Supplemental A: Full text of the discounting scenarios in Study 1

Financial Gain

Imagine the city you live in has a budget surplus that it is planning to pay out as rebates of $300 for **each** citizen. The city is also considering investing the surplus in endowment funds that will mature at **different possible times** in the future. The funds would allow the city to offer rebates of a different amount, to be paid at different possible times in the future. For the purposes of answering these questions, please assume that you will not move away from your current city, even if that is unlikely to be true in reality.

Financial Loss

Imagine the city you live in has a budget shortfall that it is planning to cover through a one-time fee of $300 for **each** citizen. The city is also considering covering the shortfall using fixed-interest bonds that will mature at **different possible times** in the future. Offering these bonds would require the city to charge the citizens a different amount, to be paid when the bonds mature. For the purposes of answering these questions, please assume that you will not move away from your current city, even if that is unlikely to be true in reality.

Environmental Gain

Imagine the current air quality (measured by number and size of particulates) in your area is neither particularly good nor especially bad. The local government has a budget surplus that it will either return to the citizens as rebates, or spend to enact various policy and infrastructure changes that will lead to a permanent improvement in air quality. Once the changes are put into place, the air will feel surprisingly clean and fresh.

Policy changes will include stricter emissions standards for factories and power plants; the city will compensate those factories and power plants for any costs incurred. Infrastructure changes will include using a fleet of cleaner-burning, more fuel-efficient vehicles in place of those currently used in the public transportation system and by city employees.

We are **not** interested in how you feel about specific measures meant to improve air quality. Rather, we are interested in knowing how much this improved air quality would be worth to you, depending on when the change is implemented. The following questions will ask about your preference between receiving a sum of money as a rebate now, or having noticeably improved air quality starting at different possible times, now or in the future. For the purposes of these questions, please assume you will continue to live in your current city, even if that is unlikely to be true in reality.

Environmental Loss

Imagine the current air quality (measured by number and size of particulates) in your area is neither particularly good nor especially bad. The local government has a budget shortfall that it will either cover by charging the citizens, or reduce spending on various policy and infrastructure repairs, leading to a permanent deterioration in air quality. Once the changes are put into place, the air will feel surprisingly dirty and stale.

Policy changes will include weaker emissions standards for factories and power plants; the city will earn more in taxes from those factories and power plants, as their profits will increase under the weaker standards. Infrastructure changes will include using a fleet of cheap, less fuel-efficient vehicles in place of those currently used in the public transportation system and by city employees.

We are **not** interested in how you feel about specific measures affecting the air quality. Rather, we are interested in knowing how much it would be worth to you to avoid this worsened air quality, depending on when the change is implemented. The following questions will ask about your preference between paying a sum of money as a one-time fee now, or having noticeably worsened air quality starting at different possible times, now or in the future. For the purposes of these questions, please assume you will continue to live in your current city, even if that is unlikely to be true in reality.

Supplemental B: Sample questions from each of the measurement methods and scenario types in Study 1

Matching, Financial Gain

How much would a rebate **ten years** from now have to be in order to make it equally attractive as $300 **now**?

Please fill in the amount that would make the following options equally attractive.

A. Receive $300 **immediately**.

B. Receive $____ **ten years** from now.

Matching, Financial Loss

How much would a tax **ten years** from now have to be in order to make it as unattractive as paying $300 **now**?

Please fill in the amount that would make the following options equally unattractive.

A. Pay $300 **immediately**.

B. Pay $____ **ten years** from now.

Titration, Financial Gain

Please choose the option that you prefer in each pair.

What if the rebate were to be paid **ten years** from now?

A1.	Receive $300 **immediately**	Receive $250 **ten years** from now
A2.	Receive $300 **immediately**	Receive $475 **ten years** from now

A3.	Receive $300 **immediately**	Receive $900 **ten years** from now
A4.	Receive $300 **immediately**	Receive $1,750 **ten years** from now
A5.	Receive $300 **immediately**	Receive $3,300 **ten years** from now
A6.	Receive $300 **immediately**	Receive $6,400 **ten years** from now
A7.	Receive $300 **immediately**	Receive $12,000 **ten years** from now
A8.	Receive $300 **immediately**	Receive $23,500 **ten years** from now
A9.	Receive $300 **immediately**	Receive $45,000 **ten years** from now
A10.	Receive $300 **immediately**	Receive $85,000 **ten years** from now

Titration, Financial Loss
Please choose the option that you prefer in each pair.

What if the tax were to be paid **ten years** from now?

