

Social Status and Intertemporal Preferences

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Abstract

The field of household finance has established a correlation between savings behavior and education, income, and race. This is partly explained by a high discount rate ultimately leading to low social status. This paper establishes causation in the opposite direction, with a relatively low social status position leading to a relatively high discount rate. The method used is experimental, with 154 subjects interacting in high- or low-status assignments. The subsequent change in intertemporal preference is significantly determined by the status assignment. The effect is strongest among the subjects who initially have higher discount rates and does not depend on the sex of the subject. This result implies low status consumers have higher discount rates and make worse financial choices because of their low social status, a finding that must be addressed in the regulation of consumer financial products.

Key Words: Consumer Finance; Household Finance; Experimental Finance; Social Status; Discounting; Intertemporal Preference

JEL Classification: D14, D91, I3

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1 Introduction

Regulation of the consumer finance industry has become a politically active issue, as evidenced by the proposed Consumer Financial Protection Agency. While most regulatory attention is focused on ensuring information transparency and preventing unfair or predatory behavior by financial institutions, less attention is focused on protecting consumers from poor decision making. A robust finding from the household finance literature (e.g., Campbell 2006) is that consumers often make poor financial decisions involving a tradeoff between present and future, such as overspending on credit cards, undersaving for retirement or against a rainy day, and not getting around to refinancing a mortgage. Those with lower social status, including consumers with less wealth or education, are more susceptible to this since they typically have a greater focus on immediate versus delayed rewards (e.g., Lawrance 1991; Warner & Pleeter 2001). In this paper, I use experimental methods to demonstrate causation from a low status assignment to a greater focus on immediate rewards. This implies lower status people focus more on the present and make worse financial choices *because* they have low social status. Hence, a permissive regulatory system that frees high status people to optimize their personal finances may expose low status people to the dangers of their own short-term focus—metaphorically handing them the rope with which to hang themselves.

In the primary experiment, 154 subjects were randomly assigned to 2-person groups that worked on a shared task for 20 minutes. One person was assigned the high-status “Supervisor” role and the other the low-status “Worker” role within each group. The Supervisor was responsible for writing down the group’s answers to the task, while the Worker merely provided help and support to the Supervisor. I measure the change in intertemporal preference with survey instruments taken both before and after the experimental manipulation. Compared to the subjects assigned the Supervisor role, the Workers became more focused on immediate rewards, exhibiting greater intertemporal inconsistency in Laibson’s (1997) quasi-hyperbolic discounting framework. The random assignment of role within each group allows causality to be clearly determined—taking the subordinate versus the senior role within a group causes individual preferences to favor immediate versus delayed rewards.

Do the results hold only for small stakes? A strong finding from the intertemporal preferences literature is that intertemporal inconsistency and high discount rates

are more pronounced for decisions involving smaller amounts (e.g., Thaler 1981). But the household finance literature finds a correlation with social status even for large amounts (e.g., Warner & Pleeter 2001). The current study elicited subjects' preferences over amounts that varied from the tens of dollars to the thousands of dollars. The change in preferences was stronger with smaller stakes than with larger stakes, although the difference was not significant.

While the household finance literature indicates little difference in discounting between men and women (e.g., Harrison, Lau & Williams 2002), social status is often considered more important to men. Do the intertemporal preferences of men and women respond differently to social status? I test whether the change in intertemporal inconsistency as a result of the manipulation is different between men and women and find no significant effect. The preferences of both men and women appear equally sensitive to status level.

I also investigate whether the sensitivity to status is greater among those who initially have the highest intertemporal inconsistency and find strong evidence in support of this. Using a specification that includes the subject's initial intertemporal inconsistency interacted with status assignment increases the goodness of fit (measured by R^2) from about 6% to the 15%-20% range, and the t-statistic for the status manipulation increases from 2.8-3.0 to 3.5-10.7, depending on the precise formulation. This specification allows an accurate assessment of the impact on intertemporal preferences. The impact is not small. An average subject who valued a dollar in a week's time as 82.3¢ today would have seen that value decline to 77.5¢ after taking the low-status role or increase to 83.6¢ after the high-status role. The level of time inconsistency—measured as one minus the discount factor—is 37% higher for the low-status role compared to the high-status role.

In this subject pool, those who initially had high intertemporal inconsistency responded strongly to the status manipulation, while those who had low inconsistency responded only weakly. However, care needs to be used in extending this result to the wider population because the experimental subjects are unlikely to be representative. In gaining a place at U.C. Berkeley and then choosing to attend the experimental session, they came through filters that would exclude many people with high intertemporal inconsistency. Hence, the subject pool is likely skewed compared to the general population.

The basic result sheds light on perhaps the strongest cross-sectional finding in household finance: low status individuals have higher discount rates and make worse

choices than high status individuals. Consider first the direct evidence related to discounting. Using the Panel Study of Income Dynamics, Lawrance (1991) calculates individual consumption Euler equations and finds poorer, less educated, and ethnic minority households have higher rates of time preference. Warner & Pleeter (2001) use a military downsizing program as a natural experiment, with the departing personnel being given the choice between an annuity and a lump-sum payment with a break-even discount rate exceeding 17%. The officers had much lower discount rates than the enlisted men, while younger, less educated, less intelligent, and Black personnel had higher discount rates. Harrison, Lau & Williams (2002) conducted a nationally representative survey in Denmark and found more educated individuals have a lower discount rate.

Similarly, there is strong evidence that poorer, less educated, and ethnic minority households make worse financial choices with an intertemporal component. For example, poorer and less educated households tend to make investment mistakes, including non-participation in risky asset markets and the failure to exercise options to refinance mortgages (Campbell 2006). Poorer households tend to save less (Dyner, Skinner & Zeldes 2004), even though their greater likelihood of unemployment and uninsured health conditions implies a greater precautionary savings motive. Finally, Blacks and Hispanics in the U.S. under-invest in health and education and over-spend on positional goods relative to Whites (Hurst, Charles & Roussanov 2009).

The above findings are concerned with socioeconomic status (occupation, education, income, and wealth), intelligence, age, and ethnicity. These characteristics are all part of a larger construct termed social status. In this paper, “social status” refers to *a power and influence hierarchy of the members of a society with accompanying dominance and submissive behaviors*. The status manipulation of this paper falls within such a definition, as do socioeconomic status, intelligence, age, and ethnicity. This is most clearly demonstrated by the small groups literature from sociology (reviewed in Webster 2003), with socioeconomic status, intelligence, age, and ethnicity being status cues that lead to power and influence within groups.¹ Hence the status manipulation of this paper is relevant to the household finance results.

Other explanations for the correlation between status and time preference must also be considered. The relationship between wealth and intertemporal preference

¹These findings are paralleled in other literatures, including human ethology (Eibl-Eibesfeldt 1989) and anthropology (Howitt 1904; Wiessner 1996).

has long been highlighted. For example, Irving Fisher (1930) notes “the smaller the income, the higher the preference for present over future income.” Becker & Mulligan (1997) construct a model in which one’s discount rate is determined by the resources spent “imagining” the future, and since the wealthy have more resources, they have a lower discount rate. While Becker & Mulligan argue for a direct causal link from wealth to discount rate, in this paper I propose social status as a mediating mechanism—*relative* wealth leads to social status, and social status then determines one’s discount rate. This is consistent with the failure of the savings rate to rise as countries become wealthier, despite an increase in the number of individuals who are wealthy in *absolute* terms.² Since relative wealth determines intertemporal preference, the aggregate rate of saving does not increase over time.

We should also expect initial differences in intertemporal preferences to lead to ultimate differences in wealth, on both a theoretical and an empirical level. In a simple endowment economy with infinitely lived agents, wealth flows to the agents with the lowest discount rate, as the agents with high discount rates borrow to over-consume.³ Those with low discount rates make decisions that are better in the long-term, leading to greater wealth accumulation. This direction of causation has been demonstrated in an educational setting. Four-year-old children were given a choice between one treat immediately (e.g. a marshmallow) or two after a few minutes delay. Those choosing the delayed reward tended to achieve better teenage and adult outcomes (Mischel 1996). Similarly, impatience in eighth grade children is twice as important as I.Q. for end-of-year grades (Duckworth & Seligman 2005).

To help disentangle the wealth from social status effects, I ran a second experiment that resulted in a small financial gain or loss, but without manipulating social status. One hundred and eighty six experimental subjects played a game in which they guessed the movements of the stock market based on historical price movements. Those guessing correctly gained a dollar, and those guessing incorrectly lost a dollar. The game ended when they had either gained or lost five dollars relative to their starting endowment. The manipulation had no effect on intertemporal preferences, even though there was a large effect on measured emotions. Similarly, in one treatment of the social status manipulation, participants were given unequal pay, with the Supervisor earning \$10 more than the Worker, and in this case the

²Indeed, there is evidence that the personal discount rate in wealthier countries is actually *higher* (Percoco & Nijkamp 2009)

³See Ramsey (1928) and Becker (1980)

manipulation had little effect on intertemporal preferences. The psychological mechanism underlying this is unclear, but perhaps the experience of unanticipated gains or losses generates mental states that undermine the status effect. To use an old adage, the unanticipated winnings of the high status group may “burn a hole in their pockets.”

The other possible reason for the correlation between status and intertemporal preferences is that some third factor is causing them both. Perhaps the parenting style of high-status parents leads to both low discount rates and high social status in their adult offspring, but without any causal link between discounting and status in the offspring. However the evidence for this is lacking.

The principal finding of this paper has public policy implications. Because status drives intertemporal inconsistency, low status individuals will respond differently to financial deregulation and innovation than high status individuals. For example, the ease of accessing consumer credit or remortgaging to release residential equity may allow high status individuals the freedom to optimize their personal finances, while exposing low status individuals to the dangers of their own intertemporal inconsistency. In this regard, point-of-sale credit is especially pernicious.⁴

Many field behaviors have been correlated with intertemporal preferences, including lack of exercise, smoking and body mass index (Chabris et al. 2008), substance abuse (Kirby, Petry & Bickel 1990; Reynolds 2006), and delinquency in juveniles (White et al. 1994). These same behaviors are more prevalent in low- versus high-status groups. The findings of this paper imply low social status is a cause of these behaviors due to the impact on intertemporal preferences. Interventions can be designed that address either social status or the intertemporal preferences directly. The next section discusses evidence that the neurotransmitter serotonin modulates the relationship between social status and intertemporal preferences. This evidence is strong. Hence, behavioral and pharmacological interventions to boost serotonergic action should reduce intertemporal inconsistency and improve intertemporal decision making.

