Supplemental Appendix

A Including all subjects

As required by our pre-registration, our analysis in the main body of the paper includes only subjects who respond correctly to our comprehension quiz on the first try. In what follows, we replicate our core results with the entire subject pool. The results are similar overall.

Table Supplemental-A.1: Counterpart to Table 1 with all sample, Experiment A: The Role of Ambiguity and Cognitive Uncertainty

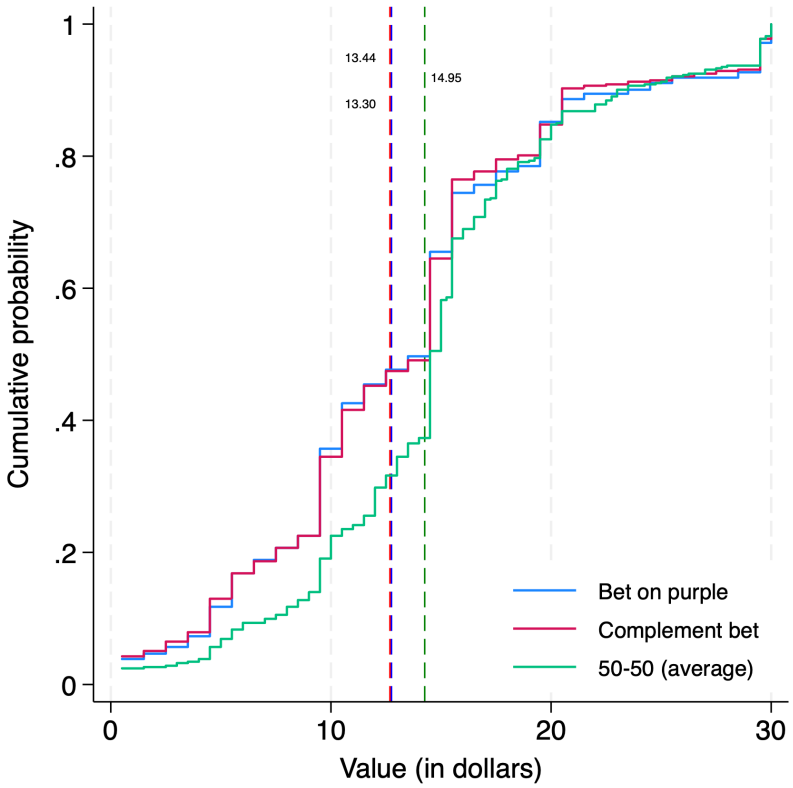
	Complexity Aversion	
	(1)	(2)
High Cognitive Uncertainty:		
Ambiguity Aversion	.31***	
	(.05)	
Low Cognitive Uncertainty:		
Ambiguity Aversion	.18***	
	(.04)	
Ambiguity Aversion		.18***
		(.05)
CU		.15
		(.57)
Ambiguity Aversion × CU		.18*
		(.10)
Constant	2.09***	2.03***
	(.55)	(.63)
Observations	986	986
Controls	Y	Y

Notes: Each updating bet is an observation, with robust standard errors clustered by subject in parentheses. * $p < .1$,*** $p < .01$. Both (1) and (2) are obtained from constrained regressions following the method previously explained. Controls include beliefs about probabilities and a dummy for each updating task and, in model (1), a dummy for high CU.

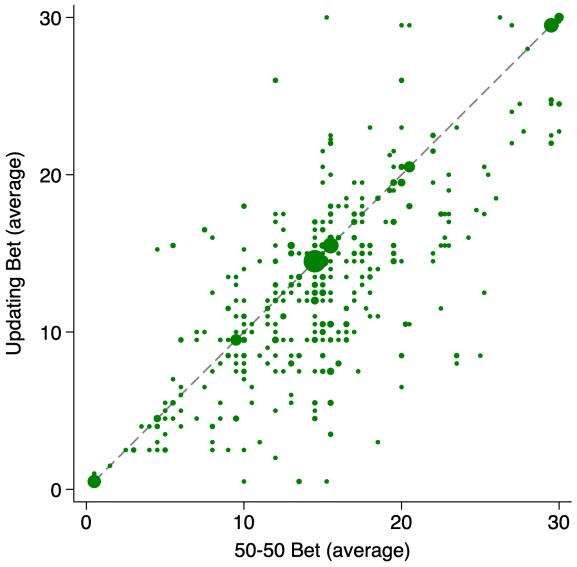
Table Supplemental-A.2: Counterpart to Table 2 with all sample, Experiment B: The Role of Ambiguity

	Complexity Aversion	
	(1)	(2)
High Uncertainty:		
Ambiguity Aversion	.54***	
	(.08)	
Low Uncertainty:		
Ambiguity Aversion	.23**	
	(.10)	
Ambiguity Aversion		.12
		(.16)
Uncertainty	5.75***	4.87***
	(2.10)	(1.70)
Ambiguity Aversion × Uncertainty		.65**
		(.31)
Constant	-3.65***	-3.52***
	(.81)	(0.83)
Observations	996	996
Controls	Y	Y

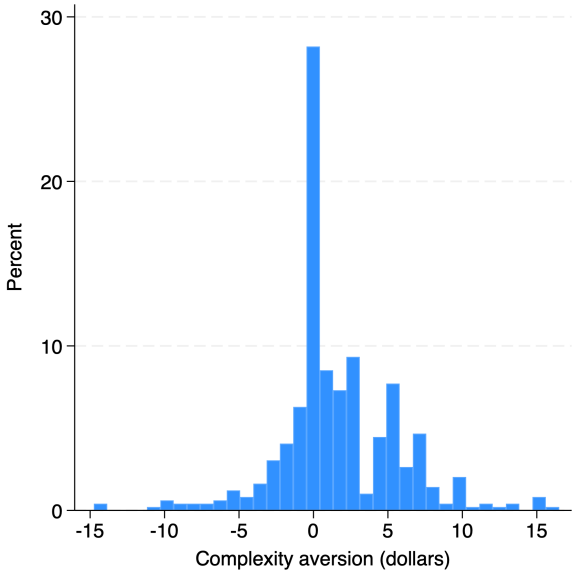
Notes: Each perceptual bet is an observation, with robust standard errors clustered by subject in parentheses. ** $p < .05$, *** $p < .01$. Both (1) and (2) are obtained from constrained regressions, following the method explained earlier. Controls include a dummy for each updating of the hard perceptual tasks and, in model (1), a dummy for high uncertainty.



(a) CDFs of the value of updating bets and the average value of 50/50 lotteries, with the sample means marked.



(b) Frequency-weighted scatter plot of the average values of updating bets and the 50/50 lotteries.



(c) Histogram of complexity aversion (the difference between the average value of updating bets and 50/50 lotteries)

Figure Supplemental-A.1: Three graphs on the value of updating bets and 50/50 lotteries in the Main treatment of Experiment A. Counterpart of Figure 3 with all subjects.

