Let the Punishment Fit the Criminal:
An Experimental Study

Josef Montag† James Tremewan‡

We use a laboratory experiment to study the extent to which people tailor levels of punishment to the subjective experience of the person to receive that punishment for both monetary and non-monetary sanctions. We find that subjects tend to apply higher fines to wealthier individuals. Additionally, subjects assign more repetitions of a tedious task to those with a lower willingness-to-pay to avoid it. We find no evidence that the distributions of monetary and non-monetary punishments are different when considered as proportions of the maximum possible punishment, but that this does not hold when non-monetary punishments are converted into monetary equivalents. This suggests that subjects do not have in mind a particular level of disutility from the punishment, but rather are guided by the sentencing possibilities.

1 Introduction

The maxim that the punishment should fit the crime, first postulated in Cicero’s De Legibus (On the Laws) in 106 BC, has been ever since a core principle of criminal justice. A more open question, however, is whether punishment should fit the criminal. Keeping a nominal punishment constant, the punishees’ experience will inevitably vary: an individual’s cost of serving a number of years in a prison, for instance, will depend on their psychological characteristics as well as lost opportunities to enjoy life outside prison, such as income

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or personal relationships. An analogous argument can be made with respect to monetary punishment, which will affect individuals differently as a result of decreasing marginal utility of money, among other factors. As a consequence, different individuals will experience punishment differently.  

There are two main arguments as to why the subjective experience of punishment should be taken into account.  

Firstly, in one retributive view of justice, the level of (subjective) suffering inflicted by a punishment should be in proportion to the gravity of the crime. Secondly, from a deterrence perspective, the optimal level of a sanction depends on the potential criminal’s disutility of that sanction; a constant nominal punishment would lead to ineffective underdeterrence, or costly overdeterrence depending on the individual. 

On the other hand there are theories of punishment which do not equate punishment with suffering (Gray 2010), notwithstanding that assigning different levels punishments to different people for an identical offense may be viewed as ethically unacceptable. 

Whether or not one holds that subjective experience of punishment should be taken into account, it is important to understand how the general public views punishment and justice. An inconsistency between people’s values and preferences on the one hand and the existing policies or proposed reforms on the other may well be a problem. Specifically, if people’s understanding of justice was such that punishment should only be fitted to the crime, those who believe that punishment should be co-determined by the level subjective discomfort felt by the punishee might find their policy recommendations resisted. Similarly, for those to whom justice requires equality of nominal punishment, a finding that individuals do use signals about subjective experience to adjust the magnitude of the punishment they

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1See Becker (1968, p. 195), noting that “if the monetary value of the punishment by, say, imprisonment were independent of income, the length of the sentence would be inversely related to income, because the value placed on a given sentence is positively related to income.” Similarly, Posner (1985, p. 1212) notes that “[t]he economic objection to punishing by inflicting physical pain is not . . . that people have different thresholds of pain that make it difficult to calibrate the severity of the punishment—imprisonment and death are subject to the same problem.” See also Polinsky and Shavell (1984). For recent evidence on individual-level variability of pain perception see Schulz, Zherdin, Tiemann, Plant, and Ploner (2012). For studies of subjective experience of imprisonment see DeVeaux (2013); Edney (2004); Raaijmakers, Loughran, Keijser, Nieuwebeerta, and Dirkzwager (Forthcoming); Williams, Taylor, Walker, Plant, Kissell, and Hammond (2013). For evidence on post-release effects of incarceration see Fazel and Baillargeon (2011); Lott (1992); Massoglia (2008); Massoglia, Remster, and King (2011); Pager (2003).  

2For a thorough exposition see Kolber (2009b).
assign would be worrisome in the context of judicial decision-making where judge or jury is given leeway in sentencing; a natural tendency to make such adjustments would need to be countered to achieve just outcomes. Surprisingly little is known about these questions.

In this paper we use a laboratory experiment to investigate whether people find it acceptable to condition punishments on the punishees’ subjective experience. It differs from Montag and Sobek’s (2014) earlier vignette experiment in two methodologically important aspects: (i) We elicit the subjects’ true valuation of punishment and provide this information to individuals who make punishment decisions. In the earlier study, the degree to which the different fictional convicts would suffer differentially from punishment was not made explicit and may not have been clear to subjects. (ii) The punishment decisions made by our subjects have real consequences for the individuals who are to be punished—similarly to real-world judges and juries. This should increase the likelihood of establishing subjects’ true preferences towards punishment as they have to deliberate their punishment decisions more carefully.

In contrast to the earlier study, we find that subjects take into account the subjective experience not only for monetary punishments (where fines are increasing in wealth), but also for non-monetary punishments (where the assigned number of repetitions of a tedious task is decreasing in the elicited willingness-to-pay to avoid the task). We find no difference between monetary and non-monetary treatments in the levels of punishments subjects assign when measured as a proportion of the maximum possible sanction; however, when the non-monetary punishments are measured in terms of their monetary equivalents, the distribution of punishment levels differ significantly, monetary punishment being harsher. This suggests that while subjects take into account subjective experience of punishees in a relative sense, they do not have in mind an absolute level of disutility they wish to inflict for a given offense.
2 Related Literature

The paper contributes to a current debate among legal scholars and philosophers about the subjective aspects of punishment.\(^3\) The debate itself is perhaps best understood as a dispute on the question what is punishment. On one side are ‘subjectivists’, according to whom a punishment is a means for the production of subjective disutility, therefore we need to pay attention to the amount of suffering inflicted upon individual punishees (Bronsteen, Buccafusco, and Masur 2009, 2010, 2014; Kolber 2009a,b, 2011, 2012, 2013, 2014). Thus, the equality of punishment, in the subjectivist conception, requires sameness in the impact of punishment on punishees as sentient beings. As a result, two people who committed the same crime under similar circumstances should often receive different punishments—in order to achieve equality of their subjective experience of the punishment.

