

**DRAFT COPY - DO NOT DISTRIBUTE****Legal and Criminological Psychology****The price of justice: Cost neglect increases criminal punishment recommendations**

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# Title: The price of justice: Cost neglect increases criminal punishment recommendations

Short title: *Cost neglect increases punishment*

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## Abstract:

**PURPOSE:** At what cost to society are we willing to punish criminal offenders, and how does our awareness of those costs impact our support for punitive measures? In a nationally distributed sample of 191 Internet users, we examined the elasticity of punishment in response to information about the direct material cost of incarceration. **METHODS:** Using an experimental vignette method with a within-subjects design, we manipulated the salience of the direct costs (low, high, or externalized) and the expected cost size (from low to high across eight intervals). **RESULTS:** As predicted, (1) when costs were made salient, cost increases reduced punishments, consistent with rational economic principles, (2) but when costs were not salient, punishments reached levels indistinguishable from those made under personally cost-free conditions. (3) Cluster analysis revealed the operation of at least three distinct punishment types: punishments that were relatively harsh even at high cost, as predicted by a conservative, deontological stance; those that were relatively lenient and similarly inelastic, as predicted by a politically liberal deontological stance, and those that decreased with cost increases, as predicted by a politically moderate, consequentialist stance.

**CONCLUSIONS:** Our results suggest that judgments about the utility of punishment are shaped by competing ideological and rational strategies, and how people trade off between these strategies depends in part on cost salience. We discuss the implications of these findings for discourse on transparency in sentencing.

## Keywords:

punishment; sentencing; framing; cost/benefit analysis; deontology; rationality; heuristics and biases

## Introduction

Public concerns about over-incarceration have reached the highest level of government (Baker, 2018). The U.S. now incarcerates over two million people, a number that is five times greater than thirty years ago and proportionally exceeds that of any other country (White House, 2016). All this punishment comes at a cost. On average, it costs over \$30,000 to incarcerate an adult for one year (Henrichson & Delaney, 2012). Collectively, taxpayers spend over \$250 billion on corrections each year (White House, 2016), not including the many collateral costs of incarceration, such as the barriers that former offenders face obtaining education, healthcare, and employment.

While sentencing policies and practices are carried out by legal practitioners, these policies are enacted by officials who are accountable to public voters and/or taxpayers (Enns, 2014). Therefore, examining how laypeople form punishment attitudes is of utmost importance. This study examined two pertinent questions: (1) How does attention to the societal costs of punishment affect lay sentencing attitudes? And (2) how great a cost will laypeople support in order to ensure that punishment is served?

Different theories make competing predictions about how cost considerations affect punishment attitudes. Deontological theories describe a categorical obligation to punish offenders for what they did in proportion to their moral culpability (Packer, 1968). From a purely deontological perspective, incarceration costs are irrelevant and should not affect sentencing judgments. Indeed, when sentencing decisions are based on strong moral values, such as the desire for retribution, no monetary cost would be large enough to override such decisions because they are incommensurable (Tetlock, 2003). This prediction is consistent with social science research on sacred values, which imply that if punishment judgments are based on

categorical moral principles, they will be resistant to change in response to exposure to cost/benefit information (Aharoni & Fridlund, 2012; Berns et al., 2012; Haidt & Graham, 2007; Tetlock, Kristel, Elson, Green, & Lerner, 2000).

Rational choice theories, in contrast, are part of a larger class of consequentialist theories, which state that consumer decisions tend to be more sparing as the cost of the good increases. These theories assume that people tend to make choices that serve their self-interest, and to do this, they attempt to place equal consideration on all relevant costs and benefits of a given choice (Starmer, 2000). From this perspective, higher costs of incarceration should result in less punishment.

Both deontological and rational choice theories assume that decision making behavior is faithful to the decision maker's theoretical motivations. The heuristics and biases framework, in contrast, suggests that human decision making under uncertainty is highly suggestible, inconsistent, and in some cases, irrational. In the context of criminal punishment judgments, laypeople and experts alike are easily swayed, not just by the substantive facts of the case, but by supposedly irrelevant contextual cues, such as the cognitive availability of the information (Bennett, 2014; Tversky & Kahneman, 1973). According to this perspective, support for punishment should be greater when the costs of incarceration are less salient because information that is out of sight is at risk of being out of mind. Increasing the salience of these costs should have the opposite effect.

Empirical evidence provides considerable support for the heuristic and biases framework. For example, behavioral economics research has shown that when people make decisions under uncertainty, they neglect to consider the decision's opportunity costs—namely, the opportunities that were foregone in order to fund the one that is selected (Becker et al., 1974; Frederick et al.,

2009; Hoskin, 1983; Jones et al., 1998; Neumann & Friedman, 1978; Northcraft & Neale, 1986; Vera-Muñoz, 1998). Other research has shown that when people make financial decisions using money that they did not expect to receive (Arkes et al., 1994), they tend to spend more freely and invest with greater tolerance for risk. These considerations suggest that unless the relevant cost information is made as salient as the benefits, decision makers are at risk of discounting these costs and over-consuming the resource.