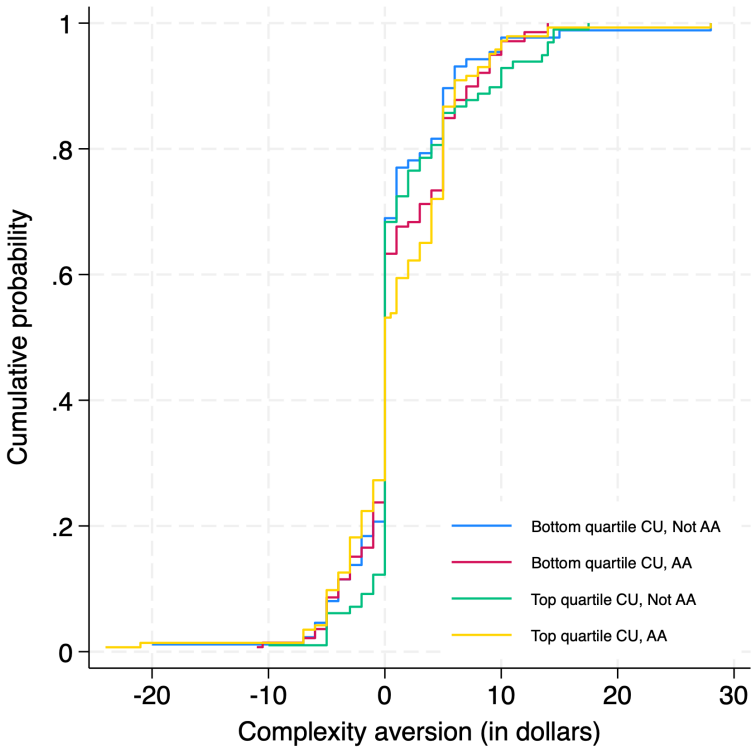
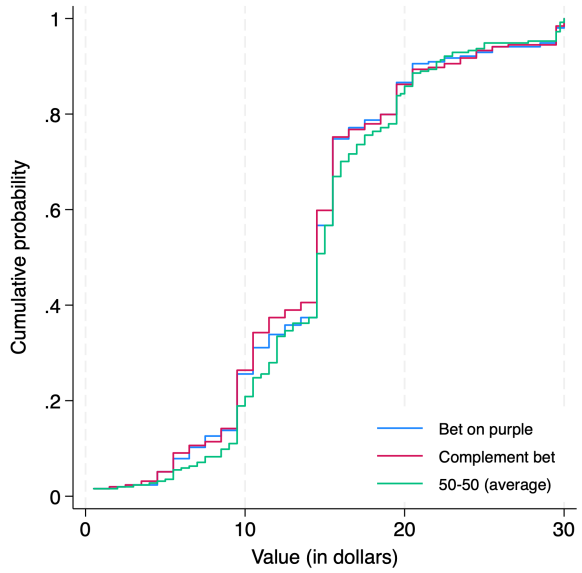
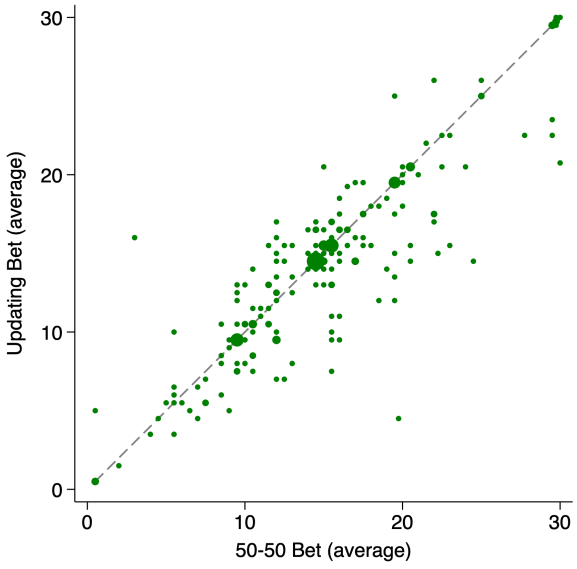


Figure Supplemental-A.2: Counterpart of Figure 4 with all subjects. Complexity aversion in 4 subgroups: top and bottom quartiles of Cognitive Uncertainty, divided based on (strict) Ambiguity Aversion vs. Ambiguity Neutrality/Seeking.



(a) Mirror Treatment: CDFs of dollar values of updating bets and average value of 50/50 lotteries.



(b) Mirror Treatment: Scatter Plot of average dollar value of updating bets and 50/50 lotteries.

Figure Supplemental-A.3: Counterpart of Figure 5 with all subjects. The value of updating bets and 50/50 lotteries in the Mirror treatment.

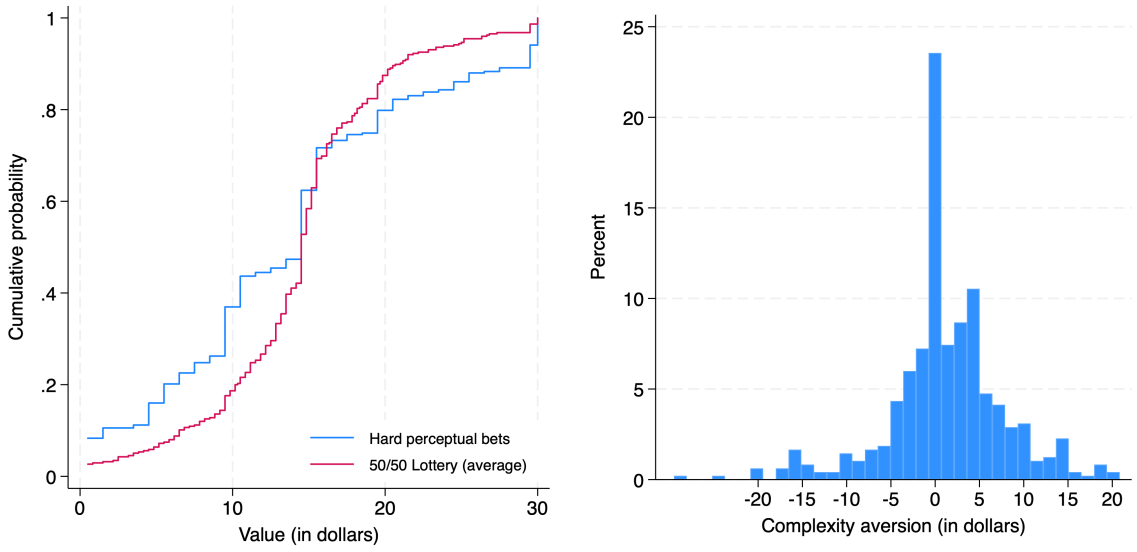


Figure Supplemental-A.4: Counterpart of Figure 6 with all subjects. Two graphs on the value of hard perceptual bets and 50/50 lotteries for observations with confidence below the median. Left panel: CDFs of dollar value of hard perception bets and average value of 50/50 lottery. Right panel: histogram of complexity aversion (difference between value of hard perceptual bets and average value of 50/50 lotteries).

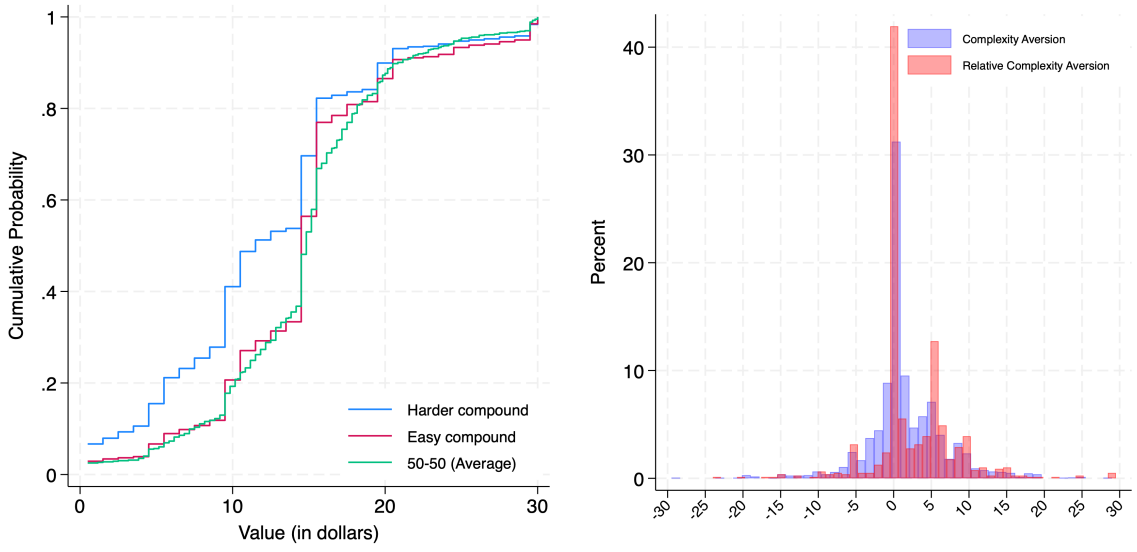
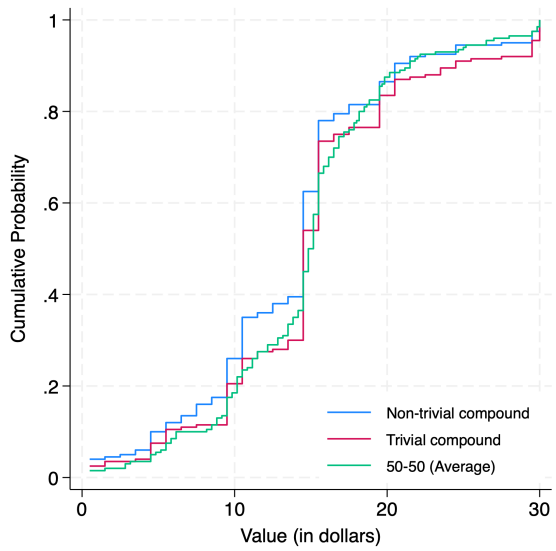
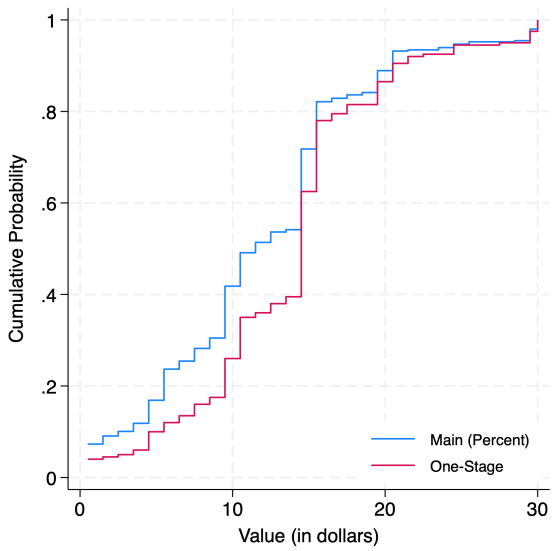