A1.	Pay $300 **immediately**	Pay $250 **ten years** from now
A2.	Pay $300 **immediately**	Pay $475 **ten years** from now
A3.	Pay $300 **immediately**	Pay $900 **ten years** from now
A4.	Pay $300 **immediately**	Pay $1,750 **ten years** from now

A5.	Pay $300 **immediately**	Pay $3,300 **ten years** from now
A6.	Pay $300 **immediately**	Pay $6,400 **ten years** from now
A7.	Pay $300 **immediately**	Pay $12,000 **ten years** from now
A8.	Pay $300 **immediately**	Pay $23,500 **ten years** from now
A9.	Pay $300 **immediately**	Pay $45,000 **ten years** from now
A10.	Pay $300 **immediately**	Pay $85,000 **ten years** from now

Multiple-staircase, Financial Gain

Which option do you prefer:

Receive $300 **now**	OR	Receive $7,700 **ten years from now**

Multiple-staircase, Financial Loss

Which option do you prefer:

Pay $300 **now**	OR	Pay $7,736 **ten years from now**

Matching, Environmental Gain

What amount of money now would be as valuable to you as getting improved air quality starting **ten years from now**? In other words, how much would a rebate have to be in order to make it difficult or impossible for you to choose whether you would prefer getting that amount of money immediately or getting the cleaner air in ten years?

Please fill in the amount that would make the following options equally attractive.

(NOTE: $0 would indicate that improved air quality is worthless to you.)
A. Improved air quality starting **ten years from now**.
B. Receive $____ **immediately**.

Matching, Environmental Loss
Paying what amount of money now would be as costly to you as suffering worse air quality starting **ten years from now**? In other words, how much would a tax have to be in order to make it difficult or impossible for you to choose whether you would prefer paying that amount of money immediately or suffering the dirty air in ten years?
Please fill in the amount that would make the following options equally unattractive.
(NOTE: $0 would indicate that air quality is worthless to you.)
A. Worse air quality starting **ten years from now**.
B. Pay $____ **immediately**.

Titration, Environmental Gain
What if the improved air quality were to start **ten years from now**?

B1.	Receive $20 **immediately**.	Permanently improved air quality starting **ten years from now**.
B2.	Receive $50 **immediately**.	Permanently improved air quality starting **ten years from now**.
B3.	Receive $130 **immediately**.	Permanently improved air quality starting **ten years from now**.
B4.	Receive $325 **immediately**.	Permanently improved air quality starting **ten years from now**.
B5.	Receive $800 **immediately**.	Permanently improved air quality starting **ten years from now**.
B6.	Receive $2,100 **immediately**.	Permanently improved air quality starting **ten years from now**.

B7.	Receive $5,200 **immediately**.	Permanently improved air quality starting **ten years from now**.
B8.	Receive $13,000 **immediately**.	Permanently improved air quality starting **ten years from now**.
B9.	Receive $33,000 **immediately**.	Permanently improved air quality starting **ten years from now**.
B10.	Receive $85,000 **immediately**.	Permanently improved air quality starting **ten years from now**.

Titration, Environmental Loss

What if the worse air quality were to start **ten years from now**?

B1.	Pay $20 **immediately**.	Permanently worse air quality starting **ten years from now**.
B2.	Pay $50 **immediately**.	Permanently worse air quality starting **ten years from now**.
B3.	Pay $130 **immediately**.	Permanently worse air quality starting **ten years from now**.
B4.	Pay $325 **immediately**.	Permanently worse air quality starting **ten years from now**.
B5.	Pay $800 **immediately**.	Permanently worse air quality starting **ten years from now**.

B6.	Pay $2,100 **immediately**.	Permanently worse air quality starting **ten years from now**.
B7.	Pay $5,200 **immediately**.	Permanently worse air quality starting **ten years from now**.
B8.	Pay $13,000 **immediately**.	Permanently worse air quality starting **ten years from now**.
B9.	Pay $33,000 **immediately**.	Permanently worse air quality starting **ten years from now**.
B10.	Pay $85,000 **immediately**.	Permanently worse air quality starting **ten years from now**.

Multiple-staircase, Environmental Gain

Which option do you prefer:

Receive $300 **now**	OR	Permanently improved air quality starting **ten years from now**

Multiple-staircase, Environmental Loss

Which option do you prefer:

Pay $300 **now**	OR	Permanently worse air quality starting **ten years from now**

Supplemental C: The multiple-staircase method in Study 1

For the financial scenario, the future amount each staircase was bounded by $250 on the low end, and $100,000 on the high end. The immediate amount was always fixed at $300. Each staircase began with a choice between $300 immediately and an amount in the future that was roughly 7.5% of the maximum amount ($100,000). This was chosen based on pretesting, determining that this would reach indifference points quickly for most participants. The actual future amount was jittered by a random amount (up to 1% greater or less than the desired amount) and rounded to the nearest dollar so that amounts would not be exactly the same among the various staircases. Therefore, the first question most participants saw was something like a choice between $300 immediately or $7548 in one year.