This view is contested by the ‘objectivists’ for whom a punishment should be nominally equal (for instance, the same number of months in prison or a fine of the same amount of dollars). They postulate that the purpose of punishment is not to produce a certain amount of suffering in the offender, but to require her to pay her just deserts for her misdoings. To them, the subjective experience of a punishee is irrelevant and therefore does not enter into the determination of the severity of the punishment (Gray 2010; Markel and Flanders 2010; Markel, Flanders, and Gray 2011).\(^4\)

This debate between subjectivists and objectivists is a reflection of current developments in neuroscience together with the advances in technologies, such as the functional magnetic resonance imaging (fMRI) or electroencephalogram (EEG), that are starting to allow us to measure individual’s perceptions and feelings of pleasure and pain.\(^5\) Although

\(^3\)For an overview see Montag and Sobek (2014, p. 96–100).

\(^4\)This paper’s results and methodology are also relevant to the moral philosophy literature which asks on which dimension outcomes should be equalised to achieve an egalitarian society (Cohen 1989; Dworkin 1981; Sen 1980), for overview see Carter (2004). Clearly an equal distribution of income would lead to very different outcomes across the population in terms of utility, depending on individuals’ preferences and physical needs. But, equalising utilities may result in unequal distributions of income, where some receive more simply as a result of their expensive tastes, or unreasonably large shares go to a small number with extreme disabilities, drastically reducing average levels of welfare. Our results suggest that individuals’ utility needs to enter such calculus.

\(^5\)See, e.g., Brodersen, Wiech, Lomakina, Lin, Buhmann, Bingel, Ploner, Stephan, and Tracey (2012); Civai, Hawes, DeYoung, and Rustichini (2016); Fliessbach, Weber, Trautner, Dohmen, Sunde, Elger, and
objective measurement of neural processes may still be in its infancy, one can expect that the scientific knowledge and technologies will be gradually improving. The implementation of subjective punishment into the criminal system may become technically possible in a foreseeable future. The questions about the nature and determinants of punishment that this paper deals with thus arise naturally from this development and their relevance will be increasing.

These questions are also of interest for economists. One may view criminal justice as a monopoly on deterrence using punishment. The standard result in microeconomics that price discrimination increases the profits has its analogy in criminal justice. Intuitively, uniform nominal punishment may be inefficient, as some individuals are overdeterred and others underdeterred. The ability to tailor punishment individually should increase efficiency of the system of criminal justice, allowing it to produce more deterrence at lower costs.

The information about individual valuation of punishment might also improve the use of alternative sanctions as substitutes for the socially extremely costly imprisonment. Economists have traditionally argued, that to the extent monetary and nonmonetary sanctions are substitutes, the latter should be only used in cases when the former are ineffective, typically when the optimal fine exceeds offenders’ wealth (Becker 1968; Polinsky and Shavell 1984). However, the extent to which different types of sanctions are substitutes is not clearly established (see Kahan 1996; Rizzolli and Tremewan 2016). An additional reason for considering carefully whether punishments should be monetary or non-monetary would arise if people tailor only one type or the other to a punishee’s subjective experience, as was found in Montag and Sobek (2014); this would further suggest limited substitutability of different types of sanctions.

Falk (2007); McClure, Laibson, Loewenstein, and Cohen (2004); Schulz et al. (2012); Singer, Seymour, O’Doherty, Kaube, Dolan, and Frith (2004); Tomlin, Kayali, King-Casas, Anen, Camerer, Quartz, and Montague (2006); Weiss, King, Inoue-Murayama, Matsuzawa, and Oswald (2012). For more general discussion of repercussions of these advances in the realm of the law see Greene and Cohen (2004); Morse (2006, 2011); Miller (2009).
Finally, nonmonetary alternative sanctions, such as community service, shaming sanctions, or property confiscation, are also attractive from the social point of view. However, their use has been limited as courts struggle to use prison alternatives effectively (Kahan 1996). Better information about the subjective impact of punishment might enhance courts’ ability to use alternatives to prison with more accuracy, enhancing their legitimacy, and avoiding the costs and adverse side effects of incarceration. The present study aims to contribute to better understanding of these important questions.

3 Experimental Design

We begin by giving an overview of the experiment and the timing of its individual components, which is summarized in Figure 1. In their first decision, subjects decide what proportion of their final earnings would be donated to a charity at the end of the experiment. Subject then earned money in three steps: (i) by doing the “Slider Task”, (ii) by receiving a “Random Payment”, and (iii) by completing a task which elicited their willingness-to-pay to avoid repeating the Slider Task (WTP).