Similar patterns have been found in moral decision making contexts. Baron and Leshner (2000) found that participants often insisted that no monetary gain is great enough to justify certain absolute moral violations (such as clear-cutting old-growth forests). However, certain conditions could nonetheless evoke compromise, specifically, when the attitude was shown to be in direct conflict with another sacred value held by the same individual, or when participants were assured that the risk of negative consequences from the violation was sufficiently low. In another study, Rozin and colleagues asked participants about their willingness to engage in harmless but aversive acts like wearing a murderer's sweater. Participants were more willing to engage in the acts when using a monetary scale (i.e., how much they are willing to pay to avoid the act) than non-monetary scales (i.e., a rating scale or preference between alternatives; Rozin, Grant, Weinberg, & Parker, 2007). That is, people are quick to endorse irrational thinking when they believe their judgments are cost-free, but drawing attention to the decision costs tempers this type of thinking. Both of these studies suggest that when engaging in sacred values reasoning, people do not spontaneously consider the impact of resource constraints on their judgments, but such constraints can predictably shape their reasoning when made salient.

The few studies that have been conducted on cost framing in punishment attitudes suggest that these attitudes may, too, be sensitive to cost salience. In an early survey study of

message framing among Illinois residents, researchers found that information about the direct costs of different criminal sanctions reduced prison sentence recommendations relative to community service, especially for crimes lower in seriousness (Thomson & Ragona, 1987). More recently, an online survey study found that emphasizing the costs or benefits of incarceration predictably modulated support for a proposition to eliminate the use of prison for low-level offenses (Gottleib, 2017). Interestingly, the effects were asymmetric: emphasizing the costs of incarceration increased support for the proposition more than the benefit frame reduced support. In a survey study of professional judges, participants recommended shorter sentences when exposed to the true average cost of incarceration as opposed to conditions in which the putative cost was low or unspecified (Rachlinski, Wistrich, & Guthrie, 2013).

Finally, a survey study that we conducted confirmed that exposure to the true costs of incarceration tempered sentencing recommendations in undergraduate samples (Aharoni, Kleider-Offutt, Brosnan, & Watzek, 2019). In addition, we found that without such exposure, punishment levels were on par with those that were characterized as personally cost-free, and many participants were willing to support up to ten times the average cost in order to ensure that at least some portion of the sentence would be served. To our knowledge, this was the first cost framing study to demonstrate, using a within-subjects design, a change in punishment recommendations for the same individual. These findings indicate that when the societal costs of incarceration are made explicit, though some people appear willing to pay any cost to society to ensure some degree of punishment, most people prefer to compromise somewhat on their original punishment recommendation, as if the societal costs matter to them. Yet, when the costs are obscured, these very same people wholly neglect those costs, punishing as if the costs to society do not matter to them at all. (Aharoni et al., 2019). This suggests that while some

punishment decisions reflect unshakable deontological commitments, others are rationally motivated, and still others may shift between these strategies (within the same individual) depending on the *salience* of cost information.

## The Current Study

Though the existing studies on cost framing shed light on punishment attitude formation and change, there exists a demand to advance this research in several ways. First, replication is necessary to test the reliability of the cost framing effect and to test its population validity in a national sample. Second, with rare exceptions (e.g., Aharoni et al., 2019), the field lacks information about within-person attitude change along different cost levels. Understanding the price-elasticity of punishment can help to clarify how much people are willing to pay for punishment, and how this willingness might vary among people with different ideological preferences. The present study addressed these limitations in an experimental vignette survey in a national sample of U.S. voters. To examine punishment elasticity, we constructed a cost scale with hypothetical large amounts, enabling us to search for an upper limit on the effect of cost size on punishment recommendations. If cost information can induce people to represent punishment like traditional commodities, then the shape of the punishment slope could reveal how much people value sentences of different length. As a supplemental aim, we examined the operation of distinct punishment types, and whether they map onto the predictions of the deontological and rational-economic theories of punishment.

## Methods

**Participants.** Two hundred two respondents were recruited from the web service Amazon Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011) and were paid \$3.00 for

participating. Participation was restricted by age (18+ yrs.), country (U.S.), and an approval rating of 95% or higher (see Peer, Vosgerau, & Acquisti, 2014). Individuals who had previously participated in Mechanical Turk surveys by the principal investigator were blocked from participation. Three participants were excluded for failing the multiple-choice attention check (“What are the colors of the American flag?”). Eight were excluded for failing to recognize the correct crime type from a multiple-choice list. The remaining 191 were 56.0% male, 42.9% female; 8.4% Hispanic or Latino; 79.6% White/Caucasian, 7.9% Black or African American, 6.8% Asian, 3.7% mixed, other, unknown, or prefer not to answer (ethnic and racial categories were non-exclusive), with a mean age of 35.09 years ( $SD = 10.06$ ). All study procedures were approved by the university’s ethical review board and contingent upon informed consent.

