(Im)patience by Proxy:
Making Intertemporal Decisions for Others

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Abstract:
Decisions with consequences that play out over time are ubiquitous in business, policy, and family relations, and frequently the agent making such a decision is not the one who bears the consequences. We use a lab experiment to examine whether individuals make different intertemporal decisions for others of varying social distance than for themselves. Subjects make a series of intertemporal work time allocation decisions for themselves and for another individual, either a friend or a stranger. We find that if they do not receive information about the decision recipient, people choose more impatiently (moving more disutility cost into the future) for others than for themselves. In other words, a decision made for you by an uninformed proxy is more impatient than a decision you would make for yourself and thus is probably suboptimal. This result contrasts with some of the literature, a divergence that may be because most of those studies are in the benefit domain while ours is in the cost domain and because (as we find in a separate survey) people perceive procrastination as qualitatively different from other discounting decisions. We provide evidence that this bias in proxy decisions exists because benevolent decision-makers believe their decision recipients to be more impatient than they actually are. First, survey evidence suggests that uninformed individuals believe that they are more patient than other subjects. Second, when the decision-maker sees information about how patient the recipient believes herself to be, this impatience bias disappears if the recipient is a friend. Taken together, our results show that given limited information, proxy decision-makers choose more impatiently than principals would prefer, but information can mitigate this suboptimal choice if social distance is low. Our results also suggest that intertemporal choice may not be behaviorally the same over time as over money.

JEL codes: D03, D90, D64, C91
Keywords: proxy decision-making, intertemporal choice, laboratory experiment

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1. Introduction

Many decisions have consequences that play out over time, and frequently the agent making decisions is not the one who bears the consequences. For example, a manager planning a team's work on a project must set intermediate deadlines. The manager may choose deadlines with a goal of smoothing work over time but may cater to the taste for procrastination she believes her employees have. The manager might make choices that match the employee's tastes or that correct for some behavioral bias (e.g., present bias) she believes the employee has by allocating tasks more patiently than the employee would do. Her choice may be suboptimal, however, if she fails to understand his preferences.

Proxy intertemporal allocation scenarios arise not only in labor management but also in policy (e.g., investment in climate change adaptation), non-profits (e.g., spending on capacity-building versus immediate service provision), and families (e.g., financial or health decisions for an elder or disabled relative). However, little is known about how people make proxy decisions when time is an important element of the decision. To address this gap, we use a laboratory experiment to study how a person's intertemporal choices differ when she chooses for another person as compared to for herself. To study why differences arise, we vary social distance between decision-maker and recipient and we vary whether information about the recipient is available to the decision-maker. Our experiment lets us control the incentives and structure the decision problem to isolate the proxy element of the decision by ensuring the choice affects only the decision-maker or only the decision recipient.

Our study contributes to the literature by comparing intertemporal decisions people make for themselves with those they make for other people. Ours is the first study to examine such

decisions for both friends and strangers. Since different degrees of psychological distance have different policy applications, both are interesting, and they may differ because of different levels of familiarity and perhaps emotional involvement. Additionally, previous studies have mostly examined decisions over benefits (cash or snacks) today versus in the future while we examine costs, specifically work time, today versus in the future. Many policy contexts involve tradeoffs of costs over time (e.g., workers' time allocation, climate change-related investments). Theory is silent on whether people should behave symmetrically in proxy decisions over costs versus benefits, and whether people should treat effort and money similarly over time. The literature has generally assumed both are true, but we provide evidence to the contrary.

We use a laboratory experiment for which subjects are recruited in friend pairs. Each subject makes a set of intertemporal choices for herself and a set for another subject. We use a 2x2 across subject design. On one dimension, we vary psychological distance: the intertemporal choices for others are either for the friend with whom the subject came to the experiment or for an anonymous stranger. On the other dimension, we vary information provision: either the decision-maker receives no information about the recipient or she is told how patient the recipient has said he is. Each intertemporal choice allocates time to be worked (at a tedious task) between the present and a session six weeks in the future, similar to Augenblick *et al*. (2015). The decisions are over work time instead of money, thus reflecting time preferences over costs instead of benefits, to minimize noise from out-of-lab transfers between friends.

We find decisions are responsive to the cost of impatience, but, consistent with either discounting or convexity of effort cost, the great majority do not simply minimize time worked. Further, with no information about the recipient's preferences, individuals choose more impatiently (delaying costs more) for others than for themselves. Since this pattern is systematic

and is unlikely to reflect intentional paternalism, it reduces welfare. We find suggestive evidence that this increased impatience for others is larger for strangers than friends. In an unincentivized survey, we find that uninformed subjects think others are less patient than they are, on average, which means their belief about others' patience must be biased. Indeed, when the decision-maker sees information about how patient the recipient says he is before she makes her allocation decision, this stated belief that others are less patient disappears and there are no significant differences between decisions for self and others. In particular, the point estimate of the bias for friends goes to zero, while that for strangers just becomes very noisy. These results together imply people are trying to be benevolent (rather than paternalistic) in the sense of choosing what they think others would choose for themselves, but (wrongly) believe others are more impatient than they themselves are. This lends support to the interpretation that the greater impatience for others is driven by benevolence with incorrect beliefs. Together, our results suggest that well-intending proxy decision-makers may make insufficient near-term investments and leave their wards vulnerable to undesirable future costs, but that policies aimed at increasing information could be welfare enhancing, although social distance seems to interfere with the effect of information. As our results differ from some in the literature, we also provide survey evidence that people view task procrastination as different from other intertemporal decisions; this implies that more behavioral research must be done to develop new models of procrastination.

2. Literature Review

Previous research indicates that individuals choose differently for others than for themselves in some cases (e.g., Stone *et al*., 2013), but not in others (e.g., Stone *et al*., 2002), and social distance may alter proxy decision-making (Montinari and Rancan, 2018), perhaps because

the decision-maker mis-estimates the recipient's feelings.[1] When self-other discrepancies occur, it may be because decision-makers fail to correctly predict others' preferences (e.g., Hsee and Weber, 1997), or because of other psychological phenomena such as a desire to conform to social values (Stone *et al*., 2013).

Intertemporal choice has been studied extensively (as surveyed in Cohen *et al.*, 2016; Frederick *et al.*, 2002), in contexts both of delaying receipt of tangible costs and benefits and of procrastinating tasks (e.g., Frakes and Wasserman, 2016), both of which have been modeled as discounting decisions; see, for example, Fischer (2001). It has also been noted, as in Akerlof (1991), that people may make suboptimal intertemporal choices for themselves, resulting in welfare loss. However, intertemporal decisions by proxy have received little attention.

In a study quite related to ours, Albrecht *et al*. (2011) do neuroimaging on subjects making intertemporal choices over cash for herself and an anonymous other person. They find (mixed) evidence that people choose more patiently for others than for themselves. They also find that while impatient people show neural activity indicating emotion and reward processes when choosing for themselves, this activity does not appear when people choose on behalf of others, which might imply that the emotions associated with impatience only drive decisions for oneself. Another study that is quite related to ours is Kölle and Wenner (2019), who find less present bias in intertemporal work task allocation decisions made for another person than in such decisions made for oneself or for intertemporal allocations between self and other, though they find no reliable difference in the discount factor. Pronin et al. (2008) find that people make more patient decisions over money for other people of varying social distances[2] than for themselves.

[1] Delegation is a related topic; e.g., Hamman *et al*. (2010) find that when principals can delegate a dictator game decision, they choose agents who will give away less of the principal's money than the principal herself would.
[2] Pronin et al. (2008) use a series of scenarios to show a person treats her own future self like she treats others' present selves, to make the point that temporal distance and social distance function similarly in decision-making.

Howard (2013) finds that people discount money less when choosing for a charity (i.e., are less impatient when acting as a proxy for a charity) as compared to for themselves.[3] Similarly, Lusk *et al.* (2013) find that people sometimes choose a healthier snack for others than for themselves, which might indicate that proxy decision-making involves paternalism. On the other hand, in intertemporal decisions over money, Rong *et al.* (2018) and Rong *et al.* (2019) find no differences in patience for decisions for others as compared to those for oneself when the other is a spouse or a stranger, respectively. Our results run counter to many of these results about intertemporal choice for others. Ours is one of the few studies that use costs, rather than benefits, and ours is one of few that involves decisions made over something other than money (in our case, time worked), and these differences could explain our different results. This explanation is supported by the result from Ellingsen and Johannesson (2009) that people treat time and money costs differently. Our result that people think they are more patient than other people is consistent with the findings of Deck and Jahedi (2015) and Fedyk (2017).

3. Experiment Design and Implementation

We next describe our experimental design and implementation before moving on to the theoretical framework and hypotheses.

3.1 Design

Subjects participate in an individual and paired choice experiment that consists of two sessions. The experiment procedure for the baseline No Information Condition is shown in Figure 1. We will call the first session "now" or "the present" and the second session, which

[3] Richards and Green (2015) find in non-proxy choices that subjects discount environmental goods less than money. A social discount rate might be more relevant in some environmental settings than an individual discount rate, and social discount rates may involve other considerations (Arrow *et al.*, 2013).

occurs six weeks later, "later" or the "return session." On recruitment, subjects are told they must commit to coming to both sessions and must bring a friend[4] who can also thus commit, and that the first session will take up to 2 hours and the return session will take up to 4.5 hours. (See Online Appendix A for subject instructions and Online Appendix G for invitation emails.)

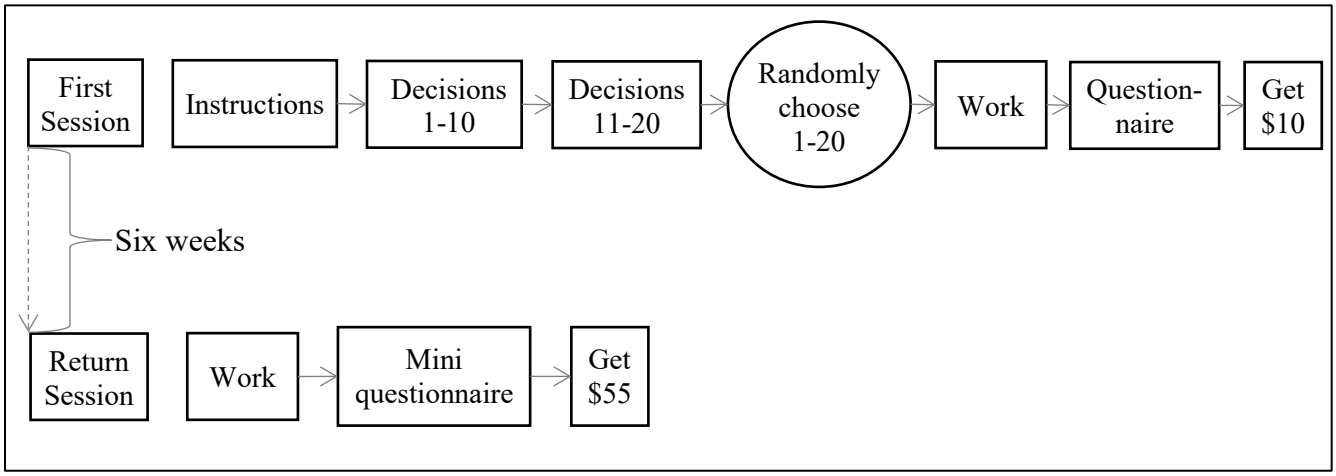


Figure 1: Experiment Procedure

When subjects arrive for the first session, each friend pair is split: one is seated at a computer on one side of the lab, and the other at a computer on the opposite side of the lab. The experiment proceeds on the computer. Instructions appear on the screens and are read aloud by the experimenter. Subjects are reminded that they must come back for the return session in six weeks to claim their full payment; as we show later, nearly all do return. Subjects proceed through example decisions and example work tasks, and then they make decisions: ten decisions for themselves and ten for another person with whom they are reciprocally matched (so subject A chooses for subject B and B chooses for A). In half of the sessions, the other person a subject is deciding for is the friend she came to the session with; in the other half, it is a stranger—another unidentified subject from this session. Friend pairings were necessarily reciprocal, so to

[4] Our results do not vary by whether the subject was the originally-invited subject or was brought as a friend.

make treatments as similar as possible, we made stranger pairings reciprocal as well. Subjects learn whether they will make decisions for their friend or a stranger at the start of the session. The decision block order is varied: in half of the sessions, a subject makes her first ten decisions for herself and her second set for the other person; in the other half of the sessions, the decision blocks are reversed. Thus, there are four session types in the No Information Condition: Friend versus Stranger decisions crossed with Self-First versus Other-First order.

The procedures in the Information Condition are identical to those in the baseline except that subjects complete a very short (three-question) survey before reading experiment instructions. In this survey, they provide demographic information and state how patient they think they are. Each subject sees information about the self-reported patience of the subject for whom she is choosing immediately before she makes allocation choices for her recipient.[5] Thus, we have a total of eight treatments, four each (Friend/Stranger x Self/Other First) in the No Information Condition (with no information about the preferences of the "other") and the Information Condition (with information about the preferences of the "other").

In each decision, the subject must allocate time to work between now and later (six weeks from now). The work to be done is the same in each period: subjects must transcribe passages of text (see Figure 2). Payment does not depend on how many passages are transcribed; subjects can complete zero passages but must sit at their desks with no sources of amusement. Copy-and-paste is not possible. The software checks each transcription and rejects it if it is imperfect. The transcription task requires attention to detail because passages are relatively long and even misplaced spaces or punctuation cause the transcription to be rejected. It is not inherently

[5] Before they answered these self-report questions, subjects were not informed how this information would be used, so had incentive to strategically answer. It is common in experimental economics to use behavior or responses for a purpose later in the experiment without telling the subjects in advance; an example is Gächter and Thöni (2005).

interesting because the passages describe minutiae relating to a commission responsible for construction and maintenance of Oregon's roads and highways, and it is also obviously pointless so subjects will not believe they are helping anyone with their work. We chose to have subjects do pointless work to ensure that there was some disutility to the time spent working, so subjects would have a uniform expectation of the experience other subjects would have during the task, and to render the artificial experience slightly more natural than simply sitting at the desk with no ability to do anything.

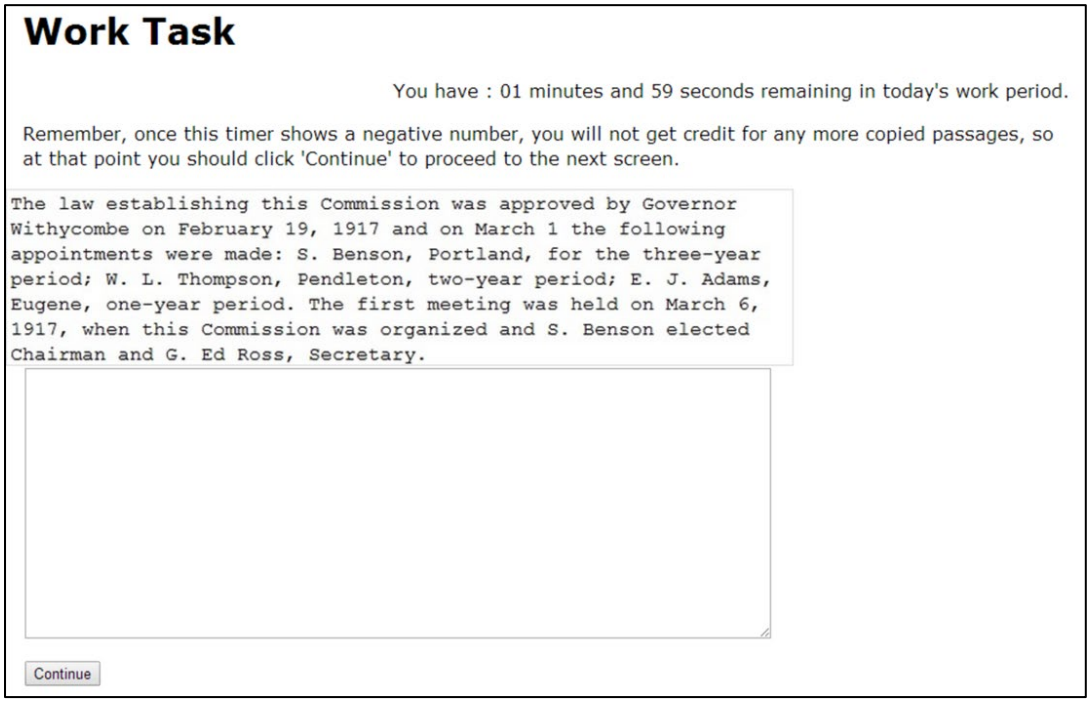


Figure 2: Text Transcription Task

Each of the ten decisions in a block uses a different "minute rate"—i.e., a different rate at which minutes worked now can substitute for minutes later. If the minute rate is *R*, minutes now is m_N, and minutes later is m_L, it is always true that:

$$m_N + \frac{m_L}{R} = 60 \tag{1}$$

Subjects specify the number of minutes to work now for each of ten minute rates, similar to the "task rates" in Augenblick *et al*. (2015). The set of decisions is shown in Figure 3. Note that each row varies the exchange rate between present and future minutes. There is a rate of equal "prices" (1 minute now:1 minute later), two rates that make working in the future more favorable (1:0.5 and 1:0.75), and seven rates that make working in the present more favorable (1:1.25 to 4). This continuous allocation across the two time periods is derived from the convex time budget of Andreoni and Sprenger (2012). The default number of minutes now in each decision cell is zero, but the software requires subjects to click "Calculate" on each row before they can proceed even if they want to choose zero minutes now. Subjects may make as many changes to each "minutes now" as they like before clicking to submit their choices.

Decision #	Minute Rate	Minutes Now		Minutes in Six Weeks
1	1:0.5	30	Calculate	15 (0 hrs 15 mins)
2	1:0.75	10	Calculate	37.5 (0 hrs 37.5 mins)
3	1:1	45	Calculate	15 (0 hrs 15 mins)
4	1:1.25	20	Calculate	50 (0 hrs 50 mins)
5	1:1.5	10	Calculate	75 (1 hrs 15 mins)
6	1:2	55	Calculate	10 (0 hrs 10 mins)
7	1:2.5	20	Calculate	100 (1 hrs 40 mins)
8	1:3	35	Calculate	75 (1 hrs 15 mins)
9	1:3.5	40	Calculate	70 (1 hrs 10 mins)
10	1:4	5	Calculate	220 (3 hrs 40 mins)

Submit

Figure 3: Time Allocation Decisions

We designed the experiment with fixed money payments and intertemporal decisions that allocate work time rather than using decisions over money as is often done in the literature (Frederick *et al*., 2002 survey relevant literature). We did this because choices in our study are interpersonal and, for friends, are not anonymous. If subjects were compensated with money, then they could to compensate each other after the session if one made a decision the other did

not like. If subjects think they can compensate their partners, this could affect their choices—for example, they might always choose the option that provides more money overall. Such compensation is less likely with work time. As discussed in Augenblick *et al*. (2015) and Cohen *et al.* (2016), time allocation may also avoid other confounds, though it is subject to its own set of issues. Further, many of the contexts with which we are concerned (e.g., labor management) involve tradeoffs of costs rather than benefits over time; if intertemporal choice varies by context, these contexts deserve attention. Also, we have our subjects choose time to work rather than number of tasks as in Augenblick *et al*. (2015) because in the proxy decision-making context subjects' heterogeneous expectations of others' productivity could add noise or bias.