Subsequent questions in each staircase were chosen dynamically based on the participant's response to the previous question. The future amount was chosen to be 80% of the between the previous amount and the maximum or minimum, as appropriate. For example, if, in the first question, the participant preferred $300 today over $7,548 in the future, the next choice might be between $300 today and $1,709 in one year (again, the future amount is jittered). Alternately, if the participant initial preferred the future $7,548 over $300 today, the next question might be a choice between $300 today and $81,510 in one year. This 80% method was chosen rather than bisection (50%) because it was found based on pretesting that this reached indifference points faster: at short delays, most indifference points were relatively low, while at long delays indifference points were relatively high, and the 80% method allowed the staircase to reach the extremes of the scale more quickly.

Each staircase consisted of seven questions chosen in this manner, plus two questions to check for attention and/or railroading.[1] The first check was mean to test for consistency, and was chosen by taking the amount from the first question and adding or subtracting 2% to make an "easy" question. For example, if the participant initially chose $300 today over $1,743 in one year, the first check might be a choice between $300 today and $1,709. Clearly, the participant would be expected to choose the immediate $300 on the check question as well. The second check was meant to test whether the participant was always choosing the immediate option or always choosing the future option, without thinking. Therefore, the "correct" answer to the second check question was always designed to be the opposite of the answer given to the first question. This second check question posed the $300 immediate against an extremely large or small future amount, as appropriate (it was either the scale minimum divided by 2, or the scale maximum times 200). For example, if the participant initially chose $300 today over $1,709 in one year, the second check question might ask about $300 today or $20,000,000 in one year. On the other hand, if the participant initially chose $1,709 in the future, the second check might ask about $300 today versus $125 in the future.

Thus, each staircase consisted of nine questions total: seven regular questions, and two check questions. The check questions were the fifth and eighth questions, respectively. Pretesting

[1] Railroading would be if a participant made a mistake when answering the first question. If this happened, the subsequent questions would be unlikely to get near his/her indifference point.

indicated that participants enjoyed the check questions because they were easy to answer, giving them a break from the questions near their indifference points, which were difficult to answer.

The *multiple* part of the multiple-staircase method came from the fact that three different scales were interleaved, one for each delay, in random order. So, participants were answering questions about 1-year, 10-year, and 50-year delays, in random order.

As a sample, here are the options that might be presented to one participant based on their choices. Note that each choice was presented one at a time, in contrast to the titration method, where all the options were presented on one page. The option the hypothetical participant chooses in each case is indicated with an X:

X Receive $300 now OR Receive $7,786 **fifty years from now**
Receive $300 now OR Receive $7,771 **one year from now** X
Receive $300 now OR Receive $7,737 **ten years from now** X
X Receive $300 now OR Receive $1,739 **ten years from now**
Receive $300 now OR Receive $1,764 **one year from now** X
X Receive $300 now OR Receive $82,087 **fifty years from now**
X Receive $300 now OR Receive $548 **one year from now**
Receive $300 now OR Receive $6,574 **ten years from now** X
Receive $300 now OR Receive $96,620 **fifty years from now** X
X Receive $300 now OR Receive $2,690 **ten years from now**
X Receive $300 now OR Receive $311 **one year from now**
Receive $300 now OR Receive $85,257 **fifty years from now X**
X Receive $300 now OR Receive $5,747 **fifty years from now**
Receive $300 now OR Receive $9,688 **one year from now** X
Receive $300 now OR Receive $9,708 **ten years from now** X
Receive $300 now OR Receive $3,501 **ten years from now** X
X Receive $300 now OR Receive $356 **one year from now**
Receive $300 now OR Receive $84,733 **fifty years from now** X
Receive $300 now OR Receive $513 **one year from now** X
Receive $300 now OR Receive $82,385 **fifty years from now** X
Receive $300 now OR Receive $2,845 **ten years from now** X
X Receive $300 now OR Receive $125 **one year from now**
Receive $300 now OR Receive $20,176,000 **fifty years from now** X
X Receive $300 now OR Receive $126 **ten years from now**
X Receive $300 now OR Receive $2,832 **ten years from now**
Receive $300 now OR Receive $81,424 **fifty years from now** X
X Receive $300 now OR Receive $478 **one year from now**

The environmental multiple-staircase was identical to the financial multiple-staircase, but with two changes. The first was that there were four staircases (immediate, 1-year, 10-year, and 50-year) rather than three. The other was that the minimum amount was set to $0, based on

pretesting which found that some participants placed a very low willingness-to-pay or willingness-to-accept for air quality.