### **Design and Hypotheses.**

The study delivered a hypothetical criminal case summary. Our objective was to examine individual-level changes in punishment, so prison sentence length recommendations were queried repeatedly under different cost conditions, obeying a within-subjects design. The initial sentencing judgment was not accompanied by any information about decision costs (i.e., the pre-cost condition, low salience condition). The post-test was the change in sentence following disclosure of each of seven consecutive cost levels (see Materials and Procedures).

To interpret the meaning of the pre- vs. post-cost comparison, the same participants were asked how their initial sentence recommendation might differ if the incarceration costs were externalized, namely, paid by seized assets such as drug money that is confiscated after an arrest, not by taxpayers. Our reasoning was that punishments made under the assumption of no personal costs would minimize rational motivations to economize, and more closely reflect purely moralistic motives, unconstrained by rational self-interest. Thus, if pre-cost punishments exceed

post-cost punishments but do not differ from those made under externalized conditions, this would imply that people in the pre-cost condition are punishing as if the punishment is personally cost-free. If these individuals explicitly recognize that criminal punishments are costly to taxpayers, then it would be irrational to utilize cost information only when it was made salient. Notably, the late position of the externalized cost question increases its susceptibility to carry-over effects, perhaps motivating respondents to maintain consistency across their punishment recommendations. However, this concern would stack the cards against our hypothesis that they will differ and is alleviated by similar research that found the predicted pattern using a between-subjects design (Aharoni et al., 2019).

We theorized that when the costs of incarceration are not salient, people will punish without restraint, as if those costs do not apply. Thus, *Hypothesis 1* stated that (a) pre-cost sentences will be more severe than post-cost sentences, but (b) pre-cost sentences will be no different from sentences that are externalized. We further theorized that when the costs of incarceration are made salient, people will be rationally responsive to cost information, but this responsibility will be limited by a persistent preference to uphold some degree of punishment. Thus, *Hypothesis 2* stated that (a) recommended punishments will decrease with increasing cost, but (b) they will exceed zero even at high cost levels. Finally, we theorized the existence of an interplay between distinct punishment motivations, representing a competition between non-negotiable, deontological sacred values and consequentialist punishments that rationally track changes in cost size. Thus, *Hypothesis 3* postulated the operation of at least three distinct patterns of punishment: (a) relatively harsh punishments that are inelastic with respect to the cost of the sentence, as predicted by a politically conservative deontological stance, (b) relatively lenient punishments that are similarly inelastic, as predicted by a politically liberal deontological stance,

and (c) moderately harsh punishments that decrease with increases in the cost, as predicted by a politically moderate, consequentialist stance.

### **Materials and Procedures.**

All study materials and procedures were the same as those reported in Aharoni et al. (2019) except where otherwise specified. We presented a case summary vignette portraying a fictitious crime of home invasion. (See Appendix for full vignette text.) Afterward, the pre-cost measure was administered, prompting participants to indicate how much the offender should be punished on a ratio slider scale from 0 to 8 years in prison. The scale maximum was slightly shorter than our previously published study to improve its psychometric properties, but is still similar to many state sentencing schemes. Although the scale labels were shown in years, participants were informed that they could drag the slider anywhere on the scale, including between labels. As they did so, their selection was displayed in real time, to the 10<sup>th</sup> decimal place. After the pre-cost measure, the cost manipulation was administered, which, under the guise of a recently released government report, stated the actual average U.S. cost of incarceration per year (\$30,000), and estimated the average per-taxpayer cost for a given state (\$200). In addition, the statement specified a plausible opportunity cost: money that could otherwise have been invested into job training for individuals at risk. There was no time limit.

After exposure to the cost information, participants were offered a chance to modify their initial sentence recommendation or keep it the same. Following their response, six additional sentencing recommendations were queried for an identical crime in response to new hypothetical cost values that increased exponentially from \$60,000 to \$1,920,000. This scale maximum was deliberately higher than in our 2018 study and enabled us to determine whether, when, and how much the size of the cost evokes changes in sentencing. Finally, to help benchmark the pre- to

post-cost change in punishment, participants made one last sentence recommendation under the assumption that prison costs would not be paid by taxpayers (i.e., externalized).

Next, manipulation checks were administered to assess awareness of cost sensitivity, to determine whether participants understood the vignette, and to assess their background knowledge of the true average direct cost of incarceration in the U.S. and how such costs are paid. To test for moderation, we assessed participants' self-reported political ideology on a Likert-type scale from liberal (-3) to conservative (+3), we assessed support for four common punitive motives using a ranking scale adapted from Nadelhoffer, Heshmati, Kaplan, and Nichols (2013). Finally, we collected routine demographic information, including gender and socioeconomic status (lower, lower-middle, upper-middle, upper). Although we did not define prior hypotheses for these individual difference variables, we included them for exploratory purposes.<sup>1</sup>

## Results

*H1(a): Were pre-cost sentences more severe than post-cost sentences? H1(b): Did pre-cost sentences differ from sentences that were externalized?*

This hypothesis was fully supported. Using a repeated-measures ANOVA with these three cost types as predictors, a main effect of cost salience on sentence length was found,  $F(2, 380) = 27.87, p < .001, \eta^2 = .128$ . Pairwise comparisons using Fisher's Least Significant Difference (LSD) test confirmed both parts of our hypothesis. Post-cost sentences of \$30k ( $M =$

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<sup>1</sup> The data that support the findings of this study are openly available in [OSF repository name] at [http://doi.org/\[doi\]](http://doi.org/[doi]), reference number [reference number]. Additional measures were collected as a part of this survey for exploratory purposes, namely the Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995), the Delayed-Discounting Questionnaire (DD; Kirby & Marakovic 1996), an n-back working memory tasks (Kirchner, 1958), and the Corsi working memory test (Milner, 1971). However, these measures were not included in this study's analytic strategy and so are not reported here.