After subjects make all twenty decisions, one decision is randomly chosen (using a bingo cage) to be implemented for all subjects in the session. This determines how many minutes each subject must work now and how many in six weeks. Since the same decision is implemented for all subjects in the session, it will never be the case that a subject's choices for herself and her partner are both implemented; either all subjects must work according to their own choices, or all must work according to their partners' choices. This makes it impossible for a subject to coordinate when she and her friend will leave the lab. Subjects then complete their current-day work time and a questionnaire and are paid $10. Since payment does not depend on number of passages transcribed, it is possible for subjects to not work during their work periods; however, they are not allowed to do anything else (including use cell phones) during the allocated time. As we show in Section 5.1, nearly all subjects in our study worked during their allocated time. Regardless of whether any work time was allocated to the six-weeks-later return session, each subject is contacted five weeks after the first session to schedule a time to return. In the return session, subjects' identities are verified to ensure that subjects do not ask someone else to work

for them. Subjects then work for the allocated time if necessary, answer a brief questionnaire, and receive $55. This large payment is designed to ensure that subjects return. Since all subjects must return for the second session, there is no incentive to allocate all work time to the present to avoid the transaction costs of returning, nor to allocate it all to the future to avoid doing it altogether.

3.2 Implementation

The authors programmed the experiment in an HTML interface that used PHP to communicate with a MySQL database. We recruited subjects using ORSEE (Greiner, 2015). The experiment sessions were conducted at the Cleve E. Willis Experimental Economics Laboratory at University of Massachusetts Amherst in fall 2014 (the No Information Condition) and spring 2016 (the Information Condition). Table 1 shows the distribution of subjects across treatments. Note that data for four subjects in the Information Condition were unusable because of a software error. There was very little attrition from the initial to the return session: only three of the 220 subjects failed to return for the second session.

Table 1: Subject Counts in Experiment Treatments

	No Information	Information
Friend	Self first $N = 28$	Self first $N = 24$ (22 usable)
	Other first $N = 26$	Other first $N = 32$ (31 usable)
	Pooled $N = 54$	Pooled $N = 56$ (53 usable)
Stranger	Self first $N = 30$	Self first $N = 26$
	Other first $N = 26$	Other first $N = 28$ (27 usable)
	Pooled $N = 56$	Pooled $N = 54$ (53 usable)

Table 2 shows subject demographics across the four treatments. While the No Information and Information Conditions have somewhat different subject characteristics, which is not surprising since they were conducted at different times of the year, within either condition, subjects look quite similar across the Friend and Stranger treatments. Detailed balance tests are

in Online Appendix D Tables D-1 and D-2. Subjects tended to be of the same declared gender as the friend they came to the experiment with: 72% of all pairs were single-gender.

Table 2: Subject Demographics by Treatment

	Friend - No Information	Stranger - No Information	Friend - Information	Stranger - Information
Age	19.41	19.91	20.36	20.02
	(1.24)	(1.44)	(1.43)	(1.17)
Percent female	38.89	32.73	62.50	44.44
	(49.21)	(47.35)	(48.85)	(50.16)
Percent white	70.37	73.21	76.79	68.52
	(46.09)	(44.69)	(42.60)	(46.88)
Percent Asian	25.93	23.21	19.64	18.52
	(44.23)	(42.60)	(40.09)	(39.21)
Number of economics classes taken	0.52	0.61	0.75	0.74
	(0.50)	(0.49)	(0.44)	(0.44)
Percent who had been in an economics experiment before	27.78	19.64	48.21	42.59
	(45.21)	(40.09)	(50.42)	(49.91)
N	54	56	56	54

Standard deviations in parentheses. Numbers represent means except where noted.

4. Theoretical Framework

We present a simple theoretical framework that incorporates exponential discounting, convex effort costs, and social preferences. We are agnostic about whether intertemporal utility reflects exponential discounting, hyperbolic discounting, or both: we focus on whether intertemporal choice (through whatever mechanism) differs between choices for self and those for others. We thus did not design an experiment that would separately identify present bias. We refer to exponential discounting in our descriptive model for simplicity. We use words like "patience" to represent overall intertemporal preferences. Further, our conception of discounting of the future, as is standard in literature like Gollier (2002), comprises both pure time preferences and other factors, such as expected future opportunity cost.

Our decision-maker has an intra-temporal utility function in which time worked gives disutility, and an intertemporal utility function that discounts future values. Work disutility

increases convexly with time worked in each period, m_N and m_L. Intertemporal allocation of work, i.e., procrastination, is typically modeled in the literature like other intertemporal decisions with models in which the future is discounted relative to the present, as in Fischer (2001). As we show in the Discussion section, we find evidence that people do not perceive procrastination to reflect impatience but rather a lack of responsibility, so a different model may be appropriate for procrastination. However, we use the standard model here to set benchmark predictions.

We write the intertemporal effort cost function that the agent seeks to minimize as:[6]

$$C = m_N^{\gamma} + \delta^t m_L^{\gamma} \quad (2)$$

where t is the time between the decision and the later work period, γ is the convexity of the effort cost function (where $\gamma \geq 1$), and δ is the discount factor (where $\delta > 0$). Opportunity cost that is constant across periods would be part of effort cost, but an expected larger future opportunity cost, or perhaps an uncertain future opportunity cost, would give rise to a larger discount factor, one that could even be greater than 1.

If a person's $\delta = 1$, she weights the present and future equally; $\delta < 1$ indicates an impatient person (a person who discounts the future) and $\delta > 1$ indicates a very patient person who prefers disutility sooner rather than later. If a person's $\gamma = 1$, effort is not strictly convex; she has a constant marginal rate of substitution of $-1/\delta^t$ and prefers corner solutions (work only now or only later). If she also views the two time periods as perfect substitutes ($\delta = 1$), she will simply choose to minimize total time worked $m_N + m_L$. For some people, time t and work times m_N and m_L are so small that even with some curvature these corner solutions will be optimal.

[6] This model assumes exponential discounting, as in Samuelson (1937). Hyperbolic discounting as in O'Donoghue and Rabin (2001) would give a cost function like $C = (m_N)^{\gamma} + \beta\delta^t(m_L)^{\gamma}$. This would have the same implications for us since our design does not separately identify discounting and present bias. Disutility of visiting the lab could also be incorporated but is omitted for simplicity, as it is constant across both dates.

Assume first the decision-maker is choosing a time allocation for herself (i.e., that she bears the consequences of her decision). The constraint in equation (1) is binding, so if $\gamma > 1$, the first order conditions[7] yield the following:

$$m_N^{\gamma-1} = R\delta^t m_L^{\gamma-1} \quad (3)$$

Recall that *R* is the number of minutes worked later for each minute not worked now out of a maximum of 60 minutes now. From equation (3), we can see that a larger *R* (price of impatience) will result in a time choice more tilted toward m_N and away from m_L, but at a decreasing rate, as m_N/m_L is proportional to $R^{\frac{1}{\gamma-1}}$. This will also be the case as δ gets bigger (as it does for more patient individuals), while the allocation will be more tilted toward m_L as δ gets smaller (approaches 0, which it does for more impatient individuals).

Using the constraint in (1) and the tangency condition in (3), the optimal m_N is:

$$m_N = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}} \quad (4)$$

From (4), when $\gamma > 1$, $\frac{\partial m_N}{\partial R} > 0$: individuals prefer to work more now when the cost of delaying is higher, which is our first hypothesis:

Hypothesis 1 (Monotonicity): As the minute rate increases, people allocate more work time to the present.

Also, $\frac{\partial m_N}{\partial \delta} > 0$ when $\gamma > 1$, so that patient individuals work more now while impatient people (δ closer to 0) work more in the future. In other words, impatient individuals prefer to get

[7] All mathematical derivations are in Online Appendix B. All results assume decision-makers are fully rational and know future opportunity costs. We screen for the latter in recruitment to some extent, as on sign-up subjects know they will have to return six weeks after the first session. If they are not fully rational, noise is most likely to be mean zero. If they are uncertain and risk averse about future opportunity costs, they will allocate more time to present; if they are more uncertain for others and particularly for those who are more socially distant, then their allocations will look increasingly patient as social distance increases, which is the opposite of the pattern we observe.

their outcome later; while this may appear backward relative to other time preference studies, that's because most of those are conducted in benefits (which impatient people prefer to get sooner) and ours is in costs (which they prefer to defer).

Equation (4) also implies that for $R > 1$, $\frac{\partial^2 m_N}{\partial R^2} < 0$, so response to minute rate is concave, and that $\lim_{R\to\infty} m_N = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}} = 60$. Since $m_N = 0$ if $R = 0$ and as shown above $\frac{\partial m_N}{\partial \delta} > 0$, if a person has $\gamma > 1$, for every $\varepsilon > 0$ there is a minute rate R^{ε} above which she will allocate less than ε minutes of work time to the future because it is too costly. As minute rate increases, in a population with varying γ and δ, more people find themselves above this threshold. This gives us our next hypothesis:

Hypothesis 2 (Convergence): Across a population, the allocation of minutes to the present converges as the minute rate approaches either 0 or infinity; any variation in the population is largest at moderate minute rates.

We next consider what differs when a person chooses time allocations for another person instead of for herself. We assume that the decision-maker does not bear differential costs for any allocation. We present four alternative hypotheses for intertemporal choice by proxy. If the decision-maker is indifferent, the recipient's utility or outcomes do not enter into her utility function. If she is malevolent, the recipient's welfare decreases the decision-maker's utility. If she is simply benevolent, her preferences are increasing in recipient *i*'s utility, so she will minimize *i*'s costs based on her beliefs about *i*'s utility function:

$$C = m_N^{\gamma} + \delta_i^t m_L^{\gamma} \tag{5}$$

However, a benevolent decision-maker may have correct or incorrect beliefs. We assume discount factor δ varies across people *i* but effort cost convexity γ does not. This is justified by

two of our main experiment results: that without information, subjects describe other subjects as less *patient* than they describe themselves, and that information about self-reported *patience* reduces the bias we observe in excessively impatient intertemporal choice (at least for friends).

Finally, if the decision-maker is paternalistic, she thinks he procrastinates too much, and will choose an allocation that is more patient than he would choose for himself.

Hypothesis 3A (Indifference): Proxy intertemporal allocation decisions are at the default allocations, or, if there are no defaults, are random.

Hypothesis 3B (Malevolence): Proxy intertemporal allocation decisions maximize effort disutility, so that minutes now is negative monotonic in the minute rate.

Hypothesis 3C (Accurate Benevolence): Proxy intertemporal allocation decisions have a similar pattern (satisfying Hypotheses 1 and 2) to decisions agents make for themselves and are statistically indistinguishable from them.

Hypothesis 3D (Inaccurate Benevolence): Proxy intertemporal allocation decisions have a similar pattern (satisfying Hypotheses 1 and 2) to decisions agents make for themselves but are on average more patient or more impatient. Further, any inaccuracy is corrected by information.

Hypothesis 3E (Paternalism): Proxy intertemporal allocation decisions have a similar pattern (satisfying Hypotheses 1 and 2) to decisions agents make for themselves and are more patient on average. This patience bias is not corrected by information.

We do not present formal hypotheses about differences between choices for friends or strangers, but we conjecture that differences in knowledge of the other's preferences or differences in emotional engagement might drive choices for friends to be more like choices people make themselves.

5. Results

We next present our results. We analyze all twenty decisions from each subject. While we focus primarily on decisions at each minute rate, we find the same qualitative results if we instead perform a coarser analysis using total number of minutes allocated to the present, summed across all minute rates, as shown in Online Appendix D Tables D-3 through 6.

We begin by confirming that individuals exert substantial effort in both work periods, a condition which must be met for our cost framework to be relevant. We then discuss how decisions vary by minute rate (the price of impatience) and give evidence in support of monotonicity (Hypothesis 1) and convergence (Hypothesis 2). Next, we examine intertemporal allocations made for self and by proxy when no information is provided, rejecting indifference (Hypothesis 3A) and malevolence (Hypothesis 3B) as motivations. Finally, we discuss subjects' perceptions of their own and others' patience and the impact of information on decisions made for others, rejecting paternalism (Hypothesis 3E) in favor of benevolence, and rejecting correct beliefs about others' patience (Hypothesis 3C) in favor of incorrect beliefs about others' patience (Hypothesis 3D). There are no substantial order effects so we pool orders for all analysis; see Online Appendix C for detailed analysis of order effects and cross-task spillovers.

5.1 Are Subjects Exerting Effort?

Subjects actively made work time allocations: less than one percent (only one of 220) of subjects selected the default allocation (zero minutes now) for all time allocation choices, and only one percent (three of 220) did so for others (all of which were in the Stranger treatment).

Recall that one of the 20 work time allocations was randomly chosen for implementation. For subjects' implemented decisions, 8% (18 of 220) of choices were for zero time to work on the first day, and 36% (80) were for zero work time on the return session. Figure 4 shows the

distributions of transcriptions per minute for those with non-zero work times. Most subjects exert significant effort: of subjects with non-zero time to work, only 2% (five of 202) completed zero transcriptions on the first day and only 11% (15 of 140) completed zero in the return session. Subjects with time to work completed 0.35 transcriptions per minute on average in the first session and 0.31 in the return session. The number of transcriptions per minute does not differ significantly based on whether the subject's own or her partner's decision was implemented (ranksum $p = 0.148$ for the first day and 0.221 for the second day). While some subjects completed a low number of transcriptions given their work time, particularly on the return day, what matters for our analysis is that when subjects made work time allocations in the first session they believed that their decisions would commit time to be spent in a way that provides some disutility. This was ensured, as subjects were monitored so they could do nothing other than the work task. Survey responses confirm the unpleasantness of the task.

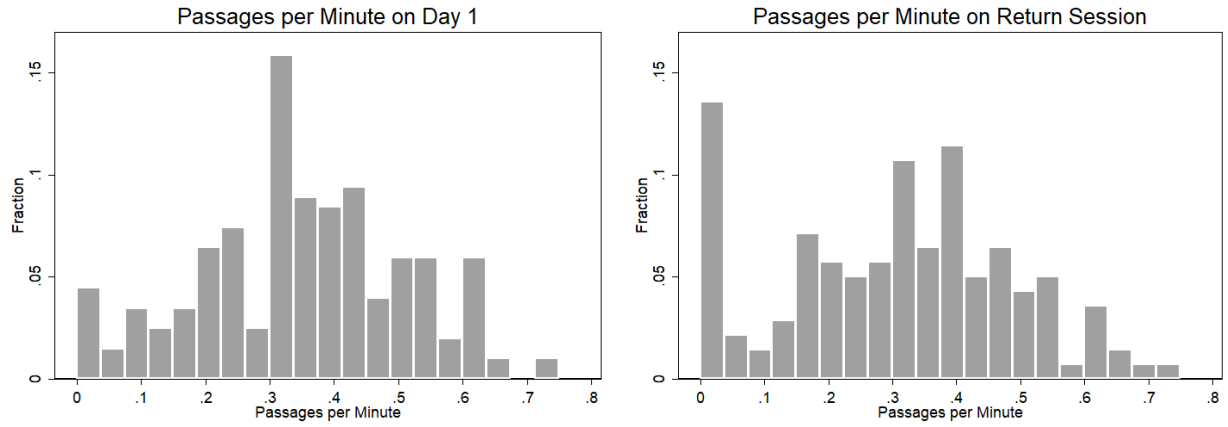
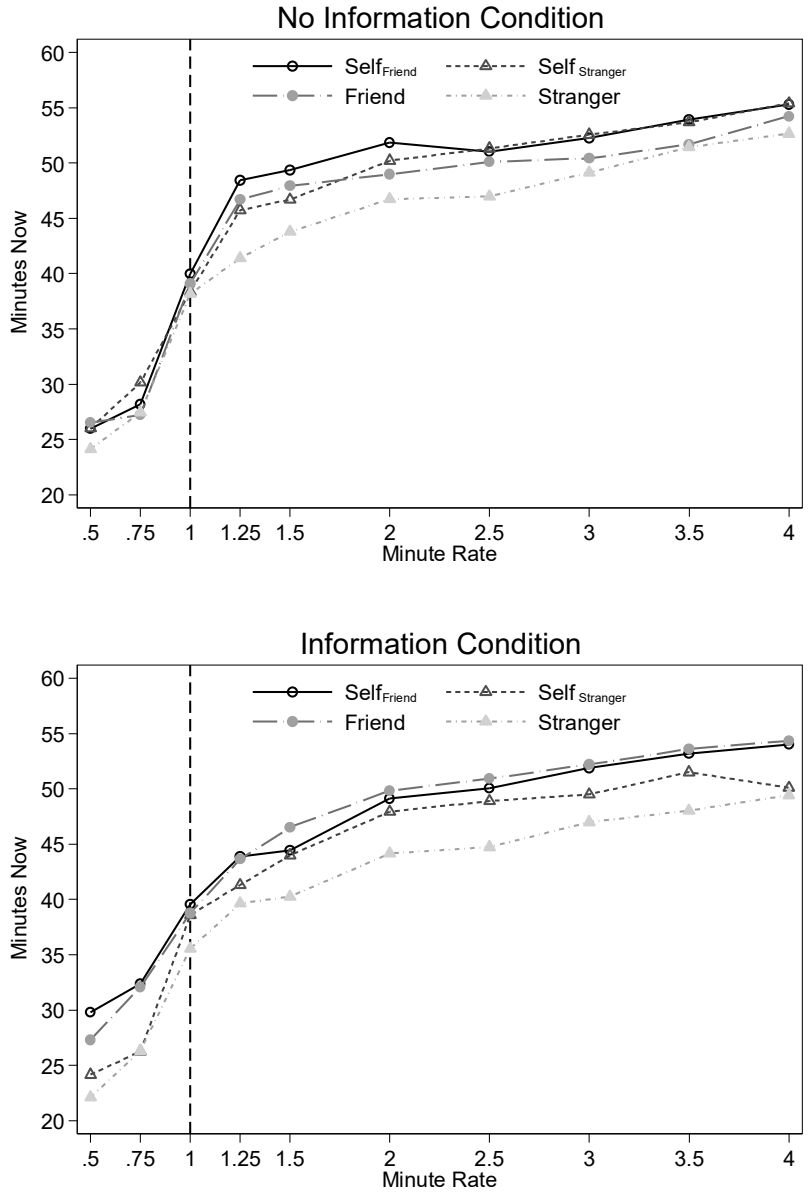


Figure 4. Passages Transcribed per Minute

5.2 How the Price of Impatience Affects Decisions for Self and by Proxy

Our first two hypotheses address how work time choices respond to the relative price of impatience, which is captured by the minute rate. We begin by examining the decision data, which are shown in Figure 5 for both the No Information and Information Conditions.



Notes: "Minutes Now" is minutes allocated to work now; a larger number indicates more patience. "Minute Rate" is *R*, the rate at which a minute worked now reduces minutes to work in the future; a larger number indicates that impatience is more costly. $\text{Self}_{\text{Friend}}$ refers to choices made for self in the treatment in which the "other" choice is for a friend; $\text{Self}_{\text{Stranger}}$ are choices for self in the treatment in which the "other" choice is for a stranger.

Figure 5: Time Allocation Choices by Treatment and Information Condition

The horizontal axis shows minute rate *R*: the number of minutes worked later for every minute not worked today. The vertical axis shows the average number of minutes worked now, m_N, for each type of decision and minute rate. The vertical dotted line at minute rate of one indicates the threshold between rates for which it is more costly in terms of total minutes worked

to work in the present (to the left of the line) versus the future (to the right of the line). A decision is more "patient" if more of the cost, or minutes worked, is allocated to the present ("minutes now"). $\text{Self}_{\text{Friend}}$ and $\text{Self}_{\text{Stranger}}$ indicate the decisions made for oneself in either Friend or Stranger treatment, respectively. Friend and Stranger indicate the decisions made for others in the Friend and Stranger treatment, respectively.

In both panels of Figure 5, the average m_N increases monotonically with the minute rate, indicating that individuals are responsive to price, and it appears to be concave as predicted for $R > 1$. These patterns hold for choices made for others as well as for self, indicating that choices made for others are not made at random (as they might be if proxy decision-makers were indifferent about their recipients).