Figure Supplemental-A.5: Counterpart of Figure 9 with all subjects. Left panel: CDFs of dollar value of the non-trivial and trivial compound lotteries and average value of 50/50 lottery. Right panel: histogram of complexity aversion (difference between the value of 50/50 lotteries and non-trivial compound lottery) and relative complexity aversion (difference between the value of the trivial and non-trivial compound lottery).



(a) One-Stage Treatment: CDFs of dollar values of the trivial and non-trivial compound bets, along with average value of 50/50 lotteries.



(b) CDF of dollar values of the non-trivial compound bets in the One-Stage treatment versus the Percentages version of the Main treatment.

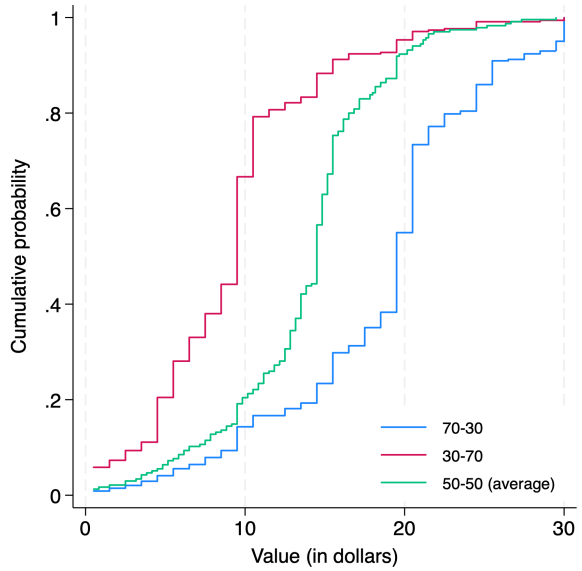
Figure Supplemental-A.6: Counterpart of Figure 10 with all subjects. The value of updating bets and 50/50 lotteries in the Mirror treatment.

Table Supplemental-A.3: Counterpart to Table 3 with all sample, Experiment C: The Role of Ambiguity and Cognitive Uncertainty

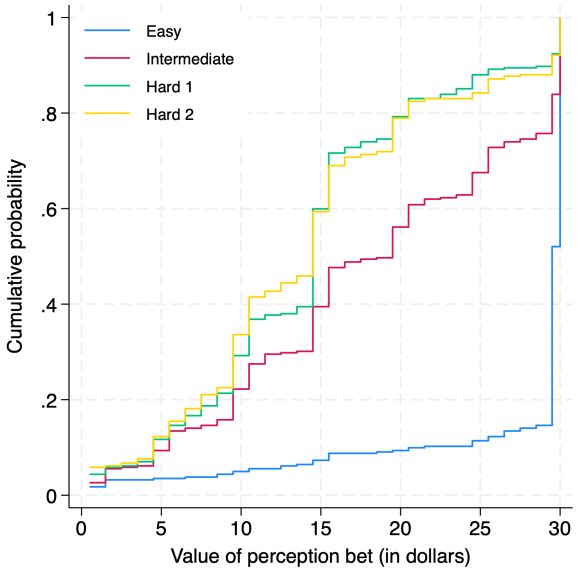
	Complexity Aversion (Trivial and non-Trivial)		Complexity Aversion (non-Trivial only)		Relative Complexity Aversion (non-Trivial only)	
	(1)	(2)	(3)	(4)	(5)	(6)
High Cognitive Uncertainty:						
Ambiguity Aversion	.44***		.59***		.45***	
	(.05)		(.06)		(.08)	
Low Cognitive Uncertainty:						
Ambiguity Aversion	.19***		.28***		.18***	
	(.04)		(.07)		(.06)	
Ambiguity Aversion		.17***		.28***		.24***
		(.04)		(.06)		(.05)
CU		-.89*		-.72		-0.53
		(.52)		(.65)		(1.22)
Ambiguity Aversion × CU		.40***		.44***		.50**
		(.10)		(.12)		(.22)
Constant	2.32***	2.68***	1.86***	2.38***	1.96*	1.91*
	(.53)	(.58)	(.65)	(.71)	(1.08)	(1.08)
Observations	1558	1558	794	794	794	794
Controls	Y	Y	Y	Y	Y	Y

Notes: Robust standard errors in parentheses, clustered by subject in models (1) and (2), where each compound lottery (trivial and non-trivial) is an observation.* $p < .1$, ** $p < .05$, *** $p < .01$. (1)-(4) are obtained from constrained regressions following the method explained earlier. In (5)-(6), CU refers to relative cognitive uncertainty. Controls include beliefs and a dummy for each compound lottery; in model (1), (3), (5), also a dummy for high CU.

B Additional Figures

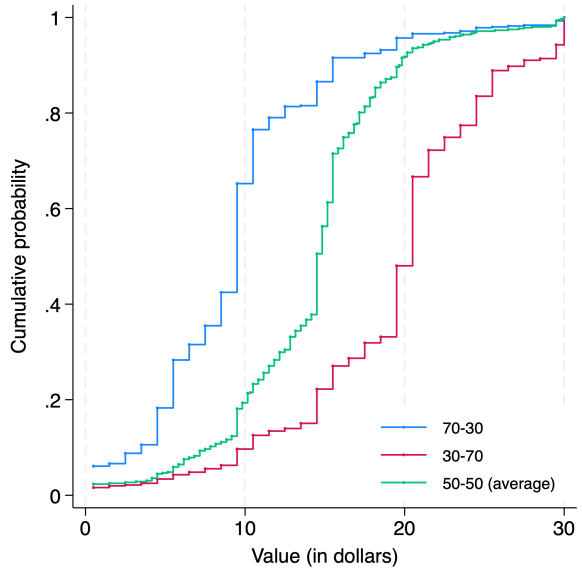


(a) CDFs of values for lotteries.