Next, each subject was randomly matched with another subject and given the opportunity to assign a punishment for her partner’s donation decision after receiving information regarding her partner’s earnings from the Slider Task, Random Payment, and WTP. The type of punishment available depended on the treatment: in the monetary punishment (MP) treatment the punishers could impose a fine of anywhere between 0 and 5 euros; in the non-monetary punishment (NMP) treatment they could select a number of sliders between 0 and 100 as a punishment. In the MP, the fine was subtracted from subject’s

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6 Full experimental instructions are provided in Appendix A.
Final Payment. In the NMP, subject then had to place the punishment sliders and only then they could collect their payment for the experiment.

3.1 Introducing Subjects to the Experiment

Introduction to Slider Task

In order for subjects to understand the following “General Instructions” it was necessary for them to be exposed to the Slider Task (Gill and Prowse 2012). On their first screen they were informed that in later parts of the experiment they would be asked to place a number of sliders exactly in the middle, and shown three sliders that they could move around to get a feel for the task. This screen was shown in both treatments. Placing sliders is done by clicking on them and dragging them into a required position. The current position of a slider is indicated by a number {0, 100} next to each slider. A slider is placed correctly if the number next to it is 50.

General Instructions

The second screen gave an overview of the experiment. Subjects were informed that there were two roles, Role A and Role B, and that Role A subjects would receive an initial endowment of €10 while Role B subjects would receive €5, that both roles would earn money in three tasks, that their earnings would depend on their effort and luck, and that Role A subjects would make Total Earnings of €10-25 while Role B subjects would make Total Earnings of €5-20.\(^7\) Details of the three tasks were not given at this stage. Subjects were also explained that all participants would make decisions in both roles, and that roles (payoff-relevant decisions) would be randomly assigned after all decisions had been made.

This design was chosen as to allow us to collect punishment decisions from all subjects.

\(^7\)We gave different initial endowments to approximately equalize Final Payments between the roles after donations had been given and to make sure that “unlucky” subjects would still earn a positive amount in the experiment. For clarity, the initial endowments plus earnings from tasks were always referred to as “Total Earnings” (the amount on which an individual’s donation would be based), whereas this amount net of any fine or donation was referred to as the “Final Payment.”
Role A Decision

Subjects were told that if they were randomly selected to be Role A, 50% of their Total Earnings would be donated to charity by default. The decision consisted of selecting one of three choices: (i) leave the donation as is, (ii) take back half the donation, or (iii) take back the whole donation. To increase credibility, they were also told that the donations would be made online immediately after payments had been determined, and they could see the receipt before they left. The decision was framed with a 50% donation as the default option in order make smaller donations more likely to appear blameworthy. Subjects were asked to make their Role A decisions after they received the initial instructions (that is prior to any earnings).

Role B Decisions

Regarding Role B decisions, subjects were informed that they would be matched to a Role A subject and may decide to impose a punishment if they feel that the choice of the Role A subject was not appropriate. The maximum value and type of punishment was explained according to the treatment. In the NMP treatment, it was made clear that subjects who did not have to place sliders at the end of the experiment could collect their final payment and leave without having to wait for the others.

3.2 Earning Money

Slider Task and Bonus

In the Slider Task, subjects had to place 100 sliders precisely in the center of the line using mouse and dragging each slider into the correct position. There were two pages of 50 sliders (see Figure A1 for a screenshot). Each subject could earn a “Bonus”, which depended on how quickly they finished relative to other subjects: the first third received €5, the second third €2.50, and the final third received nothing. The size of the bonus

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8Donations were given to the Red Cross which was made known to the subjects in advance. We note here that our analysis controls for individual attitudes toward the charity, so the choice of charity is unimportant.
received was revealed to each subject as soon as all subjects had finished. Subjects were not informed at this stage that this information would be transmitted to the Role B players with whom they would be matched.

**Random Payment**

In this part of the experiment, subjects were subsequently informed that everyone may receive a “Random Payment”: one third would receive €5, another third €2.50, and the remainder nothing. Each subject was informed of their own random payment. This random payment was introduced for two main reasons. First, it enables us to see if subjects distinguish between earned and non-earned wealth when deciding punishment levels. Second, we suspected that earnings from the slider task would be strongly correlated with the WTP to avoid the Slider Task, as found in Rizzolli and Tremewan (2016), and Random Payment generates variation in wealth that is independent from subjects’ performance in the Slider Task.

**Willingness-to-pay Elicitation**

The willingness-to-pay elicitation was performed using a simplified Becker-DeGroot-Marschak method. Subjects were given an extra €5 and told that they could use some or all of this money to avoid repeating the Slider Task. They made 11 binary choices between repeating the Slider Task and paying a sum of money, from 0 to €5 in 50-cent increments. Subjects were informed that one of these choices will be randomly selected to be implemented at the end of the experiment. Choices were forced to be consistent, i.e. if a subject stated they preferred to pay a given amount, they would also have to state that they preferred to pay all smaller amounts. It was clearly stated that if they did not have to repeat the Slider Task, they would not have to wait for others to do so before collecting their payment.

So that subjects understood the concept of WTP when making punishment decisions, it was explicitly stated that the task involved deciding the maximum they were willing
to pay to avoid repeating the Slider Task, and that this would be reflected in the highest amount where they chose to pay. As with information on bonuses, subjects were not yet told that information on their WTP would be transmitted to Role B players.