More generally, the findings have implications for how we think about personal responsibility and the concept of “natural justice.” In particular, if the preferences of an individual or group are the result of a status position that is assigned by the wider society, does that place some duty on the wider society to address the

⁴Indeed, credit card contracts appear designed for consumers with time-inconsistent preferences (DellaVigna & Malmendier 2004).

resulting behaviors? This is seen most clearly when ethnicity is a negative status characteristic, as with Blacks in the U.S. The poor educational and life outcomes of many Blacks can at least be partly attributed to high intertemporal inconsistency that results from their negative status characteristic. Does this place an obligation on society to implement programs, like positive discrimination, that address the status differential?

The rest of this paper is organized as follows. Section 2 discusses the existing evidence that social status leads to changes in discounting. Based on this evidence, I construct a set of hypotheses and questions to test experimentally. Section 3 discusses the initial questionnaire, Section 4 discusses the social status manipulation, and Section 5 discusses the financial gain/loss manipulation. Section 6 concludes.

2 Motivation

The Introduction includes evidence from household finance that discounting and social status are correlated. However, we want to move beyond *correlation* and focus on *causation*. But why should we expect social status to determine one's discounting preferences? While the household finance literature is silent on this, an answer is required to provide a theoretical basis to the empirical results of this paper. Accordingly, in this section I provide an argument and supporting evidence from outside the finance discipline. The argument is evolutionary, and the evidence is neurological. While the evidence is circumstantial, it helps construct a set of hypotheses that can be tested in an experimental setting. It also points to some open questions where the existing evidence does not generate a strong prior belief.

In discussing the relationship between income and impatience, Fisher (1930) argues that the threat of starvation forces poorer individuals to focus on the present: "If a person has only one loaf of bread he would not set it aside for next year even if the rate of interest were 1000 per cent; for if he did so, he would starve in the meantime. A single break in the thread of life suffices to cut off all the future." In the developed world today, this argument is less applicable due to the great reductions in absolute poverty that have been achieved. Indeed, obesity may now be a greater threat to the poor than starvation. However, the argument is applicable in an evolutionary context: when resource levels are low, the organism focuses on the present to reduce the chance of immediate death. Applying the evolutionary psychology paradigm (Cosmides & Tooby 1987; Barkow 1989), we should expect

psychological adaptations that reflect this evolutionary context, with people becoming more present-oriented when their level of resources is low. Since social status is a form of resource that is convertible into other forms (Barradale 2009), we should expect low status to cause greater impatience.

While this evolutionary argument is suggestive, we require a mediating mechanism. There is one obvious candidate: serotonin. A monoamine neuromodulator in the central nervous system and hormone in the peripheral circulation, the serotonin system is highly conserved across species, including all vertebrates. Its effects are diverse, including responses such as sleep, appetite, sexual behavior, violence, suicide, and depression. Indeed, the main class of anti-depressant drugs currently prescribed target the serotonin system.

The level of serotonergic activity in the central nervous system functions as a signal. The question is, what is being signalled? Wilkinson (2005) suggests social status, even referring to serotonin as the “social status hormone.” Various lines of evidence support this. For example, serotonergic function is positively correlated with socioeconomic status in healthy adults (Matthews et al. 2000) and with community social status (Manuck et al. 2005). The correlation with individual status has been replicated in primate studies (e.g. Higley et al. 1996). Causation from serotonin level to dominance behaviors and enhanced mood has been demonstrated using tryptophan, a precursor amino acid that crosses the blood-brain barrier (reviewed in Young & Leyton 2002). Whether serotonin is as specific as the social status hormone or is more generally signalling organismal well-being is unclear, although the very wide range of functional responses to serotonin (reviewed in Barnes & Sharp 1999) suggests the latter.

There is also evidence that serotonin influences intertemporal preferences. In animal models, reducing brain serotonin increases the preference for smaller immediate rewards, and increasing serotonin increases the preference for larger delayed rewards (reviewed in Cardinal 2006). Among a non-clinical group of human males, lower serotonergic activity was correlated with greater psychological impulsiveness (Manuck et al. 2003), an effect that holds for a genetic marker of lower serotonin capacity.⁵ Tryptophan depletion has also been used to demonstrate causation in human males, with reduced serotonin leading to greater impulsiveness (Walderhaug et al. 2002).

Recent neuroimaging research suggests we can be more specific in how intertem-

⁵The s allele of 5-HTTLPR (Paaver et al. 2007)

poral preferences are impacted by serotonin. McClure et al. (2004) conducted fMRI scanning while healthy subjects made intertemporal choices. They found the brain's dopamine system is preferentially activated by decisions involving immediate reward, and the relative strength of the activation predicts subjects' choices for immediate versus delayed rewards.⁶ This implies the intertemporal inconsistency element of Laibson's (1997) quasi-hyperbolic discounting has an actual neurological basis. Dopamine is another monoamine neuromodulator, and it is known to mediate reward processing and behavioral reinforcement. Importantly, changes to the brain's dopamine level are driven by the level of serotonin (Ågren et al. 1986). This is a likely route for the level of serotonin to influence intertemporal preferences.

Based on this discussion, I formulate three hypotheses and ask four questions to be investigated in the experimental setting.

Hypothesis 1 *Changes to social status cause changes to intertemporal preferences, with relatively low social status leading to higher discounting.*

The evolutionary argument implies lower status individuals should become more focussed on the present. The neurological evidence implies lower status leads to less serotonin activity, and this in turn leads the organism to become present-oriented. However, direct causation from social status to intertemporal preferences has not previously been demonstrated and, in particular, it has not been demonstrated in humans.

Hypothesis 2 *In particular, intertemporal inconsistency becomes relatively greater for those in a junior versus senior status position.*

The neuroimaging study of McClure et al. (2004) demonstrates the dopamine system is preferentially activated for decisions with immediate versus delayed rewards. Because serotonin leads to changes in dopamine activity, this is a likely route for serotonin to influence intertemporal preferences. I hypothesize that lower social status leads to a preference for immediate versus delayed rewards.

Hypothesis 3 *The effect holds for both men and women.*

Serotonin has been correlated with social status for both males and females. For example, Higley et al. (1996) find a correlation in female rhesus monkeys. Hence the neurological evidence suggests both men and women will respond similarly to the status manipulation. This is supported by the household finance results, which

⁶See also Hariri et al. (2006) and McClure et al. (2007)

hold similarly for men and women. However, folk psychology suggests that social status is more important to men than women. I hypothesize that men and women will exhibit similar responses to the status manipulation.

Question 1 *Does the effect depend on the size of the stakes?*

While discount rates are generally lower for high stakes (e.g., Thaler 1981), the correlation between social status and discount rates has been demonstrated to hold even for large amounts (e.g., Warner & Pleeter 2001). I ask whether causation from social status to discounting is influenced by the size of the stakes, being weaker for high stakes and stronger for low stakes.

Question 2 *Does the change in preference depend on initial preference as well as status?*

People vary in the extent to which they are focused on immediate versus delayed rewards, with some being close to exponential discounters and others exhibiting a high level of intertemporal inconsistency. I ask whether individuals' sensitivity to social status is dependent on initial preference, with exponential discounters responding only weakly and those with a high level of intertemporal inconsistency responding strongly.

Question 3 *How do financial gains and losses interact with the effect of status?*

The household finance results indicate a correlation between wealth and lower discount rates. Since wealth leads to social status, we should expect this correlation. However, windfall changes to wealth that are not accompanied by changes to social status may generate other psychological responses, including priming for immediate consumption. I ask whether financial gains and losses—windfall changes to wealth—influence the hypothesized social status effect.

Question 4 *What is the magnitude of the effect?*

The magnitude of the change in preferences will indicate the relative importance of the hypothesized social status effect in explaining the correlation between social status and intertemporal preferences. Furthermore, the magnitude of the effect will indicate the extent to which intertemporal preferences are dynamic over time and so likely to affect asset prices. I ask how large is the magnitude of the effect.

These hypotheses and questions are tested in the experimental manipulations that follow.

3 Initial Questionnaire

3.1 Methods

3.1.1 Subjects

A total of 389 undergraduate students from the University of California at Berkeley participated in the experiments, which were held at the Experimental Social Sciences Laboratory (“XLab”). The questionnaires were conducted on computers using ZTree (Fischbacher 2007). The experimental sessions lasted just under an hour and the subjects were paid an average of \$20 (earlier sessions) or \$15 (later sessions).

The 26 subjects who answered zero to any financial question were excluded from the analysis for two reasons. First, the financial analysis uses a log specification, making zero responses problematical. Second, subjects placing zero value on future or uncertain cash flows may not have fully understood the question. This left 363 subjects whose responses to the initial questionnaire are analyzed.

3.1.2 Measures

The basic inference strategy can be described as “test-manipulate-retest,” with (i) the primary variables of interest being tested both before and after an experimental manipulation; and (ii) subjects being randomly assigned to manipulation groups. This setup is similar to that used by the pharmaceutical industry to demonstrate the efficacy of new treatments. Testing both before and after the manipulation allows the innovation in the tested variables to be used. This filters out both idiosyncratic and systematic variation in the initial value of the tested variables, although there is a danger of subjects’ preferences becoming anchored during the initial test phase. To reduce this risk, slightly different questions can be posed in the retest phase. The random assignment to manipulation group allows causation to be inferred, with the change in the tested variables being caused by the manipulation plus noise.

The initial questionnaire is included as Appendix A.1. The first set of questions (Q1-Q6) ask for basic demographic information. The second set (Q7-11) are derived from Glaeser et al.’s (2000) measure of social status, which was found to be significant in an economic trust game. Since the subjects were undergraduates and likely below the legal drinking age in California, Q11 asked about parties per week invited to, rather than beer servings per week consumed. Q13 measures one’s sense of power and is taken from Anderson & Galinsky (2006). Q14-Q23 are general ques-

tions that could plausibly be related to intertemporal preferences, such as health, hunger, tiredness, time spent outdoors, and life satisfaction.

Question 24 measures positive and negative affect (a term in psychology for the experience of feeling or emotion) using a subset of questions asked in the PANAS questionnaire of Watson, Clark & Tellegen (1988) and the PANAS-X questionnaire of Watson & Clark (1994), with slight modification. Subjects rated the extent to which they were feeling 16 different emotional terms (Angry; Proud; Sad; Positive; Afraid; Happy; Guilty; Alert; Contented; Down; Confident; Irritable; Attentive; Ashamed; Joyful; and Nervous). For analysis, these emotional terms were grouped into pairs. In addition, the eight positive terms (Proud; Positive; Happy; Alert; Contented; Confident; Attentive; and Joyful) were grouped into a Positive Affect Score and the eight negative terms (Angry; Sad; Afraid; Guilty; Down; Irritable; Ashamed; and Nervous) into a Negative Affect Score. The subjects clicked buttons to indicate their response on a 9-point scale, rather than the 5-point scale of the PANAS-X. I took this approach because I am primarily concerned with the change in emotions from before to after the manipulation, and a 9-point scale is less prone to anchoring effects. The different scale and reduced set of questions imply the responses are not directly comparable to the PANAS scales.