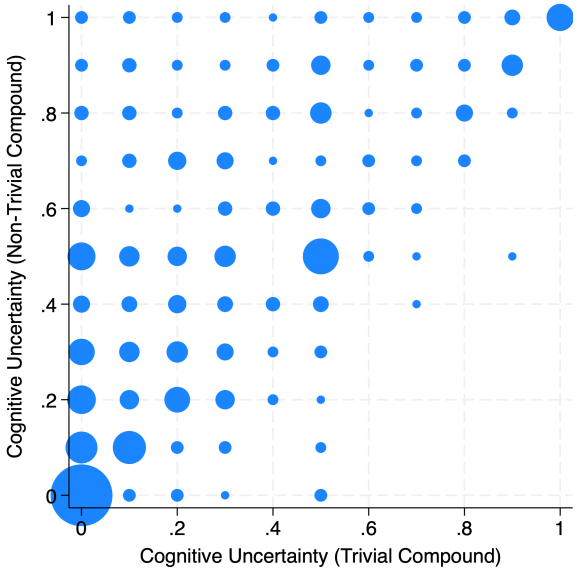


(b) CDFs of values for perceptual bets.

Figure Supplemental-B.7: Additional figures for Experiment B.



(a) CDFs of values for lotteries.



(b) Scatterplot of CU for Non-Trivial vs. Trivial.

Figure Supplemental-B.8: Additional figures for Experiment C, Main (two-stage) treatment.

C Additional details for Experiment C

C.1 Details for Percents vs. Graphical Framings

The top left (right) panel of Figure Supplemental-C.9 depicts the CDFs of the values of the trivial and non-trivial compound lotteries and the average value of 50/50 lotteries in the Percents (Graphical) framing. Our key findings holds in each framing, where the non-trivial compound lottery is undervalued: the average is \$2.60 in the Percents framing (< 0 for 19%, $= 0$ 18%, > 0 63%); and \$2.52 in Graphical (< 0 for 14%, $= 0$ for 24%, > 0 62%). The trivial compound lottery shows no sign of such aversion in either framing (averages are .17 and .22; in either framing, it is < 0 for 31%, $= 0$ 33%, > 0 36%). In both framings, the two compound lotteries are very different in cognitive uncertainty, which is much higher for the non-trivial one (average CU is 43% vs. 26% in the Percents framing and 40% vs. 25% in the Graphical framing). Relative complexity aversion is similar to complexity aversion, with an average of \$2.43 in the Percents framing and \$2.30 in the Graphical framing. The bottom panels of Figure Supplemental-C.9 show the histogram of complexity aversion for the non-trivial compound lottery and relative complexity aversion.

Table Supplemental-C.4 replicates our Table 3 for each frame for both our selected sample used in the main body of the paper (reporting correct answer to the quiz question on the first try) and the whole sample. The letter suffix indicates which column of Table 3 is replicated: a) Percent, selected sample; b) Graphical, selected sample; c) Percents, whole sample; d) Graphical, whole sample. As is clear from the table, point estimates are always in the same direction and similar magnitude to the original table; with approximately half the subjects in each regression, there is some loss of significance, but it is almost always restored if we consider the full sample.

C.2 The Third Compound Lottery in Experiment C

As we discussed above, Experiment C also included a third type of compound lottery, which we call "draw-again." Subjects were told: "A deck contains 3 cards: one Purple, one Green, and one Orange. The computer shuffles the deck and draws a card:

- If the drawn card is Purple or Green it stops.
- If it is Orange, it discards that card and draws again from the deck."

Subjects were then asked for their valuation of a \$30 bet if the final card was Purple. This is a compound lottery, but of a form very different from typical ones because the presence of a second stage is contingent on a random event. We included it as an exploration because we thought it could be an interesting and different type of non-trivial compound lottery.

Table Supplemental-C.4: Experiment C: The Role of Ambiguity and Cognitive Uncertainty.

	Complexity Aversion (Trivial and non-Trivial)								Complexity Aversion (non-Trivial only)								Relative Complexity Aversion (non-Trivial only)							
	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(3a)	(3b)	(3c)	(3d)	(4a)	(4b)	(4c)	(4d)	(5a)	(5b)	(5c)	(5d)	(6a)	(6b)	(6c)	(6d)
High Cognitive Uncertainty:																								
Ambiguity Aversion	.37***	.41***	.37***	.52***					.50***	.70***	.55***	.62***					.41***	.66***	.45***	.44***				
	(.08)	(.07)	(.07)	(.07)					(.11)	(.09)	(.09)	(.09)					(.09)	(.12)	(.10)	(.11)				
Low Cognitive Uncertainty:																								
Ambiguity Aversion	.24**	.19***	.22***	.17***					.37***	.33***	.28***	.29***					.18*	.37***	.16**	.19**				
	(.10)	(.07)	(.07)	(.04)					(.13)	(.10)	(.09)	(.08)					(.10)	(.09)	(.08)	(.09)				
Ambiguity Aversion					.21**	.18***	.20***	.13**					.39***	.39***	.30***	.24***					.19**	.45***	.17***	.30***
					(.09)	(.07)	(.07)	(.06)					(.12)	(.10)	(.09)	(.09)					(.08)	(.08)	(.06)	(.08)
CU					-.80	-1.09	-.48	-1.27					-.11	-1.01	-.33	-1.12					-2.53	.24	-3.50**	1.40
					(.96)	(.74)	(.82)	(.64)					(1.15)	(.81)	(.99)	(.81)					(1.59)	(1.35)	(1.69)	(1.45)
Ambiguity Aversion × CU					.27	.40**	.27*	.52***					.14	.47**	.35**	.54***					.71***	.56*	.87***	.24
					(.17)	(.19)	(.15)	(.13)					(.20)	(.22)	(.17)	(.18)					(.24)	(.29)	(.26)	(.28)
Constant	3.79***	1.68**	2.85***	2.48***	4.22***	2.06***	2.94***	2.58***	3.88***	1.20	3.08**	1.98***	4.38***	1.70**	3.20**	2.03***	4.42**	2.26	4.24**	0.59	4.69**	2.03	4.43**	0.52
	(1.01)	(.71)	(.98)	(.62)	(1.02)	(.77)	(1.08)	(.66)	(1.48)	(.73)	(1.34)	(.64)	(1.50)	(.77)	(1.48)	(.70)	(2.19)	(1.46)	(1.88)	(1.30)	(2.25)	(1.48)	(1.91)	(1.28)
Observations	572	544	794	794	572	544	794	794	286	272	397	397	286	272	397	397	286	272	397	397	286	272	397	397
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Robust standard errors in parentheses, clustered by subject in models (1) and (2), where each subject appears in two observations. * $p < .1$, ** $p < .05$, *** $p < .01$. (1)-(4) are obtained from constrained regressions. In (5)-(6), CU refers to relative cognitive uncertainty. Controls include beliefs and a dummy for each compound lottery; in model (1), (3), (5), also a dummy for high CU. a: Percents (correct answer to the quiz on first try); b: Graphical (correct answer to the quiz on first try); c: Percents (whole sample); d: Graphical (whole sample).

Unfortunately, a large fraction of subjects seem to have misunderstood this question in a way that makes the interpretation difficult. In particular, close to a third of our subjects in the main treatment (171/558, even focusing on those that pass the comprehension quiz) report beliefs that the probability of Purple in this question is around 1/3 (between 30 and 35). It looks like they did not understand the possibility of a second draw and only considered the chances of Purple in the first draw. Naturally, this leads them to report very low values for this bet. While this is in the direction we are trying to demonstrate (people undervalue complex options), it seems to happen for reasons unrelated to complexity aversion. For this reason, we are leaving this question aside.