3.3 Role B Decisions

Subjects chose punishment levels for five other subjects matched with them. If the punisher was assigned to Role B at the end of the experiment, one of these five subjects was randomly selected and the punishment implemented. Before deciding on punishments, subjects were informed about the Bonus, the Random Payment, and the WTP for each of the Role A participants assigned to them. We chose to give all three pieces of information in both treatments in order to minimize experimenter demand effects. Thus, our subjects were presented with all available information about the Role A participants and it was up to them to determine, whether, which, and how the individual pieces of information are relevant for their decisions. The order in which information was presented was randomized across subjects, but kept constant across decisions.

Role B decisions were made using the strategy method: subjects were asked what level of punishment they would assign for each of the three possible donation decision, and told that the punishment actually implemented would depend on the actual decision of the Role A subject. In the MP treatment they were told that they could choose a fine from €0 to 5, and in the NMP treatment they were told they could choose a number of sliders between 0 and 100 which would have to be correctly placed before payment would be received. In the NMP, subjects were reminded that those who did not have to place extra sliders would not have to wait for those who did before collecting their payment and leaving the experiment.
3.4 Conclusion of the Experiment

Questionnaire

After all payoff-relevant decisions had been made, subjects completed a questionnaire which asked for the subjects gender, age and field of study, as well as responses to the Cognitive Reflection Test (Frederick 2005), and two versions of the trolley dilemma (Edmonds 2014). Finally, subjects were asked questions about whether punishments should vary with wealth, causes of differences in wealth, and their political position on a left-right scale.

Final Sliders and Payment

After completing the questionnaire, subjects were shown the results of the WTP elicitation, which role they had been assigned, and the outcome of the punishment decisions. No subject refused to complete the final sliders (from the WTP elicitation or as a punishment) they were assigned.

Procedural Details

Three sessions of each treatment were run at the Vienna Center for Experimental Econometrics. Subjects were recruited via ORSEE (Greiner 2015) and participated in only one session, either of the MP (74 subjects) or NMP (68 subjects) treatment. The experiment was programmed in z-Tree (Fischbacher 2007). Final payments (after donations and fines) ranged from €0.25 to €25.00, with an average of €14.73. A total of €243.21 was donated to the charity.

4 Hypotheses

We are interested in identifying the determinants of the level of punishment meted out by subjects and whether and how these determinants might differ between the MP and the
NMP treatments. Our main hypotheses are that subjects take into account the subjective experience of the type of punishment they are inflicting:

**Hypothesis 1** *The level of the punishment assigned by a Role B player is decreasing in the disutility of a unit punishment to the Role A player. More specifically:*

A) *In the MP treatment, fines are increasing in the Role A player’s earnings and random payment.*

B) *In the NMP treatment, the number of sliders assigned as punishment are decreasing in the Role A player’s WTP.*

We note here that, technically, our WTP elicitation is informative about the subjective trade-off (the marginal rate of substitution) between the disutility from performing the slider task and the utility of the money that must be foregone, rather being than an absolute measure of disutility from performing the slider task. Rather than signaling a high disutility from the slider task, a high WTP might be interpreted as a signal of low utility of money. However, we suggest that subjects participating in our experiment would not follow the latter interpretation for two reasons: (i) It is rather counter-intuitive and requires a degree of economics savvy that is unlikely to be frequent in our subject pool. (ii) Secondly, as subjects were all students who had chosen to earn money in an experiment, there is little reason to suspect a great deal of heterogeneity in their *ex ante* utility of money. In fact, as will become evident, our expectations were born out by the results.\(^9\)

It is possible that subjects resent others’ ability or luck, and inflict antisocial punishment which would lead to a positive correlation between earnings and random payment, even in the NMP treatment, giving us:

**Hypothesis 2** *The level of the punishment assigned by a Role B player is increasing in the Role A player’s:*

A) *earnings in the slider task.*

\(^9\)We note, that to the extent some subjects may interpret the WTP as a measure of the marginal utility of money, this would push coefficient estimates against our hypotheses. In that case the results we obtain can be interpreted as conservative, relative to the true parameters.
Notice that in the MP treatment, this hypothesis has an identical prediction to Hypothesis 1A. We will try to disentangle these two hypotheses by comparing the elasticities of punishment level with respect to wealth across treatments: assuming that the effect of resentment is comparable in both treatments, a larger elasticity in the MP would be evidence for an additional effect due to consideration of the role A player’s subjective experience.

There is a substantial literature suggesting that people view the entitlement to earned wealth as stronger than the entitlement to windfall. This leads to the following hypothesis:

**Hypothesis 3** The (positive) relationship between earnings and punishment levels is weaker than the relationship between random payment and punishment levels.

Finally, we wish to compare the levels of punishment between treatments. This can be done in two ways. First of all, subjects may have an absolute level of disutility in mind, which means that the number of sliders assigned in the NMP should be adjusted according to the Role A players WTP before making comparisons with the fines in the MP treatment. Alternatively, subjects may see the maximum punishment as a guide to the appropriate punishment for the worst offense, in which case there should be no such adjustment.

**Hypothesis 4** Subjects assign identical punishments in the MP and NMP treatments:

A) in terms of monetary equivalents.

B) as a proportion of the maximum punishment.