At the individual level, choices are weakly monotonic for 71% (78 of 110) subjects in the No Information Condition and for 66% (73 of 110) subjects in the Information Condition. This can be compared to the monotonicity rate of 84% of Augenblick et al. (2015) with regard to interest rates in a similar task. Andreoni and Sprenger (2012) only report the monotonicity for one decision setting, and it is 92% over five similar decisions; if monotonicity reversal rates are uniform on a per-decision basis, that would yield 84% monotonicity over ten decisions. Thus, our subjects are slightly less monotonic than other studies have found. This may be due to differences across samples or to our slightly less sophisticated user interface. The tendency to choose monotonically in both Conditions is associated with being male, white, having taken fewer economics classes, and in some specifications being older, having more experience in economics experiments, self-reporting less patience, and being perceived as more patient (regressions shown in Online Appendix D Tables D-7 and D-8).

This provides mixed support for our first hypothesis, summarized in our first result.

Result 1 (Monotonicity). On aggregate, work time decisions monotonically respond to the minute rate. At the individual level, the majority of (but not all) individuals respond monotonically to the minute rate.

Further, 66% (73 of the 110) subjects in the No Information Condition and 53% (58 of 110) in the Information Condition have a threshold minute rate above which they always choose 60 minutes now, as theory predicts.

Note that, in our model, subjects would choose $m_N = 30$ at $R = 1$ with no discounting and fewer minutes allocated to the present as discounting increases. Figure 5 shows that subjects choose more than 30 minutes now at $R = 1$. This implies a discount factor greater than one, which could result from expectations or uncertainties regarding future opportunity costs.

Subjects make the same set of choices for the other subject as for themselves 38% of the time in the No Information Condition and only 25% of the time in the Information Condition (these differ: Wilcoxon signrank $p = 0.046$). Regressions in Online Appendix D Table D-9 show that subjects who identify as white and who have been in more past experiments are in some treatments more likely to choose the same pattern for their recipient as for themselves. The aggregate data in Figure 5 suggest some separation between choices made for oneself and for others, particularly strangers, at these moderate minute rates in the absence of information. This observation is borne out in statistical tests (see Online Appendix D Table D-13). Individuals allocate significantly less time to the present for strangers than for themselves for minute rates from 1.25 to 3. The separation is on the order of 3 or 4 minutes, or 6 to 10 percent of the time chosen for self. The time allocation to the present is also less for friends than for self, but this difference is only marginally significant for minute rates 2 and 3, and significant for 3.5, and is smaller in value, 2 to 3 minutes (4 to 6 percent of the time for self). While there appears to be a

consistent ordering whereby Friend decisions are more like decisions for oneself than are Stranger decisions, Friend and Stranger decisions are not statistically significant from each other.

The converse of this divergence at moderate minute rates is convergence at the extreme minute rates. Figure 5 shows that decisions for self are indistinguishable from proxy decisions at the extreme minute rates for each treatment and information condition. As we show in tests in Online Appendix D Table D-13, in no case are there statistically significant differences between time allocation decisions at the lowest minute rates (0.5, 0.75, and 1) nor at the highest minute rate (4). This provides support for our second hypothesis and leads to our second result.

Result 2 (Convergence). Differences in aggregate decisions for self as compared to other are only significant at intermediate minute rates for each treatment and information condition, indicating convergence at extreme minute rates.

The responsiveness of individuals to the minute rate implies that in aggregate they do not view time worked in the two periods as perfect substitutes. In our model, if a person has both $\gamma = 1$ and $\delta = 1$, she will always minimize total minutes worked. Only 15% of subjects (32 of 220) always chose to minimize time worked for themselves (by choosing 0 minutes now when the minute rate favors work in the future and 60 minutes now when it favors work now), and only 12% of subjects (27 of 220) always chose to minimize time worked for their recipient.[8] An additional 20% of subjects (44 of 220) always chose the same value of minutes now for all minute rates for themselves, with that value being 60 (i.e., all time worked now and none in the future) in 82% (36) of those cases, while 18% (40 of 220) chose the same minutes now for all minute rates for their recipient, and 73% (29) of these were all 60. This is consistent with

[8] Regression results (in Online Appendix D Table D-10) indicate that participants who identify as men are more likely to minimize total time.

subjects being risk averse and uncertain about future opportunity cost.[9] The remaining majority of subjects make non-linear tradeoffs between present and future, either because they discount the future or because effort costs are convex (or both).

5.3 Proxy Decisions by an Uninformed Decision-Maker

We next examine differences between decisions for self and the proxy decisions for others when decision-makers receive no information.

We first note that, while there are differences between decisions for self and those by proxy, we can reject malevolence (Hypothesis 3B) as a driver of these differences, since no subjects ever chose a time allocation pattern across minute rates that would maximize the time their recipient had to work across minute rates (as none of them did for themselves).

We begin our analysis of self and proxy decisions by examining time allocation choices when the decision-maker receives no information. We show panel regression results in Table 3. Each observation corresponds to one decision by a subject for either herself or her recipient, resulting in a panel of twenty observations per subject. These fixed effects specifications are within-subject tests. Results are generally robust to specification as pooled OLS, Tobit, clustering errors on session, or to excluding individuals who did not choose a monotonic pattern, though in some demanding specifications the coefficient on Friend ceases to be significant, as we show in Online Appendix D Table D-3.

[9] In regressions (in Online Appendix D Tables D-11 and D-12), we find that in the No Information Condition, subjects who know their friends less well are more likely to choose a flat pattern across minute rates for their recipient. In the Information Condition, subjects who choose flat patterns for themselves have taken fewer economics classes and are older, and those who choose flat patterns for friends say that their friends are less patient.

Table 3: Regressions of Minutes Allocated to the Present on Treatment Variables, No Information Condition

	(1)	(2)	(3)
Other	-2.10***		
	(0.70)		
Friend		-1.35*	-1.35*
		(0.77)	(0.77)
Stranger		-2.83**	-2.83**
		(1.140)	(1.14)
Minute Rate	7.12***	7.12***	
	(0.54)	(0.54)	
Minute Rate (< 1)			-11.93***
			(1.67)
Minute Rate (> 1)			11.09***
			(1.23)
Constant	31.08***	31.08***	39.95***
	(1.14)	(1.14)	(0.93)
R^2	0.173	0.174	0.222
n (subjects)	110	110	110
N (observations)	2,200	2,200	2,200
Test: Friend = Stranger, *p*		0.283	0.284

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Fixed effects OLS panel regressions with robust standard errors clustered on subject in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Other is an indicator for proxy decisions; Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The Minute Rate (<1) and Minute Rate (>1) variables represent linear trends for minute rates that are respectively less than and greater than 1; the omitted category in Specification (3) is minute rate of 1. All specifications use 20 observations per subject: one for each decision at a different minute rate.

Specification 1 shows that subjects choose fewer minutes now (more impatiently) for other subjects than for themselves. This is our third result.

Result 3 (Proxy Decisions). When they receive no information about the recipient's patience, decision-makers choose more impatiently when making proxy decisions than they do for themselves.

The average choice a subject receives from his uninformed proxy decision-maker differs from the choice he makes for himself. Specification 1 also shows that the number of minutes chosen to work now is strongly responsive to minute rate when minute rate is represented as a

linear trend. This again shows that subjects respond to the cost of delay, ruling out indifference (Hypothesis 3A) as a potential motivation underlying proxy decisions.

Specification 2 begins to test the impact of social distance by separating the effect of choosing for friends and for strangers. Subjects choose marginally significantly fewer minutes now for friends and significantly fewer minutes now for strangers as compared to for themselves. While the point estimates for friends and strangers may appear different from each other, that difference is not statistically significant with this sample size. Specification 3 shows the results are robust to representing the minute rate as two linear trends (for minute rates less than and greater than one). (In Online Appendix D Table D-15, we show that results are robust to representing minute rates as a series of indicators.) Specification 3 is our preferred specification.

We have identified a gap between decisions for oneself and decisions for someone else (proxy decisions) at moderate minute rates when the decision-maker does not receive information about the recipient, and we have ruled out malevolence and indifference as potential motivations. The gap could thus be caused by either benevolence (accurate or inaccurate) or paternalism. We examine these potential motivations in the next section.

5.4 Why Do Decisions for Self and by Proxy Diverge: Benevolence or Paternalism?

We begin to distinguish benevolence from paternalism by examining the pattern of proxy decisions, the (un-incentivized) beliefs about the patience of oneself and others, and the Information Condition decisions.

Paternalism (Hypothesis 3E) is unlikely to be the motivation behind these proxy decisions because it would require paternalists to believe that people ought to behave even *more impatiently* than they would choose for themselves. To interrogate this possibility, we conduct an online survey, which we further detail in Section 6. In that survey, respondents identify a

procrastinating decision as being less responsible. As a paternalist is unlikely to recommend an irresponsible option, we conclude these too-impatient decisions are not paternalistic.

In the post-experiment questionnaire, subjects answered questions about how patient they and the friend they came to the experiment with are: "Do you think of [yourself / the friend you came to this experiment with] as a pretty patient person or a pretty impatient person?" Responses to this post-experiment patience question are, surprisingly, not significantly predictive of time allocation decisions for self or others in either the No Information or the Information Condition. We will return to this point in the Discussion. Subjects gave the same rating (on a three-point scale) for their friend's patience as the friend gave for their own patience 49.54% of the time. However, it is not clear whether these are mistaken guesses because it is not clear who is correct. On average, people think of themselves as pretty patient and of their friends as being less patient than they themselves are. Over half of subjects (59%, or 129 or 220) reported that they are "Pretty patient," and only 20% (45) said they were "Pretty Impatient." Since a large literature shows that people are impatient, one might be tempted to say this is self-delusion; however, our subjects do make decisions that are relatively patient. For example, as noted above, at a minute rate of one, subjects choose to work slightly more now than in the future; if they were impatient they would choose more in the future. This comports with the literature that people discount losses less than gains (Frederick *et al.*, 2002).

We use the responses to these questions to construct the measures in Table 4. Table 4 shows the proportions of subjects who think their friend is less patient than, as patient as, and more patient than the subject herself. In the No Information Condition, subjects significantly more frequently think their friend is less patient than they themselves are rather than more patient than they are. We will return to the Information Condition results from Table 4 shortly.

Table 4: Questionnaire Responses about Patience of Self and Friend

I believe my friend is…	No Information Condition	Information Condition	Wilcoxon ranksum *p*-value
… Less patient than I am	37/110 = 34%	31/106 = 29%	0.488
… As patient as I am	49/110 = 45%	49/106 = 46%	0.805
… More patient than I am	24/110 = 22%	26/106 = 25%	0.638
Unpaired *t*-test Less patient = More patient *p*-value	0.051	0.441	

Cells include fraction and percent of respondents in the relevant cell based on response to the post-experiment questionnaire questions about beliefs about subject's own patience and the patience of the friend who came to the experiment with her.

This could be a manifestation of the Lake Wobegon effect (see, e.g., Maxwell and Lopus, 1994), according to which most people think they are "above average." Such a belief could drive people to choose more impatiently for others. Deck and Jahedi (2015) also find that people believe others are more impatient than they themselves are and that this belief affects strategic choices. Similarly, Fedyk (2017) finds that people predict others to be more present-biased than themselves. In our study, people are likely better able to guess how patient a friend is as compared to how patient a stranger is: this would be consistent with the directional ordering observed in Figure 5.

Turning to the Information Condition, recall that we replicate all four treatments of the No Information Condition with two changes. First, subjects complete a three-question survey before reading instructions and making work time allocations. This pre-survey includes a self-reported patience question (like that reported in Table 4 but on a five point scale). Second, just before a participant makes choices for her recipient, she sees her recipient's self-reported patience. When answering the pre-survey, subjects were not informed that their responses would be revealed to another agent, so their answers should not be strategic.

If proxy decisions are driven by paternalism (Hypothesis 3E), information about the recipient's preferences should not affect decisions. If proxy decisions are driven by benevolence

with incorrect beliefs (Hypothesis 3D), information should affect decisions and alleviate or eradicate the gap.

In the Information Condition, there are no differences in minutes allocated to work in the present between Self and Other or between Friend and Stranger decisions that are significant at the 5% level (see Online Appendix D Table D-14). In other words, the differences between decisions for self and for other appear diminished or even eradicated, though, as we will show, this is only clearly true when the recipient is a friend (and, indeed, Table D-14 shows that of the five of the thirty tests are significant at the 10% level, the ones that don't look like noise show a difference between decisions for self and stranger).

That said, while receiving information appears to mitigate the impatience bias, the actual information received seems to have little influence. Responses to the pre-survey patience question are strongly correlated (correlation 0.816) with responses to the post-experiment patience question. However, pre-survey patience self-reports are not significantly correlated with decisions for oneself ($p = 0.189$ for the coefficient in an OLS regression) and the pre-survey patience measure of the recipient is not correlated with decisions subjects make for recipients ($p = 0.304$ for strangers and 0.844 for friends for the coefficients in OLS regressions). Details of these analyses are reported in Online Appendix D Tables D-16 and D-17.

While the pre-survey patience responses are not predictive of allocation decisions, subjects are attentive to recipients' self-reported patience, particularly for friends. When a subject views her friend's self-reported patience, that reported value is correlated with the subject's answer to the post-survey question about how patient the friend is (correlation 0.494, OLS regression coefficient 0.361, $p < 0.001$).

Perhaps surprisingly, a subject's own self-reported patience is weakly correlated with choices she makes for her recipient: the more patient a subject thinks she herself is, the *less* patiently she chooses (the fewer minutes now) for another subject, as also reported in Online Appendix D Table D-16. This is consistent with a subject choosing too impatiently for others because she believes others are less patient than herself. That is, if she thinks she is relatively patient, then she apparently thinks others are relatively impatient. This is similar to a result from Füllbrunn and Luhan (2015) in the risk domain: they find that subjects making risky choices for others move to the perceived population average, with relatively risk tolerant individuals making more risk averse choices for others than for themselves and vice versa.

Let us return to Table 4. As we discussed above, these post-experiment responses show that people in the No Information Condition often believe themselves to be more patient than their friends, but this is not true in the Information Condition. This bias does not disappear, however, when they are shown information about a stranger's patience (one-tailed proportions test $p = 0.060$), so a friend's self-reported patience appears to be influential to a decision-maker in a way that a stranger's is not.

To further test for motivations, we analyze these time allocation choices using fixed effects panel regressions, shown in Table 5. As we did for Table 3, we create a panel in which each observation corresponds to a decision by a subject for herself or her partner, so there are twenty observations per subject.[10] Results are generally robust to analysis as pooled OLS, Tobit, clustering errors on session, or to excluding individuals who did not choose a monotonic pattern, though in two specifications the coefficient on Stranger becomes significant and in one it is significantly different from that on Friend, as we show in Online Appendix D Table D-4.

[10] The number of subjects is 106 instead of 110 because a software bug caused four subjects' decisions to be lost.

Table 5: Regressions of Minutes Allocated to the Present on Treatment Variables, Information Condition

	(1)	(2)	(3)
Other	-1.21		
	(0.97)		
Friend		0.08	0.08
		(0.84)	(0.84)
Stranger		-2.51	-2.51
		(1.73)	(1.73)
Minute Rate	6.77***	6.77***	
	(0.47)	(0.47)	
Minute Rate (< 1)			-10.56***
			(1.67)
Minute Rate (> 1)			9.89***
			(1.04)
Constant	30.00***	30.00***	38.73***
	(1.10)	(1.10)	(1.01)
R^2	0.197	0.205	0.230
n (subjects)	106	106	106
N (observations)	2,120	2,120	2,120
Test: Friend = Stranger, *p*		0.18	0.18

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Fixed effects OLS panel regressions with robust standard errors clustered on subject in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Other is an indicator for proxy decisions; Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The Minute Rate (<1) and Minute Rate (>1) variables represent linear trends for minute rates that are respectively less than and greater than 1; the omitted category in Specification (3) is minute rate of 1. All specifications use 20 observations per subject: one for each decision at a different minute rate.

As for Table 3, specification 3 is our preferred specification in Table 5. The results in Table 5 confirm that, when information about the other's self-reported patience is provided, there is no longer a significant difference between choices for self and for others. The point estimate of the bias for friends gets close to zero. While the point estimate of the bias for strangers is not significantly different from zero, it is also not much smaller in magnitude than it was in the No Information Condition. Thus, information corrects the bias for friends, but its effect is less clear for strangers. Since both accurate benevolence (Hypothesis 3C) and paternalism (Hypothesis 3E) would not respond to the receipt of information, this is further evidence that neither is the underlying motivation for proxy decisions in this setting.

This effect is further confirmed in Table 6, which shows a comparison of fixed effect and random effect specifications for both the No Information and Information Conditions.[11] Specifications 1 and 2 pool together the No Information and Information Conditions for random effects and fixed effects analysis, respectively. Specifications 3 and 4 interact the Friend and Stranger dummies with an indicator for the Information Condition, again using random and fixed effects, respectively. Specification 4 is our preferred specification, as the fixed effects give a within subject estimate of the proxy decision bias. Results are generally robust to specification as pooled OLS, Tobit, clustering errors on session, or to excluding individuals who did not choose a monotonic pattern, as we show in Online Appendix D Tables D-5 and D-6, although the coefficient on Friend in specification 3 becomes significant in a Tobit regression and the coefficient on Friend in specification 4 eases to be significant if errors are clustered on session.

[11] These regressions find that decision-maker gender does not predict decisions. In separate univariate tests, we find that in decisions made for a friend, decisions are slightly more patient at some minute rates when made for women than for men, but only in the Information Condition. Regression analysis shows that this is because women (but not men) choosing for a friend in the information treatment choose more impatiently for a man than a woman. This echoes one of the results in McLeish and Oxoby (2009), although we do not reproduce their result that men expect women to be more impatient. Minutes allocated to the present is not correlated, in similar tests, with whether the decision-maker and friend recipient have the same gender. These tests are restricted to the Friend treatment of the Information condition, so the sample size is small.

Table 6: Regressions of Minutes Allocated to the Present on Treatment Variables

	(1)	(2)	(3)	(4)
Friend	-0.53	-0.64	-1.28	-1.35*
	(0.56)	(0.57)	(0.78)	(0.77)
Stranger	-2.81***	-2.67***	-2.95**	-2.83**
	(1.01)	(1.02)	(1.15)	(1.14)
Information Condition			-1.78	
			(1.66)	
Info x Friend			1.50	1.43
			(1.11)	(1.14)
Info x Stranger			0.29	0.32
			(2.05)	(2.07)
Minute Rate	6.98***	6.95***	6.98***	6.95***
	(0.36)	(0.36)	(0.36)	(0.36)
Female	-0.63		-0.39	
	(1.51)		(1.53)	
Order: Self First	-0.92		-0.98	
	(1.50)		(1.49)	
Constant	19.08	30.55***	18.26	30.55***
	(12.12)	(0.79)	(12.24)	(0.79)
RE or FE	RE	FE	RE	FE
Added controls	X		X	
R2	0.197	0.186	0.198	0.186
n (subjects)	215	216	215	216
N (observations)	4,300	4,320	4,300	4,320
Tests				
Friend = Stranger	0.045	0.084		
No Info: Friend = Stranger			0.231	0.281
Info: Self = Friend			0.127	0.211
Info: Self = Stranger			0.478	0.876
Info: Friend = Stranger			0.599	0.640

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Panel OLS regressions with robust standard errors clustered on subject in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Other is an indicator for proxy decisions; Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; Information Condition is the indicator for whether the decision-maker received information about the recipient's patience before choosing. Omitted cell in all is Self x No Information; also omitted in (4) due to fixed effects is Self x Information. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The "Added controls" are race, number of economics classes taken, past experience in economics experiments, age, and religiosity. None are significant except that number of economics classes has a negative coefficient significant at the 10% level. One subject dropped from regressions with controls because they did not choose female or male. All specifications use 20 observations per subject: one for each decision at a different minute rate.