2.95; 95% CI [2.62, 3.28]) were significantly (~10%) lower than both pre-cost sentences ( $M = 3.30$ ; 95% CI [2.98, 3.63],  $p < .001$ ) and externalized cost (3.25; 95% CI [2.91, 3.58],  $p < .001$ ) sentences, but these latter two sentences did not differ from each other ( $p = .253$ ).<sup>2</sup> This pattern suggests that increasing the salience of sentencing costs mitigates punishment, and lacking such exposure, people effectively neglected those costs, punishing as if the sentence were personally cost-free.

### *Explanatory Analyses*

The fact that explicit prompting evoked lower sentences suggests that participants utilized this information when made salient, but not by default. One possible explanation for this effect is that our participants did not initially know the high cost of prison or that prison budgets come out of taxes, and when they were educated about this information, they were rationally motivated to reduce their sentences. To test their fiscal knowledge, participants were asked, in multiple-choice format, where prison funds ultimately come from (given five answer options) and what the true U.S. average cost of incarceration is (given six answer options). The vast majority (96.34%) of participants correctly reported that prison budgets are typically funded by taxes,  $X^2(2) = 341.23$ ,  $p < .001$ , and the majority (58.64%) also selected the true cost range,  $X^2(4) = 191.28$ ,  $p < .001$ . Indeed, the salience effect held regardless of whether they identified the true average or not,  $t(189) = -1.47$ ,  $p = .142$ . Taken together, the rational responsiveness explanation cannot easily explain the observed salience effect.

To address whether participants were aware that their sentence recommendations were affected by cost salience, we asked whether they would have assigned longer sentences to the

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<sup>2</sup> In separate mixed ANOVAs, neither gender ( $p = .816$ ) nor socioeconomic status ( $p = .889$ ), as defined by two dummy-coded groups (lower vs. upper SES), moderated the H1 effect. Likewise, no correlations were found between the pre- to post-cost punishment difference score and BIS-11 total score,  $p = .949$ , Corsi total score,  $p = .833$ , the product of the n-Back hit rate,  $p = .341$ , or the DD parameter k,  $p = .542$ .

defendant if the funds to incarcerate offenders were unlimited (yes, no, or unsure)? The majority of people (58.12%) said no,  $X^2(2) = 53.29.28, p < .001$ . And yet, as reported above, they did assign longer sentences, on average, when funds personally cost-free or unspecified. This incongruity suggests a lack of awareness about the effect of cost salience on their judgments.

Similarly, we asked participants, using a 7-point Likert-type scale, their explicit opinions about the extent to which judges ought to consider the monetary costs of the sentence. The mean response did not differ from the neutral point,  $t(190) = -1.43, p = .16, (M = -0.19, 95\% \text{ CI of Mean Difference } [-.46, .07])$ , but we observed wide variance that took the form of a bimodal distribution. We then re-tested our primary hypothesis including only participants who indicated that judges should not consider the monetary costs of the sentence.<sup>3</sup> Even in this reduced sample, the predicted effect of cost salience was observed,  $F(2, 168) = 12.42, p < .001, \eta^2 = .129$ . Post-cost sentences of \$30k ( $M = 3.49; 95\% \text{ CI } [2.98, 4.00]$ ) were significantly lower than both pre-cost sentences ( $M = 3.75; 95\% \text{ CI } [3.24, 4.25], p < .001$ ) and externalized cost sentences (3.78; 95% CI [3.26, 4.30],  $p < .001$ ), but these latter two sentences did not differ from each other ( $p = .549$ ). This pattern suggests a disparity between participants' explicit punishment values and their own sentencing recommendations.

Finally, a linear regression was employed to test the association between self-reported political ideology and pre- to post-\$30K change in sentence. The overall model was significant,  $F(1, 189) = 5.97, p = .015$ , with an  $R^2$  of 0.03. For every one-unit increase in liberalism, the post-

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<sup>3</sup> We also re-tested our primary hypothesis including only participants who indicated that judges should consider the monetary costs of the sentence,  $F(2, 180) = 17.27, p < .001, \eta^2 = .161$ . As expected, post-cost sentences of \$30k ( $M = 2.23; 95\% \text{ CI } [1.80, 2.66]$ ) were significantly lower than both pre-cost sentences ( $M = 2.70; 95\% \text{ CI } [2.26, 3.15], p < .001$ ) and externalized cost (2.49; 95% CI [2.07, 2.91],  $p = .002$ ) sentences. Pre-cost sentences were not lower than those under the externalized cost condition—in fact, they were significantly higher ( $p = .009$ ).