The financial questions (Q25-27) are broadly modeled on those of Thaler (1981). The subjects receive a hypothetical prize from their bank (Q25 and Q27), or are offered a raffle ticket for sale by their bank (Q26). In Q25 the subjects are asked for the amount of money they would need to receive with certainty that would make them indifferent to a 50% uncertain payout. In Q26 the subjects were asked for the price that would make them indifferent to buying a raffle ticket with a 50% payout chance. In Q27 the subjects were asked for the amount of money they would need to receive now to make them indifferent to receiving a larger amount with a fixed delay. In each of the questions, the subjects were asked for their indifference point over amounts that varied widely in magnitude (from tens of dollars to thousands of dollars) and in Q27 for fixed delays of 1 week, 2 months, and 2 years.

These financial questions are matching tasks, as defined by Frederick, Loewenstein & O'Donoghue (2002), with hypothetical rewards being used. The subjects were required to state the amount of money that would make them indifferent to the proposed payout. This method has three advantages in the current setting. First, the subjects were able to answer the questions relatively quickly, with most subjects completing the entire retest questionnaire in about 5 minutes. This is important

because the experimental manipulations are likely to have a transitory effect on subjects, implying the effect may disappear while a long retest phase is being conducted. Second, a tight estimate of each subject’s preferences is obtained, both before and after the manipulation. This is important because most subjects experience only a small change in preferences, which a coarse estimate would be unable to detect. Third, preferences are determined over payment amounts that vary considerably in orders of both magnitude and delay.

The use of matching tasks with hypothetical rewards has one major disadvantage, however, with less external validity than tasks involving real monetary rewards. The use of real rewards generally requires a choice task, as defined by Frederick, Loewenstein & O’Donoghue (2002), in which subjects are presented with a series of choices between A and B options. For example, the choice between \$90 now and \$110 in 2 months. The subjects make many such choices and have a chance of one choice being paid in real monetary terms. Camerer & Hogarth (1999) argue this increases effort and reduces noise. Choice tasks result in the filtration of the population by preference parameter. For example, the commonly used questionnaire of Kirby, Petry & Bickel (1999) asks 27 questions and results in each subject being assigned one of nine values for a hyperbolic discount parameter. There is a tradeoff between the coarseness of the filtration and the number of questions asked, with some questionnaires that produce a fine filtration requiring more than an hour to conduct (e.g., Tanaka, Camerer & Nguyen 2009). This tradeoff makes choice tasks unsuitable for the current experiment since both a fast test and a tight preference estimate are required.

While the current experiment uses hypothetical rewards, other researchers find the presence of real rewards makes little difference to subjects’ responses (e.g., Johnson & Bickel 2002; Madden et al. 2004). Furthermore, the intertemporal preference parameters estimated in the present experiment are close to others’ estimates based on real rewards or field behaviors, as discussed below.

Using the results from the financial questions, I estimate intertemporal and risk preferences for each subject. For intertemporal preference, I use Laibson’s (1997) quasi-hyperbolic discount function, which is relatively standard and consistent with the neurological evidence in Section 2. I make a slight modification to allow a

logarithmic transformation and OLS estimation:

$$\begin{aligned} PV(x_t) &= x_t \beta e^{-rt} \\ \ln [PV(x_t) / x_t] &= \ln [\beta] - rt \end{aligned}$$

where $PV(.)$ is the present value function, r is an exponential rate and β is an immediacy factor. For each subject $\ln [\beta]$ and r are estimated using an OLS regression with an intercept term and t the only independent variables. Table 1 presents the first four moments and median of r , $\ln [\beta]$ and β . The mean level of r is 17.4% per year, and the median is 12.1%. The mean level of β is 0.826, and the median is 0.907; this corresponds to the value of a dollar with any delay compared to a dollar now. Both β and r are skewed and have high kurtosis.

We can compare the level of β with others' estimates using field behaviors and real rewards. Brown, Chua & Camerer (2009) provide a recent summary. They report values of: 0.55 for retirement savings (Angeletos et al. 2001); 0.34 for welfare takeup by single mothers (Fang & Silverman 2007); 0.80 for credit card use (Shui & Ausubel 2004); 0.90 for unemployment spells (DellaVigna & Paserman 2005); 0.74-0.89 for experiments in Vietnam (Tanaka et al. 2009); and 0.70 for consumption data (Laibson et al. 2007). While my estimates are higher than many of these, it should be noted that the subject population of U.C. Berkeley undergraduates is unlikely to be representative of the general population.

For risk preference, I use the standard Prospect Theory utility function of Tversky & Kahneman (1992), with modification to allow a logarithmic transformation and OLS estimation. For choices over uncertain gains, the certainty equivalent is:

$$CE(px) = e^{q(p)}(px)^{1+\sigma}$$

where $CE(.)$ is the certainty equivalent function, p the objective probability, x the payment amount, $e^{q(p)}$ is a transformation of the objective probability, and σ is the curvature of the value function. In the current experiments, the uncertain gains all had a 50% probability of paying out, implying $e^{q(p)}$ is a constant, e^q . Question 26 tested the preference for certain losses against uncertain gains or, put more simply, the willingness to purchase a raffle ticket. This allows losses and gains to be compared and a loss aversion parameter λ to be estimated:

$$CE(-px) = e^{-\lambda} e^q (px)^{1+\sigma}$$

Taking logs:

$$\begin{aligned}\ln [CE(px)/px] &= q + \sigma \ln(px) \\ \ln [CE(-px)/px] &= -\lambda + q + \sigma \ln(px)\end{aligned}$$

This system can be estimated with OLS using a dummy variable to indicate a certain loss, or payment for the raffle ticket. To facilitate comparison with Tversky & Kahneman’s (1992) estimates, the intercept term, q , is recentered to be the risk aversion parameter over the average (in log terms) expected payment. The average value of $\ln(px)$ in the initial questionnaire is 6.072, so the transformation is effected by simply taking $\sigma [\ln(px) - 6.072]$ on the right hand side. Without this transformation, q would be interpreted as the risk aversion over a \$1 notional bet, which is less intuitive and outside the range of financial questions asked.

Table 2 presents the first four moments and median of λ , σ and q . The mean level of λ is 1.907, and the exponential of this is 6.73. This implies the subjects are highly loss averse, valuing a loss 6.73 times more highly than a gain. In comparison, Tversky & Kahneman found the median loss aversion parameter for their subjects of 2.25. The difference is likely due to the style of question asked and the different subject population, with Tversky & Kahneman using graduate students. The median level of σ is -0.161, while the comparable figure for Tversky & Kahneman is -0.12, calculated as one minus the exponent of their value function. The mean level of q is -0.270 and the median is -0.006. The exponents of these are 0.76 and 0.99 respectively, which is the probability weighting the subjects apply to a 50% likely gain. Tversky & Kahneman also found their subjects to slightly underweight 50% probabilities.

3.2 Results

Tables 3 and 4 present correlations between the questionnaire items and the financial preference measures. Following Chabris et al. (2008), I do not cherry-pick behaviors to report but rather present the full set of variables that were hypothesized to be correlated with financial preferences.

The static correlations are most noteworthy for how little they find, perhaps because the population is self-selected students and not representative of the wider society. The immediacy factor, β , has more significance than the other measures, but most correlations are not significant. This may be caused by the relatively weak status structures of undergraduate students. Also the students who attend

the experimental session have already come through filters that are correlated with intertemporal preferences: at high school they chose to study rather than relax or pursue other activities; and they chose to sign up for and actually attend the experimental session.

In the static data, a few trends are discernible. Subjects with a high intertemporal inconsistency choose behaviors that are pleasurable in the short term like smoking, spending time outside, attending parties, and volunteering. In contrast, subjects with a low intertemporal inconsistency are more likely to study and so have a higher GPA. There are also variables one would expect to lead to social status that are positively correlated with β , including year at university, male height, and again GPA. These are consistent with the base hypothesis that social status leads to less intertemporal inconsistency.

GPA is interesting because it both leads to status and is the result of subjects choosing to study rather than enjoying leisure time. This creates a positive-feedback loop: academic success leads to less intertemporal inconsistency, which leads to more studying, which leads back to academic success. Hence, it is not surprising that GPA has the greatest correlation with the immediacy factor β .

Some measures that were expected to be positively correlated with social status have no clear relationship with intertemporal preferences. The six measures of social status (working for pay; parent with a college degree; close friends; volunteering; parties; and girlfriend/boyfriend) that Glaeser et al. (2000) found significant in an economic trust game show no discernible pattern in relation to the immediacy factor, β , or the exponential rate, r . This may be because some of the behaviors not only lead to higher social status, but are also the result of a higher rate of time preference, like attending parties. Similarly, Anderson & Galinsky's (2006) "sense of power score" has no clear relationship to intertemporal inconsistency. This lack of a relationship also holds for the measured emotions except Afraid + Nervous, which has a significantly negative correlation with β .

With risk preferences, the main result is that women are more loss averse (higher λ). They also have greater curvature to the value function (lower σ) while having similar average risk aversion (q), and this implies they are more risk averse over large bets and less risk averse (or more risk seeking) over small bets.

In the next two sections, I present the social status and financial gain/loss manipulations. The primary measure is the effect these manipulations have on the financial preference parameters. Hence, I track the change in parameters for each

individual from before the manipulation to afterwards, and then correlate the change with the experimental treatment. Unrecoverable software problems lead to two experimental sessions being abandoned during the manipulation phase, leaving 314 subjects whose change in preferences was analyzed. Table 5 presents the first four moments of the change in preference parameters as a result of the manipulations. The kurtosis of all five parameters is high, indicating the preferences of most subjects changed by a relatively small amount while the preferences of a minority changed by a relatively large amount. This large number of outliers can bias the results and undermine the statistical tests. As a simple solution, for each observation I take the square root of the absolute change multiplied by the sign of the change. This reduces the effect of outliers. The moments on this basis are also presented in Table 5, and the kurtosis is considerably reduced.

4 Social Status Manipulation

4.1 Methods

The status manipulation utilized is similar to others in the literature (e.g., Snodgrass 1992; Hall et al; 2001, Anderson & Berdahl 2002; Wojciszke & Struzynska-Kujalowicz 2007), with two subjects working together on a shared task, one being assigned a high-status role and the other a low-status role. A total of 154 subjects participated in eight experimental sessions. Ten subjects were excluded from the analysis due to answering zero to one or more of the financial questions. Of the remaining 144 subjects, 111 participated in a game where the two roles enjoyed Equal Pay, and 33 participated in a game where the two roles were given Unequal Pay.