Focusing on specification 4, our preferred specification, we see significant negative coefficients on Friend and Stranger, indicating that in the No Information Condition, decision-

makers choose more impatiently (fewer minutes now) for someone else than for themselves. The tests at the bottom of the table show that in the Information Condition decisions made for self are not statistically different from those made for friends nor for strangers. In the Information Condition, the point estimate of the size of the divergence in decisions for self and friend is $-1.35 + 1.43 = 0.08$, so quite close to zero (with $p = 0.211$), while that for self and stranger is $-2.83 + 0.32 = -2.51$ (with $p = 0.876$). Thus, information about a proxy decision recipient's belief about his own patience drives the proxy decision bias to zero for friends; with information, the decision bias for strangers is no longer significant, but the point estimate has not gotten meaningfully smaller. The fact that information has a mitigating influence, at least for friends, provides further support for proxy decisions being driven by inaccurate benevolence (Hypothesis 3D), or benevolence with incorrect beliefs about patience; if the gap was due to incorrect beliefs about effort cost convexity then information about patience should not ameliorate the bias. This leads to our final two results.

Result 4 (Inaccurate Benevolence). In this setting, proxy decisions are most consistent with choices driven by benevolence with inaccurate beliefs about the patience of others.

Result 5 (Impact of Information). Information about tastes and preferences improves proxy decisions and welfare when decisions are made for friends, but its effect is not clear at a larger social distance.

Therefore, providing decision-makers with information about their recipients' preferences can improve welfare, at least if the principal and agent have a pre-existing relationship.

6. Discussion

One can argue that proxy intertemporal decisions are more important now than ever before. Semi-autonomous work in teams is the norm in many workplaces and teleworking arrangements are common; thus, the manager's dilemma in allocating work tasks for a project across time is ubiquitous. Parallel situations are also increasingly common in policy, as crucial sustainability questions must be considered on a vast time scale (and the policymaker can be seen as the proxy decision-maker for the populace). They also occur in family situations: as people live longer with diminished capacities, relatives are often entrusted for years with care of their elders. It is thus important that we understand how people make proxy decisions when time is involved. Akerlof (1991) noted people may lose welfare in overly impatient decisions for themselves. Our results show this impatience may be exacerbated in proxy decisions: optimal investments may remain unmade or time may be misallocated, and the recipient may suffer as a result. Our study is one of the first to address this question with significant power, one of the first to study the cost domain (which may be different from the benefit domain), and the first to identify the role of the decision-maker's intimacy with the recipient.

We find that, in the absence of information about the recipient's wishes, proxy decision-makers choose more impatiently for either friends or strangers than for themselves. In other words, people choose more impatiently for other people than those other people would choose for themselves. We also find weak evidence that people choose more patiently for friends than for strangers. Recall that in our decision-making model, there are two parameters: δ, which is the discount factor, and γ, which is the effort cost convexity factor. Our results seem to reflect misperceptions about the discount factor rather than effort cost convexity because subjects

change their decisions for friends when they receive information about patience, and this information also corrects a biased perception of others' patience.

Our results seem to be at odds with the implication from Albrecht *et al*. (2011) that emotional involvement is associated with impatient decisions. In fact, the ordering of impatience in our results is the opposite of the ordering of emotional engagement, and of the results in Albrecht *et al*. (2011), Howard (2013), Kölle and Wenner (2019), Lusk *et al.* (2013), Pronin *et al.* (2008), and Rong *et al.* (2018) that people choose more patiently when acting as proxy to allocate values over time for others.

These differences may arise because our decisions involve tradeoffs in costs (effort disutility) whereas, except for Kölle and Wenner (2019), these previous studies focus on tradeoffs in benefits (usually money). We had no *a priori* reason to believe that the sign of the consequences should change the patience ordering of decisions, but there is no theoretical reason that it could not be so, and, as described in Frederick *et al.* (2002), previous studies have noted differences between discounting losses as compared to gains (specifically, less discounting for losses). Some proxy intertemporal choice situations have consequences that are positive (as in allocating a loved one's savings to consumption over time) while others have consequences that are costs (as in climate adaptation), so both signs are interesting.

While inconsistent with some past literature, our results are supported by suggestive evidence from our questionnaire that uninformed people have incorrect beliefs about others' relative patience: they think others are more impatient than they themselves are, which may be a manifestation of the Lake Wobegon effect (see, e.g., Maxwell and Lopus, 1994). Indeed, our results echo the findings in Deck and Jahedi (2015) and Fedyk (2017) that people believe others are more impatient or present-biased than they themselves are. (The result in Fedyk (2017),

however, differs from ours in that the prediction for oneself is inaccurate whereas the prediction for others is more accurate.) This implies that benevolence with mistaken beliefs explains the gap between decisions for self and others. We further support this hypothesis by showing that when subjects get information about the recipient's patience, the difference between self and other decisions disappears. This reduction is bias is clear for friends but the bias simply ceases to be significant (with little reduction in magnitude) for strangers, suggesting that familiarity may help decision-makers interpret preference information.

One possible reason for the difference between our results and the small existing literature is that people may approach procrastination of a task through a different decision process than that they use for other intertemporal allocation decisions. After all, Ellingsen and Johannesson (2009) find that people treat time and money costs differently. We conducted a survey through Amazon Mechanical Turk in fall 2016 (see Online Appendix F) in which we asked respondents to choose words to characterize choices to delay receiving money at some interest rate or isomorphic choices to delay doing a task with a similar "minute rate." We find that over 92% of subjects associate the words "patient" and "impatient" with the appropriate money-based choices, while they did not apply these words to the task-based decisions in any particular pattern. Instead, the words "procrastination" and "responsible" seemed to resonate with respondents for the time-based decisions. Even so, in our Information Condition, a signal of recipient taste using the word "patient" reduced the proxy bias, so our experiment subjects must have associated that word with what they perceived to be the recipient's relevant preferences in some way.

Our survey results, therefore, suggest a different underlying process for evaluating decisions over costs (or at least work effort) as compared to over benefits. These implications are

similar in spirit to Olivola and Wang (2016), who compare discounting of time versus money using an auction framework. They find that decisions over time are more impatient, more likely to be captured by exponential discounting, and less present-biased than discounting over money.

In summary, we find that when making benevolent proxy decisions with a time element, it seems that people will try to do so faithfully, but their biased perceptions may make them choose too impatiently, resulting in a suboptimal decision. Policymakers might be at a large psychological distance from those who will live under the consequences of their policies, and thus less familiar with them and their tastes, so this excessive impatience by proxy could be particularly problematic in policy. To return to our example scenario in the workplace, a manager may schedule tasks on a project to pile up later rather than being smoothed out over time. In either case, welfare is lost because of suboptimal decisions.

Further research in this area is needed to study why information seems less effective when the decision recipient is a stranger as compared to a friend; whether decisions for others might be more patient than those for oneself in specific contexts or with benefits instead of costs; how choices change when the recipient is on even closer terms with the decision-maker, as family-members often are in natural situations, or in a more fiduciary role, as a policy-maker is when choosing climate adaptation strategies; whether these patterns vary with the context or framing of the decision; and what happens if it is costly to choose impatiently or benevolently. Further research is also needed to understand the difference between people's decision processes when making task procrastination choices as compared to other intertemporal choices.

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Online Appendices

Appendix A: (Im)Patience by Proxy Subject Instructions Text

In the experiment, the instructions were presented on a series of discrete screens viewed through an internet browser, but for brevity we condense just the text and relevant images here.

DAY 1:

Welcome to the Experiment!

Now that the experiment has begun, we ask that you turn off cell phones and mobile devices.

Remember that you are free to leave at any time. If you choose to leave early you will receive $5 as a show up payment but you will forfeit any additional earnings.

Please enter your ID number below and click 'Continue' when you are ready to begin.

Please wait until the experiment continues.

When instructed by the experimenter, click the button below. The button text will then change to say "Continue With Experiment". You should then click to continue.

If you have a question, raise your hand and someone will come help you.

Instructions

Thank you for agreeing to participate in today's study. You have the opportunity to make money in this experiment and these instructions explain how. Please read carefully and be attentive to directions from the experimenters. If at any time you have a question, please raise your hand and an experimenter will approach you to answer your question in private.

[INFORMATION TREATEMENT ONLY]

Questions

Before we start, please answer some questions.

How old are you (years)? [numbers 17 to 99]

Gender: [Male, Female, Other]

Do you think of **yourself** as a pretty patient person or a pretty impatient person? [dropdown menu: Very patient, Somewhat patient, Neither patient nor impatient, Somewhat impatient, Very impatient]

[END INFORMATION TREATMENT ONLY]

Instructions

Overview:

First, you will complete a practice task. Then, you will make a series of decisions. Some of these decisions will affect you and some will affect another person who is in the experiment today. We will randomly choose one decision to count. Since you don't know which decision will count, please consider each decision carefully.

Each decision will involve a choice between time spent doing a data entry task today and six weeks from now.

Once you are done with your decisions, we will choose which decision will count (that is, will determine how much time must be worked in each period). Then the first work period will happen. After today's work period, you will fill out a questionnaire. Then you will receive payment and leave.

You will return in six weeks for the second work period. After the second work period, you will fill out a brief questionnaire, receive payment, and your participation will be complete.

The Decisions:

For each decision, time spent working today reduces the time that must be spent working in six weeks. The maximum time you could spend working today is 60 minutes (1 hour); the maximum time you could spend working in six weeks will depend on the decision.

Every minute worked today reduces work time in six weeks by a factor we call the "Minute Rate," which we will write as "minutes now: minutes in six weeks." On the decision screen, you will type your chosen "minutes now." Then you will click "Calculate," and the resulting "minutes in six weeks" will appear in the appropriate box. If you are happy with the decision you made, you can move on to the next decision. If not, type a new number and click "Calculate" again.

Example 1

In this example, the Minute Rate is 1:1. This means 1 minute worked now reduces minutes worked in six weeks by 1 minute.

Look at the practice decision below.

Decision #	Minute Rate	Minutes Now		Minutes in Six Weeks
P1	1:1	0	Calculate	60

The first column says that this is decision P1.

The second column says that the Minute Rate is 1:1.

The third column allows you to enter a number of minutes to work now. To the right of that entry box, there is a "Calculate" button, and to the right of that the number of minutes to work in six weeks is displayed. The number of minutes to work in six weeks is calculated based on the number entered in the "Minutes Now" box. When this example page first loads, 0 is entered in the "Minutes Now" box; since each minute worked now reduces minutes worked in six weeks by 1 minute, the "Minutes in Six Weeks" column shows that 60 minutes must be worked in six weeks.

You will now interact with this example. First, enter the number 60 in the "Minutes Now" box. Click Calculate. See that "Minutes in Six Weeks" becomes 0.

Second, enter any other number between 0 and 60 and click Calculate. See that "Minutes in Six Weeks" becomes 60 minus the number you enter.

Practice for a minute, then click Continue.

Example 2

In this example, the Minute Rate is 1:2. This means 1 minute worked now reduces minutes worked in six weeks by 2 minutes.

Look at the practice decision below.

Decision #	Minute Rate	Minutes Now		Minutes in Six Weeks
P1	1:2	0	Calculate	120

The first column says that this is decision P1.

The second column says that the Minute Rate is 1:2.

The third column allows you to enter a number of minutes to work now. To the right of that entry box, there is a "Calculate" button, and to the right of that the number of minutes to work in six weeks is displayed. The number of minutes to work in six weeks is calculated based on the number entered in the "Minutes Now" box. When this example page first loads, 0 is entered in the "Minutes Now" box; since each minute worked now reduces minutes worked in six weeks by 2 minutes, the "Minutes in Six Weeks" column shows that 120 minutes must be worked in six weeks.

You will now interact with this example. First, enter the number 60 in the "Minutes Now" box. Click Calculate. See that "Minutes in Six Weeks" becomes 0.

Second, enter any other number between 0 and 60 and click Calculate. See that "Minutes in Six Weeks" becomes 120 minus two times the number you enter.

Practice for a minute, then click Continue.

Choosing Which Period Will Count:

You will make ten decisions allocating your work time, and ten decisions allocating work time for another person. Once you have made those 20 decisions, we will randomly choose one decision to count.

We will use a bingo cage with twenty balls numbered 1-20, corresponding to the 20 decisions. We will spin the cage and a ball will come out. The number on the ball that comes out is the number of the decision that will determine work times for everyone.

Payment and the Return Session:

Payment for this experiment will be as follows. You will be paid $10 today at the end of the session, including your show-up fee. When you return and complete your work tasks in six weeks, you will be paid $55 at the end of that work session, including your show-up fee. Even if you choose to work zero minutes in six weeks, you must return in six weeks to complete a brief questionnaire and collect your final payment.

Summary

- You will practice with the data entry task.
- You will then make a series of 20 decisions allocating work time between today and six weeks from now:
  - 10 for yourself
  - 10 for another person
- When you are choosing for another person, they are also choosing for you.
- One of the 20 decisions will be randomly chosen, and that decision will determine how much work must be done today and in six weeks.
- You will work the amount determined by that decision.
- You will complete a questionnaire, receive $10, and leave.
- You will return in six weeks, work the amount determined by the selected decision, complete a brief questionnaire, and your participation will be complete. You will receive $55 upon completing the study.
- You can leave at any time and you will be given $5 for showing up. You must complete the study in order to receive full payment.

When you click "Continue" below, you will move past the instructions, so please use the "Back" button to navigate back through the instructions now if you would like to see them again.

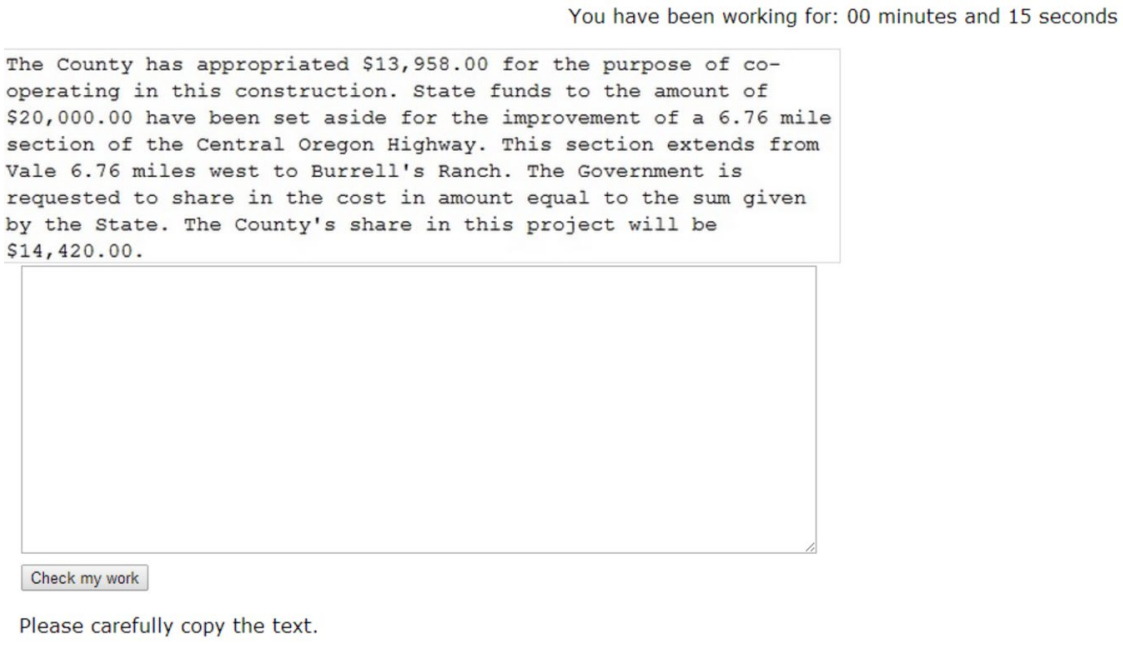
Practice with task

Before you make your decisions, we would like you to practice the data entry task. The task will be the same for both work periods.

In the data entry task, you will be presented with text on the computer screen. The task is to copy the text on the screen into a text box. Please enter all of the text, including spaces, punctuation, and capitalization, exactly as it appears on the screen. The software will check what you typed for errors. It will not let you advance to the next passage until you have entered the text correctly.

Practice with Task

Even though this is just a practice task, we want to make sure you get a feel for the task, so please enter the text you see into the box; then click "Continue;" once it is checked and the software verifies that it is correct, click "Continue" again to continue with the experiment.



[If text entered correctly] \You entered the text correctly and are ready to proceed with the experiment. Please click the 'Continue' button below.

[If text entered incorrectly] The text you entered was incorrect; please try again. Remember, you must match the text exactly, including capitalization, punctuation, and spacing.

For this experiment, you are matched with [[the person you came with today] OR [a random participant (not the person you came with today)]].

We will refer to him/her as [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]].

Choice Instructions

Now you will make two sets of decisions, each on a separate screen. Each will be a set of ten time allocation decisions, with different Minute Rates for each decision. Remember that for each decision, you will enter the number of minutes to be worked today and then you will click "Calculate". The computer will then display the number of minutes that would have to be worked in six weeks for that number of minutes worked today.

You must click "Calculate" after each decision.

The first set of decisions you make are all for [[YOU] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]]. That is, for all decisions on the first screen, the time allocation you choose will determine how much time [[YOU] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]] must work today and six weeks from now.

The second set of decisions you make will instead be for [[YOUR FRIEND] OR [YOUR MATCHED PLAYER] OR [YOU]]. For all decisions on the second screen, the time allocation you choose will determine how much time [[YOUR FRIEND] OR [YOUR MATCHED PLAYER] OR [YOU]] must work today and six weeks from now.

When you are making decisions for [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]], [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]] will be choosing for you. If one of those decisions is chosen to count, then the decision made by [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]] will determine how much time YOU must work today and in six weeks.

Recall that 60 minutes is the most time you can spend on the data entry task today. The maximum time you will have to spend in six weeks will depend on the decision.

[INFORMATION TREATMENT ONLY]

You are about to make decisions for [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]].

When asked "Do you think of yourself as a pretty patient person or a pretty impatient person?" this person answered:

[Very patient, Somewhat patient, Neither patient nor impatient, Somewhat impatient, Very impatient]

[END INFORMATION TREATMENT ONLY]

Decisions Allocating Time for YOU

In this set of time allocation choices, you are choosing to allocate time for YOU. [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]] is choosing to allocate time for HIM/HERSELF.

Recall, you can read the Minute Rate as "1 minute now: reduces minutes in six weeks by ___." You will enter time to work now and calculate time to work later; you can change your choices and calculate the time to work later as many times as you like.

For each row, you MUST hit "Calculate" after you make each decision to save your choice. You can tell that your choices have been logged if the "Minutes in Six Weeks" column shows the correct value for all rows. If you are having any difficulty, please raise your hand and an experimenter will come help.

Decision #	Minute Rate	Minutes Now		Minutes in Six Weeks
1	1:0.5	1	Calculate	29.5 (0 hrs 29 mins)
2	1:0.75	1	Calculate	44.25 (0 hrs 44 mins)
3	1:1	1	Calculate	59 (0 hrs 59 mins)
4	1:1.25	1	Calculate	73.75 (1 hrs 13 mins)
5	1:1.5	1	Calculate	88.5 (1 hrs 28 mins)
6	1:2	1	Calculate	118 (1 hrs 58 mins)
7	1:2.5	2	Calculate	145 (2 hrs 25 mins)
8	1:3	2	Calculate	174 (2 hrs 54 mins)
9	1:3.5	2	Calculate	203 (3 hrs 23 mins)
10	1:4	2	Calculate	232 (3 hrs 52 mins)

Decisions Allocating Time for [[YOUR MATCHED PLAYER] OR [YOUR FRIEND]]

In this set of time allocation choices, you are choosing to allocate time for [[YOUR FRIEND] OR [YOUR MATCHED PLAYER]]. [[Your matched player] OR [Your friend]] is choosing to allocate time for YOU.

Recall, you can read the Minute Rate as "1 minute now: reduces minutes in six weeks by ___." You will enter time to work now and calculate time to work later; you can change your choices and calculate the time to work later as many times as you like.