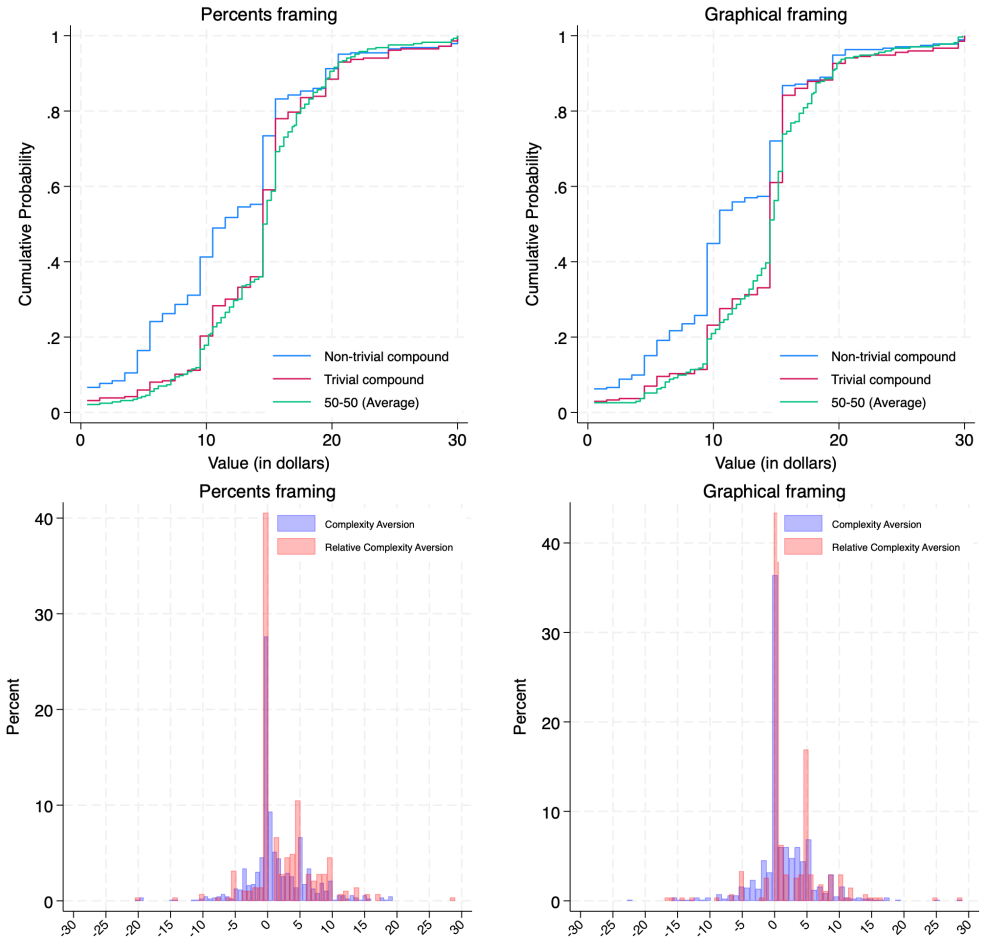


Figure Supplemental-C.9: Top Panels: CDFs of dollar value of the non-trivial and trivial compound lotteries and average value of 50/50 lottery. Left Percents framing. Right: Graphical framing. Bottom panels: Histogram of complexity aversion and relative complexity aversion, for each framing.

D Screenshots

Below, we provide screenshots of the instructions, quiz questions, and decision screens of Experiment A. Due to space constraints, we could not include those of the other two experiments, which can be found at https://paolamoscariello.github.io/Files/CautionComplexityScreenshots.pdf.

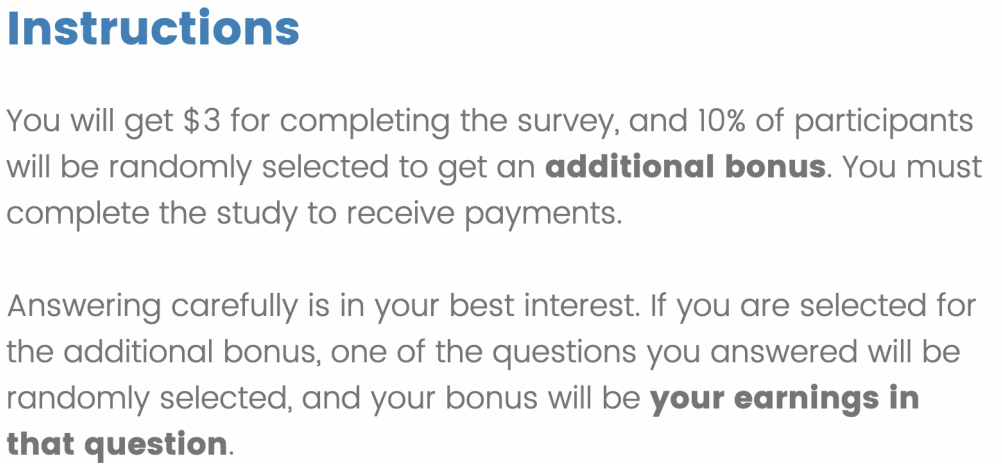


Figure Supplemental-D.10: Instructions page 1.

Instructions (continued)

Please **read these instructions carefully**. There will be a **short quiz** at the end.

You will face **7** different scenarios. In each scenario, the computer has created a (virtual) bag with **Green** or **Purple** balls and has **randomly drawn one ball** from the bag.

Each scenario gives you some information about the composition of the bag. For example:

> A bag contains **50 Green** balls and **50 Purple** balls.

In some cases, you also receive information on the drawn ball. For example:

> A bag contains:
>
> - **50 Green** balls and **50 Purple** balls.
> - **1/2** of **Green** balls are marked with an **X**
> - **1/2** of **Purple** balls are marked with an **X**
>
> A ball has been drawn from the bag. The computer informs you that this ball is **marked with an X**.

The bag is **different** in each scenario, so read carefully.

Figure Supplemental-D.11: Instructions page 2, main treatment.

Instructions (continued)

Please **read these instructions carefully**. There will be a **short quiz** at the end.

You will face **7** different scenarios. In each scenario, the computer has created a (virtual) bag with **Green** or **Purple** balls and has **randomly drawn one ball** from the bag.

Each scenario gives you some information about the composition of the bag. For example:

> A bag contains **50 Green** balls and **50 Purple** balls.

In some cases, you are told how the bag was constructed using an initial stock of **Green** and **Purple** balls. For example:

> There is a stock of **50 Green** balls and **50 Purple** balls available. A bag was constructed as follows:
>
> - **1/2** of the **Green** balls were put in the bag
> - **1/2** of the **Purple** balls were put in the bag

The bag is **different** in each scenario, so read carefully.

Figure Supplemental-D.12: Instructions page 2, mirror treatment.

Instructions (continued)

In some scenarios, you are asked to choose between a fixed amount of money received for sure or winning **$30** if the drawn ball is **Purple**.

For example, you might be asked to choose between:

$30 if drawn ball is **Purple** ○ ○ **$15** for sure

- If you select the left option, you win **$30 if the drawn ball is Purple and $0 otherwise**.
- If you select the right option, you win **$15 for sure, regardless of the color of the drawn ball**.

You must answer a list of questions like this. For example:

$30 if drawn ball is **Purple**	○ ○	**$11** for sure
$30 if drawn ball is **Purple**	○ ○	**$12** for sure
$30 if drawn ball is **Purple**	○ ○	**$13** for sure
$30 if drawn ball is **Purple**	○ ○	**$14** for sure
$30 if drawn ball is **Purple**	○ ○	**$15** for sure

The option on the left does not change, while the option on the right **gets better as you go down the list**.

You must make **a choice in all rows**, but for simplicity, you only have to **click once** on the row where you want to **switch from left to right**. You can modify your choice as many times as you want, and you can also select only the left or only the right.

Intuitively, you can think about how much you'd pay for the bet. Then, you switch to the sure amount as soon as it is above the amount you'd pay for the bet.

Below is an example for you to experience the interface (try to click).

$30 if drawn ball is **Purple**	○ ○	**$0** for sure
$30 if drawn ball is **Purple**	○ ○	**$7** for sure
$30 if drawn ball is **Purple**	○ ○	**$12** for sure
$30 if drawn ball is **Purple**	○ ○	**$18** for sure
$30 if drawn ball is **Purple**	○ ○	**$20** for sure

Figure Supplemental-D.13: Instructions page 3.