On entering the laboratory, subjects were seated in same-sex pairs. After completing the initial questionnaire, the experimenter approached each pair and offered the subject seated closest to the aisle a choice between two pieces of paper. The subject could not see the contents of the paper until after he or she had selected it. The other piece of paper was then given to the second person in the pair. The two pieces of paper described the roles of Supervisor and Worker that the subjects would take in a 2-person work group, and these role instructions are included in Appendix A.2. In brief, the Supervisor was responsible for writing down the group's answers to the task, and the Worker was responsible for advising and helping the Supervisor. To eliminate bias due to the top or bottom piece of paper being chosen more

frequently, the order of the two pieces of paper was alternated—if the Supervisor description was on top for one pair, then the Worker description would be on top for the next pair. Two distinct treatments were conducted. In one the subjects were paid unequally, with the Supervisor earning \$10 more than the Worker, and in the other the subjects were paid the same amount. All participants were made aware of the operative pay protocol.

After the roles had been assigned, the Supervisor was handed the task instructions. The first page described the task of assigning social responsibility scores to fictitious organizations. The subsequent 5 pages contained approximately 2,000 words of text describing 8 fictitious organizations. To encourage the groups to work diligently, an \$80 prize was given to the team with the “best” answers, where “best” was defined as being closest to the average answers of all the groups. The subjects were given 20 minutes to complete the task. Most groups finished the task in about 15 minutes and then continued talking quietly until the experimenter announced the end of the game. In almost all cases the Supervisor chose to retain the task instructions and, as instructed, wrote down the answers of the group. Since there was only one set of instructions, the Worker had to look over to the Supervisor’s desk to read them.

The experimental setup was designed to isolate the status interaction as the manipulated factor. Hence, the two subjects were treated equally, apart from the instructions, and the assignment of roles was transparently random. There was no attempt to devalue either subject or to suggest the Supervisor in any way deserved the role by being “better” than the Worker. Since social status was manipulated, I refer to the Supervisors as the High Status Group and the Workers as the Low Status Group.

4.2 Results

In the Equal Pay Treatment, the subjects generally enjoyed the experimental manipulation. As highlighted in Table 6, in this treatment both High Status and Low Status Groups experienced a large fall in negative affect, with all components of the Negative Affect Score (i.e. Angry + Irritable; Sad + Down; Afraid + Nervous; Guilty + Ashamed) declining significantly for both groups. Their emotional responses were similar, with no significant differences between the two groups. The theme of the subjects enjoying the manipulation is supported by some of the feedback forms at the end of the experiment. For example, “I enjoyed the group work a

lot” (Supervisor); “The corporate responsibility segment was one of the best activities I’ve done in XLab” (Supervisor); and “the team exercise was great” (Worker).

However, if we focus on the Unequal Pay Treatment, a slightly different picture emerges. The Low Status Group became more Angry + Irritable than the High Status Group, and less Happy + Joyful. Also the High Status Group became more Guilty + Ashamed than the Low Status Group. Both groups seem to have viewed the pay differential as unfair, and the Low Status Group responded with anger and the High Status Group with guilt. This view is supported by some of the feedback: “very unfair payment system” (Worker); “I contributed more to the decision making. The worker should earn equal pay.” (Worker).

With the financial preference response to the manipulation, we can formally test the hypotheses and answer the questions formulated in Section 2. In support of Hypothesis 1 (*status causes changes to intertemporal preferences*) and Hypothesis 2 (*in particular, intertemporal inconsistency*), in Table 7 we see the High Status Group responded with an increase in the immediacy factor, β , while the Low Status Group responded with a decrease. The difference between the two groups is highly significant, with a t-statistic of 2.99 or 2.79 depending on whether we use the unadjusted change in β or the square root specification. The R^2 statistic is about 5%-6%. The magnitude of the difference is 0.056, which compares with a population mean of 0.826 and standard deviation of 0.222 reported in Table 1. Interestingly, the coefficients are greater for the Equal Pay Treatment than the Unequal Pay Treatment, and if we focus just on the Equal Pay Treatment the R^2 statistic increases to about 6%-7%. While the difference between the two pay treatments is not significant in this specification, it hints that pay differentials considered unfair may undermine the effect of the status manipulation.

The impact of the manipulation on the exponential rate, r , is much less significant. Indeed, Table 7 indicates r becomes *higher* for the High Status Group relative to the Low Status Group. This appears inconsistent with the basic argument that low status leads to a greater rate of time preference. To investigate further, we can look in more detail at the structure of subjects’ responses. In particular, the intertemporal preferences question (Q27) elicited preferences over cash flows in 1 week, 2 months, and 2 years, and we can group the responses for these time periods. Table 8 presents such an analysis in the first three columns. For each subject and each time period, I take the average of the discount factor ($PV(x_t)/x_t$) before and after the manipulation, and then track the change according to whether the indi-

vidual was in the High or Low Status Group. If we focus initially on the Equal Pay Treatment (Panel B), we see the manipulation has an effect of 0.059 (t-stat = 2.32) for the 1 Week preference, 0.056 (t-stat = 2.31) for the 2 Month preference, and 0.037 (t-stat = 1.39) for the 2 Year preference. Hence, the manipulation appears to change preferences primarily over the short time periods, 1 Week and 2 Months, rather than the 2 Year period. This implies the immediacy factor, β , and the exponential rate, r , will move in the same direction as a result of the manipulation.

We can also use Table 8 to address Question 1, whether the size of the reward interacts with the status manipulation. For each time period, the subjects were asked their preferences over small, medium, and large amounts, corresponding roughly to tens of dollars, hundreds of dollars, and thousands of dollars. The specific amounts differed between the initial questionnaire and the ending questionnaire to reduce anchoring, but the amounts were of similar order of magnitude. Since the status manipulation primarily had an effect on the 1 Week and 2 Month time periods, I consider size changes over these time periods combined. In the fourth column, 1 Wk + 2 Mo, I present the same analysis as the first three columns, but taking each subject's average response over the two shortest time periods. In the last three columns, I then break this out into the three size categories. The impact of the manipulation for the Equal Pay Treatment (Panel B) for the small amounts was 0.064 (t-stat 2.28); for the medium amounts was 0.064 (t-stat 2.29); and for the large amounts was 0.043 (t-stat 1.64). Hence, the manipulation had a similar effect on the small and medium size amounts, but slightly less effect on the large amounts. However, this difference is not statistically significant.⁷

Also note that in Table 8 there is no obvious pattern to the responses for the Unequal Pay Treatment (Panel A). The manipulation has opposite effects on the 1 Week versus 2 Month time periods (-0.004 vs. +0.030), and on the Small versus Medium size amounts (+0.069 vs. -0.026). These responses appear to be noise, consistent with the suggestion that unfair pay differentials undermine the status manipulation.

I use Table 9 to investigate Question 2, whether the magnitude of the subject's response to the status manipulation will depend on their initial preferences. Specifically, do those with high intertemporal inconsistency (smaller β) respond more strongly and experience a larger change of β in the direction of the manipulation? I

⁷In a separate specification, a size term was added to the quasi-hyperbolic discount function, and the change in this term was not significantly related to the status assignment.

compare the existing model with Change in Beta depending on Status Group (Specification I) against one in which Change in Beta depends on Status Group multiplied by One minus Initial Beta (Status * 1-Initial Beta) (Specification II). The second specification appears better, based on t-statistics and the R^2 measure.⁸ To confirm this, Specification III is a multiple regression with Status * 1-Initial Beta and both level effects, Status and Initial Beta, as independent variables; the standard errors are clustered by experimental session to allow for intra-session correlation, and a separate dummy variable is included for each session.⁹ In this case Status is not significant while Status * 1-Initial Beta remains highly significant. This continues to hold when control variables from the Initial Questionnaire are included (Specification IV). Hence the subjects with greater intertemporal inconsistency respond more strongly to the status manipulation.

I address Hypothesis 3 (*effect holds for both men and women*) in Table 9, Specification V, by adding an interaction term for sex (coded as Woman = $\frac{1}{2}$, Man = $-\frac{1}{2}$) to Specification III and running a regression including the triple interaction term together with the double interaction and level terms. The triple interaction term is not significant, whether we use the Change in Beta (Panel A) or the Square Root of the Change in Beta (Panel B) as the dependent variable. This implies there is no significant difference between men and women in their response to the manipulation, consistent with Hypothesis 3.

Since treatments were run including both Equal and Unequal Pay, we can formally investigate Question 3 (*interaction with financial gains and losses*). In Table 9, Specification VI, I add an interaction term for the Unequal Pay Treatment (coded as Unequal Pay Treatment = 1, Equal Pay Treatment = 0) to Specification III and run a regression including the triple interaction, double interaction, and level terms. The triple interaction term is significantly negative in both Panel A and Panel B. This implies that paying the subjects unequally *undermines* the social status manipulation, reducing the effect of the manipulation on intertemporal preferences.

Using the coefficients from Table 9 (Specification II, Panel A) we can calculate predicted values of beta following the status manipulation. This is presented in

⁸To address the non-normality of the dependent variable, Panel A uses bootstrap standard errors, while Panel B takes the square-root of the distribution and then uses robust standard errors. The specifications in other tables generally have binary independent variables, so are much less sensitive to the use of robust or bootstrap standard errors.

⁹The sessions varied by time of day, physical location of the experimental laboratory, and timing within the academic year.

Table 10, with starting values of beta being the mean and median values from Table 1. If we focus on the Mean Beta case, the Initial Beta of 0.826 is predicted to increase to 0.836 for the High Status Group and reduce to 0.775 for the Low Status Group. This is a large effect, in answer to Question 4.

The social status manipulation had no significant effect on risk preferences. This is demonstrated in Table 11 for the square root of the change in each of the risk preference parameters, loss aversion (λ), curvature of the value function (σ), and average risk aversion (q). The lack of significance also holds when the dependent variable is the change in parameter, rather than the square root of the change.

5 Financial Gain/Loss Manipulation

5.1 Methods

A total of 235 subjects participated in this manipulation. Sixteen subjects were excluded from the analysis due to answering zero to one or more of the financial questions. Unrecoverable software problems led to the abandonment of two experimental sessions during the manipulation phase, resulting in 49 subjects' responses not being recorded. The responses for the remaining 170 subjects are analyzed.

Subjects were seated in the laboratory in the order in which they arrived. After completing the initial questionnaire, they played a game in which they were asked to guess the movements of the stock market. The instructions are included in Appendix A.3. In brief, the subjects were shown ten daily price movements of the S&P Composite starting at a random date from 1950-2008 and then had to guess whether the movement on the eleventh day was up or down. Those guessing correctly gained a dollar and those guessing incorrectly lost a dollar compared to their original stake. The game ended for each subject after 27 turns or when their total gains or losses reached five dollars, whichever occurred first. Of the 170 subjects analyzed, 45 ended on +5 dollars ("Winners"), 46 on -5 dollars ("Losers") and 79 between the two ("Midlers").