\$30K sentence decreased relative to the pre-cost sentence by an additional  $B = .07$ . Crudely, liberals were slightly more responsive to cost salience than conservatives.

*H2(a): Did punishments decrease with increasing cost?*

This hypothesis was supported. We constructed a linear mixed effects model using methods detailed in Aharoni et al. (2019). Cost level was entered as a fixed effect and participant identifier as a random effect to account for different baseline rates in sentencing. We also fitted a null model, containing only the intercept and the random effect. The linear model fit the data better than the null model, indicating that disclosure of cost information decreased sentences, as expected,  $\chi^2(2) = 485.81, p < .001$ . (See Table 1 and Fig. 1.) The steepest rate of change ( $MD = 0.43$  yrs.) occurred at \$60K, suggesting a disproportionate (23.61%) reduction in sentencing from pre- to post-\$60k,  $t(190) = 15.24, p < .001$ .

*H2(b): Did punishments exceed zero even at high cost levels?*

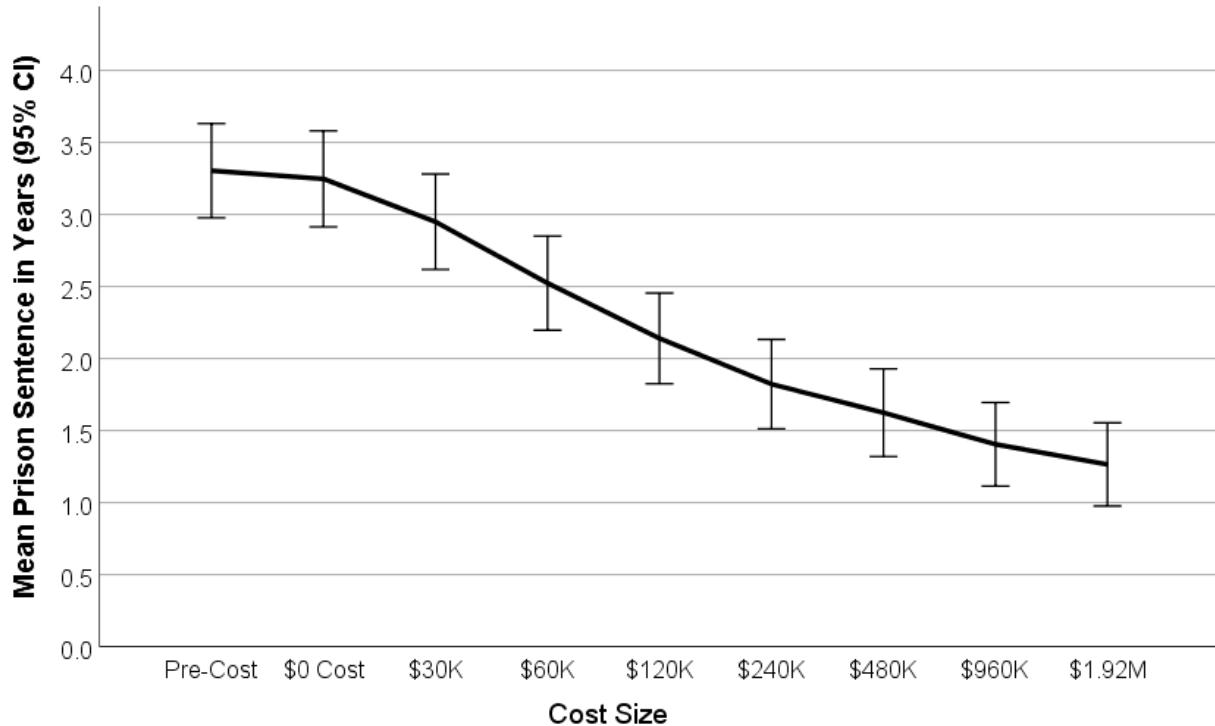
This hypothesis was supported. Descriptively, participants appeared to highly value modest prison sentences. Specifically, over half the participants (51.83%) supported at least three months of prison time even at the asymptote, that is, the highest (fictitious) cost level of \$1.92M per year ( $Mdn = 0.30$ ), and this distribution was statistically greater than zero,  $t(190) = 8.64, p < .001$ . This pattern reflects a strong lack of responsiveness to variation in the cost for the first three months. However, additional prison time yielded diminishing marginal returns, and was heavily discounted at the \$30K - \$60K level, at least for the sample as a whole.

**Table 1.**

Random effects	<b>Group</b>	<b>Variance</b>	<b>SD</b>
	ID	1.23	1.11
	Residual	0.86	0.93
Fixed effects	<b>Coefficient (SE)</b>		<b>t-value (p-value)</b>
	Intercept		-5.09 (1.49) -0.34 (.73)
	Pre- cost		7.24 (3.67) 19.71***
	Cost		-6.97 (3.98) -17.53***

**Table 1.** Linear Mixed Model indicating a reducing in sentencing recommendations as a function of cost disclosure. \*\*\* $p < .001$ .