## 5 Data and Results

### 5.1 Data and Summary Statistics

Overall, 11% of subjects left the whole donation to charity, 51% took back half, whereas 38% took back the whole donation. Subjects took on average approximately 12 minutes to
Table 1: Summary statistics

<table>
<thead>
<tr>
<th></th>
<th>Monetary treatment</th>
<th>Non-monetary treatment</th>
<th>Tests (p-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>25th</td>
<td>Median</td>
</tr>
<tr>
<td>Donation decision</td>
<td>19.26</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Slider Task Bonus</td>
<td>2.47</td>
<td>0</td>
<td>2.5</td>
</tr>
<tr>
<td>Random Payment</td>
<td>2.47</td>
<td>0</td>
<td>2.5</td>
</tr>
<tr>
<td>WTP</td>
<td>1.96</td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Total Earnings</td>
<td>16.76</td>
<td>14</td>
<td>15.25</td>
</tr>
<tr>
<td>Final Payment</td>
<td>14.21</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Red Cross donation</td>
<td>1.95</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Avg. punishment: Take All</td>
<td>2.29</td>
<td>0.4</td>
<td>2</td>
</tr>
<tr>
<td>Avg. punishment: Take Half</td>
<td>1.1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Avg. punishment: Do Nothing</td>
<td>0.44</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of subjects</td>
<td>74</td>
<td></td>
<td>68</td>
</tr>
</tbody>
</table>

complete the slider task (min: 7 minutes 43 seconds; max: 21 minutes 52 seconds). Table 1 presents the summary statistics of our data set. All possible responses were observed in the WTP elicitation with the median switching-point at €1.50 in both treatments. Mann-Whitney tests find no evidence of treatment differences in distributions of donations \((p = 0.45)\), completion times \((p = 0.76)\), or WTP responses \((p = 0.63)\).

For all three possible donation decisions and in both treatments, punishment levels varied from nothing to the maximum possible punishment. The average fine was €0.44 for subjects who left the whole donation to charity, €1.10 for those who took back half, and €2.29 for those who took back everything. For the NMP treatment the punishment levels were 13, 23, and 42 sliders respectively.

5.2 Main results

To identify the determinants of levels of punishment within treatments and test Hypotheses 1 to 3, we estimate the following equation

\[
\text{Punishment}_{ij} = \beta_1 \text{SliderTaskBonus}_i + \beta_2 \text{RandomPayment}_i + \text{WTP}_i \beta_3 + \gamma' c_j + u_{ij} \quad (1)
\]

where \(i\) identifies Role A subjects (the punishee), and \(j\) is the identity of the Role B subject (the punisher). Equation (1) is estimated separately for each treatment and each donation level. Recall that at each donation level we have elicited five punishment decisions from each participant, that is for five participants’ (in Role A) matched with her. Thus punisher
Table 2: Main Results

<table>
<thead>
<tr>
<th></th>
<th>Monetary Treatment</th>
<th>Non-Monetary Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Take All</td>
<td>Take Half</td>
</tr>
<tr>
<td>Slider Task Bonus</td>
<td>0.068**</td>
<td>0.115***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Random Payment</td>
<td>0.103***</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.037)</td>
</tr>
<tr>
<td>WTP</td>
<td>0.040</td>
<td>0.078</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>Role B Fixed Effects</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R²</td>
<td>0.050</td>
<td>0.076</td>
</tr>
<tr>
<td>Observations</td>
<td>370</td>
<td>370</td>
</tr>
<tr>
<td>Number of subjects</td>
<td>74</td>
<td>74</td>
</tr>
</tbody>
</table>

Note: Robust standard errors clustered by Role B participants (punishers) are in parentheses; *p < 0.1, **p < 0.05, ***p < 0.01.

fixed effects, $e_j$, control for subjects’ underlying punishment preferences that may, in principle, be correlated with their observed or unobserved characteristics, including their donation decision, Bonus, and Random Payment. Standard errors account for clustering of residuals at the level of Role B participant.

We note that treating each donation level separately implicitly controls for heterogeneous attitudes towards the charity. That is, we need not assume that a particular donation decision is blameworthy, it suffices that some subjects see some donation decision as such. However, as the decision was framed with a 50% donation as the default option, we expect that the subjects will primarily punish the decisions to take all or take half of the donation and the effects, if any, will be identified in these specifications.

The results from estimating regression (1) for each donation level are reported in Table 2. With regard to Hypothesis 1, we find that fines are positively related to both Slider Task Bonus and Random Payment for all three Role A decisions. The coefficients are statistically significant in all cases for earnings from the slider task, but for random wealth only when the role A player takes back the whole donation. In the NMP treatment, the number of punishment sliders is decreasing in the Role A subjects WTP, and this relationship is statistically significant when either some or all of the donation is taken.
### Table 3: Elasticities of punishment with respect to Earnings, Random Payment, and Willingness to Pay to avoid the Slider Task