For each row, you MUST hit "Calculate" after you make each decision to save your choice. You can tell that your choices have been logged if the "Minutes in Six Weeks" column shows the correct value for all rows. If you are having any difficulty, please raise your hand and an experimenter will come help.

Decision #	Minute Rate	Minutes Now		Minutes in Six Weeks
11	1:0.5	60	Calculate	0 (0 hrs 0 mins)
12	1:0.75	60	Calculate	0 (0 hrs 0 mins)
13	1:1	1	Calculate	59 (0 hrs 59 mins)
14	1:1.25	60	Calculate	0 (0 hrs 0 mins)
15	1:1.5	60	Calculate	0 (0 hrs 0 mins)
16	1:2	60	Calculate	0 (0 hrs 0 mins)
17	1:2.5	60	Calculate	0 (0 hrs 0 mins)
18	1:3	60	Calculate	0 (0 hrs 0 mins)
19	1:3.5	60	Calculate	0 (0 hrs 0 mins)
20	1:4	60	Calculate	0 (0 hrs 0 mins)

Please wait until the experiment continues.

When instructed by the experimenter, click the button below. The button text will then change to say "Continue With Experiment". You should then click to continue.

If you have a question, raise your hand and someone will come help you.

Your Work Time

The bingo cage randomly selected decision number [DECISION SELECTED]

In this decision, you chose the time allocation for [[YOURSELF] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]]. [[Your friend] OR [Your matched player] chose the time allocation for [[HIM/HERSELF] OR [YOU]].

In this decision, the minute rate was 1 : [MINUTE RATE].

In this decision, [[YOU] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]] chose [MINUTES NOW] minutes today and [MINUTES LATER] minutes in six weeks for you.

Therefore, you will work [MINUTES NOW] minutes today.

Decision Reminder and First Work Period Instructions

Remember, Decision [DECISION SELECTED] was randomly selected. The minute rate was 1 : [MINUTE RATE]. [[YOU] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]] chose for you to work [MINUTES NOW] minutes today and [MINUTES LATER] minutes in six weeks. This means that today, you will work [MINUTES NOW] minutes.

Your task is to copy the text that you see on the screen into a text box, just like in the practice task.

The work timer will start when your next screen appears.

Once your work time is done, the work timer will reach zero and then go negative. At that point, the computer will not give you credit for any more passages that you copy. Therefore, as soon as you see the timer showing a negative number, click "Continue". (You will have to click "Continue" twice to move forward.)

If you have zero minutes to work today, you will skip past the work screen, and all you will have to do today will be the questionnaire.

Work Task

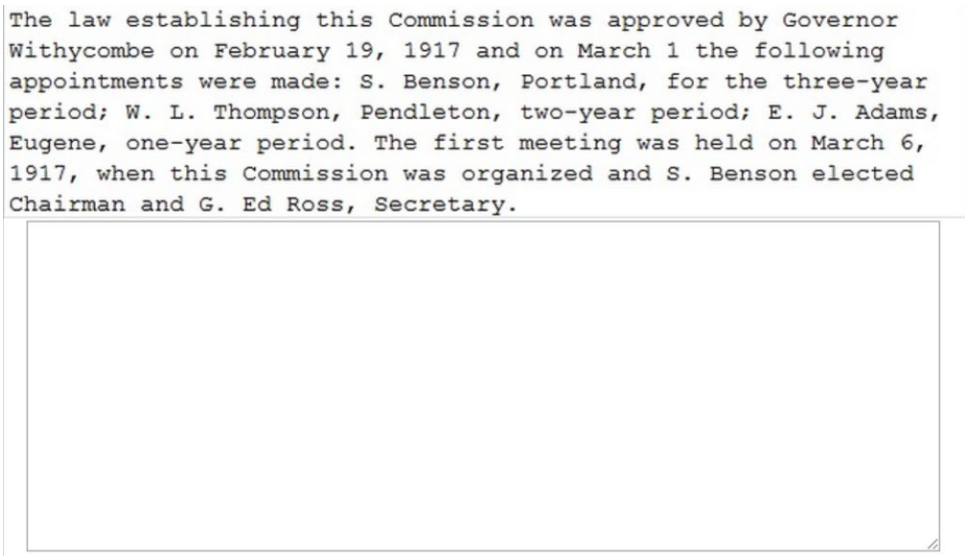
You have: [MINUTES REMAINING] minutes and [SECONDS REMAINING] seconds remaining in today's work period.

Remember, once this timer shows a negative number, you will not get credit for any more copied passages, so at that point you should click 'Continue' to proceed to the next screen.

[IF LAST TEXT ENTERED WAS CORRECT] You entered the text correctly and have moved on to the next passage.

[IF LAST TEXT ENTERED WAS INCORRECT] The text you entered was incorrect; please try again. Remember, you must match the text exactly, including capitalization, punctuation, and spacing.

[WHEN TIME HAS ELAPSED] **Today's work period has ended. Please click 'Continue' to move on to the next part of the experiment.**



Work Task Complete

Your work time for today is now over. You successfully completed [FIRST DAY NUMBER COMPLETED] passages of text.

You will now complete a questionnaire before receiving payment.

Questionnaire

How likely do you think **you** are to return for a work session in six weeks, to complete your work and collect your $55 payment? [Certain to return, Very likely to return, Uncertain, Very unlikely to return]

Do you think of **yourself** as a pretty patient person or a pretty impatient person? [Pretty patient, Neither patient nor impatient, Pretty impatient]

Do you think people in general are overly concerned with the present (not thinking enough about the future), or overly concerned with the future (not thinking enough about the present)? [Overly concerned with present, Overly concerned with future, Neither]

To what extent do you agree with this statement: Nowadays, a person has to live pretty much for today and let tomorrow take care of itself. [Disagree, Neither agree nor disagree, Agree]

Do you think of **people in general** as pretty patient or pretty impatient? [Pretty patient, Neither patient nor impatient, Pretty impatient]

Are you happy with the decisions you made for **your own** time, or would you change them if you could? [Happy, Would change to work LESS now, Would change to work MORE now]

What were you thinking when you made decisions for **your own** time? [free text entry]

How well would you say that you know the friend you came to this experiment with? [Very well, Well, A little, Not very well, Not at all]

How did you meet the friend you came to this experiment with? [free text entry]

Do you think of the **friend** you came to this experiment with as a pretty patient person or a pretty impatient person? [Pretty patient, Neither patient nor impatient, Pretty impatient]

How likely do you think **[[your friend] or [your matched player]]** is to return for a work session in six weeks, to complete his/her work and collect his/her $55 payment? [Certain to return, Very likely to return, Uncertain, Very unlikely to return]

What were you thinking when you made decisions for **[[your friend] or [your matched player]]'s** time? [free text entry]

Are you happy with the decisions you made for **[[your friend] or [your matched player]]'s** time, or would you change them if you could? [Happy, Would change to work LESS now, Would change to work MORE now]

When [[your friend] or [your matched player]] made these decisions for **him/herself**, how do you think he/she chose? [The same as you chose for him/her, More work time in six weeks and less work time this week, Less work time in six weeks and more work time this week]

How confident are you that you made the best decisions for **[[your friend] or [your matched player]]**? [Pretty confident, A little confident, Not at all confident]

When [[your friend] or [your matched player]] made decisions for **your** time, do you think he/she chose: [The same as he/she chose for him/herself, More work time in six weeks and less work time this week, Less work time in six weeks and more work time this week]

[IF THE DECISION THAT WAS SEELCTED TO ENACT WAS THE DECISION BY OTHER, NOT SELF] Are you happy with the decision that **[[your friend] or [your matched player]] made for you**, or would you change it if you could? [Happy, Would change to work LESS now, Would change to work MORE now]

How old are you (years)? [numbers 17 to 99]

Gender: [Male, Female, Other]

Ethnicity (check all that apply): [Asian, Black / African American, Hispanic, Native American, White / Caucasian, Other: [text entry]]

How often do you attend religious services? [Never, Once per 1-3 years, 2-11 times a year, 1-2 times a month, Every week, More than once a week]

What year are you in school? [Freshman, Sophomore, Junior, Senior, Graduate student (MBA, Masters, PhD, etc.), Other: [text entry]

What is/are your major(s)? [text entry]

How many economics courses have you taken (include current)? (enter a number) [text entry]

Are you currently employed? [Not employed, Part-time, Full-time]

Have you participated in an experiment before? [Economics, Psychology, Other, None]

How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

Unwilling to take risks									Fully prepared to take risks
1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Generally speaking, would you say that most people can be trusted, or that you need to be very careful in dealing with people?

Most people can be trusted									You need to be very careful in dealing with people
1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Do you think that most people would try to take advantage of you if they got a chance, or would they try to be fair?

People would try to take advantage of you									People would try to be fair
1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

During the past 12 months, how often have you done each of the following things:

	More than once a week	Once a week	Once a month	At least 2 or 3 times in the past year	Once in the past year	Not at all in the past year
Donated blood	○	○	○	○	○	○
Given food or money to a homeless person	○	○	○	○	○	○
Returned money to a cashier after getting too much change	○	○	○	○	○	○
Allowed a stranger to go ahead of you in line	○	○	○	○	○	○
Done volunteer work for a charity	○	○	○	○	○	○
Given money to a charity	○	○	○	○	○	○
Offered your seat on a bus or in a public place to a stranger who was standing	○	○	○	○	○	○
Looked after a person's plants, mail, or pets while they were away	○	○	○	○	○	○
Carried a stranger's belongings, like groceries, a suitcase, or shopping bag	○	○	○	○	○	○
Given directions to a stranger	○	○	○	○	○	○
Let someone you didn't know well borrow a item of some value like dishes or tools	○	○	○	○	○	○

During the past 12 months, how often have you done any of the following things for people you know personally, such as relatives, friends, neighbors, or other acquaintances?

	More than once a week	Once a week	Once a month	At least 2 or 3 times in the past year	Once in the past year	Not at all in the past year
Helped someone outside your household with housework or shopping	○	○	○	○	○	○
Lent quite a bit of money to another person	○	○	○	○	○	○
Spent time talking with someone who was a bit down or depressed	○	○	○	○	○	○
Helped somebody to find a job	○	○	○	○	○	○

Experiment Complete

Thank you! You have completed the questionnaire. You may now collect your belongings and prepare to leave the lab. Raise your hand when you are ready to leave and an experimenter will help you and give you today's $10 payment.

Remember that when you return and complete the second day of work in six weeks, you will be paid $55! When you come back, **you will need to bring the subject ID number we handed you at the start of the session,** so please keep that in a safe place.

RETURN SESSION:

Welcome Back to the Experiment!

Now that the experiment has begun, we ask that you turn off cell phones and mobile devices.

Remember that you are free to leave at any time. If you choose to leave early you will receive $5 as a show up payment but you will forfeit any additional earnings.

Please enter your ID number below and click 'Continue'. If you do not have the card with your ID number or are uncertain about it for any reason, please raise your hand and an experimenter will help you.

Verifying Your ID Number

[If entered correctly] The ID number you entered matches one from our database! You may proceed with the second day work task.

[If entered incorrectly] The ID number you entered does not match one from our database! Please click the button below to return to the previous page and re-enter it.

Decision Reminder and Second Work Period Instructions

Remember, Decision [DECISION SELECTED] was randomly selected. The minute rate was 1 : [MINUTE RATE]. [[YOU] OR [YOUR FRIEND] OR [YOUR MATCHED PLAYER]] chose for you to work [MINUTES NOW] minutes in the first work period and [MINUTES LATER] minutes in the second work period, six weeks after the first work period. This means that today, you will work [MINUTES LATER] minutes.

In the first session, you completed [FIRST DAY NUMBER COMPLETED] passages.

Your task is to copy the text that you see on the screen into a text box, just like the first day.

The work timer will start when your next screen appears.

Once your work time is done, the work timer will reach zero and then go negative. At that point, the computer will not give you credit for any more passages that you copy. Therefore, as soon as you see the timer showing a negative number, click "Continue" to proceed to the next screen.

Work Task

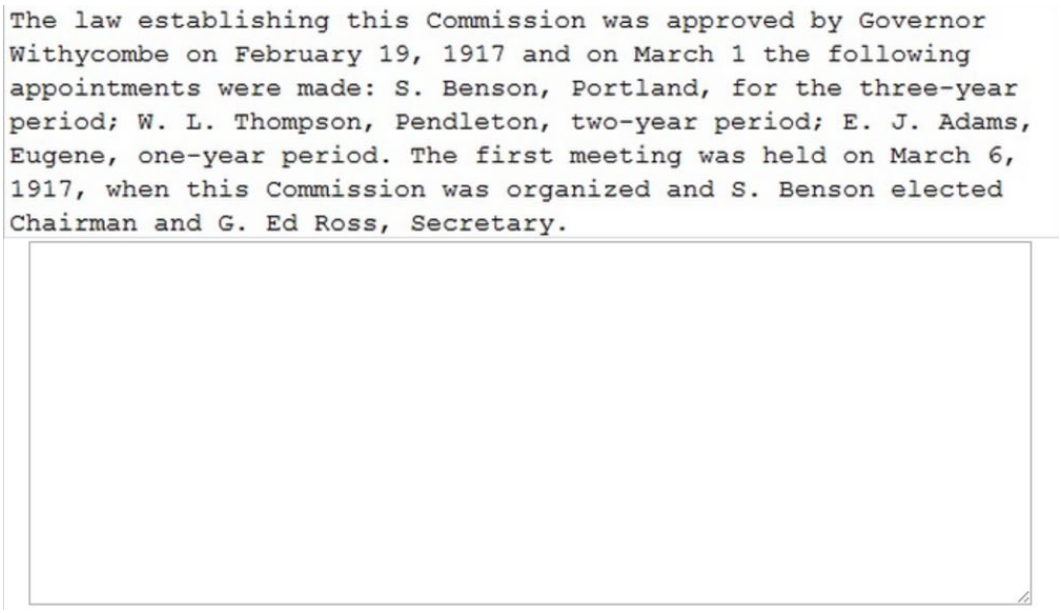
You have: [MINUTES REMAINING] minutes and [SECONDS REMAINING] seconds remaining in today's work period.

Remember, once this timer shows a negative number, you will not get credit for any more copied passages, so at that point you should click 'Continue' to proceed to the next screen.

[IF LAST TEXT ENTERED WAS CORRECT] You entered the text correctly and have moved on to the next passage.

[IF LAST TEXT ENTERED WAS INCORRECT] The text you entered was incorrect; please try again. Remember, you must match the text exactly, including capitalization, punctuation, and spacing.

[WHEN TIME HAS ELAPSED] **Today's work period has ended. Please click 'Continue' to move on to the next part of the experiment.**



Work Task Complete

Your work time for today is now over. You successfully completed [SECOND DAY NUMBER COMPLETED] passages of text.

You will now complete a questionnaire before receiving payment.

Questionnaire

Are you happy with the decisions you made six weeks ago for your own time, or would you have changed them if you could? [Happy, Would change to work LESS first day and MORE now, Would change to work MORE first day and LESS now]

Are you happy with the decisions you made six weeks ago for [[your friend] OR [your matched player]]'s time, or would you have changed them if you could? [Happy, Would change to work LESS now first day and MORE now, Would change to work MORE now first day and LESS now]

Have you and [[your friend] OR [your matched player]] discussed the decisions you and he/she made for each other? [Yes, No]

If so, what did you and he/she say to each other? [text area]

Did you and the friend you came to this experiment with learn anything about each other (get to know each other better) from participating in this experiment? Explain: [text area]

Experiment Complete

Thank you! You have completed the questionnaire. You may now collect your belongings and prepare to leave the lab. Raise your hand when you are ready to leave and an experimenter will help you and give you today's $55 payment. Then you will be done with this experiment.

Appendix B. Mathematical Proofs

Finding the Optimal Time Allocation

The problem is to minimize $C = m_N^{\gamma} + \delta^t m_L^{\gamma}$ subject to $60 = m_N + \frac{1}{R} m_L$

We write the Lagrangian: $\min_{m_N, m_L, \lambda} \mathcal{L} = m_N^{\gamma} + \delta^t m_L^{\gamma} + \lambda\left(60 - m_N - \frac{1}{R} m_L\right)$

This yields first order conditions:

$$\frac{\partial \mathcal{L}}{\partial m_N} = \gamma m_N^{\gamma-1} - \lambda = 0 \rightarrow \gamma m_N^{\gamma-1} = \lambda$$

$$\frac{\partial \mathcal{L}}{\partial m_L} = \gamma \delta^t m_L^{\gamma-1} - \lambda \frac{1}{R} = 0 \rightarrow \gamma \delta^t m_L^{\gamma-1} = \lambda \frac{1}{R}$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = 60 - m_N - \frac{1}{R} m_L = 0 \rightarrow 60 = m_N + \frac{1}{R} m_L$$

Using the first order conditions, we get:

$$\gamma m_N^{\gamma-1} = \gamma R \delta^t m_L^{\gamma-1} \rightarrow m_L = \frac{1}{R^{\frac{1}{\gamma-1}} \delta^{\frac{t}{\gamma-1}}} m_N$$

Plug that into the budget constraint:

$$60 = m_N + \frac{1}{R}\left(\frac{1}{R^{\frac{1}{\gamma-1}} \delta^{\frac{t}{\gamma-1}}} m_N\right) = m_N\left(1 + \frac{1}{R^{\frac{1}{\gamma-1}+1} \delta^{\frac{t}{\gamma-1}}}\right) = m_N\left(\frac{1 + R^{\frac{\gamma}{\gamma-1}} \delta^{\frac{t}{\gamma-1}}}{R^{\frac{\gamma}{\gamma-1}} \delta^{\frac{t}{\gamma-1}}}\right)$$

This yields the solution:

$$m_N = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}$$

How Does Minute Rate Influence Minutes Now?

$$\frac{\partial m_N}{\partial R} = \frac{60\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{\gamma}{\gamma-1}R^{\frac{\gamma}{\gamma-1}-1}\right)+60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}(-1)\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^{-2}\left(\frac{\gamma}{\gamma-1}R^{\frac{\gamma}{\gamma-1}-1}\delta^{\frac{t}{\gamma-1}}\right)$$

Group terms:

$$\frac{\partial m_N}{\partial R} = \frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{\gamma}{\gamma-1}\right)-\frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{\gamma}{\gamma-1}R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)=\frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{\gamma}{\gamma-1}\right)\left(1-\frac{R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

$$\frac{\partial m_N}{\partial R} = \frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{\gamma}{\gamma-1}\right)\left(1-\frac{R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

$$\frac{\partial m_N}{\partial R} = \frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{\gamma}{\gamma-1}\right)\left(\frac{1}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)=\frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{\gamma}{\gamma-1}\right)$$

This is positive for gamma greater than 1.