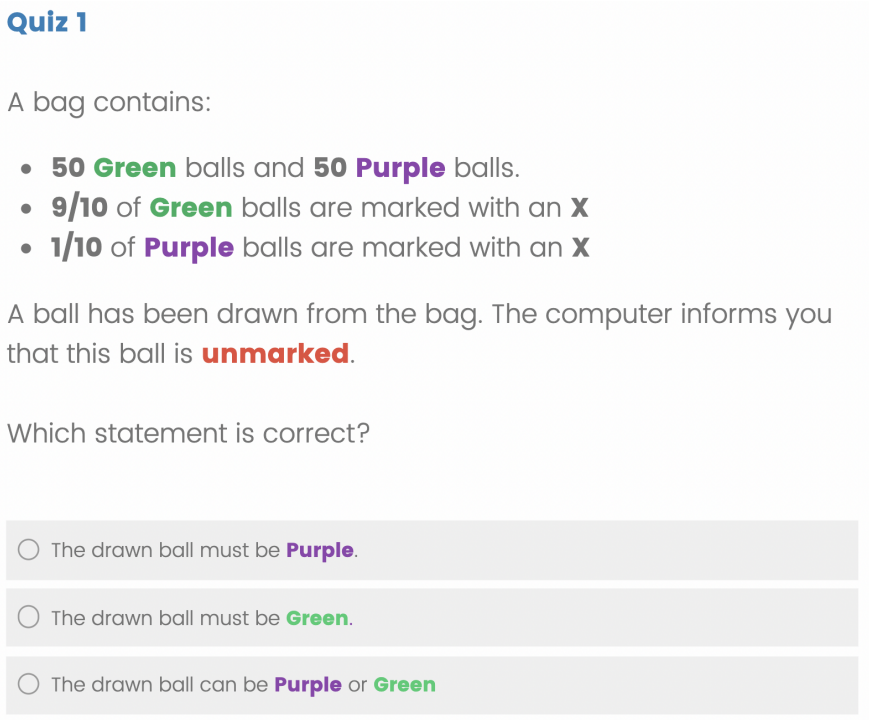


Figure Supplemental-D.14: Quiz question 1, main treatment.

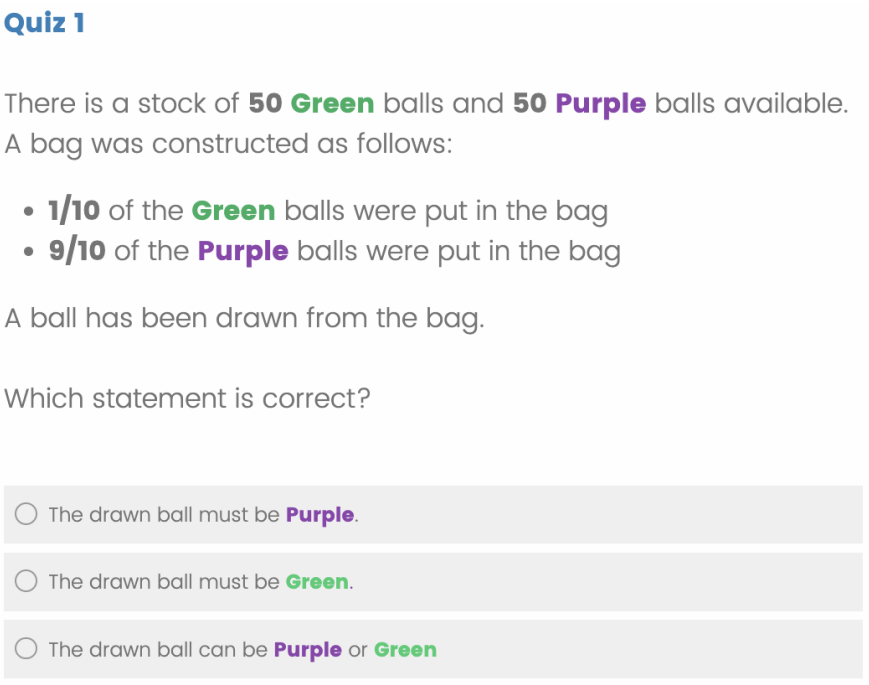


Figure Supplemental-D.15: Quiz question 1, mirror treatment.

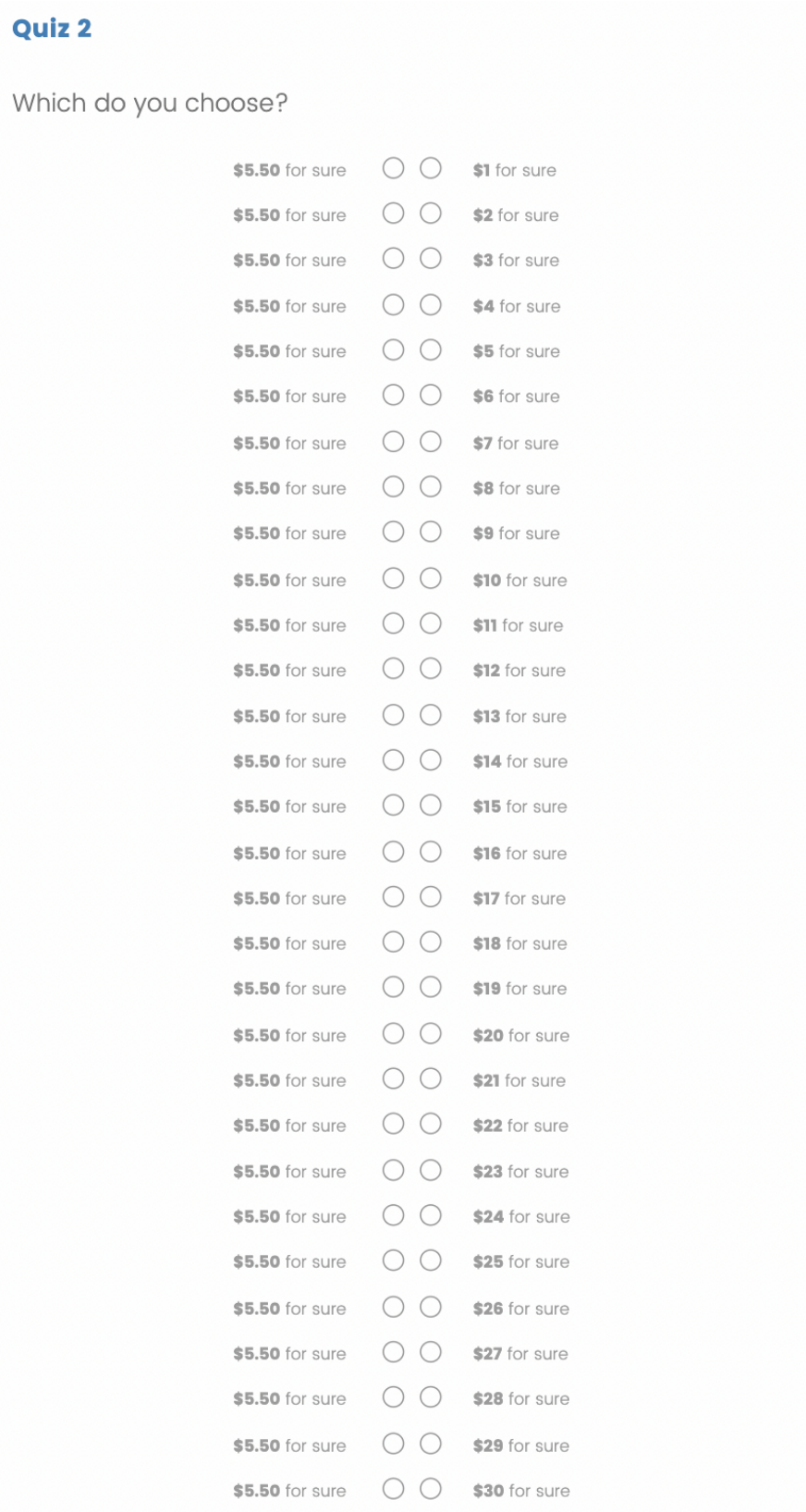


Figure Supplemental-D.16: Quiz question 2.