<table>
<thead>
<tr>
<th></th>
<th>Monetary Treatment</th>
<th>Non-Monetary Treatment</th>
<th>z-score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Donation Decision: Take All</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slider Task Bonus</td>
<td>0.08</td>
<td>0.05</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td></td>
</tr>
<tr>
<td>Random Payment</td>
<td>0.11</td>
<td>0.03</td>
<td>1.81*</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>WTP</td>
<td>0.04</td>
<td>-0.13</td>
<td>2.03**</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td><strong>Donation Decision: Take Half</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slider Task Bonus</td>
<td>0.27</td>
<td>0.08</td>
<td>2.55**</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>Random Payment</td>
<td>0.10</td>
<td>0.06</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.03)</td>
<td></td>
</tr>
<tr>
<td>WTP</td>
<td>0.18</td>
<td>-0.17</td>
<td>2.56**</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td>(0.08)</td>
<td></td>
</tr>
<tr>
<td><strong>Donation Decision: Do Nothing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slider Task Bonus</td>
<td>0.36</td>
<td>0.22</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.10)</td>
<td></td>
</tr>
<tr>
<td>Random Payment</td>
<td>0.01</td>
<td>0.09</td>
<td>-0.40</td>
</tr>
<tr>
<td></td>
<td>(0.21)</td>
<td>(0.08)</td>
<td></td>
</tr>
<tr>
<td>WTP</td>
<td>0.13</td>
<td>-0.01</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td>(0.17)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Robust standard errors clustered by Role B participants (punishers) are in parentheses: *p < 0.1, **p < 0.05, ***p < 0.01 (p-values for two-sided tests).

The elasticities allowing us to compare the effects across treatments are computed in Table 3. All elasticities are calculated where the independent variables are at €2.50, the midpoint of the range of their possible values. Of the six possible comparisons, the elasticity with respect to wealth is greater in the MP treatment, the exception being for random payment when the Role A player took back nothing. The differences are statistically significant for random payment when the Role A player took back everything, and earnings when they took back half. We note also that WTP was never significant in the MP treatment, and the elasticity significantly greater in the NMP treatment when either some or all of the donation is withheld.

We summarize the specific results pertaining to our hypotheses set up in Section 4 as follows:
**Result 1** The level of the punishment assigned by a Role B player is decreasing in the disutility of a unit punishment to the Role A player. More specifically:

A) In the MP treatment, fines are increasing in the Role A player’s earnings and random payment. This relationship is stronger than in the NMP treatment.

B) In the NMP treatment, the number of sliders assigned as punishment are decreasing in the Role A player’s WTP. This relationship does not exist in the MP treatment.

As already shown, subjects tend to give larger fines to those with greater wealth. In the NMP treatment, the coefficients on both measures of wealth are also always positive. The coefficient on earnings is significant when the Role A subject takes back nothing, and both coefficients are weakly significant when they take back half.

**Result 2** In both the MP and NMP treatments, the level of the punishment assigned by a Role B player is typically increasing in the Role A player’s:

A) earnings in the slider task.

B) random payment.

Comparing the coefficients on earnings and random payment, we find that in five out of the six regressions the former are larger, although none of the differences are statistically significant.

**Result 3** We find no evidence that punishments are more (or less) sensitive to earned wealth than random wealth.

We now turn to testing for treatment differences in the levels of punishments, first comparing the monetary equivalents, then proportions of the maximum possible objective punishment. Because our statistical tests will require independent observations, we use the average punishment chosen by each subject. To make our first comparison across treatments, we wish to replace the number of sliders given as punishment with the equivalent monetary value as experienced by the Role A subject. In order to approximate this we
Figure 2: Distributions of average punishments: slider punishment represented in monetary terms, based on the willingness to pay to avoid it.
Figure 3: Distributions of average punishments as proportions of the maximum punishment.
assume that utility is linear in money, and that the true WTP of the subject is the midpoint of the interval we have elicited.\(^{10}\)

The resulting histograms are shown in Figure 2. For taking back all or half of the donation, the mass of the distribution of monetary equivalents of the slider punishments appears to be shifted substantially towards lower punishment. Indeed, the average punishments are roughly one third the size in the NMP treatment, and Mann-Whitney tests show that in both cases the distributions are significantly different \((p < 0.01)\). There is no evidence that the distributions are different when the role A subject took back nothing \((p = 0.69)\).

Figure 3 show punishment levels as a proportion of the maximum objective payoff (\(€5\) or 100 sliders). Here the distributions look very similar across treatments, and Mann-Whitney tests find no statistically significant difference (Take all: \(p = 0.74\); Take half: \(p = 0.94\); Take nothing: \(p = 0.23\)).

**Result 4** *Do subjects assign identical punishments in the MP and NMP treatments?*

A) Subjects do not assign identical punishments in the MP and NMP treatments in terms of monetary equivalents.

B) We find no evidence that subjects assign different punishments in the MP and NMP treatments as a proportion of the maximum punishment.

## 6 Conclusion

We run a laboratory experiment to study whether or not people find it acceptable to give different nominal levels of punishment to different individuals for the same offense. We find that subjects do condition levels of punishment on information about the punishee’s likely subjective experience of the punishment, and that this is true for both monetary and non-monetary punishments. In addition to our main results, we find that subjects

\(^{10}\)If subjects stated that they were willing to pay every amount, then all we know is that there WTP is greater than \(€5\). We used the same formula for these subjects as the others and assumed their WTP was \(€5.25\).
are significantly influenced by the maximum punishment available when determining the precise level of punishment, rather than having in mind a particular quantity of disutility they would like to inflict.\textsuperscript{11}

The implications of our study depend on one's view on the nature and purpose of punishment. Our results are good news for those who believe that “the punishment should fit the crime” and equate punishment with subjective suffering, and for those who argue that punishment needs to be tailored individually to improve deterrence and increase efficiency of law enforcement expenditures: such policies may be not be excessively controversial, particularly in the case of monetary punishments. However, for those who hold that justice requires equal nominal punishment for equivalent crimes, our results may be disturbing. We find a clear tendency to adjust punishments according to signals regarding a punishee’s subjective experience, which is likely to extend to jury, and possibly judge, decision-making. To counteract this tendency, those with an objectivist view of justice should push for sentencing guidelines and restrictions on judicial discretion.