**Figure 1.**



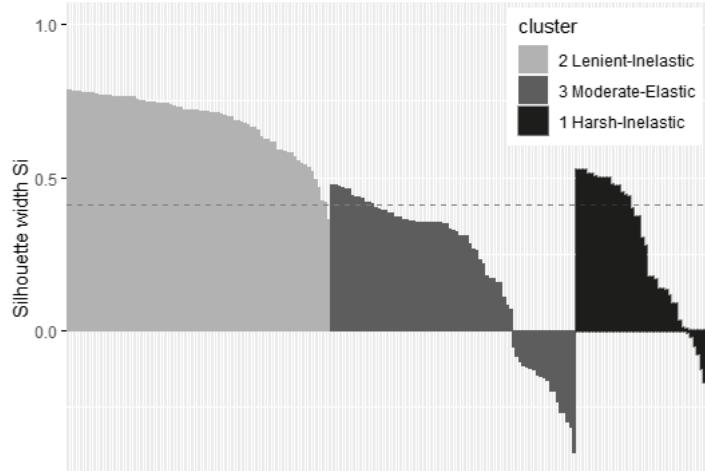
**Figure 1.** Change in recommended prison time as a function of explicit cost information. Pre-cost and zero-cost sentences were significantly longer than \$30K sentences. Sentence length was linearly related to cost size, and participants supported expenditures in excess of \$1M to ensure at least a three-month prison term.

*H3: Can variation in punishment be characterized according to distinct ideological types (harsh-inelastic, lenient-inelastic, and moderately harsh-elastic)?*

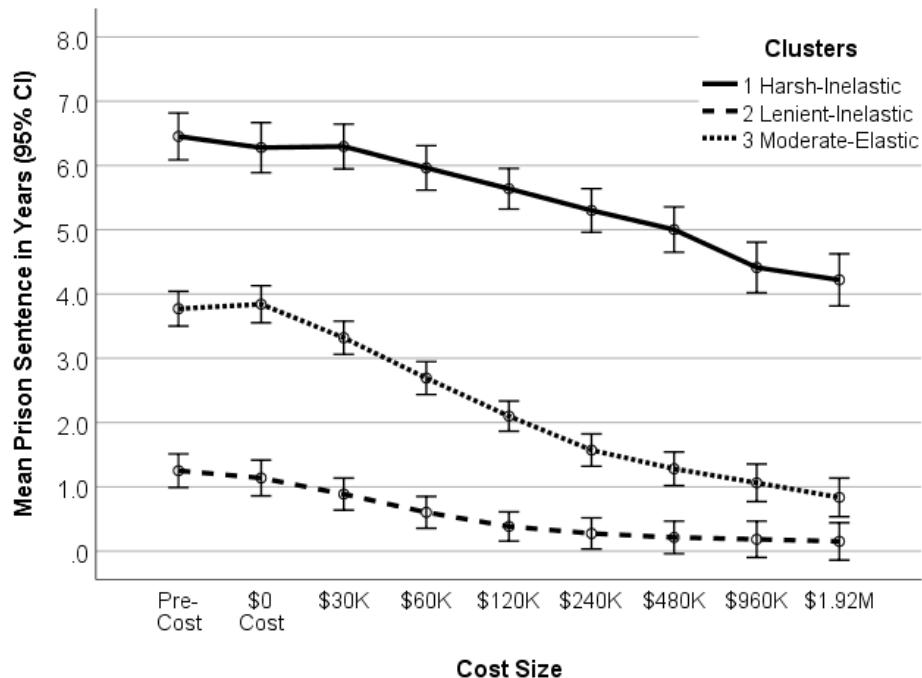
This hypothesis was supported. Cluster analysis was employed to characterize individual differences in cost sensitivity (i.e., the elasticity of punishment for distinct sub-groups). To test our hypothesis, we performed a Two-Step cluster analysis using the Log-Likelihood measure of distance for three fixed groups (Rousseeuw, 1987). This test indicated support for a three-cluster model with good cohesion and separation. (See Fig. 2 for silhouette widths; mean width = 0.41). To generate group classification assignments, we then subjected the three-cluster model to a hierarchical cluster analysis using Ward's method to maximize distance between clusters and the squared Euclidean distance measure for interval and ratio data (Ward, 1963). A repeated-measures ANOVA containing all cost levels revealed a strong main effect of cluster,  $F(2, 188) = 494.89, p < .001, \eta_p^2 = .840$ . All pairwise comparisons were significantly different at  $p < .001$ , and the mean differences were consistent with our hypothesis. (See Fig. 3.) Inspection of the line graph reveals the existence of three distinct clusters, consistent with predictions: (1) those that supported harsh punishments even at high cost, (2) those that supported lenient punishments even at low cost, and (3) those that showed a rational reduction in support for punishment with increasing cost.<sup>4</sup>

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<sup>4</sup> As a test of the internal validity of the model, we conducted a bootstrap evaluation of cluster stability using the *clusterboot* procedure in R (see Hennig, 2006). The vector of standardized

**Figure 2.**

**Figure 2.** Silhouette plot illustrating fit based on case-wise distances from each cluster mean, where positive values indicate better fit.