Does the Minute Rate Influence Minutes Now in a Way that Varies by Minute Rate?

$$\frac{\partial^2 m_N}{\partial R^2} = \left(\frac{\gamma}{\gamma-1}\right)\left(\frac{60\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\frac{1}{\gamma-1}R^{\frac{1}{\gamma-1}-1}+60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}(-2)\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^{-3}\left(\frac{\gamma}{\gamma-1}R^{\frac{\gamma}{\gamma-1}-1}\delta^{\frac{t}{\gamma-1}}\right)\right)$$

$$\frac{\partial^2 m_N}{\partial R^2} = \left(\frac{\gamma}{\gamma-1}\right)\left(\frac{1}{\gamma-1}\frac{60R^{\frac{2-\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}-\frac{2\gamma}{\gamma-1}\frac{60R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}R^{\frac{1}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^3}\right)$$

$$\frac{\partial^2 m_N}{\partial R^2} = \frac{\gamma}{(\gamma-1)^2}\frac{60\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(R^{\frac{2-\gamma}{\gamma-1}}-\frac{2\gamma R^{\frac{2}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

$$\frac{\partial^2 m_N}{\partial R^2} = \frac{\gamma}{(\gamma-1)^2}\frac{60R^{\frac{2-\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(1-\frac{2\gamma R^{\frac{\gamma}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

$$\frac{\partial^2 m_N}{\partial R^2} = \left(\frac{\gamma}{(\gamma-1)^2}\right)\frac{60R^{\frac{2-\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}-2\gamma R^{\frac{\gamma}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

$$\frac{\partial^2 m_N}{\partial R^2} = \left(\frac{\gamma}{(\gamma-1)^2}\right)\frac{60R^{\frac{2-\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{1+R^{\frac{\gamma}{\gamma-1}}\left(\delta^{\frac{t}{\gamma-1}}-2\gamma\right)}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right)$$

This is negative, and thus minutes now is concave in minute rate, iff:

$$1+R^{\frac{\gamma}{\gamma-1}}\left(\delta^{\frac{t}{\gamma-1}}-2\gamma\right)<0$$

$$1<R^{\frac{\gamma}{\gamma-1}}\left(2\gamma-\delta^{\frac{t}{\gamma-1}}\right)$$

$$R^{\frac{\gamma}{\gamma-1}}>\frac{1}{2\gamma-\delta^{\frac{t}{\gamma-1}}}$$

$$R>\left(\frac{1}{2\gamma-\delta^{\frac{t}{\gamma-1}}}\right)^{\frac{\gamma-1}{\gamma}}$$

Note that delta is between zero and 1 and gamma is greater than 1, so as long as *t* is positive, the denominator is greater than 1, so this should be true for $R > 1$.

How Does Patience Influence Minutes Now?

$$\frac{\partial m_N}{\partial\delta}=\frac{60R^{\frac{\gamma}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{t}{\gamma-1}\right)\delta^{\frac{t}{\gamma-1}-1}+\left(60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)(-1)\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^{-2}\left(\frac{t}{\gamma-1}\right)\left(R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}-1}\right)$$

$$\frac{\partial m_N}{\partial\delta}=\frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t-\gamma+1}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{t}{\gamma-1}\right)-\frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t-\gamma+1}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{t}{\gamma-1}\right)$$

$$\frac{\partial m_N}{\partial \delta} = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t-\gamma+1}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\left(\frac{t}{\gamma-1}\right)\left(1-\frac{R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}\right) = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t-\gamma+1}{\gamma-1}}}{\left(1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}\right)^2}\left(\frac{t}{\gamma-1}\right)$$

This is positive for gamma greater than 1 and positive *t*.

Appendix C. Order Effects and Cross-Task Spillovers

In this appendix, all *p* values are from Wilcoxon ranksum tests unless otherwise stated.

First, we address order effects. If we pool data from the Information and No Information Conditions and the Friend and Stranger treatments, the only differences in time allocation decisions between Self-First and Other-First sessions could have arisen randomly. Table C-1 below shows that only three of forty tests for order effects for decisions for self or someone else at any minute rate differ significantly based on order. Therefore, we pool data across orders.

Table C-1: Order Effect Tests

Panel A: No Information Condition							
		Self-First Self (1)	Other-First Self (2)	Self-First Other (3)	Other-First Other (4)	Tests	
						Self: First (1) vs. Second (2)	Other: First (4) vs Second (3)
Minute Rate (R)	0.5	25.50	26.60	24.05	26.73	0.827	0.458
		(22.62)	(22.38)	(23.04)	(21.77)		
	0.75	28.79	29.64	26.19	28.65	0.860	0.548
		(22.86)	(22.33)	(21.63)	(21.35)		
	1	38.78	39.60	38.88	38.35	0.707	0.958
		(18.32)	(19.58)	(17.49)	(19.95)		
	1.25	47.36	46.73	44.19	43.77	0.837	0.922
		(14.73)	(17.40)	(19.03)	(19.11)		
	1.5	48.90	47.04	46.45	45.12	0.939	0.769
		(14.17)	(18.22)	(17.05)	(18.45)		
	2	52.16	49.73	48.45	47.15	0.649	0.643
		(12.65)	(16.89)	(17.36)	(18.21)		
	2.5	50.45	52.00	49.22	47.71	0.547	0.860
		(15.85)	(15.33)	(16.17)	(18.30)		
	3	52.33	52.54	50.62	48.83	0.378	0.764
		(12.78)	(15.43)	(15.20)	(17.75)		
	3.5	53.48	54.14	52.24	50.79	0.522	0.805
		(12.57)	(13.01)	(14.01)	(16.34)		
	4	54.50	56.33	51.71	55.35	0.515	0.209
		(11.92)	(7.36)	(14.95)	(8.95)		
	N	58	52	82	52		

Panel B: Information Condition						Tests	
		Self-First Self (1)	Other-First Self (2)	Self-First Other (3)	Other-First Other (4)	Self: First (1) vs. Second (2)	Other: First (4) vs Second (3)
Minute Rate (R)	0.5	22.60	31.68	22.16	28.10	0.023	0.085
		(18.88)	(20.84)	(17.82)	(18.96)		
	0.75	26.90	32.23	25.70	33.18	0.167	0.035
		(18.17)	(19.48)	(18.84)	(18.01)		
	1	37.50	40.80	36.38	38.33	0.261	0.508
		(15.19)	(16.39)	(14.95)	(15.15)		
	1.25	42.58	42.88	42.28	41.42	0.936	0.701
		(15.70)	(15.23)	(14.65)	(14.49)		
	1.5	44.20	44.30	42.94	44.05	0.943	0.476
		(14.97)	(15.79)	(14.51)	(14.60)		
	2	49.30	48.10	47.78	46.65	0.715	0.505
		(13.21)	(14.84)	(14.88)	(14.06)		
	2.5	49.92	49.40	49.22	47.15	0.970	0.382
		(12.76)	(14.35)	(14.62)	(15.99)		
	3	51.32	50.40	50.44	49.20	0.709	0.666
		(11.94)	(13.66)	(13.00)	(14.39)		
	3.5	52.62	52.32	51.78	50.30	0.954	0.596
		(10.46)	(11.45)	(11.90)	(14.15)		
	4	52.52	52.07	52.24	51.97	0.858	0.811
		(12.26)	(13.47)	(11.79)	(12.05)		
	N	50	60	50	60		

Standard deviations in parentheses. Minute Rate is the rate at which minutes worked now reduce future minutes to work. "Tests" cells report *p*-values of Wilcoxon ranksum tests.

These barely-detectable order effects could have arisen from cross-task spillovers, because, as we are about to show, it seems that decisions subjects make for themselves are influenced by decisions they made for other subjects if the decisions for self are made after the decisions for the other person.

Let us now turn to how choices for self differ across treatment conditions and orders. See Table C-2 for time allocation choices reported by these distinctions.

Table C-2: Spillover Tests in Decisions for Self

Panel A: No Information Condition										
		Poold Frnd (1)	Poold Strngr (2)	Self-First Frnd (3)	Self-First Strngr (4)	Othr-First Frnd (3)	Othr-First Strngr (4)	Tests Poold: (1) vs. (2)	Self-First: (3) vs. (4)	Othr-First: (3) vs. (4)
Minute Rate (R)	0.5	26.00	26.04	22.64	28.17	29.62	23.58	0.925	0.397	0.436
		(23.31)	(21.72)	(21.65)	(23.54)	(24.90)	(19.57)			
	0.75	28.19	30.16	24.64	32.67	32.00	27.27	0.674	0.218	0.522
		(23.54)	(21.64)	(22.38)	(23.00)	(24.59)	(20.02)			
	1	39.98	38.38	39.07	38.50	40.96	38.23	0.686	0.910	0.461
		(18.38)	(19.41)	(16.90)	(19.83)	(20.15)	(19.29)			
	1.25	48.43	45.75	47.14	47.57	49.81	43.65	0.331	0.663	0.061
		(15.63)	(16.33)	(14.17)	(15.47)	(17.23)	(17.34)			
	1.5	49.39	46.70	49.96	47.90	48.77	45.31	0.337	0.973	0.156
		(15.69)	(16.64)	(11.91)	(16.14)	(19.18)	(17.42)			
	2	51.83	50.21	51.57	52.70	52.12	47.35	0.197	0.862	0.045
		(14.76)	(14.89)	(12.82)	(12.67)	(16.86)	(16.90)			
	2.5	51.04	51.32	49.75	51.10	52.42	51.58	0.598	0.641	0.195
		(16.28)	(14.97)	(15.91)	(16.04)	(16.87)	(13.94)			
	3	52.28	52.57	52.07	52.57	52.50	52.58	0.500	0.605	0.114
		(15.11)	(13.03)	(12.01)	(13.67)	(18.13)	(12.53)			
	3.5	53.91	53.68	53.36	53.60	54.50	53.77	0.837	0.235	0.097
		(12.31)	(13.22)	(9.98)	(14.76)	(14.61)	(11.48)			
	4	55.32	55.41	53.36	55.57	57.42	55.23	0.952	0.166	0.093
		(10.23)	(9.92)	(12.42)	(11.55)	(6.80)	(7.86)			
	N	54	56	28	30	26	26			

Panel B: Information Condition										
		Poold Frnd (1)	Poold Strngr (2)	Self-First Frnd (3)	Self-First Strngr (4)	Othr-First Frnd (3)	Othr-First Strngr (4)	Tests Poold: (1) vs. (2)	Self-First: (3) vs. (4)	Othr-First: (3) vs. (4)
Minute Rate (R)	0.5	30.89	24.09	27.29	18.27	33.59	29.50	0.064	0.102	0.380
		(19.96)	(20.45)	(19.17)	(17.89)	(20.41)	(21.48)			
	0.75	33.32	26.17	31.96	22.23	34.34	29.82	0.029	0.072	0.224
		(17.41)	(20.03)	(15.30)	(19.60)	(19.01)	(20.08)			
	1	40.14	38.43	39.38	35.77	40.72	40.89	0.516	0.340	0.932
		(15.34)	(16.50)	(13.05)	(17.00)	(17.04)	(15.93)			
	1.25	44.23	41.20	43.54	41.69	44.75	40.75	0.398	0.826	0.308
		(13.78)	(16.86)	(12.57)	(18.33)	(14.79)	(15.71)			
	1.5	44.75	43.74	43.88	44.50	45.41	43.04	0.820	0.734	0.494
		(15.29)	(15.54)	(13.39)	(16.56)	(16.76)	(14.80)			
	2	49.38	47.89	48.96	49.62	49.69	46.29	0.572	0.569	0.148
		(14.02)	(14.22)	(11.61)	(14.76)	(15.76)	(13.77)			
	2.5	50.41	48.83	51.38	48.58	49.69	49.07	0.468	0.781	0.431
		(13.36)	(13.90)	(9.45)	(15.26)	(15.79)	(12.79)			
	3	52.16	49.43	52.75	50.00	51.72	48.89	0.507	0.705	0.576
		(10.98)	(14.53)	(9.08)	(14.13)	(12.33)	(15.12)			
	3.5	53.39	51.48	54.42	50.96	52.63	51.96	0.372	0.429	0.608
		(10.20)	(11.71)	(7.32)	(12.61)	(11.98)	(11.02)			
	4	54.18	50.30	54.63	50.58	53.84	50.04	0.222	0.553	0.234
		(10.17)	(15.02)	(7.72)	(15.21)	(11.80)	(15.12)			
		56	54	24	26	32	28			

Standard deviations in parentheses. Minute Rate is the rate at which minutes worked now reduce future minutes to work. "Tests" cells report p-values of Wilcoxon ranksum tests.

When orders are pooled, minutes now for self does show some differences between the Friend and Stranger treatments, but those differences may be random: one test is significant at the 10% level and one at the 5% level out of 20 tests. However, when the data are separated by treatment order, we see some more interesting patterns. When decisions are made for oneself first, only one out of 20 decisions is at all statistically significantly different between the Friend and Stranger treatment. But in the No Information Condition, there are four significant differences in decisions made for oneself at moderate to high minute rates (1.25, 2, 3.5, and 4) for subjects who chose for strangers before choosing for themselves as compared to those who

chose for friends before choosing for themselves. Further, although this is not conclusive, in each case that is statistically different, the mean choice for minutes now for self is lower in the Stranger than in the Friend treatment; and we remind the reader that choices for the other reflect slightly fewer minutes now for strangers than for friends. This evidence is suggestive of a cross-task behavioral spillover: if subjects chose for strangers before choosing for self, their choices for themselves may be more impatient than if they chose for friends before choosing for self.

Appendix D. Supplementary Tables and Analysis

This Appendix contains the following:

D.1 Balance Tests

Table D-1: Subject Demographics by Information Condition

	No Information	Information	Test
Age	19.66	20.19	0.004
	(1.36)	(1.32)	
Percent female	35.78	54.64	0.008
	(48.16)	(50.10)	
Percent white	71.81	72.73	0.881
	(45.19)	(44.74)	
Percent Asian	24.55	19.09	0.329
	(43.23)	(39.48)	
Number of economics classes taken	0.56	0.75	0.005
	(0.50)	(0.44)	
Percent who had been in an economics experiment before	23.64	45.46	0.001
	(42.68)	(50.02)	
N	110	110	

Standard deviations in parentheses. Numbers represent means except where noted. "Tests" cells report *p*-values of Wilcoxon ranksum tests for between subject tests.

Table D-2: Subject Demographics by Treatment

	Friend - No Information	Stranger - No Information	Test No Info F=S	Friend - Information	Stranger - Information	Test Info F=S
Age	19.41	19.91	0.049	20.36	20.02	0.183
	(1.24)	(1.44)		(1.43)	(1.17)	
Percent female	38.89	32.73	0.504	62.50	44.44	0.059
	(49.21)	(47.35)		(48.85)	(50.16)	
Percent white	70.37	73.21	0.742	76.79	68.52	0.333
	(46.09)	(44.69)		(42.60)	(46.88)	
Percent Asian	25.93	23.21	0.742	19.64	18.52	0.881
	(44.23)	(42.60)		(40.09)	(39.21)	
Number of economics classes taken	0.52	0.61	0.351	0.75	0.74	0.912
	(0.50)	(0.49)		(0.44)	(0.44)	
Percent who had been in an economics experiment before	27.78	19.64	0.318	48.21	42.59	0.556
	(45.21)	(40.09)		(50.42)	(49.91)	
N	54	56		56	54	

Standard deviations in parentheses. Numbers represent means except where noted. "Tests" cells report *p*-values of Wilcoxon ranksum tests for between subject tests.

D.2 Robustness Variants for Favored Specifications of Core Regressions

Table D-3: Robustness for Table 3: Regressions of Minutes Allocated to the Present on Treatment Variables, No Information Condition

	Table 3 spec (3)	Total minutes	Pooled OLS	Tobit	Errors clustrd on session	Excl Non-Monotonic
Friend	-1.35*	-13.46*	-1.03	-1.32*	-1.35	-1.37*
	(0.77)	(7.76)	(0.91)	(0.76)	(1.11)	(0.82)
Stranger	-2.83**	-28.30**	-3.13***	-2.86***	-2.83*	-2.09*
	(1.14)	(11.43)	(0.94)	(0.74)	(0.92)	(1.20)
Minute Rate (< 1)	-11.93***		-11.92***	-11.93***	-11.92***	-14.41***
	(1.67)		(1.64)	(1.04)	(1.50)	(2.15)
Minute Rate (> 1)	11.09***		11.09***	11.09***	11.09***	12.20***
	(1.23)		(1.32)	(0.91)	(0.25)	(1.57)
Constant	39.95***	453.23***	39.95***	39.95***	39.95***	40.84***
	(0.93)	(3.48)	(1.31)	(1.46)	(0.05)	(1.19)
RE or FE	FE	FE	RE	RE	FE	FE
R^2	0.222	0.010	0.222		0.222	0.268
n (subjects)	110	110	110	110	110	78
N (observations)	2,200	120	2,200	2,200	2,200	1,560
Test: Friend = Stranger, *p*	0.284	0.285	0.054	0.140	0.378	0.622

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Regressions with standard errors in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; the omitted category is decisions made for self. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The Minute Rate (<1) and Minute Rate (>1) variables represent linear trends for minute rates that are respectively less than and greater than 1; the omitted category in Specification (3) is minute rate of 1. The base specification is a fixed effects OLS panel regression with standard errors clustered on subject, as in specification (3) of Table 3. All specifications except "Total Minutes" use 20 observations per subject: one for each decision at a different minute rate. The specification using "Total minutes" as the outcome has two observations per subject, one for their decision for themselves and one for their recipient, with the outcome being the sum of minutes allocated to the present across all minute rates. All specifications use robust standard errors except the Tobit, and all use errors clustered on subject except the Tobit and the specification with errors clustered on experiment session. Other specifications vary as column header indicates. The specification excluding non-monotonic subjects excludes only subjects who chose non-montonically for themselves.

Table D-4: Robustness for Table 5: Regressions of Minutes Allocated to the Present on Treatment Variables, Information Condition

	Table 5 spec (3)	Total minutes	Pooled OLS	Tobit	Errors clustrd on session	Excl Non-Monotonic
Friend	0.08	0.79	1.39*	0.27	0.08	-0.35
	(0.84)	(8.41)	(0.73)	(0.73)	(1.09)	(0.69)
Stranger	-2.51	-25.08	-3.82***	-2.70***	-2.51	-4.61*
	(1.73)	(17.36)	(0.89)	(0.73)	(1.73)	(2.67)
Minute Rate (< 1)	-10.56***		-10.56***	-10.56***	-10.56***	-13.70***
	(1.67)		(1.40)	(1.02)	(1.72)	(2.18)
Minute Rate (> 1)	9.89***		9.89***	9.89***	9.89***	11.17***
	(1.04)		(1.12)	(0.89)	(1.36)	(1.24)
Constant	38.73***	435.42***	38.73***	38.73***	38.73***	40.78***
	(1.01)	(4.82)	(1.11)	(1.27)	(1.36)	(1.22)
RE or FE	FE	FE	RE	RE	FE	FE
R^2	0.230	0.028	0.233		0.230	0.324
n (subjects)	106	106	106	106	106	70
N (observations)	2,120	212	2,120	2,120	2,120	1,400
Test: Friend = Stranger, *p*	0.181	0.183	0.000	0.004	0.295	0.127

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Regressions with standard errors in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; the omitted category is decisions made for self. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The Minute Rate (<1) and Minute Rate (>1) variables represent linear trends for minute rates that are respectively less than and greater than 1; the omitted category in Specification (3) is minute rate of 1. The base specification is a fixed effects OLS panel regression with standard errors clustered on subject, as in specification (3) of Table 3. All specifications except "Total Minutes" use 20 observations per subject: one for each decision at a different minute rate. The specification using "Total minutes" as the outcome has two observations per subject, one for their decision for themselves and one for their recipient, with the outcome being the sum of minutes allocated to the present across all minute rates. All specifications use robust standard errors except the Tobit, and all use errors clustered on subject except the Tobit and the specification with errors clustered on experiment session. Other specifications vary as column header indicates. The specification excluding non-monotonic subjects excludes only subjects who chose non-montonically for themselves.