But this is not the end of the story. For monetary punishment, our and Montag and Sobek’s (2014) earlier findings consistently show that individuals do vary the level of punishment with the subjective effect of that punishment on the person to be punished. Moreover, in our post-experimental questionnaire, 50% of our subjects responded that fines for a given offense should be increasing in wealth. However, the experimental results for non-monetary punishment are mixed. Subjects in Montag and Sobek’s (2014) study, who were explicitly asked to decide on prison sentences for convicted defendants, exhibited a strong tendency to impose nominally uniform punishment. There is evidence of the same

\textsuperscript{11}Punishments in the MP treatment were harsher than the monetary equivalents of punishments in the NMP treatment. One might be inclined to interpret this as a socially desirable outcome, since non-monetary punishments are socially costly (pure waste of time and effort), whereas monetary punishment are just transfers with no social cost. This might be an alternative explanation of the differences between our two treatments seen in Figure 2. However the sameness of distributions of both types of punishment when computed as a proportion of the maximum punishment, apparent in Figure 3, rather suggests that it was the range of available sentences that guided our subjects. To disentangle these two hypotheses rigorously, one might run an experiment where the maximum non-monetary punishment corresponds (or is lower than) the monetary equivalent of the maximum non-monetary punishment. This is a potential opportunity for future research, as the exact role of sentencing limits has important policy implications. Namely, limits on sentences may or may not be necessary in order to nudge judges to avoid inflicting socially costly punishments.
attitude regarding incarceration in our subject pool: in the survey, 75% answered that prison sentences should not be similarly conditioned.

Our study shows that peoples’ unwillingness to vary prison sentences is unlikely to be due purely to their non-monetary nature. Further research is therefore necessary to ascertain the cause of this inconsistency. It may be due to the lack of incentives that the earlier vignette study and survey answers may fail to elicit true preferences. Alternatively, imprisonment may differ in some fundamental way from the non-monetary punishment we use in our experiment, such as through the role of social stigma, which was absent in our anonymous environment. The answer to this puzzle may have important repercussions for economists’ as well as lawyers’ understanding of criminal punishment and what policies they should recommend.

References


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Appendix

A Experimental Instructions

Introduction to Placing Sliders

- In several parts of this experiment you will be asked to place sliders, such as the ones below, exactly in the middle of their line.
- You will know that it is exactly in the middle when the number next to the slider is 50.
- Before the experiment continues it is important that you understand this task.
- You may now move around the sample sliders below to see how this task works.
- When you feel you have understood, please click OK to continue.

General Instructions

- In this experiment there are two Roles: Role A and Role B.
- Participants in Role A will begin the experiment with an endowment of 10 EURO.
- Participants in Role B will begin the experiment with an endowment of 5 EURO.
- Participants in both Roles A and B can also earn money in three tasks.
- Depending on effort, choices, and luck in the three tasks, and including the initial endowments:
  - participants in Role A will have Total Earnings between 10 and 25 EURO.
  - participants in Role B will have Total Earnings between 5 and 20 EURO.
- **For Participants assigned to Role A**, 50% of their Total Earnings will be given to the Red Cross. However, they may reduce the size of this Donation by choosing one of three options. They may:
  - Do nothing (and leave the whole Donation for the Red Cross),
  - Take half of the Donation (and leave half of the Donation for the Red Cross), or
– Take all of the Donation (and leave nothing for the Red Cross).

• Any money they take from the Donation will be added to their Final Payment.

• Any money that remains in the Donation will be sent by online transfer to the Red Cross as soon as the experiment is completed.

• All payments to participants will be made in private.

• **Participants assigned to Role B** will be matched to a Role A participant. The Role B participant may decide to impose a punishment if he or she feels that the choice of the Role A participant was not appropriate.

  – The punishment will be that the Role A participant will be required to correctly place between 0 and 100 sliders (such as those on the previous screen) before collecting their earnings from the experiment.

  – The exact number of sliders the Role A participant will be required to place will be decided by the Role B participant with whom they are matched.

• All participants will make decisions both in Role A and Role B.

• At the end of the experiment it will be randomly determined whether your final payment is based on your decisions for Role A or Role B, i.e. you will only be paid for one these decisions.

• In summary, the experiment will proceed as follows:

  – **Part 1**: All participants will make decisions in Role A.

  – **Part 2** All participants will earn money in three different tasks.

  – **Part 3** All participants will make decisions in Role B.

  – **Part 4** A short questionnaire.

  – Finally, Roles will be randomly assigned and Final Payments calculated as explained above.

  – Those who are not required to place further sliders will collect their Final Payment immediately, while those who are required to place further sliders must do so before collecting their money.

• If you have any questions please raise your hand.
• Please click Continue when you are ready to make your decision in Role A.

**Part 1: Role A Decision**

• If you are randomly determined to be a Role A participant, 50% of your Total Earnings will be given as a Donation to the Red Cross.

• So you can be sure that your donation is really being sent to the Red Cross, an online transfer will be made immediately after the end of this experiment. A receipt will be printed out which you can see when you collect your payment.