5.2 Results

The game was designed to mirror the intensity of actually investing in the stock market, with participants assigning their successes and failures to both luck and skill. This is supported by responses to the feedback form at the end of the exper-

iment. For example, “I learned that I am terrible at estimating if a stock will go up or down” (Loser); “I feel that its (sic) pretty random” (Winner); “The game was exciting” (Midder); “Pretty intense” (Winner); “Very exhilarating” (Midder); “Intense!” (Midder). The emotional responses of the participants was significantly determined by their performance, with Winners increasing positive affect, Midders reducing positive affect, and Losers both increasing negative affect and reducing positive affect (Table 12).

While the manipulation had a large impact on emotions, it had little impact on financial preferences. This is demonstrated in Table 13, with no significance being achieved for any of the financial preference parameters. The contrast with the status manipulation impact on intertemporal preferences is particularly stark—the slope estimate for the β parameter is -0.010 (t-stat = -0.43) in the financial manipulation compared to 0.056 (t-stat = 2.99) for the status manipulation with equal pay (Table 7).

6 Conclusions

In this paper I have demonstrated that status roles impact financial preferences. In particular, taking a subordinate versus dominant role in a status interaction results in increased focus on immediate rewards—people’s intertemporal inconsistency increases in Laibson’s (1997) quasi-hyperbolic discounting framework. The change in preference holds more strongly for decisions over short-term payoffs and is not significantly affected by the magnitude of the decision. The sensitivity to social status is greatest among those who initially have a greater intertemporal inconsistency. Men and women respond similarly, with no significant difference in their response to the status manipulation.

Including differential financial rewards undermines the main effect when those rewards are viewed as unfair. It is unclear whether this would continue to be the case if the differential rewards were viewed as fair. In a separate financial manipulation, small financial gains and losses did not prompt changes in preferences. Both these manipulations with differential pay rewards led to significant differences in emotional responses between the high- and low-payment groups.

The research findings have broad implications for the regulation of financial products. While the time-consistency of high-status consumers argues for greater financial freedom and choices, the time-inconsistency of low-status consumers argues

for the restriction of financial freedom and choices. This tension between high- and low-status groups must be explicitly addressed in the regulatory system.

Appendix A: Experimental Materials

A.1. Initial Questionnaire

- Q1. What is your subject ID? (it is marked on your desk)
- Q2. What year are you in at university? (1=freshman; 4=senior)
- Q3. What is your cumulative GPA (approximately)?
- Q4. What do you expect your major to be?
- Q5. How tall are you?
- Q6. What sex are you?
- Q7. On average, how many hours per week do you spend working for pay?
- Q8. Does your father or mother have a college degree?
- Q9. How many close friends do you have?
- Q10. On average, how many hours per week do you spend volunteering?
- Q11. On average, how many parties per week are you invited to?
- Q12. Do you have a regular girlfriend / boyfriend? (Yes/No)
- Q13. In rating each of the items below, please use the following scale:
In my relationships with others... (1=Disagree Strongly; 5=Neither Agree nor Disagree; 9=Agree Strongly)
- I can get people to listen to what I say
 - My wishes do not carry much weight
 - I can get others to do what I want
 - Even if I voice them, my views have little sway
 - I think I have a great deal of power
 - My ideas and opinions are often ignored
 - Even when I try, I am not able to get my way
 - If I want to, I get to make the decisions
- Q14. Compared to other undergraduates on campus, how busy would you say you are? (1=Not busy; 5=Average; 9=Extremely busy)
- Q15. People vary in their sense of time. How fast does time go by for you? (1=Time seems to drag; 5=Average; 9=Time seems to fly by)
- Q16. All in all, how would you describe your state of health these days? (1=Very poor; 5=Average; 9=Very good)
- Q17. Do you smoke? (Yes/No)
- Q18. Are you currently suffering from a cold? (Yes/No)
- Q19. How hungry are you at the moment? (1=I'm feeling full/ I just ate; 5=Normal; 9=I'm hungry/ I'm about to eat)

Q20. How tired are you at the moment? (1=Not at all; 5=Normal; 9=Very tired)

Q21. On average over the past month, how much time per day have you spent outside? Approximate time per day (1=0 - 15 mins; 2=15 - 30 mins; 3=30 - 60 mins; 4=1 - 2 hours; 5=2 - 3 hours; 6=3 - 4 hours; 7=4 - 6 hours; 8=6 - 8 hours; 9=8 - 10 hours; 10=10+ hours)

Q22. All things considered, how satisfied are you with your life as a whole these days? (1=Dissatisfied; 5=Neither satisfied nor dissatisfied; 9=Satisfied)

Q23. How would you rate your general feeling of well-being at the moment? (1=Poor; 5=Average; 9=Good)

Q24. Please indicate to what extent you feel the following at the moment: (1=Not at all; 5=Moderately; 9=Extremely)

Angry; Proud; Sad; Positive; Afraid; Happy; Guilty; Alert; Contented; Down; Confident; Irritable; Attentive; Ashamed; Joyful; Nervous

Q25. You have won a CERTAIN-or-50/50 Prize in a lottery organized by your bank. The bank will either pay you a smaller amount with certainty or give you a 50% chance of winning a larger amount (and a 50% chance of winning nothing). The 50/50 outcome is decided by the flip of a coin, where you may be present.

Consider the following 50/50 amounts. For each, you must decide on the CERTAIN amount that would make you indifferent between receiving the CERTAIN amount and the 50/50 amount.

(If the CERTAIN amount is too high, you would rather receive that. If it is too low, you would rather receive the 50/50 amount. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- 50% chance of \$92 and 50% chance of \$0 vs. \$ Certain:
- 50% chance of \$7,400 and 50% chance of \$0 vs. \$ Certain:
- 50% chance of \$1,140 and 50% chance of \$0 vs. \$ Certain:

Q26. Your bank offers to sell you a 50/50 Raffle Ticket. The 50/50 Raffle gives you a 50% chance of winning a fixed amount of money (and a 50% chance of winning nothing). The outcome is decided by the flip of a coin, where you may be present. In either case you lose the amount you paid for the Ticket.

Consider the following 50/50 Raffles. For each, you must decide on the Ticket price that would make you indifferent between buying the Ticket and not.

(If the Ticket price is too low, you would definitely buy it. If it is too high, you would not. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- Payment to enter Raffle with 50% chance of \$740 and 50% chance of \$0:
- Payment to enter Raffle with 50% chance of \$5,200 and 50% chance of \$0:

- Payment to enter Raffle with 50% chance of \$142 and 50% chance of \$0:

Q27. You have won a NOW-or-LATER Prize in a lottery organized by your bank. The bank will either pay you a smaller amount NOW or a larger amount LATER (assume there is no risk of the payment not happening).

Consider the following LATER amounts and dates. For each, you must decide on the NOW amount that would make you indifferent between receiving the NOW amount and the LATER amount.

(If the NOW amount is too high, you would rather receive that. If it is too low, you would rather receive the LATER amount. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- \$4,400 in 2 months vs. \$ Now:

- \$2,500 in 2 years vs. \$ Now:

- \$1,900 in 1 week vs. \$ Now:

- \$240 in 1 week vs. \$ Now:

- \$300 in 2 years vs. \$ Now:

- \$27 in 1 week vs. \$ Now:

- \$48 in 2 years vs. \$ Now:

- \$80 in 2 months vs. \$ Now:

- \$730 in 2 months vs. \$ Now:

A.2. Status Manipulation

Worker (Unequal Pay)

CONGRATULATIONS! You have been assigned to the role of WORKER in your group. You are expected to help the other group member, the SUPERVISOR, in a decision-making task. The task involves making a series of decisions concerning the social responsibility of organizations. While all decisions are the responsibility of the SUPERVISOR, you should have an important contribution by giving the SUPERVISOR a second opinion and generally acting in a supporting role.

Due to your lesser input to the task, your pay for the experiment will be \$15. The SUPERVISOR will earn \$25 in recognition of his/her greater responsibilities. In addition, your group may receive a performance bonus of \$80, with \$30 going to you and \$50 to the SUPERVISOR.

When you are finished reading these instructions, please turn the sheet over and display it prominently at your workspace so the experimenter can see your role. Then read the instructions for the social responsibility task. The SUPERVISOR will write down the answers to the questions on that task.

(On reverse, in large font:) WORKER PAY=\$15

Supervisor (Unequal Pay)

CONGRATULATIONS! You have been assigned to the role of SUPERVISOR in your group. You are responsible for the performance of your group in a decision-making task. The task involves making a series of decisions concerning the social responsibility of organizations. The other group member, the WORKER, is expected to help you and provide a second opinion, but all decisions are your responsibility.

Due to your greater input to the task, your pay for the experiment will be \$25. The WORKER will earn \$15 in recognition of his/her lesser responsibilities. In addition, your group may receive a performance bonus of \$80, with \$50 going to you and \$30 to the WORKER.

When you are finished reading these instructions, please turn the sheet over and display it prominently at your workspace so the experimenter can see your role. Then read the instructions for the social responsibility task. As the SUPERVISOR, you will write down the answers to the questions on that task.

(On reverse, in large font:) SUPERVISOR PAY=\$25

Worker (Equal Pay)

CONGRATULATIONS! You have been assigned to the role of WORKER in your group. You are expected to help the other group member, the SUPERVISOR, in a decision-making task. The task involves making a series of decisions concerning the social responsibility of organizations. While all decisions are the responsibility of the SUPERVISOR, you should have an important contribution by giving the SUPERVISOR a second opinion and generally acting in a supporting role.

The pay for each group member has been set at \$15 for the experiment. In addition, your group may receive a performance bonus of \$80, to be split equally.

When you are finished reading these instructions, please turn the sheet over and display it prominently at your workspace so the experimenter can see your role. Then read the instructions for the social responsibility task. The SUPERVISOR will write down the answers to the questions on that task.

(On reverse, in large font:) WORKER

Supervisor (Equal Pay)

CONGRATULATIONS! You have been assigned to the role of SUPERVISOR in your group. You are responsible for the performance of your group in a decision-making task. The task involves making a series of decisions concerning the social responsibility of organizations. The other group member, the WORKER, is expected to help you and provide a second opinion, but all decisions are your responsibility.

The pay for each group member has been set at \$15 for the experiment. In addition, your group may receive a performance bonus of \$80, to be split equally.

When you are finished reading these instructions, please turn the sheet over and display it prominently at your workspace so the experimenter can see your role. Then read the instructions for the social responsibility task. As the SUPERVISOR, you will write down the answers to the questions on that task.

