a certain group of gremlins. If you do not select the price of $2 and this price is randomly chosen by the Computer, you would have to make the protection decision without a hint even though you prefer to pay $2 to get one. On another hand, if you select the price of $5, you might have to pay $5 which is $2 more than the maximum price you are willing to pay.