**Figure 3.**


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cluster stabilities (where values close to 1 indicate greater stability) was 0.58 for cluster 1, 0.77 for cluster 2, and 0.56 for cluster 3.

**Figure 3.** A Two-Step cluster analysis supported the existence of clusters that varied in elasticity and absolute punishment levels. Cluster 1 (solid line) was harsh and inelastic:  $M = 5.51$ , 95% CI [5.26, 5.76],  $n = 40$ ; Cluster 2 (dashed line) was lenient and inelastic:  $M = .57$ , 95% CI [.38, .75],  $n = 78$ ; Cluster 3 (dotted line) was highly elastic, moving from moderately harsh to relatively lenient with increasing cost:  $M = 2.28$ , 95% CI [2.09, 2.46],  $n = 73$ .

We sought to examine potential differences in political ideology between the three clusters. An ANOVA revealed a significant difference among them,  $F(2, 188) = 4.66, p = .011$ . Post hoc comparisons using Bonferroni correction (.05/3) indicated that the members of cluster 1 (harsh-inelastic) reported being significantly more conservative ( $M = -.15$ , 95% CI [-.70, .39]) than the members of cluster 2 (lenient-inelastic;  $M = -1.14$ , 95% CI [-1.53, -.75],  $p = .013$ , corrected). However, political ideology in these two clusters did not differ from the more elastic cluster 3,  $M = -.55$ , 95% CI [-.95, -.15],  $p = .746, p = .123$ , respectively.

We also examined differences in self-reported punitive motives between clusters. Using a MANOVA with the rank score of four punitive motives (retribution, special deterrence, general deterrence, and restoration) as dependent measures (where lower numbers indicate greater perceived importance), we observed a significant effect, Pillai's Trace = .11,  $F(6, 374) = 3.51, p = .002$ ,  $\eta_p^2 = .053$ , such that the harsh-inelastic cluster 1 ( $M = 2.55$ , 95% CI [2.22, 2.89]) ranked retribution as more important than did the elastic cluster 3 ( $M = 3.12$ , 95% CI [2.88, 3.37],  $p = .022$ ) and the lenient-inelastic cluster 2 ( $M = 3.31$ , 95% CI [3.07, 3.55],  $p = .001$ ); and conversely, the lenient-inelastic cluster 2 ( $M = 2.22$ , 95% CI [1.97, 2.47] ranked restoration as more important than did the elastic cluster 3 ( $M = 2.66$ , 95% CI [2.40, 2.91],  $p = .012$ ) and the harsh-inelastic cluster 1 ( $M = 2.85$ , 95% CI [2.50, 3.20],  $p = .049$ , corrected).

## Discussion

This study tested the impact of cost salience and size on lay sentencing judgments. As predicted, participants leveled harsher sentences when the costs were not salient (i.e., the status quo). These sentences were no less harsh than those made when the punishment was putatively cost-free to taxpayers, suggesting that punishers heavily discount the costs when they are not explicit. In addition, when costs were explicit, punishments decreased with increasing cost, but plateaued above the zero point, suggesting that most people explicitly desired at least some punishment, even at fictitiously high cost levels. Finally, we found evidence of at least three distinct punishment types: those that were relatively severe, persisting even at high cost; those that were relatively lenient even at low cost; and those that decreased with increasing cost, consistent with a rational cost/benefit analysis. These clusters varied predictably in their political ideology and endorsement of the retributive justification for punishment.

Although punishments were somewhat responsive to changes in cost size, variation in punishment was not well explained by changes in cost size alone, as would be expected by rational choice theories. Instead, punishment was also responsive to cost salience. In context of our manipulation checks, this responsiveness appears to operate, at least in part, on an implicit level, as to be expected from a heuristic reasoning process, wherein people tend to place greater consideration on factors that are most cognitively accessible (Tversky & Kahneman, 1973). The implication is that, by default, without cost exposure, people may express greater support for punishment than they would under more transparent conditions. Our findings are generally consistent with other studies on cost framing (Gottlieb, 2017; Thomson & Ragona, 1987). Further, our findings extend that research by demonstrating cost framing effects in a national

sample, and by examining the elasticity of punishment, both in aggregate and among individual subgroups.

At least as interesting as the variation in punishment scores were the cases of relative stability. That some individuals maintained high levels of punishment regardless of the cost suggests the operation of relatively non-negotiable sacred values (see also Tetlock, 2003). The fact that these individuals reported higher levels of political conservatism and support for the retributive motive is consistent with recent research (e.g., Silver & Silver, 2017) and comports with deontological theory. However, these individuals were in the minority (1/5 of the total sample). The motivations of the most lenient punishers are more challenging to interpret. It is tempting to attribute their low elasticity to deontological principles, but this interpretation is complicated by a possible floor effect, limiting our ability to observe otherwise rational reductions in punishment as a function of increased cost. However, the middle group, and indeed the sample as a whole, did exhibit a clear sensitivity to cost size. So, to the extent that these more responsive individuals were employing sacred values reasoning prior to cost exposure, they were ultimately willing to trade-off these values for those evoked by the cost manipulation. If so, these findings are consistent with consequentialist theories and with research showing that even so-called sacred values may ultimately be subject to revision (Baron & Leshner, 2000; Rozin et al., 2007).