Supplemental D: Study 1 results with the complete sample

Table D1

Financial Outcome	Exponential Discount Rate				Hyperbolic Discount Rate				Area Under the Curve			
	Mean	SD	Median	IQR	Mean	SD	Median	IQR	Mean	SD	Median	IQR
matching, gain	0.26	0.22	0.24	0.23	3.17	10.17	0.78	1.41	0.40	1.28	0.17	0.21
m-stairs, gain	0.42	0.34	0.33	0.32	5.12	13.41	2.53	2.14	0.13	0.07	0.11	0.11
titration, gain	0.40	0.50	0.18	0.25	8.76	28.73	1.33	3.09	0.18	0.14	0.15	0.11
matching, loss	0.08	0.37	0.09	0.22	0.94	5.72	0.15	0.43	3.41	25.46	0.45	0.52
m-stairs, loss	0.28	0.41	0.10	0.27	4.43	18.05	0.30	1.76	0.40	0.31	0.29	0.42
titration, loss	0.34	0.55	0.11	0.29	5.67	18.57	0.24	0.79	0.56	0.61	0.42	0.52

A Kruskal-Wallis non-parametric ANOVA of the gain data confirmed a significant effect of measurement method on discount rates, χ^2 (2, n = 230) = 29.4, p < .001, and a Kruskal-Wallis test of the loss data found a significant effect of measurement method there as well, χ^2 (2, n = 286) = 15.8, p < .001.

Figure D1.

Boxplots of median hyperbolic discount rates from each measurement method, in gains and losses. The crossbar of each box represents the median; the bottom and top edges of the box mark the first and third quartiles, respectively, and the whiskers each extend to the last outlier that is less than 1.5 IQRs beyond each edge of the box. Each dot represents one data point. Points are jittered horizontally, but not vertically: the vertical position of each point represents one participant's hyperbolic discount rate. Twelve data points lie outside the range of this figure.

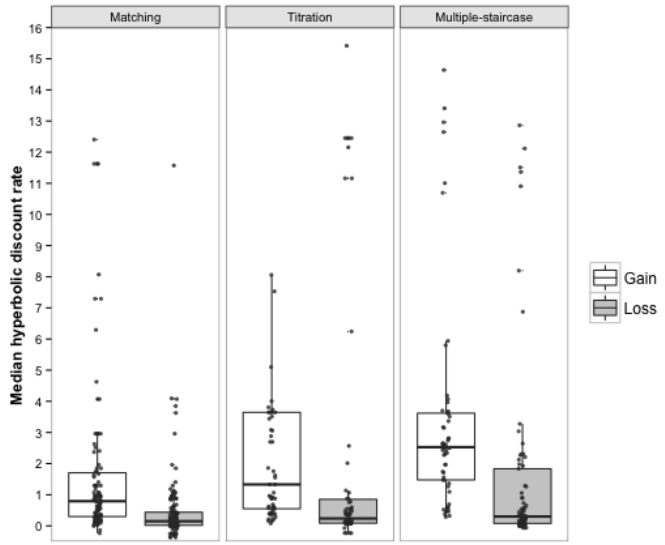
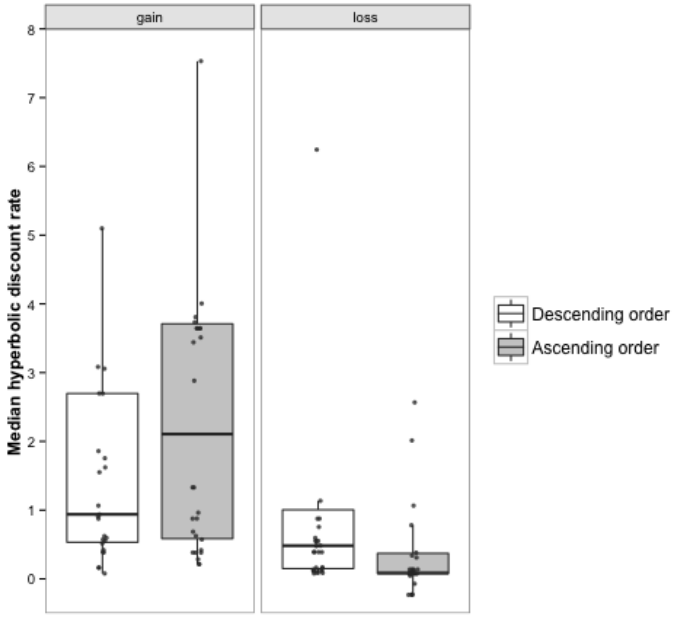