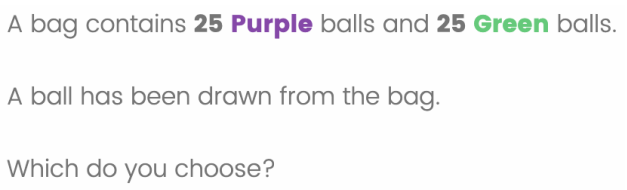


Figure Supplemental-D.17: Risk question 1.

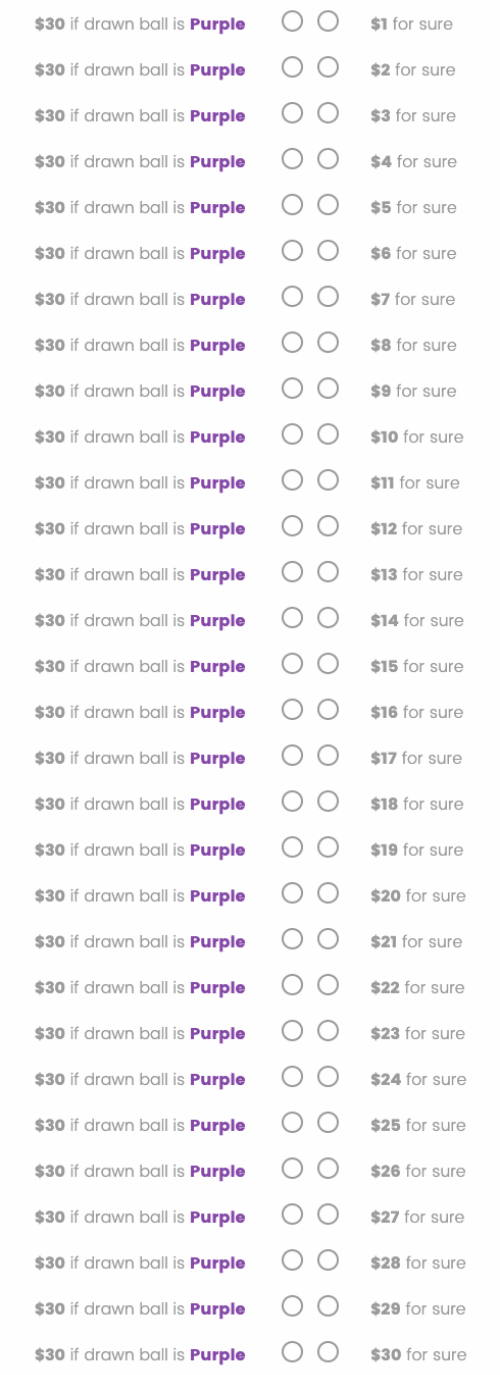


Figure Supplemental-D.18: MPL.

A bag contains:

- **30 Green** balls and **20 Purple** balls.
- **1/3** of the **Green** balls are marked with an **X**
- **1/2** of the **Purple** balls are marked with an **X**

A ball has been drawn from the bag. The computer informs you that this ball is **marked with an X**.

Which do you choose?

Figure Supplemental-D.19: Main task, main treatment.

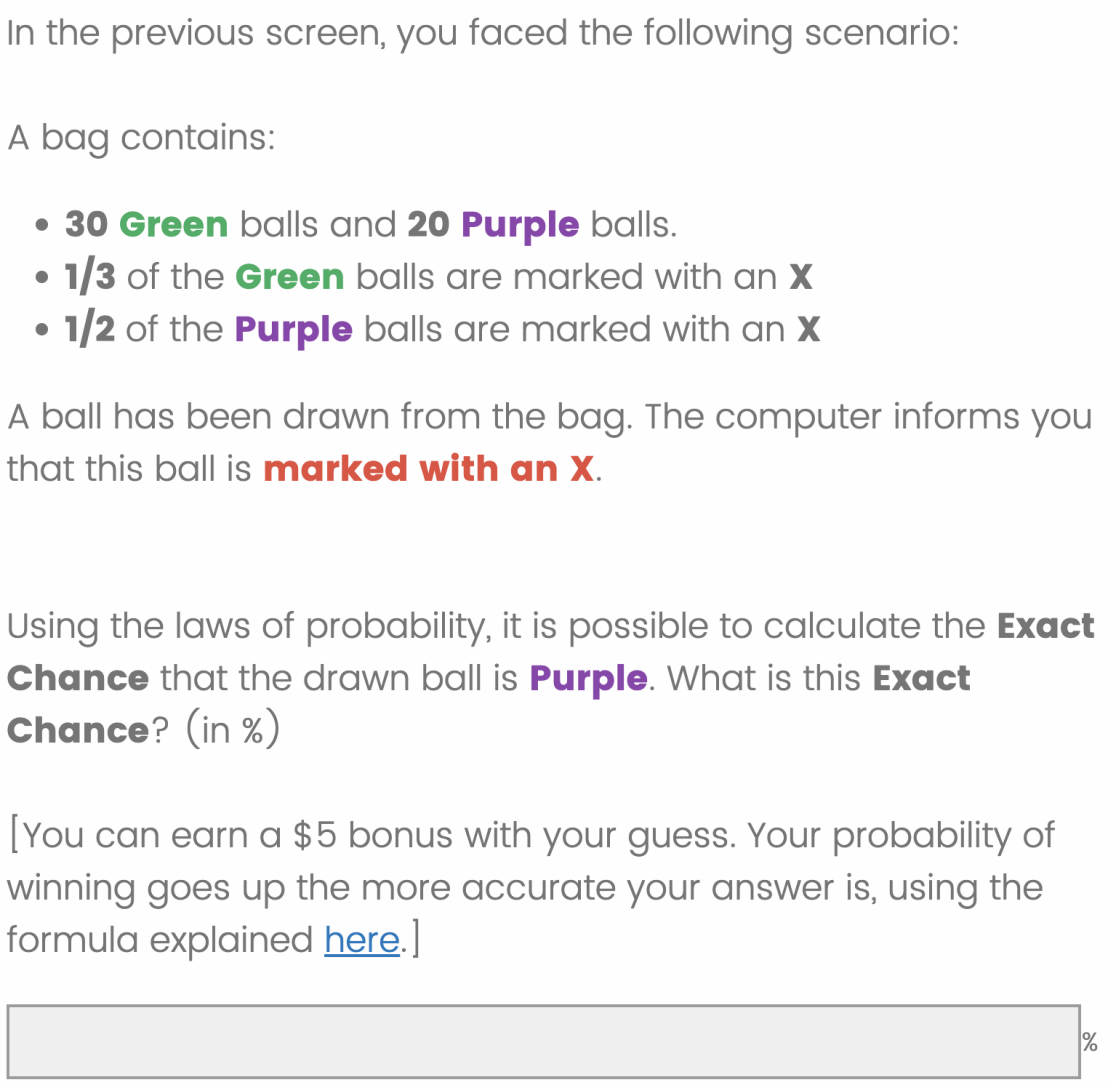


Figure Supplemental-D.20: Main task with binary scoring rule, main treatment.

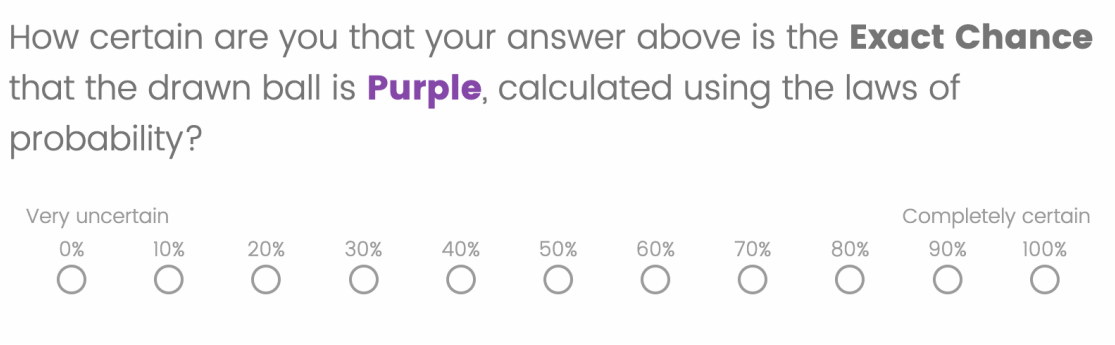


Figure Supplemental-D.21: Cognitive uncertainty.