### *Limitations and Future Research*

Like all studies, the conclusions of this study are limited by our methods. First, our sample is not necessarily generalizable to U.S. voters. Although the sample was national, it was not adjusted to match U.S. voter demographics and may have underrepresented older, less educated, or more politically conservative individuals and those without easy Internet access.

However, previous research has found good agreement between surveys conducted on Mechanical Turk and nationally representative Internet surveys (Buhrmester et al., 2011; Mullinix, Leeper, Freese, & Druckman, 2016).

Second, the crime scenario was selected to be moderate in seriousness. We would not necessarily expect cost framing effects to be as strong among more serious crimes, but future research could test this hypothesis.

Third, our suggestion that reductions in punishment was not merely an effect of learning new fiscal information is complicated by the fact that participants could have looked up this information in real time. Future studies should more systematically attempt to tease apart the educational role of cost information from the potential role of priming in the cost salience effect. One way to do this might be to test the effect of cost priming over time; if it is a result of gaining new declarative knowledge, it should be more enduring than a priming effect.

Fourth, we utilized a within-subjects design in order to observe cost-driven change in sentencing attitudes within a single individual. Like all within-subjects design, this choice exposed our results to possible carry-over effects (see Ritov & Baron, 2011) such as the motivation to fulfill a folk hypothesis that punishments should be cost-responsive. However, this concern is tempered by the fact that (1) the same people whose sentences were cost responsive at low cost levels resisted its influence at higher cost levels, and (2) the observed cost salience effect is consistent with previously published research that used a between-subjects design (Aharoni et al., 2019).

Fifth, our results do not speak to the dose-response relationship between costs and sentencing judgments at low cost levels (i.e., below \$30K). Although sentence recommendations increased from the \$30K to personally cost-free conditions, additional research is needed to

evaluate the rate of change, which would be useful for predicting how stakeholders would respond to the prospect of reductions in the cost of incarceration.

Sixth, the stability of clusters 1 and 3 was modest (see Henning, 2006), possibly owing to low statistical power. The cluster analysis literature does not currently provide definitive criteria for sample size estimation, so our interpretation of cluster performance relied on a bootstrapping procedure, silhouette width, and inspection of the confidence intervals. Power limitations also prevented us from testing for differences in sensitivity to cost salience between the three clusters or between other theoretically relevant subgroups. Larger samples would warrant examination of these open questions.

Last, the use of a judicial sentencing narrative to study voter punishment attitudes, and the use of surveys more generally to study punishment choices, are admittedly artificial. We employed these approaches for easier experimental control and to gauge explicit punishment attitudes. Future research, however, should probe such effects in more naturalistic contexts, such as mock ballot exercises, and with more consequential response modalities, such as real transactions conducted in economic games. We expect that the cost-elasticity of punishment could be even greater in such contexts.

Limitations aside, these findings raise the possibility that, without access to explicit cost cues, voters as a whole might tend to express greater support for punishment policies and sentencing verdicts than they would under more transparent conditions. The implication is that increasing the transparency of cost information could render sentencing attitudes that are more internally consistent and faithful to the individual's underlying preferences. However, this interpretation must be qualified by evidence of distinct punishment strategies that may help to

account for individual variation in sensitivity to information about the costs of incarceration. This study, thus, contributes to an important discourse on transparency in sentencing.

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## Appendix

### Case Summary

Mr. Edwards is a 33 year old male who has been found guilty of **home invasion**. On July 6th, 2015 at approximately 2:30 a.m., the following event was recorded on the security camera of Mrs. Verona, the home owner. Mr. Edwards approached Mrs. Verona's sliding glass door, smashed the glass using a flashlight, and entered the house. Mrs. Verona testified that she woke up to the noise, called the police, and remained upstairs in her bedroom behind a locked door. From her bedroom window, Mrs. Verona saw Mr. Edwards getting in a grey sedan with a laptop and other electronics. Mrs. Verona noted the make and model of Mr. Edwards' car, and the police arrested Mr. Edwards and recovered the property later that night. Mr. Edwards has no prior arrests.

Mr. Edwards was convicted of one count of **home invasion**.

### [DEPENDENT MEASUREMENT 1]

Before you announce Mr. Edwards' sentence, you read the newly released government report of prison expenses in your county. It states:

"The cost of incarcerating a single inmate is about \$30,000 per year in taxpayer dollars. All combined, taxpayers in your state pay over a billion dollars each year in prison costs. That translates to roughly \$200 dollars per year paid by each taxpayer. The state's corrections budget can also be spent on job training for those at risk. Every dollar saved on prison is a dollar that instead can be spent on building better job opportunities."

### [DEPENDENT MEASUREMENT 2]