Figure D2

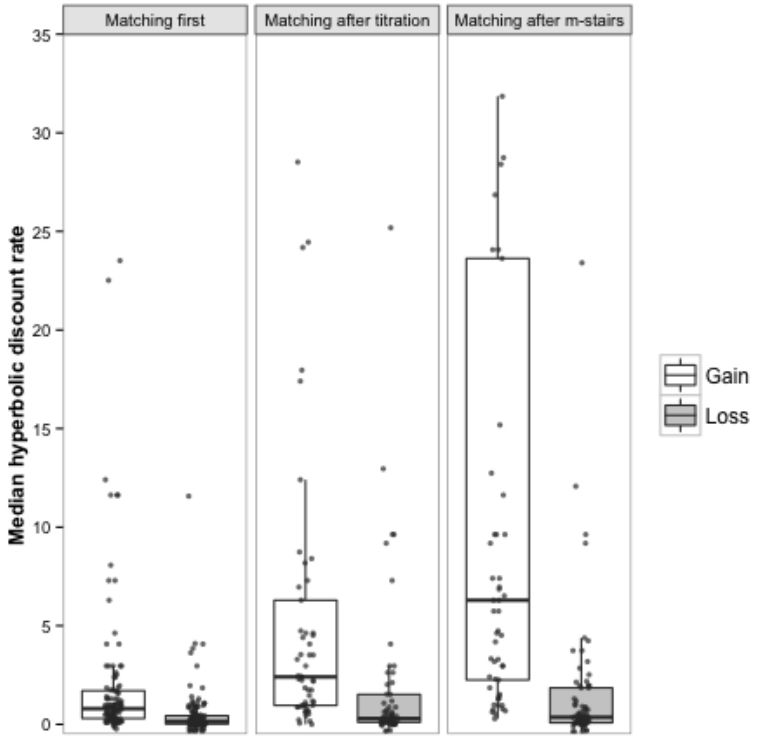
Boxplots of median hyperbolic discount rates from titration, showing an interaction of sign with order of presentation (ascending vs. descending). The crossbar of each box represents the median; the bottom and top edges of the box mark the first and third quartiles, respectively, and the whiskers each extend to the last outlier that is less than 1.5 IQRs beyond each edge of the box. Each dot represents one data point. Points are jittered horizontally, but not vertically: the vertical position of each point represents one participant's hyperbolic discount rate. Twenty-six data points lie outside the range of this figure.



A Mann-Whitney *U* test comparing the high-to-low and low-to-high orderings for losses was significant, $z = 3.3$, $n = 69$, $p < .01$. A similar test comparing the two orderings for gains was not significant, $z = 1.2$, $n = 57$, $p = .22$, but was in the predicted direction.

Figure D3

Boxplots of median hyperbolic discount rates from titration, comparing matching-elicited values among participants who completed matching first, versus after a choice-based method. The crossbar of each box represents the median; the bottom and top edges of the box mark the first and third quartiles, respectively, and the whiskers each extend to the last outlier that is less than 1.5 IQRs beyond each edge of the box. Each dot represents one data point. Points are jittered horizontally, but not vertically: the vertical position of each point represents one participant's hyperbolic discount rate. Eighteen data points lie outside the range of this figure.



A Mann-Whitney *U* test confirmed that participants gave different answers to the matching questions depending on whether they completed a choice based measure first or not, both for gains, $z = 7.3$, $n = 227$, $p < .001$, and losses, $z = 3.7$, $n = 284$, $p < .001$. Furthermore, participants' implied discount rates from the matching and choice-based questions were correlated, Spearman's $r(508) = .41$, $p < .001$.

The interquartile range (IQR) from the matching method for gains was 1.4, compared with 2.1 from multiple-staircase and 3.1 from titration. Similarly, the IQR for matching losses was only 0.43, compared with 1.8 from multiple-staircase and 0.8 from titration.

We calculated the proportion of participants who valued the 50-year change more than the immediate change, and found it to be 44% with matching, 17% with multiple-staircase, and 9% with titration. Pairwise proportion tests indicated that confused responses were significantly more common with matching than multiple-staircase, $z = 5.9$, $n = 389$, $p < .001$, and more common with matching than titration, $z = 8.5$, $n = 382$, $p < .001$, and that multiple-staircase and titration were marginally different, $z = 1.9$, $n = 261$, $p < .1$.

Further support for this interpretation comes from looking at the correlations between participants' discount rates for financial and environmental outcomes; while multiple-staircase showed some consistency between domains, Spearman's $r(132) = .38$, $p < .001$, titration was very weakly correlated, $r(125) = .19$, $p > .1$, matching answers were also uncorrelated, $r(253) = -.03$, $p > .5$.