Table D-5: Robustness for Table 6 Specification 3: Regressions of Minutes Allocated to the Present on Treatment Variables

	Table 6 spec (3)	Total minutes	Pooled OLS	Tobit	Errors clustrd on session	Excl Non-Monotonic
Friend	-1.28	-12.07	-0.80	-1.28*	-1.28	-1.22
	(0.78)	(8.26)	(1.35)	(0.78)	(0.97)	(0.83)
Stranger	-2.95**	-30.19**	-3.42**	-2.95***	-2.95***	-2.28*
	(1.15)	(11.81)	(1.54)	(0.77)	(0.85)	(1.21)
Information Condition	-1.78	-17.76	-1.74	-1.78	-1.78*	-1.21
	(1.66)	(16.77)	(1.65)	(1.72)	(1.07)	(1.94)
Info x Friend	1.50	15.90	2.07	1.51	1.50	0.93
	(1.11)	(11.32)	(1.68)	(1.10)	(1.39)	(1.08)
Info x Stranger	0.29	2.07	-0.28	0.29	0.29	-2.41
	(2.05)	(20.65)	(2.32)	(1.10)	(1.80)	(2.88)
Minute Rate	6.98***		6.98***	6.98***	6.98***	7.72***
	(0.36)		(0.36)	(0.17)	(0.33)	(0.45)
Female	-0.39	-4.08	-0.51	-0.39	-0.39	0.59
	(1.53)	(15.55)	(1.55)	(1.60)	(1.39)	(2.02)
Order: Self First	-0.98	-9.79	-0.95	-0.98	-0.98	0.32
	(1.49)	(15.08)	(1.49)	(1.54)	(0.69)	(1.83)
Constant	18.26	322.61***	18.52	18.26	18.26	28.35*
	(12.24)	(123.73)	(11.99)	(11.75)	(14.92)	(14.60)
RE or FE	RE	RE	RE	RE	RE	RE
Added controls	X	X	X	X	X	X
R^2	0.198	0.040	0.199		0.198	0.227
n (subjects)	215	215	215	215	215	147
N (observations)	4,300	430	4,300	4,300	4,300	2,940
Tests						
No Info: Friend = Stranger	0.231	0.219	0.305	0.120	0.168	0.467
Info: Self = Friend	0.127	0.126	0.142	0.132	0.093	0.356
Info: Self = Stranger	0.478	0.501	0.634	0.345	0.371	0.758
Info: Friend = Stranger	0.599	0.549	0.472	0.427	0.585	0.273

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Regressions with standard errors in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; the omitted category is decisions made for self. Information Condition is the indicator for whether the decision-maker received information about the recipient's patience before choosing. The omitted cell in all is Self x No Information; also omitted in (4) due to fixed effects is Self x Information. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The "Added controls" are race, number of economics classes taken, past experience in economics experiments, age, and religiosity. None are significant except that number of economics classes has a negative coefficient significant at the 10% level. One subject dropped from regressions with controls because they did not choose female or male. The base specification is a panel OLS regression with standard errors clustered on subject, as in specification (3) of Table 6. Other specifications vary as column header indicates. All specifications except "Total Minutes" use 20 observations per subject: one for each decision at a different minute rate. The specification using "Total minutes" as the outcome has two observations per subject, one for their decision for themselves and one for their recipient, with the outcome being the sum of minutes allocated to the present across all minute rates. The specification excluding non-monotonic subjects excludes only subjects who chose non-montonically for themselves. All specifications use robust standard errors except the Tobit, and all use errors clustered on subject except the Tobit and the specification with errors clustered on experiment session.

Table D-6: Robustness for Table 6 Specification 4: Regressions of Minutes Allocated to the Present on Treatment Variables

	Table 6 spec (4)	Total minutes	Errors clustrd on session	Excl Non-Monotonic
Friend	-1.35*	-13.46*	-1.35	-1.37*
	(0.77)	(7.74)	(1.03)	(0.82)
Stranger	-2.83**	-28.30**	-2.83**	-2.09*
	(1.14)	(11.41)	(0.85)	(1.20)
Info x Friend	1.43	14.26	1.43	1.02
	(1.14)	(11.42)	(1.44)	(1.07)
Info x Stranger	0.32	3.23	0.32	-2.52
	(2.07)	(20.73)	(1.81)	(2.91)
Minute Rate	6.95***		6.95***	7.66***
	(0.36)		(0.33)	(0.45)
Constant	30.55***	444.49***	30.55***	30.87***
	(0.79)	(2.95)	(0.84)	(1.01)
RE or FE	FE	FE	FE	FE
R^2	0.186	0.013	0.186	0.212
n (subjects)	216	216	216	148
N (observations)	4,320	432	4,320	2,960
Tests				
No Info: Friend = Stranger	0.281	0.283	0.302	0.620
Info: Self = Friend	0.211	0.213	0.355	0.342
Info: Self = Stranger	0.876	0.876	0.864	0.389
Info: Friend = Stranger	0.640	0.642	0.648	0.256

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Fixed effects OLS panel regressions with robust standard errors in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; the omitted category is decisions made for self. Information Condition is the indicator for whether the decision-maker received information about the recipient's patience before choosing. The omitted cell in all is Self x No Information; also omitted in (4) due to fixed effects is Self x Information. Minute Rate is the rate at which minutes worked now reduce future minutes to work. The base specification uses standard errors clustered on subject, as in specification (3) of Table 6. Other specifications vary as column header indicates. All specifications except "Total Minutes" use 20 observations per subject: one for each decision at a different minute rate. The specification using "Total minutes" as the outcome has two observations per subject, one for their decision for themselves and one for their recipient, with the outcome being the sum of minutes allocated to the present across all minute rates. The specification excluding non-monotonic subjects excludes only subjects who chose non-montonically for themselves. Omitted cell is Self x No Information; Self x Information is also omitted in base specification due to fixed effects. All use errors clustered on subject except the specification with errors clustered on experiment session.

D.3 Predictors of Various Decision Patterns

Table D-7: Tendency to Choose Monotonically for Self

	Pooled	No Information	Information
Information	0.00		
	(0.06)		
Female	-0.25***	-0.16	-0.30***
	(0.06)	(0.10)	(0.09)
White	0.14**	0.16*	0.13
	(0.07)	(0.10)	(0.10)
Age	0.06***	0.04	0.07**
	(0.02)	(0.03)	(0.03)
Not religious	0.10	0.17*	0.03
	(0.06)	(0.09)	(0.10)
# econ classes	-0.20***	-0.19**	-0.22**
	(0.06)	(0.08)	(0.09)
Past experiment experience	0.04	0.07	0.04
	(0.06)	(0.09)	(0.09)
Self-reported patience	0.10**	0.03	0.15***
	(0.04)	(0.06)	(0.06)
Friend's belief of my patience	-0.11***	-0.11**	-0.11*
	(0.04)	(0.05)	(0.06)
Believed patience of friend	-0.03	-0.03	-0.04
	(0.04)	(0.05)	(0.06)
How well know friend	-0.03	-0.00	-0.00
	(0.06)	(0.08)	(0.09)
Constant	-0.29	-0.02	-0.63
	(0.43)	(0.58)	(0.67)
R^2	0.217	0.185	0.280
N	215	109	106

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of whether subject chose a weakly monotonic pattern in minutes allocated to the present for themselves, with one observation per subject. Robust standard errors in parentheses. One subject excluded who did not identify as female or male. Not religious = dummy for reporting never attending religious services. Patience reports about self and friend, and friend's patience report about the decision-maker, are from post-experiment questionnaire, and are backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient). "How well know friend question" backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well).

Table D-8: Tendency to Choose Monotonically for Other

	Pooled	No Information	Information
Stranger	-0.06	0.03	-0.17*
	(0.06)	(0.08)	(0.09)
Information	-0.09		
	(0.07)		
Female	-0.22***	-0.13	-0.27***
	(0.07)	(0.10)	(0.09)
White	0.13*	0.12	0.13
	(0.07)	(0.10)	(0.10)
Age	0.05**	0.08**	0.02
	(0.02)	(0.03)	(0.03)
Not religious	0.02	0.04	0.01
	(0.06)	(0.09)	(0.09)
# econ classes	-0.18***	-0.13	-0.21**
	(0.06)	(0.08)	(0.10)
Past experiment experience	0.20***	0.18*	0.20**
	(0.06)	(0.09)	(0.09)
Self-reported patience	-0.00	-0.03	-0.00
	(0.04)	(0.06)	(0.06)
Friend's belief of my patience	-0.08**	-0.07	-0.09
	(0.04)	(0.05)	(0.06)
Believed patience of friend	-0.05	-0.02	-0.07
	(0.04)	(0.05)	(0.05)
How well know friend	-0.07	0.02	-0.15*
	(0.06)	(0.08)	(0.08)
Constant	0.04	-0.72	0.96
	(0.44)	(0.66)	(0.65)
R^2	0.207	0.165	0.285
N	215	109	106

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of whether subject chose a weakly monotonic pattern in minutes allocated to the present for themselves, with one observation per subject. Robust standard errors shown in parentheses. One subject excluded who did not identify as female or male. Not religious = dummy for reporting never attending religious services. Patience reports about self and friend, and friend's patience report about the decision-maker, are from post-experiment questionnaire, and are backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient). "How well know friend question" backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well).

Table D-9: Predictors of Tendency to Choose Same Pattern for Self and Other

	Pooled All	No Info	No Info Friend	No Info Stranger	Info	Info Friend	Info Stranger
Information	-0.13*						
	(0.07)						
Stranger	-0.03	-0.12			0.03		
	(0.07)	(0.10)			(0.09)		
Female	-0.09	-0.02	-0.06	-0.02	-0.09	0.08	-0.28*
	(0.07)	(0.11)	(0.17)	(0.18)	(0.09)	(0.11)	(0.14)
White	0.09	0.04	-0.06	0.18	0.20**	0.15	0.29**
	(0.07)	(0.11)	(0.19)	(0.15)	(0.10)	(0.16)	(0.14)
Age	-0.01	0.02	0.07	0.01	-0.02	-0.04	-0.07
	(0.03)	(0.03)	(0.06)	(0.04)	(0.04)	(0.05)	(0.06)
Not religious	0.03	0.08	-0.02	0.16	-0.02	-0.05	-0.00
	(0.07)	(0.10)	(0.17)	(0.14)	(0.10)	(0.15)	(0.15)
# econ classes	-0.04	0.02	-0.11	0.13	-0.04	-0.02	0.03
	(0.07)	(0.10)	(0.16)	(0.14)	(0.11)	(0.15)	(0.16)
Past experiment experience	0.17**	0.19*	0.21	0.12	0.16	0.25**	0.13
	(0.07)	(0.11)	(0.18)	(0.17)	(0.10)	(0.12)	(0.15)
Self-reported patience	0.02	0.07	0.08	0.06	-0.03	-0.09	-0.05
	(0.04)	(0.07)	(0.11)	(0.09)	(0.05)	(0.07)	(0.09)
Friend's belief of my patience	-0.01	-0.05	-0.08	-0.05	0.02	0.23**	-0.13
	(0.04)	(0.06)	(0.09)	(0.09)	(0.06)	(0.09)	(0.08)
Believed patience of friend	-0.02	-0.04	0.01	-0.10	-0.00	0.03	-0.01
	(0.04)	(0.06)	(0.09)	(0.09)	(0.05)	(0.06)	(0.08)
How well know friend	0.02	0.09	0.07	0.14	-0.07	-0.24**	0.06
	(0.06)	(0.09)	(0.12)	(0.13)	(0.09)	(0.11)	(0.13)
Constant	0.44	-0.17	-0.93	-0.26	0.65	0.97	1.73
	(0.51)	(0.71)	(1.29)	(0.98)	(0.77)	(0.96)	(1.31)
R^2	0.065	0.088	0.105	0.106	0.096	0.351	0.237
N	215	109	54	55	106	53	53

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of dummy variable that is one if the subject chose the same time allocation pattern for self as for other, with one observation per subject. Robust standard errors shown in parentheses. Not religious = dummy for reporting never attending religious services. One subject excluded who did not identify as female or male. Patience reports about self and friend, and friend's patience report about the decision-maker, are from post-experiment questionnaire, and are backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient). How well know friend question backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well).

Table D-10: Tendency to Minimize Time Worked at All Minute Rates

	Self – No Info	Self – Info	Other – No Info	Other – Info
Stranger			-0.11	0.02
			(0.08)	(0.06)
Female	-0.16**	-0.12*	-0.22***	-0.10
	(0.07)	(0.07)	(0.07)	(0.06)
White	0.12	0.03	0.10	0.07
	(0.08)	(0.08)	(0.07)	(0.07)
Age	0.01	-0.04	-0.01	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
Not religious	-0.01	0.04	-0.01	0.04
	(0.08)	(0.08)	(0.07)	(0.07)
# econ classes	-0.05	-0.08	-0.07	-0.05
	(0.08)	(0.10)	(0.08)	(0.09)
Past experiment	0.05	0.07	0.01	0.10
experience	(0.09)	(0.08)	(0.08)	(0.08)
Self-reported	-0.03	0.06	0.00	0.02
patience	(0.05)	(0.04)	(0.05)	(0.03)
Friend's belief	-0.03	-0.03	-0.02	-0.01
of my patience	(0.04)	(0.04)	(0.04)	(0.03)
Believed patience	-0.01	0.00	-0.01	0.00
of friend	(0.04)	(0.05)	(0.04)	(0.04)
How well know	-0.07	-0.07	-0.10	-0.02
friend	(0.07)	(0.06)	(0.07)	(0.06)
Constant	0.19	0.96*	0.68	0.95*
	(0.48)	(0.49)	(0.50)	(0.54)
R^2	0.110	0.096	0.142	0.094
N	109	106	109	106

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of whether subject always chose least total time to work (0 now for rates < 1 and 60 now for rates > 1, and anything for rate = 1), with one observation per subject. Robust standard errors shown in parentheses. One subject excluded who did not identify as female or male. Patience reports about self and friend are from post-experiment questionnaire, and are also backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient). "How well know friend question" backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well).

Table D-11: Tendency to Choose Same Minutes Now at All Minute Rates for Self

	Pooled	No Information	Information
Information	-0.07		
	(0.06)		
Female	-0.02	-0.03	0.03
	(0.06)	(0.10)	(0.08)
White	0.02	0.02	0.03
	(0.06)	(0.10)	(0.08)
Age	0.03	-0.03	0.09***
	(0.02)	(0.03)	(0.03)
Not religious	-0.02	0.03	-0.07
	(0.06)	(0.09)	(0.08)
# econ classes	-0.08	0.00	-0.17*
	(0.06)	(0.08)	(0.10)
Past experiment experience	0.02	0.03	0.03
	(0.06)	(0.10)	(0.08)
Self-reported patience	0.03	0.01	0.04
	(0.04)	(0.06)	(0.05)
How well know friend	0.03	0.08	-0.04
	(0.051)	(0.08)	(0.07)
Friend's belief of my patience	-0.01	-0.01	-0.02
	(0.03)	(0.05)	(0.04)
Constant	-0.35	0.58	-1.46**
	(0.43)	(0.64)	(0.56)
R^2	0.027	0.025	0.131
N	215	109	106

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of whether subject chose a flat pattern in minutes allocated to the present for themselves, with one observation per subject. Robust standard errors shown in parentheses. One subject excluded who did not identify as female or male. Not religious = dummy for reporting never attending religious services. "How well know friend question" backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well). Patience reports about self and friend, and friend's patience report about the decision-maker, are from post-experiment questionnaire, and are also backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient).

Table D-12: Tendency to Choose Same Minutes Now at All Minute Rates for Other

	Pooled	No Information	Information
Stranger	-0.01	0.02	-0.03
	(0.05)	(0.08)	(0.08)
Information	-0.12**		
	(0.06)		
Female	-0.03	0.01	-0.01
	(0.06)	(0.10)	(0.07)
White	0.03	0.01	0.06
	(0.06)	(0.10)	(0.07)
Age	0.03	0.01	0.04
	(0.02)	(0.03)	(0.03)
Religiosity	-0.07	-0.04	-0.09
	(0.05)	(0.09)	(0.07)
# econ classes	-0.01	0.05	-0.03
	(0.06)	(0.08)	(0.09)
Past experiment experience	0.00	-0.02	0.02
	(0.06)	(0.09)	(0.08)
Self-reported patience	0.01	-0.01	-0.00
	(0.03)	(0.05)	(0.05)
How well know friend	0.07	0.15*	-0.03
	(0.05)	(0.08)	(0.07)
Friend's belief of my patience	-0.02	-0.01	-0.04
	(0.03)	(0.05)	(0.04)
Believed patience of friend	-0.04	-0.01	-0.07*
	(0.03)	(0.06)	(0.04)
Constant	-0.23	-0.20	-0.39
	(0.39)	(0.64)	(0.49)
R^2	0.051	0.049	0.085
N	215	109	106

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. OLS regressions of whether subject chose a flat pattern in minutes allocated to the present for themselves, with one observation per subject. Robust standard errors shown in parentheses. One subject excluded who did not identify as female or male. How well know friend question backward coded so a larger number indicates less well (5=Not at all, 4=Not very well, 3=A little, 2=Well, 1=Very well). Patience reports about self and friend, and friend's patience report about the decision-maker, are from post-experiment questionnaire, and are also backward coded so higher numbers indicate less patient (1=Pretty Patient, 2=Neither patient nor impatient, 3=Pretty impatient).

D.4 Minutes Allocated to Present by Minute Rate and Treatment and Univariate Tests

Table D-13: Average Minutes Allocated to the Present by Minute Rate and Treatment, No Information Condition

		Self		Other		Tests		
		Friend (1)	Stranger (2)	Friend (3)	Stranger (4)	Self (1) vs. Friend (3)	Self (2) vs. Stranger (4)	Friend (3) vs. Stranger (4)
Minute Rate (R)	0.5	26.00	26.04	26.54	24.14	0.585	0.580	0.684
		(23.31)	(21.72)	(23.25)	(21.66)			
	0.75	28.19	30.16	27.24	27.46	0.504	0.142	0.940
		(23.54)	(21.64)	(21.96)	(21.11)			
	1	39.98	38.38	39.09	38.18	0.410	0.915	0.882
		(18.38)	(19.41)	(18.36)	(19.00)			
	1.25	48.43	45.75	46.69	41.39	0.386	0.063	0.152
		(15.63)	(16.33)	(17.69)	(19.96)			
	1.5	49.39	46.70	47.93	43.79	0.413	0.033	0.270
		(15.69)	(16.64)	(15.97)	(19.06)			
	2	51.83	50.21	48.98	46.73	0.060	0.069	0.507
		(14.76)	(14.89)	(16.84)	(18.57)			
	2.5	51.04	51.32	50.09	46.98	0.193	0.035	0.448
		(16.28)	(14.97)	(15.33)	(18.74)			
	3	52.28	52.57	50.43	49.14	0.097	0.046	0.610
		(15.11)	(13.03)	(15.58)	(17.28)			
	3.5	53.91	53.68	51.69	51.43	0.039	0.181	0.604
		(12.31)	(13.22)	(15.09)	(15.24)			
	4	55.32	55.41	54.22	52.66	0.849	0.166	0.433
		(10.23)	(9.92)	(11.12)	(13.86)			
Total		456.35	450.21	442.89	421.91	0.624	0.064	0.427
		(121.80)	(124.67)	(130.50)	(144.77)			
	N	54	56	54	56			

Standard deviations in parentheses. "Total" is total number of minutes allocated to the present summed across all minute rates. Minute Rate is the rate at which minutes worked now reduce future minutes to work. "Tests" cells report *p*-values of Wilcoxon signed rank tests for within subject tests (Self = Friend and Self = Stranger) and Wilcoxon ranksum tests for between subject tests (Friend = Stranger).