(On reverse, in large font:) SUPERVISOR

Task Description

SOCIAL RESPONSIBILITY TASK

Please write both of your subject numbers and roles below:

Subject ID (on your desk):

Subject ID (on your desk):

Role:

Role:

TASK INSTRUCTIONS

Organizations vary in their level of social responsibility. They go to different lengths to protect the interests of local communities, the environment, their employees, their suppliers and customers, and the disadvantaged members of society.

Ratings of social responsibility can be based either on objective criteria or on the public's perception of the organization. Surveys are one method of eliciting the public's perception of social responsibility, and those surveys may be completed in a group setting.

Your task is to rate organizations on their social responsibility. You will be given descriptions of fictitious organizations that you will rate on a scale of 1-9, where 9 denotes an organization that is extremely socially responsible.

As a reward for performance, the group that has the best answers will be given a bonus payment of \$80. The "best answers" are defined as those closest to the average of all the groups completing the exercise. Hence, one strategy is to rate each organization based on your expectation of the average response for all the groups.

Please discuss the answers quietly in your group. No communication with other groups is allowed. To prevent cheating, each group has a different set of questions, with organizations shown in a different order and assigned different letters.

Write your rating for each organization immediately below the description of the organization.

You will have approximately 2 minutes to rate each organization. The experimenter will let you know when there are 5 minutes and 1 minute remaining on the task. At the completion of the task, you must stop writing and hand back the questions and answers.

Please wait to turn over the page until the experimenter tells you to.

A.3. Financial Gain/Loss Manipulation

Initial Instructions:

You will play a Prediction Game. You will be shown 10 historical daily percentage price movements of the stock market and then you must predict whether the next day's movement is up or down. If you are correct in your Prediction, then your number of Credits will increase by 10, and if you are incorrect then your number of Credits will reduce by 10.

You will start with 0 Credits and the game will end when you reach +50 or -50 Credits. If you have not reached +50 or -50 Credits after 27 Predictions, then the game will end at that point.

Your pay for the experiment will be \$15 plus or minus one tenth your ending number of Credits. Hence if you end with +50 Credits you will earn \$20 and if you end with -50 Credits you will earn \$10.

You will have several seconds to consider each set of price movements before your Prediction is requested, and another few seconds before your Prediction is required.

Please answer quickly if a red flashing prompt appears in the top right corner.

Prediction Input Screen:

For these historical daily price movements of the stock market, please enter your prediction of whether the next day's movement was up or down

10 days ago:

9 days ago:

8 days ago:

7 days ago:

6 days ago:

5 days ago:

4 days ago:

3 days ago:

2 days ago:

1 day ago:

Please enter your prediction (1 = Up; 0 = Down)

(Footnote:) Current Number of Credits:

Prediction Result Screen:

CORRECT! / WRONG!

Previous number of Credits:

Winnings for Period:

Current number of Credits:

Waiting Screen:

Current status of all subjects:
Finished on +50
Finished on -50
Still playing

Ending Screen:

Your ending number of credits is:
Your pay for the experiment is:
Current status of all subjects:
Finished on +50
Finished on -50
Still playing

A.4. Ending Questionnaire

Q1. On the decision-making task, who made the greatest contribution? (1=Definitely Me; 5=Both Equally; 9=Definitely the Other Person)

Q2. How assertive were you on the task? (1=Very Unassertive; 5=Average Assertiveness; 9=Very Assertive)

Q3. How assertive was the other group member on the task? (1=Very Unassertive; 5=Average Assertiveness; 9=Very Assertive)

Q4. Who would you say had more social status on the task? (1=Definitely Me; 5=Both Equally; 9=Definitely the Other Person)

Q5. How fair do you consider the relative payments received for the task? (1=Unfair, I deserve More; 5=Fair; 9=Unfair, I deserve Less)

Q6. How hungry are you at the moment? (1=I'm feeling full/ I just ate; 5=Normal; 9=I'm hungry/ I'm about to eat)

Q7. How tired are you at the moment? (1=Not at all; 5=Normal; 9=Very tired)

Q8. How would you rate your general feeling of well-being at the moment? (1=Poor; 5=Average; 9=Good)

Q9. Please indicate to what extent you feel the following at the moment: (1=Not at all; 5=Moderately; 9=Extremely)

Angry; Proud; Sad; Positive; Afraid; Happy; Guilty; Alert; Contented; Down; Confident; Irritable; Attentive; Ashamed; Joyful; Nervous

Q10. You have won a CERTAIN-or-50/50 Prize in a lottery organized by your bank. The bank will either pay you a smaller amount with certainty or give you a 50% chance of winning a larger amount (and a 50% chance of winning nothing). The 50/50 outcome is decided by the flip of a coin, where you may be present.

Consider the following 50/50 amounts. For each, you must decide on the CERTAIN amount that would make you indifferent between receiving the CERTAIN amount and the 50/50 amount.

(If the CERTAIN amount is too high, you would rather receive that. If it is too low, you would rather receive the 50/50 amount. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- 50% chance of \$68 and 50% chance of \$0 vs. \$ Certain:

- 50% chance of \$6,200 and 50% chance of \$0 vs. \$ Certain:

- 50% chance of \$1,460 and 50% chance of \$0 vs. \$ Certain:

Q11. Your bank offers to sell you a 50/50 Raffle Ticket. The 50/50 Raffle gives you a 50% chance of winning a fixed amount of money (and a 50% chance of winning nothing). The outcome is decided by the flip of a coin, where you may be present. In either case you lose the amount you paid for the Ticket.

Consider the following 50/50 Raffles. For each, you must decide on the Ticket price that would make you indifferent between buying the Ticket and not.

(If the Ticket price is too low, you would definitely buy it. If it is too high, you would not. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- Payment to enter Raffle with 50% chance of \$560 and 50% chance of \$0:
- Payment to enter Raffle with 50% chance of \$6,800 and 50% chance of \$0:
- Payment to enter Raffle with 50% chance of \$122 and 50% chance of \$0:

Q12. You have won a NOW-or-LATER Prize in a lottery organized by your bank. The bank will either pay you a smaller amount NOW or a larger amount LATER (assume there is no risk of the payment not happening).

Consider the following LATER amounts and dates. For each, you must decide on the NOW amount that would make you indifferent between receiving the NOW amount and the LATER amount.

(If the NOW amount is too high, you would rather receive that. If it is too low, you would rather receive the LATER amount. You will be indifferent somewhere between the two.)

(Note there is no "correct" answer - the question is merely asking about your preference.)

- \$530 in 2 months vs. \$ Now:
- \$36 in 2 years vs. \$ Now:
- \$2,200 in 2 years vs. \$ Now:
- \$170 in 1 week vs. \$ Now:
- \$88 in 2 months vs. \$ Now:
- \$23 in 1 week vs. \$ Now:
- \$4,300 in 2 months vs. \$ Now:
- \$340 in 2 years vs. \$ Now:
- \$1,800 in 1 week vs. \$ Now:

Q13. Please use this opportunity to provide any feedback you have about the questions and the running of the experiment

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Table 1. Intertemporal Preference Estimates. This table presents summary statistics for subjects' discount rates, r , and intertemporal inconsistency, β , based on responses to Q27 in the Initial Questionnaire. ($n = 363$). The following regression was estimated for each subject:

$$\ln [PV_i(x_{jt}) / x_{jt}] = -r_i t + \ln [\beta_i] + \varepsilon_{ijt}$$

	r_i	$\ln [\beta_i]$	β_i
Mean	0.174	-0.274	0.826
Median	0.121	-0.098	0.907
StDev	0.302	0.541	0.222
Skew	2.768	-4.400	-1.786
Kurtosis	23.91	25.277	2.698

Table 2. Risk Preference Estimates. This table presents summary statistics for subjects' loss aversion, λ , curvature of the value function, σ , and average risk aversion, q , based on responses to Q25 and Q26 in the Initial Questionnaire. The following regression was estimated for each subject:

$$\ln [CE_i(px_j)/px_j] = -\lambda_i 1(\text{raffle}) + q_i + \sigma_i [\ln(px_j) - 6.072] + \varepsilon_{ij}$$

Where $1(\text{raffle})$ is an indicator function taking a value of 1 for the raffle, Q26, and 0 for the lottery, Q25. The risk aversion term, q_i , is recentered to be the risk aversion over the average (in log terms) expected payout by deducting 6.072 from the expected payment amounts on the right hand side. ($n = 363$).

	λ_i	σ_i	q_i
Mean	1.907	-0.201	-0.270
Median	1.880	-0.161	-0.006
StDev	1.605	0.219	0.920
Skew	0.377	-1.636	-2.330
Kurtosis	-0.575	3.465	6.745

Table 3. Correlation Coefficients Between Surveyed Variables and Intertemporal Preferences. This table presents correlation coefficients between the surveyed variables and the discount rate, r , and intertemporal inconsistency, β . 2-tailed significance levels: *=10%; **=1%; ***=0.1%. ($n = 363$).

	Variable mean	r_i	β_i
Year at University	2.96	0.021	0.083
Cumulative GPA	3.41	-0.022	0.218***
Height (m)	1.68	0.004	0.077
Male Height (m)	1.76	-0.022	0.110*
Female? (1=Yes)	0.57	-0.121*	0.055
Ln (1+hours per week working for pay)	1.14	0.125*	0.037
Father or mother with degree? (1=Yes)	0.76	-0.012	0.050
Ln (1+ no of close friends)	1.98	0.042	-0.024
Ln (1+ hours per week volunteering)	0.79	-0.020	-0.103*
Ln (1+ parties per week)	0.76	0.012	-0.145**
Regular girlfriend/boyfriend? (1=Yes)	0.45	0.058	0.007
Sense of power score	1.49	-0.070	-0.060
How busy are you? (9=Extremely)	6.11	-0.047	0.023
How fast does time go? (9=Time flies)	6.81	-0.091*	-0.065
State of health? (9=Very good)	6.50	-0.048	-0.013
Do you smoke? (1=Yes)	0.09	0.050	-0.144**
Do you have a cold? (1=Yes)	0.11	0.003	0.006
How hungry are you? (9=Hungry)	4.91	-0.039	0.044
Time outside (9=Lots)	5.17	-0.061	-0.123*
Life Satisfaction (9=Satisfied)	6.41	0.031	-0.010
Well-Being (9=Good)	6.46	0.013	-0.003
Angry + Irritable	4.99	-0.030	-0.070
Proud + Contented	9.36	0.054	0.026
Sad + Down	5.55	0.026	-0.043
Positive + Confident	11.45	0.007	-0.023
Afraid + Nervous	5.50	-0.013	-0.136**
Happy + Joyful	10.46	0.018	-0.004
Guilty + Ashamed	3.77	0.022	0.054
Alert + Attentive	10.42	0.063	-0.097*

Table 4. Correlation Coefficients Between Surveyed Variables and Risk Preferences. This table presents correlation coefficients between the surveyed variables and the loss aversion, λ , curvature of the value function, σ , and average risk aversion, q . 2-tailed significance levels: *=10%; **=1%; ***=0.1% ($n = 363$).