Another difference between methods is seen in the correlations between age and discount rates for the 50-year delayed outcomes. It would be understandable for older individuals to care

less about financial gains that would be accrued after their death, and indeed, older individuals tended to show higher discount rates for 50-year delayed financial gains when responding with titration (Spearman's $r(55) = .36$, $p < .01$) or multiple-staircase (Spearman's $r(55) = .51$, $p < .001$), but not with matching (Spearman's $r(114) = .10$, $p > .1$). There were no significant correlations between age and discount rates for 50-year financial losses (regardless of measurement method).

Table D2

Sign	Method	Choosing a $100 gain now over $200 in one year	Smoking
Gain	Matching	.16	.09
	M-stairs	.34*	.25†
	Titration	.45**	-.02
Loss	Matching	.02	-.01
	M-stairs	.06	.07
	Titration	.09	.31**

Supplemental E: Full text of all Study 2 materials

Matching, Financial Gain

1. Imagine you could choose between **receiving** $300 immediately, or another amount **6 months** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ 6 months from now.

2. Imagine you could choose between **receiving** $300 immediately, or another amount **one year** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ one year from now.

3. Imagine you could choose between **receiving** $300 immediately, or another amount **10 years** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ 10 years from now.

Matching, Financial Loss

1. Imagine you could choose between **paying** $300 immediately, or another amount **6 months** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ 6 months from now.

2. Imagine you could choose between **paying** $300 immediately, or another amount **one year** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ one year from now.

3. Imagine you could choose between **paying** $300 immediately, or another amount **10 years** from now. How much would the future amount need to be to make it as attractive as receiving $300 immediately?
Please fill in the dollar amount that would make the following options equally attractive:
A. Receive $300 immediately.
B. Receive $___ 10 years from now.

Titration, Financial Gain

Imagine you could choose between **receiving** $300 immediately, or another amount **6 months** from now. Please indicate which option you would choose in each case:

A1.	Receive $300 immediately	Receive $250 in 6 months
A2.	Receive $300 immediately	Receive $300 in 6 months
A3.	Receive $300 immediately	Receive $350 in 6 months
A4.	Receive $300 immediately	Receive $400 in 6 months

A5.	Receive $300 immediately	Receive $500 in 6 months
A6.	Receive $300 immediately	Receive $750 in 6 months
A7.	Receive $300 immediately	Receive $1,000 in 6 months
A8.	Receive $300 immediately	Receive $3,000 in 6 months
A9.	Receive $300 immediately	Receive $5,000 in 6 months
A10.	Receive $300 immediately	Receive $10,000 in 6 months

Titration, Financial Loss

Imagine you could choose between **paying** $300 immediately, or another amount **6 months** from now. Please indicate which option you would choose in each case:

A1.	Lose $300 immediately	Lose $250 in 6 months
A2.	Lose $300 immediately	Lose $300 ten years from now
A3.	Lose $300 immediately	Lose $350 in 6 months
A4.	Lose $300 immediately	Lose $400 in 6 months
A5.	Lose $300 immediately	Lose $500 in 6 months
A6.	Lose $300 immediately	Lose $750 in 6 months

A7.	Lose $300 immediately	Lose $1,000 in 6 months
A8.	Lose $300 immediately	Lose $3,000 in 6 months
A9.	Lose $300 immediately	Lose $5,000 in 6 months
A10.	Lose $300 immediately	Lose $10,000 in 6 months

Single-Staircase, Financial Gain

Imagine you could choose between receiving $300 immediately, or another amount **6 months** from now. Please indicate which option you would choose:

[Note: each of these options appears one at a time, with the next option being dynamically calculated based on the previous response. The underlined option is the one selected in each choice for the purposes of creating this example staircase.]

Receive $300 immediately OR Receive $7,600 in **6 months**

Receive $300 immediately OR Receive $3,900 in **6 months**

Receive $300 immediately OR Receive $2,050 in **6 months**

Receive $300 immediately OR Receive $1,125 in **6 months**

Receive $300 immediately OR Receive $663 in **6 months**

Receive $300 immediately OR Receive $431 in **6 months**

Receive $300 immediately OR Receive $489 in **6 months**

Receive $300 immediately OR Receive $460 in **6 months**

Receive $300 immediately OR Receive $475 in **6 months**

Single-Staircase, Financial Loss

Imagine you could choose between paying $300 immediately, or another amount **6 months** from now. Please indicate which option you would choose:

[Note: from here, the dynamic staircase for losses works the same as for gains, except that "receive" is replaced with "lose."]

Consequential Choice Question

Your choice on this page may be paid out for **real money**.

We are collecting data from 300 people for this study. We have randomly selected a number to

determine one participant whose choice will be paid out for real money. Therefore, your odds of being chosen are 1 in 300.
Because this choice could potentially be paid out for real money, you should take it seriously.