• Choose one of the three following options.
  – Do nothing (and leave the whole Donation for the Red Cross)
  – Take half the Donation and add it to your Final Payment (and leave half the Donation for the Red Cross).
  – Take all the Donation and add it to your Final Payment (and leave nothing for the Red Cross).

**Part 2: Task 1**

• On the next page there are a number of sliders like the ones you saw at the beginning of the experiment.

• Before continuing with the experiment you must place 100 sliders exactly in the middle of their line.

• There will be two pages, each with 50 sliders.

• You may be paid a Bonus depending on how quickly you place all the sliders.
  – The first third to finish will be paid an extra 5 EURO.
  – The second third to finish will be paid an extra 2.5 EURO.
  – The last third to finish will not be paid a Bonus.

• If you have any questions please raise your hand.

• When you are ready to begin, please click Continue.
• [Shown after task complete] You finished in the last/second/first third. Your bonus is 0/2.5/5 EURO.

Part 2: Task 2

• In this part of the experiment, all participants may be given a Random Payment.
  – One third will be given an extra 5 EURO.
  – One third will be given an extra 2.5 EURO.
  – One third will not receive a Random Payment.

• Your Random Payment is 0/2.5/5 EURO.

• Please click Continue.

Part 2: Task 3

• In this task you must decide the maximum amount you are willing to pay to avoid placing 100 sliders.

• You have now been given an additional 5 EURO. You may use some or all of this money in this task. The money you do not spend will be added to your Total Earnings.

• The table below gives a list of 11 choices between correctly placing a further 100 sliders and different amounts of money you can pay to avoid having to do this.

• For each choice, indicate whether you would prefer to place the sliders or pay the amount shown by placing a checkmark in the corresponding box.

• At the end of the experiment, one of these 11 choices will be randomly selected.

• If, for the randomly selected choice, you chose to do the sliders, then you must again correctly place 100 sliders before collecting the money you have earned in this experiment. You will not be paid any extra money for placing these additional sliders.
• If, for the randomly selected choice, you chose the payment, you will be able to collect your money immediately, but the payment will be deducted from your Total Earnings.
• Note that your responses must be consistent, so if you say you prefer to pay a certain amount to avoid placing further sliders, you must also say you prefer to pay all lesser amounts.
• The highest amount where you say you prefer to pay, should be the **maximum you are willing to pay to avoid placing 100 sliders**. Note you will not necessarily pay this amount, as it depends on which of your 11 choices is randomly chosen. It is the maximum you can POSSIBLY pay.

**[Shown after choices entered]**

• Your choices indicate that the maximum you are willing to pay to avoid placing a further 100 sliders is [0,5] EURO. (Note you will not necessarily pay this amount, as it depends on which of your 11 choices is randomly chosen to be implemented, as explained in the previous screen. It is the maximum you can POSSIBLY pay).
• If this is correct, click "Finish".
• If you wish to go back to the previous screen and change your responses, click "Change".
• If you need some help, please raise your hand.

**Part 3: Role B Decision**

• You will now make decisions in Role B.
• You will decide how many sliders the Role A participant with whom you are matched must correctly place as a punishment before collecting his/her final payment. You will make this decision before you know their actual choice by indicating how many sliders they must place:
  – if they did nothing (and left the whole Donation for the Red Cross),
– if they took half of the Donation (and left half of the Donation for the Red Cross), AND
– if they took all of the Donation (and left nothing for the Red Cross).

• How many sliders they must ACTUALLY place will depend on their ACTUAL choice.

• When you make your decisions, you will be given three pieces of information about the Role A participant:
  – the Bonus he or she earned in the slider task,
  – the size of the Random Payment he or she received, and
  – the maximum amount he or she was willing to pay to avoid repeating the slider task.

• Remember that participants who do not have to place further sliders will not have to wait for those who do before collecting their Final Payment and leaving the experiment.

• Rather than making just one decision in Role B, you will decide how much 5 different Role A participants should be punished.

• At the end of the experiment, if you are chosen to be a Role B participant, one of these 5 Role A participants will be randomly chosen and receive your punishment.

• If you have any questions please raise your hand.

• Please click Continue when you are ready to make your decisions in Role B.

[Next screen]

• Reminder: 50% of the Total Earnings of the Role A participant described below were to be a Donation given to the Red Cross. However, they were able to reduce the size of the Donation by choosing one of the three following options:
  – Do nothing (and leave the whole Donation for the Red Cross),
  – Take half of the Donation (and leave half the Donation for the Red Cross), or
  – Take all of the Donation (and leave nothing for the Red Cross).

• Here is the information about this Role A participant:
– He/she earned a Bonus of 0/2.5/5 EURO.
– His/her Random Payment was 0/2.5/5 EURO
– He/she was willing to pay a maximum of [0,5] EURO to avoid placing a further 100 sliders.

• Please indicate for each possible choice how many sliders (between 0 and 100) this Role A participant will have to place before they can collect their final payment if this Decision is randomly selected to be implemented.
  – If this participant did nothing (and left the whole Donation for the Red Cross), how many sliders will he/she have to place?
  – If this participant took half of the Donation (and left half the Donation for the Red Cross), how many sliders will he/she have to place?
  – If this participant all of the Donation (and left nothing for the Red Cross), how many sliders will he/she have to place?
Figure A1: Slider task (one half) screen shot, 50 sliders