Table D-14: Average Minutes Allocated to the Present by Minute Rate and Treatment, Information Condition

		Self		Other		Tests		
		Friend	Stranger	Friend	Stranger	Self vs. Friend	Self vs. Stranger	Friend vs. Stranger
Minute Rate	0.5	29.81	24.17	27.30	22.11	0.137	0.101	0.179
		(2.70)	(2.83)	(2.56)	(2.44)			
	0.75	32.38	26.28	32.09	26.32	0.174	0.304	0.100
		(2.35)	(2.78)	(2.49)	(2.57)			
	1	39.59	38.59	38.77	35.55	0.453	0.351	0.452
		(2.09)	(2.28)	(1.85)	(2.23)			
	1.25	43.91	41.32	43.64	39.64	0.593	0.954	0.396
		(1.88)	(2.34)	(1.71)	(2.22)			
	1.5	44.45	44.00	46.53	40.26	0.057	0.077	0.060
		(2.10)	(2.14)	(1.50)	(2.33)			
	2	49.15	47.94	49.85	44.17	0.852	0.057	0.179
		(1.95)	(1.97)	(1.41)	(2.39)			
	2.5	50.06	48.91	50.93	44.74	0.814	0.091	0.224
		(1.87)	(1.93)	(1.36)	(2.64)			
	3	51.91	49.51	52.23	47.00	0.839	0.158	0.284
		(1.54)	(2.01)	(1.18)	(2.39)			
	3.5	53.21	51.51	53.60	48.04	0.721	0.124	0.373
		(1.43)	(1.62)	(0.96)	(2.35)			
	4	54.04	50.11	54.34	49.43	0.773	0.360	0.140
		(1.43)	(2.08)	(1.02)	(2.06)			
Total		448.49	422.34	449.28	397.26	0.827	0.046	0.060
		(105.56)	(118.05)	(85.03)	(126.15)			
	N	53	53	53	53			

Standard deviations in parentheses. "Total" is total number of minutes allocated to the present summed across all minute rates. Minute Rate is the rate at which minutes worked now reduce future minutes to work. "Tests" cells report *p*-values of Wilcoxon signed rank tests for within subject tests (Self = Friend and Self = Stranger) and Wilcoxon ranksum tests for between subject tests (Friend = Stranger).

D.5 Regressions Using Minute Rate Dummies

Table D-15: Minutes Allocated to the Present, Using Minute Rate Dummies

	No Info			Info		
	All	Other only	Other only	All	Other only	Other only
Friend	-1.35*			0.08		
	(0.77)			(0.84)		
Stranger	-2.83**			-2.51		
	(1.14)			(1.73)		
0.5	-13.23***	-13.31***	-12.56***	-12.27***	-12.45***	-11.47***
	(1.74)	(1.81)	(2.77)	(1.77)	(1.93)	(2.49)
0.75	-10.62***	-11.27***	-11.85***	-8.85***	-7.95***	-6.68***
	(1.68)	(1.70)	(2.58)	(1.65)	(1.83)	(2.08)
1.25	6.63***	5.36***	7.59***	4.00***	4.48***	4.87***
	(1.07)	(1.28)	(1.69)	(0.97)	(1.03)	(1.23)
1.5	8.02***	7.19***	8.83***	5.69***	6.24***	7.75***
	(1.13)	(1.35)	(1.73)	(1.04)	(1.14)	(1.41)
2	10.53***	9.21***	9.89***	9.66***	9.85***	11.08***
	(1.31)	(1.50)	(1.99)	(1.12)	(1.34)	(1.62)
2.5	10.95***	9.88***	11.00***	10.53***	10.67***	12.15***
	(1.38)	(1.67)	(2.11)	(1.24)	(1.44)	(1.70)
3	12.20***	11.15***	11.33***	12.04***	12.45***	13.45***
	(1.41)	(1.62)	(2.22)	(1.22)	(1.34)	(1.63)
3.5	13.78***	12.93***	12.59***	13.47***	13.66***	14.83***
	(1.42)	(1.51)	(2.29)	(1.18)	(1.35)	(1.58)
4	15.50***	14.80***	15.13***	13.86***	14.73***	15.57***
	(1.62)	(1.72)	(2.51)	(1.22)	(1.29)	(1.68)
Strngr x 0.5			-1.48			-1.96
			(3.65)			(3.87)
Strngr x 0.75			1.14			-2.55
			(3.42)			(3.67)
Strngr x 1.25			-4.38*			-0.77
			(2.53)			(2.07)
Strngr x 1.5			-3.23			-3.04
			(2.69)			(2.26)
Strngr x 2			-1.34			-2.45
			(3.00)			(2.68)
Strngr x 2.5			-2.20			-2.96
			(3.33)			(2.88)
Strngr x 3			-0.37			-2.00
			(3.24)			(2.69)
Strngr x 3.5			0.66			-2.34
			(3.04)			(2.70)
Strngr x 4			-0.65			-1.68
			(3.47)			(2.58)
Constant	39.95***	38.63***	38.63***	38.73***	37.16***	37.16***
	(0.93)	(1.01)	(1.01)	(1.01)	(0.91)	(0.91)
R^2	0.238	0.213	0.216	0.260	0.256	0.270
n (subjects)	110	110	110	106	106	106
N (obsrvtns)	2,200	1,100	1,100	2,120	1,060	1,060

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Fixed effects OLS panel regressions with robust standard errors clustered on subject in parentheses. The outcome variable is minutes allocated to work in the present rather than the future. Friend and Stranger are indicators for proxy decisions made for Friends and Strangers, respectively; the omitted category is decisions made for self. The numbers indicate dummies for the Minute Rates (the rate at which minutes worked now reduce future minutes to work). All specifications use 20 observations per subject: one for each decision at a different minute rate. "Other Only"

specifications include only decisions for recipient (not self). Interaction terms "Strngr x …" interact the Stranger dummy with the specified Minute Rate.

D.6: Predictive Power of Pre-Survey Patience Response on Experiment Decisions

Table D-16: Predictive Power of Pre-Survey Patience Response on Minutes Now for Self and Other (Pooled)

	Self	Self	Other	Other	Other
Minute Rate	6.69***	6.70***	6.88***	6.85***	6.88***
	(0.51)	(0.52)	(0.53)	(0.52)	(0.53)
Pre-survey my patience	1.31	0.97		1.71*	1.41
	(1.00)	(1.06)		(0.98)	(1.02)
Partner's pre-survey patience		-1.03	-0.79		-0.65
		(1.10)	(0.90)		(0.90)
Constant	26.96***	30.23***	30.43***	24.46***	26.65***
	(2.79)	(4.93)	(2.58)	(2.64)	(3.88)
R^2	0.20	0.20	0.20	0.21	0.21
n (subjects)	106	102	102	106	102
N (observations)	1,060	1,020	1,020	1,060	1,020

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Panel OLS regressions of minutes allocated to the present for recipient (stranger or friend), with 10 observations per subject in each regression. Robust standard errors in parentheses clustered on subject. Patience questions come from the pre-experiment questionnaire, and are backward coded: 1=Very patient, 2=Somewhat patient, 3=Neither patient nor impatient, 4=Somewhat impatient, 5=Very impatient. Standard errors shown in parentheses. Minute Rate is the rate at which minutes worked now reduce future minutes to work.

Table D-17: Predictive Power of Pre-Survey Patience Response on Minutes Now for Strangers and Friends

	Stranger	Stranger	Stranger	Friend	Friend	Friend
Minute Rate	6.63***	6.77***	6.63***	7.13***	6.93***	7.13***
	(0.82)	(0.82)	(0.82)	(0.66)	(0.64)	(0.66)
Pre-survey my patience		1.83	1.62		1.65	1.20
		(1.70)	(1.72)		(1.10)	(1.13)
Partner's pre-survey patience	-1.43		-1.07	-0.22		-0.23
	(1.39)		(1.36)	(1.12)		(1.07)
Constant	29.93***	21.70***	25.06***	31.21***	27.05***	28.29***
	(4.42)	(4.06)	(5.93)	(2.93)	(3.39)	(4.83)
R^2	0.16	0.17	0.17	0.29	0.29	0.30
n (subjects)	52	53	52	50	53	50
N (observations)	520	530	520	500	530	500

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Panel OLS regressions of minutes allocated to the present for recipient (stranger or friend), with 10 observations per subject in each regression. Robust standard errors in parentheses clustered on subject. Patience questions come from the pre-experiment questionnaire, and are backward coded: 1=Very patient, 2=Somewhat patient, 3=Neither patient nor impatient, 4=Somewhat impatient, 5=Very impatient. Standard errors shown in parentheses. Minute Rate is the rate at which minutes worked now reduce future minutes to work.

Appendix E. Structural Estimation of Decision Model

We performed a structural estimation of the decision model from our Theoretical Framework section:

$$m_N = \frac{60R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}{1+R^{\frac{\gamma}{\gamma-1}}\delta^{\frac{t}{\gamma-1}}}$$

We programmed this model into Stata and estimated the parameters using maximum likelihood. A censored model is appropriate, since of 4,320 observations, 324 are censored from below and 1,738 from above. However, as is often noted in this kind of estimation, censoring can make it difficult for models to converge, and thus we report the best estimates we could generate in Table E-1. In short, we find that none of the treatments have reliable effects on any of the parameter estimates. For the discounting parameter δ, post-estimation test indicates that in all specifications it is statistically different from one (with $p < 0.01$ in all cases, except the last specification, where $p < 0.05$); in each case, however, the point estimates are quite close to one but slightly larger. As we discuss in the paper, a discount factor larger than one could result from expectations or uncertainty about future opportunity cost.

Table E-1: Parameter Estimates from Structural Estimation of Decision Function

Treatments		All	No Info	Info	No Info	Info	All
Censoring		Top	Double	Double	Double	Double	No
Delta	Constant	1.021***	1.015***	1.021***	1.014***	1.020***	1.036***
		(0.003)	(0.004)	(0.007)	(0.004)	(0.005)	(0.015)
	Other	0.000					
		(0.002)					
	Friend		-0.001	0.004			0.014
			(0.003)	(0.005)			(0.035)
	Stranger		-0.005	-0.013*			0.026
			(0.004)	(0.007)			(0.069)
	Info treatment						0.055
							(0.083)
	Info x Friend						-0.043
							(0.078)
	Info x stranger						0.154
							(2.214)
Gamma	Constant	1.744***	1.463***	2.044***	1.416***	1.953***	3.342***
		(0.118)	(0.097)	(0.353)	(0.082)	(0.311)	(0.869)
	Other	0.210*					
		(0.127)					
	Friend				0.023	-0.146	1.258
					(0.081)	(0.178)	(2.465)
	Stranger				0.241	0.999	4.016
					(0.208)	(0.909)	(6.872)
	Info treatment						4.614
							(5.973)
	Info x Friend						-4.186
							(5.623)
	Info x stranger						31.641
							(315.670)
Sigma	Constant	24.124***	31.926***	23.022***	31.867***	22.979***	16.323***
		(1.182)	(3.193)	(1.987)	(3.182)	(1.961)	(0.639)
N		4,320	2,200	2,120	2,200	2,120	4,320
Wald chi2		0.00	2.60	3.38	.	.	1.12
Prob > chi2		0.9715	0.2723	0.1848	.	.	0.9526

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Standard errors clustered at the subject level in parentheses. A "." in some cells indicate Stata failed to generate a chi2 statistic for these estimations. Duration was specified in days ($t = 42$).

Appendix F. Survey on Procrastination in Decision-Making

In fall 2016, we conducted a survey on Amazon Mechanical Turk in which we asked the following questions:

1. Fred and George each has to do get some work done. If they do it today, it will take two hours, but if they do it in six weeks it will take three hours. Fred chooses to do two hours of work today, and George chooses to do three hours of work in six weeks.
    a. Which word do you associate more with each person? (check one per row)

	Fred	George	Neither
Patient			
Satisfied			
Procrastination			
Responsible			
Impatient			
Diligent			
Impulsive			

    b. If you were in this situation, which would you choose?

2 hours of work today	3 hours of work in six weeks

2. Robert and Stuart each will get money either today or in six weeks. If they get it today, they will get $100, but if they get it in six weeks, they will get $150. Robert chooses to get $100 today and Stuart chooses to get $150 in six weeks.
    a. Which word do you associate more with each person?

	Robert	Stuart	Neither
Patient			
Satisfied			
Procrastination			
Responsible			
Impatient			
Diligent			
Impulsive			

    b. If you were in this situation, which would you choose?

$100 today	$150 in six weeks

We randomized the order of presentation of the two scenarios. The survey was limited to US-based respondents who had at least a 98% positive completion rate on past HITs. We got 445 usable responses. The data from the main questions of interest are shown in Table E-1.

Table E-1: Survey Responses Categorizing Behavior in Scenarios

	Money			Time		
	% who say the more "patient" person (Stuart) fits this	% who say the more "impatient" person fits this	% who say neither	% who say the more "patient" (Fred) person fits this	% who say the more "impatient" person fits this	% who say neither
Patient	95.73	2.47	1.80	31.24	31.46	37.30
Satisfied	49.66	33.71	16.63	62.02	11.69	26.29
Procrastination	13.48	20	66.52	2.47	93.03	4.49
Responsible	77.98	5.62	16.4	90.56	3.82	5.62
Impatient	2.70	92.14	5.17	36.18	22.02	41.80
Diligent	72.58	5.84	21.57	88.76	4.27	6.97
Impulsive	5.17	84.94	9.89	16.63	37.30	46.07

The survey respondents themselves claimed to be quite patient, especially with regard to the procrastination decision, as shown in Table E-2.

Table E-2: Respondents' Hypothetical Choices for Themselves

	Money More Patient ($150 later)	Money Less Patient ($100 now)
Time More Patient (2 hours now)	296 (66.52%)	111 (24.94%)
Time Less Patient (3 hours later)	23 (5.17%)	15 (3.37%)

Appendix G: Recruitment and Confirmation Emails

Contact Email

We are currently recruiting for a series of two experimental sessions, one this week and one in six weeks. You will pick the time for the session this week when you register; you will pick a time to return for the second session a week before that session (five weeks from now). If you sign up you must attend BOTH days. You must be over 18 years old to participate.

For this study, you will need to bring a friend with you. That friend will also need to be able to participate in BOTH sessions and must be over 18 years old. After you register, we will email you to ask you your friend's name and email address. Your friend does not need to already be in our subject database.

You will choose a time for both you and a friend for the first session. You must both come to the same session this week. Possible times are:

DATES [includes links to sign up]

You will choose a time for the second session a week before that session (five weeks from now). You and your friend do not have to attend the same second session.

At the end of the first day, you will each be given $10 for participation. After you complete the experiment, you will each be paid your $55 day 2 earnings. Should you miss the second day, you will forfeit the additional earnings. If you, or your friend, have to leave early you both will be given a $5 show-up fee and you will forfeit your additional earnings.

The maximum amount of time spent in the session will not be more than 2 hours in the first session and not more than 4.5 hours in six weeks. Your actual amount of time may be significantly less.

If you are available for and interested in participating in the two experimental sessions (DATES), please visit the website LINK to register.

You will be contacted by email with details confirming your enrollment in the session and the location. We will also collect the contact information for your friend at that time.

If you have questions, please feel free to send us an email at: expecon@resecon.umass.edu; our website (http://umass.edu/expecon/) provides more information about our lab, our researchers and our research projects.

Thank you very much.

Recruiting Site

We are currently recruiting for a series of experimental sessions. The first session will take place DATES and the second session will take place in six weeks. If you sign up you must attend BOTH days. You will pick a time to return for the second session a week before that session (five weeks from now). You must be over 18 years old to participate. For this study, you will need to bring a friend with you. That friend will also need to be able to participate in BOTH sessions and must be over 18 years old. At the end of the first day, you will each be given $10 for showing up on time. After you complete the experiment, you will each be paid your $55 day 2 earnings. Should you miss the second day, you will forfeit the additional earnings. If you, or

your friend, have to leave early you will both be given a $5 show-up fee and you will forfeit additional earnings.

Please choose a date below if you are available for and interested in participating in the two experimental sessions (DATES & TIMES, Time blocks indicate maximum time).

Day 1 Confirmation Email

Thank you very much for your interest in our upcoming experiment. Please respond to expecon@resecon.umass.edu with the name and email of the friend you will be bringing to the session. Your friend does not need to already be in our subject database.

It is very important to us that both you and your friend are able to attend all both the day 1 session (below) and the day 2 session (at a time you choose in six weeks).

You are registered for: DATE & TIME

You and your friend will each be paid $10 for participating in the day 1 session. You will be paid your $55 day 2 earnings at the end of the day 2 session. If either of you have to leave early, both of you will be paid a $5 show-up fee and you will both forfeit additional earnings.

If you are not able to attend the session you signed up for or if you will not be available in six weeks, please respond to expecon@resecon.umass.edu so that we can find someone to take your spot.

Sessions will take place in the Cleve E. Willis Experimental Lab, STK 303. The lab is located on the 3rd floor of Stockbridge hall. Come to the third floor, turn right at the top of the stairs and

proceed to the end of the hall. You should arrive 10 minutes before the experiment so that we can start on time.

You should plan to arrive with your friend, as we will check you in as a pair. You cannot participate without your friend present. Some sessions may be over-booked, in which case you will each be given $5 and asked to sign up for another time (if available).

Thank you very much for your interest in our session.

Receipt of Friend Information Confirmation Email

Thank you very much for sending us the contact information for the friend you will be bringing to your session on:

DATE & TIME

As a reminder, you should plan to arrive with your friend, as we will check you in as a pair. You cannot participate without your friend present. Some sessions may be over-booked, in which case you will each be given $5 and asked to sign up for another time (if available).

Sessions will take place in the Cleve E. Willis Experimental Lab, STK 303. The lab is located on the 3rd floor of Stockbridge hall. Come to the third floor, turn right at the top of the stairs and proceed to the end of the hall. You should arrive 10 minutes before the experiment so that we can start on time.

If you or your friend are not able to attend the session you signed up for or if you will not be available in six weeks, please respond to expecon@resecon.umass.edu so that we can find someone to take your spot.

Thank you very much for your interest in our session.

Friend Information Confirmation Email

You are receiving this email because your friend NAME has signed you up to participate in an economics experiment. Thank you very much for your interest. This study will take place over two days. The day 1 session time is below and the day 2 session will be at a time of your choosing.

It is very important to us that both you and your friend are able to attend all both the day 1 session (below) and the day 2 session (at a time you choose in six weeks).

You are registered for: DATE & TIME

You and your friend will each be paid $10 for participating in the day 1 session. You will be paid your $55 day 2 earnings at the end of the day 2 session. If you have to leave early your will be paid a $5 show-up fee and you will forfeit additional earnings.

If you are not able to attend the session you signed up for or if you will not be available in six weeks, please respond to expecon@resecon.umass.edu so that we can find someone to take your spot.

Sessions will take place in the Cleve E. Willis Experimental Lab, STK 303. The lab is located on the 3rd floor of Stockbridge hall. Come to the third floor, turn right at the top of the stairs and proceed to the end of the hall. You should arrive 10 minutes before the experiment so that we can start on time.

You should plan to arrive with your friend, as we will check you in as a pair. You cannot participate without your friend present. Some sessions may be over-booked, in which case you will each be given $5 and asked to sign up for another time (if available).

Thank you very much for your interest in our session.

Day 2 Scheduling Email (all subjects)

You are receiving this email because you participated in day 1 of a two-part experiment five weeks ago. Thank you very much for your participation.

You need to choose your day 2 session time for next week. Based on the decisions made in day 1, you will need to perform the entry task for TIME minutes, and then complete a short survey. You will then receive your $55 day 2 earnings.

Please click the LINK and choose a session time. If none of these times work for you please respond to us at expecon@resecon.umass.edu so that we can set up a time that works for your schedule. If you have to leave early you will be paid a $5 show-up fee and you will forfeit any additional earnings. It is thus very important that you choose a timeslot that works for your schedule.

Sessions will take place in the Cleve E. Willis Experimental Lab, STK 303. The lab is located on the 3rd floor of Stockbridge hall. Come to the third floor, turn right at the top of the stairs and proceed to the end of the hall. You should arrive 10 minutes before the experiment so that we can start on time.

Thank you very much for your participation.

Day 2 Confirmation Email (all subjects)

Thank you very much for your interest in our upcoming experiment.

You are registered for: DATE & TIME

If you have to leave early your will be paid a $5 show-up fee and you will forfeit any additional earnings. It is thus very important that this timeslot that works for your schedule. If you are not able to attend the session please respond to expecon@resecon.umass.edu to reschedule.

Sessions will take place in the Cleve E. Willis Experimental Lab, STK 303. The lab is located on the 3rd floor of Stockbridge hall. Come to the third floor, turn right at the top of the stairs and proceed to the end of the hall. You should arrive 10 minutes before the experiment so that we can start on time.

Thank you very much for your interest in our session.