Please choose:

Receive a $100 Amazon gift certificate today	Receive a $200 Amazon gift certificate in one OR year

Demographics Questions

Although some of the following demographic questions involve sensitive information, all your answers will be anonymous, so please answer honestly.

1. Your gender:
   - Female
   - Male
2. How old are you?
   - ___ years old
3. Your marital status:
   - Single
   - Living together
   - Married
   - Divorced or living separated
   - Widowed
4. What is your highest completed level of education?
   - No degree
   - High school diploma
   - Associate degree, occupational
   - Associate degree, academic
   - Bachelor's degree
   - Master's degree
   - Professional degree
   - Doctoral degree
5. Have you taken college-level courses in the following subjects?
   - Economics: yes no
   - Finance: yes no
   - Mathematics: yes no
   - Statistics: yes no
6. What is your primary ethnicity?
   - American Indian or Alaskan Native
   - Asian

Black or African American
Caucasian/White
Hispanic or Latin American
Other

7. What is your political affiliation?
Democrat
Republican
Independent
Libertarian
Green
Other

8. How tall are you?
___ feet ___ inches

9. How much do you weigh?
___ pounds

10. About how many hours per week do you exercise?
___ hours

11. Are you currently following a specific diet plan?
No
Yes

12. In a typical week, how often do you choose your food (the type and/or amount) with health and fitness concerns in mind?
Never
A few meals each week
Some meals each week
Most meals
Every meal

13. In a typical week, how often do you eat more than you think you should eat?
Never
A few meals each week
Some meals each week
Most meals
Every meal

14. How often do you visit your dentist for a check-up?
Never
Less than once per year
Once per year
Two or more times a year

15. How often do you floss your teeth?
Never

Rarely
Once or twice each week
Most days each week
At least once per day

16. When your doctor gives you a prescription to fill at the drugstore (excluding birth control), do you follow it exactly (for example, by going to the drugstore, picking up the medication, taking all of the medication on schedule, and finishing the entire prescription)?

Never
Rarely
Sometimes
Usually
Always

17. Do you smoke cigarettes or otherwise use tobacco products? If so, how often?

Never
Rarely
About once a month
About once a week
Daily, or almost every day

18. Do you drink alcohol? If so, how often?

Never
Rarely
About once a month
About once a week
Daily, or almost every day

19. Do you smoke marijuana or otherwise use cannabis products? If so, how often?

Never
Rarely
About once a month
About once a week
Daily, or almost every day

20. Do you take other illegal drugs (such as cocaine or methamphetamine)? If so, how often?

Never
Rarely
About once a month
About once a week
Daily, or almost every day

21. About what age were you when you first had sexual intercourse? (If you have never had sexual intercourse, please enter 0.)

___ years old

22. In the last five years have you ever been sexually unfaithful (sexual intercourse) to a partner?

No
Yes

23. What is the annual income of your household? (Please give your best estimate.)
less than $14,999
$15,000 - $24,999
$25,000 - $34,999
$35,000 - $49,999
$50,000 - $99,999
$100,000 - $199,999
greater than $200,000

24. How many credit cards do you have?
___ credit cards

25. Over the past two years how many times were you charged a late fee for making a credit card payment after the deadline?
NA (don't have a credit card)
Never
1-2 times
3-4 times
5 or more times

26. Over the past two years, how often have you paid your credit card bill in full, as opposed to paying less than the full amount? (Paying in full means carrying no debt to the next month's bill.)
NA (don't have a credit card)
Never pay in full
Rarely pay in full
Pay in full about half of the time
Usually pay in full
Always pay in full

27. Over the past three years, what percentage of your income have you saved? (Please include savings into retirement plans and any other form of savings that you do.)
___%

28. On average, how many days per month do you gamble money, including visiting casinos, buying lottery tickets, betting on sports, playing poker, etc?
Never
Rarely
2-5 days per month
6-10 days per month
More than 10 days per month

29. Compared to your friends who are close to you in age, how much wealth have you accumulated? (Wealth includes retirement savings, stocks, bonds, and mutual funds you own, money in bank accounts, the value of your home minus the mortgage, etc.)

Less than all of my friends
Less than most of my friends
About average
More than most of my friends
More than all of my friends

30. Compared to the other members of your family in your generation (such as brothers, sisters, and cousins close to your age), how much wealth have you accumulated?

Less than all of my family
Less than most of my family
About average
More than most of my family
More than all of my family

31. Imagine that you had to pay an unexpected bill immediately. (For example, suppose that you needed an expensive medical treatment that was not covered by insurance.) Considering all possible resources available to you (including savings, borrowing, etc.), what is the **maximum** amount that you could come up with on short notice?