	Variable mean	λ	σ	q
Year at University	2.96	-0.049	-0.047	-0.043
Cumulative GPA	3.41	-0.029	-0.008	-0.001
Height (m)	1.68	-0.086	0.066	-0.005
Male Height (m)	1.76	0.036	0.082	0.051
Female? (1=Yes)	0.57	0.246**	-0.153**	0.011
Ln (1+hours per week working for pay)	1.14	-0.002	-0.106*	-0.111*
Father or mother with degree? (1=Yes)	0.76	0.010	-0.090*	-0.082
Ln (1+ no of close friends)	1.98	0.005	-0.081	-0.062
Ln (1+ hours per week volunteering)	0.79	0.069	-0.066	-0.040
Ln (1+ parties per week)	0.76	0.017	-0.153**	-0.076
Regular girlfriend/boyfriend? (1=Yes)	0.45	0.036	-0.092*	-0.045
Sense of power score	1.49	0.096*	-0.095*	-0.014
How busy are you? (9=Extremely)	6.11	0.050	-0.012	-0.012
How fast does time go? (9=Time flies)	6.81	0.051	-0.087*	-0.045
State of health? (9=Very good)	6.50	0.003	-0.069	-0.060
Do you smoke? (1=Yes)	0.09	0.076	-0.088*	-0.040
Do you have a cold? (1=Yes)	0.11	-0.056	-0.005	-0.004
How hungry are you? (9=Hungry)	4.91	-0.064	-0.060	-0.083
Time outside (9=Lots)	5.17	-0.005	-0.087*	-0.060
Life Satisfaction (9=Satisfied)	6.41	0.000	-0.058	-0.024
Well-Being (9=Good)	6.46	0.041	-0.081	-0.070
Angry + Irritable	4.99	-0.028	0.077	0.036
Proud + Contented	9.36	0.036	-0.065	-0.007
Sad + Down	5.55	-0.001	-0.001	-0.034
Positive + Confident	11.45	0.033	-0.117*	-0.035
Afraid + Nervous	5.50	0.070	0.002	0.071
Happy + Joyful	10.46	0.081	-0.111*	-0.001
Guilty + Ashamed	3.77	-0.092*	0.003	-0.017
Alert + Attentive	10.42	0.065	-0.067	0.024

Table 5. Preference Change Moments. This table presents summary statistics for the change in subjects' preferences from before the manipulation to afterwards. $\sqrt{v_2 - v_1}$ is an abbreviation for $abs(v_2 - v_1)^{0.5} * sign(v_2 - v_1)$. ($n = 314$).

Panel A: Intertemporal Preference Moments				
	$r_2 - r_1$	$\beta_2 - \beta_1$	$\sqrt{r_2 - r_1}$	$\sqrt{\beta_2 - \beta_1}$
Mean	-0.012	-0.004	-0.016	-0.011
StDev	0.224	0.116	0.357	0.257
Skew	-2.421	0.145	-0.161	0.053
Kurtosis	22.18	11.49	0.10	0.07

Panel B: Risk Preference Moments						
	$\lambda_2 - \lambda_1$	$\sigma_2 - \sigma_1$	$q_2 - q_1$	$\sqrt{\lambda_2 - \lambda_1}$	$\sqrt{\sigma_2 - \sigma_1}$	$\sqrt{q_2 - q_1}$
Mean	-0.140	0.021	0.075	-0.107	0.038	0.049
StDev	1.021	0.152	0.551	0.792	0.314	0.539
Skew	-0.328	1.439	2.654	0.028	0.090	0.493
Kurtosis	6.53	7.08	13.71	-0.38	-0.71	0.48

Table 6. Emotional Response to Status Manipulation. This table presents the mean change in measured emotional responses from before the status manipulation to afterwards for the High Status Group and the Low Status Group. In the Unequal Pay treatment, the High Status Group was paid \$10 more than the Low Status Group. 2-tailed significance levels based on Student's t-test: *=10%; **=1%; ***=0.1%.

Treatment: Group:	Equal Pay (n=111)			Unequal Pay (n=33)		
	Supervisor	Worker	Diff.	Supervisor	Worker	Diff.
Well-Being	-0.41*	0.00	-0.41	0.19	-1.88*	2.07*
Angry + Irritable	-1.30***	-1.09**	-0.21	-1.50*	1.71	-3.21**
Proud + Contented	0.04	-0.20	0.24	0.38	-1.71*	2.08*
Sad + Down	-1.50***	-1.89***	0.39	-2.81**	-0.47	-2.34
Positive + Confident	-0.55*	0.00	-0.55	-0.81	-1.76*	0.95
Afraid + Nervous	-0.95*	-1.62**	0.67	-1.94*	-1.06*	-0.88
Happy + Joyful	-0.30	-0.24	-0.07	0.94	-2.29**	3.23**
Guilty + Ashamed	-0.70***	-0.53*	-0.17	2.00*	-0.94	2.94**
Alert + Attentive	-0.16	-0.11	-0.05	0.50	-0.06	0.56
Positive Affect Score	-0.98	-0.55	-0.44	1.00	-5.82*	6.82*
Negative Affect Score	-4.45***	-5.13***	0.68	-4.25**	-0.76	-3.49

Table 7. Intertemporal Preference Response to Status Manipulation. This table presents the mean change in discount rate, r , and intertemporal inconsistency, β , from before the status manipulation to afterwards for the High Status Group and the Low Status Group. $\sqrt{v_2 - v_1}$ is an abbreviation for $abs(v_2 - v_1)^{0.5} * sign(v_2 - v_1)$. In the Unequal Pay treatment, the High Status Group was paid \$10 more than the Low Status Group. Status is coded as High = $+\frac{1}{2}$, Low = $-\frac{1}{2}$. 2-tailed significance levels based on unadjusted standard errors: *=10%; **=1%; ***=0.1%. The difference estimates are based on the following regression:

$$v_{i2} - v_{i1} = Difference_v * Status_i + const_v + \varepsilon_{iv}$$

Dependent Variable:	$r_2 - r_1$	$\beta_2 - \beta_1$	$\sqrt{r_2 - r_1}$	$\sqrt{\beta_2 - \beta_1}$
Panel A: Status Game (Unequal Pay) (n=33)				
High Status	0.011	0.001	0.040	-0.010
Low Status	-0.038	-0.016	-0.092	-0.073
Difference (H-L)	0.049	0.017	0.132	0.063
(t-stat)	(1.36)	(0.98)	(1.39)	(0.97)
Unadjusted R^2	5.65%	3.00%	5.88%	2.92%
Panel B: Status Game (Equal Pay) (n=111)				
High Status	0.025	0.020	0.030	0.036
Low Status	-0.068	-0.047	-0.031	-0.096
Difference (H-L)	0.093	0.067**	0.061	0.132**
(t-stat)	(1.61)	(2.85)	(0.79)	(2.60)
Unadjusted R^2	2.33%	6.95%	0.57%	5.85%
Panel C: Status Game Combined (n=144)				
High Status	0.022	0.016	0.032	0.026
Low Status	-0.061	-0.040	-0.045	-0.091
Difference (H-L)	0.083*	0.056**	0.077	0.116**
(t-stat)	(1.84)	(2.99)	(1.23)	(2.79)
Unadjusted R^2	2.32%	5.91%	1.05%	5.19%

Table 8. Change in Discount Factors by Time and Size. This table presents the mean change in responses to the intertemporal preferences questions for different time periods and payment amounts for both the High Status and Low Status Groups. For each question we take the individual's stated preference, $PV(x_t)/x_t$, then average over the relevant time period or payment amount, both before the status manipulation and afterwards. In the unequal pay treatment, the High Status Group was paid \$10 more than the Low Status Group. Status is coded as High = $+\frac{1}{2}$, Low = $-\frac{1}{2}$. 2-tailed significance levels based on unadjusted standard errors: *=10%; **=1%; ***=0.1%. The difference estimates are based on the following regression:

$$v_{i2} - v_{i1} = \text{Difference}_v * \text{Status}_i + \text{const}_v + \varepsilon_{iv}$$

Discount Factors	By Time Period			1 Wk+	1Wk + 2Mo by Pmt Size		
	1 Wk	2 Mo	2 Yr	2 Mo	Small	Med.	Large
Mean DF	0.839	0.804	0.640	0.822	0.774	0.846	0.845
Median DF	0.918	0.873	0.671	0.888	0.819	0.935	0.941
Panel A. Dep Var: Change in DF (Unequal Pay, n=33)							
High Status	-0.008	0.007	0.000	0.000	0.038	-0.058	0.019
Low Status	-0.004	-0.023	0.042	-0.013	-0.031	-0.032	0.023
Difference (H-L)	-0.004	0.030	-0.042	0.013	0.069*	-0.026	-0.003
(t-stat)	(-0.24)	(1.45)	(-1.33)	(0.81)	(2.13)	(-1.18)	(-0.18)
Unadjusted R ²	0.19%	6.34%	5.41%	2.08%	12.74%	4.26%	0.11%
Panel B. Dep Var: Change in DF (Equal Pay, n=111)							
High Status	0.010	0.026	0.020	0.018	0.025	0.002	0.026
Low Status	-0.049	-0.030	-0.018	-0.039	-0.039	-0.062	-0.017
Difference (H-L)	0.059*	0.056*	0.037	0.057**	0.064*	0.064*	0.043*
(t-stat)	(2.32)	(2.31)	(1.39)	(2.68)	(2.28)	(2.29)	(1.64)
Unadjusted R ²	4.69%	4.66%	1.75%	6.19%	4.55%	4.60%	2.41%
Panel C. Dep Var: Change in DF (Combined, n=144)							
High Status	0.006	0.021	0.015	0.014	0.028	-0.011	0.025
Low Status	-0.038	-0.028	-0.004	-0.033	-0.037	-0.055	-0.008
Difference (H-L)	0.044*	0.050**	0.019	0.047**	0.065**	0.044*	0.032*
(t-stat)	(2.21)	(2.61)	(0.85)	(2.79)	(2.85)	(1.95)	(1.55)
Unadjusted R ²	3.32%	4.56%	0.51%	5.19%	5.41%	2.61%	1.67%

Table 9. Initial Beta, Sex, and Pay Interactions with Status Manipulation. This table investigates (i) whether the initial level of beta determines the magnitude of the subject's beta response to the status manipulation; (ii) whether there is a significant sex interaction; and (iii) whether there is a significant difference between the Equal and Unequal Pay Treatments. In Panel A, the change in Beta, $(\beta_{2i} - \beta_{1i})$ is the dependent variable, while in Panel B, $abs(\beta_{2i} - \beta_{1i})^{0.5} * sign(\beta_{2i} - \beta_{1i})$ is the dependent variable. Status is coded as High = $+\frac{1}{2}$, Low = $-\frac{1}{2}$; Sex is coded as Female = $+\frac{1}{2}$, Male = $-\frac{1}{2}$; Uneq is coded as Unequal Pay Treatment = 1, Equal Pay Treatment = 0; Initial Beta is β_{1i} . The Controls are the independent variables from Table 3, except that Sex is excluded, and the emotion terms are grouped into separate Positive Affect and Negative Affect Scores. T-stats are shown in parentheses; bootstrap standard errors use 1,000 replications; and 2-tailed significance levels are: *=10%; **=1%; ***=0.1%.