There is a stock of **30 Green** balls and **20 Purple** balls available.
A bag was constructed as follows:

- **1/3** of the **Green** balls were put in the bag
- **1/2** of the **Purple** balls were put in the bag

A ball has been drawn from the bag.

Which do you choose?

Figure Supplemental-D.22: Main task, mirror treatment.

In the previous screen, you faced the following scenario:

There is a stock of **30 Green** balls and **20 Purple** balls available.
A bag was constructed as follows:

- **1/3** of the **Green** balls were put in the bag
- **1/2** of the **Purple** balls were put in the bag

A ball has been drawn from the bag.

Using the laws of probability, it is possible to calculate the **Exact Chance** that the drawn ball is **Purple**. What is this **Exact Chance**? (in %)

[You can earn a $5 bonus with your guess. Your probability of winning goes up the more accurate your answer is, using the formula explained here.]

%

Figure Supplemental-D.23: Main task with binary scoring rule, mirror treatment.

A bag contains:

- **20 Green** balls and **30 Purple** balls.
- **1/2** of the **Green** balls are marked with an **X**
- **1/3** of the **Purple** balls are marked with an **X**

A ball has been drawn from the bag. The computer informs you that this ball is **marked with an X**.

Which do you choose?

Figure Supplemental-D.24: Complement task, main treatment.

In the previous screen, you faced the following scenario:

A bag contains:

- **20 Green** balls and **30 Purple** balls.
- **1/2** of the **Green** balls are marked with an **X**
- **1/3** of the **Purple** balls are marked with an **X**

A ball has been drawn from the bag. The computer informs you that this ball is **marked with an X**.

Using the laws of probability, it is possible to calculate the **Exact Chance** that the drawn ball is **Purple**. What is this **Exact Chance**? (in %)

[You can earn a $5 bonus with your guess. Your probability of winning goes up the more accurate your answer is, using the formula explained here.]

%

Figure Supplemental-D.25: Complement task with binary scoring rule, main treatment.

There is a stock of **20 Green** balls and **30 Purple** balls available. A bag was constructed as follows:

- **1/2** of the **Green** balls were put in the bag
- **1/3** of the **Purple** balls were put in the bag

A ball has been drawn from the bag.

Which do you choose?

Figure Supplemental-D.26: Complement task, mirror treatment.

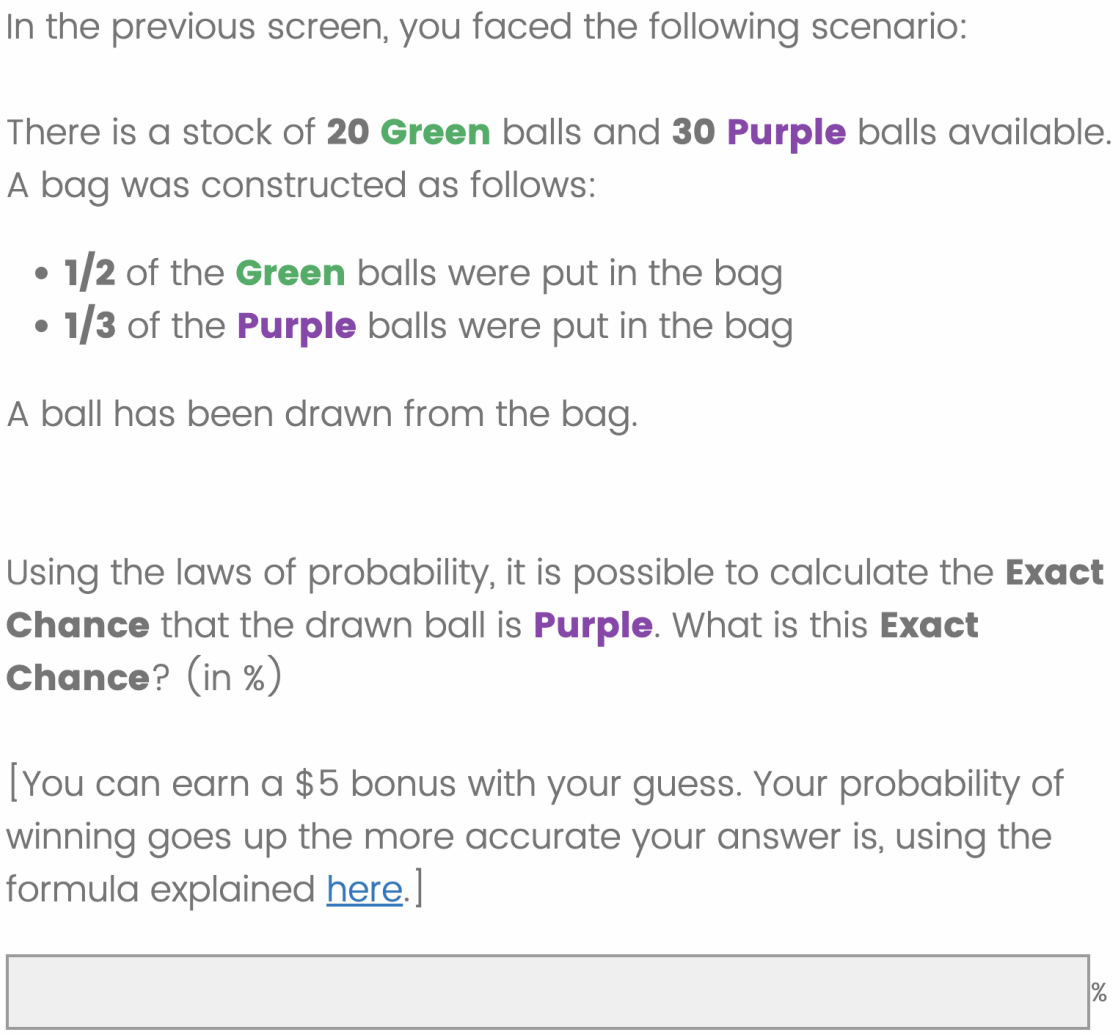


Figure Supplemental-D.27: Complement task with binarized scoring rule, mirror treatment.

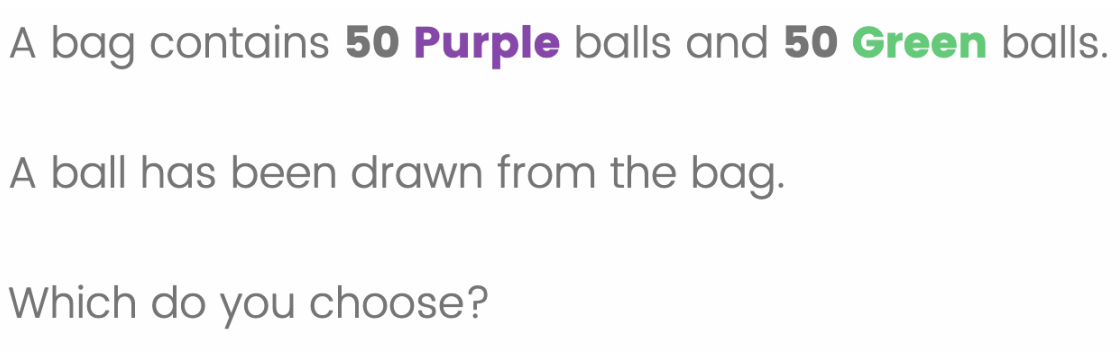


Figure Supplemental-D.28: Risk question 2.

A bag contains **100** balls. Each ball is either **Purple** or **Green**. You are not told the exact number of **Purple** or **Green** balls. They could be all **Purple**, all **Green**, or any combination.

A ball has been drawn from the bag.

Which do you choose?

Figure Supplemental-D.29: Ambiguity question.