$___

Supplemental F: Results for the air-quality discounting scenarios in Study 1

Discount rates for the air quality outcomes were computed by comparing how much participants valued the immediate change in air quality compared to the future change in air quality. For example, if someone would pay $100 to avoid an immediate deterioration in air quality, but only pay $90 to avoid a deterioration starting in one year, then the hyperbolic discount rate for that participant would be (100-90)/(90*1), or 0.11. Thus, unlike the financial scenario, where the immediate value was fixed at $300, the air quality scenario allowed the immediate value to vary from person to person (e.g., one person might value immediately improved air quality at $10, and another at $1,000). Perhaps as a result of this, the made the variances in discount rates for the air quality outcomes were quite large, as seen in Table F1. Also, some participants were confused, particularly in the matching condition (discussed below), so the discount rates in Table F1 may not represent participants' true preferences. For these reasons we will not analyze them very closely, except to note that the same general trends are seen here that were also observed for the financial outcomes: choice-based methods generally produced higher discount rates than matching, and often had higher variability as well. Also, median discount rates for air quality losses were quite low, at or near zero. In other words, the typical respondent indicated that they would be willing to pay the same amount to avoid a deterioration in air quality, regardless of whether the change in air quality would occur immediately or in the future.

Table F1

Means, standard deviations, medians, and interquartile ranges (IQRs) for three methods of eliciting discount rates (matching, multiple staircase, and titration) for air quality gains and

losses. Discount rates are summarized for three popular discounting metrics: the continuously compounded exponential model and the hyperbolic model. For both metrics, higher numbers mean more discounting.

Air Quality Outcome	Continuously Compounded Exponential Discount Rate				Hyperbolic Discount Rate			
	Mean	SD	Median	IQR	Mean	SD	Median	IQR
matching, gain	-0.13	0.40	0.00	0.33	0.05	0.36	0.00	0.29
m-stairs, gain	0.35	0.50	0.21	0.49	68.53	319.7	1.16	15.63
titration, gain	0.18	0.27	0.05	0.35	1.35	3.62	0.31	0.69
matching, loss	-0.02	0.25	0.00	0.20	0.08	0.30	0.00	0.21
m-stairs, loss	0.11	0.29	0.02	0.08	3.53	15.22	0.03	0.19
titration, loss	0.04	0.22	0.00	0.05	9.12	58.53	0.00	0.15

Ease of use for participants

The rational response is to value *future* improvements or deterioration in air quality less than *immediate* improvements or deterioration in air quality. For example, if someone is willing to pay $200 for an immediate improvement in air quality, then they should not be willing to pay more than $200 for an improvement that would begin in fifty years. We calculated the proportion of participants who valued the fifty-year change more than the immediate change, and found it to be 38% with matching, 11% with multiple staircase, and 7% with titration. Pairwise proportion tests indicated that these confused responses were significantly more common with matching than multiple staircase, $z = 5.0$, $p < .001$, and more common with matching than titration, $z = 6.3$, $p < .001$, but that multiple staircase and titration were not significantly different, $z = 0.9$, $p = .39$. (Such confusion was much less common with the financial scenarios; the proportion was 5% with matching, 4% with multiple staircase, and 5% with titration, a non-significant difference, $z = 0.1$, $p = .89$.) Qualitative data reinforced the inference that participants were indeed making confused mistakes when responding to the matching task for the environmental scenario, rather than expressing their true preferences. For example, one typical participant wrote: "This was confusing to me. I would pretty much always take better air quality over a financial incentive. I wasn't clear whether this would mean putting a high value on the rebate option now or in the future." Our interpretation is that it is difficult for participants to pull dollar values "out of the air", and while this is somewhat manageable when participants only have to think about different amounts of money at different times, it becomes extremely difficult to do when participants have to consider tradeoffs between air quality and money at different points in time. Therefore, although 38% of the participants in our matching sample (44% in the gain scenario, and 33% in the loss scenario) showed negative discount rates, we believe that these were nearly all errors in responding. Further support for this interpretation comes from looking at the correlations between participants' discount rates for financial and environmental outcomes; while multiple staircase showed some consistency between domains, rho = .47, $n = 80$, $p < .001$, and titration

did as well, rho = .24, $n = 82$, $p < .05$, matching answers were uncorrelated, rho = -.01, $n = 154$, $p > .5$.

There were no significant correlations between age of the participant and discount rates for air quality (all $p > .1$), with one exception: age was negatively correlated with discount rates in the air quality loss condition, Spearman's $r(83) = -.29$, $p < .01$. This may indicate that older individuals were more likely to show the "confused" pattern of responses when faced with the (admittedly confusing) air quality matching loss scenario.