Specification:	I	II	III	IV	V	VI
Panel A. Dep Var: Change in Beta (n=144)						
Status	0.056** (2.95)		-0.015 (-1.63)	-0.013 (-0.59)	-0.015 (-1.19)	-0.018 (-1.34)
Initial Beta (β_1)			-0.073* (-1.79)	-0.088 (-1.59)	-0.077 (-1.24)	-0.063 (-1.29)
Status * $1-\beta_1$		0.353*** (3.54)	0.362*** (5.71)	0.375*** (4.71)	0.361*** (4.28)	0.404*** (7.06)
Sex * Status * $1-\beta_1$					0.155 (0.49)	
Sex					0.008 (0.33)	
Sex * Status					-0.050 (-1.74)	
Sex * $1-\beta_1$					-0.075 (-0.45)	
Uneq * Stat * $1-\beta_1$						-0.480*** (-8.12)
Uneq * Status						0.046*** (3.29)
Uneq * $1-\beta_1$						-0.105* (-1.80)
Constant	-0.012 (-1.33)	-0.020* (-2.44)	0.039 (1.13)	0.104 (0.47)	0.810 (0.42)	0.034 (0.77)
Unadjusted R^2	5.91%	19.14%	24.45%	37.13%	25.53%	25.93%
Standard Errors	Btstrap	Btstrap	Btstrap	Btstrap	Btstrap	Btstrap
Session Dummies	No	No	Yes	Yes	Yes	Yes
Cluster by Session	No	No	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	No	No

Table 9 Continued

Specification:	I	II	III	IV	V	VI
Panel B. Dep Var: Sqrt Change in Beta (n=144)						
Status	0.116** (2.79)		-0.035 (-0.92)	-0.023 (-0.34)	-0.033 (-0.77)	-0.052 (-1.18)
Initial Beta (β_1)			-0.102 (-1.85)	-0.120 (-0.94)	-0.097 (-1.31)	-0.095 (-1.55)
Status * $1-\beta_1$		0.728*** (4.72)	0.798*** (7.84)	0.790*** (5.08)	0.775*** (6.32)	0.889*** (10.73)
Sex * Status * $1-\beta_1$					0.359 (0.60)	
Sex					0.006 (0.10)	
Sex * Status					-0.079 (-0.77)	
Sex * $1-\beta_1$					-0.048 (-0.17)	
Uneq * Stat * $1-\beta_1$						-1.200*** (-9.42)
Uneq * Status						0.163* (2.57)
Uneq * $1-\beta_1$						-0.378*** (-5.85)
Constant	-0.033 (-1.56)	-0.049* (-2.55)	0.033 (0.73)	0.258 (0.85)	0.028 (0.46)	0.037 (0.71)
Unadjusted R^2	5.19%	16.51%	21.47%	30.93%	22.00%	23.33%
Standard Errors	Robust	Robust	Robust	Robust	Robust	Robust
Session Dummies	No	No	Yes	Yes	Yes	Yes
Cluster by Session	No	No	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	No	No

Table 10. Predicted Value of Beta from Status Manipulation This table presents predicted values for beta as a result of the status manipulation. The predictions are based on the Mean Beta and Median Beta from Table 1 with the effect of the status manipulation from Table 9 (Specification II, Panel A).

	Mean Beta	Median Beta
Initial Beta	0.826	0.907
Predicted Beta for High Status	0.836	0.903
(% Increase in $(1-\beta)$)	(6.0%)	(-4.3%)
Predicted Beta for Low Status	0.775	0.870
(% Increase in $(1-\beta)$)	(-29.3%)	(-39.5%)

Table 11. Risk Preference Response to Status Manipulation. This table presents the change in loss aversion, λ , curvature of the value function, σ , and average risk aversion, q , from before the status manipulation to afterwards for the High Status Group and the Low Status Group. $\sqrt{v_2 - v_1}$ is an abbreviation for $abs(v_2 - v_1)^{0.5} * sign(v_2 - v_1)$. In the Unequal Pay Treatment, the High Status Group was paid \$10 more than the Low Status Group. Status is coded as High = $+\frac{1}{2}$, Low = $-\frac{1}{2}$. 2-tailed significance levels based on unadjusted standard errors: *=10%; **=1%; ***=0.1%. The difference estimates are based on the following regression:

$$v_{i2} - v_{i1} = Diff_v^i * Status_i + const_v + \varepsilon_{iv}$$

Dep. Var:	$\lambda_2 - \lambda_1$	$\sigma_2 - \sigma_1$	$q_2 - q_1$	$\sqrt{\lambda_2 - \lambda_1}$	$\sqrt{\sigma_2 - \sigma_1}$	$\sqrt{q_2 - q_1}$
Panel A: Status Game (Unequal Pay) (n=33)						
High Status	-0.105	0.052	0.264	-0.025	0.085	0.181
Low Status	0.445	0.036	0.277	0.313	0.067	0.204
Diff. (H-L)	-0.551	0.016	-0.013	-0.339	0.019	-0.023
(t-stat)	(-1.39)	(0.21)	(-0.05)	(-1.15)	(0.15)	(-0.11)
Unadj R^2	5.89%	0.15%	0.01%	4.11%	0.07%	0.04%
Panel B: Status Game (Equal Pay) (n=111)						
High Status	-0.241	-0.005	-0.016	-0.188	-0.033	-0.057
Low Status	-0.015	0.012	-0.002	-0.067	0.052	0.003
Diff. (H-L)	-0.226	-0.017	-0.014	-0.120	-0.084	-0.060
(t-stat)	(-1.19)	(-0.71)	(-0.16)	(-0.80)	(-1.52)	(-0.59)
Unadj R^2	1.27%	0.46%	0.02%	0.59%	2.06%	0.32%
Panel C: Status Game Combined (n=144)						
High Status	-0.211	0.008	0.046	-0.151	-0.007	-0.004
Low Status	0.093	0.018	0.064	0.022	0.055	0.051
Diff. (H-L)	-0.304*	-0.010	-0.018	-0.174	-0.062	-0.055
(t-stat)	(-1.76)	(-0.39)	(-0.18)	(-1.30)	(-1.20)	(-0.59)
Unadj R^2	2.14%	0.11%	0.02%	1.17%	1.00%	0.24%

Table 12. Emotional Response to Financial Gain/Loss Manipulation.

This table presents the change in emotional responses from before the financial gain/loss manipulation to afterwards for the High Status Group and the Low Status Group. 2-tailed significance levels based on unadjusted standard errors: *=10%; **=1%; ***=0.1% ($n = 170$). The slope estimates are based on the following regression:

$$v_{i2} - v_{i1} = Slope_v * (wins_i - losses_i)/10 + const_v + \varepsilon_{iv}$$

	Winner	Midder	Loser	Slope	(Slope t-stat)
Well-Being	0.62	-1.27***	-2.31***	2.93***	(6.69)
Angry + Irritable	0.36	2.29***	2.84***	-2.70***	(-3.29)
Proud + Contented	3.20***	-1.27*	-2.44***	5.68***	(8.43)
Sad + Down	-1.47*	0.93	3.60***	-5.08***	(-6.33)
Positive + Confident	1.04	-2.02***	-2.93***	4.21***	(6.92)
Afraid + Nervous	-0.87*	-1.12**	-0.29	-0.81	(-1.40)
Happy + Joyful	1.89***	-1.95***	-2.49***	4.45***	(7.34)
Guilty + Ashamed	-0.49	0.22	1.33**	-1.76**	(-3.09)
Alert + Attentive	0.73	-0.56	-1.33**	2.03***	(3.49)
Positive Affect Score	6.87***	-5.80***	-9.20***	16.37***	(8.68)
Negative Affect Score	-2.47	2.32*	7.49***	-10.35***	(-5.41)

Table 13. Preference Response to Financial Gain/Loss Manipulation.

This table presents the change in discount rate, r , intertemporal inconsistency, β , loss aversion, λ , curvature of the value function, σ , and average risk aversion, q , from before the financial gain/loss manipulation to afterwards for the Winner, Midder, and Loser Groups. $\sqrt{v_2 - v_1}$ is an abbreviation for $abs(v_2 - v_1)^{0.5} * sign(v_2 - v_1)$. 2-tailed significance levels based on unadjusted standard errors: *=10%; **=1%; ***=0.1% ($n = 170$). The slope estimates are based on the following regression:

$$v_{i2} - v_{i1} = Slope_v * (wins_i - losses_i)/10 + const_v + \varepsilon_{iv}$$

Panel A: Time Preference Parameters						
Dep Var:	$r_2 - r_1$	$\beta_2 - \beta_1$	$\sqrt{r_2 - r_1}$	$\sqrt{\beta_2 - \beta_1}$		
Winner	-0.001	0.011	-0.033	0.026		
Midder	0.003	-0.015	0.006	-0.027		
Loser	-0.024	0.026	-0.070	0.048		
Slope	0.024	-0.010	0.029	-0.017		
(t-stat)	(0.69)	(-0.43)	(0.43)	(-0.33)		
Unadj. R^2	0.28%	0.11%	0.11%	0.06%		
Panel B: Risk Preference Parameters						
Dep Var:	$\lambda_2 - \lambda_1$	$\sigma_2 - \sigma_1$	$q_2 - q_1$	$\sqrt{\lambda_2 - \lambda_1}$	$\sqrt{\sigma_2 - \sigma_1}$	$\sqrt{q_2 - q_1}$
Winner	-0.200	0.045	0.199	-0.187	0.096	0.128
Midder	-0.266	0.001	-0.023	-0.180	-0.006	-0.027
Loser	-0.122	0.061	0.182	-0.039	0.102	0.180
Slope	-0.062	-0.010	-0.008	-0.137	0.015	-0.062
(t-stat)	(-0.32)	(-0.34)	(-0.08)	(-0.89)	(0.24)	(-0.60)
Unadj. R^2	0.06%	0.07%	0.00%	0.47%	0.03%	0.21%